

Punjab Urban Land Systems Enhancement (PULSE) Project (P172945)



Environmental and Social Management Framework

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Board of Revenue, Government of the Punjab

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ABBREVIATION & ACRONYMS

ARCs	Arazi Record Centers
BoR	Board of Revenue
C&D	Construction and Demolition
CCP	Climate Change Policy
C-EHSS	Construction Environmental, Health, Safety and Social
CHS	Community Health and Safety
COVID-19	Corona Virus Disease of 2019
DGKA	Directorate General of Katchi Abadis
DHA	Defense Housing Authority
DLR	Directorate of Land Records
E&S	Environmental and Social
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ESMF	Environmental and Social Management Framework
ESS	Environmental and Social Standard
ET & NC	Excise, Taxation & Narcotics Control
GBV	Gender Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GoP	Government of Pakistan
GoPb	Government of Punjab
GRM	Grievance Redress Mechanism
GSP	Gross State Product
HUD & PHE	Housing, Urban Development & Public Health Engineering
IBRD	The International Bank for Reconstruction and Development
ICTs	Information and Communication Technologies
IDA	International Development Association
JICA	Japan International Cooperation Agency
LAA	Land Acquisition Act
LDA	Lahore Development Authority
LG & CD	Local Government and Community Development
LGD	Local Government Department
LMP	Labor Management Procedures
LRMIS	Land Record Management Information system
MAF	Million Acre Feet
M&E	Monitoring and Evaluation
NFFI	Net Foreign Factor Income
NGOs	Non-Governmental Organizations
NOC	No Objection Certificate
NPHP	Naya Pakistan Housing Program
O&M	Operation and Maintenance
OGP	Open Government Partnership
OHS	Occupational Health and Safety
PAPs	Project Affected Persons
PDMA	Provincial Disaster Management Authority
PDO	Project Development Objective
PEPA	Pakistan Environmental Protection Act

PHATA	Punjab Housing and Town Planning Agency
PIA	Pakistan International Airlines
PITB	Punjab Information Technology Board
PIU	Project Implementation Unit
PLRA	Punjab Land Records Authority
POM	Project Operational Manual
PPE	Personal Protection Equipment
PSDIS	Provincial-level Spatial Data Infrastructure
PULSE	Punjab Urban Land Systems Enhancement
PV	Photovoltaic
RF	Resettlement Framework
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SOP	Survey of Pakistan
SOPs	Standard Operating Procedures
SPM	Suspended Particulate Matter
TMA	Tehsil Municipal Authority
VAC	Violence against Children
WASAs	Water and Sanitation Agencies
WB	World Bank
WHO	World Health Organization

Executive Summary

Background

Punjab is Pakistan's largest province, accounting for 55 percent of the country's population and around 60 percent of its economy. It is also one of the two provinces most affected by the COVID-19 pandemic. The economic downturn is projected to increase unemployment in Punjab by five to eight million, pushing many households below the poverty line. Income generating activities for the urban poor and small landholders have been hampered due to the pandemic. Farmers and small business owners rely on lands and properties for their income. However, the overall dispersed and duplicative nature of Punjab's land records negatively impacts economic recovery during and after the COVID-19 and threatens the poor and the vulnerable, including women whose rights remain unprotected.

Inefficiencies in Pakistan's land management system create additional costs for investments. The land recording institutions in Pakistan, despite multiplying, have been unable to keep pace with population growth and urbanization. Over time, fragmented and incomplete land records have created ample opportunities for rent accumulation and clientelism by the elite, reducing incentives for efficiency and equity enhancing reforms. This has contributed to a lack of tenure security, and generated opportunities for insiders and barriers for outsiders, depressing overall investments. As records do not provide comprehensive coverage, land-rights related litigation is widespread. Since access to justice reflects economic and political inequalities, the lack of security in property rights has a differential impact on insiders and outsiders. For the former, it provides opportunities for rent extraction through deliberate fraud and the manipulation of land records; for the latter, it adds to projects' riskiness and overall cost.

Inclusive and efficient process of urbanization has hampered by the weakness of Pakistan's land administration system. Service provision in urban areas is closely linked to the capacity of municipalities to raise revenues and to plan for cities' development. In the two aspects, insiders' interest in maintaining their privileges, compounded by the weakness of the land administration system, has contributed to the poor livability of Pakistani cities. On the revenue front, the continuous use of outdated valuation tables for the purpose of immovable property taxation has stifled financial autonomy of municipalities. On the planning side, the fragmentation of land records and the lack of a complete inventory of public land have contributed to inefficient urban sprawl and created opportunities for illegal land appropriations and patronage through preferential land allocations to connected property developers.

Well-functioning land delivery systems lie at the heart of many solutions for affordable housing. Access to land with secure tenure, is a basic requirement for sustainable and affordable housing. Land markets and land delivery systems must ensure vacant, developable land (public or privately owned) can be unlocked for utilization, and that can exchange hands at a fair cost with minimal transaction risks. Land markets require well-functioning, timely and transparent systems for transactions, planning, permitting, construction, construction monitoring, beneficiary awarding, and property maintenance with mechanisms to manage associated social risks. Pakistan's housing deficit is estimated at around 10 million units while the housing backlog grows more than 200,000 units per year. The adequate supply of suitable lands for housing development, with clear titles, is a priority for the success of the Naya Pakistan Housing Project (NPHP).

Project Overview

Under the Punjab Urban Land Systems Enhancement (PULSE) Project, the Government of Punjab (GoPb) will advance their efforts to strengthen land administration and support of urban development specifically by supporting the supply of urban land for housing through the NPHP. Both the GoP and the GoPb recognize that they will not be able to achieve NPHP's goal of constructing up to 2.5 million low-cost housing units in Punjab if the province's urban land record challenges are not resolved. The NPHP calls urban land records modernization to access a comprehensive data catalog of state land's location and status. As such, the BoR requested Bank assistance to support the modernization and digitization of land records throughout the province ensuring that land registration processes are efficient and transparent. Specifically, it is requesting support for the creation of a province-wide digital cadastral map, data improvement in urban and rural areas and the scale-up of LRMIS, as well as project management and policy development. Promoting a more transparent, efficient, and selective supply of lands will address one of the critical bottlenecks to the supply of affordable housing.

Project Components

The PULSE project has following three components:

Component 1- Digital Land Records and Cadastral Maps for LRMIS: This component will finance development of a seamless cadastral map linked to digital land records for the whole Province of Punjab. This activity builds on the existing LRMIS that covers about 44.5 million rural land holdings in Punjab. Key activities include preparing the spatial framework for LRMIS, registration of peri-urban and urban properties, and upgrading tax records to urban land records. This component will also support the regularization of unregistered lands in notified informal settlements to provide secure rights for dwellers occupying plots in previously notified katchi abadis on state and public lands. BoR will carry out a pilot phase in Year 1 to develop efficient and cost-effective techniques, followed by a scale-up phase in the remaining years.

Component 2- Land for Housing: This component will support government agencies to identify and mobilize suitable public lands for development including housing programs. This component will consolidate the state lands identified under Component 1 and the paper records kept by various government authorities. These state lands will be digitalized, georeferenced, and stored in a database in LRMIS to build an inventory of state land asset. The project will finance the establishment of public land asset management procedures and good governance with a monitoring system to ensure transparency and accountability.

Component 3- Integrated Land and Geospatial Information Systems and Services: This component will support various activities to establish a modern Land Information System, unifying and integrating rural and urban land records. These activities will include: (i) strengthening of ICT equipment and software; (ii) development of the next generation Land Records Management Information System (LRMIS) and Land Information Portal; (iii) digitizing deed records across Punjab Province; (iv) establishment of a provincial spatial data infrastructure (PSDI); and (v) provision of base maps.

Component 4- Project Management and Institutional Strengthening: This component will support for the Project Implementing Units (PIUs) to manage, implement, and supervise Project activities, and training and skill development in the areas of monitoring and evaluation, communication, audits, social and environmental management, policies and regulations, operations and maintenance, and project management. This component includes public awareness campaigns and other related activities to build confidence in and understanding of the parcel-based land administration, as well as

targeted messaging for women and vulnerable groups. Under this Component a grievance redress mechanism (GRM) for the Project will be established and managed to ensure that all grievances, complaints, and concerns are responded to.

The Proponent

Board of Revenue (BoR), Government of Punjab, will have an overall responsibility to execute the project. The Senior Member of the Board of Revenue, will look after the project activities. Directorate of Land Records (DLR) is the attached department of BoR. Provincial Disaster Management Authority (PDMA) and Punjab Land Record Authority (PLRA) are the autonomous bodies functioning under BoR. The DLR, PDMA and PLRA will be the assistant implementing agencies of PULSE. These agencies will be responsible to execute project activities as per their scope of work defined in the project.

Objective and Scope of Environmental and Social Management Framework

Environmental and Social Management Framework (ESMF) is an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and the risks and impacts cannot be determined until the program or subproject details have been identified. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, including on its capacity to manage environmental and social risks and impacts.

Potential Environmental and Social Impacts and Mitigation Measures

Following are the potential environmental and social impacts of the project activities:

- Some level of social disharmony and conflict can also be anticipated given widespread disputes over land (multiple claimants, disputed inheritance rights, customary exclusion of women and minors from rightful land shares, etc.).
- Field mapping work may also include health and safety risks for field staff and the local communities, including the potential for communicable diseases.
- Lack of engagement with key stakeholders in the project activities can lead to conflict in the community.
- Public display without awareness raising and information sharing may lead to exclusion of vulnerable/marginalized groups, particularly women.
- The dispute mediation and resolution may fail if access to the system and information is not ensured for all types of stakeholders.
- The inability to incorporate /consider customary forms of tenure during the registration process may negatively impact ethnic groups, minority and other vulnerable communities.
- There is a risk of exacerbating gender inequality and gender violence if women's rights to land are not systematically protected.
- Given that katchi abadis dwellers are usually, poor, often disenfranchised (in that they may not have requisite citizenship papers, id cards or any documentation of payment for land or utilities) and rarely approached by officials, their voices are in danger of being ignored or drowned out.
- Social unrest and resistance at commencement of registration due to fear of eviction after the land is registered at katchi abadis.
- The digitization of private and public land records will legalize the ownership of the lands which may result in the clearing of the lands from informal settlers/ occupants and render them homeless.

- Women could be marginalized in case their needs are not considered while upgrading existing ARCs.
- Risk of insufficient public information and awareness among the project's beneficiaries, especially in areas of collective land and customary land ownership.
- The digital tools created need to be accessible and responsive. Only around 40% of Pakistan's population is currently using online and the vast majority of them access the internet through smartphones.
- The GRM may not be effective in practice if vulnerable groups cannot access it and if it does not address complaints in the specified time period.
- Vulnerable stakeholder voices may be excluded and their concerns not incorporated and addressed in the policies prepared.
- The digitization of land records will require procurement and use of ICTs which will ultimately result into generation of E-waste. E-waste contains hazardous material which are released into environment during dismantling and recycling processes.
- There will be high electrical energy consumption and GHG generation due to operation of ICTs in project offices.
- There are chances that the construction of ARCs will take place at biologically sensitive sites which can pose threat to the habitats and the biodiversity they support.
- Construction/renovation of ARCs will generate construction related environmental, health and safety impacts.
- There are chances that the project workers i.e. direct workers, working on the project directly and the construction workers, working under the civil contractor, are treated unfairly and their labor rights are compromised.
- The sites chosen for renovation/ building of new centers may have the presence of encroachers or informal settlers who are living on or using the land or facilities.
- For construction/renovation work, no land acquisition will be required. However, there are chances that the squatters will be displaced and resettled during land digitization process.
- Low level short-term environmental impacts may occur in the form of drainage clogging due to improper construction waste disposal, sanitary wastewater ponding due to improper disposal arrangements at construction sites, air pollution due to dust and stack emissions, noise pollution, soil pollution, occupational health hazards due to improper management of sanitary and hazardous waste during ARCs construction activities.
- Energy consumption at ARCs will contribute in GHG emission.
- The digitization of the system through ICT use in the PLRA offices, ARCs and other offices can pose a risk for those office employees and field staff who have a low level of IT literacy and knowledge. These employees can therefore be marginalized under the new system.

Following are the mitigation measures to manage environmental and social impacts of the project activities:

- Engagement of all the stakeholders, communities and vulnerable groups, particularly the women, during all phases of the project as per project Stakeholder Engagement Plan (SEP) so that nobody could be excluded from getting project benefits and to avoid all sort of social disharmony and unrest in the community during land registration process and legalizing the land ownership for all the legal heirs.
- Ensuring that women's right to inheritance and property is not circumvented by male relatives.
- Ensuring that the digital tools developed are simple and user friendly, preferably in a language understandable to the general public. It will be preferred to use mobile based tools and applications which may be more effective (android, iOS) as a majority of the people use mobile phones.

- Given that women are often not part of property registration procedures and may not be well versed with the process, specific steps will be taken to ensure that they are informed and able to use the services available at the ARCs.
- A project specific Grievance Redress Mechanism (GRM), proportionate to the potential risks and impacts of the project, will also be established, implemented, monitored and reported on a regular basis.
- For the displacement and resettlement of the informal settlers/occupants, the project Resettlement Framework (RF), prepared under the project, will provide guidance on the preparation of the Resettlement Plan, including identification of eligible affected persons, and entitlements for the informal settlers/occupants as per World Bank regulations.
- Preparation and implementation of Labor Management Procedures (LMP) for all types of workers including direct workers and construction labor for exercising their labor rights during the project life.
- Capacity building of all the concerned staff with low level of IT skills and having no familiarity with the new digital system to avoid their exclusion from the project activities.
- Establishing effective communication throughout the project life as per communication action plan to avoid social disharmony and conflict arising from widespread disputes over land, and social unrest and resistance at commencement of registration due to fear of eviction after the land is registered at katchi abadis.
- Procurement and use of energy efficient ICTs in the project to reduce energy consumption and consequently the GHG emissions.
- Preparation of E-waste Management Plan (EWMP) and its implementation at implementing departments to manage environmental hazards of the E-waste.
- Carrying out screening of the sites with respect to the environmental sensitivity. The site selection criteria will be developed and applied prior to finalization of any site for the ARC construction to avoid environmental and social impacts associated with the location of the ARCs.
- Preparing Construction Environmental, Health, Safety and Social (C-EHSS) SOPs, and appending it to the bidding documents for the civil contractors, and implementing at construction sites to mitigate environmental, health, safety and social impacts of construction activities.
- Installation of solar photovoltaic technologies at ARCs to contribute 20-30% of renewable energy in the total energy consumption to reduce grid electricity and GHG emissions.
- Ensuring the operation of the installed solar photovoltaic technologies at the ARCs.

Environmental and Social Management Framework Implementation

Board of Revenue (BoR), Government of Punjab, will be overall responsible to execute the project. BoR will operate a Project Implementation Unit (PIU) to implement PULSE activities. The PIU will be headed by a Project Director (PD) and have technical staff for carrying out core functions of the project. A project steering committee (PSC) for PULSE is also established to proactively prepare and support the project. This PSC is led by the Chairman of Planning and Development Board and constituted with eleven key government authorities. Generic Environmental and Social Mitigation Plan (ESMP) for avoiding or mitigating the potential environmental and social impacts is part of this ESMF. This plan will be followed by project PIU, three assistant PIUs, and the contractors to manage E&S impacts of the project activities. Monitoring of the ESMP is required at construction and operational phases of the project components. The monitoring is the requisite for World Bank. This plan mentions the key E&S parameters to be monitored and key implementation measures to be evaluated at required frequency with assigned responsibilities of the personnel.

The project PIU and three assistant PIUs will have the responsibility to implement ESMP of the project, monitor its progress and report to the BoR. The respective PIUs i.e. PIU-PDMA, PIU-DLR and PIU-PLRA will be responsible to implement ESMP at their respective departments and report to

the project PIU. The project PIU will report the progress of ESMP implementation to the BoR. The BoR will report to the World Bank as per the set frequency.

The Bank has classified PULSE overall as ***High Risk project due to its high social risks***. The environmental risks are moderate. In the project, the following different methods and tools can be used to carry out the environmental and social assessment and to document the results of such assessment, including the mitigation measures to be implemented, as per the nature of the project. BoR will decide to use the methods and tools in consultation with the Bank.

- Environmental and Social Management Framework (ESMF) as per ESS-1
- Social Assessment (SA) as per ESS-1
- E-waste Management Plan as per ESS-1 and ESS-3
- Resettlement Framework as per ESS-5
- Labor Management Procedure (LMP) as per ESS-2
- Stakeholder Engagement Plan (SEP) as per ESS-10

Stakeholder Consultation and Disclosure

Stakeholder Engagement Plan (SEP) is prepared to engage all the project stakeholders throughout the project life. The SEP will be periodically revised and updated as necessary during the course of project implementation and any major changes to the project related activities and to its schedule will be duly reflected in the SEP. One stakeholder consultation was took place on February 12, 2020 during project preparation phase. Also it is planned to conduct community level consultations, as well as discussions with experts during the preparation stage from October to December 2021, focusing mainly on project affected parties. For PULSE project, it is vital that accurate information is disseminated to the relevant stakeholders and the affected parties at the beginning, and updates are provided at regular intervals as the project proceeds. It is also necessary to give stakeholders ample time to formulate their response and provide feedback during the engagement process. Various modes of communication would be used to disseminate the necessary information to the relevant stakeholders. Key messages will be conveyed in the national as well as relevant regional languages to facilitate a broader audience. The information will be disseminated using relevant strategies depending on the stakeholder group and the program stage. Stakeholders will be provided draft documents in advance of consultations.

Grievance Redress Mechanism

The implementing departments such as PLRA and PDMA and Chief Minister Punjab Complaint Cell have their own GRM in place to redress the grievances of the public. However, project specific GRM will also be established. Under the project specific GRM, a Grievance Redress Committee (GRC) will be constituted at the main PIU. There will be a system to receive and record the complaints and respond to the complainants at the earliest. The grievances will be investigated and resolved within the timeframe specified. Records of all grievances/complaints will be maintained in a database, including details of actions taken to resolve the issue, and dates on which resolution was effected.

Capacity Building of Stakeholders

Capacity building will be required for the stakeholders involved for the implementation, supervision, monitoring, evaluation, and reporting of the mitigation measures during construction and operational phases of the project activities.

Budget

The tentative budget for the environmental and social assessment of project activities and compliance of E&S mitigation plan during construction and operational phases of the project is Rs. 405 million.

1.0 Introduction

This chapter provides background of the project and its components to be financed by the World Bank, profile of the proponent and the Environmental and Social Management Framework (ESMF) for the project. This framework will be applied to all the project components irrespective of whether financed by the World Bank or not, and its associated facilities¹, if any.

1.1 Background

Pakistan is at a crossroads as it deals with the coronavirus disease (COVID-19) pandemic. 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 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 prospects². The country was making good progress in stabilizing its economy and implementing much needed structural reforms. However, the COVID-19 pandemic has had significant negative impacts on the economy. Real GDP growth (at factor cost) is estimated to have declined from 1.9 percent in FY 2019 to 1.5 percent in FY 2020, the first contraction in decades, reflecting the effects of COVID-19 containment measures that followed monetary and fiscal tightening prior to the outbreak. Due to significant uncertainty over the evolution of the pandemic, demand compression measures to curb imbalances, along with unfavorable external conditions, Pakistan's near-term economic prospects are subdued. Economic growth is projected to remain below potential, averaging 1.3 percent for FY 2021-2022.

In response to the outbreak of COVID-19 in Pakistan, the government announced a fiscal stimulus package of approximately US\$ 7.5 billion³ (equivalent to 2.6 percent of GDP). This was aimed to (a) support the medical health sector in combatting the spread of the virus and providing relief to those affected; (b) implement social welfare measures to support the poor and vulnerable whose livelihoods have been affected by the economic slowdown and partial lockdowns across the country; and (c) provide stimulus to businesses and industries to protect productive assets during the economic downturn. The financing of the response package comprised approximately US\$ 2.5 billion of additional resources, and a re-appropriation from the existing budget. Pakistan also availed of the Debt Service Suspension Initiative (DSSI) and expects US\$ 1.8 billion to US\$ 2.4 billion in temporary fiscal space⁴ due to the debt service standstill during the period May 1 to December 31, 2020 from bilateral creditors, including the G20 and its extension through 2021. The country has committed to use the created fiscal space for additional social, health or economic spending and follow the disclosure and other requirements of the DSSI.

Punjab is Pakistan's largest province, accounting for 55 percent of the country's population and around 60 percent of its economy. It is also one of the two provinces most affected by the COVID-19 pandemic. The economic downturn is projected to increase unemployment in Punjab by five to eight million, pushing many households below the poverty line. Income generating activities for the urban poor and small landholders have been hampered due to the pandemic. Farmers and small business

¹ Facilities or activities that are not funded as part of the project and, in the judgment of the Bank, are: (a) directly and significantly related to the project; (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist. For facilities or activities to be Associated Facilities, they must meet all three criteria.

² World Bank. 2019. Pakistan at 100: Shaping the Future. Washington, DC: World Bank.
<https://openknowledge.worldbank.org/handle/10986/31335>

³ Estimated USD equivalent for PKR 1.2 trillion stimulus package.

⁴ This includes non-G20 creditors. Specific amount will be determined after data reconciliation has been completed.

owners rely on lands and properties for their income. However, the overall dispersed and duplicative nature of Punjab's land records negatively impacts economic recovery during and after the COVID-19 and threatens the poor and the vulnerable, including women whose rights remain unprotected.

Inefficiencies in Pakistan's land management system create additional costs for investments. The land recording institutions in Pakistan, despite multiplying, have been unable to keep pace with population growth and urbanization. Over time, fragmented and incomplete land records have created ample opportunities for rent accumulation and clientelism by the elite, reducing incentives for efficiency and equity enhancing reforms. This has contributed to a lack of tenure security, and generated opportunities for insiders and barriers for outsiders, depressing overall investments. As records do not provide comprehensive coverage, land-rights related litigation is widespread. Since access to justice reflects economic and political inequalities, the lack of security in property rights has a differential impact on insiders and outsiders. For the former, it provides opportunities for rent extraction through deliberate fraud and the manipulation of land records; for the latter, it adds to projects' riskiness and overall cost.

Pakistan is highly vulnerable to natural disasters and climatic variability, such as extreme floods due to monsoon rains, droughts, earthquakes, landslides, together with the ongoing increase in vulnerable houses and infrastructure. These risks are rising which is due to changing monsoon patterns from climate change, as experienced in record-breaking August 2020 rains. In addition, Pakistan's deforestation rate is the second highest in Asia. From 2001 to 2019, Pakistan lost 7.1% of tree cover, equivalent to 3.63 Mt of CO₂ emissions⁵. Periods of severe droughts, followed by devastating floods are common in the country and have contributed to low crop yields, loss of livestock, food insecurity, and displacement in recent years. Given that the poor are more likely to be employed in the agricultural sector in rural areas, they tend to be more exposed to climatic shocks and natural disasters. The urban and peri-urban poor are also exposed to these risks often due to the hazardous location of their settlements.

The Constitution of Pakistan provides a fundamental right to every citizen to own property and guarantees equality of citizens. Nothing in the Constitution shall prevent the State from protection of rights of women, minors, and other marginalized groups. Pakistan has a land administration system inherited from the British, involving rules and regulations regarding sale, purchase and use of land resources mainly linked to the collection of land revenue. In Punjab, the present land legislation is constituted mainly of the Punjab Land Records Authority (PLRA) Act 2017, the Land Revenue Act 1967 and the Registration Act 1908. The PLRA Act 2017 is the main applicable law to modernize the land records system and service delivery for both urban and rural citizens, contributing long lasting tenure security.

Pakistan's main land records or the Record of Rights are maintained at the village level by the provincial Board of Revenues (BoRs). In addition, the BoRs maintain a Register of Deeds that registers property transfers and mortgages. The Record of Rights and the Register of Deeds are person-based records, but the Cadastral Maps have provided a survey number as a common identifier. The Revenue Records were originally rural records excluding the historical city centers. As urban areas have expanded, unplanned large urban areas around the city centers have become covered by the Revenue Records. However, the Cantonments, Development Agencies, and Cooperatives maintain their own land records on land plots, properties and rights in areas of their respective jurisdictions, providing land registry services to owners, banks and others, including the registration of mortgages.

⁵ Global Forest Watch (GFW) by the World Resources Institute (WRI).
<https://www.globalforestwatch.org/dashboards/country/PAK>

The semi-public land records are not reflected or interlinked with the Revenue Records or the Excise and Taxation's Urban Immovable Property Tax (UIPT) records. There is no single agency maintaining updated land records for all of Punjab, and the coordination in record keeping functions being carried out by the various agencies is limited. Within this complicated institutional structure, the BoR is the most important agency of land administration as a primary custodian of land records and deed registration.

Inclusive and efficient process of urbanization has hampered by the weakness of Pakistan's land administration system. Service provision in urban areas is closely linked to the capacity of municipalities to raise revenues and to plan for cities' development. In the two aspects, insiders' interest in maintaining their privileges, compounded by the weakness of the land administration system, has contributed to the poor livability of Pakistani cities. On the revenue front, the continuous use of outdated valuation tables for the purpose of immovable property taxation has stifled financial autonomy of municipalities. On the planning side, the fragmentation of land records and the lack of a complete inventory of public land have contributed to inefficient urban sprawl and created opportunities for illegal land appropriations and patronage through preferential land allocations to connected property developers.

In an effort to address the growing inequality and further reduce poverty, the Government of Pakistan (GoP) has initiated a number of pro-poor programs, including the Naya Pakistan Housing Program (NPHP). Launched in April 2019, NPHP seeks to build 5 million low-cost housing units in urban areas across the country within a 5-year timeframe. The program will be implemented in partnership with private developers and the banks, with the aim of strengthening the construction sector, creating jobs and boosting economic growth. Although NPHP will target a mix of income groups, it will place special emphasis on the bottom 40 percent of Pakistan's population. Out of the 5 million units, between 2.0 and 2.5 million are expected to be constructed in Punjab Province under the purview of the Punjab Housing and Town Planning Agency (PHATA). NPHP, however, faces numerous challenges as the GoP attempts to achieve the ambitious goals set under the program, particularly targeting housing investments in urban areas where needs are most acute, as well as identifying appropriate lands for housing developments that are near jobs and basic infrastructure, and not prohibitively expensive.

Well-functioning land delivery systems lie at the heart of many solutions for affordable housing. Access to land with secure tenure, is a basic requirement for sustainable and affordable housing. Land markets and land delivery systems must ensure vacant, developable land (public or privately owned) can be unlocked for utilization, and that can exchange hands at a fair cost with minimal transaction risks. Land markets require well-functioning, timely and transparent systems for transactions, planning, permitting, construction, construction monitoring, beneficiary awarding and property maintenance with mechanisms to manage associated social risks. Pakistan's housing deficit is estimated at around 10 million units while the housing backlog grows more than 200,000 units per year⁶. The adequate supply of suitable lands for housing development, with clear titles, is a priority for the success of the NPHP.

The Land Records Management and Information Systems Project (LRMIS; P090501)⁷ set the stage for improving land tenure security and gender equality in rural areas of Punjab Province. The project supported the creation of the LRMIS, or the ICT application for Punjab's BoR. LRMIS is maintained by the PLRA, a department under BoR, that is itself an outcome of the previous LRMIS project.

⁶ The number of urban households grows by 700,000 each year, while only 300,000 to 400,000 formal housing units are delivered by the private sector per year.

