



Sovereign-backed Financings

Approval Project Document

P000404 Pakistan: Karachi Water and Sewerage Services Improvement Project-2

Currency Equivalents

As at September 30, 2024

Currency Unit – Pakistani Rupee (PKR)

USD1.00 = PKR277.6998

PKR1.00 = USD0.0036

Fiscal Year

July 1 – June 30

Abbreviations

AIIB	Asian Infrastructure Investment Bank
ADB	Asian Development Bank
ARAP	Abbreviated Resettlement Action Plan
CAP	Corrective Action Plan
CBA	Cost-Benefits Analysis
CCDR	Country Climate and Development Report
CLA	Co-lenders' Agreement
CoC	Commitment of Cooperation
CO2	Carbon Dioxide
DA	Designated Account
E&S	Environmental and Social
EIRR	Economic Internal Rate of Return
ESCO	Energy Service Company
ESCP	Environmental and Social Commitment Plan
ESF	Environmental and Social Framework
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standard
FIRR	Financial Internal Rate of Return
FM	Financial Management
FY	Fiscal Year
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
GoP	Government of Pakistan
GoS	Government of Sindh
GRM	Grievance Redress Mechanism
IMF	International Monetary Fund
IUFR	Interim Unaudited Financial Reports
K-IV	Greater Karachi Bulk Water Supply Scheme
KBFU	Kalri Baghar Feeder Upper
km	kilometer
KWSC	Karachi Water and Sewerage Corporation
KWSSIP	Karachi Water and Sewerage Services Improvement Project
LMP	Labor Management Procedures

M&E	Monitoring and Evaluation
MDB	Multilateral Development Bank
MGD	million gallons per day
MIS	Management Information Systems
MPA	Multiphase Programmatic Approach
NPV	Net Present Value
NRW	Non-Revenue Water
O&M	Operation and Maintenance
OCCR	Operating Cost Coverage Ratio
OHS	Occupational Health and Safety
PIE	Project Implementation Entity
PIU	Project Implementation Unit
PMC	Project Management Consultancy
POM	Project Operation Manual
PPM	Project-affected People's Mechanism
PPP	Public-private Partnership
PPSD	Project Procurement Strategy for Development
PPSF	Project Preparation Special Fund
PSC	Project Steering Committee
RAP	Resettlement Action Plan
RMF	Results Monitoring Framework
SEP	Stakeholder Engagement Plan
STDC	Sindh Transmission and Dispatch Company
TP	Treatment Plant
VGF	Viability Gap Funding
WAPDA	Water and Power Development Authority
WASH	Water supply, sanitation, and hygiene
WB	World Bank

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1. Executive Summary

1. Karachi, Pakistan's economic and financial hub, is experiencing a decline in livability, competitiveness, and access to basic infrastructure and services. Nearly 3 million residents lack access to piped water, and about 6 million residents lack access to functional public sanitation services. The city faces major environmental challenges due to inadequate sewer trunk mains, a lack of wastewater treatment capacity, dilapidated and dysfunctional existing sewage treatment plants, and lack of investment and funding.
2. To improve access to safe water and sanitation services and increase financial and operational performance of Karachi Water and Sewerage Corporation (KWSC), the Asian Infrastructure Investment Bank (AIIB or the Bank) and the World Bank (WB) jointly cofinanced and approved in 2019 the Karachi Water and Sewerage Services Improvement Project Phase 1 (KWSSIP-1), each with USD40 million. With the KWSSIP-1, KWSC is on track to deliver safe drinking water for 2 million people by June 2025. Through working with AIIB and WB, KWSC's revenue has almost doubled in fiscal year 2023 (FY23) from the FY19 level. To increase KWSC's bulk water capacity, construction of the Greater Karachi Bulk Water Supply Scheme (K-IV) Phase-1 is underway through the Government's financing. The proposed second Project, KWSSIP-2, will further deepen reforms while scaling-up infrastructure investments to benefit about 16 million people and build support for additional reforms and investments under the planned subsequent phases.
3. AIIB has supported project preparation through its Project Preparation Special Fund (PPSF) of USD4.14 million approved in December 2020. The PPSF enabled KWSC to carry out the feasibility study of the Project and recommend sustainable solutions, develop integrated engineering designs, and prepare in advance the tender documents, which significantly improved the implementation-readiness of the Project. The PPSF grant also assisted KWSC to address the potentially adverse environmental and social impacts of all the activities under the Project by undertaking environmental and social impact assessments and preparation of relevant safeguard instruments in accordance with WB's environmental and social standards as well as local laws and regulations.
4. Since the details and overall scope of the WB's multiphase programmatic approach (MPA) were not finalized until its approval, it was premature for AIIB to adopt the Multi-phase Program (MPP) modality at such a late stage. By this time, AIIB had completed the Project Appraisal, and both the WB and the Government of Pakistan required AIIB's timely approval of the Project. With the expected successful implementation of the Project, AIIB will have a potential opportunity to continue co-financing with the WB for subsequent phases using MPP.
5. The Project passed Appraisal almost after 4 years from the Project passing Concept. Three major factors contributed to the delays: (1) the COVID-19 pandemic significantly slowed the processing of the PPSF grant; (2) some reforms had to face lengthy process of approval, including the drafting and legislation of a new KWSC Act in the provincial assembly; and (3) the challenging technical aspects of the Project necessitated thorough due diligence, particularly in safeguards and technical design, which was not straightforward. Despite these challenges, AIIB's PPSF delivered outstanding outputs by completing the engineering design and all the procurement packages for the Project to help in avoiding the usual start-up delays.

Project No. and Name	P000404 Karachi Water and Sewerage Services Improvement Project-2		
AIIB Member	Pakistan		
Borrower	Islamic Republic of Pakistan		
Project Implementing Entity/ Implementation Agencies	Provincial Government of Sindh (GoS)/ Karachi Water and Sewerage Corporation		
Proposed Amount of AIIB Financing	USD240 million	Instrument type (Instrument subtype)	Loan (Direct Sovereign)
		Currency of financing requested	US Dollar
Sector (Subsector)	Water (Water Supply, Sanitation, and Wastewater Treatment)	E&S Category	A
Project Objective	To provide safely managed water and sanitation services in Karachi and increase KWSC's financial and operational performance.		
Project Description	The Project will significantly scale-up infrastructure investments to improve water supply and sewerage services in Karachi. Investments in the rehabilitation of existing infrastructure and the construction of new infrastructure will enhance the development impacts by reaching more beneficiaries and, at the same time, building support for continued mainstreaming of the operational reforms. Proposed activities are grouped into four components: • Component A. Capacity Building and Reform of KWSC: This component will continue to build capacity and improve operational performance and sustainability of KWSC by supporting institutional reforms; revenue management, customer care and communication; non-revenue water reduction; preparation and implementation of water safety plans; water wastage reduction program; and water audits. • Component B. Safely Managed Water Supply and Sanitation Services: This component will invest in key water and sewerage infrastructure to address three interlinked structural problems in Karachi's water and sanitation system – the overall supply shortfall; the low water quality; and the lack of sewage treatment capacity. • Component C. Project Management and Studies: This component will support project management costs and finance technical assistance for advance studies of subsequent potential water and wastewater infrastructure projects in Karachi. • Component D. Contingent Emergency Response Component (CERC) (USD0 million): The Borrower may request AIIB to reallocate Project funds for the provision of immediate response to an eligible crisis or emergency, as needed. This component would draw from the uncommitted loan resources under the Project from other Project components to cover emergency response.		
Implementation Period	Start Date: June 1, 2025 End Date: June 30, 2030	Expected Loan Closing Date	December 31, 2030

Lead financier	World Bank	Applying another MDB policies in lieu of AIIB's Environmental and Social Framework; or Procurement Policy	Yes
Co-financing type	Joint Co-financing		
Cost and Financing Plan	Project cost: USD600 million <u>Financing Plan:</u> AIIB loan: USD240 million WB loan: USD240 million GoS: USD120 million		
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that the Bank is in compliance with the policies applicable to the Project.		

