



**ASIAN INFRASTRUCTURE
INVESTMENT BANK**

PD000214-PAK
Nov. 30, 2021

**Project Document
of the Asian Infrastructure Investment Bank**

Sovereign-backed Financing

**Islamic Republic of Pakistan
Khyber Pakhtunkhwa Cities Improvement Project**

Currency Equivalents

(As at June 20, 2021)

Currency Unit – Pakistani Rupee (PKR)

PKR1.00 = USD0.00638

USD1.00 = PKR156.669

Borrower's Fiscal year

July 1 – June 30

Weight and Measures

1 gallon (g)	=	4.546 liter (l)
1 liters per second (lps)	=	22,824.47 gallons per day (gpd)
1 Hectare (Ha)	=	2.4710 acre

Abbreviations

ADB	Asian Development Bank	lpcd	liters per capita per day
AIB	Asian Infrastructure Investment Bank	MBT	Mechanical Biological Treatment
CAP	Corrective Action Plan	MGD	Million Gallons per Day
CIU	City Implementation Unit	MRF	Material Recovery Facility
EIA	Environmental Impact Assessment	MSW	Municipal Solid Waste
EIRR	Economic Internal Rate of Return	NRW	Non-Revenue Water
EMP	Environmental Management Plan	O&M	Operations and Maintenance
ENPV	Economic Net Present Value	OHS	Occupational Health and Safety
ESP	Environmental and Social Policy	P&DD	Planning and Development Department
FM	Financial Management	PMSCS	Project Management and Construction Supervision Consultants
GAP	Gender Action Plan	PMU	Project Management Unit
GDP	Gross Domestic Product	PPM	Project-affected People's Mechanism
GHG	Greenhouse Gas	PPMS	Project Performance Monitoring System
GoKP	Government of Khyber Pakhtunkhwa	PPP	Policy on Prohibited Practices
GRC	Grievance Redress Committee	PRF	Project Readiness Financing
GRM	Grievance Redress Mechanism	RDF	Refuse Derived Fuel
IEE	Initial Environmental Examination	SAMA	Services and Assets Management Agreement
IMF	International Monetary Fund	SCADA	Supervisory Control and Data Acquisition
IP	Indigenous Peoples	SDDR	Social Due Diligence Report
IR	Involuntary Resettlement	STP	Sewage Treatment Plant
IVS	Independent Valuation Study	SWM	Solid Waste Management
km	Kilometer	SWTP	Surface Water Treatment Plant
KP	Khyber Pakhtunkhwa Province	TMA	Tehsil Municipal Administration
KPCIP	Khyber Pakhtunkhwa Cities Improvement Project	WASH	Water, Sanitation and Hygiene
LAR	Land Acquisition and Resettlement	WBDC	Women Business Development Center
LARP	Land Acquisition and Resettlement Plan	WSSC	Water and Sanitation Services Company
LGRDD	Local Government and Rural Development Department		

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1. Summary Sheet

Project No.	000214
Project Name	Khyber Pakhtunkhwa Cities Improvement Project
AIIB Member	Islamic Republic of Pakistan
Borrower	Islamic Republic of Pakistan
Project Implementation Entity/ Implementation Agencies	Government of Khyber Pakhtunkhwa (GoKP), City Governments and Water & Sanitation Services Companies (WSSC) of participating cities (Abbottabad, Kohat, Mardan, Peshawar and Mingora)
Sector	Urban
Sub-sector	Water and Sanitation, Solid Waste Management, Green Urban Infrastructure
Project Objective	The objectives of the project are to improve access to reliable and resilient urban services and strengthen institutional capacities of urban service providers and local governments in selected cities of the KP province.
Project Description	<p>The project will support the Government of Khyber Pakhtunkhwa to construct, rehabilitate and revitalize core urban infrastructure, including water supply, sewerage, solid waste management (SWM) and green urban spaces in five provincial cities namely Peshawar, Abbottabad, Kohat, Mardan and Mingora. This will be achieved through three interlinked outputs: (i) climate resilient and gender friendly urban infrastructure and services improved; (ii) institutional capacities of urban service providers strengthened; and (iii) women's role in urban development increased. Project components include:</p> <ul style="list-style-type: none"> • Component A (Water Supply and Sanitation) will improve the coverage and access to water and sanitation infrastructure by augmenting potable water supply and storage facilities, promoting water safety, improving water conservation, upgrading sewerage networks and constructing new sewage treatment facilities. • Component B (Solid Waste Management) will address the gaps in infrastructure and service delivery of SWM by providing collection equipment, vehicle fleets, mechanical/biological treatment facilities and properly designed sanitary landfills. • Component C (Green Urban Infrastructure) will finance the development of green infrastructure and public spaces to promote healthy and sustainable living environments which will include green spaces, de-congestion of city centers, parks, and other nature-based solutions.

	<p>Gender-equitable activities to promote small enterprises and skills will also be supported.</p> <ul style="list-style-type: none"> • Component D (Institutional Strengthening and Capacity Building) will strengthen technical and institutional capacities of the Water and Sanitation Services Companies, city governments and provincial governments. • Component E (Women’s Participation in Urban Development) will increase women’s participation in urban governance and services and improve their access to economic opportunities.
Implementation Period	<p>Start Date: Jan. 2022 End Date: Dec. 2027</p>
Expected Loan Closing Date	30 June 2028
Cost and Financing Plan	<p>Project cost: USD650 million <u>Financing Plan:</u> AIIB loan: USD200 million ADB loan: USD380 million ADF grant: USD5 million GoKP: USD65 million</p>
Size and Terms of AIIB Loan	<p>EUR 171.70 million (approx. USD200 million equivalent)¹. The loan will have a final maturity of 30 years, including a grace period of 5 years, with standard terms for AIIB’s sovereign-backed loan.</p>
Cofinancing (Size and Terms)	<p>ADB loan: EUR 329.575 million (approx. USD380 million equivalent), with a final maturity of 30 years, including a grace period of 5 years. ADF grant: USD5 million</p>
Environmental and Social Category	A
Risk (Low/Medium/High)	High
Conditions of Effectiveness	<ul style="list-style-type: none"> • Cross-effectiveness with ADB Loan Agreement, • Signing of Co-lenders’ Agreement with ADB
Key Covenants/Conditions for Disbursement	<ul style="list-style-type: none"> • Availability and release of all counterpart funds required for timely and effective implementation of the project. • Implementation of all project activities in accordance with Project Administration Manual. • Completion of all key FM actions in accordance with the Financial Management Action Plan, given in the Project Administration Manual. All actions shall be completed within the time frames indicated in the Action Plan.

¹ The loan is denominated in EUR, however costs and funding in this project document are presented in USD, with exchange rate of 1EUR=1.1648USD, as of Oct 31, 2021.

Retroactive Financing (Loan % and dates)	Applicable for eligible expenditures, up to 20 percent of AIIB loan amount incurred up to 12 months prior to the date of loan signing.
Policy Waivers Requested	None
Policy Assurance	

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2. Project Description

A. Project Overview

1. **Project Description.** Cities are economic, social, and innovative engines of growth in Pakistan, playing a fundamental role in socio-economic development of the country. They generate most of the national wealth and are home to about two-thirds of the country's population. The cities in Khyber Pakhtunkhwa (KP) province, one of the four administrative provinces of Pakistan, are home to about 20 percent of the provincial population and growing at a rapid pace (estimated at 3.5 percent per annum) but in an uncoordinated and unplanned manner. The rapid urbanization is taking its toll on delivery of basic urban services. A large percentage of the population live in informal settlements in the cities, less than half of water demands are met, wastewater treatment is practically non-existent and public transport has deteriorated. Lack of sanitary landfills and poor Solid Waste Management (SWM) infrastructure and unhygienic practices contribute to severity of pollution. Furthermore, gender disparities continue, and female labor force participation is very low. The cities in KP province are also highly vulnerable to natural disasters and their resilience is threatened by climate change. Additionally, the COVID-19 pandemic has revealed serious inadequacies in the current delivery models of public health services, thus making it imperative to alleviate the gaps in services delivery.

2. Lack of critical infrastructure is only one of the challenges for sustainable urban development, which is also exacerbated by a weak institutional framework and institutional capacities. The cities in KP province, therefore, suffer in multiple ways, as a consequence of: (i) inability of provincial departments and municipal local bodies to perform their mandated roles due to weak institutional capacities; (ii) financially unsustainable service delivery due to, among other factors, limited own-source revenues; (iii) inadequate business and operating models which focus on ad-hoc service delivery instead of specifying performance measures; (iv) focus on creation of new infrastructure assets rather than investing in complete life-cycle systems with sustainable Operations and Maintenance (O&M); and (v) limited responsiveness and outreach to customers and stakeholders' engagement.

3. The Khyber Pakhtunkhwa Cities Improvement Project (KPCIP, the project) aims to address these cross cutting-challenges in five participating provincial cities of Peshawar, Abbottabad, Kohat, Mardan and Mingora. The project will improve the quality of life of the residents in these cities by improving access, quality, and reliability of basic urban services. The overall green urban space² in KP cities is estimated at 3.5 percent, which is below the recommended international guidelines of 15-20 percent. Improving and enhancing the urban green spaces will increase the quality of urban settings as well as provide opportunities to improve the health and well-being of urban residents by promoting sustainable lifestyles. A comprehensive institutional review and capacity building of the municipal level service delivery entities is also being carried out in each city to address urban development challenges through integrated planning, improved urban infrastructure, improved institutional framework for urban services and strengthened utility business processes.

4. **Project Objective.** The objectives of the project are to improve access to reliable and resilient urban services and strengthen institutional capacities of urban service providers and local governments in selected cities of the KP province. These objectives will be achieved through three

² Green urban space is defined as all urban land covered by vegetation of any kind, including private and public ground, irrespective of size and function; WHO Regional Office for Europe. "Urban green spaces: a brief for action".

interlinked outputs: (i) climate resilient and gender friendly urban infrastructure and services improved; (ii) institutional capacities of urban service providers strengthened; and (iii) women's role in urban development increased.

5. **Expected Results.** The progress toward the project objectives will be measured by monitoring the achievement of following proposed outcome indicators. Gender-disaggregated data for each indicator will be monitored and collected for each city and the results will be aggregated.

- (i) Population provided with access to improved safely-managed water supply from sources meeting national water quality standards (numbers, of which 50 percent are females)
- (ii) Residents' complaints on water supply services to households decreased
- (iii) Population served by sewerage network connected to new wastewater treatment plant (numbers, of which 50 percent are females)
- (iv) Households provided with access to improved SWM services (numbers)
- (v) Residents visiting renovated urban public spaces (numbers, of which 50 percent are females)
- (vi) Improved financial sustainability of WSSCs to cover O&M costs (Operating Cost Coverage Ratio, OCCR)

6. **Expected Beneficiaries.** Approximately 3.5 million residents of the five cities will benefit from improved SWM services and will be less exposed to adverse environmental consequences of poor SWM in their neighborhoods. Improved water supply will directly benefit approximately 800,000 population in the five cities, whereas the improvements in the sanitation systems in Kohat and Mardan will benefit 180,000 people. The project will address the challenges of municipal services delivery in a socially inclusive manner. Poor and vulnerable groups will benefit from the improved quality, reliability and management of a range of basic urban services. They will also benefit from employment opportunities from the construction works. Women and children are the primary users of municipal services at household level and suffer due to inadequate service access. This reduces the productivity of women and other home-based workers in carrying out other tasks. They also suffer due to lack of recreational facilities and family parks. The project will help promote gender equity by financing targeted actions and thus increase their access to better quality municipal services. The project will also improve the access of women and children to green urban spaces by improving the existing public spaces to be more inclusive, and constructing new women-friendly public facilities. Women will also benefit from the activities supported under Output 3, including the scholarships and internship programs, and skills and business development initiatives targeting beneficiaries from poor and low-income households. WSSCs will benefit from increased revenues and improved financial sustainability through the institutional development components as capacity building measures. The infrastructure improvements are expected to translate into higher revenues through improved billing, tariffs and collections and greater accountability to customers.

B. Rationale

7. **Strategic fit for AIIB.** The project is strongly aligned with AIIB's thematic priority of Sustainable Infrastructure which promotes green infrastructure and supports countries to meet their environmental and social goals. The project also promotes AIIB's primary mandate of social and economic development in Asia through infrastructure investment. By investing in urban infrastructure and urban amenities in Pakistan, the project will contribute to one of the goals outlined in the AIIB's Articles of Agreement, namely: (i) fostering sustainable economic development – the project will improve living conditions in the selected cities through the provision of reliable clean water, wastewater and SWM, and inclusive access to public spaces; and (ii) addressing development

challenges through collaboration with other development institutions – the Bank will co-finance the project with ADB, which has long experience and deep engagement in the Pakistani urban sector. KPCIP directly supports the goals envisioned in the Sustainable Cities Strategy. Specifically, the project activities are consistent with the “Access” objective (through providing the population of target cities with easy and inclusive access to basic urban services) and the “Green” objective (through protecting environment by treating and safely disposing domestic sewage and SWM) of the Strategy. The project is also aligned with the investment focus and the guiding principles of the AIIB’s water strategy. It supports the principle of “promoting sustainability” by embedding operational reforms in the project design as well as the “inclusive services delivery” by focusing on vulnerable communities.

8. **Value addition by AIIB.** Beyond mobilization of financial resources to fill the investment gap for the project, the project team also contributed to the project’s due diligence during the preparation of engineering designs, analytical assessments and environmental and social assessments. These reviews, inter-alia, ensured that provisions are made to adequately address environmental flows and safeguard the interests of downstream water users from water abstractions in surface water supply subprojects. As a result of AIIB’s technical reviews, provisions were also made for continuous monitoring of potential negative impacts of leachate leakages during landfill operations along with enhanced technical rigor in other elements of project preparation. The due diligence will continue during the project implementation and AIIB will continue to add value by enhancing the quality of project implementation through regular monitoring, for instance, in review of key technical deliverables and environmental and social reports.

9. **Value addition to AIIB.** The project includes institutional strengthening to bring about sustained improvements in municipal operations. ADB has a long and established history in financing urban services delivery and accompanying institutional reforms. The Bank’s partnership and joint preparation and implementation of the project with ADB provide the project team with the opportunity to gain valuable experience in governance, structural and corporate reforms, and measures. This will also increase the capacity of the Bank’s staff in addressing operational inefficiencies in public sector water utilities through sharing of experience and knowledge.

10. **Lessons learned.** Project preparation was informed by lessons identified through an assessment of similar urban and municipal projects implemented in Pakistan and elsewhere. The scattered nature of sub-projects poses design as well as implementation challenges, which can be addressed through a motivated, resourced and well-staffed implementation unit and a higher-level oversight mechanism – in this case, the Project Steering Committee – to encourage coordination among diverse stakeholders. The needs for new urban infrastructure are high with various competing interests seeking to develop new schemes with limited due diligence. Sub-sector master planning is important in this regard which ensures that needs are prioritized, designs are holistic for providing comprehensive solutions, and that the urban infrastructure is selected to fill the most critical gaps in municipal services delivery. Lessons were also identified from past projects that did not meet their development objectives. Major reasons include lack of will and ownership by the political leadership, limited institutional capacities of the service provider as well as issues related to land acquisition and compensation. Among these, the institutional capacities of WSSCs are especially relevant to KPCIP since establishment of corporate utilities to deliver municipal services is a new experience in the province. Institutional strengthening and capacity building are, therefore, inherent in the KPCIP design which will be achieved through activities proposed under Output 2.

C. Components

11. The project components and its sub-projects, prioritized around the principles of sustainable and integrated urban development, have been consolidated for the KPCIP investment plan, are described below. These components are described in more detail in Annex 2: *Detailed Project Description*.

- Output 1: Climate resilient and gender friendly urban infrastructure and services improved.

12. **Component A. Water Supply and Sanitation (USD283.3 million, of which AIB USD98.8 million).** This component includes (i) augmenting potable water supply and storage capacities; (ii) replacing old and broken pipe networks, prioritizing those at risk of fecal contamination; (iii) promoting water safety, quality and conservation measures, such as treatment and disinfection facilities and water meter installations; (iv) constructing new Sewage Treatment Plants (STP) to ensure adequate treatment capacity using the best available and environmentally sound technology; and (v) replacing and upgrading sewerage networks and connecting these to treatment plants. Prioritized sub-components include:

- (i) *Abbottabad Water Supply sub-project* will augment the existing supplies by delivering additional water from two different surface water sources to the city and almost completely eliminate the ground water use from inefficient tube-wells in the WSSC's service zone. Sub-components include intake structures, a new Surface Water Treatment Plant (SWTP) with a design capacity of 5.7 Million Gallons per Day (MGD), 28 kilometers (km) of raw water transmission mains, 34 km supply mains to deliver clean water to the city, 16 new storage tanks, solar powered pumps to deliver water to the tanks located at higher elevations, rehabilitation of existing and construction of approximately 200 km of new distribution network, and installation of 36,000 metered connections.
- (ii) *Mingora Water Supply sub-project* will construct 30 MGD Mingora Greater Water Supply Scheme which includes construction of a diversion and intake structure to withdraw water from River Swat, 1.5 km raw water delivery main, a new SWTP, 20 km treated water transmission main from the SWTP to Mingora City, supply mains within the city, 18 new clear water storage tanks and solar powered pumps to deliver water to the tanks at higher elevations. A new distribution network of approximately 500 km will be constructed along with installation of 55,000 metered house connections.
- (iii) *Peshawar Water Supply sub-project* will rehabilitate and upgrade the priority water infrastructure including distribution pipelines and overhead water storage tanks. This includes re-construction of 23 and rehabilitation of 10 overhead reservoirs, replacement of 155 km of associated distribution network, construction of 7 new and rehabilitation of 41 existing tube wells, and installation of 22,000 household water meters.
- (iv) *Kohat Water Supply sub-project* will improve the water supply system in Kohat and ensure 24/7 sustainable water supply in the entire service area of Kohat WSSC. This will be achieved by constructing five new overhead and three new surface reservoirs; a new distribution network of 305 km; construction of 10 new tube wells and rehabilitation of 24 existing tube wells to increase their yield; provision of solar pumps and installation of approximately 32,000 metered connections.
- (v) *Kohat Sanitation sub-project*. The city has a combined sewerage and drainage system with open drains serving both domestic sewage and storm water flows which are disposed into water bodies without any treatment. The sanitation master plan of the city recommends separate wastewater and drainage systems in the entire city. A separate sewerage and drainage system already exists

in Kohat Township – a major planned urban settlement of the city. But the sewerage pipelines are old, damaged and inadequate to serve the present-day needs. The sub-project supports replacement/reconstruction of 80 km of sewer pipes within the township, including primary and secondary mains, approximately 7,500 household service connections, construction of an STP with a treatment capacity of 3 MGD of wastewater, associated pumping stations and pumping mains.

- (vi) *Mardan Sanitation sub-project* includes construction of a new STP with a capacity of treating 30 percent of the wastewater generated by the city. The existing treatment system in Mardan consisted of waste sedimentation lagoons which were built at an area of 30 acres. However, these lagoons are dysfunctional and will be replaced with proposed mechanized STP, which will have a design capacity of 5.8 MGD and serve approximately 12,800 households of the six urban union councils under the service zones of Mardan WSSC. Other major components include construction of trunk mains, pump house, and approximately 82 km of piped sewer network within the catchment area of the STP.

13. Component B. Integrated Solid Waste Management (USD168.5 million, of which AIB USD59 million). This component addresses the gaps in infrastructure and service delivery of SWM because of a lack of integrated solid waste management system including collection equipment and vehicles, transfer stations and properly designed sanitary landfills. The project will support a set of carefully designed waste processing technologies - Mechanical-Biological Treatments (MBT) – to reduce environmental degradation and minimize land utilization and reduce landfill infrastructure costs. Each landfill site will therefore include: Material Recovery Facility (MRF) to sort and segregate municipal waste and recover recyclable material; Refuse Derived Fuel (RDF) technology for processing segregated waste to make uniform fuel for combustion; and anaerobic digestion and subsequent composting of the green waste for generation of bio-gas and organic compost. Moreover, all landfill sites are proposed to have landfill gas capture systems, leachate collection and treatment, access roads, facilities for administration and ancillary work. Sub-components are listed below and described in more detail in Annex 2: *Detailed Project Description*.