⁷ The LRMIS was approved in January 2007 with US\$51 million investment (P090501), added US\$70 million by additional financing (P131266) in 2012, and finally closed in December 2016.

Because of LRMIS, 92 percent of the rural land record overseen by the PLRA is now fully digital and operates in 152 service centers for land transactions called Arazi Record Centers (ARCs, local land offices) across the province, as well as 20 mobile offices. LRMIS covers 55 million land holdings and an estimated 46 million land parcels in rural areas. The digital LRMIS has been recognized region wide as a success story that has increased transparency, helped to resolve land disputes and reduced land transaction information request processing times from weeks to minutes and property transaction times from months to days. Women greatly benefitted from the LRM

IS project, as LRMIS enabled them to access land records and helped to secure the inheritance rights, which was often restricted under the old manual system. Land can no longer be transferred without the presence of female record holders in the ARCs when their name is on the land record.

The initial success and lessons learned from LRMIS in rural areas laid the foundation improving tenure security in urban areas. Although information on urban property transactions is typically recorded through the registration of deeds, a standardized methodology for transaction processing does not exist and spatial information is rarely included in the transaction record. Given the existing gaps and the absence of a standardized system of recording property rights in urban areas, many challenges persist, such as (i) the unavailability of any formal ownership records for many people; (ii) high rates of lengthy litigation; (iii) numerous records registries being maintained by multiple agencies that lack any harmonization; (iv) a lack of easy access to property rights information for the development authorities and agencies to fulfill their core functions; (v) absence of up-to-date cadastral data for the governments to incorporate climate change considerations while planning of services and infrastructure; and (vi) property tax evasion (i.e. transfer tax) and inequitable taxation. Women in urban areas also face marginalization and the loss of inheritance rights to land due to the lack of clarity on land and property ownership.

1.2 Project Overview

Under the Punjab Urban Land Systems Enhancement (PULSE) Project, the Government of Punjab (GoPb) will advance their efforts to strengthen land administration and support of urban development specifically by supporting the supply of urban land for housing through the NPHP. Both the GoP and the GoPb recognize that they will not be able to achieve NPHP's goal of constructing up to 2.5 million low-cost housing units in Punjab if the province's urban land record challenges are not resolved. The NPHP calls urban land records modernization to access a comprehensive data catalog of state land's location and status. As such, the BoR requested Bank assistance to support the modernization and digitization of land records throughout the province ensuring that land registration processes are efficient and transparent. Specifically, it is requesting support for the creation of a province-wide digital cadastral map, data improvement in urban and rural areas and the scale-up of LRMIS, as well as project management and policy development. Promoting a more transparent, efficient, and selective supply of lands will address one of the critical bottlenecks to the supply of affordable housing.

1.2.1 Program Development Objective

The project development objective (PDO) is to:

'Provide beneficiaries in Punjab Province with: (i) updated formal land records; and (ii) improved access to land for development including housing programs, and to provide immediate and effective response in case of an eligible crisis or emergency'

1.2.2 Program Development Objective Level Indicators

The program development objective level indicators are as under:

- a. Land rights registered and/or recorded in LRMIS (number, gender-disaggregated)
- b. Increased coverage of updated digital cadastral maps (percentage of provincial area)
- c. Number of landholding-based records converted to parcel-based records in LRMIS (number)
- d. Area of public lands screened for housing (ha); and
- e. Sites of public lands identified for development programs (number).

1.3 Project Components

The Project aims to establish a unified land registry linked to digital cadastral maps that underpins the comprehensive land administration system, covering urban and rural areas in Punjab. In urban area, the Project will adopt a systematic approach, coordinating existing land-related functions and standardizing procedures and systems. In rural areas, existing land holdings in digital format will be connected to land parcels produced from base maps. Pilots will be conducted in the first project year before full rollout during the subsequent four years to facilitate an efficient process for parcel mapping and registration. The four key areas that the project aims to achieve are: (i) provision a cadastral map linked to digital land records; (ii) improved tenure security and access to land for housing; (iii) a unified modern land information system and provincial spatial data infrastructure; and (iv) strengthened capacity and regulatory framework.

The detail of the project components is as under:

Component 1: Digital Land Records and Cadastral Maps for LRMIS

(US\$ 116 million; WB financing: US\$ 116 million)

Component 1 will finance development of a seamless cadastral map linked to digital land records for the whole Province of Punjab. This activity builds on the existing LRMIS that covers about 44.5 million rural land holdings in Punjab. This component will also support the regularization of unregistered lands in notified informal settlements to provide secure rights for dwellers occupying plots in previously notified Katchi Abadis on state and public lands. BoR will carry out a pilot phase in Year 1 to develop efficient and cost-effective techniques, followed by a scale-up phase in the remaining years.

Sub-Component 1.1: Spatial Framework for LRMIS

(US\$ 46 million; WB financing: US\$ 46 million)

This sub-component will support production of the digital cadastral maps to update the existing revenue maps. The revenue maps will be scanned and georeferenced to the national coordinate reference system. The digitized maps will create initial index parcel maps by overlaying high-resolution base map images. Field verification will be needed in areas, especially where there have been significant changes or where legacy paper maps are not available. The project will introduce a simple mapping method and the general position of the boundary. The digital cadastral maps will be validated through public display and following refinement, where required. The public will be informed, and proper measures for dispute mediation and resolution will be in place to ensure safeguards and protection for women and vulnerable people.

Sub-Component 1.2: Systematic Registration of Peri-urban Properties

(US\$ 14.5 million; WB financing: US\$ 14.5 million)

This sub-component will finance systematic registration for peri-urban properties that are not yet registered in LRMIS. A new settlement process will be developed to provide public awareness and information, demarcate property boundaries, gather evidence of rights, adjudicate rights, publicly display, respond to public requests for correction and to register the property rights.

Sub-Component 1.3: Upgrading Tax Records to Urban Land Records

(US\$ 12.6 million; WB financing: US\$ 12.6 million)

Activities under this sub-component will include improvements to the existing tax maps of about 5 million properties to build fit-for-purpose urban cadastral maps. The base maps will provide the initial urban parcel map information in the seamless cadastral map and will update the property tax maps managed by the Excise and Taxation Department (E&TD). New field procedures and processes will be developed to use the E&TD information as a basic record to create urban land records in the new LRMIS.

Sub-Component 1.4: Incorporation of Existing Urban Records

(US\$ 4.9 million; WB financing: US\$ 4.9 million)

The sub-component will finance digitalization, parcel mapping and incorporation of existing urban land records into a single land registry. The existing digital land registry records and parcel maps that were created by public development authorities and private development agencies and shared with BoR would be compiled, validated and integrated to a single database in LRMIS. The Deeds Registry records based on holdings will also be combined with the parcel-based recording.

Sub-Component 1.5: Systematic Registration of Urban Property

(US\$ 38 million; WB financing: US\$ 38 million)

Activities under this sub-component will include systematic registration of urban land and first registration in Katchi Abadis, supported by cadastral surveys carried out area by area to fill the gaps that are not covered by other activities under Component 1.

Component 2: Land for Housing

(US\$ 3 million; WB financing: US\$ 3 million)

This component will support government agencies to identify and mobilize suitable public lands for development including housing programs. This component will consolidate the state lands identified under Component 1 and the paper records kept by various government authorities. These state lands will be digitalized, georeferenced, and stored in a database in LRMIS to build an inventory of state land asset. The project will finance the establishment of public land asset management procedures and good governance with a monitoring system to ensure transparency and accountability.

Component 3: Integrated Land and Geospatial Information Systems and Services

(US\$ 25.5 million; WB financing: US\$ 25.5 million)

This component will support various activities to establish a modern Land Information System, unifying and integrating rural and urban land records. These activities will include: (i) strengthening of ICT equipment and software; (ii) development of the next generation Land Records Management Information System (LRMIS) and Land Information Portal; (iii) digitizing deed records across Punjab Province; (iv) establishment of a provincial spatial data infrastructure (PSDI); and (v) provision of base maps.

Sub-Component 3.1: ICT Infrastructure Upgrade

(US\$ 10.5 million; WB financing: US\$ 10.5 million)

This sub-component will support strengthening ICT infrastructural capacity by upgrading existing data Centers, backup sites and Arazi Record Centers (ARCs), and equipping new ARCs that will be established during the project.

Sub-Component 3.2: LRMIS Improvement

(US\$ 4 million; WB financing: US\$ 4 million)

This sub-component will support integration of rural and urban land records in one single system to deliver a comprehensive data source of property information. The new LRMIS will be strengthened to manage spatial information and use it for decision-making purposes, valuation, and analysis. The new LRMIS will be designed to provide land registration functions as a service to multiple stakeholders who will migrate their land records into LRMIS and continue to manage these records in accordance with their mandate and responsibilities.

Sub-Component 3.3: Integrated Land Portal

(US\$ 1 million; WB financing: US\$ 1 million)

This sub-component will finance development of an integrated Land Portal and mobile application to provide various e-services, based on a unified land information database.

Sub-Component 3.4: Establishment of PSDI

(US\$ 10 million; WB financing: US\$ 10 million)

This sub-component will finance the following three activities which are required to be conducted before the cadastral surveying and mapping activities under the Component 1: (i) strengthening geodetic network; (ii) provision of high-resolution imagery and base maps; and (iii) establishment Provincial Spatial Data Infrastructure (PSDI) framework.

Component 4: Project Management and Institutional Strengthening

(US\$ 5.5 million; WB financing: US\$ 5.5 million)

This component will support for the Project Implementing Units (PIUs) to manage, implement, and supervise project activities, and training and skill development in the areas of monitoring and evaluation, communication, audits, social and environmental management, policies and regulations, operations and maintenance, and project management. This component includes public awareness campaigns and other related activities to build confidence in and understanding of the parcel-based land administration, as well as targeted messaging for women and vulnerable groups. Under this Component a grievance redress mechanism (GRM) for the Project will be established and managed to ensure that all grievances, complaints, and concerns are responded to.

Sub-Component 4.1: Project Management, Monitoring and Evaluation

(US\$ 2.5 million; WB financing: US\$ 2.5 million)

This sub-component will support effective project management, fiduciary support (financial management and procurement), monitoring and evaluation of project activities, establishment of a solid M&E framework, and compliance with social and environmental safeguards policies and processes. The component will also include financing for the baseline study, and the mid-term and end-of-project evaluations to assess performance and document important lessons to inform the design of future operations. Under this Component a grievance redress mechanism (GRM) for the project will be established and managed to ensure that all grievances and complaints are responded to the concerned stakeholders and citizens.

Sub-Component 4.2: Legal and Regulatory Support

(US\$ 1.0 million; WB financing: US\$ 1.0 million)

This sub-component will update and harmonize the policy, legal and regulatory framework for comprehensive land administration, systematic land registration, and unified land registry management. The sub-component will support legal and technical studies to analyze current challenges, develop recommendations, and pursue acceptance of recommendations within government, which will promote security of tenure, integration of land registry, reduction of land disputes, parcel-based cadastral mapping and registration, land-related climate change actions, and modern land valuation and taxation infrastructure. This sub-component will be done through legal and technical analysis, workshops and consultancies, including (i) a series of pilots of cadastral mapping,

upgrading land records, incorporation of existing land records, and systematic land registration; (ii) international and regional comparative studies; (iii) consultations and workshops to discuss key policy issues; (iv) consultancy services to develop draft policies and procedures; and (v) policy studies to enhance land allocation and spatial planning for climate resilience.

Sub-Component 4.3: Institutional Strengthening and Public Awareness

(US\$ 2.0 million; WB financing: US\$ 2.0 million)

The objective of this subcomponent is to increase the capacity, create awareness of a unified land records and cadastral mapping, expand ARCs' coverage, and improve the performance of all relevant actors in the land sector to be able to fulfill functions in land administration. Training needs assessment will be conducted, and a detailed long-term training plan will be prepared. Training packages (both short courses, study tours and other) will be provided at different levels, including, but not limited to, provincial departments, local governments, PIU staff, BoR officials, public development authorities and private agencies, local leaders, and contractors. This sub-component will also enhance equal treatment of all citizens regardless of their gender or social status by accompanying technical field work with raising public awareness and legal advisory services.

1.4 The Proponent

The details of the proponents of the project is are provided below:

1.4.1 Board of Revenue

Board of Revenue (BoR), Government of Punjab, will have an overall responsibility to execute the project. The Senior Member of the Board of Revenue, will look after the project activities. Directorate of Land Records (DLR) is the attached department of BoR. Provincial Disaster Management Authority (PDMA) and Punjab Land Record Authority (PLRA) are the autonomous bodies functioning under BoR. The DLR, PDMA and PLRA will be the assistant implementing agencies of PULSE. These agencies will be responsible to execute project activities as per their scope of work defined in the project.

1.4.2 Directorate of Land Records

The function of Directorate of Land Records (DLR) is to improve the land records service delivery in the Punjab, contributing to long lasting tenure security, increased access to land records at lower transaction cost for the beneficiary, through a client-responsive service and increased level of tenure security of land-right holders.

1.4.3 Provincial Disaster Management Authority

The Provincial Disaster Management Authority (PDMA), Government of Punjab, is a comprehensive endeavor towards combating natural or man-induced disasters at the provincial and local level for securing lives and livelihoods of the affected people. The Geographic Information System (GIS) Center of PDMA is responsible for geospatial data management and analysis, delivering mapping services and spatial analysis in emergency situations and day-to-day work. GIS unit collects geospatial data from different sources that are maintained by other departments and agencies and combines them into a unified geospatial database. Apart from combining existing geospatial sources, GIS unit also produces basic infrastructure layers, such as administrative boundaries, education facilities, health facilities, settlements, major cities, rivers, roads, bridges, landslides, flood extents and others.

PDMA will coordinate with the Survey of Pakistan (SOP). SOP is a federal level mapping agency which will play important role in densification of geodetic reference points and acquisition of base maps, as well as technical cooperation in surveying, mapping and urban cadastre pilot.

1.4.4 Punjab Land Records Authority

Punjab Land Records Authority (PLRA) was set up through PLRA Act-2017 under the administrative control of the Board of Revenue, Government of the Punjab. The major function of the PLRA is to computerize the land record of the province for bringing about a qualitative change in the lives of people, improve service delivery and to enhance the perceived level of tenure security.

1.4.5 Project Collaboration Partners

The key departments and development authorities will support PULSE as the collaboration partners, while exercising their mandates and sharing their existing land and property records. These partners will share their land registry data and become users of the integrated LRMIS to maintain their respective land records. Administrative agreements between BoR and the key partners would be required before launching the project. These key departments and authorities include, but not limited to, ET & NC department, LG & CD department, HUD & PHE department, Cooperative department, Auqaf & Religious Affairs department, Irrigation department, PITB, PHATA, LDA, Urban Unit, DHA, Cantonment Boards, Development Authorities, Private Housing Colonies, and Societies & Industrial Zones.

1.5 Objective and Scope of Environmental and Social Management Framework

The PULSE project is supported by the World Bank through *Investment Project Financing* for which the compliance of Environmental and Social Standards (ESSs) is the responsibility of the PIU PULSE to manage project's environmental and social impacts. As per ESS-1 (Assessment and Management of Environmental and Social Risks and Impacts), PIU-PULSE is required to prepare Environmental and Social Management Framework (ESMF) for all activities under PULSE.

ESMF is an instrument that examines the risks and impacts when a project consists of a program and/or series of subprojects, and the risks and impacts cannot be determined until the program or subproject details have been identified. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social risks and impacts. It contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, including on its capacity to manage environmental and social risks and impacts.

The purpose of the ESMF is to ensure compliance of environmental and social management requirements of the national laws and World Bank's environmental and social framework for those PULSE's activities that are not yet defined and/or whose locations are unknown at the time the Bank appraises the project. The ESMF describes the process of how environmental and social impacts will be assessed, addressed and managed during the project implementation, when the sub-projects will be identified in terms of technical aspects and location; as well as a set of measures for mitigation, monitoring and institutional responsibility that should be taken during the project implementation to eliminate adverse environmental and social impacts, their neutralization or reducing up to acceptable levels. The ESMF covers general mitigation measures for possible impacts of different proposed activities to be supported by the project; implementation arrangements for project environmental and social aspects, relevant capacity building activities, consultation process etc.

ESMF identifies the responsibilities of project stakeholders, procedures for environmental and social safeguards screening, review and approval, monitoring and reporting requirements, as well as plans to enhance institutional capacity through capacity building activities. Finally, this ESMF will be an integrated part of the Project Operation Manual (POM) and is applicable to all linked investments financed in the project areas regardless of their funding source or implementing agency.

PIU PULSE in close coordination with BoR has prepared this ESMF by using primary and secondary information collected through a literature review, reconnaissance survey, institutional stakeholder consultations, and a consultation workshop. This framework will be followed by PIU PULSE, once the activities are identified during project implementation and their location, technical and engineering details are available. The ESMF also provides the stakeholder engagement and involvement guidelines throughout the project life cycle and mechanism to disclose project information to them and redress the grievances of the affected communities.

PIU PULSE will use this ESMF during the planning, designing, construction and operational phases of the project components to ensure safeguard compliance and to mitigate environmental and social impacts at all the stages of the project as per the environmental and social management plan provided in the framework.

1.6 Structure of the ESMF Report

The ESMF report consists of eight chapters. The brief of each chapter is given below:

	Executive Summary	<i>Provides summary of the ESMF contents and key findings.</i>
1	Introduction	<i>Background of the project, description of project and its components, information of the proponents, introduction of the ESMF, its objective and structure of the ESMF report</i>
2	Environmental and Social Baseline	<i>Description of environmental and social baseline of the entire area for the proposed project/subprojects including physical, socioeconomic conditions and cultural aspects relevant to project and its potential impacts including any changes anticipated before the project commencement</i>
3	Regulatory Review	<i>Brief description of the national, provincial and World Bank laws, policies, strategies, guidelines, codes, standards and procedures for the categorization, screening, environmental and social assessment and compliance of the proposed project/subprojects. This chapter establishes that how the various requirements have been or will be complied with during the planning and implementation stages of the subprojects.</i>
4	Potential Environmental and Social Impacts and Mitigation Measures	<i>Description of potential generic environmental and social risks and impacts (direct, indirect/induced and cumulative) to be caused by the project's construction and operation phases on surrounding environment and community. Description of mitigation measures as per mitigation hierarchy (avoidance, minimization or reduction, mitigation, compensate/offset).</i>
5	Stakeholder Consultation and Disclosure	<i>Describes the objective, process, and outcome of the stakeholder consultations carried out during the ESMF preparation and its disclosure requirements.</i>

6	Environmental and Social Management Framework Implementation	<i>Description of institutional arrangements for environmental and social management, screening methodology, generic mitigation plan, monitoring framework, and capacity building of stakeholders involved in environmental and social assessment, monitoring and management. The guidelines for environmental and social compliance and occupational health and safety requirements have been described.</i>
7	Grievance Redress Mechanism	<i>Description of the Grievance Redress Mechanism to be adopted by the proponent to facilitate resolution of any community complaints and grievances about the project's environmental and social performance, in line with the requirements of World Bank.</i>
8	Budget	<i>Estimated budget for executing the ESMF, monitoring cost etc.</i>
	Annexes	<i>Checklist for E&S screening, list of participants of consultation workshop, E-waste Management Plan</i>

2.0 Environmental and Social Baseline

This chapter describes the environmental and social baseline of the entire area for the proposed project (Punjab province) including physical, socioeconomic conditions and cultural aspects relevant to PULSE.

2.1 Physical Environment

2.1.1 Geography

Punjab is Pakistan's second largest province having an area of 205,344 km² after Balochistan. It is located at 31.17° N and 72.70° E, at the north-western edge of the geologic Indian plate in South Asia. Punjab occupies about 26 percent of the land area of Pakistan. It is the nation's only province that touches every other province. It is bordered by Sindh, Balochistan and Khyber Pakhtunkhwa, as well as the regions of Islamabad Capital Territory and the Azad Kashmir. It also shares borders with the Indian states of Punjab, Rajasthan, and Jammu and Kashmir. The capital and largest city of the province is Lahore which was the historical capital of the wider Punjab region. Other important cities include Multan, Faisalabad, Sheikhupura, Sialkot, Gujranwala, Jhelum and Rawalpindi.

The province is a mainly a fertile region along the river valleys, while sparse deserts can be found near the border with Rajasthan and the Sulaiman Range. The region contains the Thal and Cholistan deserts. The land of Punjab is made up of soils deposited by the Indus River and its tributaries during the Quaternary Era. The Indus River is the longest river of Pakistan and therefore, also of Punjab. The landscape is amongst the most heavily irrigated on earth and canals can be found throughout the province.

The Punjab province is divided into nine divisions and 36 districts. The map of the Punjab province, showing its districts is presented in Figure 1. The colors correspond to the divisions.

Figure 1: Map of Punjab Province



2.1.2 Climate

Punjab lies in arid to semi-arid region of Pakistan. Climatically, Punjab has three major seasons:

- Hot (April to June) when the temperature rises to about 46 °C;
- Rainy season (monsoon rainfall) July up to September;
- Cool/foggy/mild weather from November to March.

2.1.3 Temperature

Table 1 and Figure 2 show the maximum, minimum and average monthly temperatures of the Punjab province for the recent years (2017-2021). The maximum temperature range is 21 – 46 °C. The average temperature range is 17 - 42°C. The minimum monthly temperature range is 12 – 35 °C.

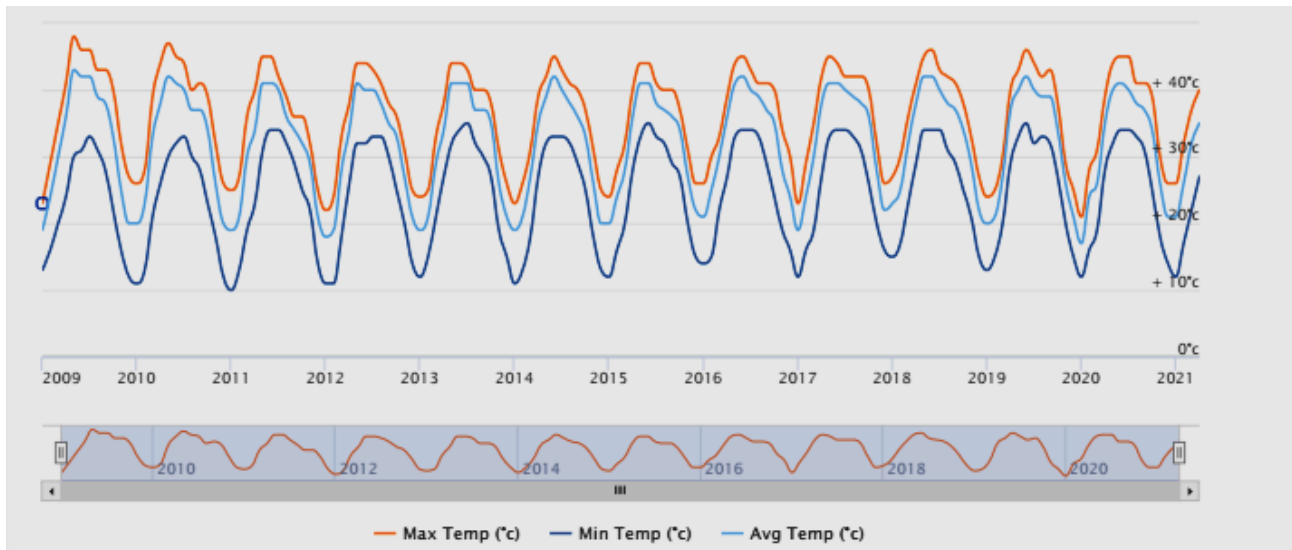
April to October are the hot months whereas cold months are November to March.

Table 1: Maximum, Minimum and Average Temperature (Punjab)

Year	Month's Temperature C°											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017												
Max	23	29	35	42	45	44	42	42	42	40	32	26
Avg	19	24	30	38	41	41	40	39	38	36	28	22
Min	12	16	19	27	33	34	34	33	31	26	20	16
2018												
Max	27	30	36	41	45	46	43	42	41	38	33	27
Avg	23	25	32	38	42	42	40	38	37	34	29	22
Min	15	17	23	29	34	34	34	31	29	25	21	15
2019												
Max	24	25	30	40	43	46	44	42	43	38	29	25
Avg	20	21	27	37	40	42	40	39	39	34	26	21
Min	13	15	20	29	33	35	32	33	32	27	20	15
2020												
Max	21	28	31	39	44	45	45	41	41	39	30	26
Avg	17	24	26	35	40	41	40	38	37	34	26	21
Min	12	16	19	28	32	34	34	33	31	25	18	14
2021												
Max	26	32	37	40	-	-	-	-	-	-	-	-
Avg	21	26	32	35	-	-	-	-	-	-	-	-
Min	12	17	22	27	-	-	-	-	-	-	-	-

Source: Extract from Temperature Graph (World Weather Online)

Figure 2: Maximum, Minimum and Average Temperature (Punjab)



Source: World Weather Online (<https://www.worldweatheronline.com/punjab-weather-averages/punjab/pk.aspx>)

2.1.4 Rainfall

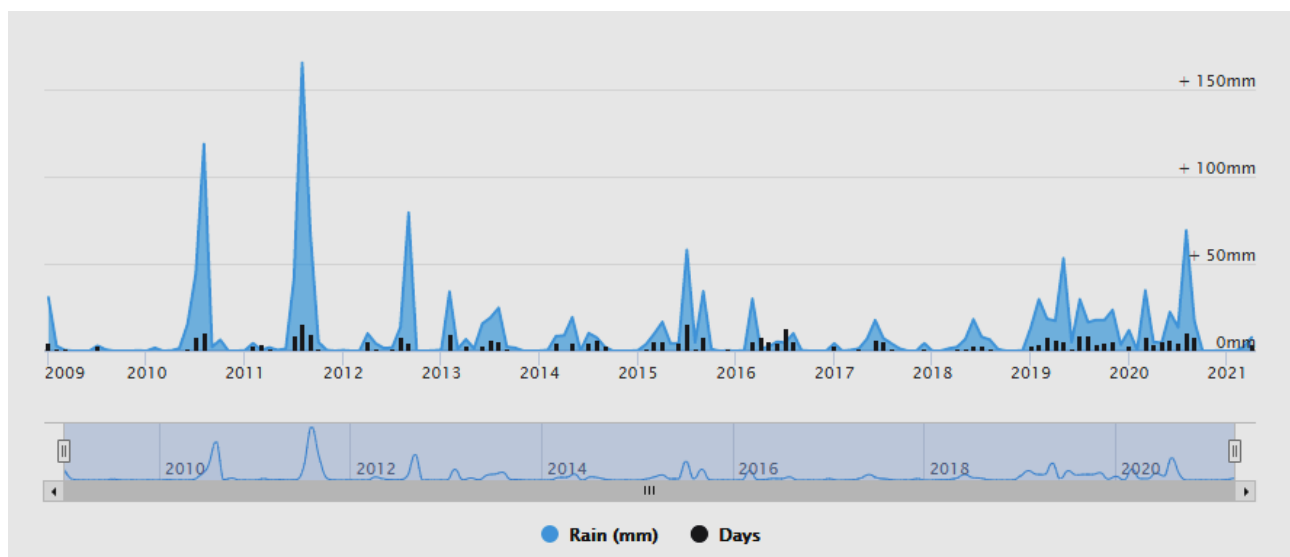
Table 2 and Figure 3 show the average monthly rainfall data of the Punjab.