Risk	
Key risks	Mitigation Measures
• High implementation risks because of (a) magnitude of the Project activities and its diverse nature; (b) complexity of sub-components; (c) typical startup delays; and (d) extended implementation period. • Central risk related to land acquisition and resettlement is the legacy issue associated with the Government-financed K-IV Project, which is assessed as an associated facility to the Project. • Cost and time overruns are possible, which will impact Project success.	• The Project Implementation Unit's (PIU's) implementation capacity will be strengthened through: (i) urgent deployment of additional PIU staff (as mandated through legal covenants); (ii) induction of Project Management Consultant (PMC); (iii) engagement of construction supervision consultants for timely troubleshooting at site; and (iv) deployment of KWSC senior staff in the PIU for facilitating timely execution of critical KWSC reforms. Regular involvement of the Project Steering Committee (PSC) will help in prompting resolution of any interdepartmental issues. Furthermore, PPSF has provided outstanding outputs to address the start-up delays through advance completion of engineering design and preparation of procurement documents. Implementation of some key reforms, such as KWSC Act 2023, will also act as mitigant for the political and governance issues. • GoS has committed that PIU will implement the Corrective Action Plan (CAP) before K-IV Augmentation works are awarded. Implementation of the CAP will be complemented by regular monitoring of the resettlement activities by an independent monitoring agency/consultant. ▪ Cost estimates will be prepared based on market rates. PIU will carefully plan for the works execution by utilizing lessons learned from recent implementation of contracts under KWSSIP-1. ▪ PIU will assign independent contract manager(s) for each contract and prepare comprehensive procedures to allocate responsibilities for timely identification and resolution of issues relating to quality and progress of works. ▪ Key Performance Indicators and monitoring plans will be developed for large value contracts and regularly reviewed by PIU and the Bank for the prompt actions, when required.
Economic Capital (ECap) Consumption	Ecap amount: USD124.23 million Ecap ratio: 63.11%

Strategic Alignment				
Alignment with AIIB's thematic priorities		Green infrastructure		
Alignment with AIIB's strategies		Sustainable Cities Strategy, Water Strategy		
Key Outcomes	Indicator	Unit of measure	Baseline	Target (Year)
Infrastructure development for Water Supply and Wastewater Management	People provided with safely managed water (disaggregated by female and youth)	Number	0 (0, 0)	16,000,000 (8,000,000, 3,006,400) (2030)
Infrastructure development for Water Supply and Wastewater Management	People provided with safely managed sanitation (disaggregated by female and youth)	Number	0 (0, 0)	10,400,000 (5,200,000, 1,954,160) (2030)
Infrastructure development for Water Supply and Wastewater Management	KWSC Operating Cost Coverage Ratio improved	%	80	130 (2030)

Other Key Financing Requirements	
Conditions of Effectiveness	1. The Project Operations Manual (POM) has been updated, in form and substance acceptable to the Bank, and adopted by KWSC; 2. WB's Financing Agreement has been executed on behalf of the WB and the Borrower, and all conditions precedent to its effectiveness (other than the effectiveness of AIIB's Loan Agreement) have been fulfilled; and 3. The Project Co-lenders' Agreement (CLA) has been executed on behalf of the Bank and the WB.
Key Conditions for 1st Disbursement	Notwithstanding the provisions of S.2.IV.A of the Loan Agreement, no withdrawal shall be made: a) for payments made prior to the date of the Loan Agreement, except that withdrawals up to an aggregate amount not to exceed (i) forty-three million five hundred thousand Dollars (USD43,500,000) may be made for payments made prior to this date but on or after November 1, 2024, for Eligible Expenditures under Category 1 [relating to all expenditures except under sub-components B.5 and B.7], and (ii) four million five hundred thousand Dollars (USD4,500,000) may be made for payments made prior to this date but on or after November 1, 2024, for Eligible Expenditures under Category (2)(a) [relating to sub-component B.5(i)] provided that the Borrower has completed, in a manner and substance satisfactory to the Bank, the environmental and social audit referred to in the environmental and social commitment plan (ESCP) for those works under sub-component B.5(i) of the Project completed prior to the request for such withdrawal; b) for goods, works, non-consulting services, and consulting services under sub-component B.5(ii) of the Project, unless and

	until: (i) in the Bank's opinion at the time of contract award for sub-component B.5(ii) (or such other time as the Bank may determine in its sole discretion), K-IV Phase 1 and works to deliver increased annual inflows to Keenjhar Lake by an amount greater than or equal to the required amount have been or will, at the same time as the activities contemplated under sub-component B.5(ii) of the Project, be completed to the satisfaction of the Bank; and (ii) the corrective actions needed to align the K-IV Phase 1 associated facilities with the requirements of the World Bank Environmental and Social Framework have been implemented and completed in a manner acceptable to the Bank.
Key Covenants	1. The Project Implementation Entity (PIE) shall, no later than twelve (12) months from the Loan Effectiveness, enter into a performance agreement with KWSC, which shall include (a) performance targets for KWSC and action steps for regular performance review by the PIE; and (b) updates and revisions to the principles and objectives set out in the Commitment of Cooperation, all in form and substance acceptable to the Bank. 2. The PIE shall, no later than six (6) months after the Loan Effectiveness, appoint a performance auditor acceptable to the Bank to monitor and carry out performance assessments of KWSC's achievement of the targets set out in the performance agreement between the PIE and KWSC. 3. The PIE shall cause KWSC to prepare, within one (1) year from the Loan Effectiveness, a financial sustainability roadmap, acceptable to the Bank, based on a utility financial model with time-bound actions to achieve an operating cost coverage ratio (OCCR) for water supply operations of at least one hundred thirty percent (130%) (including electricity costs and without compensation of these costs). 4. The PIE shall, no later than eighteen (18) months from the Loan Effectiveness, adopt a new water and wastewater tariff review framework that enables recovery of the full cost of service provision on a timeline acceptable to the Bank.

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2. Context

2.1 Country and Macroeconomic Overview: Pakistan, the fifth most populous nation in the world, is a lower-middle income country with a per capita Gross Domestic Product (GDP) of around USD1,580.¹ Pakistan has experienced longstanding macroeconomic challenges, including recurrent fiscal and current account deficits, protectionist trade policies, low productivity growth, and a growing public debt burden. Because of these challenges, Pakistan's economy grew at an average rate of 3.3 percent over the last decade, much lower than growth rates of regional economies.² The economy has remained vulnerable to external and domestic shocks including energy price shocks, supply chain disruptions, and fluctuations in the value of the Pakistani rupee. Fiscal management has been strained by low tax revenues (only about 10 percent of its GDP) and high government expenditures, particularly on debt servicing, defense, and subsidies. This has led to a persistent lack of investment in several important sectors including education, health, social protection, and infrastructure. Consequently, over one-third of school-age children across Pakistan are out of school, children stunting rates of 40 percent persist, and lower-middle income poverty rate (defined as USD3.65/day 2017 purchasing power parity per capita) in Fiscal Year (FY) 2024 is estimated at 40.5 percent.³

2.2 The post-pandemic recovery was driven by expansionary fiscal policies that led to macroeconomic imbalances. These imbalances were further worsened by spikes in food and fuel prices following geopolitical tensions and global monetary tightening. At the same time, devastating floods in 2022 caused approximately USD16 billion⁴ damage to public infrastructure and significantly affected agricultural output, which still employs about 40 percent of the labor force. Due to the confluence of COVID-19, floods, and macroeconomic and political volatility, poverty rate increased, with an additional 2.6 million people falling below the middle-income poverty rate in FY2024.⁵

2.3 To stabilize the economy, in July 2023, Pakistan signed the International Monetary Fund (IMF) Standby-Agreement and began to restore exchange rate flexibility, relax import controls, and contain the fiscal deficit. Sustainable macroeconomic practices along with easing of external conditions and favorable weather for agricultural output growth, the economy began to recover in FY24. Tight fiscal and monetary policies helped considerably with easing inflationary pressures. According to the most recent World Economic Outlook (2024) data, growth has also rebounded to 2.4 percent in FY24, supported mainly by activity in agriculture. Stability in the current account as well as foreign exchange markets have enabled the rebuilding of reserve buffers. With the easing of inflationary pressures, global commodity prices, and supply-chain disruptions, growth in real GDP is expected to reach 3.2 percent in FY25.⁶ Business confidence has also improved with the recent credit rating upgrades, and fiscal tightening measures, such as the devolvement of constitutionally mandated expenditures to the provinces and higher agricultural income taxes. However, long-term

¹ World Economic Outlook Database (2024). [Report for Selected Countries and Subjects](#)

² World Bank national accounts data. <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=PK>

³ <https://thedocs.worldbank.org/en/doc/7008031a15959f10bde28b6c56767d59-0310062024/original/Pakistan-Development-Update-The-Dynamics-of-Power-Sector-Distribution-Reforms-Oct-24-FINAL.pdf>

⁴ <https://www.worldbank.org/en/news/press-release/2022/10/28/pakistan-flood-damages-and-economic-losses-over-usd-30-billion-and-reconstruction-needs-over-usd-16-billion-new-assessme>

⁵ <https://thedocs.worldbank.org/en/doc/7008031a15959f10bde28b6c56767d59-0310062024/original/Pakistan-Development-Update-The-Dynamics-of-Power-Sector-Distribution-Reforms-Oct-24-FINAL.pdf>

⁶ Article IV IMF staff report (2024). <https://doi.org/10.5089/9798400290992.002>

growth rates are expected to remain below potential as fiscal restraint weighs down on aggregate demand, income, and employment.

2.4 Despite this stabilization, debt sustainability risks remain high. These risks include heavy banking sector exposure to the sovereign, domestic policy uncertainty, federal-provincial government political misalignments and geopolitical instability. The sustainability of growth and positive economic outlook is conditional on successful implementation of the new three-year IMF-Extended Fund Facility (EFF) program as well as broader and faster fiscal and economic reforms, including energy sector reforms, increasing tax-to-GDP ratio, enhancing competitiveness and rationalization of subsidies, improving productivity, and building climate resilience. In the short- to medium-term, debt sustainability will critically depend on financial commitments by multilateral and bilateral partners and the ability of the banking system to roll over domestic debt.

2.5 **Sector Overview.** Pakistan has underperformed in providing safe drinking water and sanitation services to its people due to decades of insufficient investments and overall poor management of water resources. According to the World Bank (WB), about half of the population do not have access to safely managed water services, three-quarters of the population do not have access to safely managed sanitation services, and 36 million lack basic hygiene services.