- (i) Peshawar SWM sub-component will improve the existing dump site which is spread over 100 acres. About 40 acres of the site will be redesigned and developed as a sanitary landfill site while the rest of the site will be reclaimed by capping and greening the waste already filled. An MRF, to be constructed within the landfill site, will handle 600 tons of municipal waste daily (representing about one-third of daily waste).
- (ii) Abbottabad SWM sub-component will construct a new landfill site, over an area of 35 acres. An MRF is proposed within the landfill site to handle almost 100 tons of waste daily. The existing open dump site at *Salhad* has been receiving waste for a very long time and the quantity of waste and height of the accumulated heap have reached precarious levels. The dump site will be safely closed and the site will be rehabilitated and developed into a public area.
- (iii) *Mardan SWM sub-component* will construct a new landfill site, over an area of 27 acres. An MRF is also proposed within the landfill site to handle almost 190 tons of waste daily.
- (iv) *Kohat SWM sub-component* will develop a new landfill site over an area of 20 acres next to an existing MRF site. The civil works for the MRF was completed by the city government, however the MRF was never operationalized. The project is proposing to complete the MRF and make it operational by providing the missing equipment and facilities. Upon completion, the MRF will handle 120 tons of mixed municipal waste.

(v) *Mingora SWM sub-component* – a new landfill site is proposed over an area of 7 acres. The land already belongs to the city government but is too small to accommodate construction of a facility for resource recovery. Therefore, the project will assess the feasibility of a transfer station with an MRF within the city.

14. **Component C: Green Urban Infrastructure (USD15.9 million, of which AIIB USD5.6 million).** This component will develop green infrastructure to promote healthy and sustainable living environment. Selected facilities for empowerment of women and promotion of women-run enterprises will also be developed. Prioritized sub-components include:

- (i) *Abbottabad, Revitalization of Old City Commercial Area (Saddar bazaar)* into an attractive green urban marketplace and pedestrian zone with improved walkability, gender-inclusive accessibility and urban environment. This will be achieved by providing street and open area lights in 15 streets and 3 common spaces, street furniture, rehabilitation and covering of roadside drains, construction of accessible sidewalks and shared pathways, repaving road and street surfaces, construction of dedicated rest area and restrooms for women, development of green park with trees plantation, and uplifting of market facades through providing shades awnings, paintings and signage frames.
- (ii) *Kohat, Women's Business Development Center (WBDC)* will upgrade an existing vocational training center over an area of 0.8 acre into a Women's Business Development and Community Center. The facilities will include a vocational school for female entrepreneurs, multipurpose community hall, indoor/outdoor exhibition areas, and females owned clothing and craft shops and other small businesses.

Public Parks and Green Spaces. This sub-component will develop public spaces in urban areas to enhance the life of local communities, provide opportunities for recreational activities, restore natural ecosystems and build climate resilient green infrastructure in the participating cities. The project will finance civil works, goods and consulting services for the following interventions:

- (iii) *Abbottabad, Shimla Hill Park* will develop an urban forest and a public park over an area of 87 acres at Shimla Hill, to the west of the city. Existing landform and the natural features will be *conserved* and will be complemented by constructing recreational facilities.
- (iv) *Kohat, Sport Complex* is an existing multi-purpose sport facility but lacks facilities and vegetation. The project will increase the green cover by planting about 6,500 trees and shrubs. The proposed additional facilities include upgrading of stepped pavilions for spectators, walking and jogging tracks and recreational facilities.
- (v) *Mardan, Ghulam Nabi Park* will be developed at an area of 2.25 acres in the city center.
- (vi) *Mardan, Ladies Park.* The existing park, spread over an area of 1.25 acres, will be rehabilitated and upgraded through provision of missing facilities for exclusive use of women and children.
- (vii) *Mardan, Landscaping of public roads.* The proposed initiatives will create new greenbelts, or improve the existing ones running parallel to the National Highway and Ring Road that run through and around the Mardan city.
- (viii) *Mingora Neighborhood Park* will be developed by converting an existing 3-acre site into an accessible and safe park for the residents of the area.
- (ix) *Peshawar, Bagh-e-Naran Extension Park* will be developed on a 13-acre vacant site in the Hayatabad township by expanding the existing Bagh-e-Naran park.

(x) *Peshawar, Besai Park* will be developed on a 4.7-acre site within the Hayatabad residential neighborhood.

- Output 2: Institutional Capacities of urban service providers strengthened.

15. **Component D: Institutional Strengthening and Capacity Building (USD30.0 million, of which AIIB USD9.5 million).** This component aims to ensure the sustainability of infrastructure investments, strengthen governance and build capacity by financing the following activities: (i) consulting services for establishment of KP Municipal Regulatory Office, a new and dedicated regulatory body, to improve the oversight and regulatory mechanism for municipal services; (ii) preparation of financial sustainability and business action plans for WSSCs to introduce cost recovery tariff programs based on a new set of service standards; (iii) development of Enterprise Resource Planning systems with the WSSCs to strengthen their operational systems and managements of assets and resources; (iv) the improvement of the existing local government academy for training staff of municipal services institutions including WSSCs; and (v) individual consultants for capacity building of the PMU and CIUs. This output will also support implementation of new digital citizen's interface to strengthen client responsiveness, especially women participation in service provision, and feedback mechanism and to improve billing and complaints handling systems.

16. **Project Management (USD24.8 million, of which AIIB USD9.3 million).** Costs of managing the project, construction supervision, and technical assistance to PMU/CIUs will also be supported under this sub-component. This includes recruiting an international Project Management and Construction Supervision Consultant (PMSCS) firm to assist PMU in project management and individual consultants, including capacity building consultants for the PMU as well as CIUs.

- Output 3: Women's role in urban development increased.

17. **Component E: Women's participation and urban governance (USD5 million).** This component, supported by the Asian Development Fund (ADF) gender grant, will improve women's participation in urban governance and services as well as women's access to economic opportunities. In particular, this output will finance: (i) the sustainable management of Kohat Women Business Development Center (WBDC) to promote WASH initiatives and women empowerment through income generating activities for better economic opportunities; (ii) the establishment of a scholarship program for qualified female students who wish to pursue education in urban sector development and planning; (iii) a one-year-long internship opportunity to 200 fresh graduates (with 70% female graduates) in the city administrative units including WSSCs in five KPCIP cities; and (iv) rehabilitation of women's polytechnic college in Peshawar which will benefit around 500 girls to access technical education in a variety of employable skills relevant to urban sector development. The ADF gender grant will support the capacity building of the staff, women, and youth in leadership and WASH-related skills and knowledge. Despite no financial contribution to this Output 3, which is supported by ADF grant, AIIB considers the women's participation in urban governance and access to urban services extremely important. Therefore, it will monitor the progress of the activities supported by the grant and actively track the results indicators for Output 3 to ensure that the project's gender related targets are satisfactorily achieved.

D. Cost and Financing Plan

18. The project cost is expected to be USD650 million to be financed as follows: (i) a sovereign backed loan of USD 200 million from the Bank, (ii) a sovereign backed loan of USD380 million from

ADB, (iii) a grant of USD5 million to be provided by ADF, and (iv) USD65 million counterpart financing by Government of Khyber-Pakhtunkhwa (GoKP), which will cover the physical and price contingencies to complete the project. Table 1 provides the summary of project cost and financing.

Table 1. Project Cost and Financing Plan

Item	Project Cost (USD m)	Financing (USD m and %)							
		AIIB		ADB		ADF		GoKP	
Component A	283.3	98.8	35%	184.5	65%	0.0	0%	0.0	0%
Component B	168.5	59.0	35%	109.6	65%	0.0	0%	0.0	0%
Component C	15.9	5.6	35%	10.3	65%	0.0	0%	0.0	0%
Component D	30.0	9.5	32%	20.5	68%	0.0	0%	0.0	0%
Component E	5.0	0.0	0%	0.0	0%	5.0	100%	0.0	0%
Project Management and Incremental costs	24.8	9.3	38%	15.5	62%	0.0	0%	0.0	0%
Sub-total	527.5	182.1	35%	340.4	65%	5.0	1%	0.0	0%
ES Mitigation	12.9	0.0	0%	5.9	46%	0.0	0%	7.0	54%
Physical/Price Contingencies	65	0.0	0%	7.0	11%	0.0	0%	58	89%
Financial Charges	44.5	17.9	40%	26.6	60%	0.0	0%	0.0	0%
Grand Total	650	200	31%	380	58%	5	1%	65	10%

E. Implementation Arrangements

19. **Implementation period.** The Project will be implemented over a period of six years from January 2022 to December 2027.

20. **Implementation Management.** The Local Government and Rural Development Department (LGRDD) is the overall implementing agency for the project, which will implement the project through the support of WSSCs and the relevant units of city governments, the Tehsil Municipal Administrations (TMAs). A Project Steering Committee (PSC), as an oversight body, has been established within the Planning & Development Department (P&DD) and is headed by the Additional Chief Secretary of the P&DD. Besides providing policy direction and strategic oversight, the PSC has also been empowered to make higher level decisions, such as approval of major variations and scope-modifications of the contracts, and coordination among different agencies and stakeholders. Implementation arrangements have been described in detail in the Project Administration Manual.

21. **Project Management Unit.** A PMU was established within LGRDD for the implementation of preparatory activities, supported by a preparatory loan approved by ADB under its Project Readiness Facility (PRF). The PMU will continue to function with an expanded mandate to implement KPCIP. Water, sanitation and SWM activities will be implemented in coordination with WSSCs, whereas TMAs will be involved in implementation of public parks and other green urban infrastructure. The PMU is headed by a Project Director and will be supported by four directors, one each for finance and administration, compliance, technical and reforms. Dedicated incremental staff will be hired and individual long-term consultants will be recruited for other key positions in each of these directorates. Procurement and Financial management roles will be centralized in the PMU. The PMU will also recruit an international PMCSC firm, which will assist the PMU in tendering/bidding, contract management and construction (resident) supervision of all the subprojects.

22. **City Implementation Units (CIUs)** will be established within each participating WSSC, which will be involved in day-to-day monitoring and reporting, construction management, verification of payment invoices and safeguard compliance. The CIUs will also be responsible for coordination with local agencies and seeking authorities' approval for physical works.

23. **Implementation supervision support** will be provided jointly by AIIB and ADB. ADB, as lead co-financier, will take the lead role on disbursements and review of procurement, environmental and social aspects, as well as project monitoring and reporting. It will also serve as main focal point vis-à-vis the Borrower on behalf of AIIB in accordance with ADB's applicable policies and procedures and a Project Co-Lenders' Agreement (to be signed). AIIB will jointly supervise the implementation of the project with ADB. It will conduct regular supervision missions, either jointly with ADB or independently, after official travel resumes. The supervision missions will be organized virtually until travel suspension are lifted.

24. **Procurement.** All goods, works and consulting services to be financed under the project will be procured in accordance with the methods and procedures set out in: (i) the Loan Agreement and agreed Procurement Plan; and (ii) ADB's Procurement Policy (2017, as amended from time to time) and ADB's Procurement Regulations (2017, as amended from time to time). In line with the Bank's Procurement Policy and Interim Operation Directive on Procurement Instructions for Recipients (June 2, 2016), Open Participation will be applied to permit firms and individuals from all countries to offer goods, works and services for all procurement packages to be financed under the project. For this, ADB will seek a waiver to allow for open participation in procurement activities from its Board. The procurement activities under the project to be carried out by the PMU will consist of goods and civil works for rehabilitation and upgrade of water, sanitation, SWM and other public infrastructure and consulting services. The design consultants engaged through the PRF are supporting the PMU in preparation of bidding documents and tendering activities to improve the implementation readiness of the project.

25. **Retroactive Financing.** Retroactive financing for eligible expenditures, including civil works, equipment, consulting services and incremental operating, incurred up to 12 months prior to the date of loan signing and paid out of budgetary funds will be reimbursed subject to a maximum of 20 percent of the loan amount of the AIIB loan. The Borrower has been advised that the advance contracting and retroactive financing do not commit AIIB to finance the project.

26. **Financial Management (FM).** The PMU will be responsible for the overall coordination and execution of the FM function of the project. Key FM positions including the Director of Finance and Administration, will be filled through a competitive selection process. In addition, each WSSC will execute its respective day-to-day FM functions through its dedicated Finance and Administration Officers. The FM functions will be guided by the approved Project Administration Manual and the updated FM procedure manuals approved by the financiers. An internal audit team will be established which will report directly to the PSC to ensure independence of its functions.

27. The consolidated project financial statements will be audited annually. The audit will be executed by the Office of the Auditor General of Pakistan in accordance with the International Standards for Supreme Audit Institutions and the Audit Regulations of the Auditor General of Pakistan. The annual consolidated Project audit report will be due within six months after the end of each financial year. In addition to the financial statements, the audit report will comprise of a management letter and auditor's opinions, which cover: (i) whether the project financial statements are presented

fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loans were used only for the purpose(s) granted; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements. The audited entity financial statements of the WSSCs, together with the auditor's report and management letter, will be submitted to AIIB within six months after the end of each financial year.

28. **Disbursements.** AIIB loan will finance civil works, goods and consulting services by co-financing such activities with ADB on a cost sharing basis. The project may use direct payment procedure for civil works expenditures. PMU will be responsible for (i) preparing disbursement forecasts; (ii) requesting budgetary allocations for counterpart funds; (iii) and preparing and submitting withdrawal applications. Advance method will be used for small payments of eligible project expenditures. A designated account will be established for this purpose in a financial institution acceptable to AIIB. Reimbursement will be applicable mainly in respect retroactive financed expenditures.

29. **Monitoring and Evaluation.** A detailed Results Monitoring Framework has been prepared which details the annual as well as end-of-project targets for all outputs/outcomes and provides the basis for monitoring the implementation of the project. Within six months of the loan effectiveness, the PMU will establish a Project Performance and Monitoring System (PPMS) to monitor progress of the project in achieving the planned outcomes and outputs. Besides monitoring the progress indicators, the PPMS will also include safeguard compliance, gender and social dimensions, compliance with loan covenants and tracking of other time-bound actions. The PMU, working together with the CIU in each city, will be responsible for project level monitoring, contract and construction management, and supervision (through the PMSCS). PMU will also be responsible for periodic reporting, which will be transmitted to AIIB and ADB on a semi-annual basis.

3. Project Assessment

A. Technical

30. **Project Design.** Detailed technical feasibilities and engineering designs were prepared through the ADB's PRF for the proposed civil works using integrated urban design principles. Building on the previous studies, the PRF assisted the GoKP in preparing integrated and climate-resilient urban infrastructure investment packages to improve urban environment and livability in the selected cities. GoKP prioritized the investment sub-projects and has completed their technical designs as well as necessary due diligence. An essential feature of all the sub-projects is that they provide integrated end-to-end solution for service delivery in accordance with the recommendations of sub-sector master plans which were also finalized during the preparatory phase.

31. Hydrological studies confirmed the sustainability of the surface sources for Abbottabad and Mingora water supplies. These studies also confirmed the availability of adequate environmental flows to sustain the downstream ecosystems. Water quality analysis revealed presence of suspended particles (turbidity) and coliforms in raw water. A conventional treatment process comprising coagulation, flocculation and filtration followed by disinfection was found suitable to treat this raw water for potable use. Rapid ground water depletion is also a major concern in Abbottabad and Mingora since the rate of abstraction is higher than recharge. Replacing the ground water use by

surface water will alleviate this issue and ensure sustainable and quality water availability for the residents.

32. Distribution networks will be significantly improved in participating cities (on a city-wide scale in Abbottabad and Mingora, and in prioritized localities in Peshawar and Kohat). This will reduce the technical losses in the system and ensure pressurized flows, which in turn will enhance water quantity and quality. Significant energy savings are expected as a result of leakage control, metered consumption, and energy efficient equipment.

33. Wastewater systems have been designed taking into account the sewage characteristics. Composite samples were collected and tested for various biological, chemical, organic, and inorganic parameters indicated in the National Environmental Quality Standards. Conventional activated sludge processes, with primary and secondary treatments, have been adopted for biological treatment of the sewage which will bring the effluent quality within the permissible limits in accordance with national standards. Associated sewer network has been designed to minimize the requirement of pumping stations to reduce energy consumption and Greenhouse Gas (GHG) emissions.

34. SWM investments will promote an integrated solution across the complete supply chain of solid waste, following the 3Rs concept of reduce, recover, and recycle. Given the land scarcity in urban areas, disposal has been designed to maximize the life of the facilities by considering and prioritizing alternatives to landfilling or reducing the amount of waste reaching landfill sites. Various waste diversion, resource recovery and energy capture techniques were, therefore, assessed based on waste quantity, physio-chemical characteristics of waste, land requirements, technical complexities and O&M considerations. Final designs are based on a combination of Mechanical Biological Treatment (MBT) techniques including material recovery, recycling, Refuse Derived Fuels (RDF), anaerobic digestion and composting. Similarly, landfill site selection and design features were guided by a range of technical assessments including: review of international best practices; consultation with local communities, especially the vulnerable groups; assessment of geology, surface and sub-surface hydrology; ecological and environmental assessments; and climate change considerations.

35. **Operational sustainability.** Establishment of WSSCs with ring-fenced financial structures to provide comprehensive water, sanitation and SWM services on corporate model was the first step toward ensuring the sustainability of operations. However, until now, WSSCs have limited financial autonomy especially on tariff-setting, while the lack of financial, technical and physical resources also contributes to sub-optimal operations. Learning from sectoral experiences, the project has adopted an inclusive service delivery model whereby infrastructure investments are supported by concurrent institutional reforms to promote sustainability of the project outcomes. An Institutional Reform Roadmap – a framework document that underlines key reform actions – has been prepared which recommends targeted interventions in six key areas (namely, institutional, technological, financial, human resource, operational and social outreach) to achieve sustained service delivery improvements. The project will support the implementation of these reforms to strengthen institutional capacities and improve governance, which, in turn, will enhance financial sustainability and operational efficiency.

B. Economic and Financial Analysis

36. **Project Costs and Benefits.** A cost-benefit analysis was undertaken to assess the economic viability of the project, based on a comparison between “with-” and “without-project” scenarios. Costs

included in the cost-benefit analysis include initial capital costs for construction and annual O&M costs. The project benefits include, for water supply: (i) value of increased water supply (incremental water); (ii) health benefits (avoided earnings loss from sick days, and avoided costs of health treatment). With respect to sewerage and sanitation, project benefits include: (i) avoidance of flood-related costs (earnings loss, and infrastructure damage); (ii) health benefits (avoided earning loss from sick days, and avoided costs of health treatment); (iii) avoidance of environmental pollution. For improved solid waste management, project benefits derive from: (i) value of improved SWM (incremental); (ii) avoidance of indirect coping costs (time saved in trash disposal); and (iii) avoidance of GHG emissions.

37. **Economic Analysis.** The Economic Internal Rate of Return (EIRR) was estimated at 13.8 percent and Economic Net Present Value (ENPV) at PKR 29,002 million, based on a 9 percent social discount rate. The EIRR exceeds the social discount rate and the project demonstrates good economic viability. A sensitivity analysis of the EIRR and ENPV was conducted with respect to: (i) an increase of 10 percent in construction costs; (ii) an increase of 10 percent in O&M costs; (iii) a decrease of 10 percent in benefits; (iv) a one-year delay in implementation; and (v) a four-year delay in implementation. The EIRR remained at or above the 9 percent social discount rate in all individual scenarios. The approach and detailed results of the analysis are presented in Annex 3: *Economic and Financial Analysis*.