Table 2: Average Rainfall of Punjab (mm)

Year	Month's Average Rainfall (mm)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	4.3	0	0.5	1.4	6.9	17.6	7.3	4.2	1.3	0	0	4.4
2018	0	0.1	1.4	2.3	6.7	18.1	8.1	6.5	1.02	0	0	0.3
2019	13.3	29.6	18.4	17.3	53.1	5	29.6	16.5	17.8	17.7	23.5	3.6
2020	11.9	0.5	34.7	5	4.8	22.3	13.6	69.1	17.1	0	0	0.2
2021	0	0	2.3	7.8	-	-	-	-	-	-	-	-

Source: Extract from Rainfall Graph (World Weather Online)

Figure 3: Monthly Average Rainfall (mm) and Number of Rainy Days of Punjab



Source: World Weather Online (<https://www.worldweatheronline.com/punjab-weather-averages/punjab/pk.aspx>)

2.1.5 Humidity

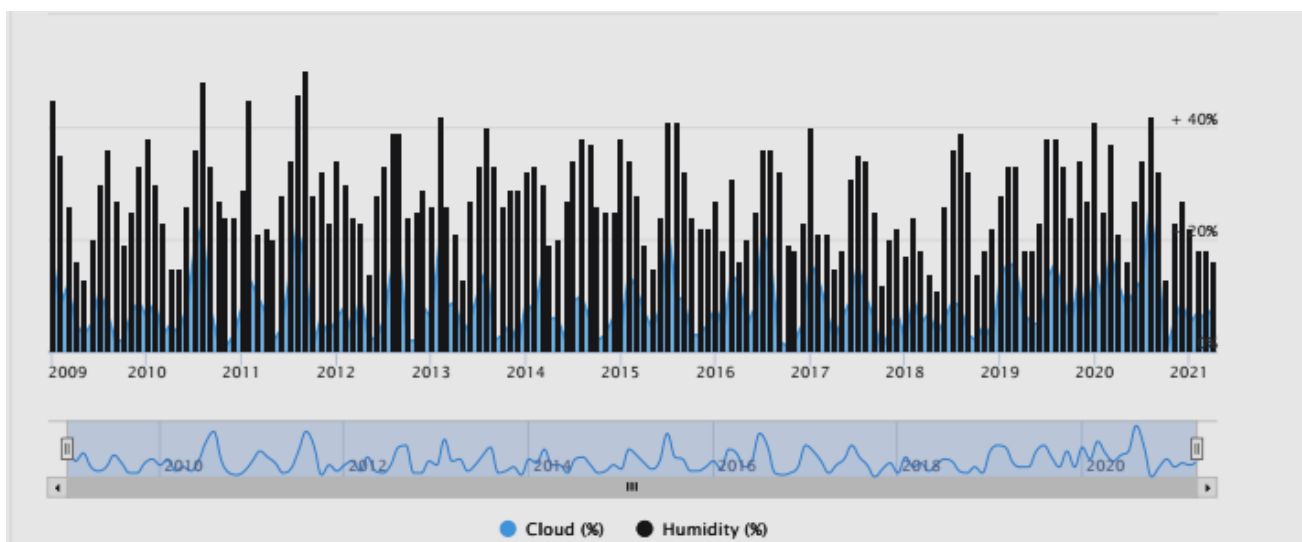
Table 3 and Figure 4 present detail of the average monthly humidity of Punjab.

Table 3: Average Humidity (%) of Punjab

Year	Month's Average Humidity (%)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017	40	21	21	15	18	31	35	34	25	12	20	22
2018	17	24	18	14	11	26	36	39	32	14	18	22
2019	28	33	33	18	18	23	38	38	33	24	34	27
2020	41	25	37	21	16	27	34	42	32	13	23	27
2021	22	18	18	16	-	-	-	-	-	-	-	-

Source: Extract from Humidity Graph (World Weather Online)

Figure 4: Average Humidity and Clouds (%) of Punjab



Source: World Weather Online (<https://www.worldweatheronline.com/punjab-weather-averages/punjab/pk.aspx>)

2.1.6 Wind

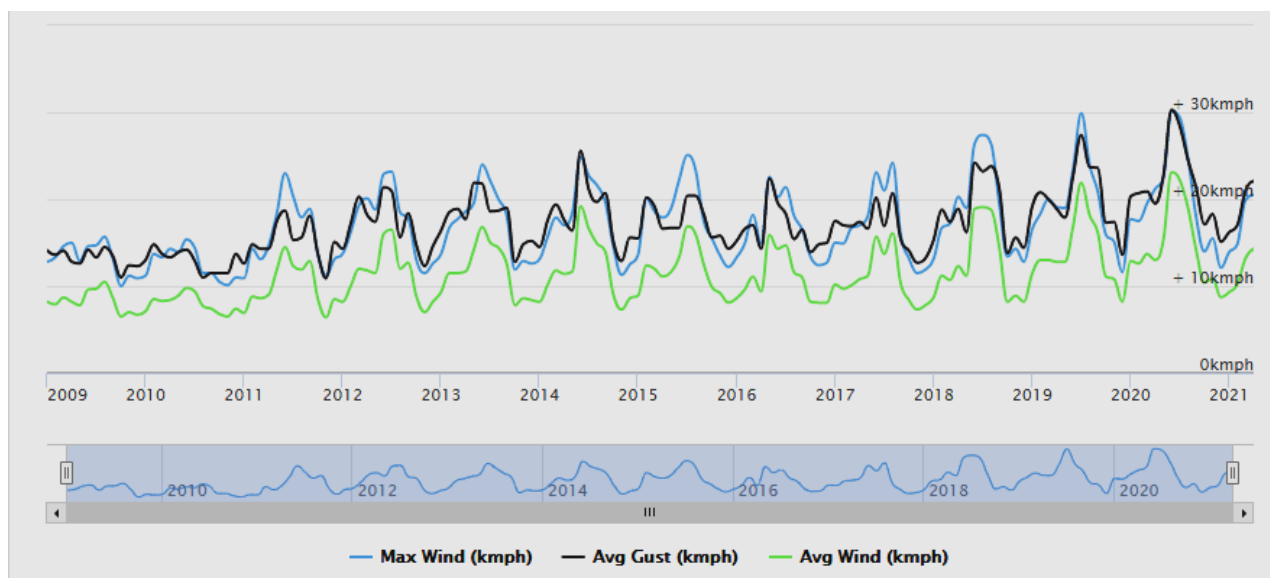
Table 4 and Figure 5 show the maximum and average monthly wind speed of Punjab.

Table 4: Maximum and Average Wind Speed (kmph) of Punjab

Year	Month's Wind Speed (kmph)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2017												
Max	15	14.9	16.7	17	16.6	23.1	21	24.2	15.9	13.2	11.5	11.9
Avg	10.2	9.71	10.1	10.8	11.2	15.7	13.7	16.1	10.3	8.4	7.31	7.8
2018												
Max	13.1	16.7	17.2	20.3	19	26.4	27.4	26.4	19.5	13.4	14.3	12.8
Avg	8.7	11.2	10.7	12.3	11.2	18.9	19.1	18.8	14.5	8.2	8.9	8.2
2019												
Max	16.5	18.3	20	19.1	19	23.5	29.9	24	20.9	15.9	15.1	11.6
Avg	11.4 1	13	13	12.8	12.8	16.9	21.9	18.2	16.2	11.1	10.8	8.2
2020												
Max	17.7	17.5	19.5	21.2	22.5	30.1	29.4	24.7	17.9	14	15.5	12.1
Avg	12.9	12.6	13.7	13	15.3	23.1	22.2	19	14.1	10.4	10.9	8.7
2021												
Max	13.9	14.8	19.9	20.5	-	-	-	-	-	-	-	-
Avg	9.3	10.2	13.2	14.3	-	-	-	-	-	-	-	-

Source: Extract from Wind Graph (World Weather Online)

Figure 5: Monthly Average and Maximum Wind Speed and Gust (kmph) of Punjab



Source: World Weather Online (<https://www.worldweatheronline.com/punjab-weather-averages/punjab/pk.aspx>)

2.1.7 Topography

Punjab province is predominantly on plain level, however, there are some hilly areas in the North-West and extreme South-West including the Sulaiman Mountains in the South-West part of the province, the Margalla Hills in the north near Islamabad, and the Salt Range which divides the most northerly portion of Punjab. There is also a plateau adjacent to the mountains known as the Potohar plateau and sparse deserts can be found in southern Punjab near the border with Rajasthan and near the Sulaiman Range.

Punjab's landscape consists mostly of fertile alluvial plains of the Indus River and its four major tributaries in Pakistan, the Jhelum, Chenab, Ravi, and Sutlej rivers which traverse Punjab north to south. The landscape is amongst the most heavily irrigated on earth and canals can be found throughout the province.

2.1.8 Soil Morphology

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

The soil of the areas of Sialkot, Narowal, Gujranwala, Hafizabad and Sheikhpura is of clayey soil. The soil of the areas of Lahore, Jhang, Nankana Saheb, Chiniot, Vehari and Multan is of loamy soil whereas the soil of areas of Layyah, Bhakar, Mianwali and Bahawalpur is of sandy soil.

2.1.9 Water Resources

The Indus River and its tributaries are the main source of surface water in the Punjab Province. The Indus rises in Tibet, at an altitude of about 5,486 m (18,000 feet) above mean sea level, and has a total catchment area of 654,329 km². Length of the Indus River in the country is about 2,750 km. The five main rivers that join the Indus from the eastern side are Jhelum, Chenab, Ravi, Beas and Sutlej. These rivers originate from the Himalayas and pass from North-West to South-West. They are primeval in nature and the volume of water increases in the summer after the monsoon rains, resulting sometimes in floods. Besides these, two minor rivers, Soan and Harrow also drain into the Indus. On the western side, a number of small rivers join Indus, the biggest of which is River Kabul with its main tributaries i.e. Swat, Panjkora and Kunar. Several small streams such as Kurram, Gomal, Kohat, Tai, and Tank also join the Indus on the right side.

Water availability and usage is crucial for Punjab. Most of the province's territory is arid or semi-arid relying on an extensive irrigation system. Much of the irrigation water from the Indus River is from glacial melt, snowmelt, rainfall and runoff. Erratic monsoons, rising average temperature, increased glacial melt and cross border water disputes increase the uncertainty and vulnerability of agriculture of the province.

Approximately 94% of Pakistan's water (mainly in Punjab) is for agriculture, out of which an estimated 50% is wasted during distribution and application. Over-irrigation from lack of knowledge on optimal timing and quantity is common. Rapid urbanization, population growth, inadequate water storage, sedimentation of reservoirs and overall low system efficiency are an increasing strain on supplies. The share of Punjab in the Water Accord is 55.94 million acre feet (MAF). This includes 18.87 MAF for Rabi and 37.07 MAF for Kharif. However, in Punjab, there has been a yearly shortage of water during the past five years (2013-2018).

Increased demand and erratic availability has increased the reliance on and extraction of ground water, with an exponential growth in the number of tube wells over the last 4 decades, with 1 million tube wells in Punjab alone. This strain on groundwater by agriculture and industry has dramatically dropped the water table and aquifers have become contaminated by unregulated discharge.

2.1.10 Flooding

Punjab province is affected by the floods. The detail of the floods in Punjab is as under:

In 2010, almost all of Pakistan was affected when massive flooding caused by record breaking rains hit Khyber Pakhtunkhwa and Punjab. The number of individuals affected by the flooding exceeds the combined total of individuals affected by the 2004 Indian Ocean tsunami, the 2005 Kashmir earthquake and the 2010 Haiti earthquake. At least 2,000 people died in this flood and almost 20 million people were affected by it.

In September 2012, more than 100 people died, and thousands of homes destroyed, with thousands of acres of arable land affected when intense rainfall battered Khyber Pukhtunkhwa, Southern Punjab and Upper Sindh.

In September 2014 Due to massive rain in Jammu and Kashmir as well as in Punjab constituted flood situation in River Chanab and River Jhelum.

According to the National Disaster Management Authority, most recently in 2019, six people died in Lahore due to monsoon flooding and building collapses.

2.1.11 Seismology

As per seismic zoning map, Pakistan is divided into five seismic zones (Zones 1, 2A, 2B, 3, and 4) considering the severity of seismic hazard. The Zone 1 is the lowest, and zone 4 is the highest seismic zone. Punjab is located in a moderate earthquake zone. Most of the tehsils of Punjab are located in zone 2A and 2B.

The seismic zoning map of Pakistan, encircling the Punjab province, is given as Figure 6.

2.1.12 Air Quality

A joint air quality study of Lahore, Rawalpindi, and Islamabad by the Pak-EPA and the Japan International Cooperation Agency (JICA), showed that the average suspended particulate matter (SPM) in the study districts was 6.4 times higher than WHO Guideline Values. The levels of sulfur dioxide, carbon monoxide, and oxides of nitrogen also exceeded the acceptable standards in some areas, but the average levels were below the Guideline Values⁸. Another similar study of Gujranwala and Faisalabad also revealed higher concentrations of SPM in the ambient air⁹. However, barring congested urban centers, air quality in rest of the province generally conforms to WHO Guideline Values¹⁰. The ambient air quality in the rural areas of Punjab is likely to be free from most of the criteria pollutants such as sulfur dioxide, carbon monoxide, and oxides of nitrogen.

2.2 Socioeconomic Environment

2.2.1 Demography

Punjab is the most populous province and home to about half of the population of Pakistan. According to the latest Population Census of 2017, Punjab has a population of 110 million, equivalent to 52.95 percent of the national population. The proportion of rural and urban population is 63.3% and 36.7% respectively. Punjab is blessed with a young population. As far back as 1998, the share of young (up to the age of 24 years) population has risen to almost 63 percent. This is certainly a favorable position, but only if enough productive jobs can be found for the youth entering the labor force.

The major language spoken in the Punjab is Punjabi and Punjabis comprise the largest ethnic group in the country. The language is not given any official recognition in the Constitution of Pakistan at National level. Punjabis themselves are a heterogeneous group comprising different tribes, clans and communities. In Punjab these clans and communities have more to do with traditional occupations such as blacksmiths or artisans as opposed to rigid social stratifications.

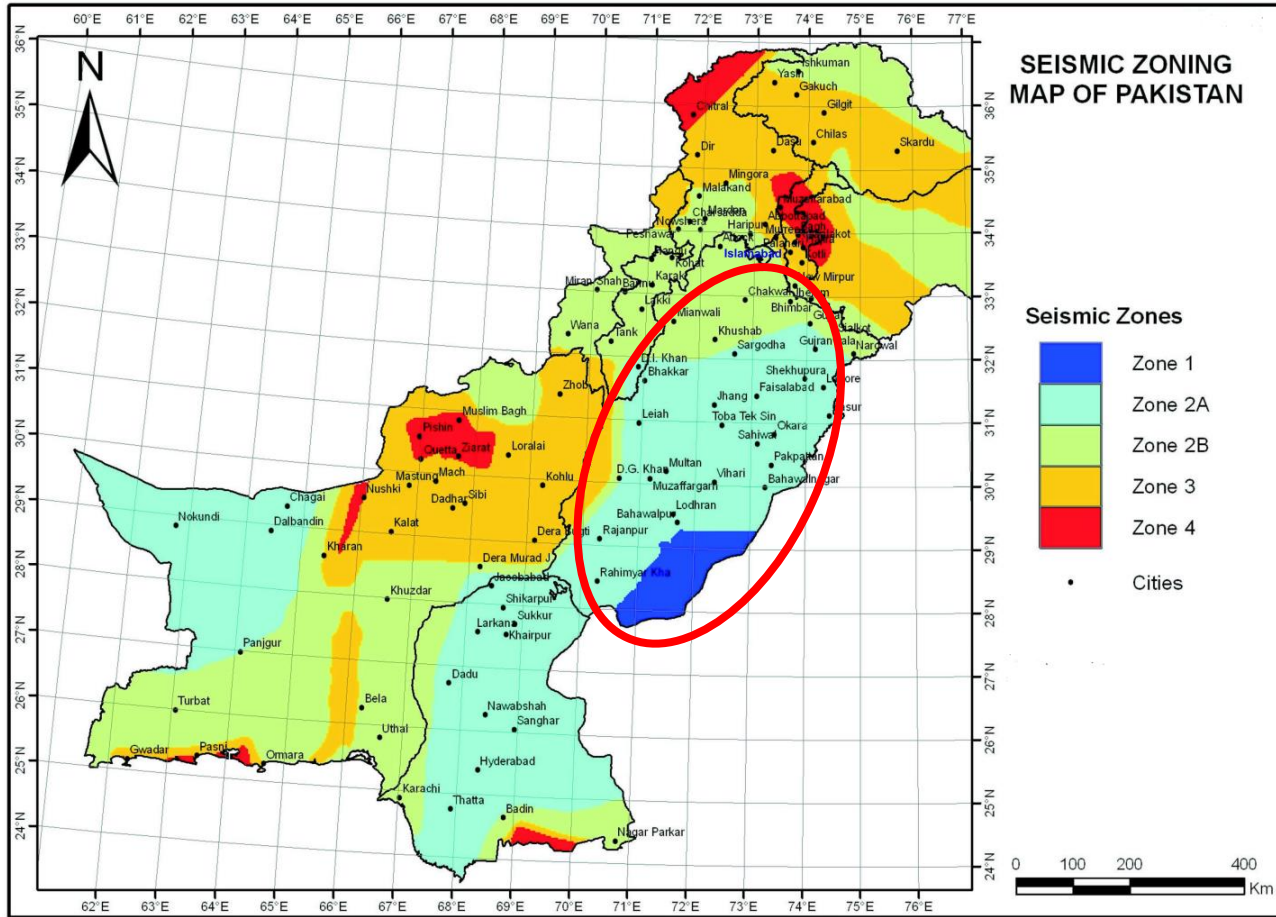
In addition to the Punjabis, the province is also home to other smaller ethnic groups in the province including the Siraiki, Hindkowan, Kashmiris, Sindhis, and Muhajirs. The Muhajirs are Urdu speaking Muslim migrants from India and settled in Pakistan after independence in 1947. Three decades of bloodshed in neighboring Afghanistan have also brought a large number of Afghan refugees to the province.

⁸ 3-Cities Investigation of Air and Water Quality (Lahore, Rawalpindi, Islamabad), JICA/Pak-EPA, 2001

⁹ 2-Cities Investigation of Air and Water Quality (Gujranwala and Faisalabad), JICA/Pak-EPA, 2003

¹⁰ Air Quality Monitoring in Six Districts of Punjab using Physico-Chemical Techniques, Environment Protection Department, Government of the Punjab, 2005

Figure 6: Seismic Zoning Map of Pakistan



As per the census of Pakistan 2017, linguistic distribution of the Punjab province is: Punjabi (69.67 percent), Saraiki (20.68 percent), Urdu (4.87 percent), Pashto (1.98 percent), Balochi (0.83 percent), Sindhi (0.15 percent) others (1.82 percent). The population of Punjab is estimated to be between 97.77 percent Muslim with a Sunni Hanafi majority and Shia Ithna 'ashariyah minority. The largest non-Muslim minority is Christians and make up 1.88 percent of the population. Hindus form about 0.2% of the population. The other minorities include Ahmedi, Hindus, Sikhs, Parsis, and Bahai.

The dialects spoken in different regions of the land have a common vocabulary and a shared heritage. The people of Punjab have also a shared spiritual experience, which has been disseminated by *Tasawwaf* and can be witnessed on the occasion of the remembrance-fairs held on the Urs of Sufi Saints.

2.2.2 Agriculture¹¹

Agriculture is the mainstay of Punjab economy, contributing approximately 27% to the provincial GSP, while its share in national GDP is only 19%. As a result, the province accounts for two-thirds of the national agriculture production. Agriculture constitutes three quarters of national exports, of which

¹¹ FAO, Climate Smart Agriculture for Punjab, Pakistan

60% is from Punjab. The province represents a significant share of national production of key cash crop; wheat (77%), cotton (74%), sugarcane (65%), rice (52%) and cattle (55%). But also, significant national share in horticulture, including mango (77%) and citrus (97%). Agriculture not only offers vital raw materials for key exports as textiles and agro-food products (including rice and horticulture), but also contributes significantly to the social, economic and cultural activities of its citizens.

2.2.3 Land Use

Punjab comprises around 25% of Pakistan's geographical area, 57% of the cultivated area and 73% of the cropped area. Approximately 72% of the reported land in Punjab (12.5 million ha) is available for cropping, with the balance land either infertile or under infrastructure. The province's forested area is only 2.3% of total land and is declining at a rate of 0.2-0.5% per year nationally. Deforestation is driven by urbanization, a rural reliance on fuel wood, and poor land planning. The area of land under production has remained relatively stable over the last four decades. Since most of the arable land in Punjab is already cultivated, agricultural growth is achieved through intensification and higher use of fertilizers and pesticides, with longer term implications for human health and wellbeing, soil degradation and ecological damage¹².

2.2.4 Health¹³

In spite of extensive network of health care facilities in the province, health status of the people of the province as a whole is below the desired level. Infant mortality rate is 77 per 1000 live births. Under 5 mortality rate is 112 per 1000 live births. Maternal mortality ratio is estimated to be 300 per 100,000 live births, lower than the national figure of 350. Total fertility rate in the province is estimated to be 4.7. About 92 percent of the population has access to improved drinking water sources; whereas 58 percent of the population in the province has access to sanitation.

Currently there are about four million malnourished children in Punjab, and about a third of all pregnant women are estimated to have iron deficiency anemia. Over 34 percent of children under the age of five years are short for their age; over 10 percent are under weight for their age and over half anemic. Malnutrition is a major contributor to infant and maternal deaths.

Poor health status is in part explained by poverty, low levels of education especially for women, low status of women in large segments of society, and inadequate sanitation and potable water facilities, low spending/expenditure on health even by Asian standards (0.7% as compared to 1.3%, World Bank report). It is also strongly related to serious deficiencies in health services, both in public and private sectors.

2.2.5 Education¹⁴

As per the Pakistan Social & Living Standards Measurement Survey (2019-20), Punjab has the highest literacy rate with 64 percent among all provinces for the population 10 years and older. District wise comparison reveals that within Punjab, Rawalpindi with 82 percent is at top in literacy and Rajanpur with 42 percent is at bottom. The youth literacy (age 15-24) of Punjab is 78 percent, higher than all other provinces.

¹² FAO, Climate Smart Agriculture for Punjab, Pakistan

¹³ <https://health.punjab.gov.pk/PunjabHealthProfile.aspx>

¹⁴ Key Findings Report, Pakistan Social and Living Standards Measurements (PSLM) Survey, District Level (2019-20)

The population of ten years and older that has ever attended schools at Punjab level is 66 percent. Out of School consists of children aged 5 to 16 years who have never been to school and those children who attended school and left afterwards. Out of school children at Punjab level is 24 percent which has the lowest among other provinces.

2.2.6 Economy¹⁵

The estimated share of the economy of Punjab in the national GDP was 54.2 percent in 2017-18. This implies that given the share in population of just below 53 percent, the per capita income of Punjab is 2 percent higher than the national average. This indicates that in terms of USD, it is \$1,673. The growth rate of Punjab's economy has been close to the national growth rate. During the last five years, the average annual provincial GDP growth rate has been 4.9 percent.

The sectoral composition of Punjab's economy is given in Table 5. The share of agriculture in 2017-18 was 20 percent. Over the last five years, the share has declined from 23 percent in 2012-13. Simultaneously, the shares of the industrial and service sectors have increased. A comparison with the share of different sectors in the national economy reveals that agriculture and services in Punjab have a comparatively larger share, while the industrial share is smaller.

Table 5: Sectoral Share (%), Punjab & Pakistan, 2012-13 to 2017-18

Sector	2012-13	2015-16	2017-18
Punjab			
Agriculture	23.0	20.8	20.2
Industry	17.2	17.4	17.5
Services	59.8	61.8	62.4
Pakistan			
Agriculture	21.4	19.8	19
Industry	20.4	20.9	20.8
Services	58.2	59.3	60.2

Source: Punjab Economic Research Institute, Government of Punjab and Pakistan Bureau of Statistics

Overall, Punjab's economy has a higher share in private and public investment, as well as in Net Foreign Factor Income (NFFI). Also, Punjab has a significantly higher saving rate. The net trade deficit of Punjab is somewhat higher at 6 percent of the provincial GDP.

The labor force participation rate is higher in Punjab than the national average. From 2013-14 to 2017-18: it averaged at 48.4 percent as compared to 44.9 percent of Pakistan's. The difference is largely due to the higher labor force participation rates of females in Punjab. The labor force growth rate is the same in Punjab and the country as a whole. Employment growth has been slightly faster in Punjab. However, the unemployment rate in Punjab during 2017-18 at 6 percent is somewhat higher than 5.8 percent in Pakistan. Punjab has a higher share of employment in both agriculture and manufacturing. The latter is due to the stronger and more pervasive presence of small-scale manufacturing units in the province, with strong export orientation.

¹⁵ Planning and Development Board, Government of Punjab, Growth Strategy 2023

3.0 Regulatory Overview

This chapter briefly describes the national and provincial laws, policies, strategies, guidelines, codes and procedures, and World Bank's Environmental and Social Standards (ESSs) for the categorization, screening, environmental and social assessment and environmental and social compliance of the proposed project.

3.1 Constitution of Pakistan (1973)

a) Protection of the Rights of Individuals to Private Property

The constitution includes provisions to protect the rights of individuals to private property, and also sets principles under Article 23 of the constitution to establish the right of every citizen to acquire, hold and dispose of his or her property in any part of Pakistan and Article 24 of the constitution relates to the protection of property rights and has direct relevance to the Project. Article 24 of the Constitution of Pakistan (1973) clearly addresses the protection of property rights by stating that "no person shall be compulsorily deprived of his property save in accordance with law" and "no property shall be compulsorily acquired or taken possession of save for a public purpose, and save by the authority of law which provides for compensation". However, it neither fixes the amount of compensation nor specifies the principles and manner in which compensation is to be determined and given. Further, Article 4, sub-clause (2) (a) reiterates the legislative right of people; "no action detrimental to the life, liberty, body, reputation or property of any person shall be taken except in accordance with law".

b) Gender Equality

The Constitution of Islamic Republic of Pakistan provides the principle of equal rights and equal treatment to all citizens/ persons, without any distinction including on the basis of sex. The following articles of Constitutional of Islamic Republic of Pakistan broadly cover women rights:

Article 3 calls upon the State to eliminate all forms of exploitation.

Article 4 provides for the right of individual to enjoy the protection of law and to be treated in accordance with the law. This applies to the citizens as well as "to every other person for the time being within Pakistan" without distinction. This article also clearly states that certain rights cannot be suspended.

Article 25 ensures equality before the law and equal protection of the law and states that there shall be no discrimination on the basis of sex alone.

Articles 25(3) and 26(2) allow the state to make special provisions for the protection of women and children.

Article 26 & 27 provide for equal access to public places and equality of employment in the public and private sector.

Articles 11 & 37 (g) prohibit trafficking in human beings as well as prostitution.

Article 32 makes special provisions for the representation of women in local Government.

Article 34 directs the state to take appropriate measures to enable women to participate in all spheres of life and social activities.

Article 35 asks the state to protect the marriage, the family, the mother and the child.

Article 37 (e) directs the state to make provisions for securing just and humane conditions of work ensuring that children and women are not employed in vocations unsuited to their age or sex, and for ensuring maternity benefits for women in employment

Articles 51 & 106 provide for the reservation of seats for women in the legislatures.