2.6 Karachi, with a population of over 20 million, is Pakistan's economic and financial hub and hosts a main port. It contributes 15 percent of Pakistan's GDP and the largest share of national tax revenues, industrial employment, manufacturing and high-end services. Given its size, location and industrial and human capital, it has continued to be the engine of economic growth for the country. In recent decades, however, the city's livability, competitiveness and access to basic infrastructure and services have declined. The city's water supply and sanitation services are falling far short of the needs of a growing population and businesses. Nearly three million residents lack access to piped water, and even those formally connected experience inadequate, irregular and inequitable service.⁷ Typical service availability is "two hours every two days to four hours per day at very low pressure", with rationing widespread. Many informal settlements (*Katchi Abadis*⁸) are unconnected and rely on informal water sources. Non-revenue water (NRW) is around 64 percent in part due to insufficient hydraulic capacity and leakages. Currently, Karachi faces a water supply deficit of about 580 million gallons per day (MGD) which is about half of the total requirements, but increasing supply requires investment. The Karachi City Diagnostic and Transformation Strategy⁹ identifies gaps of over USD9 billion in public infrastructure. Institutional strengthening and investments aiming to enhance livability, competitiveness, and operational sustainability of basic urban services have emerged as priorities for Karachi. Considering the importance of the city, both the federal and provincial governments are in dire need for investments.

2.7 About 6 million residents lack access to functional public sanitation services. Those lacking access typically discharge sewage through the stormwater system, natural drains or informal sewers directly into city rivers – Lyari and Malir rivers – and ultimately into the sea. Even those with nominal access to public sewerage systems do not receive acceptable

⁷ Data from Pakistan Social and Living Measurement Data combined with 2017 census data.

⁸ *Katchi Abadis* are unplanned settlements as declared by the Sindh Katchi Abadis Authority.

⁹ World Bank, Transforming Karachi into a Livable and Competitive Megacity – A City Diagnostic and Transformation Strategy, Washington DC, 2018

services. The city faces major environmental challenges due to inadequate sewer trunk mains, a lack of wastewater treatment capacity, dilapidated and dysfunctional existing sewage treatment plants because of aging infrastructure and malfunctioning pumping facilities, and lack of investment and funding. The city's three wastewater treatment plants operate at one-third of capacity, treating 50 MGD of the estimated 472 MGD generated. Sindh did not sufficiently finance its Water Supply, Sanitation, and Hygiene (WASH) Sector Development Plan (2016-2026), and service indicators have continued to worsen. Low and unpredictable budget allocations have led to ad hoc engagements. The absence of systematic service delivery monitoring undermined accountability and limited the ability of governments to amend plans. From a financial and human resources standpoint, the Karachi Water and Sewerage Corporation (KWSC), which is the largest water utility in Pakistan serving a major commercial hub, performs well below the public expectations. The utility has 1.07 million registered customers compared to Karachi Electric's 3.5 million in the same area. No household has a water meter, and only 75 percent receive bills. Billing efficiency is about 36 percent, and operation and maintenance (O&M) cost recovery is around 73 percent. The failure to provide adequate water and sewerage services in Karachi is a frequent source of public discontent and has prompted an intervention of the Supreme Court of Pakistan, which issued directives aimed at improving services.

2.8 In 2019, the Government of Sindh (GoS) and the Government of Pakistan (GoP) jointly launched Karachi Transformation Plan (KTP) to address service delivery issues, including WASH, by investing in infrastructure and transforming the performance of service providers such as the KWSC¹⁰. The 10-year investment program addresses five structural problems in Karachi's water and sanitation system: bulk water supply shortfall, a leaky water distribution network, an unreliable supply that does not meet quality standards, a lack of wastewater collection and treatment, and persistent poor service levels, especially in *Katchi Abadis*. The WB supported the program by signing a Commitment of Cooperation (CoC) for the reform¹¹ of the KWSC together with the GoS and through the Karachi Water and Sewerage Services Improvement Project, Phase-1 (KWSSIP-1) co-financed by the Asian Infrastructure Investment Bank (AIIB or the Bank) and the WB each with USD40 million loan, which is due to close on June 30, 2025. Additionally, KWSC completed a Utility Performance Improvement Assessment, and Training for key staff focused on customer service management and billing development with Aguas de Portugal in June 2024.

2.9 With the KWSSIP-1, KWSC is on track to deliver, for the first time, safe drinking water for 2 million people by June 2025. The 2023 KWSC Act¹² strengthened the KWSC's financial and managerial autonomy. A new Board of Directors with more independent members appointed a new KWSC Chief Executive Officer and Chief Operating Officer in 2023 through open market competition. The new management has prioritized revenue-enhancing measures, including digitalizing hydrant management, addressing illegal connections, increasing metering, and recovering arrears. As a result of these measures, the WB reported that KWSC's revenue has almost doubled from PKR8,305 million in FY19 to PKR16,428 million in

¹⁰ The Karachi Water & Sewerage Corporation is a service-based consumer oriented public organization responsible for production, transmission and distribution of potable water to the citizen of Karachi, managing sewerage system within the city to ensure hygienic environment, development of scheme to cover short falls in services and collection of revenues for sustained economic viability, under the KWSC Act 2023.

¹¹ The Commitment of Cooperation (CoC) for the reform of the KWSC to Improve Service Delivery and Financial Viability of the KWSC was signed between GoS and the World Bank Group on May 30, 2019.

¹² The Karachi Water and Sewerage Corporation Act, 2023 was passed by the GoS's Provincial Assembly on June 8, 2023, and published in the Gazette of the Government of Sindh on July 26, 2023, as "Sindh Act No. XVIII of 2023".

FY23.¹³ Construction is underway of the Greater Karachi Bulk Water Supply Scheme (K-IV) Phase-1 to increase KWSC's bulk water capacity. KWSC is also making investments to control water losses and developing two public-private partnerships (PPPs) for wastewater treatment and recycling (Treatment Plant-I (TP-I) and TP-IV) advised by the Asian Development Bank (ADB). TP-I is at the Request for Proposal stage and is expected to reach financial closure by July 2025.

2.10 To scale up safely managed WASH services through long-term programmatic infrastructure investments and reforms, the WB has adopted Multiphase Programmatic Approach (MPA) and approved in December 2024 its first Urban WASH Services MPA for Pakistan. The 10-year MPA with an envelope of about USD2.18 billion will initially have three overlapping phases; two for Karachi and one for about 20 selected cities of Punjab. The Karachi Water and Sewerage Services Improvement Project-2 is the proposed first phase of this MPA. With the expected successful implementation of the proposed Project, AIIB will have a potential opportunity to continue co-financing with the WB for subsequent phases likely by using its Multi-phase Program approach.

2.11 **Addressing Key Development Challenges: Project Contributions:** The proposed second Project, KWSSIP-2, will deepen reforms commenced under the first phase while scaling up infrastructure investments. The significant expansion in capital investments will broaden the impact of the Project, reaching more beneficiaries and building support for additional reforms and investments under the planned subsequent phases.

2.12 The Project is consistent with and supports Pakistan's climate change strategies, including the National Water Policy (2018), the National Climate Change Policy (2021), the National Adaptation Plan (2022), and the Nationally Determined Contribution (2021), as well as the Pakistan Country Climate and Development Report (CCDR), prepared by the WB¹⁴. The Project will contribute to the priorities laid out in the National Adaptation Plan Pakistan 2023-2050, including: (a) improving municipal service delivery for coping with droughts and other water-related challenges; (b) strengthening municipal financial capacity through the improvement of cost recovery; and (c) improving human capital (Health) by reducing disease incidences through the expansion of WASH services.

¹³ Data from KWSC Financial Statements.

¹⁴ [Pakistan – Country Climate and Development Report, 2022](#)

3. Rationale

3.1 Project Objective. The Project objectives are to provide safely managed water and sanitation services in Karachi and increase KWSC's financial and operational performance.

3.2 Expected Beneficiaries. The Project will benefit about 16 million people in Karachi with a safely managed water supply, of which about 10.4 million will also receive safely managed sanitation services. Poor and socially disadvantaged members of the population, such as those living in *Katchi Abadis*, and women and children suffer most due to lack of reliable or safe urban services. About half of all beneficiaries will be women, 58 percent will be youth (age 15–24), and about 3 percent living in *Katchi Abadis*. The Project will also improve the water quality in Karachi's rivers and the coastal areas by treating wastewater discharge. This will significantly improve living conditions and quality of life of coastal communities and those living along riverbanks. KWSC will benefit from higher revenues through reduced NRW, availability of additional water, improved infrastructure, and expanded metering and billing systems. The utility will also benefit from cost savings due to improved energy efficiency in its pumping stations and treatment plants.