38. **Financial Analysis.** The financial analysis focuses on the financial sustainability of the WSSCs. WSSCs rely heavily on GoKP grants for operational sustainability. Besides weaknesses in collection of due water payments, the existing tariff structure does not allow for full O&M cost recovery. This situation is expected to continue in the short to medium term. Based on historical performance, the financial position of WSSCs is stable, largely as a result of GoKP subsidy support. GoKP has demonstrated a strong historic commitment to ensure operational and financial sustainability of WSSCs. In the “with-project” scenario, the project assets will be transferred by GoKP to the relevant WSSCs, which will be responsible for subsequent O&M. The project is expected to generate incremental revenues from improved water and sanitation services, resulting in improved operating ratios of WSSCs, but WSSCs will continue to rely on GoKP support to meet O&M shortfalls in the medium term. Continued financial sustainability of WSSCs is assessed based on GoKP’s ability to fund the net incremental O&M costs of the project assets. Net incremental costs are expected to constitute 0.45 percent of the total GoKP annual budget. The total budget of the line ministry for the project, LGRDD, is projected to increase from 1.84 percent of the total GoKP budget in a “without-project” scenario by 0.51 percent to 2.35 percent of the total GoKP budget, in the “with-project” scenario. The net incremental costs of the project are therefore within the absorptive capacity of the GoKP. Based on this, and the demonstrated commitment of GoKP to ensure operational and financial sustainability of WSSCs, the WSSCs and TMAs are considered to be financially stable. It should also be noted that the GoKP has commenced institutional reforms, including implementation of financial sustainability action plans, to improve financial independence and sustainability of WSSCs. Detailed results of the financial analysis are presented in Annex 3.

C. Fiduciary and Governance

39. **Procurement.** ADB has assessed the overall procurement risk for the project as *Substantial*, equivalent to AIIB’s “High” categorization. The Project Procurement Risk Assessment has identified following major risks (i) weak staff capacity, (ii) geographical spread of the project, and (iii) lack of experience with ADB’s procurement framework. A risk mitigation plan has been agreed with the

implementing entities, which includes the following mitigation measures: (i) establishing a Central Procurement Committee for providing procurement oversight and making all major decisions; (ii) additional dedicated staff positions within the PMU, including procurement and contract management specialists, (iii) engaging external PMCSC for oversight and support to the PMU (including preparation and prior review of all bidding documents and contracts for goods, civil works and services before award); and (iv) building capacity at the procurement and implementation levels. High procurement readiness of the project (more than half of the procurement packages are expected to be ready before approval) will contribute to the management of procurement risks. Moreover, ADB will continue to provide trainings to the PMU on ADB procurement and disbursement arrangements.

40. **Financial Management (FM).** An FM capacity assessment was conducted in March 2021 which assessed the capacities of the PMU and WSSCs, including funds-flow arrangements, staffing, accounting, financial management and reporting systems and internal and external auditing requirements. The assessment concluded that, although there are multiple improvements required to current FM arrangements, these arrangements are deemed adequate, allowing for adequate control and oversight over the use of funds, and the provision of timely and accurate financial information on project implementation.

41. Considering the deficiencies noted in the overall FM arrangements, the FM risk rating of the project prior to mitigation is assessed to be “Substantial” equivalent to AIIB’s “High” categorization. The key deficiencies noted in the current FM arrangements are: (i) inadequate staffing; (ii) weak budget monitoring procedures; (iii) absence of operational internal audit functions; (iv) specifically for LGRDD, the absence of an automated accounting system; (v) the WSSCs’ delays in the appointment of board of directors and, lack of experience of staff in managing ADB and AIIB financed projects and (vi) WSSCs delays in the finalization of entity-level audits. Mitigation action plans have been established to address all weaknesses identified. These mitigation measures are embedded in the proposed FM arrangements, in which the FM and disbursement arrangements for AIIB’s and ADB’s financings are centralized at the PMU level. GoKP will implement the FM action plan, which has been included in the Project Administration Manual, to strengthen the PMU’s governance, systems, internal controls and accountability arrangements. In parallel, the engagement with the WSSCs will continue to build sustainable governance and financial management capacities in the medium term. This initiative will be guided by the required actions already communicated to the WSSCs and included in the institutional reforms supported by Output 2.

42. LGRDD and the PMU have gained experience in managing ADB’s financed operations, and therefore, would be able to adequately manage the FM responsibilities of this project, in which ADB’s FM policies and procedures will apply. The Finance Department of PMU will be strengthened by recruiting a Director of Finance and Administration and two Finance and Accounts Officers, three Accounts Assistants, and one FM Specialist. The FM Specialist will be engaged to implement enhancements in FM systems and internal controls. In addition, each WSSC will be staffed with a Finance Manager and a Finance and Administration Specialist. The increase in the staffing capacity will enable the effective execution of the FM function, and the adequate segregation of duties in respect to payment authorization, accounting, and financial reporting. All FM staff will be trained in ADB’s FM and disbursement requirements. The internal audit team to be established, will execute risk-based audits of the project’s systems, internal controls, and financial transactions. The internal audit report will be shared with the Banks by no later than three months from the end of each year.

43. The FM policies procedures will be updated to provide adequate procedural guidance on processes and procedures included but not limited to payment authorizations, budgeting, accounting, and reporting at a sub-project and consolidated level. The PMU will acquire an accounting software, which will be used to account for project transactions on a cash basis in accordance with the International Public Sector Accounting Standard. The accounting software will be designed to capture project transactions by financing sources, WSSCs, component, and activities. Each calendar semester, as part of the project progress report, the PMU will prepare unaudited financial statements capturing consolidated financial progress of the project. The report will become due no later than one month after the end of each calendar semester.

44. **Financial Crime and Integrity (FCI) and Counterparty Due Diligence/Know Your Counterparty (CDD/KYC).** No current sanctions have been reported against the country, heads of governments, implementing agency or PMU. Fiduciary risks have been noted in public procurement and financial management which have been assessed in detail by ADB in accordance with its applicable policies, and remedial measures have been designed accordingly for the project implementation (as described in detail in the Fiduciary and Governance Section).

45. **Governance and Anti-corruption.** The Bank is committed to preventing fraud and corruption in the projects that it finances in strict compliance with the Bank's PPP. AIIB will monitor the work related to procurement of contracts and implementation of works under AIIB's financing. To the extent that the ADB's Anticorruption Policy is similar to the Bank's PPP, the ADB's Anti-Corruption Policy will apply to the project activities financed in whole or in part by the proceeds of the proposed AIIB's and ADB Loans. However, AIIB's PPP will apply in regard to the prohibited practices of "Misuse of Resources" and "Theft", which are not covered under the ADB's Anti-Corruption Policy. The Bank reserves the right to investigate, directly or indirectly through its agents, any alleged Prohibited Practices relating to the project and to take necessary measures to prevent and redress any issues in a timely manner, as appropriate. Detailed requirements will be specified in the Loan Agreement and will also be included in the Co-Lenders' Agreement.

D. Environmental and Social

46. **Environmental and Social Policy and Categorization.** The proposed loan is co-financed with ADB, and the project's Environmental and Social (ES) risks and impacts have been assessed in accordance with ADB's Safeguard Policy Statement 2009 (SPS). To ensure a harmonized approach in addressing ES risks and impacts of the project, and as permitted by AIIB's Environmental and Social Policy (ESP), ADB's SPS will apply to the project in lieu of AIIB's ESP. AIIB has reviewed ADB's SPS and is satisfied that: (a) it is consistent with the Bank's Articles of Agreement and materially consistent with the provisions of AIIB's ESP including AIIB's Environmental and Social Exclusion List and relevant Environmental and Social Standards; and (b) the monitoring procedures that are in place are appropriate for the project.

47. The project has been assigned Category A for Environment, A for Involuntary Resettlement and C for Indigenous Peoples for the overall project in accordance with ADB's SPS. This is equivalent to Environmental and Social Category A if AIIB's ESP were applicable. For the ES due diligence, the project has assessed 24 different activities³. Categorization for each activity has been determined

³ Some sub-projects are based on multiple activities. For instance, Abbottabad Water Supply sub-project has prepared separate ES instruments for the water treatment plan and the water infrastructure system.

following the assessments done on environment, land acquisition and Involuntary Resettlement (IR), and Indigenous Peoples (IP).

48. **Environmental aspects.** During the environmental impact assessments, individual activities were also categorized. The environmental safeguards documentation has been prepared to meet both the KP Environmental Protection Agency requirements as well as ADB's SPS. The GoKP has prepared a total of four Environmental Impact Assessments (EIAs) for the SWM sub-projects, eight Initial Environmental Examinations (IEEs) for water supply, sanitation and STPs and nine stand-alone Environmental Management Plans (EMPs) for green urban space sub-projects, which are all categorized as Category C sub-projects. Each EIA and IEE also include an EMP. The instruments and impacts of each activity are described in detail in Annex 4: Environmental and Social Summary.

49. The project is expected to have positive environmental impacts as construction of sanitary landfills, closure of existing dumpsites and construction of STPs will reduce urban pollution and prevent soil and water contamination. Urban green space interventions will enhance the urban quality with a range of environmental benefits. However, large-scale construction at multiple geographical locations will have potential adverse environmental impacts. The environmental impacts during the construction stage across different types of sub-projects are mostly localized and reversible and include air and noise pollution, generation of construction waste, land and water pollution, and Occupational Health and Safety (OHS) risks for the construction workers. The O&M of the landfill sites and STPs will generate leachate, effluent and wastes, posing potential risks of contaminating surface and ground water and soil. Odor and emission of harmful gases may pose additional risks to sensitive receptors around these sub-projects. The O&M of the STPs and WTPs will generate sludge, which will need to be managed properly. The solid waste collection, storage, transportation and final disposal activities and maintenance of water supply and sewage networks will pose OHS risks for the O&M workers. The closure of the two existing dumping sites which are inside the proposed landfill sites of Peshawar and Mingora and the sub-project of Salhad Park (closure of dumpsite) may pose OHS risks, contamination of surface and groundwater and soil by leachate and gas leakage. Actions for waste collection have also been proposed and will be implemented by WSSCs to segregate the non-hazardous waste from the infectious waste within the health institutions, instead of continuation of the existing practices.

50. The ES assessments confirmed that the locations of the sub-projects have been selected to minimize the adverse ES impacts. Particularly the assessments confirm that the landfill sites meet the criteria for site selection in accordance with World Bank Group Environmental, Health and Safety Guidelines for Waste Management Facilities⁴. The environmental impacts of STPs and landfills have been further reduced through selection of technology, suitable in the context of each city, design of pollution prevention and control methods, and provision of adequate buffer zones around the facilities. The potential adverse impacts from all the activities have been assessed to be localized and can be mitigated and minimized using effective mitigation measures and housekeeping during implementation. Effective controls have also been designed for facilities' operations. All of these measures have been included in the EIAs, IEEs and EMPs. The EMPs also include monitoring plans, reporting mechanism and roles and responsibilities of the key institutions during implementation. To minimize the risks associated with the existing dumpsites, environmental assessments will be carried out at the time of the closure of the dumpsites and comprehensive closure plans will be prepared.

⁴ <https://www.ifc.org/wps/wcm/connect/5b05bf0e-1726-42b1-b7c9-33c7b46ddda8/Final%2B-%2BWaste%2BManagement%2BFacilities.pdf?MOD=AJPERES&CVID=jqeDbH3>

The EIAs, IEEs, and EMPs will be included as part of the bid and contract documents. No contract will be awarded until ADB/AIIB approves the updated or final EIAs, IEEs and EMPs. Prior to execution of civil works, contractors will prepare site-specific EMPs, which will be approved by the PMU and cleared by ADB. All statutory clearances and no objections must be obtained prior to the commencement of construction activities.

51. **Climate Change Risks and Opportunities.** Pakistan is among the countries most vulnerable to climate change and affected by extreme events on a recurrent basis.⁵ Since large cities with poor infrastructure are also among the regions of maximum vulnerability, extreme events are expected to be more catastrophic in nature for the people living in cities. Multiple stresses caused by rapid urbanization, industrialization, and economic development will be compounded by climate change, resulting in widespread and diverse health impacts. Climate change projections estimate Pakistan's temperature increase – in the range of 3°C to 5°C – to be higher than the global average, which will be accompanied with prolonged droughts and erratic precipitation, with more intense summer monsoon rainfall. A continual westward shift in the monsoon pattern during the past decades has brought the major river systems of KP, namely the Indus, Kabul and Swat rivers, under the monsoon coverage. These major changes in the weather patterns add to vulnerability of project areas, usually emerging as a result of monsoon-induced heavy precipitation and subsequent flooding as well as flash flooding in hill torrents in the higher ranges.

52. Climate change impacts on the project areas were assessed using different models, the impact of projected changes in temperature and precipitation on all subcomponents of the project were evaluated, and adaptation measures were incorporated in the design of the respective subprojects. These measures cater for the expected increase in water demand, decrease in ground and surface water availability, impact on waste digestion processes, performance of materials used in construction, and increase in flooding. Climate mitigation financing of this project is estimated as USD106 million, and climate adaptation financing is estimated as USD14 million (details are given at Annex 7: *Climate Finance*). The project investments are estimated to reduce 250,516 CO₂-equivalent tons of GHG emission annually in the project areas.

53. **Social Aspects.** The project will contribute to poverty reduction in the five target cities through (i) improved water supply and sanitation services, which will reduce the incidence of waterborne diseases and household health expenses; and (ii) integrated SWM operations that will improve the health to citizens and increase the value of urban assets. However, there are also social impacts engendered by the development of the 24 activities. A consolidated Social Due Diligence Report (SDDR) was prepared to screen all the activities for land acquisition and Involuntary Resettlement (IR) impacts. Fourteen of the 24 activities do not cause any Land Acquisition and Resettlement (LAR) impacts or social risks. The remaining 10 activities have varying degrees of LAR impacts. Seven such activities with LAR impacts require acquisition of approximately 91 acres of private land comprising of about 21 acres of agriculture and about 70 acres waste/barren land. A total of 117 acres of land has already been acquired by the government for the remaining three activities with LAR impacts; 115 acres of which is barren land. However, Corrective Action Plans (CAPs) are being prepared to address legacy issues and ensure that these activities are compliant with requirements of the ADB's SPS. Currently, PMU is conducting an Independent Valuation Study (IVS) to determine the adequacy

⁵ Global Climate Risk 2021. The GCRI Index has assessed Pakistan as eight most affected country in its annual report for 2021 due to climate induced extreme events for the period 2000-2019.
https://germanwatch.org/sites/default/files/Global%20Climate%20Risk%20Index%202021_2.pdf

of the compensation rates and compliance with the SPS requirement. As per completed detailed engineering designs, a total of four Land Acquisition and Resettlement Plans (LARPs) have been prepared and updated to incorporate the measures and actions required to address the social issues and risks. In addition, three CAPs are being prepared as mentioned above. These safeguard documents (SDDR, LARPs, CAPs, and IVS) will be a part of the civil work contracts and have been disclosed on ADB, and AIIB websites and shared with the affected people. The PMCSC hired under the project will be responsible for supporting the PMU/CIUs in strengthening their safeguards capacity and day-to-day implementation and periodical monitoring of LARPs and management of project-based Grievance Redress Mechanism (GRM). The institutional arrangements to support social safeguards at the PMU are in place, GRM is being established and will be functional prior to the award of the first contract.

54. In terms of impact to IPs, the project has conducted assessment through documentary reviews, field visits, and consultations with locals in the project areas. The SDDR thus prepared indicates that there is no IP impact anticipated, involving direct or indirect impacts to the dignity, human rights, livelihood systems, territories, or natural and cultural responses that are used, owned, or occupied by IP per the ADB's SPS 2009. The project has been classified as category C for IP because no IP or IP groups, as described in IP policy of SPS, exist in the project areas.

55. **Gender Aspects.** ADB has categorized the project under the "gender equity theme" because it directly addresses gender equity through women's participation in urban governance. A Gender Action Plan (GAP) has been prepared and the following specific measures are included in the project design: (i) equitable access to water supply and sanitation services for women, poor and vulnerable households; (ii) scholarship opportunities for female students who wish to pursue urban studies at post-graduate level; (iii) an internship program for female students in WSSCs; (iv) appointment of senior level female staff in PMU and WSSCs; (v) construction and management of a women's business center and rehabilitation of a technical training institute to promote women's business and skills; and (vi) integrated SWM operations, following reduce, recycle, and reuse approach with gender-based organization, with incentives for women engage in good municipal practices at the household level – "Women as Champions of Change." Performance indicators have also been designed to assess the awareness and consultations reach-out to women and children. The PMU, with support from project consultants, will implement the overall GAP.

56. **Occupational Health and Safety, Labor and Employment Conditions.** The EIAs, IEEs and EMPs have identified OHS risks during construction and O&M phases. OHS risks during the construction phase will mostly be associated with the operation of construction machinery, vehicular traffic, working on heights and in confined spaces, handling and storage of fuels and other hazardous materials, fire hazards, and exposure to raw sewage and hazardous wastes. Sludge generated from the STPs can be of hazardous nature and poses OHS risks during the O&M of these facilities. The sludge will be disposed of in the landfill site in each city (other subprojects of KPCIP). The OHS mitigation actions related to the construction phase will be included in the contractors' site-specific EMPs. For the O&M phase, the OHS requirements will be included in the operation manuals for each facility. Labor influx is not considered primarily as a serious issue since local labor is usually available and will be used in the province. Appropriate guidelines to address the impacts arising out of labor influx have nonetheless been included in the EIAs, IEEs and EMPs.

57. **Stakeholder Consultation and Information Disclosure.** During the PRF implementation, the GoKP organized a series of stakeholder consultations, and community views were incorporated

into the EIAs, IEEs, EMPs, LARPs as well as project designs. The SDDR also indicated that consultation meetings were held with a wide range of stakeholders including displaced people, the general public, local leaders, officials of WSSCs, TMAs, City Governments, Urban Policy Unit, Ministers, and the Design Consultant. Meaningful engagement with communities will continue during project implementation. All of the ES documents have been disclosed on the websites of ADB⁶ and GoKP⁷. GoKP has also disclosed the Executive Summaries of the ES documentation in Urdu language at the same website. The links are provided on AIIB website⁸.

58. **Project Grievance Redress Mechanism.** Grievances will be handled following the project GRM, which will be a three-tier system. At the first tier, the complaints will be received and addressed at the field level with the help of the Grievance Redress Committee (GRC) established at the field level. If any complaint is not resolved at this level, it would be escalated to the second tier where the GRC at the PMU level will address the complaint. In case the complaint is still not resolved or if the complainant is not satisfied with the resolution, s/he can escalate it further at the government level or approach court of law and pursue legal process. The information on the GRM has been included in the ES documentation and disclosed to project-affected people and will be disseminated in the Project brochures prepared (in local languages) in the participating cities.

59. **Independent Accountability Mechanism.** As noted above, the ADB's SPS will apply to this project instead of AIIB's ESP. Pursuant to the Bank's agreement with the ADB, the Bank will rely on the ADB's Independent Accountability Mechanism, the Accountability Mechanism, to handle complaints relating to ES issues that may arise under the project. Consequently, in accordance with the Bank's policy on the Project affected People's Mechanism (PPM), submissions to the PPM under this Project will not be eligible for consideration by the PPM. Information on the ADB's Accountability Mechanism is available at: <https://www.adb.org/site/accountability-mechanism/main>.

60. **Monitoring and Supervision Arrangements.** During the project implementation, the PMU will prepare semi-annual environmental and social monitoring reports for ADB and AIIB to review and disclose on the ADB and Project website. The Bank's ES Specialists will carry out field-based ES monitoring missions when conditions allow. The Bank will agree with ADB on arrangements regarding the sharing of ES information between the co-lenders and the monitoring implementation. AIIB will maintain its responsibility to monitor the Project, but ADB is expected to lead the ES supervision and monitoring.

E. Operational Policy on International Relations.

61. AIIB's Operational Policy on International Relations (OP on IR) applies because the Mingora Water Supply sub-component of the project involves the use of water from the Swat River, which is an International Waterway as defined in the OP on IR. The Swat River is a tributary of the Kabul River, which in turn is a tributary of the Indus River. Both the Kabul and Indus Rivers are International Waterways, and as a tributary of these rivers, the Swat River is also considered an International Waterway. The Swat River flows exclusively within Pakistan: originating in northern Pakistan, it flows generally southward into the Kabul River, to join the Indus River as the latter flows south within Pakistan to the Arabian Sea.

⁶ <https://www.adb.org/projects/51036-002/main#project-documents>

⁷ <https://kpcip.gov.pk/downloads-publications/>

⁸ <https://www.aiib.org/en/projects/details/2020/proposed/Pakistan-Khyber-Pakhtunkhwa-Cities-Improvement-Project.html>

62. Notification of the proposed project's details to the riparian states of these International Waterways, is required under the OP on IR unless one of the exceptions to notification specified in the OP on IR applies. Since this project is expected to have minimal or no effect on any of the other riparians, notification is not required under the exception in paragraph 3.3(c)(i) of the OP on IR, which provides that the notification requirement does not apply to "(i) projects that are expected to have minimal or no effect on any of the other riparians."