3.2 National Policies, Laws and Strategies

This section briefly describes different policies, laws, and strategies of the Government of Pakistan relevant for the proposed project mentioned in the previous chapters.

3.2.1 National Environmental Policy, 2005

The National Environmental Policy provides an overarching framework for addressing the environmental issues facing Pakistan, particularly pollution of freshwater bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of biodiversity, desertification, natural disasters, and climate change. It also gives directions for addressing the cross sectoral issues as well as the underlying causes of environmental degradation and meeting international obligations.

Policy measures recommends to i) enact the National Clean Air Act, ii) ensure reduction and control of harmful emissions through regulatory programs, iii) promote cleaner production technologies, iv) introduce discharge licensing systems for industry, v) establish cleaner production centers and promote cleaner production techniques and practices, vi) encourage reduction, recycling and reuse of municipal and industrial solid and liquid wastes, and vii) provide financial and other incentives (reduction/elimination of tariffs, low interest loans, appreciation certificates and awards) for technology up-gradation, adoption of cleaner technology, implementation of pollution control measures and compliance with environmental standards.

3.2.2 Pakistan Environmental Protection Act 1997

PEPA 1997 is the basic legislative tool empowering the Government to frame regulations for the protection of the environment. It is a comprehensive legislation and provides the basic legal framework for protection, conservation, rehabilitation, and improvement of the environment. The act is applicable to a wide range of issues and extends to air, water, soil, marine, and noise pollution, and to the handling of hazardous wastes.

Environmental pollution control associated with hazardous waste is addressed in this act under Section 13 and 14. Under Section 13 'Prohibition of Import of Hazardous Waste', no person shall import hazardous waste into Pakistan and its territorial waters, Exclusive Economic Zone and historic waters. Under Section 14 'Handling Hazardous Substances', no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous waste except under a license issued by the Federal Agency and in such manner as may be prescribed or in accordance with the provision of any other law or of any international treaty, convention, protocol, code, standard, agreement or other instruments to which Pakistan is a party.

3.2.3 Climate Change Policy of Pakistan 2012

Climate Change Policy (CCP) establishes that urban areas in Pakistan are already affected by short-term climate changes. In the long term, it is predicted that urban areas located in the irrigated plains and coastal areas will be significantly affected by climate changes. It is predicted that due to climate changes, changes in hydrological cycle (intensive and erratic monsoon rains, flash floods, increased availability of water due to increased melting of glaciers in the short term, and decrease in water availability in the long term due to decrease in glacier flows) and increase in temperature will affect urban areas. 50 cyclonic storms developed in the northern Arabia Sea during 1946-2004. Four storms hit the coast of Karachi resulted in heavy downpours, flashfloods, and loss of life and property.

CCP predicts that due to climate change, extreme weather events such as heat and cold waves, heavy or too little precipitation, and strong winds will occur more frequently and will cause health impacts in urban areas, for example, diarrheal diseases because of insufficient clean water availability for drinking and personal hygiene. It is predicted that vector-borne diseases such as malaria and dengue fever may increase. Similarly, extreme weather events will express themselves in the form of natural disasters such as floods, droughts, landslides, and urban flooding.

CCP recommends the following actions: develop city-specific strategic plans, prepare and enforce legislation for water resource management in industry and domestic sectors with special focus on groundwater, adopt water efficiency measures and technologies, adopt rain harvesting measures, avoid excessive groundwater pumping, reuse wastewater after treatment, take flood protection measures, assess the health vulnerabilities of communities and build their capacities, develop proper disaster management system, redesign and upgrade drainage capacity of cities, strengthen early warning systems, develop enabling mechanisms for the adoption of climate change adaptations and mitigation measures; and conduct awareness campaigns to underscore the importance of conservation and sustainable use of water resources.

Regarding environmental management and climate change resilience of cities, CCP recommends that cities should update town planning design principles for lowering carbon footprints, ensure proper land use planning and encourage vertical instead of horizontal expansion, install wastewater treatment plants, segregate solid waste at source, develop municipal infrastructure in the periphery of urban areas, and conduct hazard mapping and zoning of areas before construction.

CCP recommends that Climate Change Units be established in all federal and provincial ministries, redesign administrative and procedures for federal and provincial environmental protection agencies (EPAs) and P&Ds to integrate climate change concerns into the EIA and ensure that these are strictly enforced particularly for infrastructure projects, and develop capacities of the relevant institutions to undertake appropriate mitigation actions to reduce GHG emissions.

3.2.4 Pakistan Climate Change Act 2016

The Prime Minister established Pakistan Climate Change Council which coordinates and supervises the enforcement of the provisions of the Act, monitor implementation of the international agreements relating to climate change, approve and monitor implementation of comprehensive adaptation and mitigation policies, strategies, plans, programs, projects and other measures formulated by the authority to meet Pakistan's international obligations, monitor the implementation of National Adaptation Plan and its constituent provincial and local adaptation action plans, approve guidelines for the protection and conservation of renewable and non-renewable resources, species, habitats and biodiversity adversely affected or threatened by climate change.

The Minister In-charge of the Federal Government shall establish the Pakistan Climate Change Authority to exercise the powers and perform the functions under the Act. The functions of the authority shall be to formulate comprehensive adaptation and mitigation policies, plans, programs, projects and measures designed to address the effects of climate change, establish institutional and policy mechanism for implementation of Federal and provincial adaptation and mitigation policies, plans, programs, projects and measures, prepare suitable adaptation and mitigation projects for submission to international and local institutions for funding, including Clean Development Mechanism (CDM), Global Environmental Facility (GEF), Green Climate Fund and Adaptation Fund, prepare National Adaptation Plan and its constituents provincial and local adaptation plans, carry out Technology Need Assessment and prepare Climate Change Technology Action Plan in accordance with international best practices, prepare projects for funding under the Reducing Emissions from

Deforestation and Forest Degradation (REDD) Mechanism, prepare guidelines for the protection and conservation of renewable and non-renewable resources, species, habitats and biodiversity which are adversely affected or threatened by climate change, advise Government regarding appropriate legislative, policy and implementation measures and actions relating to disaster preparedness, capacity building, institutional strengthening and awareness raising in relevant sectors affected by climate change, advise the Government regarding implementation of international conventions, design, establish and maintain a national registry and database on greenhouse gas emissions etc.

Pakistan Climate Change Fund shall be established under the Act. The monies received in the form of donations, endowments, grants and gifts, and raised by the authority for the execution of programs and projects of the authority shall be paid into the fund. This fund shall be managed by the authority.

3.2.5 Pakistan Penal Code

The Penal Code discusses offences where public or private properties and/or human lives are affected due to intentional or accidental misconduct of an individual or body of people. The code defines the penalties for violations concerning pollution of air, water bodies and land. In the context of this program, the Penal Code can provide a basis for the infrastructure projects to coordinate activities with the local authorities to ensure that construction and operation activities do not become a cause of public nuisance or inconvenience.

3.2.6 Hazardous Substance Rules 2003

Under the Hazardous Substance Rules 2003, made under PEPA 1997, license will be required for the import and transportation of hazardous substance from Federal or Provincial agency. The application for the grant of license for the industrial activity involving generation, collection, consignment, transport, treatment, disposal, storage, handling or import of hazardous substances, will also be accompanied with EIA report and safety plan. The validity of the license will be for three years from the date of issue. The licensee will notify any major accident occurring at licensed facility to provincial and federal agencies. There will be packing and labelling requirement, safety precautions for the premises and workers which will have to be followed. The licensed facility may be inspected by the provincial or federal staff.

3.2.7 Land Acquisition Act, 1894

In Pakistan, the governing legislation for land acquisition and compensation is the Land Acquisition Act (LAA) of 1894 with successive amendments, which regulates the land acquisition process and enables the federal and provincial governments to acquire private land for public purposes. Land acquisition is a provincial subject, and each province has its own interpretation of the Act, and some have their own province specific implementation rules.

The law deals with the matters related with acquisition of private land and other immovable properties existing on the land for the public purpose. The public purpose, *inter alia*, includes the construction of development projects of public interest. The LAA specifies a systematic approach for acquiring and compensation of land and other properties for development projects. It stipulates various sections pertaining to notifications, surveys, acquisition, compensation and apportionment awards and disputes resolution, penalties and exemptions.

The LAA prescribes provisions for fair and adequate compensation for land acquired involuntarily, however, its enforcement marred by many lacunas due to the bureaucratic ineptness and the whole process from notification to compensation and grievance resolution often encumbered with inordinate

delays and under the guise of eminent domain the state coercively acquires the citizens property and agonizing and pushing them in impoverishment with a little recourse. In addition, the LAA procedures do not entail the consultation and participation of affected people but leave the entire process to the discretion of the revenue department and implementing agency.

The framework of the LAA is generally considered to be constricted in scope and inadequately take into account the rehabilitation and resettlement of displaced populations and restoration of their livelihoods. The LAA also does not specifically provide any assistance for the poor, vulnerable or severely PAPS, nor does it cover for livelihood losses or resettlement costs for rehabilitation. Generally, it is limited to a cash compensation policy for the acquisition of land and built-up property, and damage to other assets such as crops, trees, and infrastructure. Consequently, a National Resettlement Policy and Resettlement Ordinance in 2002 with a wider scope of eligibility and entitlements had been drafted. However, the national policy and ordinance have yet to be officially approved, notified and enacted. In order to fill the vacuum, currently some transient measure are taken to compensate adversely affected non-titled people, non-registered tenants, businesses and wage workers under project specific arrangements for their rehabilitation, payment of resettlement costs and assistance for livelihood restoration.

For different range of infrastructural and developmental functions, land acquisition laws are applied. Land Acquisition Act of 1894 allows the various government departments LCs authorities to apply to relevant Boards of Revenue or other authorities for acquisition of land for public interest projects.

3.2.8 Building Energy Code

ENERCON has established Building Energy Codes. These codes address only the energy conservation aspects of the buildings used for human inhabitation such as residences, offices, shops, schools, hotels, government buildings etc. The buildings used for manufacturing, warehousing, storage, agriculture or industrial processes are exempted from this code. The buildings plans and specifications will be approved and allowed electric and gas connection or oil storage after all the requirements of this code are met. Buildings will be inspected for the compliance of the code. These codes address energy efficiency and conservation aspect of building envelope, roofs, ceiling, ventilation, and HVAC.

3.3 Provincial Policies and Strategies, and Laws

This section briefly describes different laws, policies and strategies of the Punjab province for the environmental and social compliance of proposed project mentioned in the previous chapters.

3.3.1 Punjab Environmental Policy 2015

This policy addresses effluent and sewage treatment plant, wastewater, air and soil pollution control, groundwater management, energy efficiency and renewable energy, climate change and ozone depletion, and industrialization and environment. Installation of effluent and sewage treatments plants will be encouraged. WASAs and TMAs will install wastewater treatment plants to treat the sewage in accordance with prescribed standards by EPA Punjab. It emphasizes to promote metering of water consumption to discourage indiscriminate use of water for industrial and domestic purposes, developing and implementing the viable models of public-private partnerships for setting up and operating secure landfills, incinerators, and other appropriate techniques for the treatment and disposal of toxic and hazardous waste, and the promotion of recycling technology and establishing system for segregation, recycling, and reuse of municipal solid wastes. It focuses on regulating

transportation of sand, clay, bricks and other construction materials in open trolleys and carts, in urban centers to reduce air pollution and making the Building Energy Code as part of the Building Code of Punjab.

3.3.2 Punjab Environmental Protection Act 1997 (Amendment 2012)

This act addresses prohibition of discharges and emissions of wastewater and air emissions, noise control, requirements of initial environmental examination and environmental impact assessment for the newly established development projects, and hazardous waste and substances. Under this act, no person is allowed to discharge or emit any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the Punjab Environmental Quality Standards. The Government may levy a pollution charge on any person who contravenes or fails to comply with the provisions of this act. No project construction or production will be allowed to commence without conducting and submitting Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) study to the provincial agency and getting no objection certificate. However, the construction/renovation of ARCs will not require any NOC from the agency.

3.3.3 Punjab Growth Strategy 2023

The strategy under 'Urban Development and Housing' focuses on policy and legal reforms to leverage urbanization and reap optimal benefits from planned cities' growth, agglomeration of economies and balanced regulation of land and housing market. It emphasizes to make Building Control Act for land use, zoning, and building regulations besides other building control functions, provision of strategic land subsidies from the government in urban centers for low cost and affordable housing, and develop and implementing master plans for all cities of Punjab to define boundaries, regulate density, integrate land use, and direct city investments.

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

This law protects wildlife sanctuaries, wildlife breeding farms, national parks, game reserves, wildlife parks, zoological gardens, zoo and safari parks and restricts for any intervention which could impact the wildlife. Under this act, polluting water flowing in or through the wildlife breeding farms, wildlife parks, zoological gardens, zoo, safari parks and national parks is prohibited.

3.3.5 Punjab Local Government Act 2019

As per the law, the functions of a Metropolitan Corporation, Municipal Corporation and Municipal Committee include management of primary, elementary and secondary education facilities, monitoring and supervision of primary health care facilities, preventive health and hygiene, solid waste collection and disposal, sewage collection and disposal including water management and treatment, building control and land use, public parking facilities, city roads and traffic management, public transport, drinking water supply, community safety, environmental health, awareness and services, and parks and landscape development. These functions are mentioned in different schedules of the act.

The detail of the municipal offences and their penalties related with public nuisance and public health, land use and building control and public safety are mentioned in the fifteenth schedule of the act.

3.3.6 The Punjab Occupational Safety and Health Act 2019

Under this act, the employer would be responsible to ensure the health and safety of the workers at workplaces (construction sites are also considered as workplace under the act). The act mentions health and safety requirements which need to be ensured to be complied by the employer/site in-charge and the workers. The Chief Inspector and the inspectors appointed under the act shall be responsible to enforce health and safety requirements prescribed by the act. Penalties shall be imposed in case of noncompliance of the requirements.

3.3.7 Punjab Hazardous Substances Rules 2018

These rules are made under Punjab Environmental Protection Act 2012 to manage hazardous substances in the province for their collection, generation, handling, consignment, transport, treat, dispose of, manufacturing and storage. The names of the hazardous substance and their threshold quantities are listed in Schedule 1, 2, 3, and 4 which are regulated under these rules.

The concerned authorities are required to inspect the subject industrial activity once a year and submit the report on the compliance of the rules by the occupiers to the EPA annually. The occupier is required to notify the concerned authority in case of major accident within the premises or outside the premises of the licensee within 48 hours during manufacturing, loading or unloading, supply, storage, marketing, and transportation of hazardous substances. The notified officer will take appropriate actions to prevent accidents from recurring.

The occupier of the subject industrial activity will require to acquire license from concerned authority i.e. EPA to operate the facility after submitting Hazardous Substance Report. The occupier is also required to submit safety report to the concerned authority 90 days before commencing the industrial activity. This safety report will be updated annually. The occupier is also required to prepare and keep up to date an onsite emergency plan. It shall be the duty of the Rescue 1122 to prepare and keep up to date an adequate off-site emergency plan with details that how emergencies relating to a possible major accident on that site will be dealt with.

The rules provide guidelines to the occupier regarding packaging and labelling of the hazardous material, conditions to be maintained for the premises where hazardous substance is generated, collected, consigned, treated, disposed of, stored or handled, general and specific safety precautions to be taken at the facility and for the workers, and requirements of the safety plan and waste management plan.

3.3.8 Punjab Land Acquisition Rules 1983

As per Punjab Land Acquisition Rules, the acquiring authority shall submit an application to the Collector of the District concerned for the acquisition of land under the act given full justification of the public purpose involved and minimum area required by it with full details of all other area owned by it in same locality. The Collector shall examine its feasibility and after his satisfaction regarding the genuineness of the requirement, shall issue a notification and conduct the survey of the area and submit his report to the Commissioner, not later than sixty days from the date of publication of the notification.

Where the land is to be acquired for a public purpose, the Commissioner shall issue a notification not later than one year from the date of the publication of the notification by the Collector. In case the notification is not issued by the Commissioner within the said prescribed time, its time can be extended by the Board of Revenue upon request by the Commissioner for the extension in time. In

case, Board of Revenue declines to grant the extension applied, the acquisition proceedings shall be deemed to have come to an end.

After the publication of notification by the Commissioner, the Commissioner shall issue declaration within six months. If no notification is issued within the said prescribed time, the acquisition proceedings shall be deemed to have come to an end, provided that the Board of Revenue, in its discretion does not extend the time for issuance of notification.

After the publication of declaration, the Land Acquisition Collector shall announce the award within a period of six months.

Where the land is acquired for company, the Commissioner immediately forward the survey report, received from the Collector, to the Board of Revenue, within a period of one year from the date of the notification by the Collector, the acquisition proceedings shall be deemed to have come to an end.

The objections received by the Collector shall be disposed of by the Collector with the least possible delay and his report/recommendations shall be forwarded to the Commissioner within a period of ninety days from the date of publication of the notification by the Commissioner. The decision of the Commissioner shall be announced within a period of three months from the date of receipt of the report from the Collector.

3.4 Legislations for Land Use and Social

Following are the regulations pertaining to land use control and social aspects.

3.4.1 Board of Revenue and Punjab Land Records Authority Act 2017

The Board of Revenue (BoR) is the administrative Department of all the three laws relevant for the project: (i) The Punjab Board of Revenue Act, 1957; (ii) The Punjab Land Revenue Act, 1967; and (iii) The Punjab Land Records Authority Act 2017. The BoR needs to rely upon the provisions of the Punjab Land Records Authority Act, 2017, as the governing law, for urban and peri-urban land registration, as the Punjab Land Revenue Act, 1967, mainly deals with land revenue administration. Section 5(2) of The Punjab Board of Revenue Act, 1957 specifically provides that the Board shall be the highest court of appeal and revision in revenue cases in the Province.

The provisions of The Punjab Land Records Authority Act, 2017 relevant for the PULSE project are reproduced below:

- Section 2(1)(n) of the Act defines “Land records” to include any information in electronic, digital or computerized form in relation to land or buildings.
- Section 5 describes the functions of the Punjab Land Record Authority (PLRA), which includes:
 - to manage, update and maintain land records [Clause (b)];
 - to formulate strategies, policies and plans for the management of land records [Clause (c)];
 - to advise the Government on matters relating to improvement and modernization of land records management [Clause (f)];
 - to lay down the administrative, financial, legal and technical framework including the information technology based land records management and related services [Clause (h)];
 - to provide for the computerization of the record-of-rights or part thereof or any other land related document, preparation of the computerized land record and its maintenance, in respect of each estate, in collaboration with the Board of Revenue [Clause (k)];

- to establish Arazi Record Centers, maintain and operate such Centers and provide for monitoring the performance of Arazi Record Centers [Clause (l)]; and
- to co-ordinate with the Board of Revenue for preparation of computerized land record of any area in respect of which no record-of-rights exists or the existing records-of-rights requires special revision [Clause (m)].
- Section 14 empowers the PLRA to prepare, amend and keep the land record.
- Section 15 provides that PLRA shall specify the documents forming part of record-of-rights which are to be computerized, and such computerization shall be done in such form and manner as may be prescribed.
- Section 16 specifically the land records including the computerized land records managed and maintained by the PLRA shall be presumed to be true until the contrary is proved or a new entry is lawfully substituted therefor.
- Section 17 provides that PLRA shall establish Arazi Record Centers in each tehsil and may also designate any place or facility notified as such to provide such services as may be prescribed [sub-section (1)]; and may establish offices or deploy human resource for the transmission of land records maintained by any other body established under law [sub-section (2)].
- Section 18 provides that PLRA may levy such fee or charges for provision of services as may be prescribed [sub-section (1)]; and may collect on behalf of the Government, authorities or other entities, such fee and charges as may be prescribed and shall transfer the amount so recovered to the Government or, as the case may be, to the authorities or other entities [sub-section (2)].
- Section 29 empowers the Provincial Government as well to make Rules by notifying the same in the official Gazette, to prescribe the procedure for preparation and maintenance of land record, for the said purpose.
- Section 30 empowers the PLRA to itself prescribe the procedure for preparation and maintenance of land record by making Regulations in this regard.
- Whereas, it would not be out of place to mention here that the Punjab Land Revenue Act 1967 has already been amended to make it consistent with and to give effect to the provisions of the PLRA 2017. Sub-section (4) of section 42-A has been specifically substituted to provide that until rules are made under the Punjab Land Records Authority Act 2017 (VI of 2017), the procedure provided in the rules made under this Act shall be followed.

3.4.2 Building Bylaws of Development Authorities

There are eight development authorities for Lahore, Rawalpindi, Gujranwala, Faisalabad, Multan, Bahawalpur, Koh-e-Suleman, and Dera Ghazi (DG) Khan. Few of these authorities have established land use rules and building and zoning regulations.

Lahore Development Authority (LDA) Land Use Rules 2020: LDA has classified land use in ten classes of residential, commercial (including institutional), industrial, institutional, mixed use, open space and recreational, peri-urban, special development zone, agricultural and notified area (historically significant area, environmentally sensitive area, public sector institutional area, other restricted area, and an intercity service area).

Lahore Development Authority (LDA) Building and Zoning Regulations 2019: These regulations are applicable to different zones of Residential Zone, Commercial Zone, Industrial Zone, Special Area Zones (walled city area or historically significant areas, flood plains, environmentally sensitive areas, Shahalam Gate Development Scheme, Walled City, Lahore). These regulations provide specifications and requirement for open spaces, building height, ground coverage and floor area ratio, porch, toilets, bathrooms, number of storeys, parking space, As per the regulations, every application will be required to be accompanied with an EIA and a No Objection Certificate from EPA concerning

the urban development projects, residential apartments with height above 70 feet and area four Kanals and above besides other types of buildings.

Multan Development Authority (MDA) Building and Zoning Regulations 2007: The requirements of these regulations are similar to the LDA Building and Zoning Regulations 2019.

3.4.3 Punjab Land Use (Classification, Reclassification and Redevelopment) Rules 2009

As per these rules, the City District Government or a Tehsil Municipal Administration shall classify the areas under its control into six land use classes of residential, commercial (including institutional), industrial, peri-urban, agricultural and notified area (historically significant area, environmentally sensitive area, public sector institutional area, other restricted area or an intercity service area). The residential area can be sub-classified into approved scheme and established built area

3.4.4 Punjab Housing and Town Planning Agency Land Use Rules 2017

As per the rules, the agency shall classify the land in an area or any part thereof into one or more land use classes as residential, commercial, industrial, institutional, mixed use, special development zone and notified area (historically significant area, environmentally sensitive area, public sector institutional area, other restricted area, and an intercity service area).

3.4.5 Punjab Private Housing Schemes and Land Sub-division Rules 2010

Under these rules, one of the evaluation criteria for the application of the developer of the housing scheme to the Town Municipal Authority, a Tehsil Municipal Administration or a Development Authority is that the housing scheme site should not be prone to flooding. Under Planning Standards for a Housing Scheme, the authorities shall ensure a housing scheme is planned and sanctioned in accordance with the National Reference Manual on Planning and Infrastructure Standards, prepared by Ministry of Housing & Urban Affairs, Environment & Urban Affairs Division, Government of the Pakistan. The developer will adhere to the requirement that there should be a ten marla plot for solid waste management up to one thousand plots and ten marla plot for every additional one thousand plots in the housing scheme. As per these rules no private housing scheme or land subdivision shall be allowed outside peri-urban area. The developer shall provide fire hydrant on main water lines in open space, commercial center and at regular interval along a road and shall plant trees on both sides of the road and in an open spaces.

3.4.6 Punjab Housing and Town Planning Agency, Building and Zoning Regulations 2008

As per the regulations, the residential zone is categorized into Approved Scheme, Established Built up Area, and Predominantly Open Areas. The special areas include Walled City Area or Historically Significant Areas, Flood Plain, and Environmentally Sensitive Areas which will be dealt with special building regulations. These regulations provide specifications and requirement for open spaces, building height, ground coverage and floor area ratio, porch, toilets, bathrooms, number of storeys, and parking space for the residential areas.

3.4.7 Punjab Housing and Town Planning Agency (Affordable Private Housing Schemes Rules) 2020

Under these rules the sponsor having minimum area of one hundred kanals may submit an application to the Director General of the Agency for participation in Naya Pakistan Housing Program

(NPHP) with 20% area reserved for NPHP. The housing scheme site should not be prone to flooding and should not fall in designated or protected area. The sponsor will conduct the IEE and get NOC from the EPA.

3.4.8 The Punjab Katchi Abadis Act 1992

As per The Punjab Katchi Abadis Act, the Director General, appointed under the act, may declare any area or part thereof which was occupied unauthorizedly before the 31st December 2011 and continue to be so occupied and has at least forty dwelling units to be a Katch Abadi by notification in the official Gazette. Government may by notification from time to time re-determine the number of dwelling units for the purpose of declaration of a Katch Abadi.

No area belonging to the Federal Government or any authority or corporation or body established or controlled by the Federal Government shall be declared as Katchi Abadi without the consent of the Federal Government.

No area owned by a person or a society shall be declared as Katchi Abadi except with the consent of such person or society. Katchi Abadi so declared shall be subject to such terms and conditions as may be agreed to between such person or society and the Director General.

No area which is reserved for the purposes of roads, streets, water supply arrangements, sewerage or other conservancy arrangements, hospitals, schools, colleges, libraries, playgrounds, gardens, mosques, graveyards, railways, high tension lines, or similar other purposes or is not safe from flood hazard, shall be declared to be a Katchi Abadi. Where the area cannot be acquired by consent or agreement, the area may be acquired under the provision of the Land Acquisition Act, 1894. The area declared to be Katchi Abadi shall vest in the Development Authority or the Tehsil Municipal Administration within whose area it falls.

Occupants of any Katch Abadi may be shifted by the Director General if the land under a Katchi Abadi or a part thereof i) is not transferred by the owner of the land, ii) is required for providing civic amenities in the Katch Abadis, iii) is low lying and its development is not economical, or iv) is required for any public purpose.

3.4.9 Punjab Transparency and Right to Information Act 2013

The Punjab Transparency and Right to Information Act 2013 was promulgated with effect from 4th October 2013 to provide for transparency and freedom of information to ensure that citizens have improved access to public information; to make the Government more accountable to citizens; to enforce the fundamental right of access to information in all matters of public importance and to provide for ancillary matters. The law was promulgated owing to an old demand of different sections of the society, NGOs and the courts of law; above all, due to the following Article of the Constitution (inserted through 18th Amendment in the year 2010):

“19A. Right to information – Every citizen shall have the right to have access to information in all matters of public importance subject to regulation and reasonable restrictions imposed by law.”

3.4.10 The Punjab Office of the Ombudsman Act 1997

The Ombudsman Punjab has the mandate to protect the rights of the people, ensuring adherence to the rule of law, diagnosing, redressing and rectifying any injustice done to a person through maladministration and suppressing corrupt practices.

The law empowers the Ombudsman Punjab to entertain complaints against any department, commission or office of the Provincial Government or a statutory corporation or other institution established or controlled by the Provincial Government but does not include the High Court and the Courts working under the supervision of High Court and Provincial Assembly and its Secretariat. Under section 9 (1) of the Act the Ombudsman on a complaint of any aggrieved person, on a reference by the Government or the Provincial Assembly or on a motion of Supreme Court or the High Court or on his own motion (suo moto) can undertake any investigation into any allegation of 'maladministration' on the part of any agency or its officers or employees. The Ombudsman, however, has no jurisdiction to investigate or enquire into matters which are (a) sub judice before a court of competent jurisdiction (b) relates to the external relations of Pakistan or connected with defense of Pakistan or Military, Naval and Air Force of Pakistan or the matters covered by the laws relating to these Forces. The Ombudsman also cannot entertain for investigation any complaint by or on behalf of a public servant or functionary concerning any matter relating to the agency in which the public servant has been or is working in respect of any personal grievance or relating to his service therein.