3.3 Expected Results. The Results Monitoring Framework (RMF) is included in Annex 1. It consists of Project Objective Indicators and Project Intermediate Results Indicators formulated during project preparation. The Project Objective Indicators are measured/calibrated once the Project becomes operational. The Project Objective Indicators are:

- (i) People provided with safely managed water (Number of people)
- (ii) People provided with safely managed water – Female (Number of people)
- (iii) People provided with safely managed water – Youth (Number of people)
- (iv) People provided with safely managed sanitation (Number of people)
- (v) People provided with safely managed sanitation – Female (Number of people)
- (vi) People provided with safely managed sanitation – Youth (Number of people)
- (vii) KWSC Operating Cost Coverage Ratio improved (Percentage)

3.4 The Intermediate Results Indicators will be measured periodically during implementation to ensure that the Project is progressing in accordance with the implementation plan. The proposed key Project Intermediate Results Indicators are:

- (i) New water and wastewater tariff review framework adopted by KWSC (Yes/No)
- (ii) KWSC customer satisfaction improved (Percentage)
- (iii) Geographic Information System (GIS) including digital mapping of water supply and sewerage system functional (Yes/No)
- (iv) KWSC collection efficiency improved (Percentage)
- (v) Water Safety Plan prescribed by the WB implemented (Yes/No)
- (vi) Annual appointment of female staff in technical and managerial positions increased (Percentage)
- (vii) Gender-inclusive recruitment strategy approved by KWSC Board (Yes/No)
- (viii) KWSC staff productivity improved (Number)¹⁵
- (ix) Performance agreement prescribed by the WB signed between KWSC and GoS (Yes/No)

¹⁵ number of staff/1000 connections

- (x) Unplanned settlements provided with improved water and sanitation services (Number)
- (xi) Sewer network rehabilitated or extended (Kilometers)
- (xii) Water supply distribution network rehabilitated or extended (Kilometers)
- (xiii) NRW reduced (Percentage)
- (xiv) Specific energy consumption for water supply reduced (kWh/cubic meter)
- (xv) Bulk water supply capacity increased (Million cubic meters/year)
- (xvi) Wastewater Recycled for Industrial Use (Million cubic meters/year)
- (xvii) Private capital mobilized through PPPs (USD millions)
- (xviii) Private capital enabled through PPPs (USD millions)

3.5 Strategic Fit for AIIB. The Project is aligned with AIIB's thematic priority of Green Infrastructure which promotes green infrastructure and supports economies to meet their environmental and social goals. It supports AIIB's Sustainable Cities Strategy objectives of "*Green: protect and enhance environmental sustainability*", by safe collection, treatment and disposal of domestic wastewater; "*Resilient: develop the ability to withstand sudden shock*", by incorporating climate-adaptive measures in design of infrastructure, and "*Accessible: provide households easier access to infrastructure and social services*" by improving delivery of water and wastewater services for the resident and businesses of Karachi. The Project is specifically aligned with the investment focus and the guiding principles of 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 areas such as *Katchi Abadis*. KWSC's operational reforms in billing, metering, NRW reduction, energy efficiency and water reuse will also improve "integrated" as well as "public resource management". The Project also supports the progress toward achieving the targets for SDG 6 (Water and Sanitation) and the key priority areas of Pakistan's 2018 National Water Policy.

3.6 Paris Agreement Alignment (PAA) and Climate Finance. In line with AIIB methodology for assessing the alignment with the mitigation and adaptation goals of the Paris Climate Agreement, the Project is assessed as aligned under both mitigation (BB1) and adaptation (BB2). Regarding mitigation, all Project activities are on the Universally Aligned List such as the rehabilitation of the water supply system which will help improve water and energy efficiency. Furthermore, the electricity utilized for the WASH services will be sourced from the grid and not utilize fossil fuels. Regarding adaptation, Karachi is extremely vulnerable to water scarcity, extreme heat, flooding, sea level rise, and the Project components are addressing all of those risks. The Project intends to address climate risks in the Project area to limit their impacts on the infrastructure and beneficiaries. The risks to water and sanitation infrastructure will be reduced to an acceptable level by integrating the resilient design principles¹⁶ within Project design, ensuring that climate change and disaster risks are adequately considered in an interactive and participatory manner.¹⁷ In line with the joint multilateral development banks (MDBs) methodology for tracking mitigation and adaptation finance, it is estimated that a total of 85.2 percent of the AIIB financing (USD204.42 million)

¹⁶ This 2019 World Bank Resilient Water Infrastructure Design brief will be used to ensure the WSS infrastructure is itself resilient to floods, droughts, and high winds.

¹⁷ Measures that may be considered include: reinforce surface water intakes, install flood barriers around the plant, installing pumps if needed to drain the area inside the barriers, elevating water tanks, pumping stations and electrical components, installing submersible pumps, developing procedures to adapt to source waters with higher pollutant loads, installing capacity to manage extreme changes in influent quality, etc.

contributes to support climate finance, of which 57.2 percent (USD116.9 million) contributes towards climate mitigation; and 7.9 percent (USD16.2 million) of the Project cost contributes to support adaptation¹⁸, while 34.9 percent (USD71.3 million) will have dual benefits¹⁹. More information on the PAA assessment and climate finance calculation can be found in Annex 3.

3.7 Value Addition by AIIB. AIIB's value addition involves providing critical financial resources to fill the investment gap for the Project which is necessary to improve the water and sanitation services in Karachi. AIIB has also supported the project preparation through its Project Preparation Special Fund (PPSF)²⁰. The PPSF grant enabled KWSC to mobilize technical resources to carry out the feasibility study of the Project and recommend sustainable solutions and develop integrated engineering designs. Preparation of tender documents during the PPSF grant implementation significantly improved the implementation-readiness of the Project. Because of the nature of activities, the Project is expected to have significant environmental and social risks, which will entail rigorous environmental and social due diligence. The PPSF grant also assisted KWSC to address the potentially adverse environmental and social impacts of all the activities under the Project by undertaking environmental and social impact assessments and preparation of relevant safeguard instruments in accordance with WB environmental and social standards as well as local laws and regulations.

3.8 Value Addition to AIIB. AIIB has partnered with the WB not only to invest in the vital water and wastewater infrastructure in Karachi but also to improve the sustainability and governance of KWSC, the largest water utility in Pakistan. Working alongside WB, who has rich experience and established history of implementing public sector reform programs, provide the Bank's staff valuable opportunities to gain experience in governance and institutional reforms in corporate utilities. The Project Team will also learn from the tools and resources that have been deployed through WB's assistance for planning, designing and implementing techniques and best practices in urban water and sanitation services. For instance, the Water Supply and Sanitation Global Solution Group of the Water Global Practice of the WB has contracted the services of Aguas de Portugal (AdP) to support utilities in WB's member countries in promoting the concept of the "Utility of the Future" in a manner that is best-fit to the local context. KWSC has been selected to benefit from this technical assistance program. This experience also provides learning opportunities for AIIB in incremental improvements in services delivery.

3.9 Lessons Learned. The preparation of this Project has benefited from the co-financers' experience in similar projects in the country and region, and particularly the projects funded by the WB in Karachi, including the KWSSIP-1 co-financed with the Bank. Key lessons learned show that:

- (i) Investment alone on infrastructure development is not sustainable unless there are parallel interventions of targeted and implementable institutional reforms, including
 - (a) deployment of additional experienced human resources and allocation of the additional O&M funds for operating the newly developed infrastructure; (b) tariff rationalizing with the provision of improved services; and (c) effective monitoring

¹⁸ These 75 percent will be accounted as having dual benefits.

¹⁹ Contributing to both mitigation and adaptation finance

²⁰ AIIB approved in December 2020 the PPSF Grant of USD4,136,500 to assist KWSC to perform rigorous due diligence for the preparation of all investment sub-components

and evaluation (M&E) measures for continued improvements based on the M&E findings. As recently learned from KWSSIP-1, institutional reform requires sustained commitment from borrowers over the long term. Therefore, the Project uses legal covenants to maintain focus and attention on the most critical reforms relevant to improving KWSC's operational and financial performance. The Project scope also includes complimentary technical assistance and change management support to achieve results.

- (ii) Many past projects financed by the international financial institutions (IFIs) for the construction of water and wastewater treatment facilities in Karachi could not be completed in time either due to inadequate procurement strategy – for example unnecessarily breaking down large components into small procurement packages, thus creating sequencing and interface problems – or lack of technical rigor – where the complex designs were not validated independently, eventually leading to poor performance. In view of the above, the large procurement packages were used in the KWSSIP-1, which helped in completing the contracts in time, and same practice has been proposed for the Project. The Bank's PPSF helped KWSC to prepare a draft 18-month procurement plan and a Project Procurement Strategy for Development (PPSD), an equivalent document of AIIB's Project Delivery Strategy (PDS), that addresses the overall procurement outlays, market availability, system constraints, procurement competencies, and implementation aspects of the Project.
- (iii) Based on the positive lessons learned in the past by using PPSF for several AIIB-funded projects and achieving the desired project implementation readiness, the Bank offered PPSF to GoS to support KWSC's Project Implementation Unit (PIU) of KWSSIP-1. The PIU successfully achieved results and completed the engineering design and bidding documents for all investments under the proposed KWSSIP-2. PIU has initiated procurement of the design review consultant for K-IV Augmentation (sub-component B.5) and bids for one of the works contracts have also been invited. Award of both contracts are planned immediately after the Project effectiveness.
- (iv) In a complex socio-political environment like in Karachi, achieving quick results through public utility reform initiatives can help maintain the support of all stakeholders. Like in KWSSIP-1, the Project scope includes short-term investments, such as (a) in-line chlorination units in the network to disinfect water, to enable KWSC to immediately start providing safe drinking water in selected parts of its service areas; (b) support for increasing revenues rapidly and reducing costs through energy efficiency interventions; and (c) leveraging technology in billing and revenue collection.

4. Project Description

4.1 The proposed investments under the Project include the scaling up of infrastructure rehabilitation and expansion, which will be complemented by capacity building and institutional reforms to increase KWSC's operational performance.