63. An assessment of the impact of the project's Mingora Water Supply sub-component on the use of the water of the Swat River concluded that the total water abstraction for this sub-component is less than one percent of the combined mean annual flows of the Swat and Kabul Rivers, and is negligible in comparison to the mean water flow of the Indus River. In view of the above, the project is expected to have minimal effect on the other riparians, and notification to these riparians is therefore not required under the OP on IR.

F. Risks and Mitigation Measures

Table 2: Summary of Risks and Mitigating Measures

Risk Description	Assessment	Mitigation Measures
Technical and Operational - Multiple and complex subprojects present challenges and implementation risks	Medium	- Fully functional PMU and valuable experience gained during PRF implementation are important mitigants, - Detailed designs have been finalized and major procurement documents will be ready before effectiveness, which will improve implementation readiness and reduce operational and delay risks
Environmental and Social - Major E&S impacts are anticipated in large construction such as large treatment plants or landfill sites, - Land acquisition can be challenging	High	- Construction would only commence after land has been acquired in accordance with the provisions of LARPs. - Comprehensive communication campaigns and citizen engagement activities will accompany the LARP implementation. - Construction sites would be properly isolated before any construction activity. Comprehensive EMPs would be made part of construction contracts.
Financial Management: - Low FM capacity and deficiencies in oversight mechanism resulting in inaccurate accounting and reporting on ineligible expenditures per financing source.	High	- Centralization of the FM and disbursement functions at the PMU. - Additional experienced and qualified FM professionals to be hired and trained in ADB's FM policy. - Strengthening of FM procedures and process which are documented in the PAM and FM manuals. - Establishment of an internal audit department to execute risk-based audits.
Procurement	High	

<ul style="list-style-type: none">- Multiple procurement packages of goods, works and services- Lack of procurement experience in PMU and low capacity		<ul style="list-style-type: none">- All the procurement packages will be ready before effectiveness while advance procurement (up to contract award) will be initiated for major goods and works contracts in accordance with Procurement Plan,- Continuation of Design Firm as PMCSC will ensure continuity of functions, including tendering support, and delivery of procurement services.
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Annex 1: Results Monitoring Framework

Project Objective:	The objectives of the project are to improve access to reliable and resilient urban services and strengthen institutional capacities of urban service providers and local governments in selected cities of the KP province.										
Indicator Name	Unit of measure	Base-line (2021)	Cumulative Target Values						End Target (2028)	Frequency	Responsibility
			YR1	YR2	YR3	YR4	YR5	YR6			
Project Objective Indicators:											
Population provided with access to improved safely-managed water supply from sources meeting national water quality standards	Number (Females)	247,000 (124,000)	247,000	247,000	300,000	385,000	525,000	650,000	800,000 (400,000)	Semi-annual	Project progress reports, WSSC and city government records, and project monitoring reports
Population served by sewerage network connected to new wastewater treatment plant	Number (Females)	19,880	19,880	19,880	19,880	60,000	120,000	180,000	180,000 (90,000)	Semi-annual	
Households provided with access to improved SWM services	Number	0	0	0	0	80,000	160,000	250,000	250,000	Semi-annual	
Residents visiting renovated urban public spaces	Number (Females)	0	0	0	20,000	40,000	60,000	90,000	90,000	Semi-annual	
Improved Operating Cost Coverage Ratio *	Percentage	16							70	Annual	
Residents' complaints on water supply services to households decreased	Percentage	58	58	58	58	50	35	30	25	Annual	
Intermediate Results Indicators:											
Output 1: Climate resilient and gender friendly urban infrastructure and services improved											
<i>Supply Capacity:</i> Potable water storage and supply capacity increased	Cubic meter/day	238,443	238,443	238,443	250,000	280,000	320,000	360,000	400,000	Semi-annual	Project progress reports, WSSC and city government records, and project monitoring reports
<i>Water Infrastructure Upgrade:</i> Water pipelines rehabilitated/installed	Kilometer	550	550	550	700	950	1,200	1,600	1,750	Semi-annual	
<i>Sewage treatment:</i> Cumulative sewage treatment capacity achieved	Cubic meter/day	0	0	0	0	0	10,000	30,000	30,000	Semi-annual	
<i>Sewerage infrastructure upgrade:</i> Sewerage network modernized/installed	Kilometer	0	0	0	0	50	100	156	156	Semi-annual	
<i>SWM services:</i> Solid waste treatment capacity achieved	Daily tons	0	0	0	0	0	1,000	1,500	2,000	Semi-annual	
Gender friendly urban spaces established/improved	square km	0	0	0	0.5	1.0	1.6	1.6	1.6	Semi-annual	
Output 2: Institutional capacities of urban service providers strengthened *											

Project Objective:	The objectives of the project are to improve access to reliable and resilient urban services and strengthen institutional capacities of urban service providers and local governments in selected cities of the KP province.										
Indicator Name	Unit of measure	Base-line (2021)	Cumulative Target Values						End Target (2028)	Frequency	Responsibility
			YR1	YR2	YR3	YR4	YR5	YR6			
Performance/service benchmarks for key urban services developed and approved for 5 WSSCs	number	0							5	Annual	Project progress reports, WSSC and city government records, and project monitoring reports
Nonrevenue water reduced	Percentage	45	45	45	45	40	35	27.5	20	Semi-annual	
New Tariff scheme formulated and adopted by WSSCs	Text	No							Yes	Annual	
New gender inclusive HR plans developed and adopted by WSSCs	Text	No							Yes	Annual	
Women serving as Board Members in each WSSC Boards	Percentage	3							20	Annual	
At least 50% of the target population reached through consultations and awareness raising campaigns are women	Percentage	0							50	Semi-annual	
Output 3: Women's role in urban development increased											
Women and girls with qualifications received from training programs of the WBDC and Women's technical institute	Number	0	0	0	100	300	500	800	1,000	Annual	Project progress reports, GOKP records, and project monitoring reports
Girls benefitted from scholarship program in the fields related to urban water supply and sanitation	Number	0	0	0	15	30	45	55	55	Annual	
WBCD established and Peshawar technical institute for girls upgraded	Number	0	0	0	1	2	2	2	2	Annual	

* End and intermediate targets for these indicators will be confirmed during the implementation when the operational /business plans have been developed and adopted.

Annex 2: Detailed Project Description

1. **Description and Components.** Basic urban services in KP cities have failed to meet the increasing urban demand, leading to degradation of urban environment and living standards. Piped water is available to only about 42 percent of the urban population and, typically, only for few hours a day. Poor maintenance and leakages contribute to significant losses in piped water networks and contamination of the water supply. Operational sewerage systems with wastewater treatment serve less than 5 percent of urban areas. Most wastewater flows via open drains and where sewer pipes exist, they are poorly maintained and prone to overflow. Only a small portion of solid waste is collected in urban areas. Uncollected waste is typically burned, disposed of in drains or used to fill low-lying land. The public green space allocation in KP cities (3.5 percent of urban land) is significantly below recommended international norms (15-20 percent).
2. The proposed project will improve access, reliability of urban services and the well-being and quality of life in the five participating provincial cities by supporting GoKP to construct, rehabilitate and revitalize core urban infrastructure, including water supply, sewerage and SWM. Improving and enhancing the urban green spaces will increase the quality of urban settings and improve the health and well-being of urban residents by promoting sustainable lifestyles. These objectives will be achieved through three interlinked outputs: (i) climate resilient and gender inclusive urban infrastructure and services improved; (ii) institutional capacities of urban service providers and government strengthened; and (iii) women's role in urban development increased.
3. *Sub-Sector Master Plans.* GoKP has prepared sub-sector master plans for water supply, sanitation, drainage, and SWM for the five cities. The sub-sector master planning is important as it provides a long-term vision for integrated development in each city. The sub-projects prioritized under the KPCIP are supported and justified by the recommendations of the master planning as two key parameters have been considered for all priority sub-projects, namely: (i) the activities should provide an end-to-end and integrated solution for service delivery; and (ii) they are not impacted by the sub-sector master plans which are still under formulation.
4. The sub-projects prioritized through the project due diligence have been consolidated for KPCIP investment plan which will be jointly co-financed by ADB and AIIB through three outputs detailed below:
5. **Output 1. Urban infrastructure and public spaces improved and expanded (USD467.7 million, of which AIIB 163.3 million).** This output will be achieved through the following three components:
6. **Component A. Water Supply and Sanitation (USD283.3 million, of which AIIB USD98.8 million).** This component includes (i) augmenting potable water supply and storage capacities; (ii) replacing old and broken pipe networks, prioritizing those at risk of fecal contamination; (iii) promoting water safety, quality and conservation measures, such as treatment and disinfection facilities and water meter installations; (iv) constructing new STPs to ensure adequate treatment capacity using the best available and environmentally sound technology; and (v) replacing and upgrading sewerage networks and connecting these to treatment plants. Proposed sub-components include:
 - (i) *Abbottabad Water Supply.* The sub-project will serve four urban union councils presently served by WSSC Abbottabad, by supplying additional water to a population of 150,000 from two different surface water streams (*Phalkot* and *Jandar Bari*) to the city. An intake structure already exists at Phalkot source with a capacity of 1.9MGD. A new intake, consisting of a weir, cut-off walls and intake chambers will be constructed at Jandar Bari with a design capacity of drawing 2.8MGD of raw water. A new SWTP

with a design capacity of 5.7MGD will be constructed next to an existing treatment plant. Raw water from Jandar Barri source will be supplied to the new SWTP via 17 km of transmission main. Phalkot source will be connected to both existing and proposed SWTP, via 11 km of transmission mains, to provide flexibility in operations. Treated water will be delivered through 34 km of supply mains to the 17 existing and 16 new storage reservoirs. Each storage reservoir will have its own service zone with defined boundaries and an assembly of flow and pressure valves, flow meter and pressure transmitter to perform water balance calculations for each reservoir and regulate flows and pressures in respective zone. The project is also supporting installation of solar panels and solar powered pumps for the reservoirs which are located at higher elevations and where water cannot be delivered through gravity. Rehabilitation of existing network and construction of new network of approximately 200 km along with provision of 36,000 metered house connections have also been included under this sub-component.

- (ii) *Mingora Water Supply*. The sub-project supports the Greater Mingora Water Supply Scheme for supplying drinking water to a population of 300,000 in the nine urban union councils served by Mingora WSSC by replacing the existing tube well-based ground water supply. Required flows will be diverted from the Swat River by constructing a run-of-river intake structure with a capacity of 30 MGD. The intake structure will consist of an approach channel, regulating gates, abutments, a stilling basin (or a cistern) and a sump to receive the diverted water. From the sump, the raw water will be supplied to the proposed SWTP via a 1.5 km delivery main through gravity. The SWTP has been designed to treat 30 MGD of raw water via two parallel treatment streams to provide flexibility during operation. Treated water will be stored in clean water tanks and supplied to 18 new and 48 existing storage reservoirs via 84 km of transmission and supply mains. A new distribution network of approximately 500 km will be constructed along with provision of 55,000 metered house connections under the sub-project. Similar to Abbottabad water supply, the storage reservoirs at higher elevations will be delivered water through solar panels/power to reduce energy costs.
- (iii) *Peshawar Water Supply*. This sub-project will rehabilitate and upgrade the priority water infrastructure including distribution pipelines and overhead water storage tanks. Distribution network improvements will be linked to corresponding improvements in water supply sources, namely tube wells. This will ensure that the networks remain pressurized while meeting the quality and quantity requirements of an estimated 187,000 customers. A detailed technical analysis revealed prioritized service zones where the services are inadequate and need improvements. These zones are served by 61 tube wells which are connected to 34 overhead reservoirs. Catchment boundaries were re-defined for each overhead reservoir to serve its isolated distribution network and cater to the water supply requirements of a specific area. Approximately 155 km of priority distribution network will be restored within the area, 23 overhead reservoirs will be demolished and reconstructed, 10 overhead reservoirs will be repaired, 7 new tube wells will be constructed, and 41 existing ones will be rehabilitated with provision of solar pumps at selected tube wells, and approximately 22,000 meters will be installed.
- (iv) *Kohat Water Supply*. The sub-project will improve the water supply system in Kohat and ensure 24/7 sustainable water supply in six urban union councils presently served by Kohat WSSC, benefitting approximately 170,000 residents. Detailed condition assessment of city's water supply system, including tube wells, reservoirs and distribution network, was carried out during the due diligence. Catchment boundaries were marked out for each reservoir to avoid interconnections of the new distribution network (approximately 305 km) among different catchment areas. Hydraulic modeling was performed for each catchment area to ensure gravity flows from reservoir to end-users, which will almost entirely eliminate the present arrangements based on direct pumping. Thirty-four tube wells will also be solarized under the project reducing the energy and operational costs of the proposed systems.

- (v) *Kohat Sanitation System*. The sub-project is located in the Kohat Township, a planned urban settlement located in the Union Council-4 (one of the six union councils of District Kohat). The township was built in two phases, phase-1 and phase-2. Engineering surveys revealed that the existing sewer network is old and clogged/damaged and in need of major improvements. The sub-project will construct a sustainable sewerage system for wastewater collection and disposal for about 50,000 residents of the entire township, which will consist of construction of 80 km of sewer pipelines (35 km in Phase1 and 45 km in Phase-2); 7,500 house connections (either new or rehabilitation of existing infrastructure), two pumping stations to pump the sewage from the localities where gravity flow is not feasible, and sewage treatment plant with a design capacity of 3 MGD. Sludge treatment facilities, consisting of sludge thickener and drying beds, are proposed within the premises of STP. A gravity sludge thickener will receive the sludge from the settling tanks. After thickening, the sludge will be pumped to sludge drying beds from where it will be sent for final disposal. To cater for the high-power requirements and to reduce the operational expenses of the proposed STP, an on-grid solar system (capacity of 2,025 KW) will be installed as main energy source for the operation of system.
- (vi) *Mardan Sanitation System*. The sub-project has been designed for wastewater generated in six union councils served by Mardan WSSC. Technical studies prioritized construction of a new collection and disposal system for domestic sewage along with re-design of treatment system based on a mechanized STP. The original lagoons based STP was designed to collect wastewater flows from only three union councils of the city. However, the coverage of the proposed system has been extended to three additional union councils. The project area has been selected based on needs assessment as well as the topography of the area which can contribute to the proposed STP via gravity flow. The proposed STP, with a design capacity of 5.8 MGD, will serve a population of approximately 130,000 citizens. The STP will be constructed with three parallel streams (each of 1.93 MGD capacity) to provide operational flexibility. Sludge treatment facilities, consisting of a sludge thickener and drying beds, are proposed within the premises of STP. A gravity sludge thickener will receive the sludge from the settling tanks. After thickening, the sludge will be pumped to sludge drying beds from where it will be sent for final disposal. An on-grid solar system (capacity of 3,825 KW) will be installed as main energy source for the operation of STP.

7. **Component B. Integrated Solid Waste Management (USD168.5 million, of which AIB USD59 million)**. The SWM sub-component includes construction of sanitary landfills, safe closing or rehabilitation of the existing dumping sites and development of integrated SWM systems from source to final disposal in all the five cities. The system has been designed for door-to-door collection in residential areas whereas storage containers will be provided for commercial waste for collection and temporary storage. The project will finance the following sub-components:

(i) *Improving SWM in Peshawar*.

- The existing dumping ground at *Shamshatoo Road*, spread over an area of 100 acres, will be rehabilitated and part of the reclaimed land will be used for construction of the new facilities, designed as waste treatment and disposal complex. The landfill site is planned to contain five waste cells, with cell size ranging from 4 to 10 acres. A leachate treatment facility will be constructed next to the waste cells to collect and treat the leachate run-off and infiltration. Other facilities to be supported under the project include an administration building including a quality control laboratory, weighbridge of 100 tons capacity and a paved approach road. Because of the long distance of the landfill site from city center, three transfer stations are also proposed within the city.
- The project will support a set of carefully designed Mechanical-Biological Treatments (MBT) to manage environmental degradation and minimize land utilization and reduce landfill infrastructure costs. At the

same time, the project presents an opportunity to exploit the economic potential of the daily waste by diverting about 600 tons of waste (representing about one-third of daily waste) to intermediate treatment. An MRF capable of handling 40 tons of municipal waste per hour will be constructed. The sorted and segregated green waste will be subject to Anaerobic Digester to generate biogas. This waste will be mixed with the waste collected from fruits, vegetables and animal markets to optimize the carbon/nitrogen ratio of the feedstock. Digestate, obtained as a by-product, will be fed to a composting platform, where it will be aerated to convert into nutrient rich compost. A proposed sorting facility is expected to generate 120 tons/day of RDF, 10 tons/day of recyclables and about 100 tons/day of rejects which will require disposal at landfill site.

(ii) Improving SWM in Abbottabad.

- An Integrated SWM system has been designed for all the 12 union councils of Abbottabad which includes a new 35 acres landfill site to be constructed at a distance of 10 km from the city center. The landfill will consist of three waste cells, with cell size ranging from 2 to 4 acres. Fifty tons of waste will need to be disposed in the waste cells every day while the remaining waste will be diverted toward recycling and resource recovery. A leachate collection pond and treatment facility will be constructed within the landfill site. The site has been designed to handle the waste generated for the next 15 years and will also house an administration building, a 100 tons weighbridge for recording incoming waste data, and wheel washing and parking yard.
- An MRF capable of handling 170 tons of municipal waste will be constructed which will sort and segregate recyclables, metals, combustibles, and inert material. Bio-degradable waste will be segregated which will be fed to Anaerobic Digester to generate methane rich biogas. Digestate, obtained as a by-product, will be fed to a composting platform, where it will be aerated to convert into nutrient rich compost. The proposed sorting facility is expected to generate 60 tons/day of RDF, 5 tons/day of recyclables and about 15 tons/day of rejects which will require disposal at the landfill site.
- The existing dumping site at *Salhad* spread over an area of 21 acres will be rehabilitated under the project. The abandoned site will be safely closed and capped. The reclaimed land will be converted into a public park through plantation of trees and other green features.

(iii) Improving SWM in Mardan.

- A landfill will be developed over a 27-acre site at a distance of 11 km from the city center. Four waste cells, ranging in size from 2 to 4 acres, will be constructed. A leachate collection pond and treatment facility will be constructed within the landfill site. With maximum waste diversion, it is expected that the cells will initially receive five to ten tons of daily waste which will maximize the life of the landfill to 20 years. Other than the technical components of the landfill, the site will house an administration building, weighbridge for recording incoming waste data and parking yard.
- A centralized MBT will handle mixed municipal waste to sort and segregate material while green waste will be fed to an anaerobic digester. MRF will receive approximately 190 tons of municipal waste will be constructed which will sort and segregate recyclables, metals, combustibles, and inert material. About 100 tons/day of bio-degradable waste will be segregated which, after mixing with 30 tons/day of other green waste, will be fed to an Anaerobic Digester and subsequent composting. The proposed facilities are expected to generate 60 tons/day of RDF, 5 tons/day of recyclables and about 15 tons/day of rejects which will require disposal at landfill site.

(iv) Improving SWM in Kohat.

- A new landfill will be developed over a 20 acres site at a distance of 7 km from city center. The existing access road is in bad condition which will also be re-constructed as a metalled pavement to allow

vehicular movement. The landfill site is planned to contain five waste cells, each ranging in size from 1.6 to 2 acres. An area has been reserved for leachate treatment facility and leachate collection pond. The landfill is expected to receive five tons of waste every day and will be able to serve the city for next 20 years. Other than the technical components of landfill, the site will house an administration building, weighbridge for recording incoming waste data and parking yard.

- The MBT system designed under the project include an MRF to handle 120 tons of mixed municipal waste. Almost 100 tons of green waste, to be supplemented from other green waste collected directly from hotels and fruit and vegetable markets will be subjected directly to Anaerobic Digestion for capturing biogas. Digestate will be fed to a composting platform and converted to compost through aeration. The proposed system is expected to produce approximately 60 tons/day of RDF, 5 tons/day of recyclables and 10-15 tons/day of inert waste which will require landfilling.