Ombudsman has the same powers as are vested in a Civil Court under the code of civil procedure for summoning and enforcing the attendance of any person; compelling the production of documents; receiving evidence on affidavits and issuing commission for examination of witnesses. The Ombudsman is vested with the powers to enter and search any premises and inspect any article, books of account and other documents; impound and seal such article. The Ombudsman has the same powers, mutatis mutandis, as the High Court has to punish any person for its contempt.

3.4.11 The Punjab Jinnah Abadis for Non-Proprietors in Rural Areas Act 1986

This Act provisions for providing housing facilities to non- proprietors in the rural areas of the Punjab and to provide for matters connected therewith or ancillary thereto. Under this Act, the Government may grant land, free of cost not exceeding seven marlas in a rural area, on such terms and conditions as may be prescribed, to a non-proprietor in the revenue estates in the Union Council in which he ordinarily resides, for the construction of a house by him for his residence.

3.4.12 Open Government Partnership

The Open Government Partnership is a multilateral initiative that aims to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance. In the spirit of multi-stakeholder collaboration, OGP is overseen by a Steering Committee including representatives of governments and civil society organizations.

To become a member of OGP, participating countries must endorse a high-level Open Government Declaration, deliver a country action plan developed with public consultation, and commit to independent reporting on their progress going forward.

The Open Government Partnership formally launched on September 20, 2011, when the 8 founding governments (Brazil, Indonesia, Mexico, Norway, the Philippines, South Africa, the United Kingdom and the United States) endorsed the Open Government Declaration, and announced their country action plans. Since 2011, OGP has welcomed the commitment of 67 additional governments to join the Partnership.

In total, 75 OGP participating countries have made over 2,500 commitments to make their governments more open and accountable. Pakistan expressed intent to become a member of Open

Government Partnership in November 2016 whereby the Finance Minister signed the letter of intent and expressed the commitment to respect the Open Government Principles as articulated in the Open Government Declaration.

3.5 International Treaties and Conventions

Pakistan is a signatory to a number of Multilateral Environmental Agreements (MEAs). These MEAs impose requirements and restrictions of varying degrees upon the member countries, in order to meet the objectives of these agreements. However, the implementation mechanism for most of these MEAs is weak in Pakistan and institutional setup mostly non-existent. The following are the relevant international treaties and conventions that have been ratified by Pakistan, where relevant, these will be discussed in further detail within relevant chapters:

- Ramsar Convention on Wetlands of International Importance
- Basel Convention on the Control of Trans-Boundary Movements of Hazardous Wastes and their Disposal
- Convention Concerning the Protection of World Culture and Natural Heritage
- Convention on the International Trade in Endangered Species
- International Plant Protection Convention
- International Covenant on Economic, Social and Cultural Rights
- International Labour Organization's (ILO) Core Labour Standards on:
 - Freedom of association (convention 87)
 - Elimination of forced and compulsory labour (conventions 29 and 105)
 - Elimination of discrimination in respect of employment and occupation (conventions 100 and 111)
 - Abolition of child labour (conventions 138 and 182)
- Kyoto Protocol to the Convention United Nations Framework on Climate Change
- Stockholm Convention on Persistent Organic Pollutants
- United Nations Convention on Biological Diversity
- United Nations Convention on the Rights of the Child
- United Nations Framework Convention on Climate Change.

3.6 Relevant World Bank Environmental and Social Standards (ESSs)

Following Environmental and Social Standards (ESSs) of the World Bank are relevant with PULSE:

- ESS-1: Assessment and Management of Environmental and Social Risks and Impacts
- ESS-2: Labor and Working Conditions
- ESS-3: Resource Efficiency and Pollution Prevention
- ESS-5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- ESS-10: Stakeholder Engagement and Information Disclosure

3.6.1 ESS-1: Assessment and Management of Environmental and Social Risks and Impacts

This standard sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).

The objectives of this standard are to i) identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs, ii) adopt a mitigation hierarchy approach to (a) Anticipate and avoid risks and impacts; (b) Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels; (c) Once risks and impacts have been minimized or reduced, mitigate; and (d) Where significant residual impacts remain, compensate for or offset them, where technically and financially feasible, iii) adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project, iv) utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate, v) promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.

3.6.2 ESS-2: Labor and Working Conditions

This standard recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions.

The objectives of this standard are to i) promote safety and health at work, ii) promote the fair treatment, nondiscrimination and equal opportunity of project workers, iii) protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate, iv) prevent the use of all forms of forced labor and child labor, v) support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law, vi) provide project workers with accessible means to raise workplace concerns.

3.6.3 ESS-3: Resource Efficiency and Pollution Prevention

This standard sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle consistent with Good International Industry Practice (GIIP).

The objectives of this standard are to i) promote the sustainable use of resources, including energy, water and raw materials, ii) avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities, iii) avoid or minimize project-related emissions of short and long-lived climate pollutants, iv) avoid or minimize generation of hazardous and non-hazardous waste, and v) minimize and manage the risks and impacts associated with pesticide use.

3.6.4 ESS-5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement

ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term “involuntary resettlement” refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

The objectives of this standard are to i) avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives; ii) avoid forced eviction; iii) mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost, and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher; iv) improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure; v) conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant; and vi) ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.

3.6.5 ESS-10: Stakeholder Engagement and Information Disclosure

This standard recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

The objectives of this standard are to i) establish a systematic approach to stakeholder engagement that will help borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties, ii) assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance, iii) promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them, iv) ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format, v) provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow borrowers to respond to and manage such grievances.

4.0 Potential Environmental and Social Impacts and Mitigation Measures

This chapter describes potential generic environmental and social risks and impacts (direct, indirect/induced, and cumulative) to be caused by the construction and operational phases of the project activities on surrounding environment and communities. It also describes mitigation measures as per mitigation hierarchy (avoidance, minimization or reduction, mitigation, compensate/offset). The project activities that would have major widespread and intense environmental and social impacts will be excluded from the project and will not be eligible for financing. Therefore, the proposed PULSE will finance activities that may still have significant impacts but will not be wide spread, and therefore, can either be avoided in their design, or reduced to acceptable levels or reversed through the application of effective mitigation measures. These impacts are mainly expected to arise during the operational activities, and a lesser extent during construction phases.

4.1 Project Activities

Table 6 describes type of project and associated activities which could result into potential environmental and social risks and impacts.

Table 6: Project Activities

#	Project Component	Activities
Component-1: Digital Land Records and Cadastral Maps for LRMIS		
1	<i>Sub-Component 1.1: Spatial Framework for LRMIS</i>	Support the production of the digital cadastral maps to update the existing revenue maps.
2		The scanning and geo referencing of the revenue maps to the national coordinate reference system.
3		Creation of initial index parcel maps from digitized maps by overlaying high-resolution base map images.
4		Field verification in areas, especially where there have been significant changes.
5		The validation of digital cadastral maps through public display.
6		Providing information to the public and placing proper measures for dispute mediation and resolution to ensure safeguards and protection for women and vulnerable people.
7	<i>Sub-Component 1.2: Systematic Registration of Peri-urban Properties</i>	Systematic registration for peri-urban properties that are not yet registered in LRMIS.
8		Developing a new settlement process to provide public awareness and information, demarcate property boundaries, gather evidence of rights, adjudicate rights, publicly display, respond to public requests for correction and to register the property rights.
9	<i>Sub-Component 1.3: Upgrading Tax Records to Urban Land Records</i>	Improving the existing tax maps of about 5 million properties to build fit-for-purpose urban cadastral maps

#	Project Component	Activities
10		Developing new field procedures and processes to use the E&TD information as a basic record to create urban land records in the new LRMIS.
11	<i>Sub-Component 1.4: Incorporation of Existing Urban Records</i>	Digitalizing, parcel mapping and incorporating of existing urban land records into a single land registry.
12		The compilation, validation and integration of the existing digital land registry records and parcel maps that were created by public development authorities and private development agencies and shared with BoR, into a single database in LRMIS.
13		The combining of the Deeds Registry records, based on holdings, with the parcel-based recording.
14	<i>Sub-Component 1.5: Systematic Registration of Urban Property</i>	Systematic registration of urban land and first registration in Katchi Abadis.
15		Conducting cadastral surveys area by area to fill the gaps that are not covered by other activities under Component 1.
Component 2: Land for Housing		
16	<i>Sub-Component 2.1: Inventory of State Lands Asset</i>	Consolidating the state lands identified under Component 1 and the analog records kept by various government authorities.
17		The digitization, geo referencing and storage in a database in LRMIS to build an inventory of state land asset.
18	<i>Sub-Component 2.2: State Land Asset Management</i>	Establishing public land asset management procedures and good governance with a monitoring system.
Component 3: Integrated Land and Geospatial Information Systems and Services		
19	<i>Sub-Component 3.1: ICT Infrastructure Upgrade</i>	Strengthening ICT infrastructural capacity by upgrading existing data Centers, backup sites and Arazi Record Centers (ARCs).
20		Equipping new ARCs.
21	<i>Sub-Component 3.2: LRMIS Improvement</i>	Developing next generation Land Records Management Information System (LRMIS). Integration of rural and urban land records in one single system to deliver a comprehensive data source of property information. Digitizing deed records across Punjab Province.
22	<i>Sub-Component 3.3: Integrated Land Portal</i>	Developing an integrated Land Portal and mobile application to provide various e-services, based on a unified land information database.
23	<i>Sub-Component 3.4: Establishment of PSDI</i>	Strengthening geodetic network.
24		Providing high-resolution imagery and base maps.
25		Establishing Provincial Spatial Data Infrastructure (PSDI) framework.
Component 4: Project Management and Institutional Strengthening		

#	Project Component	Activities
26	<i>Sub-Component 4.1: Project Management, Monitoring and Evaluation</i>	Establishing Project Implementing Units (PIUs) to manage, implement, and supervise project activities.
27		Establishing financial management and procurement
28		Establishing a solid M&E framework.
29		Conducting baseline study, and the mid-term and end-of-project evaluations.
30		Establishing and managing grievance redress mechanism (GRM) for the project.
31	<i>Sub-Component 4.3: Legal and Regulatory Support</i>	Conducting a series of pilots of cadastral mapping, upgrading land records, incorporation of existing land records, and systematic land registration.
32		Conducting international and regional comparative studies.
33		Conducting consultations and workshops to discuss key policy issues.
34		Get consultancy services to develop draft policies and procedures.
35		Conduct policy studies to enhance land allocation and spatial planning for climate resilience.
36	<i>Sub-Component 4.4: Institutional Strengthening and Public Awareness</i>	Conducting training needs assessment and preparing a detailed long-term training plan.
37		Establishing training packages (both short courses, study tours and other) and providing training at different levels.

4.2 Potential Environmental and Social Impacts

4.2.1 Overall Project Positive Social Impacts

Land record digitization will increase the transparency, and help to resolve land disputes and reduce the land transaction information request processing times from weeks to minutes and property transaction times from months to days. It will not only reduce the transaction costs but also limit the scope for corrupt practices, which are very common in land transaction activities.

Women will get benefit from the land record digitization, as the new system will enable them to access land records and help to secure the inheritance rights, which is generally restricted under the current patwari system. Land will not be transferred without the presence of female record holders in the ARCs when their name is on the land record.

The new system of digital land records will improve tenure security in the urban areas. There will be availability of formal ownership records of the lands. The clarifying land and property ownership would help to lower the costs of land related conflict resolution. The availability of digital land records with clear ownership will avoid lengthy litigation.

It will create harmony among various agencies and enhance their process efficiency when unified land records will be available in the LRMIS. There will be no need to maintain the land records by multiple agencies and spending time and resources to maintain these records.

The development authorities and agencies will find adequate land to fulfill their core functions due to the availability of real property portfolios and up-to-date records of those assets, their exact location, current use, or potential value. Due to availability of clear information or strategic planning, public land assets will not remain vacant or underutilized.

The land record digitization will enable both the GoP and the GoPb to achieve NPHP's goal of constructing up to 2.5 million low-cost housing units in Punjab.

Increase in taxpayer compliance without increasing the tax burden, improved valuation of urban properties for taxation and using public land for generating revenue will all result in improved own source revenues (OSR) for the province to deliver basic services to its citizen. The land record digitization will allow easy access to property rights information for both state and private sector actors and will facilitate government to enhance property tax base and avoid property tax evasion.

Disasters reveal the need for integrated solutions to address on-the-ground response and reconstruction informed by geospatial technologies and digital databases, as well as comprehensive land records. Therefore the land record digitization will support disaster management in the province.

Proposed project's activities would create an enabling environment for Punjab's cities to attract greater levels of private-sector investment in addition to improved urban planning.

4.2.2 Overall Project Positive Environmental Impacts

The land digitization process is expected to have a net positive environmental impact due to automation of service delivery which would, thus, result in resource efficient offices, and decrease in paper use, leading to a lower carbon footprint.

Unified, digital land records for urban areas will help to clarify land property ownership, which may help to stimulate Punjab's real property market and resolve artificial land shortages in urban areas that contribute to urban sprawl, environmental degradation and construction in high-risk areas prone to natural disasters.

4.2.3 Project Potential Negative Environmental and Social Impacts

Table 7 presents the project activities which can cause potential negative environmental and social impacts.

Table 7: Potential Environmental and Social Impacts

Activities	Potential Environmental Impacts	Potential Social Impacts
Component-1: Digital Land Records and Cadastral Maps for LRMIS		
Support the production of the digital cadastral maps to update the existing revenue maps	<ul style="list-style-type: none"> ▪ The digitization of land records will require procurement and use of ICTs which will ultimately result into generation of E-waste. At the start of the project, the obsolete ICTs will be replaced with the latest ICTs which will also contribute into E-waste. E-waste is hazardous which has the potential of causing environmental and health hazards when it is not stored, dismantled and recycled in environmentally safe methods. ▪ High electrical energy consumption and GHG generation due to operation of ICTs. 	<ul style="list-style-type: none"> ▪ The digitization of the system through ICT use in the PLRA offices, ARCs and other offices can pose a risk for those office employees and field staff who have a low level of IT literacy and knowledge. These employees can therefore be marginalized under the new system. ▪ The digitization of private and public land records will legalize the ownership of the lands which may result in the clearing of the lands from informal settlers/ occupants and render them homeless. ▪ Some level of social disharmony and conflict can also be anticipated given widespread disputes over land (multiple claimants, disputed inheritance rights, customary exclusion of women and minors from rightful land shares, etc.). ▪ There are chances that the project workers i.e. direct workers, working on the project directly and the construction workers, working under the civil contractor, are treated unfairly and their labor rights compromised.
The scanning and geo referencing of the revenue maps to the national coordinate reference system	E-waste generation	
Creation of initial index parcel maps from digitized maps by overlaying high-resolution base map images	E-waste generation	
Field verification in areas, especially where there have been significant changes		<ul style="list-style-type: none"> ▪ Field mapping work may also include health and safety risks for field staff and the local communities, including the potential for

Activities	Potential Environmental Impacts	Potential Social Impacts
		<p>communicable diseases such as the prevalent COVID-19, associated with exposure to communities.</p> <ul style="list-style-type: none"> ▪ Lack of engagement with key stakeholders in the verification process can lead to conflict in the community.
<p>The validation of digital cadastral maps through public display</p>		<ul style="list-style-type: none"> ▪ the public display and dissemination of existing revenue-based maps in rural areas could have significant risks due to the power imbalance of influential local landlords, as small landholders and those without tenure may be empowered and bring to the fore existing and past disputes over tenure. ▪ Public display without awareness raising and information sharing may lead to exclusion of vulnerable/marginalized groups, particularly women.
<p>Providing information to the public and placing proper measures for dispute mediation and resolution to ensure safeguards and protection for women and vulnerable people</p>		<p>The dispute mediation and resolution may fail if access to the system and information is not ensured for all types of stakeholders.</p>
<p>Systematic registration for peri-urban properties that are not yet registered in LRMIS</p>	<p>E-waste generation</p>	<ul style="list-style-type: none"> ▪ There are chances that there would be disputes among various claimants of the lands during registration i.e. field data collection, public consultations and display of the land records etc. ▪ The inability to incorporate /consider customary forms of tenure during the registration process may negatively impact ethnic groups, minority and other vulnerable communities disproportionately, since excluding such communities from the benefits of land registration could worsen inequality.

Activities	Potential Environmental Impacts	Potential Social Impacts
		<ul style="list-style-type: none"> ▪ There is a risk of exacerbating gender inequality and gender violence if women's rights to land are not systematically protected for instance in cases of women inheriting property.
<p>Developing a new settlement process to provide public awareness and information, demarcate property boundaries, gather evidence of rights, adjudicate rights, publicly display, respond to public requests for correction and to register the property rights</p>		<ul style="list-style-type: none"> ▪ The officers (patwaris) and their enablers (often large landholders) may be disruptive to the field mapping exercises. ▪ Limited capacity of relevant public officials to develop and implement a new settlement process may impact its efficiency, effectiveness and timely completion.
<p>Improving the existing tax maps of about 5 million properties to build fit-for-purpose urban cadastral maps</p>	E-waste generation	<p>There may be resistance from property owners which could delay the development of cadastral maps.</p>
<p>Developing new field procedures and processes to use the E&TD information as a basic record to create urban land records in the new LRMIS</p>	E-waste generation	
<p>Digitalizing, parcel mapping and incorporating of existing urban land records into a single land registry</p>	E-waste generation	
<p>The compilation, validation and integration of the existing digital land registry records and parcel maps that were created by public development authorities and private development agencies and shared with BoR, into a single database in LRMIS</p>	E-waste generation	<p>As records are digitized and roles become redundant, relevant public officials (particularly patwaris) may lose their jobs due to lack of understanding and skills of IT-based systems.</p>
<p>The combining of the Deeds Registry records, based on holdings, with the parcel-based recording</p>	E-waste generation	

Activities	Potential Environmental Impacts	Potential Social Impacts
Systematic registration of urban land and first registration in Katchi Abadis	E-waste generation	<ul style="list-style-type: none"> ▪ Given that katchi abadis dwellers are usually, poor, often disenfranchised (in that they may not have requisite citizenship papers, id cards or any documentation of payment for land or utilities) and rarely approached by officials, their voices are in danger of being ignored or drowned out. ▪ Social unrest and resistance at commencement of registration due to fear of eviction after the land is registered. ▪ Possibility of evictions and therefore eventual displacement of urban poor from katchi abadis if government agencies and/or concession holders seek to reclaim land ownership and land use rights.
Conducting cadastral surveys area by area to fill the gaps that are not covered by other activities under Component 1		Conducting multiple surveys of these settlements and potential land tenure may exacerbate disputes over ownership.
Component-2: Land for Housing		
Consolidating the state lands identified under Component 1 and the analog records kept by various government authorities	E-waste generation	
The digitization, geo referencing and storage in a database in LRMIS to build an inventory of state land asset	E-waste generation	
Establishing public land asset management procedures and good governance with a monitoring system		
Component-3: Integrated Land and Geospatial Information Systems and Services		
Strengthening ICT infrastructural capacity by upgrading existing data	E-waste generation	Women could be marginalized in case their needs are not considered while upgrading existing ARCs.

Activities	Potential Environmental Impacts	Potential Social Impacts
Centers, backup sites and Arazi Record Centers (ARCs)		
Equipping new ARCs	<ul style="list-style-type: none"> ▪ There are chances that the construction of ARCs will take place at biologically sensitive sites which can pose threat to the habitats and the biodiversity they support ▪ Construction/renovation of ARCs will generate construction related environmental, health and safety impacts. ▪ For construction/renovation work, no land acquisition will be required. Any loss or conversion of natural habitats and any changes in land or resource use are not expected. ▪ Low level short-term environmental impacts may occur in the form of drainage clogging due to improper construction waste disposal, sanitary wastewater ponding due to improper disposal arrangements at construction sites, air pollution due to dust and stack emissions, noise pollution, soil pollution, occupational health hazards due to improper management of sanitary and hazardous waste. ▪ Energy consumption at ARCs will contribute in GHG emission 	<ul style="list-style-type: none"> ▪ The sites chosen for renovation/ building of new centers may have the presence of encroachers or informal settlers who are living on or using the land or facilities. ▪ In case of new construction the accompanying civil works can have occupational health and safety risks to labor and surrounding communities. ▪
Developing next generation Land Records Management Information System (LRMIS). Integration of rural and urban land records in one single system to deliver a comprehensive data source of property information.	E-waste generation	<ul style="list-style-type: none"> ▪ Influential/landlords wield influence and may be able to control access to information about land transactions and records. ▪ Risk of insufficient public information and awareness among the project's beneficiaries, especially in areas of

Activities	Potential Environmental Impacts	Potential Social Impacts
Digitizing deed records across Punjab Province		<p>collective land and customary land ownership.</p> <ul style="list-style-type: none"> ▪ the land registration and titling activities may have unintended consequences for instance restrictions on access to land, livelihood, and/or cultural resources upon which local people depend, impacting on natural resource-based livelihoods and tenure of vulnerable or marginal households, in particular women and ethnic minority groups.
Developing an integrated Land Portal and mobile application to provide various e-services, based on a unified land information database	E-waste generation	The digital tools created need to be accessible and responsive. Only around 40% of Pakistan's population is currently using online and the vast majority of them access the internet through smartphones.
Strengthening geodetic network	E-waste generation	
Providing high-resolution imagery and base maps	E-waste generation	
Establishing Provincial Spatial Data Infrastructure (PSDI) framework	E-waste generation	
Component-4: Project Management and Institutional Strengthening		
Establishing Project Implementing Units (PIUs) to manage, implement, and supervise project activities		
Establishing financial management and procurement		
Establishing a solid M&E framework		
Conducting baseline study, and the mid-term and end-of-project evaluations		
Establishing and managing grievance redress mechanism (GRM) for the project		The GRM may not be effective in practice if vulnerable groups cannot access it and if it does not address complaints in the specified time period.

Activities	Potential Environmental Impacts	Potential Social Impacts
Conducting a series of pilots of cadastral mapping, upgrading land records, incorporation of existing land records, and systematic land registration	E-waste generation	
Conducting international and regional comparative studies		
Conducting consultations and workshops to discuss key policy issues		Vulnerable stakeholder voices may be excluded and their concerns not incorporated and addressed in the policies prepared.
Get consultancy services to develop draft policies and procedures		
Conduct policy studies to enhance land allocation and spatial planning for climate resilience		
Conducting training needs assessment and preparing a detailed long-term training plan		
Establishing training packages (both short courses, study tours and other) and providing training at different levels		

4.3 Environmental Impacts Mitigation Measures

Following sections describe details of the mitigation measures for the above identified potential environmental impacts in Table 7 for the design, construction and operation phases of the project activities.

4.3.1 Design Stage Mitigation Measures

Design phase environmental mitigation measures for the PULSE project are given below:

a) Procurement of Energy Efficient ICTs

PULSE will require procurement of ICTs to digitize the land records of the province. ESS-3 (Resource Efficiency and Pollution Prevention) requires to implement technically and financially feasible measures for improving efficient consumption of energy, water and raw material, as well as other resources. The procurement of energy efficient ICTs will be preferred under PULSE to comply ESS-3. These energy efficient ICTs will contribute in reducing GHG and other air pollutants, generating from the thermal power plants of the province. The procuring agency will add energy efficiency labeling requirement as one of the key specifications for the ICTs while advertising for the procurement. There are different energy efficiency labels available internationally for the ICTs including Energy Star, EPEAT (Gold, Silver, Bronze), CEL (China Energy Label), and EU label (A to G, where A is the most and G is the least).

b) E-waste Management Plan

PULSE project activities will require procurement of ICTs and their use to accomplish the digitization of the land records of the province. Also the procurement of new ICTs will allow to discard and dispose of the obsolete ICTs, presently being used in different sections of the implementing departments. At the end of the useful life of the procured ICTs, these will also be disposed of. The obsolete ICTs and procured ICTs, after their useful life, will be converted into the E-waste. The E-waste, as such, is not hazardous, however, when it is dismantled and recycled to get valuable materials using easy and direct methods, which are improper and result into environmental and health impacts to the surrounding environment, workers and the nearby communities where these dismantling and recycling practices are carried out.

Under World Bank environmental safeguard requirements, PULSE needs to manage E-waste in such a manner to mitigate environmental and health impacts associated with its dismantling and recycling activities.

During design stage, E-waste management plan is prepared and attached with this framework as Annexure-3. This plan will be followed by the implementing departments during the execution stage of the project. The summary of the plan is as under:

Under the current scenario in the country and the province where there is no municipal collection system of E-waste, no mechanism of retailer take back and producer take back, and no formal or certified/licensed E-waste recycling facilities, the only possible E-waste management is described below:

Make the Inventory of the E-waste: Each implementing department will make the inventory of the E-waste. The PIU of the respective department will be responsible to make the E-waste inventory and will keep on updating it. This inventory should be reconciled with the inventory of the procured ICTs.

Storage of the E-waste: All the discarded ICTs or the E-waste will be handed over to the administration department. The administration department will receive the E-waste and record it in its E-waste inventory and place in the specified storage bins. There will be one or two storage bins allocated for the E-waste storage. The list of the items placed in the bin will be displayed at the bin so that anybody could see that what type of items are placed inside the bin.

Continuous Liaison with the Environmental Protection Agency: It will be the responsibility of the PIU of the project to establish a continuous liaison with the Environmental Protection Agency (EPA) and convince it to take action against the E-waste collectors, dismantlers and recyclers and certify them.

Guidelines for Collectors, Transporters, Dismantlers and Recyclers: EPA will have to issue guidelines for the E-waste collectors and transporters, dismantlers and recyclers to certify these facilities after compliance of the guidelines.

Visit of the Licensed E-Waste Recycling Facilities: After EPA takes action on E-waste management and certify the E-waste recyclers in the province. The PIU should visit the certified collection, dismantling and recycling facilities to ensure that the facilities are complying the EPA rules and guidelines.

Handing Over the E-waste: The PIU should hand over the collected and stored E-waste to the selected collectors, dismantlers and recyclers. This handing over or auction will be as per the Punjab Procurement Rules.

c) Selection of Sites for ARCs Renovation/Construction

Under Component-4, renovation/construction of ARCs is proposed as per the requirement. The renovation/construction of ARCs at biologically sensitive sites can pose threat to the habitats and the biodiversity they support. At the design stage, the proposed sites for the ARCs renovation/construction will be screened with respect to the environmental sensitivity. The sensitive sites for biodiversity and natural resources will be avoided to protect and conserve biodiversity and sustainability managing the natural resources of the province. In case any site is found to be environmentally sensitive, the alternative site will be selected. The site selection criteria will be developed and applied prior to finalization of any site for the ARC renovation/construction.

d) Renovation/Construction related Environmental Impacts Mitigation

The renovation/construction of ARCs under Component-4 will generate construction related environmental, health and safety impacts. For renovation/construction work, no land acquisition will be required. Any loss or conversion of natural habitats and any changes in land or resource use are not expected as such sites will be excluded for the renovation/construction. Low level short-term environmental impacts may occur in the form of drainage clogging due to improper construction waste disposal, sanitary wastewater ponding due to improper disposal arrangements at construction sites, air pollution due to dust and stack emissions, noise pollution, soil pollution, occupational health hazards due to improper management of sanitary and hazardous waste. There will be low level of risk to public and worker health and safety at renovation/construction sites.