4.2 **Components.** The Project activities are grouped into four components: Component A will finance reform and capacity building measures, thus contributing to improved utility performance. Component B will undertake selected infrastructure investments in water and sewerage, thereby improving water and sewerage services in Karachi and increasing the city's resilience. Component C will fund project management and associated studies. The Project also includes a Contingent Emergency Response Component, with zero allocation, which will provide flexibility to the GoP/GoS to reallocate funds to support emergency response activities in case of an eligible emergency. The proposed activities under these components are summarized below:

4.2.1. **Component A: Capacity Building and Reform of KWSC** (USD14 million, of which AIIB USD5.6 million, WB USD5.6 million, GoS USD2.8 million). This component will finance capacity building and reform support activities to enable KWSC's evolution into a well-functioning utility that is resilient to climate change. The component will finance: (i) technical assistance and capacity building related to technical and commercial operations, including asset management, GIS and data systems, hydraulic modeling, NRW reduction, billing and revenue management, financial management, communications, and customer service; (ii) implementation of organizational structure reforms to enhance efficiency, accountability and commercial orientation in service delivery; (iii) implementation of a human resource reform plan, including a gender-inclusive recruitment and training strategy; (iv) preparation and implementation of water safety plans, including the establishment of a centralized water quality testing laboratory capable of carrying out biological and key chemical tests (including lead and other heavy metals); (v) rehabilitation and upgrade of office spaces and establishing an innovation, research, development, and learning center; (vi) technical assistance on PPPs, to expand the scope of investments and outsource operational management; (vii) preparation of all the required rules, regulations and guidelines to enable full operationalization of the KWSC Act and their adoption as standard operating procedures for operationalizing the utility; and (viii) any other capacity-building activities necessary to strengthen KWSC's corporate governance and increase its operational and financial performance and adaptive capacity, such as technical trainings for women in the KWSC, support to the newly established Environmental and Social (E&S) Cell at KWSC, and support to improve groundwater management.

4.2.2. **Component B: Safely Managed Water Supply and Sanitation Services** (USD560 million, of which AIIB USD224 million, WB USD224 million, GoS USD112 million). This component will finance investments to enhance Karachi's water supply and sanitation infrastructure. The medium-term investment plan addresses five interlinked structural problems in Karachi's water and sanitation system: a bulk water supply shortfall, a leaky water distribution network, an intermittent supply that

does not meet drinking water quality standards, a lack of wastewater collection and treatment capacity, and persistent poor service levels, especially in *Katchi Abadis*. The scope of investments is categorized into seven sub-components as follows.

4.2.2.1 Sub-component B.1: Provision of Safely Managed Drinking Water and Sanitation Services in Selected Unplanned Settlements (*Katchi Abadis*) (USD29 million, of which AIIB USD11.60 million, WB USD11.60 million, GoS USD5.80 million). This sub-component will finance the provision of safely managed water and sanitation services in selected *Katchi Abadis*, benefiting over half a million people. Investments will include rehabilitation and expansion of water distribution systems, installation of In-Line Chlorination (ILC) units, metered house connections, sewerage network rehabilitation and expansion, and accompanying social marketing and WASH behavior change communication. The KWSC will deliver services in partnership with local non-governmental organizations and community-based entrepreneurs, particularly women's organizations.

4.2.2.2 Sub-component B.2: Priority Sewer Network Rehabilitation and Expansion (USD23.24 million, of which AIIB USD9.30 million, WB USD9.30 million, GoS USD4.64 million). This sub-component will finance priority sewerage network rehabilitation and expansion to restore network integrity in critical areas and reduce sewer overflows and flooding that currently impact an estimated 3.02 million people in these areas. The networks for rehabilitation have been identified based on levels of deterioration, under-sizing, and combined sewer/open channel sewers. These sewers carry wastewater to Treatment Plant-1 (TP-I) and TP-III, which are under rehabilitation by the KWSC.

4.2.2.3 Sub-component B.3: Priority Water Distribution Network Rehabilitation and Expansion (USD56.99 million, of which AIIB USD22.80 million, WB USD22.80 million, GoS USD11.39 million). This sub-component will finance rehabilitation and upgrading of the water distribution network, including the creation of pressure zone boundaries and District Metered Areas for physical water loss monitoring, installation of ILC units, and installation of modern, digital network monitoring systems, including modern flow meters (district, domestic and bulk customer meters), pressure loggers, automatic metering reading and advanced metering infrastructure, and remote monitoring and sensing tools to monitor real-time residual chlorine levels. The sub-component will also finance network expansion to areas of Karachi that are currently not covered. In addition, the sub-component will finance a performance-based NRW reduction program to reduce physical and commercial water losses, prioritizing physical water losses by improving system maintenance, active leakage control, speed and quality of leak repairs, and pressure management. Reducing physical water losses will help reduce pressure on water sources and build resilience to droughts. An initial set of areas for rehabilitation has been established based on the potential for NRW reduction and energy-saving benefits relative to E&S complexity and costs. District-metered areas financed under this sub-component, complemented by the installation of

customer meters from the KWSC metering program, will support the implementation of NRW reduction plan.

- 4.2.2.4 **Sub-component B.4: Improvement of Energy Efficiency** (USD20 million, of which AIIB USD8.0 million, WB USD8.0 million, GoS USD4.0 million). This sub-component will finance a range of energy-saving interventions to reduce energy consumption in KWSC's pumping stations and water treatment plants as well as the utilization of feasible renewable energy resources and thus reduce energy costs and KWSC's carbon footprint. The KWSC will partner with competitively selected Energy Service Companies (ESCOs) to develop, design, build, and co-finance interventions that reduce energy costs through energy saving and decrease operations and maintenance costs at Dhabeji water pumping station, secondary pumps, and other major facilities. ESCOs will function as Project developers for comprehensive energy conservation measures and assume the technical and performance risks associated with the selected interventions. ESCOs will be engaged on performance-based contracts with payments linked to actual energy cost savings. If needed, about USD6 million is allocated for viability gap funding (VGF).
- 4.2.2.5 **Sub-component B.5: K-IV Augmentation** (USD256.97 million, of which AIIB USD127.80 million, WB USD77.80 million, GoS USD51.37 million). This sub-component will finance (i) 2.7 kilometers (km) of the transmission line from Reservoir-2 running from National Institute of Public Administration to the Expo Centre in Hasan Square in Karachi constructed as part of a common corridor; and (ii) apart from those 2.7 km, the construction of three transmission mains to bring 260 MGD of treated water into the existing network from three separate treated water reservoirs currently under construction as part of the K-IV Phase 1 Project.
- 4.2.2.6 **Sub-component B.6: Rehabilitation and Reconstruction of Existing Water Treatment Plants** (USD73.80 million, of which AIIB USD29.50 million, WB USD29.50 million, GoS USD14.80 million). This sub-component will: (i) finance the rehabilitation and upgrade of two water treatment plants (NEK-KII, 100 MGD; and Pipri JBIC, 50 MGD) with a total installed capacity of 150 MGD to ensure treated water entering the network from these plants is safe and meets national drinking water quality standard; and (ii) support the financing of the reconstruction of up to two water treatment plants (COD, 180 MGD, and NEK-KIII 100 MGD) with a total capacity of 280 MGD to increase treated water production design capacity. The KWSC intends to pilot the reconstructions through PPPs, lessons from which might enable future PPPs in other water treatment plants. A feasibility study indicates a total cost of USD87 million for these two water treatment plant reconstructions. A preliminary assessment suggests an opportunity for a PPP supported by a VGF of USD40 million. The VGF would finance payments against construction milestones outlined in the PPP contract. Of the estimated USD47 million of private capital mobilized, USD14 million (30 percent) is expected to be as equity and USD33 million (70 percent) as debt,

16 percent (USD7.5 million) of the estimated USD47 million of private capital is attributed to AIIB financing.

4.2.2.7 Sub-component B.7: Construction of Malir Basin Wastewater Interceptor, TP-IV Wastewater Treatment, Recycling Plant, and New Recycled Water Distribution Network (USD100 million, of which AIIB USD15 million, WB USD65 million, GoS USD20 million²¹). This sub-component will finance: (i) a wastewater interceptor (21.7 km) along the Malir River to capture the untreated wastewater currently discharged in the river and convey it to the TP-IV; (ii) TP-IV to treat 120 MGD influent of mixed domestic and pre-treated industrial wastewater compatible with a domestic wastewater treatment plant; (iii) a recycling facility with advanced tertiary treatment to produce 50 MGD water for industrial use; and (iv) a distribution network to convey recycled water to industrial users. These investments will improve the KWSC's ability to collect and treat wastewater in the Malir basin, reducing the pollution of the Malir River, which discharges into the Arabian Sea, and enhancing the resilience of the city's water supply system to droughts with recycled water. The KWSC intends to implement the full scope of this sub-component as a single hybrid PPP contract and this sub-component will contribute towards the USD230 million of combined VGF from AIIB (USD15 million), WB (USD65 million) and GoS (USD150 million, including USD50 million financing from ADB, which is under discussion). ADB is advising GoS on the PPP transaction with the issuance of a request for proposals expected by Q4 2025 and financial closing estimated by 2026. The VGF would finance payments against construction milestones outlined in the PPP contract. Of the estimated USD222 million private capital mobilized, USD67 million (30 percent) is expected to be as equity and USD155 million (70 percent) as debt, USD25.5 million (11.5 percent of the estimated private capital mobilized) is attributed to AIIB financing.