(v) Improving SWM in Mingora.

- A new landfill site over an area of 7.5 acres will be constructed in Mingora at a distance of 5 km from city center. The landfill will consist of two waste cells of 2-3 acres. An area has been reserved for leachate treatment facility and leachate collection pond. Other than the technical components of the landfill, the site will house administration building, weighbridge for recording incoming waste data and parking yard.

8. Component C. Green Urban Infrastructure (USD15.9 million, of which AIIB USD5.6 million).

This component will finance: (i) redevelopment of public urban spaces; (ii) conversion of designated streets into pedestrian walkways, and certain areas into non-motorized traffics zones; (iii) rehabilitation of existing parks and developing green spaces/corridors and new parks; and (iv) modifying existing infrastructure and urban public spaces to improve resilience to climate change.

- (i) *Abbottabad, Revitalization of Old City Commercial Area (Saddar bazaar).* Saddar bazaar is located in the historical downtown area of Abbottabad which has a high concentration of commercial and cultural activities, and is visited by large number of tourists. The area consists of congested marketplaces, narrow alleys and degraded open spaces. Women form a large proportion of daily visitors yet there are limited facilities for women for rest and recuperation. The subcomponent aims to enhance the useability, gender-inclusiveness, pedestrian access to key destinations and non-motorized mobility within the selected area. Approximately 13,000 square meters of street area and 1,300 square meters of green spaces will be revitalized and upgraded. The streets and roads have been selected through spatial analysis and in consultation with government and other stakeholders to maximize the impact on livability and minimize adverse environmental and social impacts.
- (ii) *Kohat, Women's Business Development and Community Center.* The sub-project will empower female entrepreneurs through skills development and vocational training by upgrading an existing facility into business development center. The sub-project has been selected in consultation with the City Government, Department of Social Welfare, Special Education and Women Empowerment and other local stakeholders, who have also been consulted for the design of the infrastructure and its operations. The complex will impart vocational trainings to females and provide opportunities to establish small businesses within the same facility.
- (iii) *Abbottabad, Shimla Hill Park.* Shimla hills are located to the south-west of the city. The area is popular with locals because of rich biodiversity and natural vegetation, but it lacks accessible and safe recreational facilities. An area of over 87 acres will be developed as an outdoor natural park, which has been designed to complement the existing natural landscape. Proposed development includes increasing the green cover through plantation and vegetation, walking trails and ramps, recreational

sports facilities, improving the access to and facilities at vantage points and resting areas for families and visitors.

- (iv) *Kohat, Sport Complex Green Space.* A multi-purpose sports complex is situated in the north-west of the city on a 20-acre site. The sub-project addresses the lack of vegetation at the site as well as provide missing facilities. Green cover will be enhanced by planting about 6,500 trees and shrubs. The proposed additional facilities include upgrading of stepped pavilions for spectators, walking and jogging tracks, recreational park and space for women and children, hard and soft landscaping and tuck shops.
- (v) *Mardan, Ghulam Nabi Park.* The park will be developed over a vacant strip of 2.25 acres land in the center of the city. The site will be converted into a public park with green lawns, sitting and resting spaces, permeable walking tracks, play area for children and public restrooms. Plantation and green cover will be enhanced through planting of 185 trees and 950 shrubs. Given its central location with Mardan, the park will be accessible to a large population living in the vicinity, providing outdoor recreational space.
- (vi) *Mardan, Ladies Park.* The park for the exclusive use of women and children will be developed by major rehabilitation and upgradation of a 1.25-acre existing park. The existing site is in derelict condition due to lack of proper maintenance. The local community in the vicinity of the park has expressed strong interest in re-design and redevelopment of the park which is accessible and safe for the use of women and children. The park will be restored through additional plantation (about 80 trees and 540 shrubs), new stone walkways, seating furniture, playground for children and public restrooms. After restoration, the park will be accessible to a large population as a breathing and recreational space.
- (vii) *Mardan, Landscaping of public roads (National Highway N-45 and Ring Road).* These initiatives are part of a larger effort to increase the green cover and vegetation in Mardan city. National Highway N-45 runs across the middle of the city, dividing it into half. Its 15-km stretch within the city also serves as inter-city arterial road. Highway median has been underutilized as possible vegetation buffer. Additionally, some parts of the central median and a major roundabout have been paved with tuff pavers, which is a permanent heat source during the summers. Total length of ring road is about 45 km built around the periphery of the city. It has a 144-foot wide right-of-way, which besides the carriageway, has provision for service roads and greenbelts, presently underutilized. Certain segments of greenbelt, which are in depressions, get waterlogged during rainy seasons, affecting growth of vegetation as the soil cannot drain-off. The project will support (i) restoration of the N-45 median with parallel rows of interlocking barriers which will be filled with earth for vegetation, (ii) planting of about 12,500 trees and shrubs, (iii) replacement of turf pavers with grass to reduce the urban heat island effect and cool the environment, (iv) backfilling of depressed zones along the ring road and their development as dense urban vegetation zones, and (v) planting of about 32,000 trees and shrubs along the entire corridor of the ring road.
- (viii) *Mingora, Neighborhood Park.* The park will be developed on a 3-acre site located within a dense neighborhood. The existing site is an abandoned slaughterhouse, posing health risks to the residents. The project will support remediation of the existing site, demolishing of the existing derelict structures, cleaning-up of the accumulated solid waste and establishing an accessible and safe outdoor park. Main features of the park include: permeable walkways, seating furniture, children play area, tuck shops, grasslands and about 2,100 trees and shrubs.
- (ix) *Peshawar, Bagh-e-Naran Extension Park.* The park will be developed on a 13-acre vacant site in the Hayatabad township by expanding the existing Bagh-e-Naran park. The park will enhance the existing natural habitats and ecosystem and improve environmental quality for the residents. Facilities to be

provided include an outdoor sports area, urban forest comprising 4,000 trees and shrubs, children playground, jogging and walking tracks, public restrooms and cafeteria. Wide open areas have been designed for families' rest and recreation. The site is located next to a seasonal creek. A retaining wall will be constructed along the bank of the creek as a measure for flood protection and climate resilience feature in the design.

- (x) *Peshawar, Besai Park*. The 11-acre site for the proposed park is located in Hayatabad township, which was earmarked for a park in the original master plan but never got developed. The project will finance its development with multi-purpose activities. Main features of the park will include: green lawns, urban forest with about 6,000 trees and shrubs, walkways, children play area, an amphitheater, a cycling track and outdoor sporting facilities.

Output 2: Institutional Capacities of urban service providers strengthened.

9. ***Component D: Institutional Strengthening and Capacity Building (USD30.0 million, of which AIIB USD9.5 million)***. This component aims to ensure the effectiveness and sustainability of infrastructure investments, strengthen governance and develop sustainable business models to guide investments, create a favorable environment for private sector participation in urban municipal services, and build capacity in planning, budgeting and resource allocation. To achieve these objectives, the project will finance the following activities: (i) establishment of KP Municipal Regulatory Office, a new and dedicated regulatory body, to improve the oversight and regulatory mechanism for municipal services; (ii) preparation of financial sustainability and business action plans for WSSCs to introduce cost recovery tariff programs based on a new set of service standards; (iii) development of Enterprise Resource Planning systems with the WSSCs to strengthen their operational systems and management of assets and resources; (iv) the improvement of the existing local government academy for training staff of municipal services institutions including WSSCs; and (v) individual consultants for capacity building of PMU and CIUs. This output will also support implementation of new digital citizens' interface to strengthen client responsiveness, especially women participation in service provision, and feedback mechanism and to improve billing and complaints handling systems. Lastly, an effective communication strategy will also be rolled out to promote behavior change in water, sanitation, and hygiene practices (WASH).

10. ***Project Management and Coordination (USD24.8 million, of which AIIB USD9.3 million)***. This component will provide funding for incremental operating costs for staff and individual consultants of PMU and CIUs; office equipment and material; support formulation of a communication and citizen engagement; hiring of an international PMCSC firm to support project and construction management; and PPMS to support project M&E, including baseline surveys, periodic monitoring during implementation, and beneficiaries' satisfaction surveys, and safeguard monitoring.

Output 3: Women's role in urban development increased.

11. ***Component E: Women's participation and urban governance (USD5 million)***. This component, supported by the Asian Development Fund (ADF) gender grant, will improve women's participation in urban governance and services as well as women's access to economic opportunities. In particular, this output will finance: (i) the sustainable management of Kohat Women Business Development Center (WBDC) to promote WASH initiatives and empower women through income generating activities for better economic opportunities. Capacity building activities will be designed for the WBDC staff and instructors in consultation with the local technical and vocational institute for improving teaching/learning methodologies and skills development curricula; (ii) the establishment of a scholarship program for qualified female students who wish to pursue research and education in selected fields relevant to urban sector

development and planning; (iii) a one-year-long internship opportunity to 200 fresh graduates (with 70% female graduates) in the city administrative units including WSSCs in five KPCIP cities; and (iv) rehabilitation of women's polytechnic college in Peshawar which will benefit around 500 girls to access technical education in a variety of employable skills relevant to urban sector development. The selected female students will be given opportunities to join the WSSCs in order to gain practical experience to nurture future leaders of municipal operations. This component also establishes a new women-led WASH initiative called "SAFA KHAR DA TOLO" (Clean City for All) within the WSSCs to promote good hygiene behaviors. The ADF gender grant will support the capacity building of the staff, women, and youth in leadership and WASH-related skills and knowledge.

Annex 3: Economic and Financial Analysis

Economic Analysis

1. **Approach and Methodology.** A cost-benefit analysis was undertaken to assess the economic viability of the project, based on a comparison between “with-” and “without-project” scenarios. The EIRR and ENPV of the project were estimated using discounted cash flow analysis of economic costs and benefits. A sensitivity analysis was performed to evaluate the impact of: (i) increased capital costs; (ii) increased O&M costs; (iii) decreased benefits; (iv) one-year delayed start-up operation; and (v) four-year delayed start-up operation.

2. **Situational Context and Demand Analysis.** Currently potable water supply in Abbottabad, Kohat, Mingora, and Peshawar – the cities where the water supply component will be implemented – is 238,443 cubic-meters per day, translating to 40 lpcd of piped water to 241,300 persons for an average of six hours per day. The project will result in an increase in clean water supply capacity to 400,000 cubic-meters per day, translating to 132.5 lpcd, for 800,000 persons, starting in 2028.

3. Sewerage systems serve less than 5 percent of KP province. Sewerage and storm water drainage systems are combined; they are poorly maintained and prone to overflow, causing urban flooding. In Mardan and Kohat, where the sewerage component will be implemented, wastewater moves via open drains and there are no properly functioning wastewater plants. Untreated sewage and wastewater are discharged into surface water drains or agricultural land posing environmental and health risks to communities and farmers. The current practice carries higher risk of social and environmental impacts, and thus costs. These costs would be avoided in the with-project scenario. The project assumes that the 2021 capacity for *properly* functioning wastewater treatment is zero. The project will result in 30,000 cubic meter per day of sewage treatment capacity starting in 2028, through two new treatment plant constructions. With the project, a total of 180,000 persons will be served by a 156 km sewerage network connected to a new wastewater treatment system.

4. Less than 30 percent of solid waste produced in KP is collected. Uncollected waste is typically burned, disposed of in drains or used to fill low-lying land. Collected waste is disposed of and burned in open dumps. Improperly disposed plastic waste blocks drains, contributing to flooding from rains. The lack of sanitary landfills and use of open dumps for trash disposal contributes to pollution of the surrounding environment. Without the project, the baseline in the five project cities is zero solid waste management facilities, zero solid waste treatment, and no door-to-door solid waste collection. The project will result in the treatment of two thousand tons per day of solid waste starting in 2028. The project will result in GHG emission reductions of 250,516 tons of CO₂-equivalent per year.

5. **Key Assumptions of the Economic Analysis.** The main assumptions used in the analysis are as follows:

- Population growth: for each city, population growth is assumed to follow the historical trend
- Domestic price numeraire: all project inputs and outputs are valued at domestic market prices in national currency; traded goods are adjusted to domestic price level using the shadow exchange rate factor
- Constant 2021 prices: All costs and benefits represented in constant 2021 prices
- Exchange rate: USD 1 = PKR 156.7
- Shadow exchange rate factor: 1.039

- Shadow wage rate factor (unskilled labor): 0.85⁹
- Economic life of project: 25 years (2022 to 2046)
- Construction period: 6 years
- Benefits assumed to accrue after completion of all construction works in sixth year
- Discount rate: 9 percent.

6. **Economic Costs.** Economic costs include construction and O&M costs, and are calculated from project cost estimates. Price contingencies, financial charges, taxes and duties are excluded; physical contingencies are included. Project costs are converted to economic costs.

Table 1. Economic Costs of the Project

Project Component	Capital Costs	O&M Costs
	Economic Cost	Economic Cost
Water supply	243.24	8.46
Sewerage and drainage	95.82	3.33
Solid waste management	198.34	7.09
Urban space/public parks	25.59	0.93
Total	562.99	19.82

7. **Economic Benefits.** The project benefits included in the quantitative analysis are, for water supply and sanitation: (i) value of increased water supply (incremental water); (ii) health benefits (avoided earnings loss from sick days, and avoided costs of health treatment). With respect to sewerage and sanitation, project benefits include: (i) avoidance of flood-related costs (earnings loss, and infrastructure damage); (ii) health benefits (avoided earnings loss from sick days, and avoided costs of health treatment); and (iii) avoidance of environmental pollution costs. For improved solid waste management, project benefits derive from: (i) value of improved solid waste management (incremental); (ii) avoidance of indirect coping costs (time saved in trash disposal); and (iii) avoidance of GHG emissions.

8. Further project benefits, not accounted for in the quantitative analysis, include, for water supply and sanitation, avoided cost of procuring water from other sources, time saved in handling and treatment of water (e.g. boiling), and avoided costs of water storage. Further, greening of urban infrastructure will result in amenity value and health benefits for users. Regarding the institutional strengthening and gender inclusiveness activities of the project, benefits will include increased participation of the female labor force, increased lifetime earnings of children benefitting from childcare facilities and of women graduating from the urban sector and development planning qualifications, and income generated from women-owned commerce.

Table 2. Economic Benefits of the Project

Benefit Category	Benefit per Household (PKR/Year)	Total Benefit – Year 2028 (PKR million)		
		Water Supply	Sewerage	Solid Waste Management
Non-Incremental				
Avoided cost of treatment water borne diseases ^a	7,828	564	10	

⁹ Based on recent ADB project in Peshawar, Peshawar Sustainable Bus Rapid Transit Corridor Project. RRP 48289-002. 2017. Asian Development Bank

Avoided earnings loss during sick days ^b	113,668	8,196	144	
Avoided loss of earnings during flood days ^c	41,376		131	
Avoided damage of infrastructure due to flood ^d	74,824		238	
Avoided cost of environmental pollution ^e	103,685		329	
Time saved for trash disposal ^f	3,060			2,442
Avoided GHG emissions ^g				1,446
Incremental				
Value of incremental water consumed ^h	297			
Value of improved solid waste management ⁱ				5,496

- a Treatment cost for water borne diseases estimated as: PKR 32,814 (annual cost of treatment for diseases) * 0.43 (% of annual treatment cost attributed to water borne disease) * 0.51 (% of households affected by water borne disease). Sixty percent of unit annual treatment cost is attributed to water supply, forty percent to sewerage and drainage. Data source: KPCIP Baseline Socio-Economic Survey, 2021.
- b Avoided earnings loss during sick days from water borne diseases estimated as: PKR 7,233 (average daily Hh income) * 15.7 days (average number of working days lost annually because of water borne disease). Sixty percent of unit earnings loss is attributed to water supply, forty percent to sewerage and drainage. Data source: KPCIP Baseline Socio-Economic Survey, 2021.
- c Avoided earnings loss during flood days estimated as: PKR 7,233 (average daily Hh income) * 5.72 days (average annual working days lost because of floods). Data source: KPCIP Baseline Socio-Economic Survey, 2021.
- d Cost of avoided infrastructure damage estimated as: PKR 27,300 (average cost of repair and maintenance works after each flooding weighted by the frequency of flooding occurrence) * 2.74 flooding frequency per year. Data source: KPCIP Baseline Socio-Economic Survey, 2021.
- e The avoided cost of environmental pollution is valued by using, as a proxy, the avoided cost of treating wastewater (to an environmentally acceptable level) using traditional wastewater sedimentation ponds. The avoided cost of wastewater treatment is estimated assuming wastewater produced per household in KP is 431.5 m³ per year against ADB KPCIP treatment capacity of 11,096,000 m³ sewage per year and cost of wastewater treatment at 1.37 US\$ per year in 2010 updated to 2021 prices. Source: KP CIP estimates; Murtaza, G. and M. H. Zia. 2012. Wastewater Production, Treatment and Use in Pakistan. Final Country Report.
- f Time saved from trash disposal estimated considering 30 minutes of time (woman/child) daily, with time valued at 216,000 PKR/year (annual salary of an unskilled worker, based on minimum wage, multiplied by the shadow wage rate 0.85) reduced using an efficiency factor of 0.8 (child/woman). Data source: Baseline Socio-Economic Survey, 2021 (time for trash disposal); and Government of Pakistan, Ministry of Finance – Annual Budget for 2020-2021 (minimum wage).
- g Estimated based on: GHG emissions avoided in tons/year CO₂ * US\$43.2 (year 2020), increased by 2.23% annually (the average value of GDP deflators for the last three years) in real terms to account for increasing marginal damage of global warming over time. (Sources: Project team's climate mitigation assessment (for GHG emissions estimate); World Bank national accounts data and OECD national accounts data files (GDP deflators)).
- h Valuation is based on willingness to pay based on the benefits transfer method using unit transfer approach. Source: Akram, A. and S. M. Olmstead (2011): "The Value of Household Water Service Quality in Lahore, Pakistan", Environmental and Resource Economics, 49, 173–198. (Willingness to pay from 2011 was updated to 2021 using Consumer Price Index.)
- i Valuation is based on willingness to pay based on the benefits transfer method using unit transfer approach. Source: Mustafa, U., Ahmad, I., and ul Haq, M. 2014. Capturing Willingness to pay and its Determinants for Improved Solid Waste Management. Pakistan Institute of Development Economics Working Papers No 110. (Willingness to pay from 2014 was updated to 2021 using Consumer Price Index). The willingness to pay survey introduced efficiency, regularity, and sanitary improvements but omitted time saved for trash disposal, hence time saved for trash disposal was included as non-incremental benefit.

9. **Cost-Benefit Analysis.** The results show that the project is economically viable. The EIRR for the various components of the project are: 13.0 percent for water supply; 10.1 percent for sewerage and

sanitation; and 18.3 percent for solid waste management. The EIRR of the overall Project is 13.8 percent. The ENPV of the Project is PKR 29,002 million, based on a 9 percent social discount rate.