Construction Environmental, Health, Safety and Social (C-EHSS) SOPs will be developed at design stage to mitigate construction related environmental, health, safety and social impacts. These SOPs will be part of the bidding document where the civil contractor will be responsible to follow these SOPs during construction activities. The cost of complying the CEHSS SOPs will be incorporated in the bid price.

e) Use of Solar Photovoltaic Technologies at ARCs

As per compliance of ESS-3 (Resource Efficiency and Pollution Prevention), there will be provision in the design of installing solar photovoltaic technologies at ARCs to allow at least 20-30% contribution of the renewable energy in the total electricity consumption. The uptake of renewable energy technologies will contribute in reducing GHG and other air pollutants, generating from the thermal power plants of the province.

4.3.2 Renovation/Construction Phase Environmental Mitigation Measures

The contractors appointed for the renovation/construction of ARCs will have to follow the C-EHSS SOPs as part of his contract obligations and implement following measures to mitigate construction related impacts at construction sites. These measures will be mentioned in the SOPs.

- Suppression of dust emission
- Control of stack and vehicular emissions
- Safe disposal of sanitary wastewater
- Safe disposal of domestic solid waste
- Safe disposal of hazardous and construction waste
- Soil pollution control
- Noise abatement
- Protection of workers from health and safety hazards
- Protection of community from accidents

The PULSE PIU will be responsible for monitoring and supervising the implementation of mitigation measures by the contractors. PIU will implement a system of internal checks to ensure that these actions are carried out to a satisfactory standard. In exceptional circumstances, if the contractors refuse to adhere to the requirements of the SOPs, then the PIU will use his authority to call a halt to a particular construction activity.

To avoid any misunderstandings regarding who is responsible for any particular mitigation activities mentioned in the SOPs, the C-EHSS SOPs will be appended to the bidding documents. This will ensure that contractors include in their bids the cost of any mitigation actions and also a reliable mechanism for enforcement. In fact, most of the recommended actions involve little or no capital investment, but these also depend on whether the contractor's management adopts a responsible attitude toward environmental and social protection, thereby ensuring that the construction activity is properly planned and that mitigation measures are properly implemented. The recommended environmental mitigation actions for the construction phase are given under:

a) Suppression of Dust Emission

Regular water sprinkling will be the responsibility of the contractor at the dust generation points, during construction activities. The water will be also sprinkled at vehicular and machinery movement routes to avoid dust spreading to the nearby community. In addition, the provision of dust masks and ensuring their use by the workers will also be the responsibility of the contractor under C-EHSS SOPs.

b) Control of Stack and Vehicular Emissions

The stack emissions from generators, if used as standby source of power supply and vehicular/machinery movement at the construction site can affect the ambient air quality of the area. It will be the responsibility of the contractor to use well maintained generators and vehicles/machines

to keep ambient air quality within the desired level. The contractor will be obliged to provide fitness certificate/maintenance records of the generators, vehicles, and machines before deploying them at the construction sites.

c) Safe Disposal of Sanitary Wastewater

In case, the construction labor stays at the construction sites under temporary residential arrangement, generally proper disposal of sanitary wastewater is not practiced there. It will be the responsibility of the contractor to dispose sanitary wastewater in a nearby drain after passing it through septic tanks. The contractor can also plan to include temporary septic tanks for the construction labor.

d) Safe Disposal of Domestic Solid Waste

In case of labor stay at the construction sites under temporary residential arrangement, there will be chance that the improper disposal of domestic solid waste will lead to air, water, and soil pollution, if it is burnt, thrown in the surface water drains or on open land. The solid waste dumping site becomes breeding place for mosquitos and flies which could be the source of outbreak of diseases. The construction contractors will be responsible to manage all sort of domestic waste and dump at the proper dumping site.

e) Safe Disposal of Hazardous and Construction Waste

During construction activities different types of hazardous solid waste including empty containers of paint, lubricants, grease, fuel etc. oil filters, oily rags and construction waste are generated. The hazardous waste will be properly collected and stored at impervious surface under shade. This waste will be handed over to the authorized waste collectors so that these could be disposed of properly.

The debris produced during construction would preferably be dumped at nearby depressions rather than being thrown away and left unattended. Leftover material would not be dumped into storm water drains or watercourses, because such practices can clog these man-made and natural drainage systems and cause many other problems for the residents.

f) Soil Pollution Control

Soil pollution will be controlled by taking following measures:

- Storage of fuel, paint, and oil containers, oil filters, oily parts, and oily rags on impervious floor under shade or storing of fuel and lubricants on a sand flooring of at least 6 inches thick done on brick edge flooring lined with polyethylene sheet
- Placement of fuel containers under containment and proper decantation arrangement to avoid its spillage and leakage on floor
- Presence of spill kit to remove spills from the floor
- Avoidance of washing the contaminated floors rather dry cleaning the spills from the floor with saw dust and rags
- Location of fuel storage and refilling areas at least 500 m from all cross-drainage structures and important water bodies

g) Noise Abatement

To minimize noise impacts on workers and nearby communities, the following measures will be taken:

- Carrying out regular inspection and maintenance of the construction vehicles and equipment
- Replacement of worn and noise producing parts of construction machinery in a timely manner
- In case of severe noise, using sound barriers to avoid the dispersion of sound waves into the nearby community
- Workers will use noise protection equipment when working in a noisy area
- The noise level of 85 dBA for 8 hours working for the workers is considered safe. The contractors would ensure keeping noise levels within safe limits. In case of higher noise levels (more than 85 dBA), the workers will be rotated. The workers at higher noise level areas will not be allowed to work for more than two to three hours and shifted to calm places for rest of the hours
- Vehicular and machineries will not be allowed to operate at construction site at night
- Noisy machines and vehicles will not be allowed to be used at the construction site (noise level should not be more than 85 dBA at 7.5 m distance)

h) Protection of Workers from Health and Safety Hazards

The contractor will comply with all the precautions as required for the safety of the workforce as per the national/provincial and World Bank requirements. Contractor will ensure that all operators of heavy or dangerous machinery are trained, certified, and insured. The contractor will supply all necessary safety appliances such as safety goggles, helmets, masks, safety shoes etc., to the workers and staff. The contractor will comply with all regulation regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields. First Aid Box will be provided at every construction site and under the charge of a responsible person who will always be readily available during working hours. Suitable transport will be provided to take injured or ill person(s) to the nearest approachable hospital. The contractor will be responsible for providing safe drinking water and for implementing appropriate sanitation conditions, and for supplying hygienic food and a sewerage system for the construction team at the site.

The risk of fires will be evaluated for each construction site based on the activities that would occur, environmental conditions, and presence of ignitable or combustible materials in the area. If the activities pose a risk of igniting a wildfire, appropriate fire prevention and response equipment will be available at each active site such as shovels, axes, fire extinguishers, and dedicated water tanks. All workers will be trained on proper fire prevention and response procedures prior to working on the site. Any smoking on site will be restricted to barren areas away from ignitable or combustible material. Smoking waste will be fully extinguished and disposed of appropriately.

Each contractor will be required to follow the occupational health and safety (OHS) measures as mentioned in the C-EHSS SOPs. In case of COVID-19 pandemic situation in the province, the contractor will have to follow the specific safety measures, mentioned in the SOPs, with respect to regular use of sanitizers, washing of hands, wearing of face masks and maintaining physical distancing by the construction labor.

i) Protection of Community from Accidents

The construction activities, particularly the excavation, will not be carried out during rainy season to avoid any accident. The excavated areas will be properly cordoned off, and warning and safety signs will be posted at accident prone areas to warn the passersby the potential danger at the construction site. The construction contractors will install temporary signs and fences around all unsafe areas to prevent members of the public from entering the areas. If installing fences is not feasible, the area will be clearly identified as unsafe with signs and flagging.

j) Installation of Solar Photovoltaic Technologies at ARCs

PIU will ensure that the solar photovoltaic (PV) technologies are installed at each ARC. These technologies will allow to reduce about 20-30% of the total electricity consumption in each office which is mainly sourced through fossil fuels. It will be ensure while procuring the technologies that the branded or certified technologies are selected.

4.3.3 Operational Phase Environmental Mitigation Measures

The following are the environmental mitigation measures for the operational phase of the project:

a) Operation of Energy Efficient ICTs

At the operational phase of the project, PIU will ensure that the energy efficient ICTs are procured and installed at all the project offices and ARCs. PIU will also ensure that the operators of ICTs are properly trained to operate these ICTs and the ancillary systems and the practices are energy efficient.

b) Compliance of E-waste Management Plan

At the operational phase, PIU will ensure that the E-waste Management Plan is implemented at all the implementing departments. The E-waste is managed i.e. stored as per the recommendations and handed over to the licensed facilities for dismantling and recycling. Inventory of E-waste generation, its storage and handing over to the licensed facility/authority will be kept.

c) Operation of Solar Photovoltaic Technologies at ARCs

At the operational phase, PIU will ensure that the installed solar photovoltaic technologies are operational in all the ARCs. There should be proper record keeping of energy consumption from grid, generators and the solar PV to ensure that the renewable energy consumption is within 20-30% as perceived during design stage.

4.4 Social Impacts Mitigation Measures

Following sections describe details of the mitigation measures for the above identified potential social impacts in Table 7 for the design, construction and operation phases of the project activities.

It is clear from the above table that the identified impacts/mitigations can be grouped into the following categories:

- Community engagement & inclusion
- Gender equality and its mainstreaming
- Access and utilization of LRMIS
- ARCs locations and their user friendly operation for women
- Grievance redress mechanism
- Resettlement, eviction and livelihood
- Labor management
- Health and safety
- Capacity building of staff on IT skills
- Effective communication

The following sections describe the generic mitigation measures for the identified issues. As per the Environmental & Social Commitment Plan of the project, relevant studies (e.g. ESIA, ESMP, and RPs if required etc.) will be carried out for individual interventions. These studies will further assess and address the social impacts of various project activities under the different project components.

4.4.1 Community Engagement & Inclusion

Social exclusion is an over-arching risk, and this can occur due to lack of meaningful engagement with communities, particularly vulnerable groups such as women, ethnic and religious minorities, residents of low-income settlements such as *katchi abadis* etc. Without proper stakeholder and community engagement, low income neighborhoods and communities may be excluded from project benefits. Vulnerable landowners and people living in *katchi abadis* are also a direct and important stakeholder group, and there is a risk that the group as a whole might be left out from any consultations regarding the project.

Furthermore, social acceptability of the project might decrease if any of the stakeholders perceive that his concerns and complaints are not addressed properly and in a transparent manner. These impacts would be mitigated starting from the design stage through the following:

- Mapping and engaging stakeholders, including vulnerable groups such as women, minorities, informal settlement residents etc., at the start of the design process and obtaining their feedback about project interventions;
- Consulting the affected communities regarding any design changes, prior to finalization.

To ensure that vulnerable landowners (specifically poor and women) are not excluded because of lack of knowledge about the project and its benefits, or because they cannot afford to be included, the legal frameworks and policy development work envisaged under the project will also need to be inclusive. The risks of exclusion from any property registration or regularization activity could generate negative sentiment against the project and the government.

These risks can be mitigated by ensuring that the Stakeholder Engagement Plan (SEP) is prepared, implemented and, as required, updated throughout the project life cycle.

In order to ensure that the stakeholders are consulted during design and implementation phases of the project, a Stakeholder Engagement Plan (SEP) will be prepared in accordance with ESS-10 and disclosed on the websites of the implementing departments. SEP will identify all the stakeholders involved in the project. In addition to identifying stakeholders, the SEP will also help to ensure that all the identified stakeholders are engaged throughout the project. Given the continuing rise in COVID-19 cases in Punjab, consultations at the field level were not possible during the design phase; however, these will be completed when conditions allow. Hence, a preliminary SEP (including a project grievance redress mechanism-GRM) will be prepared in accordance with the WB technical note on community consultations under conditions of restricted public gatherings, consulted on, and disclosed in-country and on the Bank's website. The SEP will be updated, as required, within 60 days of effectiveness and re-disclosed. The commitment to update and re-disclose the SEP is included in the ESCP.

The SEP will be a 'living' document and hence, may be updated periodically during project implementation. The ESCP also includes the condition for updating the SEP, as required, during project implementation.

The project design ensures that an effective GRM is in place. This will ensure that project related complaints are resolved efficiently and in a transparent manner. While the SEP outlines a project specific GRM, all effort will be made to use the existing complaints mechanism in place in the implementing departments, to register, record and address any complaints and issues related to the project.

4.4.2 Gender Equality and its Mainstreaming

It is critical that women's perspectives are obtained and their interests factored into all aspects of the land registration, titling, resettlement planning and implementation processes.

The GoPb has instituted some measures to ensure that women's right to inheritance and property is not circumvented by male relatives. For example, Section 135A of the Punjab Land Revenue Act 1967 requires from Revenue Officers to serve notice on all owners of joint property to submit a scheme of private partition after mutation of inheritance takes place. The joint titling of land for instance addresses the risk of women being ignored in property matters or not given their due rights. Revenue officers are now bound to ask for details (CNICs and/or Form B) for all legal heirs, including females. In spite of such measures, there is still a likelihood that families may find ways to circumvent the law and disinherit females. This project will help to create systems that make such actions difficult, if not impossible.

Also in case of resettlement or eviction, addressing livelihood impacts may require intra-household analysis in cases where women's and men's livelihoods are affected differently. Women's and men's preferences in terms of compensation mechanisms, such as replacement land or alternative access to natural resources rather than in cash, will be explored.

Women mainstreaming will be considered by: (i) offering equal opportunities to women in project-related employment; (ii) developing of a gender sensitive human resources policy and outreach strategy ensuring women's participation; (iii) training of staff in gender sensitization to encourage clients to record women's name on land registry as joint ownership; and (iv) particular attention on awareness-raising regarding the regulatory framework for protection of women's rights.

4.4.3 Access and Utilization of LRMIS

The design and functionality (and on-going maintenance) of all citizen-facing websites like the LRMIS and the Land Information Portal is critical for citizens to feel confident about the maps and records being shown. These sites will be easy to navigate, and available in Urdu and English so that there is more reach and use as mostly everyone is not literate in English. Also these site will be accessible to differently abled people for instance through a voice activated technique and braille.

It will be ensured that the digital tools developed are simple and user friendly, preferably in a language understandable to the general public. It will be preferred to use mobile based tools and applications which may be more effective (android, iOS) as a majority of the people use mobile phones.

4.4.4 ARCs Locations and their User Friendly Operation for Women

These impacts will be addressed and mitigated to a large extent at the design stage. All project feasibility studies and technical designs will also take social aspects into consideration. In particular, while determining locations for building new ARCs on public land, it will be ensured that those locations are selected which do not cause any disturbance for pedestrians, traffic, and adverse impacts of the livelihood and living environment/conditions of communities living and working in the

select areas. Similarly, in accordance with the SEP, communities, particularly vulnerable groups, will be meaningfully consulted and engaged during the siting process so that their needs are prioritized and addressed, in particular

- **Access to ARCs:** When finalizing the locations for ARCs, the easy access to these ARCs aspects will be considered.
- **Design provision for vulnerable groups (e.g. women, differently-abled):** During design phase, e.g. of ARCs, it will be ensured that the needs of women and vulnerable groups such as the differently-abled are addressed.

Given that women are often not part of property registration procedures and may not be well versed with the process, specific steps will be taken to ensure that they are informed and able to use the services available at the ARCs. These measures will include separate counters and dedicated areas for the hindrance-free access to newly established ARCs for women. The counters will be manned by women staff so that there is no hesitation at any level for women to approach them. A targeted communication campaign will also focus on creating awareness among women across Punjab on the availability of ARCs for the registration and titling of land and any related questions/concerns.

4.4.5 Grievance Redress Mechanism

During the design phase, based on consultations, the existing redress platform of the implementing departments will be reviewed and strengthened in accordance with project requirements. A project specific Grievance Redress Mechanism (GRM), proportionate to the potential risks and impacts of the project, will also be established, implemented, monitored and reported on a regular basis. There has to be a robust and effective GRM in place with equal access for all including an appeals process, so that any complaints and issues are addressed in a timely manner and nobody is excluded from accessing it. The project GRM will become operational no later than 30 days after the effective date, as agreed in the ESCP, and commitment to maintain the GRM throughout the project is also reflected in the ESCP.

4.4.6 Resettlement, Eviction and Livelihood

A social, legal and institutional assessment will be required under ESS-1. The assessment will aim to identify potential risks and impacts, as well as appropriate design measures to minimize and mitigate adverse economic and social impacts, especially those that affect poor and vulnerable groups. There are chances that the informal settlers/ occupants will have to be displaced and resettled during the project activities. The project Resettlement Framework (RF), prepared under the project, will provide guidance on the preparation of the Resettlement Plan, including identification of eligible affected persons, and entitlements for encroachers as per World Bank regulations. Although no land acquisition will take place under this project, all project activities which include civil works will be screened by the project to identify any potential impacts related to resettlement. The project RF will include an Involuntary Resettlement Screening Checklist for Civil Works to be used during a rapid assessment of a site.

The resettlement impacts will be avoided or minimized as far as possible through the selection of design alternatives. Detailed scoping activities will be conducted to avoid all potential resettlement impacts of the project activities at critical locations. The project RF, among other details, includes measures to address encroachment impacts along with an entitlement matrix elaborating the compensation for different groups.

The RF will be updated and re-disclosed within 60 days of project effectiveness. The updated RF will make a further assessment of potential project impacts and provide measures for addressing the same. Site specific RPs will be prepared, in accordance with the project RF, if any resettlement/livelihood issues are involved.

4.4.7 Labor Management

This can be particularly acute in smaller communities hosting a largely male workforce (a potential scenario during the renovation/construction of ARCs), and/or a workforce from other areas which may result in conflicts between locals and non-locals concerning employment opportunities, wages, and use of public services. Mobile workers may also contribute significantly to gender-based social impacts and risks.

Risk of social conflict: Conflicts may arise between the local community and the construction workers, which may be related to religious, cultural or ethnic differences, or based on competition for local resources. Tensions may also arise between different groups within the labor force, and pre-existing conflicts in the local community may be exacerbated. Ethnic and regional conflicts may be aggravated if workers from one group are moving into the territory of the other.

Increased risk of crime: The influx of workers and service providers into communities may increase the rate of crimes and/or a perception of insecurity by the local community. This may include theft, physical assaults, substance abuse, prostitution and human trafficking.

Increased burden on and competition for public service provision: Presence of construction workers and service providers (and in some cases family members of either or both) can generate additional demand for the provision of public services, such as water, electricity, medical services, transport, etc.

Increased risk of communicable diseases: The influx of people may bring communicable diseases to the project area, including sexually transmitted diseases (STDs), or the incoming workers may be exposed to diseases to which they have low resistance. Local health and rescue facilities may also be overwhelmed and/or ill-equipped to address the accidents at the construction sites.

To mitigate the above-mentioned impacts, stand-alone Labor Management Procedures (LMP) (in accordance with ESS-2) will be prepared within 60 days after project effectiveness, and a commitment in this regard is included in the ESCP. Besides the 60-days timeline, it will also be ensured that the LMP is in place before the commencement of any works on the ground. The LMP will be applicable for all type of workers likely to be involved in the project i.e. direct workers, contract workers and primary labor. The LMP will include an assessment of potential worker related risks; an overview of labor regulations, policies and procedures; contract terms and conditions; working age regulations; mechanism for redressal of workers related grievances. However, it is not applicable to civil servants, with the exception of provisions relating to child and forced labor and occupational health and safety. Labor management requirements will be included in bidding and contract documents for all civil contractors to construct the ARCs.

4.4.8 Health & Safety

ARCs renovation/construction work, especially under Component-4, may involve health and safety related concerns for both the construction workers and the nearby communities. Mitigation measures for protecting the workers from occupational health and safety (OHS) hazards, protecting

communities from accidents, traffic management etc. have been given in Section 4.3.2 under the environmental impacts mitigations.

Field work for the project will mainly consist of land surveying, some of which may take place in hilly terrain or in otherwise physically challenging conditions. Survey work will be carried out in all instances under the occupational health and safety requirements of the concerned legislations. If contractors are hired for survey work, they will also be bound by the same legislation. In addition, their health and safety procedures will be reviewed by the relevant PIU staff before commencement of the work. Project labor will preferably be vaccinated by the time the project commences, given the government's accelerated vaccination drive. Regardless of that, project management will ensure adherence to all COVID SOPs recommended by the National Command and Operation Centre (NCOC) at the time.

4.4.9 Capacity Building of Staff on IT Skills

The digitization of the system through ICT use in the PLRA offices, ARCs and other offices can pose a risk for those office employees and field staff who have a low level of IT literacy and knowledge. These employees can therefore be marginalized under the new system. As records are digitized and roles become redundant, relevant public officials, particularly the patwaris, may lose their jobs due to lack of understanding and skills of IT-based systems. The project will emphasize capacity building of all the concerned staff with low level of IT skills and having no familiarity with the new digital system to avoid their exclusion from the project activities.

4.4.10 Effective Communication

The project will need effective communication throughout the project life to avoid impacts such as social disharmony and conflict arising from widespread disputes over land, significant risks due to the power imbalance of influential local landlords, exclusion of vulnerable/marginalized groups, due to public display of land records/information without awareness raising and information sharing, causing disruption to the field mapping exercises by the officers (patwaris) and their enablers (often large landholders), social unrest and resistance at commencement of registration due to fear of eviction after the land is registered at katchi abadis, influential/landlords wield influence and may be able to control access to information about land transactions and records, risk of insufficient public information and awareness among the project's beneficiaries, especially in areas of collective land and customary land ownership, and failure of dispute mediation and resolution due to no access to the system and information to the stakeholders.

Effective communication action plan will be prepared, based upon all possible social impacts arising from the improper communication, implemented and its progress will be monitored. As per the plan, the targeted communication campaigns will be started in the rural/remote areas and different information sessions will be organized to make women aware of formal complaint procedures. Various awareness raising and information sharing campaigns will be organized at project inception and at regular intervals targeting women in particular. The pamphlets will be prepared in both English and Urdu language and disseminated to the stakeholders, particularly outlining the registration process and role of ARCs.

4.4.11 Post Operation Phase Social Mitigation Measures

As per the Resettlement Framework, resettlement and compensation requirements will be applicable on project activities that may result in involuntary economic or physical displacement from public lands during project lifetime and up to 15 months after project completion.

5.0 Stakeholder Consultation and Disclosure

5.1 Introduction

This chapter provides a brief account of the Stakeholder Engagement Plan (SEP) so that the activities under ESMF remain aligned with the SEP. The SEP will be periodically revised and updated as necessary during the course of project implementation. Any major changes to the project related activities and to its schedule will be duly reflected in the SEP.

5.2 Potential Social and Environmental Risks

The project is being prepared under the World Bank's Environment and Social Framework (ESF) and is expected to have 'High' environmental and social risks. There are some potential types of social issues which may arise as the project proceeds. First, more disputes over land ownership are likely to come to light as cadastral maps are updated and properties registered. In Pakistan, land disputes typically take the form of inheritance related issues amongst multiple heirs; issues related to the widespread practice of not allowing daughters to claim inheritance; multiple claimants for properties who often rely on falsified documentation etc. There may be an increase in court cases registered with regard to land ownership once the mapping and registration processes are set in motion, and project staff may also face a barrage of complaints.

The second risk relates to the process of identification of state land and possible mobilization of such lands for development programs. The identification of the land itself may give rise to disputes as there is a chance that citizens will have laid claim to long-forgotten tracts of land. There is also the issue of katchi abadis or informal settlements on state land. Although the government has a notified process for regularization of such settlements, under the broad framework of the Punjab Katchi Abadis Act 1992, even then there is a possibility that some occupied land may be reclaimed for alternate use. In such cases, both government, and project specific processes require that communities living on the lands be relocated only after a series of consultations, including clear agreement on alternative locations, and amenities to be provided in the new location etc.

5.3 Stakeholder Identification and Analysis

Stakeholders include both those who are directly affected by the project and those who do not experience direct impacts, but who have an interest in how the project proceeds. The key stakeholders are listed as follows:

Government Departments

- Board of Revenue (BoR)
- Provincial Disaster Management Authority (PDMA)
- Punjab Land Records Authority (PLRA)
- Directorate of Land Records (DLR)
- Excise, Taxation and Narcotics Control
- Lahore Development Authority
- Local Government and Community Development
- Housing, Urban Development and Public Health Engineering
- Cooperative Department
- Auqaf & Religious Affairs
- Irrigation Department

- Punjab Information Technology Board
- Punjab Housing and Town Planning Agency
- Urban Unit
- Defense Housing Authority
- Cantonment Boards
- Development Authorities

Project Affected Parties

- Land owners and property owners
- Real estate renters and buyers
- Residents of katchi abadis
- Housing society
- Surveyors hired and trained
- Project staff with low IT skills

Other Interested Parties

- Skilled surveying professionals
- Elected representatives
- General Public

Disadvantaged / Vulnerable Groups

- Women inheriting property
- Residents of Katchi Abadis
- Minorities and other vulnerable groups

5.4 Phases of Stakeholder Engagement

Stakeholder engagement will take place in three phases:

- Project preparation phase
- Project implementation phase
- In the first few months after project activities have been wrapped up

5.4.1 Consultations during Preparation Phase

In the preparation stage, given time constraints and pandemic issue, engagement will be limited to interactions with program affected parties. The purpose of engagement at this stage is to apprise the stakeholder groups of planned activities, and to ensure that valid concerns of stakeholders and useful suggestions are taken on board and addressed before program activities are finalized.

One stakeholder consultation was took place on February 12, 2020 during project preparation phase. Also it is planned to conduct community level consultations, as well as discussions with experts during the preparation stage from October to December 2021, focusing mainly on project affected parties.

COVID-19 has also necessitated a new approach to consultation. Focus groups may be restricted in size. In densely populated communities where following the SOPs may have been problematic, FGDs may not be undertaken in favor of key informant interviews. Experts may be consulted through phone interviews.

5.4.2 Consultations during Implementation Phase

In the project implementation stage, consultations will be carried out with affected parties, and other interested parties and will be planned monthly or quarterly, depending on the stakeholder group, and the activities to be discussed. Vulnerable groups likely to be affected by project work will be consulted, both in separate groups, and by making sure that their representatives are included in the consultations with affected parties and others. In this phase, the emphasis will be on disseminating information on how activities are proceeding, getting feedback on impacts, and consultations on how activities can be carried out such that any negative effects (if any) are mitigated.

As the project proceeds and if COVID restrictions continue, the reliance on communication through meeting apps, and the dissemination of information through electronic and social media will continue. As COVID restrictions are relaxed, some forms of electronic communication will be replaced in communities with face to face contact through social organizers or community-based workers, and workshops or roundtables/people's assemblies will be organized.

5.4.3 Consultations post Completion

Engagement after program conclusion will focus on all identified stakeholder groups. At this stage of the process, the emphasis will be on understanding whether the project has achieved its objectives.

5.5 Summary of Consultations in PULSE Project Preparation Phase

On February 12, 2020, the mission team and PLRA held a consultation workshop, inviting 20 key public and private stakeholders regarding PULSE's activities and to present the proposed project activities, systematic registration procedures, various technical options, risks and challenges, as well as to ensure clarity of the project direction and their participation. The participants appreciated and endorsed the components and scheme, and the key suggestions received are as follows:

- Modern technologies need to be introduced to enhance efficiency and reduce cost/time/repeated tasks;
- Existing digital records/maps will be integrated to the proposed system, particularly those housed at the Excise, Taxation and Narcotics Control Department;
- Digital land records will provide a momentum to test/change current rental value tax to capital value based property tax;
- National firms and their capacity need to be examined for province-wide geodetic surveying tasks; and
- The legal and regulatory framework should be reviewed to support urban mapping and registration.