4.2.3. Component C: Project Management and Studies (USD26.0 million, of which AIIB USD10.4 million, WB USD10.4 million, GoS USD5.2 million). This component finances: (i) project management and coordination, including design review and construction supervision, Project management support, E&S risk management, and Project results monitoring and evaluation; and (ii) technical assistance for advance studies of subsequent potential water and wastewater infrastructure projects including feasibility studies, engineering designs, E&S studies, and special studies on applicability of trenchless technology in water and wastewater infrastructure development in Karachi.

4.2.4. Component D: Contingent Emergency Response Component (CERC) (USD0 million). The GoP may request the Bank to reallocate, as needed, Project funds for the provision of immediate response to an eligible crisis or emergency (an event, associated with a natural or man-made crisis or disaster, that has caused, or is likely to imminently cause, a major adverse economic and/or social impact to the

²¹ The counterpart financing under KWSSIP-2 for this subcomponent is USD20 million. Furthermore, an additional USD80 million of financing had been approved by the GoS cabinet on August 9, 2023 as part of the ongoing provincial S-III project (the revised PC-1 for S-III, which includes TP-IV, was approved on February 7, 2018) as well an additional USD50 million of VGF is under discussion with ADB.

GoP). This component would draw from the uncommitted loan resources under the Project from other Project components to cover emergency response.

4.3 Cost and Financing Plan

Table 1. Project Cost and Financing Plan				
Item	Project Cost (USD m)	Financing (USD m and %)		
		AiIB	WB	GoS
Component A: Capacity Building and Reform of KWSC	14.0	5.6 (40%)	5.6 (40%)	2.8 (20%)
Component B: Safely Managed Water Supply and Sanitation Services	560.0	224.0 (40%)	224.0 (40%)	112.0 (20%)
Component C: Project Management and Studies	26.0	10.4 (40%)	10.4 (40%)	5.2 (20%)
Component D: Contingent Emergency Response Component	0	0	0	0
Grand Total	600 (100%)	240 (40%)	240 (40%)	120 (20%)

Note: The front-end fees (USD600,000 each) of the WB and AiIB loans will be paid from the proceeds of each loan and are included in the total Project cost.

4.4 Implementation Arrangements and Readiness

4.4.1 Implementation arrangements.

- (i) **Project implementation unit (PIU):** The PIU already established to manage the KWSSIP-1 will continue to be responsible for implementing the KWSSIP-2. The KWSC will strengthen the PIU with additional technical and project management staff, and E&S specialists recruited from the market. The additional PIU staff will comprise, among others, a Project Coordinator/Deputy Project Director, one senior environmental specialist, one senior social development specialist, two procurement specialists, one occupational health and safety specialist, one senior gender specialist, four additional field staff including two environmental specialists and two social specialists, as well as financial management specialist, technical specialist, monitoring and evaluation specialist, and a communications and community liaison staffing as further provided in the Project Operation Manual (POM). In addition, the PIU will engage a Project Management Consultancy (PMC) firm, within three months after Loan effectiveness, with experience in managing complex capital programs relating to water supply and wastewater management. The PMC will (a) provide support in timely procurement of works, goods, and services; (b) provide inputs for speedy decision-making on all project implementation matters; (c) provide advice to PIU on the matters related to implementation of environmental and social safeguard instruments, monitoring and evaluation,

reporting/documentations; and (d) coordinate with all parties including contractors, design and construction supervision consultants, Project beneficiary representatives, and PIU managers for timely information sharing and guidance and managing interdependency risks. To build KWSC's long-term capacity for externally financed projects, some senior and middle-level permanent staff of KWSC were inducted in the PIU under the KWSSIP-1. Besides their capacity building, KWSC staff will continue to facilitate PIU and reform consultants in data collection from KWSC for timely achieving the intended results under Component A and also providing all other related services to PIU and field teams such as obtaining necessary clearances and data from the other government agencies.

- (ii) The existing KWSSIP-1 Project Steering Committee (PSC), which is chaired by the Chairman of the Planning and Development Department, GoS and includes high-level representatives of all agencies involved in the Project, will continue to provide strategic oversight and high-level coordination for the Project. The KWSC will remain the secretariat to the PSC and will invite PIU directors to the PSC meetings, as needed, to update on the overall project implementation progress, including its business plans and reform activities.
- (iii) GoS will ensure that KWSC's Board: (a) inter alia, includes members who are representatives of its customer (civil and business) basis; and (b) no later than twelve (12) months after Loan effectiveness, approves new corporate governance rules on human resources (establishment), corporate financial management, and outsourcing, all in accordance with the KWSC Act and as acceptable to the Bank. The KWSC Board of Directors will continue to oversee KWSC reform through an internal change management task force comprising senior KWSC managers. A performance agreement, to be signed within 12 months after Loan effectiveness between the GoS and KWSC, will commit KWSC (represented by its Board) to achieve performance targets for KWSC, including but not limited to the Project results framework and updated targets to the Commitment of Cooperation, in form and substance satisfactory to the Bank; appointing, within 6 months of Loan effectiveness, an auditor acceptable to the Bank to monitor and assess achievement of these targets, and within 18 months of Loan effectiveness, to publish the performance auditor's initial annual performance assessment and annually thereafter publicly disclose performance assessments within 6 months of fiscal year end.
- (iv) **Procurement.**
 - a. **Applicable Procurement Policies.** With the WB being the lead co-financier, the Project will follow WB's Procurement Regulations for Investment Project Financing (IPF) Borrowers.²² The WB Procurement

²² World Bank: Procurement in Investment Project Financing, Goods, Works, Non-Consulting and Consulting Services, Fifth Edition, September 2023

Regulations are materially consistent with AIIB's core procurement principles.

- b. **Institutional Arrangements.** The Procurement Unit of the PIU will be staffed with three to five members with International Federation of Consulting Engineers (FIDIC) and MDB procurement experience. The PIU will carry out all procurement activities, which will include procurement of goods and civil works for rehabilitation and upgrade of water and sewerage infrastructure, and consulting services. Technical experts and PMC will ensure timely actions on all procurement related activities. During implementation, the PIU will maintain liaison with the KWSC management and the Board of Directors.
- c. **Project Procurement Strategy for Development.** PPSD is an equivalent document of AIIB's PDS. As a project-level strategy document, it is used to determine the optimum procurement approach to deliver the right procurement result. The PPSD addresses the overall procurement outlays, market availability, system constraints, procurement competencies, and implementation aspects of the Project. It identifies works procurement including large infrastructure of K-IV Augmentation and other medium and small value contracts; consulting services contracts covering design and supervision consultancies, energy audit, and project management consultancy; and small value IT equipment procurement. It concludes that project procurement, including VGF components, will follow WB's Procurement Regulations for IPF Borrowers. The PPSD will be updated on the PPP implementation aspects, including the type of standard procurement documents to be used to develop PPP documents for the planned interventions.

(v) **Financial Management (FM) and E&S arrangements.**

- a. **FM arrangements.** Project financial staff in the PIU will continue to be responsible for financial management activities. An interim project financial report in the agreed format will be prepared and submitted within 45 days of the period end on a semi-annual basis to reflect sources and usage of Project funds. Annual Project financial statement as per the requirements of International Public Sector Accounting Standards Cash Basis will be audited by the Auditor General of Pakistan through the Director General Audit Sindh. Audited financial statements will be submitted to the Bank within six months after the end of the fiscal year. The proceeds from the WB's and AIIB's loans will be transferred to the Project's designated account (DA) in US Dollars at the National Bank of Pakistan and released through the Finance Department to the PIU. The DAs will be operated in accordance with the provisions of "Revised Accounting Procedure for Revolving Fund Account" issued by GoP. The disbursement processing will be provided by WB following the co-financing framework agreement and corresponding Project Co-lenders' Agreement (CLA). The detailed

disbursement arrangements will be included in the Disbursement and Financial Information Letter prepared by WB.

- b. **E&S actions.** All E&S instruments required for the Project have been prepared, except one Environmental and Social Impact Assessment (ESIA) for an associated facility (a power transmission line). This ESIA is being prepared by Sindh Transmission and Dispatch Company (STDC) and is expected to be approved by the WB by the Project effectiveness date. Furthermore, the Client has confirmed that a budget to implement a Corrective Action Plan (CAP) to address the resettlement related legacy issues of an associated facility (water conveyance system or K-IV) has been secured. All the necessary approvals from the environmental protection agency for the Project have been obtained.
 - c. **E&S arrangements.** The existing PIU has a dedicated team of one environmental specialist, one social development specialist and one gender specialist to oversee the E&S aspect KWSSIP-1. Since the same PIU will be responsible for implementing KWSSIP-2, one additional senior environmental specialist, and one senior social specialist will be onboarded prior to the Project effectiveness. Within three months of Project effectiveness, two Environmental Specialists and two Social Specialists will be hired along with one Occupational Health and Safety (OHS) Specialist and one senior Gender Specialist. One permanent E&S Cell in KWSC with a clear mandate and appropriate E&S organizational structure will be established during the first year of Project effectiveness. The PIU E&S staff will initially provide direct supervision of the implementation of the E&S instruments for the Project and the roles and responsibilities will gradually transfer to KWSC E&S Cell as it becomes fully staffed. The PIU will closely coordinate with the Commissioner of the Karachi Division on all land occupancy aspects.
- (vi) **Project implementation plans and project manual:** WB, as lead co-financier, will take the lead role on procurement, disbursements, E&S aspects, and Project monitoring and reporting. The PIU is in the process of developing the POM. The Project team will coordinate with the WB and the PIU to review, and clear the POM to ensure that it establishes, in a timely manner, robust E&S arrangements that cover the PIU and responsible entities for daily operations, including those managing the associated facilities. The WB will supervise the Project, jointly with the Bank, and serve as main focal point vis-à-vis the Borrower on behalf of the Bank, in accordance with WB's applicable policies and procedures and a Project CLA.