Table 3. Project Viability

Project Component	EIRR (%)	ENPV at 9%	
		PKR million	USD million
Water supply and sanitation	13.0	12,518	78.89
Sewerage and drainage	10.1	1,808	11.54
Solid waste management	18.3	14,676	93.66
Overall	13.8	29,002	185.08

Table 4. Detailed Costs and Benefits Over Project Life

Year	Construction Cost	O&M Cost	Total Cost	Water Supply and Sanitation			Sewerage System					Solid Waste			Overall Project	
				Avoided earning loss during sick days	Avoided cost of treatment for water borne diseases	Value of incremental water	Avoided earning loss during flood days	Avoided damage of infrastructure from flood	Avoided earning loss during sick days	Avoided cost of treatment for water borne diseases	Avoided cost of environmental pollution	Reduction in GHG emission	Time saved for trash disposal	Value of improved solid waste management	Total benefits	Net benefits
2021	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0
2022	8,421	-	8,421	-	-	-	-	-	-	-	-	-	0	0	0	(8,421)
2023	12,632	-	12,632	-	-	-	-	-	-	-	-	-	0	0	0	(12,632)
2024	21,053	-	21,053	-	-	-	-	-	-	-	-	-	0	0	0	(21,053)
2025	21,053	-	21,053	-	-	-	-	-	-	-	-	-	0	0	0	(21,053)
2026	16,842	-	16,842	-	-	-	-	-	-	-	-	-	2,304	5,185	7,489	(9,354)
2027	4,211	1,992	6,203	-	-	-	-	-	-	-	-	-	2,372	5,338	7,710	1,507
2028	-	2,139	2,139	8,196	564	297	131	238	144	10	329	1,446	2,442	5,496	19,295	17,157
2029	-	2,300	2,300	8,399	578	305	148	267	162	11	370	1,478	2,515	5,659	19,892	17,592
2030	-	2,478	2,478	8,608	593	312	166	300	182	13	416	1,511	2,589	5,826	20,515	18,037
2031	-	2,676	2,676	8,823	608	320	186	337	205	14	467	1,545	2,666	5,999	21,168	18,493
2032	11,435	2,895	14,330	9,044	623	328	209	378	230	16	524	1,580	2,744	6,176	21,853	7,524
2033	-	3,139	3,139	9,272	639	336	235	425	258	18	589	1,615	2,826	6,359	22,572	19,433
2034	12,936	3,410	16,347	9,507	655	345	264	477	290	20	661	1,651	2,826	6,359	23,055	6,709
2035	-	3,714	3,714	9,750	671	354	296	536	326	22	743	1,688	2,826	6,359	23,571	19,857
2036	-	4,053	4,053	9,999	689	363	333	602	366	25	834	1,725	2,826	6,359	24,121	20,068
2037	-	4,433	4,433	9,754	672	354	374	676	411	28	937	1,764	2,826	6,359	24,155	19,721
2038	11,435	4,860	16,295	9,950	685	361	420	760	462	32	1,053	1,803	2,826	6,359	24,710	8,416
2039	-	5,340	5,340	10,153	699	368	472	853	518	36	1,182	1,844	2,826	6,359	25,310	19,970
2040	-	5,880	5,880	10,361	714	376	530	958	582	40	1,328	1,885	2,826	6,359	25,959	20,079
2041	-	6,489	6,489	10,515	724	381	595	1,076	654	45	1,492	1,927	2,826	6,359	26,595	20,106
2042	-	7,177	7,177	10,515	724	381	669	1,209	735	51	1,675	1,970	2,826	6,359	27,113	19,937
2043	-	7,954	7,954	10,515	724	381	751	1,358	825	57	1,882	2,014	2,826	6,359	27,692	19,738
2044	12,936	8,834	21,770	10,515	724	381	843	1,525	927	64	2,113	2,059	2,826	6,359	28,337	6,567
2045	11,435	9,831	21,266	10,515	724	381	947	1,713	1,041	72	2,374	2,105	2,826	6,359	29,057	7,791
2046	-	10,962	10,962	10,515	724	381	1,064	1,924	1,169	81	2,666	2,152	2,826	6,359	29,861	18,899
2047	-	12,247	12,247	10,515	724	381	1,064	1,924	1,169	81	2,666	2,200	0	0	20,724	8,477
2048	-	13,708	13,708	10,515	724	381	1,064	1,924	1,169	81	2,666	2,249	0	0	20,774	7,066
2049	-	15,370	15,370	10,515	724	381	1,064	1,924	1,169	81	2,666	2,299	0	0	20,824	5,454
2050	-	17,262	17,262	10,515	724	381	1,064	1,924	1,169	81	2,666	2,351	0	0	20,875	3,613
2051	-	19,418	19,418	10,515	724	381	1,064	1,924	1,169	81	2,666	2,403	0	0	20,928	1,509
Total	144,387	178,560	322,947	237,482	16,354	8,612	13,953	25,233	15,333	1,056	34,966	45,265	57,191	128,709	584,155	261,208
ENPV	71,106	27,550	98,657	50,270	3,773	1,987	2,104	4,148	2,521	174	5,748	9,179	15,979	35,961	130,330	31,674
EIRR																13.8%

10. **Sensitivity Analysis.** A sensitivity analysis of the EIRR and ENPV was conducted to assess the impact of adverse changes in key variables: (i) a 10 percent overrun in construction costs; (ii) a 10 percent overrun in O&M costs; (iii) a 10 percent reduction in benefits; (iv) a one-year delay in implementation; and (v) a four-year delay in implementation. The EIRR remained at or above the 9 percent social discount rate in all scenarios.

Table 5. Sensitivity Analysis

Scenario	Overall Project		Water Supply & Sanitation		Sewerage		Solid Waste	
	EIRR	NPV	EIRR	NPV	EIRR	NPV	EIRR	NPV
Base case	13.8	29,002	13.0	12,518	10.1	1,808	18.3	93.7
Capital cost (+10%)	12.4	21,892	11.8	9,416	9.4	714	16.2	75.1
O&M cost (+10%)	13.5	26,247	12.7	11,317	10.0	1,717	17.9	84.3
Benefit (-10%)	11.9	16,236	11.4	6,963	9.3	442	15.5	56.4
1-yr implementation delay	13.8	28,898	12.9	12,011	9.8	1,343	18.4	99.2
4-yr implementation delay	13.7	30,024	12.8	9,630	9.2	309	18.5	118.9

Financial Analysis

11. In order to decentralize and corporatize water and sanitation services, the GOKP established, in 2014, seven independent municipal corporations, the WSSCs. The WSSCs have taken over from local government, the O&M of assets for water supply, wastewater and SWM services in the capital cities of KP’s seven administrative divisions. The WSSCs entered into service and asset management agreements with the relevant municipal authorities for the transfer of assets and human resources to facilitate the delivery of their mandates.

12. **Approach and Methodology.** The project consists of various sub-projects in water supply, sewerage, SWM and urban green spaces. With the exception of urban green space sub-projects, the sub-projects are designed to generate incremental revenues through additional connections and volume-based metered service charges by WSSCs. Existing tariffs are, however, not structured for full cost recovery, and collection efficiency is weak. As a result, the WSSCs do not generate positive cash flows. Historically, WSSCs have relied heavily on GoKP grants for operational sustenance, and this is expected to continue to be the case with the project. The financial analysis seeks to: (i) assess the past, current, and projected financial performance of the WSSCs in a without-project scenario; (ii) assess projected financial performance of WSSCs with the project, based on GoKP’s ability to fund the net incremental O&M costs of the Project.

Situational Context.

13. Historically WSSCs have been financially stable due to GoKP support. WSSCs’ own-source revenue increased on average 35 percent annually between 2017 and 2020 due to increased residential customers. However operating ratios remained low at 10 to 15 percent, due to high operating costs and lower-than-cost-recovery tariffs. The financial position of WSSCs remained

stable, primarily due to GoKP grants, indicating GoKP’s strong commitment to ensuring WSSCs’ operational and financial sustainability.

Table 6. Consolidated Financial Performance of WSSCs (2017-2020)

Item	FY2017 Actual	FY2018 Actual	FY2019 Actual	FY2020 Actual
A. Consolidated financial performance				
Operating costs (PKR billion)	2.39	2.80	3.50	3.99
Administrative costs (PKR billion)	0.27	0.37	0.51	0.57
Total costs (PKR billion) (a)	2.66	3.17	4.02	4.56
Revenue from services (PKR billion) (b)	0.27	0.43	0.61	0.62
Operating loss without Govt. grants (PKR billion)	(2.40)	(2.74)	(3.41)	(3.94)
Government grants (PKR billion)*	2.50	2.98	3.65	4.33
Depreciation and amortization (PKR billion) (c)	0.00	0.06	0.08	0.10
Total costs – adjusted (PKR billion) (d = a-c)	2.66	3.11	3.93	4.46
Operating ratio (b/d) (%)	10%	14%	15%	14%
B. Consolidated cash flow				
Operating cash flows (PKR billion)	(0.33)	(1.16)	(1.06)	(1.31)
Investing cash flows (PKR billion)	(0.07)	(0.11)	(0.21)	(0.09)
Financing cash flows (PKR billion)	0.13	1.98	1.11	1.67
Net cash generated/(used) (PKR billion)	(0.27)	0.70	(0.16)	0.26
C. Consolidated financial position				
Long term assets (PKR billion)	0.24	0.31	0.44	0.45
Current assets (PKR billion)	1.40	2.66	2.96	3.59
Total liabilities (PKR billion)	1.44	2.79	3.21	3.78
Net assets (PKR billion)	0.2	0.18	0.18	0.26

() = negative, FY = fiscal year

*Government grants include allocations from Tehsil Municipal Administration, and funding from the LGE&RDD budget

Source: Audited financial statements: Up to FY 2020 for WSSCs Kohat and Swat; Up to FY 2019 for WSSCs Peshawar and Mardan.

14. “Without Project”. Projected financial performance of WSSCs follows the existing trend. Financial performance (Table 7) is not expected to improve substantially in the next five years, despite customer growth, due to incremental costs and a stagnant tariff regime. The operating ratio is projected to be 14 to 16 percent.

Table 7. Projected Operating Results of WSSCs (2022-2030) - Without Project

Item	FY2022	FY2023	FY2024	FY2025	FY 2026	FY2027	FY2028	FY2029	FY2030
Consolidated projected operating results									
Operating costs (PRs billion)	5.74	6.36	6.92	7.51	8.22	8.96	9.78	10.68	11.66
Administrative costs (PRs billion)	0.89	0.97	1.06	1.15	1.26	1.37	1.50	1.64	1.79
Total costs (PRs billion) (a)	6.63	7.33	7.98	8.67	9.48	10.34	11.27	12.31	13.44
Revenue from services (PRs billion) (b)	0.89	0.97	1.09	1.21	1.35	1.50	1.68	1.88	2.12
Operating loss without Govt. grants (PRs billion)	(5.74)	(6.36)	(6.90)	(7.46)	(8.14)	(8.83)	(9.59)	(10.43)	(11.32)
Government grants (PRs billion)	6.11	6.43	6.97	7.57	8.22	8.93	9.71	10.56	11.50

Item	FY2022	FY2023	FY2024	FY2025	FY 2026	FY2027	FY2028	FY2029	FY2030
Depreciation and other adjustments (PRs billion) (c)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Total costs – adjusted (PRs billion) (d = a-c)	6.13	6.83	7.48	8.17	8.98	9.84	10.77	11.81	12.94
Operating ratio (b/d) (%age)	14%	14%	15%	15%	15%	15%	16%	16%	16%

() = negative, FY = fiscal year

15. “With Project”. Projected financial performance of WSSCs has been assessed on the assumption that the tariffs remain unchanged. However, with installation of meters, consumption-based billing will be introduced in project areas.¹ Further, the sanitation tariffs in project areas with functional wastewater treatment have been indexed to water consumption. Incremental revenues have been assumed to accrue from the SWM facilities (RDF, compost and recyclables). However, no changes have been assumed in the current tariff regime for waste collection as the project team was unable to conduct rigorous WTP surveys due to the ongoing COVID-19 pandemic.

Table 8: Projected Operating Results of WSSCs (2022-2030) - With Project

Item	FY2022	FY2023	FY2024	FY2025	FY 2026	FY2027	FY2028	FY2029	FY2030
Consolidated projected operating results									
Operating costs (PRs billion)	5.74	6.36	6.92	7.51	15.57	16.96	16.52	18.00	19.61
Administrative costs (PRs billion)	0.89	0.97	1.06	1.15	1.26	1.37	1.50	1.64	1.79
Total costs (PRs billion) (a)	6.63	7.33	7.98	8.67	16.83	18.33	18.02	19.64	21.40
Revenue from services (PRs billion) (b)	0.89	0.97	1.09	1.21	2.53	2.80	3.13	3.49	3.90
Operating loss without Govt. grants (PRs billion)	(5.74)	(6.36)	(6.90)	(7.46)	(14.30)	(15.53)	(14.89)	(16.15)	(17.49)
Government grants (PRs billion)	6.11	6.43	6.97	7.57	8.22	8.93	9.71	10.56	11.50
Depreciation and other adjustments (PRs billion) (c)	0.50	0.50	0.50	0.50	1.29	8.37	8.37	8.37	8.37
Total costs – adjusted (PRs billion) (d = a-c)	6.13	6.83	7.48	8.17	15.55	9.96	9.65	11.27	13.03
Operating ratio (b/d) (%age)	14%	14%	15%	15%	16%	28%	32%	31%	30%

16. The results show that the WSSCs’ financial performance improves as a result of incremental revenues from the transition to consumption-based billing for water, and charging for sanitation services. As a result, the operating ratio is expected to increase, and will exceed 30 percent during FY2028-FY2030. The analysis reveals that though these entities will continue to rely on financial support from the provincial government to meet the O&M shortfall, major improvements can be achieved even with minor reforms. The analysis underscores the need for major operational and

¹ The analysis assumes per capita consumption of 50GPD and sewer fee collection as 80 percent of water bill. This is in line with utility rates in other large cities of Pakistan.

business reforms which focus on: reform in the tariff regime which is unrealistically low; major investments in deteriorated infrastructure which is characterized by high leakage losses; major investments in services which the consumers currently consider to be of low-quality and unhygienic and, thus, not willing to pay for; and improvements in billing and metering systems to move toward consumption-based charges. Output 2 of the project will specifically support the government in designing and implementing such institutional reforms.

17. GOKP commitment towards WSSCs' support is expected to continue for the foreseeable future. From 2017 to 2020, provincial (GOKP) resources (Table 9) have grown consistently in line with expenditure, and budget allocations/releases to the LGRDD (Table 10), the GoKP's line ministry for the project, are consistent with budget requirements. GOKP's 2020-2023 medium term budget estimates for service delivery indicate increasing planned budget allocations to LGRDD: PKR 26.5 billion for FY 2022 (of which, current expenditure: PKR 11.5 billion), and PKR 28.5 billion for FY 2023 (of which, current expenditure: PKR 12.9 billion).² This points to GoKP's continued commitment and support for the LGE&RDD.

Table 9. GOKP Fiscal Performance (2017-2021)

Item	FY2017 ¹	FY2018	FY2019	FY2020	FY2021
	Actual	Actual	Actual	Actual	Budget
A. Total GOKP revenues (PKR billion) (a)	404.2	493.2	513.9	763.2	923.0
B. Total GOKP expenditures (PKR billion) (b)	458.2	504.2	520.8	763.2	923.0
Current expenditure (PKR billion)	338.6	348.0	369.0	532.6	593.1
Development + capital expenditure (PKR billion)	119.6	156.2	151.8	230.7	329.9
C. Fiscal deficit (PKR billion) (c) = (a-b)	(54.0)	(11.0)	(6.9)	0	0
D. Fiscal deficit (%) (c/a)	(13%)	(2%)	(1%)	0%	0%
E. Growth in current expenditure allocation (%)		3%	6%	44%	11%

() = negative, FY = fiscal year

1. Expenditure classifications were revised in FY 2018

Sources: FY 2017 to FY 2019, GOKP's Actual Revenue and Expenditure Report 2018-2019; FY 2020 and FY 2021, GOKP Annual Budget Statement 2020-2021.

Table 10. LGE&RDD Budget and Actual Expenditure (2017-2021)

Item	FY2017	FY2018	FY2019	FY2020	FY2021
	Actual	Actual	Actual	Actual	Budget
A. Total LGE&RDD budget (PKR billion) (c=a+b)	13.2	23.3	13.5	14.2	17.8
Current and development budget (PKR billion) (a)	12.8	22.4	12.5	13.2	17.0
TMAs budget for WSSCs (PKR billion) (b)	0.4	0.9	1.0	1.0	0.8
B. Total LGE&RDD expenditure (PKR billion) (f+g)	11.5	22.1	13.1	13.5	17.0
Current expenditure (PKR billion) (d)	3.8	3.3	3.3	5.3	10.3
TMAs budget utilization - WSSCs (PKR billion) (e)	0.4	0.9	1.0	0.9	0.7
Total current expenditure (PKR billion) (f=d+e)	4.2	4.2	4.3	6.2	11.0
Development expenditure (PKR billion) (g)	7.3	17.9	8.8	7.3	6.7
Year-on-year change - annual budget (%)	-	77%	(42%)	5%	26%
Year-on-year change - current expenditure (%)	-	0%	0%	61%	94%

() = negative, FY = fiscal year, TMA = Tesil Municipal Administration.

Source: FY 2017 to FY 2020, Accountant General GOKP Appropriation Accounts for FY 2017-2020; FY 2021, GOKP Annual Budget Statement 2020-2021.

² GOKP Finance department: [Medium Term Budget Estimates for Service Delivery \(2020-2023\)](#).

18. **Key Assumptions of the Financial Sustainability Analysis.** The main assumptions used in the analysis are as follows:

- In a “without-project” scenario, the percentage of LGRDD budget to total GOKP budget remains at 1.84 percent (based on the FY 2021 approved budget)
- Service rates are based on existing tariffs,
- Irrecoverable revenue is estimated at 20 percent of gross revenue from FY 2026 onwards,
- Inflation is 8.76 percent, based on current IMF estimates.³

19. **Financial Sustainability.** The net incremental O&M costs of the project are projected to be 0.45 percent of the total GoKP budget, whereas the LGRDD budget is projected to increase by 0.51 percent, from 1.84 percent of the total GoKP budget in a “without-project” scenario, to 2.35 percent in the “with-project” scenario. The net incremental costs of the project are therefore within the absorptive capacity of the GoKP. A scenario analysis, assuming 10 percent increase in total incremental funding required to cover the O&M costs of the project, did not indicate a material impact on the percentage budget requirement with respect to the total GoKP budget. Based on the above, and GoKP’s demonstrated commitment to ensure WSSCs’ financial sustainability, the WSSC’s financial situation is considered to be stable. Further, the GoKP has commenced institutional reforms, including implementation of financial sustainability action plans, to improve operational and financial sustainability of WSSCs, and decrease their dependence on grants. Reform measures include revision of tariff structures, rationalization of operating and administrative costs, and improved service standards.⁴ Finally, as indicated earlier, incremental revenues will be generated from the project, and these are expected to reduce the dependency of the WSSCs on government grants.

³ IMF. [Pakistan country page](#). Country Data. Accessed July 7, 2021.

⁴ A willingness to pay survey indicated that KPK residents are willing to pay additional costs if the service standard improves.