The list of the participants is attached as Annexure-2.

5.6 Strategy for Information Disclosure

An uninterrupted two-way flow of information is crucial to the success of any stakeholder engagement program. This is particularly true for projects which are likely to have widespread impacts across a range of stakeholders covering almost all income groups. Since PULSE is such a project, it is vital that accurate information is disseminated to the relevant stakeholders and the affected parties at the

beginning, and updates are provided at regular intervals as the project proceeds. It is also necessary to give stakeholders ample time to formulate their response and provide feedback during the engagement process. Various modes of communication would be used to disseminate the necessary information to the relevant stakeholders. Key messages will be conveyed in the national as well as relevant regional languages to facilitate a broader audience. The information will be disseminated using relevant strategies depending on the stakeholder group and the program stage. Stakeholders will be provided draft documents in advance of consultations.

6.0 Environmental and Social Management Framework Implementation

This chapter describes institutional arrangements for environmental and social management, the procedures and tools to assess environmental and social risks and impacts, generic environmental and social mitigation plan, monitoring framework, and capacity building of stakeholders involved in environmental and social assessment, monitoring and management.

6.1 Institutional Arrangement

The institutional arrangement for the implementation of the PULSE project activities and the environmental and social management framework is shown in Figure 7. Following is the description of institutional arrangement.

6.1.1 Board of Revenue

Board of Revenue (BoR), Government of Punjab, will be overall responsible to execute the project. The Senior Member of the Board of Revenue, will look after the project activities. Directorate of Land Records (DLR) is the attached department of BoR. Provincial Disaster Management Authority (PDMA) and Punjab Land Record Authority (PLRA) are the autonomous bodies functioning under BoR. The DLR, PDMA and PLRA will be the assistant implementing agencies of PULSE. These agencies will be responsible to execute project activities as per their scope of work defined in the project.

6.1.2 Project Steering Committee

A project steering committee (PSC) for PULSE was established on March 5, 2020 to proactively prepare and support the project. This PSC is led by the Chairman of Planning and Development Board and constituted with eleven key government authorities¹⁶. The PSC will provide overall policy direction and technical guidance for the initiation, execution and implementation of the project, as well as remedial actions in case of delays and challenges of the project activities.

6.1.3 Project Implementation Unit

BoR will operate a Project Implementation Unit (PIU) to implement PULSE activities. The PIU will be headed by a Project Director (PD) and have technical staff for carrying out core functions of the project. The technical staff will include, but not limited to, Procurement and Financial Management (FM) Specialists, Social and Management Specialists, Legal Specialist, Monitoring and Evaluation (M&E) Specialist, Communication Specialist, GRM Specialist, ICT Expert and GIS Expert. PIU PULSE will be responsible for the management of E&S safeguard requirements of the project.

6.1.4 Directorate of Land Records

The function of Directorate of Land Records (DLR) is to improve the land records service delivery in the Punjab, contributing to long lasting tenure security, increased access to land records at lower

¹⁶ The member of PULSE PSC includes: member of Board of Revenue, secretary of Finance Department, secretary of Local Government & Community Development Department, secretary of Housing & Urban Development Department, secretary of Cooperative Department, chairman of Punjab IT Board, CEO of Urban Unit, director general of Lahore Development Authority, district collector of Lahore, director of Land Records of Board of Revenue, and director of Punjab Land Record Authority.

transaction cost for the beneficiary, through a client-responsive service and increased level of tenure security of land-right holders.

6.1.5 Provincial Disaster Management Authority

The Provincial Disaster Management Authority (PDMA), Government of Punjab, is a comprehensive endeavor towards combating natural or man-induced disasters at the provincial and local level for securing lives and livelihoods of the affected people. The Geographic Information System (GIS) Center of PDMA is responsible for geospatial data management and analysis, delivering mapping services and spatial analysis in emergency situations and day-to-day work. GIS unit collects geospatial data from different sources that are maintained by other departments and agencies and combines them into a unified geospatial database. Apart from combining existing geospatial sources, GIS unit also produces basic infrastructure layers, such as administrative boundaries, education facilities, health facilities, settlements, major cities, rivers, roads, bridges, landslides, flood extents and others.

PDMA will coordinate with the Survey of Pakistan (SOP). SOP is a federal level mapping agency which will play important role in densification of geodetic reference points and acquisition of base maps, as well as technical cooperation in surveying, mapping and urban cadastre pilot.

6.1.6 Punjab Land Records Authority

Punjab Land Records Authority (PLRA) was set up through PLRA Act-2017 under the administrative control of the Board of Revenue, Government of the Punjab. The major function of the PLRA is to computerize the land record of the province for bringing about a qualitative change in the lives of people, improve service delivery and to enhance the perceived level of tenure security.

6.1.7 Three Assistant Project Implementation Units

There will be three assistant Project Implementation Units. Each assistant PIU will work under DLR, PDMA, and PLRA to support these authorities and PIU to accomplish project activities.

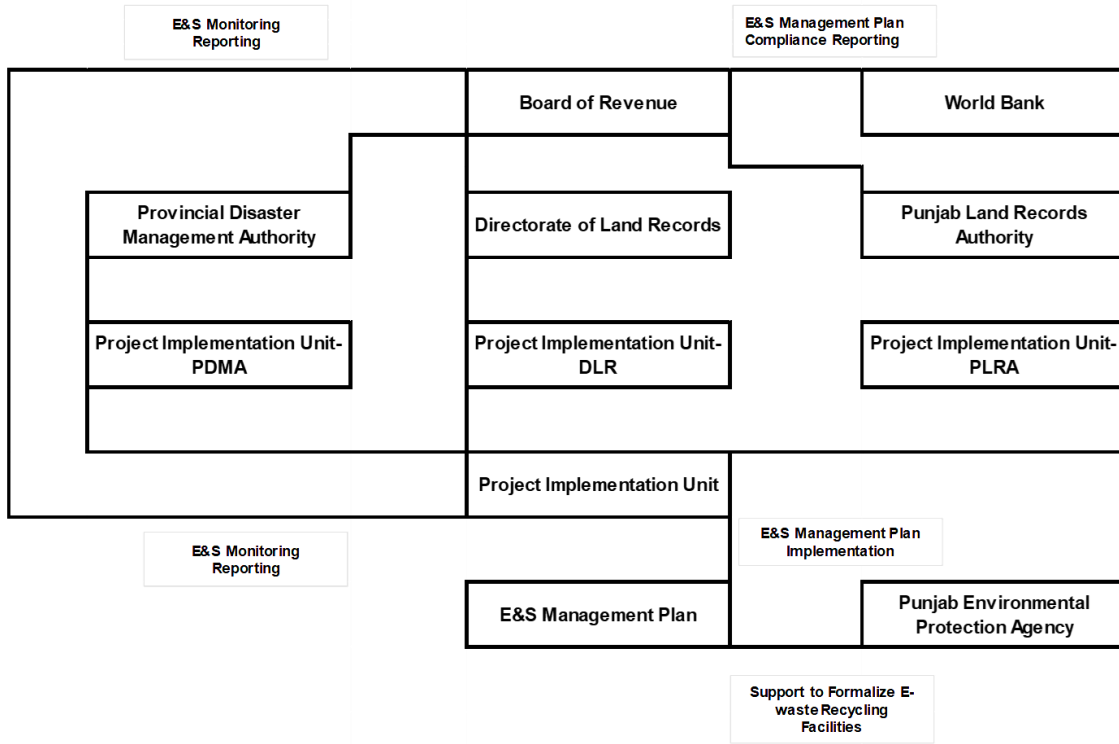
6.1.8 Project Collaboration Partners

The key departments and development authorities will support PULSE as the collaboration partners, while exercising their mandates and sharing their existing land and property records. These partners will share their land registry data and become users of the integrated LRMIS to maintain their respective land records. Administrative agreements between BoR and the key partners would be required before launching the project. These key departments and authorities include, but not limited to, ET & NC department, LG & CD department, HUD & PHE department, Cooperative department, Auqaf & Religious Affairs department, Irrigation department, PITB, PHATA, LDA, Urban Unit, DHA, Cantonment Boards, Development Authorities, Private Housing Colonies, and Societies & Industrial Zones.

6.1.9 Punjab Environmental Protection Agency

The role of Punjab Environmental Protection Agency will be to formalize the E-waste recycling facilities in the province. The agency will have to declare E-waste as hazardous material and bring it within the ambit of Punjab Hazardous Substances Rules 2018 where the E-waste recycling facilities will have to get license for operation under strict environmental, health and safety conditions.

Figure 7: Institutional Arrangement for PULSE ESMF



6.2 World Bank Requirements for Environmental and Social Management

The World Bank requires from BoR to conduct environmental and social assessment of the project proposed for Bank support in accordance with ESS1. For the project that is classified as High and Substantial risk, as well as situations in which the BoR has limited capacity, the BoR will retain independent specialists to carry out the environmental and social assessment as per ESS1 paragraph 25. The Bank requires from BoR to prepare and implement project activities so that these meet the requirements of the ESSs in a manner and a timeframe acceptable to the Bank. In establishing the manner and an acceptable timeframe, the Bank takes into account the nature and significance of the potential environmental and social risks and impacts, the timing for development and implementation of the project, the capacity of the BoR in developing and implementing the project, and the specific measures and actions to be put in place or taken by the BoR to address such risks and impacts.

6.3 Environmental and Social Assessment of the Project

6.3.1 Environmental and Social Risks and Impacts Screening

a) Environmental and Social Screening

The methods and tools to be employed for environmental and social assessment of different project activities depend on the nature and scale and the level of the risks associated with the activities. It is required to first conduct E&S screening of the project activities to ascertain their E&S risks and then on the basis of their levels, the type of method and tool to be employed for E&S assessment will be decided. E&S screening will be carried out by environmental and social specialists of the PIU after

the identification of the project activities and location. The E&S Screening Checklist is given as Annexure-1 which will be used by E&S specialists of PIU and decide to employ method and tool as per the category of the E&S risk of the specific project activity. PIU, in consultation with the Bank, will decide the risk category and the tools to be used for each project activity.

b) Environmental and Social Risk Classification

The Bank classifies all projects into one of four classifications: *High Risk*, *Substantial Risk*, *Moderate Risk* or *Low Risk*. In determining the appropriate risk classification, the Bank takes into account relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the BoR to manage the environmental and social risks and impacts in a manner consistent with the ESSs.

The Bank has classified PULSE overall as ***High Risk project due to its high social risks***. The environmental risks are moderate. There are various environmental and social issues related to project activities that will be financed under the project, as mentioned in the previous chapters. The project has been designed to deal with these issues following relevant national and international standards and various environmental and social instruments will be prepared to mitigate all potential risks and impacts.

The Bank requires the BoR to carry out appropriate environmental and social assessment of subprojects, and prepare and implement such subprojects, as follows:

(a) *High and Substantial Risk* subprojects, ESIA and ESMPs will be prepared by independent specialist in accordance with the ESSs;

(b) *Moderate Risk* and *Low Risk* subprojects, Screening Reports and ESMPs will be prepared respectively in accordance with ESSs.

6.3.2 Environmental and Social Assessment Methods and Tools

In the project, the following different methods and tools can be used to carry out the environmental and social assessment and to document the results of such assessment, including the mitigation measures to be implemented, as per the nature of the project. BoR will decide to use the methods and tools in consultation with the Bank.

- Environmental and Social Management Framework (ESMF) as per ESS-1
- Social Assessment (SA) as per ESS-1
- E-waste Management Plan as per ESS-1 and ESS-3
- Resettlement Framework as per ESS-5
- Labor Management Procedure (LMP) as per ESS-2
- Stakeholder Engagement Plan (SEP) as per ESS-10

6.4 Generic Environmental Mitigation Plan

Table 8 presents generic environmental mitigation plan for the avoiding or mitigating the potential environmental impacts identified above.

Table 8: Generic Environmental Mitigation Plan

Potential Environmental Impacts	Environmental Mitigation Measures	Responsibility	Implementation Stage
COMPONENT-1 Digital Land Records and Cadastral Maps for LRMIS			
High electrical energy consumption and GHG generation due to operation of ICTs	Procurement of energy efficient ICTs	Procurement Committee	Design stage
The digitization of land records will require procurement and use of ICTs which will ultimately result into generation of E-waste. At the start of the project, the obsolete ICTs will be replaced with the latest ICTs which will also contribute into E-waste. E-waste is hazardous which has the potential of causing environmental and health hazards when it is not stored, dismantled and recycled in environmentally safe methods.	<ul style="list-style-type: none"> ▪ Prepare E-waste Management Plan (EWMP) ▪ Implement EWMP at implementing departments 	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
COMPONENT-3 Integrated Land and Geospatial Information Systems and Services			
<ul style="list-style-type: none"> ▪ There are chances that the construction of ARCs will take place at biologically sensitive sites which can pose threat to the habitats and the biodiversity they support ▪ Construction/renovation of ARCs will generate construction related environmental, health and safety impacts. ▪ Low level short-term environmental impacts may occur in the form of drainage clogging due to improper construction waste disposal, sanitary wastewater ponding due to improper disposal arrangements at construction sites, air 	<ul style="list-style-type: none"> ▪ Screening of the sites with respect to the environmental sensitivity will be carried out. The site selection criteria will be developed and applied prior to finalization of any site for the ARC construction ▪ Prepare Construction Environmental, Health, Safety and Social (C-EHSS) SOPs and append to the bidding documents for the civil contractors ▪ Enforce the civil contractors to follow the C-EHSS SOPs at the construction sites ▪ Installation of solar photovoltaic technologies at ARCs to contribute 20-30% of renewable energy in the total energy consumption 	<ul style="list-style-type: none"> ▪ PIU-PLRA ▪ PIU, PIU-PDMA, PIU-DLR, PIU-PLRA ▪ PIU, PIU-PLRA 	<ul style="list-style-type: none"> ▪ Design stage ▪ Construction stage ▪ Operational stage

Potential Environmental Impacts	Environmental Mitigation Measures	Responsibility	Implementation Stage
<p>pollution due to dust and stack emissions, noise pollution, soil pollution, occupational health hazards due to improper management of sanitary and hazardous waste.</p> <ul style="list-style-type: none"> Energy consumption at ARCs will contribute in GHG emission 	<ul style="list-style-type: none"> Ensure operation of the installed solar photovoltaic technologies at the ARCs 		

6.5 Generic Social Mitigation Plan

Table 9 presents generic social mitigation plan for the avoiding or mitigating the potential social impacts identified above.

Table 9: Generic Social Mitigation Plan

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
COMPONENT-1			
Digital Land Records and Cadastral Maps for LRMIS			
<p>The digitization of the system through ICT use in the PLRA offices and ARCs can pose a risk for those office employees and field staff who have a low level of IT literacy and knowledge. These employees can therefore be marginalized under the new system.</p>	<ul style="list-style-type: none"> Conduct trainings to those office staff who have low level of IT skills. These trainings will be focused on IT skills and IT systems to enhance existing skills of the employees. Develop and implement the training plan. 	PIU-PLRA	<ul style="list-style-type: none"> Design stage Operational stage
<p>The digitization of private and public land records will legalize the ownership of the lands which may result in the clearing of the lands from informal settlers/occupants and render them homeless.</p>	<ul style="list-style-type: none"> Develop and implement project Resettlement Framework (RF). RF provides details to handle illegal occupants and provides an entitlement matrix for compensation before eviction from any property. Conduct social, legal and institutional assessment to ascertain the relevant issues of resettlements and their mitigation measures. 	PIU, PIU-PLRA	<ul style="list-style-type: none"> Design stage Operational stage

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
Some level of social disharmony and conflict can also be anticipated given widespread disputes over land (multiple claimants, disputed inheritance rights, customary exclusion of women and minors from rightful land shares, etc.)	<ul style="list-style-type: none"> ▪ Display the information to the public at relevant places and informing them through newspapers and other media sources, including social media. ▪ Develop and implement the communication action plan for engaging different types of stakeholders. ▪ Start targeted communication campaigns in rural/remote areas as per the plan. ▪ Organize information sessions to make women aware of formal complaint procedures or establish new complaint centers with gender sensitive design, for instance separate queues, female staff availability etc. as per the plan. 	PIU PIU-PDMA, PIU-DLR, PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Field mapping work may also pose health and safety risks for the field staff and the local communities, including the potential for communicable diseases such as the prevalent COVID-19.	Develop and enforce health and safety protocols for the field staff	PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Lack of engagement with key stakeholders in the verification process can lead to conflict in the community.	Develop and implement Stakeholder Engagement Plan (SEP) to make verification process effective.	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
The public display and dissemination of existing revenue-based maps in rural areas could have significant risks due to the power imbalance of influential local landlords, as small landholders and those without tenure may be empowered and bring to the fore existing and past disputes over tenure.	<ul style="list-style-type: none"> ▪ Organize regular stakeholder consultations and engage them in different phases of the project. ▪ Work with community based organizations to give key messages and information to different stakeholder groups. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Public display without awareness raising and information sharing may lead to exclusion of vulnerable/marginalized groups, particularly women.	Ensure effective implementation of the communication action plan specifically targeting women.	PIU PIU-PDMA PIU-DLR PIU-PLRA	Operational stage

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
The dispute mediation and resolution may fail if access to the system and information is not ensured for all types of stakeholders.	Ensure easy access of the complete land information to all the stakeholders.	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
There are chances that there would be disputes among various claimants of the lands during registration, field data collection, public consultations, display of the land records etc.	<ul style="list-style-type: none"> ▪ Implement SEP during land registration process. ▪ Conduct regular communication and consultations with key stakeholders. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	Operational stage
The inability to incorporate /consider customary forms of tenure during the registration process may negatively impact ethnic groups, minority and other vulnerable communities disproportionately, since excluding such communities from the benefits of land registration could worsen inequality	<ul style="list-style-type: none"> ▪ Work with NGOs and community based organizations to focus minorities of the areas. ▪ Work with vulnerable groups, including women's groups and legal aid groups concerned with women's inheritance and with property rights of the disadvantaged in general. ▪ Engage community in stakeholder consultations as per SEP throughout the project life. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
There is a risk of exacerbating gender inequality and gender violence if women's rights to land are not systematically protected for instance in cases of women inheriting the property.	<ul style="list-style-type: none"> ▪ Enforce Section 135A of the Punjab Land Revenue Act 1967 and mandate the revenue officers to ask for details (CNICs and/or Form B) for all legal heirs, including females. ▪ Identify and partner with NGOs and community based organizations working with vulnerable groups, including women's groups and legal aid groups concerned with women's inheritance. ▪ Redress the grievances related to GBV as a separate category within the GRM system. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	Operational stage
The officers (patwaris) and their enablers (often large landholders) may be disruptive to the field mapping exercises.	Engage these groups in the design phase of the project and address and mitigate their concerns through information sharing of benefits of innovating the land registration process.	PIU PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Limited capacity of relevant public officials to develop and implement a new settlement	Build the capacity of the relevant public officials through trainings.	PIU PIU-PMDA	<ul style="list-style-type: none"> ▪ Design stage

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
process may impact efficiency, effectiveness and timely completion of the project.		PIU-DLR PIU-PLRA	Operational stage
There may be resistance from property owners which could delay the development of cadastral maps.	Engage these key stakeholders and share information and orient them on the positive aspects of cadastral mapping.	PIU PIU-PLRA	Operational stage
Given that katchi abadis dwellers are usually, poor, often disenfranchised (in that they may not have requisite citizenship papers, id cards or any documentation of payments for land or utilities) and rarely approached by officials, their voices are in danger of being ignored or drowned out.	Pay particular attention to the needs of vulnerable groups, especially those below the poverty line, the landless, the elderly, women and those without legal title to land, and ensure their participation in consultations.	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage ▪ Post project till 15 months after project closure
There may be social unrest and resistance in katchi abadis at commencement of registration process due to fear of eviction after land is registered.	Inform all displaced persons of their entitlements and resettlement options and ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs.	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Operational stage ▪ Post project till 15 months after project closure
Possibility of evictions and therefore eventual displacement of urban poor in katchi abadis if government agencies and/or concession holders seek to reclaim land ownership and land use rights.	Develop and enforce RF for the complex and sensitive involuntary resettlement at katchi abadis (RF contains an entitlement matrix which outlines different compensation options before displacement).	PIU PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Operational stage ▪ Post project till 15 months after project closure
Multiple surveys of settlements may exacerbate disputes over ownership	<ul style="list-style-type: none"> ▪ Undertake comprehensive survey after conducting a pilot survey to avoid repeated encounters with communities and exacerbate tensions due to property ownership. ▪ Conduct small scale surveys in a low profile manner to avoid drawing attention and any potential social unrest if additional information is required. 	PIU-PLRA	Operational stage
There are chances that the project workers i.e. direct workers, working on the project directly and the construction workers, working under	As per ESS-2, BOR will develop and implement written labor management procedures (LMP) applicable to the project. These procedures will set out the way in which project	PIU	Design stage

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
the civil contractor, are treated unfairly and their labor rights compromised.	workers will be managed, in accordance with the requirements of national law and ESS-2. The procedures will address the way in which this ESS will apply to different categories of project workers including direct workers, and the way in which the BoR will require the civil contractors to manage their workers in accordance with ESS-2.		
COMPONENT-3 <i>Integrated Land and Geospatial Information Systems and Services</i>			
Women could be marginalized in case their needs are not considered while upgrading existing ARCs and equipping new ARCs.	<ul style="list-style-type: none"> ▪ Ensure that the centers have separate counters for women which are run by female staff for ease of access and comfort of women. ▪ Organize awareness raising and information sharing campaigns at project inception and at regular intervals targeting women in particular. ▪ Prepare and disseminate pamphlets in both English and Urdu language, outlining the registration process and role of ARCs. 	PIU, PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Influential/landlords wield influence and may be able to control access to information about land transactions and records.	Develop a secure and transparent system that is free from unauthorized access and interference.	PIU PIU-PLRA	Operational stage
Risk of insufficient public information and awareness among the project's beneficiaries, especially in areas of collective land and customary land ownership.	Develop and implement a communication action plan.	PIU PIU-DLR PIU-PDMA PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
The land registration and titling activities may have unintended consequences for instance restrictions on access to land, livelihood, and/or cultural resources upon which local people depend, impacting on natural resource-based livelihoods and tenure of vulnerable or marginalized households, in particular women and ethnic minority groups.	<ul style="list-style-type: none"> ▪ Implement the Involuntary Resettlement Screening Checklist for Civil Works outlined in the RF. ▪ Conduct a social, legal and institutional assessment to ascertain the relevant issues. 	PIU, PIU-PLRA	Operational stage

Potential Social Impacts	Social Mitigation Measures	Responsibility	Implementation Stage
The digital tools created need to be accessible and responsive. Only around 40% of Pakistan's population is currently use online and the vast majority of them access the internet through smartphones.	<ul style="list-style-type: none"> ▪ Ensure that the digital tools are simple and user friendly, preferably in a language understandable to the general public, for instance Urdu. ▪ Prefer to use mobile based tools and applications which may be more effective (android, ios) as a majority of the people use mobile phones. 	PIU, PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
COMPONENT-4 Project Management and Institutional Strengthening			
The GRM may not be effective in practice if vulnerable groups cannot access it and if it does not address complaints in the specified time period.	<ul style="list-style-type: none"> ▪ Establish and put in place a robust and effective GRM for land related disputes with equal access for all so that any complaints and issues are addressed in a timely manner and nobody is excluded from accessing it. ▪ Strengthen the existing systems and notify a Grievance Redress Committee. 	PIU PIU-DLR PIU-PDMA PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Operational stage
Vulnerable stakeholder voices may be excluded and their concerns not incorporated and addressed in the policies prepared.	Engage vulnerable stakeholders in all aspects of the policy process through implementing the project communication action plan and SEP and seek feedback and consensus on policy drafts.	PIU PIU-DLR PIU-PDMA PIU-PLRA	<ul style="list-style-type: none"> ▪ Design Stage ▪ Throughout project life
The sites chosen for renovation/building of new centers may have the presence of encroachers or informal settlers who are living on or using the land or facilities.	<ul style="list-style-type: none"> ▪ BoR will review and determine the potential ARC sites taking the future service needs and regionally balanced ARC allocation into consideration. ▪ Manage the informal settlers/occupants as per guidelines given in the RF. 	PIU	Design stage
In case of new construction the accompanying civil works can have occupational health and safety risks to labor and surrounding communities.	Develop Construction Environment, Health, Safety and Social SOPs, append it with the civil contracts and enforce during construction.	PIU PIU-PLRA	<ul style="list-style-type: none"> ▪ Design stage ▪ Construction stage

6.6 Monitoring Framework

Monitoring of the environmental and social mitigation plan (ESMP) is required at construction and operational phases of the project. Project monitoring is the requisite for World Bank. Monitoring will not be required by the Punjab Environmental Protection Agency (EPA) for any project activity. However, EPA role will be important to formalize the E-waste recycling facilities in the province so that E-waste generated from project activities could be handed over to the certified/licensed recyclers.

6.6.1 Design Phase Monitoring

Design phase monitoring will require to ensure that the energy efficiency specifications for the procurement of ICTs have been included in the procurement plan. Also it will be ensured that the installation of solar photovoltaic technologies are part of the ARCs design.

a) Procurement Committee

Procurement Committee for goods and consulting/non-consulting services, notified by PLRA under PPRA 2014 Procurement Guidelines, will be responsible to ensure that the energy efficiency specifications of the ICTs are mentioned in the procurement plan and in the advertisement for ICTs procurement. This committee will also be responsible to ensure that the solar photovoltaic technologies have been incorporated in the design of the ARCs to contribute about 20-30% of the renewable energy in the total energy consumption of each center.

6.6.2 Construction Phase Monitoring

There are monitoring requirements for the ESMP under environmental and social assessment for World Bank for construction phase of the project.

a) Project Implementation Units

The Board of Revenue will have an overall responsibility for the compliance of ESMP and compliance reporting to the World Bank. The Project Implementation Unit (PIU), established under PULSE for the management of PULSE project activities, will overall supervise the monitoring and compliance of ESMP during construction phase. PIU of PLRA will be directly involved to monitor construction phase compliance and reporting to the PULSE PIU.

The Environment and Social professionals under PIUs will take care of environmental and social aspects of the project activities. PIUs will arrange environmental and social monitoring and prepare compliance reports and submit to the World Bank, to fulfill their monitoring, reporting and compliance requirements of environmental and social safeguard.

The Construction Environmental, Health, Safety and Social (C-EHSS) SOPs will be prepared and appended to the bidding document for the civil contractors. It will be a standard document. The contractors will follow these SOPs to eliminate, offset or reduce environmental, social and health and safety impacts during construction of the ARCs.

The compliance of C-EHSS SOPs will be the responsibility of the contractor and compliance cost will be added in the bidding documents. The PIUs will be responsible to ensure compliance of SOPs during construction phase through contractors. The compliance will require measurements

of environmental and social parameters, and observations at the construction sites to evaluate compliance.