4.4.2 **Implementation period.** The Project is expected to be implemented from June 2025 to June 2030 and the closing date for the Loan is 31 December 2030.

4.4.3 **Implementation readiness.** The project implementation readiness is summarized below:

- (i) The existing PIU will be expanded to implement the Project. The procurement process is advancing with PPSD and Procurement Plan already prepared. Procurement documents follow WB Standard Procurement Documents (SPDs) for International Competitive Bidding (ICB) and WB agreed national documents for procurement through National Competitive Bidding (NCB) and other methods for lower value contracts. The Bank's PPSF grant supported the PIU in completing the engineering design and bidding documents for all the Project investments.
- (ii) PIU has initiated procurement of the design review and construction supervision consultant with the issuance of request for proposal (RFP) and invitation for bids for one of the contracts of K-IV Augmentation (sub-component B.5). Both contracts are planned to be awarded immediately after the Project effectiveness. The ongoing institutional reform studies under KWSSIP-1, covering topics such as financial and human resources management, provide a basis for deepening reforms under KWSSIP-2.
- (iii) An Environmental and Social Due Diligence (ESDD) has been carried out and environmental and social safeguard instruments which included ESIA's, Environmental and Social Management Plans (ESMPs), Resettlement Action Plans (RAPs), Stakeholder Engagement Plan (SEP) and Labor Management Procedure (LMP) have been submitted, finalized and disclosed on AIIB and implementation entity's websites.

4.4.4 **Monitoring and Evaluation.** The RMF will form the basis for tracking progress toward the Project development objectives. The overall responsibility for monitoring Project results will be with the PIU, supported by the PMC. Currently, the PIU's capacity is weak for the M&E data collection. PMC, through Project Component C, will strengthen the existing M&E system at the PIU to create a comprehensive Management Information Systems (MIS). All assets created will be geo-tagged. The MIS will include a data management system to process all information related to beneficiaries, disbursements, verification, and monitoring. Field staff, consultants, and beneficiaries will be able to directly upload information to the MIS in real-time through their smartphones, which PIU staff will then verify and consolidate centrally. PMC, with the help of all PIU Managers and field staff, will collect data and prepare regular progress reports to share with all the Project stakeholders. PIU will produce quarterly progress reports, which will serve as one of the tools for monitoring the project implementation. These reports, which will be shared with AIIB and WB, will highlight the status of achievement of agreed targets for monitoring indicators and detail project implementation progress.

4.4.5 **AIIB's Implementation Support.** Under normal circumstances AIIB is expected to conduct two field visits per year to monitor the implementation progress. Depending on the Project's progress and the performance of the PIU, PMC, and Contractors, AIIB may conduct additional visits to resolve critical issues.

5. Project Assessment

A. Technical

5.1 Project Design. Detailed technical feasibility studies and engineering designs were prepared through the PPSF grant for all the physical works. The PPSF grant also assisted KWSC in performing independent third-party reviews and design updates of the sub-components whose engineering designs had already been prepared by KWSC such as S-III Malir Basin component, wastewater TP-IV and K-IV Augmentation works (Phase-I) sub-components. In general, the engineering designs of all the sub-components followed the technical approaches of the existing infrastructure being operated by the utility for many years. However, all the designs will promote the life-cycle operations and hydraulic efficiency of the system, which in turn will improve the energy efficiency as energy is a central expense of the KWSC's operational costs. The technical and energy audits studies, therefore, were integral assessments made during the project preparation. Their results identified a range of energy-saving interventions to be made under the Project to reduce energy consumption in KWSC's pumping stations and water treatment plants as well as the utilization of feasible renewable energy resources and thus reduce energy costs and KWSC's carbon footprint.

5.2 Water Supply. The water sub-components aim to resolve multi-faceted challenges of KWSC for safe delivery of water in Karachi in a holistic manner to address bulk water supply shortfall, a leaky water distribution network, an intermittent supply that does not meet drinking water quality standards, and persistent poor service levels, especially in the city's selected informal, unplanned, and unregulated neighborhoods. The Project will scale up safely managed WASH services in Karachi to reach 16 million people, building on KWSSIP-1. It will leverage GoS and GoP capital already committed under the KTP, as well as MDBs and private sector capital through PPPs, to expand the scope of investments in bulk water augmentation, water treatment, wastewater treatment and reuse, water distribution, and sewer network rehabilitation, including in *Katchi Abadis*. The existing water schemes supply a total of about one billion cubic meters per year to Karachi, representing less than 0.5 percent of the mean annual flow of the Indus River. Technical studies in the past have established that the Indus River will continue to remain the most viable water source for growing needs of Karachi and even with the complete implementation of K-IV, the abstractions for Karachi's water supply will be less than one percent of the Indus River flows. The water from Indus River flows into Keenjhar Lake from where it is supplied downstream to Karachi through a network of open channels, pumping stations and pressurized transmission pipelines. The technical studies supported by the PPSF grant assessed that the current water supply network does not have enough capacity to transport and distribute the additional bulk water and hence needs capacity upgrade. The PPSF grant also helped in technical due diligence of the existing designs of the K-IV Augmentation project and finalized the engineering designs for the augmentation works – connection of the K-IV Phase-I treatment plants to KWSC's existing network – to make the treated water available to consumers. The capacity of the existing distribution network to absorb additional water at interconnection points was also assessed. Furthermore, it was noted that the KWSC's existing estimated treatment capacity of 440 MGD was significantly less than the existing and future needs. The Project will address this water quality related public health issue by rehabilitating existing and constructing new filtration plants to treat all the existing raw water and provide additional safe drinking water.

5.3 Wastewater. The design of the Malir basin wastewater interceptor and wastewater treatment plant TP-IV under S-III (Malir basin component) has been reviewed under the PPSF grant. The Project focuses on improving the overall environmental and sanitation conditions of Karachi by a well-integrated system of collection, treatment and disposal of municipal sewage presently flowing through the Malir River and disposed of directly to sea untreated. The sewage will be treated at TP-IV to meet the International and Sindh Environmental Quality Standards (SEQS), improving environmental & hygienic conditions of the coastal belt, which will supplement the harbor operational activities to be performed more efficiently. The implementation of the Project will have a far-reaching positive impact on maintaining and sustaining the ecological marine life and will subsequently result in increasing exports of seafood. The PPSF grant has also identified the investment in the selected priority sewerage network rehabilitation and *Katchi Abadis* to restore network integrity in critical areas and reduce sewer overflows. These selected priority sewers will transport the sewage to TP-I and TP-II, which are being rehabilitated by KWSC through its own funds.

5.4 Operational Sustainability. The Project will accelerate KWSC's progress toward cost recovery through NRW reduction, improved billing and revenue collection, energy efficiency, and other reforms to optimize costs. According to the WB, these interventions will increase the KWSC's operating cost coverage ratio (OCCR) for water supply from 75 to 150 percent (based on the outcome of a financial model incorporating projected improvements from the current baseline) by the end of the Project. To ensure transparency and achieve the financial recovery, the KWSC has agreed to: (i) prepare, within one year of the Project effectiveness, a financial sustainability roadmap acceptable to the Bank, based on a robust utility financial model with time-bound actions to achieve an OCCR for water supply operations of at least 130 percent (including electricity costs); and (ii) within 18 months of Loan effectiveness, adopt a revised water and wastewater tariff framework that enables recovery of the full cost of service provision on a timeline acceptable to the Bank. Measures for increasing cost recovery may include financial restructuring, promotion of private sector participation, promotion of efficiency, and adjustments of the structure or levels of tariffs. As part of the scope of the performance audit, the Project will support advisory services to evaluate options for achieving financial sustainability.

B. Economic and Financial Analysis

5.5 Economic Analysis or Cost-Benefits Analysis (CBA) assesses the economic viability of the Project using the 25-year Project cycle and comparing with/without Project scenarios. The scope of CBA considers all the sub-components of the Project where benefits can be reasonably identified. The key benefits for these subcomponents included: (a) expenditures saved due to less illness based on out-of-pocket monthly health expenditures per household; (b) saved public health expenditures based on a percentage of the privately held expenditures; (c) cost of time saved from reduced days of illness; (d) reduced cost of access to alternative water sources such as purchased bowser water and pumping from own wells; and (e) cost savings from reduced time spent on collecting water.

5.6 Given the numerous benefits of this Project as well as a high demand for water and sanitation services in Karachi, a positive net present value (NPV) of USD837 million and an economic internal rate of return (EIRR) of 30 percent was estimated. The economic value of environmental benefits of reducing pollution were not included in the analysis as they were

difficult to estimate reliably. Sensitivity analysis was conducted to illustrate the robustness of the positive economic impact of the Project. Significant changes in critical variables will not render the Project unviable. For example, in a scenario where Capex and Opex increase by 15 percent along with a 15 percent reduction in benefits will still yield an EIRR of 21 percent.²³ Further details of the economic analysis are presented in Annex 2.