Table 11. Project Incremental Costs – Funding Requirement Compared to Budget (Projected)

Item	FY2026	FY2027	FY2028	FY2029	FY2030	FY2031
A. Water supply						
Incremental cash inflow	492	549	632	726	831	951
Incremental O&M costs	895	973	1,058	,151	1,252	1,362
Net incremental O&M costs	402	424	426	426	421	411
B. Sewerage						
Incremental cash inflow	50	54	64	76	90	106
Incremental O&M costs	687	747	812	883	961	1,045
Net incremental O&M costs	637	693	748	808	871	939
C. Solid waste-management						
Incremental cash inflow	740	799	864	935	1,014	1,100
Incremental O&M costs	5,425	5,900	6,417	6,979	7,591	8,256
Net incremental O&M costs	4,684	5,101	5,553	6,044	6,577	7,156
D. Urban green spaces						
Incremental cash inflow	0	0	0	0	0	0
Incremental O&M costs	345	375	408	444	483	525
Net incremental O&M costs	345	375	408	444	483	525
Total net incremental O&M costs	6,069	6,593	7,136	7,721	8,352	9,031
Add: uncollectable receivables	257	281	312	347	387	431
Total incremental funding required	6,325	6,873	7,448	8,069	8,739	9,462
LGE&RDD budget, without project	28,731	1,605	34,765	38,242	42,066	46,272
LGE&RDD budget, with project	35,057	38,478	42,213	46,310	50,805	55,734
GOKP budget (PRs in billion)	1,487	1,635	1,799	1,979	2,176	2,394
% of total GOKP budget						
Total incremental funding required	0.43%	0.42%	0.41%	0.41%	0.40%	0.40%
Total LGE&RDD budget, with project	2.36%	2.35%	2.35%	2.34%	2.33%	2.33%

FY = fiscal year

Source: Project financial projections

Annex 4: Environmental and Social Summary

Environmental Summary

	Sub-Project	Environmental Category / Instrument	Sub-project specific Environmental Impacts and Mitigations
Abbottabad			
1	Abbottabad Water Supply Scheme 1a. Water Treatment Plan 1b. Water Supply Infrastructure	Category B / IEE	No environmental sensitivity associated with the subproject location. In addition to the typical construction-related impacts (dust and gaseous emissions, wastewater discharges, solid waste, OHS, traffic management), the treatment plant will generate sludge, which will be disposed of in the nearby landfill site (another subproject of KPCIP discussed below). Water source sustainability for the two water sources (water streams: Phalkot and Jamdar Bari) has also been determined with the help of the catchment study. Phalkot has a flow range between 170 and 450 liters per second (lps) out of which 100 lps will be extracted for the proposed subproject while Jandar Bari flow ranges between 208 and 1415 lps out of which 200 lps will be extracted for the water supply scheme.
2	New Landfill Site	Category A/ EIA	<p>This sub-project site has a rolling terrain with the southern part being mostly hilly with steep slopes. Two perennial streams Darkhan Katha Nullah and Dor River are flowing close to the landfill site. Darkhan Katha Nullah, which carries mainly wastewater from Abbottabad city, flows about 100m north of the boundary of the site whereas Dor River is located about 200 m from the proposed site (the shortest center to center distance between Dor River and proposed landfill cells). The difference between elevation of Dor River and proposed landfill site is around 30 meters. The Darkhan Katha is on the upstream direction of ground water flow and will remain unaffected by any groundwater contamination.</p> <p>Dor River lies in the downgradient of groundwater flow under the landfill site, however, the groundwater table is deeper than 20m with aquifer of low to high permeability while the depth of landfill cells is designed as 3m. Thus, the Dor Rive will not be affected unless there is spring flow due to the steep gradient of ground. Any spring flow between LFS and Dor River should be identified for possible contamination and mitigated by cut-off drains around active landfill site and peripheral drains around landfill site. Regular monitoring of water quality of Dor River will be carried out.</p> <p>The modeling shows the risk of groundwater contamination is medium in case of liner bursting which is quite unlikely for a new landfill site. The risk will be confirmed through regular monitoring of groundwater quality during operation phase.</p> <p>No sensitive receptor is located within 250m from the boundary of landfill cells. However, several receptors to the northeast and east-north-east of the site are in the corridor of airborne impacts during the operation of the landfill. Best management practice and housekeeping including daily cover and final capping will be implemented to reduce the odor impact.</p>

	Sub-Project	Environmental Category / Instrument	Sub-project specific Environmental Impacts and Mitigations
3	Salhad Park (Closure of dumpsite)	Category B / IEE	The critical part of this sub-project is the appropriate closure and remediation of the existing open dump site at the subproject location. The dumpsite will be closed once the LFS (another subproject of KPCIP discussed above) becomes operational. A Site Assessment – including geotechnical investigations, groundwater study, gas leakage, leachate and water and soil quality analysis -- will be carried out at the time of the closure of the dumpsite. Based upon this assessment, a comprehensive closure plan will be prepared that will include site clearing, site grading and stabilization, soil cover, drainage, leachate management, and gas management.
4	Pedestrianization (Old city)	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of excavated soil/debris, dust and noise emissions and Community and Occupational Health and Safety (COHS) aspects are the key issues during the construction phase.
5	Shimla Hill Park	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the construction phase.
Kohat			
1	Water Supply Improvement	Category B / IEE	No environmental sensitivity associated with the subproject location. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the installation and maintenance of the water supply network. ESMP included in IEE provides mitigation measures for the identified impacts.
2	Landfill Site	Category B / IEE	<p>This sub-project site is barren land in a plain area. No stream is found inside or near the sub-project site.</p> <p>The groundwater table is as shallow as 11m. This aquifer is harnessed by the locals for human consumption and irrigation on a limited scale. The depth of landfill cells is designed as 5m on a concrete base with liner. The modeling shows the risk of groundwater contamination is significant in case of liner bursting which is quite unlikely for a new landfill site, but the nearest community in the downgradient direction is Mohammad Zai village at 2km distance from the site. Due to the greater depth of water table and no surface water flow, it is unlikely that the contamination will reach Mohammad Zai village before getting neutralized.</p> <p>No sensitive receptor is located within 250m from the boundary of landfill cells. However, several receptors to the southwest and southeast of the site are in the corridor of airborne impacts during the operation of the landfill. Best management practice and housekeeping including daily cover and final capping will be implemented to reduce the odor impact.</p>

	Sub-Project	Environmental Category / Instrument	Sub-project specific Environmental Impacts and Mitigations
3	Sewerage Treatment Plant	Category B / IEE	The proposed site is located inside Kohat housing township. The treated wastewater from the STP will be released into the local water stream that flows through the proposed site and currently carries raw sewage. The water quality in this stream is likely to improve once the STP becomes functional. The treatment plant will generate sludge, which will be disposed of in the landfill site (another subproject of KPCIP discussed above).
4	Women Business Development Centre	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of construction debris, dust and noise emissions and COHS aspects are the key issues during the construction phase.
5	Sports Complex - green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area.
Mardan			
1	Landfill Site	Category A/ EIA	<p>This sub-project site is located in a plain area. An irrigation channel which originates from the lower Swat Canal lying 35m from the southern boundary of the landfill site flows 375m to its tail end. Project hydrogeological study suggests the groundwater flow at the subproject site is toward northern side, so the irrigation channel on southern side is not downgradient to the landfill cells. The risk of surface water contamination is medium. To address this risk, periodic surface water quality monitoring will be carried out during the landfill operation and necessary mitigations will be implemented as appropriate.</p> <p>The groundwater table is as shallow as 0.7-1.2m. This aquifer is harnessed by the locals for human consumption and irrigation on a limited scale. The aquifer is of moderate to high permeability. Landfill cells will be excavated to a depth of 1 to 3 meters wherever the shallow groundwater permits excavation. The landfill cells will be constructed on a concrete base with liner placed under the concrete foundation to ensure the landfill cells impermeability.</p> <p>The modeling shows the risk of groundwater contamination is significant in case of liner bursting which is quite unlikely for a new landfill site, but the contaminant flow is relatively slow through the groundwater. The risk will be addressed through monthly groundwater quality monitoring of the upper strata at both upstream and downgradient of the landfill cells with Phytotoxicity as an indicator of contamination.</p> <p>No sensitive receptor is located within 250m from the boundary of landfill cells. However, several receptors to the southeast and southwest of the site are in the corridor of airborne impacts during the operation of the landfill. Best management practice and housekeeping including daily cover and final capping will be implemented to reduce the odor impact.</p>

	Sub-Project	Environmental Category / Instrument	Sub-project specific Environmental Impacts and Mitigations
2	Sewerage Treatment Plant	Category B / IEE	The Plant will be constructed inside the premises owned by the government where a disused STP exists. The treated water from the STP will be released in the local water stream that is currently likely to carry raw sewage from the area. The water quality in this stream is likely to improve once the STP becomes functional. The treatment plant will generate sludge, which will be disposed of in the landfill site (another subproject of KPCIP).
3	Ring Road - green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area.
4	N-45 - green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area.
Mingora			
1	Solid Waste Management Facility Development	Category A/ EIA	<p>This sub-project site is located in a hilly terrain in the catchment area of the Swat River. One seasonal drain, which remains dry most of the year, is located within 100 m to the north of the site. Surface runoff may happen during high precipitation events, so a retaining wall along the boundary of landfill site and diversion drainage will be provided to manage surface run off thus reducing the risk of surface water contamination.</p> <p>The groundwater table is deeper than 24m with aquifer of moderate to very high permeability while the depth of landfill cells is designed as 3m. The modeling shows the risk of groundwater contamination is medium in case of liner bursting which is quite unlikely for a new landfill site. To address this risk, regular monitoring of groundwater quality will be carried out during operation phase.</p> <p>There are six nearest residential houses falling within 250 m from the boundary of landfill cells. These receptors are considered as sensitive and will be relocated during project execution subject to willingness of owners.</p> <p>The existing dump site inside the sub-project area will be remediated and restored as part of the subproject activities. A closure plan will be prepared for this purpose.</p>
2	Mingora Greater Water Supply Scheme	Category B / IEE	No environmental sensitivity associated with the subproject location. In addition to the typical construction-related impacts (dust and gaseous emissions, wastewater discharges, solid waste, OHS, traffic management), the treatment plant will generate sludge, which will be disposed of in the landfill site (another subproject of KPCIP). Water source sustainability for the water source (Swat River) has also been determined with the help of the catchment study. Water flow in Swat rivers ranges from about 34,000 lps in dry months to as much as 424,000 lps during wet months, whereas the maximum

	Sub-Project	Environmental Category / Instrument	Sub-project specific Environmental Impacts and Mitigations
			capacity of the water diversion structure for the proposed subproject is about 1,300 lps.
3	Neighborhood Park – green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the construction phase.
Peshawar			
1	Water Supply Improvement	Category B / IEE	No environmental sensitivity associated with the subproject location. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the installation and maintenance of the water supply network. ESMP included in IEE provides mitigation measures for the identified impacts.
2	Solid Waste Management Facility Development	Category A/ EIA	<p>This sub-project is located in a semi-urban area with landform of undulating plains. There are two water streams to the east and west side of the sub-project site which are dry most of the year, so the risk of surface water contamination is low.</p> <p>The groundwater table is deeper than 50m with aquifer of low to high permeability while the depth of landfill cells is designed 10m. The modeling shows the risk of groundwater contamination is medium in case of liner bursting which is quite unlikely for a new landfill site. To address this risk, regular monitoring of groundwater quality will be carried out during operation phase.</p> <p>No sensitive receptor is located within 250m from the boundary of landfill cells. However, several receptors to the south, south-south-east and southeast of the site in the corridor of airborne impacts during the operation of the landfill. Best management practice and housekeeping including daily cover and final capping will be implemented to reduce the odor impact.</p> <p>The existing dump site inside the sub-project area will be remediated and restored as part of the subproject activities. A closure plan will be prepared for this purpose.</p>
3	Besai Park - green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the construction phase.
4	Bagh e Naraan Park Extension - green initiatives	Category C / EMP	No environmental sensitivity associated with the subproject area. Generation of excavated soil/debris, dust and noise emissions and COHS aspects are the key issues during the construction phase.

Social Summary

Social Instrument	Sub-projects	Key LAR Impacts
LARP/RP		
1	Greater Water Supply Mingora	Land requirement: about 21 acres, of which about 17 acres are cultivated land. About 876 landowners own this land. Some temporary livelihood impacts are possible during the laying of the supply network. The government has initiated the land acquisition process and the land award is expected by December 2021 while the compensation payments are expected to be made by Feb 2022. The civil works will only commence once the ADB approved LARP is fully implemented and all compensation and allowances as detailed in LARP are fully disbursed to the DPs.
2	Landfill Site Abbottabad	Land requirement: about 52 acres, of which about 6 acres are cultivated land. About 347 landowners own this land. The government has initiated the land acquisition process and the land award is expected by December 2021 while the compensation payments are expected to be made by Feb 2022. The civil works will only commence once the ADB approved LARP is fully implemented, and all compensation and allowances as detailed in LARP are fully disbursed to the DPs.
3	Landfill Kohat	Land requirement: about 20 acres of communal land which is entirely barren. About 3695 landowners own this land. The government has initiated the land acquisition process and the land award is expected by December 2021 while the compensation payments are expected to be made by Feb 2022. The civil works will only commence once the ADB approved LARP is fully implemented, and all compensation and allowances as detailed in LARP are fully disbursed to the DPs.
4	Approach Road Landfill Mingora	Land requirement: about 0.8 acres. Land is completely barren. About 27 landowners own this land. The government has initiated the land acquisition process and the land award is expected by December 2021 while the compensation payments are expected to be made by Feb 2022. The civil works will only commence once the ADB approved LARP is fully implemented, and all compensation and allowances as detailed in LARP are fully disbursed to the DPs.
5	Pedestrianization (Old city), Abbottabad	No land acquisition is involved. About 128 shops will be temporarily impacted in terms of livelihood loss. The compensation payments are expected to be made by December 2021. The civil works will only commence once the ADB approved RP is fully implemented, and all compensation and allowances as detailed in RP are fully disbursed to the DPs.
CAP (for Legacy Issues)		
1	Landfill Peshawar	Required land already acquired: about 102 acres. About 231 landowners own this land. An Independent Valuation Study (IVS) is being conducted to determine any difference between the land rate fixed by the Government and the market rates. The differential will be paid to the landowners. These payments are expected to be made by December

		2021 and verification done by early 2022. The civil works will only commence once the ADB approved CAP is fully implemented, and all compensation and allowances as detailed in CAP are fully disbursed to the DPs.
2	Landfill Mingora	Required land already acquired: about 8 acres. About 6 landowners own this land. An IVS is being conducted to determine any difference between the land rate fixed by the Government and the market rates. The differential will be paid to the landowners. These payments are expected to be made by December 2021 and verification done by early 2022. The civil works will only commence once the ADB approved CAP is fully implemented, and all compensation and allowances as detailed in CAP are fully disbursed to the DPs.
3	Abbottabad (<i>Chuna</i>) Water	Required land already acquired: about 7 acres. About 245 landowners own this land. An IVS is being conducted to determine any difference between the land rate fixed by the government and the market rates. The differential will be paid to the landowners. These payments are expected to be made by December 2021 and verification done by early 2022. The civil works will only commence once the ADB approved CAP is fully implemented, and all compensation and allowances as detailed in CAP are fully disbursed to the DPs.
LARF		
1	All subprojects	A LARF has been prepared to address any LAR impacts that are not known at this stage but may be faced during the construction phase. These include livelihood impacts that may be caused by the construction activities along the busy streets and roads potentially affecting shopkeepers and vendors.

Annex 5: Member and Sector Context

A. Member Context.

1. Pakistan has been growing at an average annual rate of 3.6 percent over the past decade, significantly below the other major economies of the region. The tepid growth has been a result of lack of robust exports and investment. Short spells of consumption driven growth led to macroeconomic imbalances, reflected in large current account and fiscal deficits. Pakistan entered a 39-month IMF Extended Fund Facility in FY2020 to reduce economic vulnerabilities and generate sustainable and balanced growth. The various adjustment measures contributed to reduction of the imbalances and improved macroeconomic stability.

2. However, the containment measures implemented to reduce the spread of COVID-19 infection significantly stalled economic activity in the final quarter of FY2020 resulting in GDP contracting by 0.4 percent in FY2020. The first half of FY2021 witnessed fragile recovery aided by increased community mobility, strong remittance inflows, and some uptick in investment. The government continued to sporadically impose localized containment measures to contain the spread of infection and enable partial resumption of economic activity during FY2021.

3. Like most other emerging markets, the Covid-19 pandemic resulted in rising unemployment and reversal of poverty reduction in Pakistan. A recent survey highlights that 37 percent of the workforce lost their jobs and an additional 12 percent witnessed a decline in labor income between April and July 2020.⁵ The informal and low-skilled workers faced the strongest contraction in employment. The labor market shock resulted in poverty rising with estimates indicating poverty increase of 2.3 percentage points based on national poverty line, which translates into 5.8 million additional people falling into poverty due to the pandemic. The rise in poverty would reverse the gains of recent years and comes after two decades of uninterrupted decline in poverty. The pandemic also worsened the severity of poverty among the already poor demonstrated by the rise in the share of severely food insecure population to 10 percent, compared to 3 percent in 2019.

4. The pandemic also dented infrastructure spending due to a drop in revenue and additional funds being allocated to measures taken to support the economy. According to Global Infrastructure Outlook, Pakistan would require USD 480 billion infrastructure investment between 2015 and 2040. Water, sanitation and solid waste management are key areas of infrastructure investment as lack of these facilities cause unhygienic conditions, infectious diseases and polluted environment. Inadequate access to safe water and sanitation also results in high rates of stunting and malnutrition among children causing low human capital accumulation. According to the World Bank Human Capital Index, a child born in Pakistan today will be 41 percent as productive when she grows up as she could be if she enjoyed complete education and full health. This is lower than the average for South Asia region and lower middle-income countries.⁶ High rates of stunting, especially in rural areas, are mainly due to lack of investment in the treatment of drinking water and safe management of fecal

⁵ Pakistan Development Update: Navigating in Uncertain Times, April 2021, World Bank

⁶ Pakistan: Human Capital Index 2020. For comparison with individual economies in South Asia, the numbers are: Afghanistan (40%), Bangladesh (46%) Bhutan (48%), India (49%), Nepal (50%), and Sri Lanka (60%).

waste. This has led to an unprecedented concentration of untreated fecal waste near human settlements and the consequent contamination of water and soil, which coupled with poor hygiene practices and the use of inadequately treated water for drinking purposes, has resulted in several child developmental issues that are manifested in child stunting.

B. Sectoral Context

5. The World Bank describes Pakistan as the “most urbanized large country in South Asia”. Against a nation-wide population growth rate of 2.3 percent per year, the annual urban population growth rate from 1998 – 2013 was an estimated 3.1 percent. Results from the National Population and Housing Census 2017 echoed this trend by revealing that the urban population growth rate was 2.7 percent per year, compared to national population growth rate of 2.2 percent.⁷

6. This very high rate of Pakistan’s urbanization, compared with its South Asian neighbors, is further confirmed by the United Nations Development Program. The UN agency revealed that cities in Pakistan generate 55 percent of the nation’s Gross Domestic Product. To illustrate this further, Pakistan generates 95 percent of its federal tax revenue from its 10 biggest cities. Poverty across a few categories, is also generally lower in cities than in rural areas. However, common problems faced by Asian cities such as income inequality, unequal access to mobility and resources, such as public housing, water and jobs, are prevalent in Pakistan’s cities.⁸

7. Against the backdrop of the above urbanization trends and challenges, cities play a fundamental role in socio-economic development of Pakistan by being centers of economic productivity, innovation and social transformation. With the highest urbanization rate in the region, the cities of Pakistan are growing and transforming fast. They dominate the economic landscape of the country, hosting nearly all its industrial and services economy and majority of labor force. Given their resources, industrial and human capital, they continue to be the engine of economic growth for the country. However, urban livability and competitiveness are on decline. High population growth, increasing urbanization, unsustainable urban services and inefficient infrastructure are placing enormous pressure on the cities and their limited resources. A large population live in informal settlements in the cities, less than half of water demands are met, wastewater treatment is practically non-existent, public transport has deteriorated and pollution is severe. Furthermore, gender disparities continue, and female labor force participation is very low. Over the medium to long term, Pakistan needs to invest more in cities and their human capital, raise more revenue, simplify doing business procedures, expand local and regional trade, and manage its natural endowments sustainably, as articulated in Pakistan@100: Shaping the Future⁹.

8. Past diagnostic studies and research in urban challenges have identified large gaps in public infrastructure and urban services. Institutional strengthening and investments aiming to enhance livability, competitiveness and sustainability have emerged as priorities. In the past, investments in basic urban services of water supply, sewerage, drainage, urban management, and urban transport

7 World Bank. (2014) “Pakistan Urban Sector Assessment” background paper for South Asia Urbanization Flagship.

8 UNDP “Development Advocate Pakistan – Sustainable Urbanization” Volume 5, Issue 4

9 World Bank. 2019. Pakistan at 100: Shaping the Future. World Bank, Washington, DC

have been supported by development partners including the World Bank and Asian Development Bank. At the same time, capacity building and technical support to city managers and municipal operators also need to be prioritized to ensure that right policy interventions are identified, developed and effectively implemented.

9. ***The cities in Khyber Pakhtunkhwa (KP) province*** are home to about 20 percent of the provincial population and generate roughly 75 percent of the provincial GDP with economic activities mainly focused in Central KP – where trade and services sectors are concentrated – and the Northern KP – which has mineral resources and tourism potential. The urban population in KP has been growing at a rapid rate with an annual average growth rate of 3.5 percent. This has led to unplanned, and unregulated expansion of the cities without a corresponding increase in planned urban services. Basic urban services such as water supply, wastewater collection and treatment, storm water drainage, Solid Waste Management (SWM) and urban transport facilities have failed to meet the increasing urban domestic and commercial demand, leading to gradual degradation of the urban environment and living standards. The demand for basic public services is expected to further soar as the urban population continues to grow.

10. The federal and provincial governments recognize these challenges and have outlined the commitment in addressing them in the 'Pakistan Vision 2025' by focusing on 'Achieving Sustained, Indigenous and Inclusive Growth (Pillar II) which comprises the development of smart cities with comprehensive and reliable urban amenities (e.g., housing, water supply, sewerage, transportation, energy distribution, health care and educational services). Similarly, Pillar IV of the Vision (Energy, Water and Food Security) also emphasizes the need for a significant improvement of water supply and sewage service delivery especially in urban environments, to spur national growth and promote urban areas as centers of economic activity, culture, and knowledge.