6.6.3 Operation Phase Monitoring

The Project Implementation Unit of PULSE and assistant PIUs will be responsible to monitor the ESMP during operational phase.

a) Project Implementation Units

The PIU of PULSE will be overall responsible for the monitoring of the ESMP of the project. The assistant PIUs under PDMA, DLR and PLRA will support PULSE PIU and monitor the ESMP of their respective departments and report to the PULSE PIU. PULSE PIU will report the ESMP compliance progress to BoR. BoR will report the compliance to World Bank.

The assistant PIUs will be responsible to monitor the compliance of E-waste Management Plan in their respective departments. They shall ensure that the inventory of the E-waste is properly maintained, stored and handed over to the certified recyclers (at a time when certified recyclers will be available).

PIU-PLRA will be responsible to ensure that the solar photovoltaic technologies installed at ARCs are functional and contributing about 20-30% of renewable energy in the total energy consumption of each center.

The monitoring plan is presented in Table 10.

Table 10: Environmental and Social Mitigation and Monitoring Plan

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
COMPONENT-1 Digital Land Records and Cadastral Maps for LRMIS			
Procurement of energy efficient ICTs	Procurement Committee	Ensure that the ICTs are procured as per the energy efficiency specifications provided in the advertisement	Procurement stage
Prepare E-waste Management Plan (EWMP) Implement EWMP at implementing agencies	PIU , PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure EWMP is practical and as per the requirements of the project Ensure E-waste inventory is maintained, stored and handed over to the recyclers as per the plan	<ul style="list-style-type: none"> ▪ At the start of the project when obsolete ICTs will be discarded ▪ Throughout project life
Develop and implement Stakeholder Engagement Plan (SEP) to make verification process effective	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that the SEP is implemented and its progress is reported in the project quarterly reports	Throughout project life
Develop and implement communication action plan targeting women and vulnerable stakeholders	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that the action plan is developed and is operationalized as per project requirements and context	Throughout project life
<ul style="list-style-type: none"> ▪ Conduct trainings to those office staff who have low level of IT skills. These trainings will be focused on IT skills and IT systems to enhance existing skills of the employees. ▪ Develop and implement the training plan. 	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that the training plan is prepared as per the training need assessment and trainings are carried out as per the plan	Throughout project life
Conduct social, legal and institutional assessment to ascertain the relevant issues of resettlements and their mitigation measures	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that specific assessments are carried out to specify and mitigate the risks of various activities	At the start of the project

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
Develop and implement project Resettlement Framework (RF). RF provides details to handle illegal occupants and provides an entitlement matrix for compensation before eviction from any property	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that the project RF is developed and all the potential displaced persons are compensated according to the entitlement matrix and maintain a record of disbursements.	Operational phase of the project
<ul style="list-style-type: none"> ▪ Display the information to the public at relevant places and informing them through newspapers and other media sources, including social media. ▪ Develop and implement the communication action plan for engaging different types of stakeholders. ▪ Start targeted communication campaigns in rural/remote areas as per the plan. ▪ Organize information sessions to make women aware of formal complaint procedures or establish new complaint centers with gender sensitive design, for instance separate queues, female staff availability etc. as per the plan. 	PIU PIU-PDMA, PIU-DLR, PIU-PLRA	<ul style="list-style-type: none"> ▪ Ensure that the relevant information are displayed properly at conspicuous places and communicated through all social, electronic and print media. ▪ Ensure effective communication action plan is developed. ▪ Ensure effective campaigns are launched at rural/remote areas as per plan and record feedback of the target community. ▪ Ensure effective information sessions are organized for women at appropriate localities as per the plan. 	Throughout project life
Develop and enforce health and safety protocols for the field staff	PIU-PLRA	Ensure effective health and safety protocols are developed and adopted by the field staff	During field surveys
<ul style="list-style-type: none"> ▪ Organize regular stakeholder consultations and engage them in different phases of the project. ▪ Work with community based organizations to give key messages and information to different stakeholder groups. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	Ensure that regular stakeholder consultations are carried out and community based organizations are engaged during different phases of project.	During project life

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
Ensure easy access of the complete land information to all the stakeholders	PIU PIU-PDMA PIU-DLR PIU-PLRA	Ensure that information related with the land records is easily accessible to all the stakeholders.	During project life
<ul style="list-style-type: none"> ▪ Work with NGOs and community based organizations to focus minorities of the areas. ▪ Work with vulnerable groups, including women’s groups and legal aid groups concerned with women’s inheritance and with property rights of the disadvantaged in general. ▪ Engage community in stakeholder consultations as per SEP throughout the project life. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	Ensure that the NGOs, community based organizations, vulnerable groups (including women), legal aid groups and the community are engaged in all the stakeholder consultations as per SEP	During project life
<ul style="list-style-type: none"> ▪ Enforce Section 135A of the Punjab Land Revenue Act 1967 and mandate the revenue officers to ask for details (CNICs and/or Form B) for all legal heirs, including females. ▪ Redress the grievances related to GBV as a separate category within the GRM system. 	PIU PIU-PDMA PIU-DLR PIU-PLRA	<ul style="list-style-type: none"> ▪ Ensure that the Section 135A of the Punjab Land Revenue Act 1967 is fully enforced. ▪ Ensure that grievances related with GBV are addressed in the project GRM 	During project life
Engage these groups (patwaris and large landholders) in the design phase of the project and address and mitigate their concerns through information sharing of benefits of innovating the land registration process	PIU PIU-PLRA	Ensure that patwaris and large landholders are engaged and consulted during stakeholder consultation process	During project life
Pay particular attention to the needs of vulnerable groups of the katchi abadis, especially those below the poverty line, the landless, the elderly, women and those without legal title to land, and ensure their participation in consultations	PIU PIU-PDMA PIU-DLR PIU-PLRA	Ensure these groups of the katch abadis are fully engaged during stakeholder consultations at katch abadis	During project life
Inform all displaced persons of their entitlements and resettlement options of katchi abadis and ensure their participation in planning, implementation, and monitoring and evaluation of resettlement programs	PIU PIU-PDMA PIU-DLR PIU-PLRA	As above	During project life

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
<ul style="list-style-type: none"> ▪ Undertake comprehensive survey after conducting a pilot survey to avoid repeated encounters with communities and exacerbate tensions due to property ownership. ▪ Conduct small scale surveys in a low profile manner to avoid drawing attention and any potential social unrest if additional information is required. 	PIU-PLRA	Ensure that surveys are carried out in amicable manner to avoid tension and social unrest among the communities.	Operational phase
COMPONENT-3 <i>Integrated Land and Geospatial Information Systems and Services</i>			
<ul style="list-style-type: none"> ▪ Ensure that the ARCs have separate counters for women which are run by female staff for ease of access and comfort of women. ▪ Prepare and disseminate pamphlets in both English and Urdu language, outlining the registration process and role of ARCs. 	PIU, PIU-PLRA	<ul style="list-style-type: none"> ▪ Ensure ARCs have separate counters for women with female staff. ▪ Ensure pamphlets are prepared in English and Urdu and distributed among the target communities 	During project life
Develop a secure and transparent system that is free from unauthorized access and interference	PIU PIU-PLRA	Ensure transparent and secure system of land records in place which does not allow interference of the unauthorized persons.	During project life
<ul style="list-style-type: none"> ▪ Ensure that the digital tools are simple and user friendly, preferably in a language understandable to the general public, for instance Urdu. ▪ Prefer to use mobile based tools and applications which may be more effective (android, iOS) as a majority of the people use mobile phones 	PIU, PIU-PLRA	Run trials of all the digital tools deployed and get feedback from the stakeholders for their easy to use and understanding	During start of the project
COMPONENT-4 <i>Project Management and Institutional Strengthening</i>			
<ul style="list-style-type: none"> ▪ Establish and put in place a robust and effective GRM for land related disputes with equal access for all so that any complaints and issues are addressed in a timely manner and nobody is excluded from accessing it. ▪ Strengthen the existing systems and notify a Grievance Redress Committee. 	PIU, PIU-DLR, PIU-PDMA, PIU-PLRA	Record the number of public grievances received monthly, quarterly, and annually) and number of those resolved within the prescribed timeline	During project life

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
Engage vulnerable stakeholders in all aspects of the policy process through implementing the project communication action plan and SEP and seek feedback and consensus on policy drafts	PIU PIU-DLR PIU-PDMA PIU-PLRA	Ensure SEP and communication action plan are fully implemented and the stakeholder feedback is considered while preparing policies	During project life
Screening of the sites with respect to the environmental sensitivity will be carried out. The site selection criteria will be developed and applied prior to finalization of any site for the ARC construction	PIU-PLRA	Ensure site selection criteria is developed Ensure that the screening of the sites is carried out as per the criteria	Design stage
<ul style="list-style-type: none"> ▪ Prepare Construction Environmental, Health, Safety and Social (C-EHSS) SOPs and append it to the bidding documents for the civil contractors. ▪ Enforce the civil contractors to follow the C-EHSS SOPs at the construction sites. 	PIU, PIU-PDMA, PIU-DLR, PIU-PLRA	Ensure that the C-EHSS SOPs cover all aspects of environment, health, safety and social and practical to be implemented by the contractors on ground Ensure through checklists that the civil contractors follow the SOPs at construction sites	<ul style="list-style-type: none"> ▪ Design stage Construction stage
<ul style="list-style-type: none"> ▪ Installation of solar photovoltaic technologies at ARCs to contribute 20-30% of renewable energy in the total energy consumption. ▪ Operation of the installed solar photovoltaic technologies at the ARCs. 	PIU, PIU-PLRA	Ensure the installation of solar PV technologies at ARCs Ensure the operation of solar PV technologies at ARCs Keep record of energy consumption from all sources i.e. grid, generators and solar PV and assess the percent contribution of renewable energy in the total energy consumption	<ul style="list-style-type: none"> ▪ Construction phase Operational phase
<ul style="list-style-type: none"> ▪ BoR will review and determine the potential ARC sites taking the future service needs and regionally balanced ARC allocation into consideration. 	PIU	<ul style="list-style-type: none"> ▪ Ensure that the ARCs sites are selected which none or least displacement of the 	During project life

Environmental and Social Mitigation Measures	Monitoring Responsibility	Monitoring Requirements/Parameters	Monitoring Frequency
Manage the encroachers or informal settlers as per guidelines given in the RF.		encroachers or informal settlers. ▪ Ensure that the informal settlers/occupants are treated as per the guidelines given in the RF.	
Implement the Involuntary Resettlement Screening Checklist for Civil Works outlined in the RF	PIU, PIU-PLRA	Ensure that checklist is followed to ascertain the issues and their resolution	During project life

6.7 Capacity Building

Capacity building will be required for the stakeholders involved for the implementation, supervision, monitoring, evaluation, and reporting of the mitigation measures during construction and operational phases of the project. This section describes the capacity building requirements for the stakeholders involved.

Following are the key stakeholders involved for the accomplishment of the environmental and social safeguard requirements of the PULSE project:

- Project Director (PD)
- PIU PULSE (Social Specialist, Environmental Specialist, Legal Specialist, M&E Specialist, Communication Specialist, GRM Specialist)
- PIU-PDMA
- PIU-DLR
- PIU-PLRA
- Contractors (CONTs)

Table 11 presents detail of trainings required for the capacity building of above mentioned key stakeholders on environmental and social safeguard requirements.

Table 11: Training Requirements

#	Trainings (Resource Person)	Key Stakeholders (Frequency)					
		PD	PIU PULSE	PIU PDMA	PIU DLR	PIU PLRA	CONTs
1	Overview of Project, its Activities and their Environmental and Social Impacts and Mitigation Measures, E-waste Management Plan (EWMP)	■	■	■	■	■	
	<i>(Environmental/Sociologist)</i>	<i>Once at start of the project</i>					
2	Construction Environmental Health Safety and Social (C-EHSS) SOPs	■	■	■	■	■	■
	<i>(Environmental & Sociologist)</i>	<i>Once at start Once for every contractor</i>					
3	Environmental & Social Monitoring and Evaluation/Social Assessment and Compliance Reporting Requirements	■	■	■	■	■	
	<i>(Environmental & Sociologist)</i>	<i>Once at start</i>					
4	Labor Management Procedures (LMP), Grievance Redress Mechanism (GRM), Stakeholder Engagement Plan (SEP), Resettlement Framework (RF), Communication Action Plan	■	■	■	■	■	
	<i>Sociologist</i>	<i>Once at start</i>					

7.0 Grievance Redress Mechanism

This section lays out the existing grievance redress mechanisms (GRM) currently in place in the implementing departments responsible for project implementation, in addition to delineating proposed GRM procedures for the project itself. As per World Bank requirements, GRM systems are an integral component of the project administration. As per ESS-10, the BoR will require to respond to concerns and grievances of project affected parties related to the environmental and social performance of the project in a timely manner. For this purpose, BoR will propose and implement a mechanism to receive grievances and facilitate resolution of these concerns and grievances.

7.1 Existing Mechanisms

PLRA: The PLRA has a fairly well developed complaint registration system wherein a third party manages a complaint logging system for the Authority. The general public can either reach the PLRA through a UAN number, or through the website.¹⁷ The website asks the user to specify nature of complaint and gives three options – 1) delay; 2) corruption and 3) general. Complainants are required to provide details of identification (name, CNIC number, phone number, email); and specify nature of complaint. Adding documents or writing an explanatory message is optional. PLRA is represented on social media, with a Facebook page, and a YouTube channel (featuring two videos which were uploaded some years ago). There is a Twitter account associated with the Authority, but it is not operational at the moment.

PDMA: The Punjab Information Technology Board (PITB) hosts a Disaster Helpline for the PDMA, which can be used by citizens to file complaints.¹⁸ As with all PITB helpline systems, the complaints are registered, and a ticket number issued against each complaint. Complaints are assigned to relevant officers to deal with, and progress on resolution can be tracked online. When the complaint is redressed, or if the officer needs to more information, he or she contacts the complainant.

Chief Minister Punjab Complaint Cell: Chief Minister Punjab complaint cell is operated through PITB call center. PITB is also operating call center to receive complaints from the Government departments. The employees can lodge complains against their superiors at this portal. However, the departmental complaint register is limited to certain departments only such as health, education etc.

7.2 GRM Systems for the Project

A Grievance Redress Committee (GRC) will be constituted at the main PIU, managed by a Social Development Specialist (SDS). Other than the SDS, the Committee will draw on existing resources at the BoR and will comprise of five additional members as follows.

¹⁷ <http://rodportal.punjab-zameen.gov.pk/complaint-page>

¹⁸ <http://pdma.gop.pk/helpline>

Designation	Parent Department
Head of the GRC	BoR
Director GRC	DLR
Social Development Specialist (SDS)/Secretary to GRC	PIU
Members from PLRA and PDMA	3 members

A designated officer from the BoR will serve as Head of the GRC. An officer with experience of working on the LRMIS from DLR will serve as Director GRC. Both these officers will work at their parent departments, but will be available to the GRC to decide on complaints that need responses from senior officials or inter-departmental cooperation, or which are otherwise complex in some way. Day to day issues will be handled by the SDS, with assistance from the main PIU and Assistant PIU staff.

7.3 GRM System Operation

As a first step, an online complaint registration system will be set up for the project, which will also link with the PLRA's existing system. Thus it will pick up relevant complaints from the website and social media, as well as complaints registered on it directly. Complaint registration will be structured such that complaints can be entered directly on the project website (in English or Urdu); can be posted to a designated address as letters or written messages; or can be narrated to operators on a helpline. All complaints, however made, will be consolidated into a database on a daily basis, and separated by location as well as nature of grievance.

As a second step, grievances/complaints will be screened and classified into three categories by order of priority, with those requiring instant action being classified as high priority. A set of criteria will be made to determine what sort of grievances/complaints fall into which category. All registered grievances/complaints will be acknowledged through a text message or phone call. If no telephone number is supplied by the complainant, he or she will be asked through a letter to check back with the main PIU. This acknowledgement will be issued within one day of receipt of the grievance/complaint. Each complainant will be given an estimated timeframe for resolution of the grievance/complaint.

Grievances will be investigated and resolved within the timeframe specified, which will not be longer than ten days. If resolution demands longer than this timeframe, the complainant will be informed, and will be contacted by staff from the main PIU or Assistant PIUs to explain details of the issue. Grievances which require cooperation of a number of departments, or which are otherwise complicated, will be referred to the GRC who will specify how resolution is to take place. Records of all grievances/complaints will be maintained in a database, including details of actions taken to resolve the issue, and dates on which resolution was effected. At the conclusion of action to solve grievances, the complainants will be informed of the outcome. Two days after action is closed and complainants informed, they will be contacted again to ensure that they are satisfied with the work done. The system will include a system for Appeals. If a complainant remains unsatisfied, he/she will be able to lodge an appeal, which will be escalated to the Head of the GRC or the Director.

7.3.1 Handling Gender Based Violence (GBV) issues

The project will be particularly sensitive to GBV, given that its key stakeholders include marginalized communities, whose women may be particularly vulnerable to abuse over property matters. Grievances related to GBV will be handled as a separate, category within the GRM system. The PIU staff responsible for receiving complaints, the SDS and Resettlement Specialist will receive training on receiving complaints regarding GBV from a certified and reputable organization/NGO focusing on issues of GBV. The organization will also draw up a list of established service providers who can provide support to GBV survivors and all relevant cases will be referred accordingly.

8.0 Budget

This chapter describes the tentative budget for the environmental and social assessment of project activities and compliance of ESMP during construction and operational phases of the project.

8.1 Tentative Budget

The tentative budget under different cost head is mentioned in Table 12. Total tentative budget for the compliance of environmental and social safeguard requirements is about Rs.405 million.

Table 12: Tentative Budget for Environmental & Social Assessment and Compliance

All Costs are in Pak Rupee (PKR)

#	Cost Head	Unit Cost	No. of Units	Total Amount
A- Environmental & Social Assessment (Lump Sum Unit Cost)				
1	Social assessment of the project (SA)	4,000,000	1	4,000,000
2	Preparation of Construction Environmental Health, Safety and Social (C-EHSS) SOPs	3,000,000	1	3,000,000
Total-A				7,000,000
B- Construction Phase C-EHSS SOPs Implementation <i>(PPE, fire safety equipment, septic tanks, noise barriers, first aid, solid waste management, water sprinkling)</i>				
3	Construction of ARCs	1,000,000	36	36,000,000
Total-B				36,000,000
C-Training				
4	Training cost for 4 trainings	500,000	4	2,000,000
Total-C				2,000,000
D- Operation of PIUs for E&S Management (for 5 Year)				
5	PIU cost for E&S management (Salary of Project Director (01), Environmental Specialists (04), Social Specialists (04), Legal Specialists (04), M&E Specialists (04), Communication Specialists (04), and GRM Specialists (04), and operational expenses of the 04 PIUs)	72,000,000	5	360,000,000
Total-D				360,000,000
Grand Total				405,000,000

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2. Government of Pakistan, "Pakistan Environmental Protection Act, 1997"
3. Government of Pakistan, "Climate Change Policy, 2012"
4. Government of Pakistan, "Climate Change Act, 2016"
5. Government of Pakistan, "Pakistan Penal Code"
6. Government of Pakistan, "Hazardous Substance Rules, 2003"
7. Government of Pakistan, "Land Acquisition Act, 1894"
8. Government of Pakistan, "Building Energy Code"
9. Government of Punjab, "Punjab Environmental Policy, 2015"
10. Government of Punjab, "Punjab Environmental Protection Act, 2012"
11. Government of Punjab, "Punjab Growth Strategy, 2023"
12. Government of Punjab, "The Punjab Wildlife (Protection, Preservation, Conservation and Management) Act, 1974"
13. Government of Punjab, "Punjab Local Government Act, 2019"
14. Government of Punjab, "The Punjab Occupational Safety and Health Act, 2019"
15. Government of Punjab, "Punjab Hazardous Substance Rules, 2018"
16. Government of Punjab, "Punjab Land Acquisition Rules, 1983"
17. Government of Punjab, "Lahore Development Authority Land Use Rules, 2020"
18. Government of Punjab, "Lahore Development Authority Building and Zoning Regulations, 2019"
19. Government of Punjab, "Multan Development Authority Building and Zoning Regulations, 2007"
20. Government of Punjab, "Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009"
21. Government of Punjab, "Punjab Private Housing Schemes and land Sub-division Rules, 2010"
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26. Government of Punjab, "The Punjab Office of the Ombudsman Act, 1997"
27. Government of Pakistan, "Open Government Partnership"
28. Key Findings Report, Pakistan Social and Living Standards Measurements (PSLM) Survey, District Level (2019-20)
29. FAO, Climate Smart Agriculture for Punjab, Pakistan
30. FAO, Agro Ecological Zones of Punjab, Pakistan, 2019
31. Agriculture Department, Government of Punjab, Punjab Irrigated Agriculture Productivity Improvement Project, Executive Summary Environmental and Social Assessment, 2011
32. Government of Punjab, "Punjab Procurement Rules, 2014"
33. World Bank, "Environmental and Social Framework", Washington, DC, 2017
34. <https://health.punjab.gov.pk/PunjabHealthProfile.aspx>

ANNEXURE-1: Environmental and Social Screening Checklist

Checklist to be followed for Environmental and Social Screening during the sub-project screening has been provided below. Environmental and social specialists of PIU must complete the screening for each sub-project by filling out the checklist below.

Name of the Project:	
Sub-Project/Project Activity:	
Sub-Project/Activity location:	
Implementing Department:	
Contact:	
ENVIRONMENTAL AND SOCIAL SCREENING CHECKLIST QUESTIONNAIRE	
(must be filled out for every sub-project)	

Sub-project description

No	Project Overview Questions	
1	Details of the proposed sub-project activities (Provide information on type of activities/facilities to be implemented/constructed, capacity, main facilities/equipment to be installed/used. Please also attach schematic diagram if available)	
2	Location of the Project Sites, Current Land Use (Provide information for all sites involved in the sub-project; including for Linked activities / associated facilities), any historic land use (related to heritage, or contamination), sensitive habitats and receptors. Please also explain alternative locations considered. Site Survey No./s (attach map) with ownership details, Geographical co-ordinates of the site location [including any off-site sub-components (attach map) Also, mention disaster zones? (Earthquake, Cyclone, etc.)	
3	Land Area proposed to be used	
4	Quantity of Water Required for Construction and Annual Operations with Details of Source/s	
5	Power Required and Source of Power	
6	Construction/implementation period	
7	Number of workers to be employed (including potential to mobilize workers from other countries)	

Environmental and Social Conditions and Risks

No	Environmental and Social Risk Questions	YES / NO	Unknown	Notes
1	Does the proposed activity include new construction and extension of activity?			
2	Does the proposed activity include rehabilitation activities?			

No	Environmental and Social Risk Questions	YES / NO	Unknown	Notes
3	Does the proposed activity require NOC from the environmental authorities?			
4	What type of E&S assessment required for the proposed activity under National legislation?			
5	Does the proposed activity require specific public consultations under the national legislation?			
6	Will the project contribute to any long term significant adverse (negative), large scale, irreversible, sensitive impact at a regional scale or area broader than the project sites?			
7	Will the project use natural resources such as land, water, materials, or energy, particularly any resources which are non-renewable or in short supply?			
8	Will the project activities be performed in or potentially affects archaeological or cultural heritage site?			
9	Will the project activities be source of dust, pollutants or some hazardous, toxic, or harmful substances in the air?			
10	Will the project be source of greenhouse gases or ozone depletion substances?			
11	May the project cause microclimate changes?			
12	Will the project be source of noise and vibration?			
13	Will the project generate significant quantities of waste (hazardous, nonhazardous, inert waste)?			
14	Total extent of land where the waste will be dumped openly / or expected to get contaminated by waste or leachate/material storage			
15	Will the Project involve the use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?			
16	Will the project generate additional releases of wastewater?			
17	Are there any risks of contamination of surface waters due to the proposed sub-project?			
18	Are there any risks of contamination of ground waters due to the proposed sub-project?			
19	Are there any activities which will lead to physical changes of the water body?			

No	Environmental and Social Risk Questions	YES / NO	Unknown	Notes
20	Will the project contribute to pollution of international waters?			
21	Are there any risks of physical changes of the terrain, soil pollution, sediment loads, erosion, etc.?			
22	Does the project involve cutting and filling/ blasting etc.?			
23	Will the project involve any quarrying/ mining etc.?			
24	Will the project involves use of pesticides or fertilizers?			
25	Are there any areas on or around the location that are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the Project?			
26	Will the project be located in or near some sensitive or protected area?			
27	Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the Project?			
28	Will this project affect some critical habitats (forest, wetlands, marshlands, aquatic ecosystems)?			
29	Will this project affect some endangered plant/s?			
30	Will this project affect some endangered animal species?			
31	Will the project require cutting of Trees / Loss of Vegetation? If yes, please provide the expected numbers/areas.			
32	Is there a right to way issue or need for land acquisition?			
33	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the Project?			
34	Are there any transport routes on or around the location that are susceptible to congestion or which cause environmental problems, which could be affected by the project?			
35	Does the project location cover a previously undeveloped area where there will be loss of green field land?			

No	Environmental and Social Risk Questions	YES / NO	Unknown	Notes
36	Are there existing land uses within or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying that could be affected by the Project?			
37	Are there areas within or around the location which are densely populated or built up, that could be affected by the Project?			
38	Will the implementation of project may cause physically displacement of individuals, families, or businesses?			
39	Will the project need temporary or permanent land acquisition?			
40	Will the project involve temporary or permanent impacts on livelihood?			
41	Does project involve vulnerable and disadvantaged groups of the society?			
42	Does the project cause impact on community assets?			
43	Does the project cause impact on community health and safety?			
44	Does project involve workers?			
45	Does construction workers include women and children?			
46	Does project may cause health and safety impacts on workers?			
47	Does project pose safety risks to the public?			

Project Categorization prepared by ES Specialist: _____

Name and signature of person(s) prepared: _____

Date: _____

Categorization of the Risk	<input type="checkbox"/> Low Risk	<input type="checkbox"/> Moderate Risk	<input type="checkbox"/> Substantial Risk	<input type="checkbox"/> High Risk
	The Applicant need to prepare:	The Applicant need to prepare:	The Applicant need to prepare:	The Applicant need to prepare:
	ESMP	ESMP or ESIA	ESIA	ESIA
Approval				

Project Categorization issued World Bank E&S Specialist: _____

Signature of responsible person: _____

Date: _____

ANNEXURE-2: List of Participant at Consultation Workshop

#	Name	Designation	Organization
1	Saeed Qadir	SO (RLE/PPB)	Finance Department
2	Mian Halib Khalid	-	Local Government & Community Development
3	Rizwan Sherwani	Director	Excise and Taxation
4	Farrukh Hayat	Director	Cooperative Department
5	Fakhar Dogar	DC	Colonies Department
6	Urooj Saeed	Sr. GIS Specialist	Urban Unit
7	Sajid Latif	Director General (E-GN)	Punjab Information Technology Board
8	Kamran Pervaiz	Director	Lahore Development Authority
9	Reema Aftab	Director (LD & EM)	Rawalpindi Development Authority
10	Mehar Ayoub	Director	Faisalabad Development Authority
11	M. Anwar	Director	Multan Development Authority
12	M. Baker Bhatti	ADG M.DA	Gujranwala Development Authority
13	Rana Khalid Mahmood	Director General	Katch Abadis
14	Malik Ghulam Farid	Chief (GIT)	Planning and Development Borad
15	Malik Aslam	AD Record	Defense Housing Authority
16	Others		Housing and Urban Development Department, Legal Department, Revenue Department, Economic Research Department, DC Lahore, Bahria Town

ANNEXURE-3: E-waste Management Plan