C. Institutional Context

11. Infrastructure investment in urban areas is generally the responsibility of Tehsil Municipal Administration (TMA) which is the municipal administrative unit of the Local Government and Rural Development Department (LGRDD), working under the framework of provincial laws and regulations. However, the local government revenue base had been eroding and falling short of the resources required for sustainable service delivery. In 2014, the GoKP established independent utility companies to manage assets and provide services related to water supply, wastewater, and solid waste management, on behalf of the LGRDD. This was initially done in Peshawar and later on has been expanded to other participating cities. The companies were operationalized under a Services & Assets Management Agreement (SAMA), which lays down the functions and responsibilities of the provincial government, the city government and the WSSC. SAMA transferred the responsibility for management and operation of drinking water, wastewater and SWM to a WSSC including all relevant assets, facilities and control over staff. SAMA also stipulates other requirements for the WSSC, including benchmarking of services, developing key performance indicators, and producing business plan and budgets.

12. WSSCs have introduced some utility and urban governance reforms to improve the delivery of municipal services. Corporate decision-making and operational performance have been publicly

disclosed to enhance transparency and accountability. Being new institutions in the province, the WSSCs face challenges in service delivery and sustainability of the services. Project preparation and implementation are often inadequate largely due to WSSC's limited technical and human resources capacity. Moreover, WSSCs are unable to meet full O&M costs because of inadequate tariffs structures and weak collection systems, which, together with limited subsidies from the GoKP, results in insufficient funding for service delivery. Overall, WSSCs need support in (i) strengthening corporate governance, tariff structuring, and business model improvement, (ii) harnessing public-private partnerships and optimizing capital and human resources, and (iii) increasing revenues, and strengthening project management capacity.

D. Cities Context

13. All the five participating cities are centrally located in KP province in North-West Pakistan. Besides being the hub of trade, services and industries, Peshawar (population of 2 million) and Mardan (population of 416,700) are the two largest KP cities and drivers of provincial economic growth. Kohat (population of 270,146) is a major city in central KP at the crossroads of important national highways that connect Kohat to both Peshawar, the provincial capital, via the N-55 Indus Highway, and Islamabad, the national capital, via the N-80 Highway. Abbottabad (population of 293,130) and Mingora (population of 350,000) located in the foothills of Northern mountain ranges, are major tourism destinations and significant centers of social, cultural and economic activities in the region.

14. **Peshawar** is the administrative and commercial capital of KP and draws people from all over the province in search of work and better life quality. The city is divided into 45 union councils with an estimated urban population of 2 million. Peshawar's rapid growth and lack of investment in urban infrastructure has increased the demand on public services, adversely affecting the economic development. Ground water is the major source of water in Peshawar which is supplied from more than 500 tube-wells either through direct pumping or from 34 elevated storage tanks. Service access is intermittent, ranging on average from 10 to 14 hours per day and complaints of low pressure and poor water quality are common. Many of the storage tanks are not functional either because they have completed their useful design life or because of poor operational performance due to inadequate planning and design. The distribution networks, which were originally designed as isolated systems with one tube well supplying a specific locality, became interconnected over time as the city expanded. This interconnection, in which multiple pumps supply water to the distribution network, continuously undermines pumping efficiency and performance of the system. Majority of the existing sanitation system of Peshawar consist of a combined wastewater and drainage systems where the sewage is discharged into open drains due to which odor and hygiene issues are common.

15. **Mingora** is the district headquarter of Swat district, located in the lower ranges of Hindu Kush mountains. Mingora's water needs are met from 64 tube wells. The city is experiencing rapid depletion of ground water table due to ever increasing water demand, and increasing tube well yields from already overstressed system is becoming challenging. Being a hilly town, the water distribution network of 110 km is spread over an area with an elevation difference of as much as 150 meters. Improper hydraulic design is affecting pressure equalization in areas located at higher elevations and reliable supply to the end users. The system operational efficiency is low and energy consumption is

high. Energy costs alone comprise around 65 percentage of the total operating expenditures. Mingora WSSC plans to almost replace the ground water supply completely with surface water which, besides ensuring sustainable water services, will also reduce the higher operational costs of tube wells.

16. **Abbottabad**, located in the foothills of Northern Mountain ranges, is a major tourism destination. The city has an estimated population of 293,130 persons, however Abbottabad WSSC is providing services to 150,000 residents in four union councils of the city. The city is served from two water supply sources. About 1.12 Million Gallons per Day (MGD) of ground water is supplied from 14 operational tube wells whereas 1.46 MGD of water is supplied from an existing SWTP. Total current demand of the city is estimated as 5.25 MGD. The city's water infrastructure consists of approximately 130 km of distribution network, 17 surface water reservoirs and 4 overhead tanks. The water supply system is in need of upgrade with varying degrees of rehabilitation needed for different components. Generally, water pipelines are old and require major replacement. The ground water is depleting and yields from the tube wells are reducing rapidly. There is, therefore, a need to promote conjunctive ground and surface water use by tapping the available surface water sources, improve and extend the distribution networks and provide metered connections to promote water conservation.

17. **Kohat**, with a population of 270,146, is a major city in central KP at the crossroads of important national highways that connect Kohat to both Peshawar, the provincial capital, via the N-55 Indus Highway, and Islamabad, the national capital, via the N-80 Highway. Kohat WSSC operates in six urban union councils and supply about 3.9 MGD water from 65 tube wells on an intermittent basis, with average pumping hours of tube wells varying from 6 to 16 hours. Total demand is estimated to be twice that of supplied water. Distribution lines connect each tube well directly to adjacent service area forming multiple decentralized micro networks. The infrastructure also includes 14 reservoirs (seven overhead and seven surface) of which only nine reservoirs (four overhead and five surface) are operational. The distribution network is almost 20 years old and in poor condition. Some of the distribution lines pass through the sanitation drains, severely compromising the quality of drinking water. The length of network is about 177 km, most of which is in need of major rehabilitation/replacement. Like other cities, an open drainage system caters to both domestic sewage and storm water flows, eventually discharging into existing water bodies without any treatment. These drains are classified as primary, secondary and tertiary. Domestic sewage is collected by the tertiary drains and finally discharged by primary drains. Only a small area in Kohat city, the Kohat township, is served by a dedicated sewerage network.

18. **Mardan** is the second largest city of the province (population of 416,700). Mardan WSSC is operating in 14 union councils of the city. Rehabilitation and upgrade of sanitation system has been prioritized under the project as presently most of the domestic sewage of city is discharged into *Kalpaani* River and leads to environmental degradation. A sewerage network was constructed in three union councils of the city in 1990s, which is now non-operational. As a result, the existing open drains cater to both the storm water and sewage water flows. These drains overflow during rainfalls due to lack of capacity and clogging, aggravating the drainage and hygiene issues. The existing treatment system in Mardan, which was built in 1993 consists of waste sedimentation lagoons, but is now also dysfunctional. Main challenges related to sanitation system include absence of dedicated pipe-based sewerage network to collect wastewater flows and lack of mechanized STP. There is also

a need to technically delineate sewage catchment areas so the flows can be properly channelized toward ultimate disposal points.

19. **Solid Waste Management (SWM).** Access to SWM remains poor in all urban areas because of a lack of solid waste collection equipment as well as limited technical capacity for landfill management. Collection efficiency is low, with the bulk of uncollected waste burned, disposed in drains and canals, or used to fill low-lying land and depressions. The collected waste is disposed in open dumping sites, which lack proper landfill management to mitigate pollution of the surrounding environment. There are no formal mechanism of waste recovery/recycling because of weak waste management system and inadequate infrastructure. Material of economic value and recyclables are collected by waste-pickers through an informal system. Rummaging through open dumpsites and waste containers not only increase urban pollution but also poses serious health threats to the waste-pickers, who generally belong to the most vulnerable groups of society.

20. Recognizing the provincewide need for SWM, the provincial government has prioritized to rehabilitate the SWM systems in the five participating cities of KPCIP. The current combined population of these cities generate over 2,400 tons of waste daily (or 0.9 million tons annually), which is estimated to increase to 3,400 tons daily (or 1.24 million tons annually) by 2030. WSSCs estimate an average collection efficiency of 60-70 percent through maintaining a combination of collection tools and transportation fleet. The Municipal Solid Waste (MSW) collection system is generally based on open primary and secondary communal containers (of varying capacities) from where it gets transferred through a range of waste transfer vehicles. The open and exposed nature of this SWM system always result in waste spillage and inadequate collection, creating unsanitary conditions and posing public health risks. Collected waste is disposed at unsanitary sites in all these cities where it is dumped and left exposed, causing considerable environmental damage to land, air and water resources. The existing SWM system in all cities requires expansion, and the collection, transfer and disposal infrastructure require rehabilitation and upgrade. Moreover, significant opportunities exist for waste minimization, resource recovery and recycling, which can be exploited to improve the level of service and environmental management.

Table: SWM in participating cities – Selected parameters

WSSC	Generated MSW (tons/day)	Generated MSW (tons/year)	Collection Points (Primary/Secondary containers)	Transport and Transfer Vehicles
Peshawar	1,685	614,970	371	313
Abbottabad	168	61,262	105	18
Kohat	174	63,545	93	22
Mardan	185	67,553	113	37
Mingora	215	78,657	210	24

Annex 6: Sovereign Credit Fact Sheet

A. Recent Economic Development

1. Pakistan is a lower-middle-income country with GDP per capita at USD 1,534¹⁰ and a population of 221 million (as of 2020). Pakistan's economy grew at an average annual rate of 3.6 percent over the last decade. To resolve the acute macroeconomic imbalances, in July 2019, the IMF approved a 39-month program under the Extended Fund Facility for USD6 billion to help Pakistan undertake fiscal consolidation, float the exchange rate, rebuild official reserves, and eliminate quasi-fiscal losses in the energy sector. Key policy reforms supported by the program helped reduce the imbalances and formed the base for improved economic performance. However, the containment measures imposed to tackle the Covid pandemic caused the economy to shrink by 0.4 percent in FY2020. In FY2021, the economy is estimated to have grown by 1.5 percent, with economic activity picking up as lockdowns eased. Growth in FY2021 was driven primarily by the manufacturing and construction sectors, which were aided by fiscal incentives, and the agriculture sector.

2. Average inflation is estimated to have eased to 8.7 percent in FY2021. Depressed domestic demand, low international prices, and improvement in supply chains, especially for food, have contributed to lower inflation. Core inflation remained below the headline inflation. The central bank maintained an accommodative monetary policy by lowering policy rate by a cumulative 625 basis points to 7 percent since March 2020 to support the economic recovery.

3. Fiscal deficit narrowed further to around 7.1 percent of GDP in FY2021 aided by some revenue mobilization, lower spending and expenditure management. The primary balance is estimated to have remained in surplus. Despite the pandemic, public debt remained largely unchanged. A lower than anticipated gross financing needs, as a result of the extension of G-20 Debt Service Suspension Initiative (DSSI) and the government's efforts to lengthen the maturity of the domestic debt helped contribute to the stability of public debt.

4. The current account deficit is expected to have widened to 1.5 percent of GDP in FY2021. Domestic economic recovery and a rise in commodity prices increased the import bill, especially in the second half of FY2021. Persistent weak global demand has prevented robust export growth. Although remittances experienced a robust growth (aided by government's initiative to help Pakistanis abroad to make online bank payments, transfers and investments), the widening of trade deficit is leading higher current account deficit.

Table: Selected Macroeconomic Indicators

Selected Economic Indicators	FY19	FY20	FY21*	FY22*	FY23*
Real GDP growth (% change)	1.9	-0.4	1.5	4.0	4.5
Inflation (average, % change)	6.7	10.7	8.7	8.0	7.3
Current account balance	-4.9	-1.1	-1.5	-1.8	-2.0
General government overall balance	-9.0	-8.0	-7.1	-5.5	-3.9

¹⁰ Pakistan Economic Survey 2020-21

Nominal gross public debt	90.7	92.8	92.9	88.2	82.1
Public gross financing needs	36.7	29.1	28.9	25.5	21.5
External debt	37.5	41.3	42.1	41.7	40.3
Gross external financing need	9.6	7.0	9.9	8.0	8.8
Gross international reserves (USD billion)	12.2	14.4	17.8	19.0	21.1
Exchange rate (PKR/USD, EOP) 1/	162.5	167.2	158.1	158.1	..

Note: in percent of GDP, unless as indicated; * FY21-FY23 are forecasts; 1/ State Bank of Pakistan, July 1, 2021.

Source: IMF Country Report No.21/73

B. Economic Outlook and Risks

5. Growth is expected to pick up to 4.0 percent in FY2022 as the expected vaccine roll-out and the IMF-supported economic reforms undertaken by the government boost the economy. Growth is projected to remain at around 5 percent in the medium-term, lower than pre-COVID levels, as the effects of the pandemic and the need for fiscal adjustment could reverse some of the gains, and also due to a more sluggish private sector growth.

6. Inflation in FY2022 is expected to remain relatively stable, but elevated. Still weak domestic demand might be offset by higher international oil prices, high food prices and adjustments in electricity prices.

7. Fiscal balance is projected to improve in FY2022 to 5.5 percent of GDP. It is hoped that the IMF-supported reform program will gain pace and help Pakistan to reduce the fiscal deficit. The government has shown commitment to undertake general sales tax and personal income tax reforms, which combined are expected to increase revenues by 1.1 percent of GDP. Expenditure rationalization measures, such as streamlining of subsidies, will also aid fiscal consolidation.

8. Pakistan's debt is assessed to be sustainable despite the recent increase due to the pandemic. Public debt is very high but projected on a downward path—to reach 88.2 percent by the end of FY2022 and to decline further to 69.6 percent of GDP by end of FY2026. Fiscal discipline, revenue mobilization, lengthening the maturity of debt profile, and diversification of debt instruments and investor base will be key for the government to stay on the track of debt sustainability. Risks relate to the course of the pandemic and to the progress on unpopular reforms in face of vested interest, where slippages on the IMF program could lead to a loss of confidence. Pakistan is rated B-/B3 with a stable outlook, maintained throughout the pandemic.

9. The current account deficit is likely to widen slightly in FY2022 and FY2023. Imports are expected to increase because of improving economic conditions. Export growth will depend on the economic conditions of key trading partners. Similarly, remittance growth will depend on economic recovery and vaccine policy of key destinations such as Saudi Arabia.

Annex 7: Climate Finance

1. **Climate Change and Disasters:** Pakistan is classified among the top ten countries most affected by the impacts of climate change. The project will contribute directly to both adaptation and mitigation efforts, enhancing sustainable development in the provincial cities. Climate change impacts on the project areas were assessed using different models, the impact of projected changes in temperature and precipitation on all subcomponents of the project were evaluated, and adaptation measures were incorporated in the design of the respective subprojects. The measures cater for the expected increase in water demand, decrease in ground and surface water availability, impact on waste digestion processes, performance of materials used in construction, and increase in flooding. The current practices of the solid waste management system in the five project cities are a major source of GHG emissions, that include waste burning, uncontrolled dumping, and informal recycling. The other sources for GHG emission include use of fossil fuels in vehicles and machinery, inefficient equipment and pumps, excessive energy wastage due to losses and leakages and use of ground water sources. Project investment in recycling and treating solid waste; conversion to surface sources of water, solar energy, and LED lights; energy produced from RDF combustion will contribute to the reduction in GHG emissions. In addition, significant energy savings are expected as a result of leakage control, metered consumption, and energy efficient equipment. Similarly, sewer network has been designed to minimize the requirement of pumping stations to reduce energy consumption and GHG emissions.

Table: Climate Adaptation Plans Within the Project

Adaptation Activity	Target Climate Risk	Estimated Adaptation Cost (USD, million)	Justification
Sewage Treatment Plant			
Mardan	Rise in maximum and minimum temperature will increase water consumption requirements together with increase in sewerage capacity. Extreme precipitation (1-day and 5-day precipitation) is likely to become more intense and frequent, resulting in more intense floods.	0.765	<ul style="list-style-type: none"> • The potential increase in water requirement and subsequent rise in sewerage quantities have been considered in sewers design. • Allocations for additional excavations and other quantities have been opted during design. • Considering future intense and frequent floods adequate design of drains and flood protection works have been considered. • Enhance design capacity of pumps have been considered to accommodate rise due to changing climate. • The proposal includes the cost for managing and treating 10% additional water due to increase in demand and 25% increase in maximum flood flows.
Kohat		0.613	
Water Supply Schemes			
Abbottabad	Rise in maximum and minimum temperature will likely increase	2.085	
Kohat		0.43	

Mingora	water requirement. Floods are likely to increase in near to far future, therefore adequate flood protection is required in various cities.	4.91	<ul style="list-style-type: none"> • Climate resilient design has been carried out keeping additional capacity for water supply main distributions systems. • Water storages designs have additional storage capacity for climate change enhancement in various cities. • Additional cost has been allocated for extra excavation due to use of large diameter pipes compared to the standard design. • Flood protection and drainage designs have been considered accounting future changes in peak precipitation events. • Pumping capacities have been decided based on standard cum additional water requirement due to rise in temperature.
Peshawar		0.481	
Urban Green Spaces			
Abbottabad	Rise in temperature will increase water demand of plants and green spaces. Increase in precipitation will rise flood risks.	0.046	<ul style="list-style-type: none"> • Climate resilient water supply systems have been designed for the current and future water demands. • The proposed incremental cost is up to 10% to cater increase in water demand due to climate change. • Enhanced capacities of pumps and wells have been considered to meet climate-water demands. • Adequate floods have been considered for design of drains and flood protection schemes.
Kohat		0.006	
Mardan		0.006	
Mingora		0.026	
Peshawar		0.005	
Integrated Solid Waste Management (Landfill Sites)			
Abbottabad	Increase in frequent and intense precipitation will enhance flood risks. Leachate collection system may need adequate capacity to accommodate future intense and frequent precipitation and resultants flows	0.033	<ul style="list-style-type: none"> • Climate resilient drainage systems have been designed. • Adequate flood protection works have been considered. • Leachate collection system has been allocated additional capacity to accommodate climate induced annual flows.
Kohat		0.019	
Mardan		0.033	
Mingora		0.006	
Peshawar		0.026	
Total		9.49	

Table: Climate Mitigation Plans Within the Project

Mitigation Activity	Estimated GHG Emissions Reduction (CO _{2e} /year)	Estimated Mitigation Costs (USD, million)	Mitigation Finance
ISWM			
Peshawar	102,386.0	25.930	The ISWM would ensure that: i. Material recovery facilities will greatly reduce waste quantities going to landfill site.
Mardan	31,621.0	9.370	
Abbottabad	41,913.0	9.370	

Kohat	33,831.0	9.370	<p>ii. Anaerobic biodigesters will convert organic waste into compost and biogas for use as fuel and conditioner with this waste processing resulting in much less GHG emissions compared to open dumping or landfilling.</p> <p>iii. The proposed ISWM system will reduce open burning of papers and plastics.</p> <p>iv. The proposed ISWM will produce RDF, which can be used in cement industries or burnt in incinerators and produces energy and reduced emissions compared to other fuels, such as coal.</p>
Mingora	39,296.0	2.370	
Water Supply Schemes			
i. Shift from Groundwater to Surface Water Extraction:			
Mingora	258.2	6.864	<p>Availability and delivery of surface water supplies will eliminate or reduce groundwater use. The energy required for pumping will be conserved. The average energy saving per year is estimated to be 456 MWh for Mingora and 365 MWh for Abbottabad, resulting in an overall, of 821 MWh savings per year. Thus, savings in energy will also reduce GHG emissions.</p>
Abbottabad	206.6	1.122	
ii. Solar PV based water supply for four cities	115.7	2.673	<p>To generate power from solar energy, which is a renewable and clean source of energy</p>
Sanitation			
5850 kW Solar PV Generation for WWTP Operation	151.1	2.798	<p>To generate power from solar energy, which is a renewable and clean source of energy that will reduce emissions resulting from replaced grid energy (70 based on fossil fuels)</p>
Total	250,516	70.35	