5.7 Greenhouse gas (GHG) emission reductions—monetized by applying a low and high shadow price of carbon—further add to the Project’s economic benefits, though these calculations are not made part of the formal CBA. The Project is expected to generate a net emission reduction of 17,558,837 tons of carbon dioxide (CO₂) equivalent over its economic lifetime. The annual GHG reduction is estimated at 877,942 tons of CO₂ equivalent. The emission reductions are driven by energy efficiency gains, reduced tanker water deliveries, and improved wastewater collection and treatment.

5.8 **Financial Analysis.** A comprehensive financial analysis was conducted to assess the financial impact of investments under KWSSIP-2 and evaluate the financial sustainability of KWSC in managing its water supply and wastewater operations. KWSC is financially viable under the Project, with an NPV of USD204 million and a financial internal rate of return (FIRR) of 16 percent. Further details of the financial analysis are presented in Annex 2.

5.9 During the implementation of Phase 1 Project and preparation of the Project, both the Bank and the WB consistently followed up with the KWSC to address the backlog in the completion of financial audits from 2014 onwards. This helped in the production of the complete audited financial statements till FY 2020, which is considered a big achievement. Efforts are underway to complete the audits for the remaining years and the GoS has committed, as part of the Project legal covenants, to regularly conduct the audits and submit audited financial statements to the Bank by December 31 each year. An issue of importance is the ability of the KWSC to operate as a solvent and financially viable entity during and after the Project, with reduced dependency on operational GoS subsidies. KWSC is currently facing challenges in boosting its revenue from water sales, largely attributed to an inaccurate and incomplete customer database, a lack of water metering, and outdated billing and collection methods. Although there has been a substantial increase in billings since 2018, collection efficiency has remained flat at approximately 70 percent. These patterns highlight opportunities for the KWSC to enhance its financial health and establish itself as a creditworthy organization capable of securing investment, provided it embarks on more ambitious reforms with improved services to raise its revenue and manage operating costs more effectively. Given the large potential customer base in Karachi, the KWSC has the opportunity to gradually improve its operations and recoup the full costs associated with water supply services. The Project will accelerate the KWSC’s progress toward cost recovery through NRW reduction, improved billing and revenue collection, energy efficiency, and other reforms to optimize costs.

C. Fiduciary and Governance

5.10 **Procurement:** PPSD details procurement assessment from different perspectives, including operational context, institution’s capacity, market analysis, and procurement

²³ The World Bank estimated the EIRR to be 35% in their project document. The difference between the EIRR in the two documents comes from differences in the USD-to-PKR exchange rates used in the analysis and the assumption related to the percentage of salvage value of capex investments. We assume that at the end of the Project, 20% of the value of investment remains intact, which is in line with other analyses conducted for AIB projects.

arrangements options analysis. Key procurement risks and corresponding risk mitigation measures are provided in Table 2.

5.11 Financial Management: The FM arrangements follow the government systems, including budgeting, internal controls, accounting and reporting, flow of funds, and audits. After assessment, the FM risk is rated as medium. The Project shall retain the FM unit from KWSSIP-1 and also hire a junior FM Specialist within six months of project effectiveness to support the increased workload under KWSSIP-2. The Project is part of the Annual Development Program and is reflected in the GoS budget. The annual budget for the Project will be prepared by the PIU based on planned activities identified in the procurement plan and will be timely communicated to the Finance Department for the allocation of resources for counterpart funding and the annual budget of the Project. The Budget Section will seek input from all relevant departments and the Project Director for the preparation of the budget.

5.12 The Project accounts will be maintained on a cash basis as per GoS accounting policies and procedures and the detailed chart of accounts will be used for the accounting. A unified public FM system exists at all levels of government in Pakistan. The Project will benefit from FM software already implemented in KWSSIP-1, which can generate financial reports directly from the system in the agreed-upon format, i.e., Interim Unaudited Financial Reports (IUFRs). The Project will submit the IUFRs on a semester basis within 45 days from the end of each calendar semester. Annual external FM audits will be conducted by the Department of Auditor General and submitted to the Bank by December 31 each year (six months after the end of the fiscal year), as included in the Project's legal covenants. The Bank will conduct FM reviews regularly to ensure that expenditures incurred are eligible.

5.13 Disbursements: AIIB will provide the Loan to the Islamic Republic of Pakistan, which will relend it to the GoS on the same terms and conditions. The foreign exchange risk will, however, be borne by the GoS, which will make the Loan proceeds available to KWSC as a grant through budgetary allocation.

5.14 The proceeds from AIIB's and WB's loans will be transferred to an account of State Bank of Pakistan and released through the Finance Division to the PIU, who will operate a segregated DA at the National Bank of Pakistan. The DA will be operated in accordance with the provisions of "Revised Accounting Procedure for Revolving Fund Account" of the Finance Division of Government of Pakistan. The payments will be authorized to contractors and service providers through electronic funds transfer.

5.15 The Project will use the Advance and Direct Payment method of disbursements. Disbursements will be in direct payments for foreign currency payment outside Pakistan, and report-based with an initial advance equivalent to six months projection of expected payments. Eligible expenditures will comprise of works, consulting and non-consulting services, goods, workshops and training, and incremental operating costs incurred for implementing the Project. The Bank and the WB will jointly finance the Project in equal shares, with all components financed jointly by the partners covering 80 percent of the total Project cost. GoS shall finance the remaining 20 percent of cost relating to resettlement, taxes, and audit costs through its own funds. KWSC will prepare an IUFR, which will be furnished to AIIB and WB within 45 days of the close of every quarter, and which will report quarterly fund receipts and utilization. Retroactive Financing for the expenditure incurred by the PIU out of budgetary funds will be

reimbursed subject to compliance with WB's procurement procedure and Environmental and Social Framework.

5.16 Financial Crime and Integrity (FCI) and Counterparty Due Diligence/Know Your Counterparty (CDD/KYC): Integrity screenings of the Borrower and the KWSC have been performed through World-Check One. No critical findings were found, and the overall Project risk was ranked Medium. The head of the State and the government ministries have been identified as politically exposed persons (PEPs) due to their public status.

5.17 Governance and Anti-corruption: The Bank is committed to preventing fraud and corruption in the projects that it finances. It places highest priority on ensuring that projects are implemented in strict compliance with the Bank's Policy on Prohibited Practices (PPP). The Bank will monitor the work related to tender document preparation and tender/proposal evaluation and award under Bank financing. Implementation will also be monitored regularly by Bank staff in coordination with WB. 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. For all harmonized sanctionable practices, the WB's Anticorruption Guidelines will apply and (ii) for the Prohibited Practices which are not harmonized with the WB's sanctionable practices, AIIB's PPP shall apply. Detailed requirements are specified in the Loan Agreement and will also be included in the CLA and the Project's tender documents.

5.18 Cybersecurity: The Project being a water and wastewater system, the investment may be considered as a critical infrastructure. However, the infrastructure is not likely to be targeted, and the level of exposure is considered low.

5.19 The Project introduces some digital technologies essentially for metering, billing and network supervision/maintenance, which are not critical to core operations. Further to this, there are not any digital components that could disrupt the operations and hence the overall risk is considered to be low and not material to the core operation of water supply, wastewater, and treatment. Moreover, no significant external factors have been identified that would warrant a comprehensive cybersecurity review at this time. The Project Team engaged the PIU and discussed the relevant cybersecurity considerations, ensuring that appropriate attention and resources will be allocated to address this matter effectively.

D. Environmental and Social

5.20 Environmental and Social Policy and Categorization: As the Project is co-financed with the WB as a lead co-financier, AIIB has assessed its E&S risks and impacts in accordance with the WB's Environment and Social Framework (ESF). To ensure a harmonized approach to addressing the E&S risks and impacts of the Project, and as permitted under AIIB's ESF, AIIB agrees that the WB ESF will be applicable to the Project in lieu of AIIB's ESF. AIIB has reviewed the WB ESF and is satisfied that: (a) it is consistent with AIIB's Articles of Agreement and materially consistent with the provisions of AIIB's ESF and the relevant E&S Standards; and (b) the monitoring procedures that are in place are appropriate for the Project.

5.21 The WB has categorized the environmental risk rating as 'Substantial' and the social risk rating as 'High', making the overall E&S risk rating of the Project as 'High'. The WB categorization of the Project as High is equivalent to the AIIB's categorization as 'Category A'

(if AIIB's ESF were applicable). The environmental risks and impacts are considered Substantial as Component B of the Project includes a series of large-scale investments. The investment in construction of either new or rehabilitation of existing bulk water supply schemes, would happen in a large geographical area around the existing infrastructure or in a new alignment with potential irreversible environmental impacts for medium to long period of time through design, construction, and operations of the Project. Under the WB's ESF, the social risks and impacts were assessed as High mainly due to the legacy issues (land acquisition and resettlement) linked with a project (water conveyance system) financed by the Pakistani Government (K-IV Project). The K-IV Phase 1 was assessed under the WB's Environmental and Social Standard 1 (ESS1) as an Associated Facility to this Project. The land acquisition and resettlement for this K-IV Project was already completed by a separate government entity, Water and Power Development Authority (WAPDA), using the Government's Land Acquisition Act. An assessment was conducted resulting in a CAP to be implemented by WAPDA to ensure compliance with WB's ESF. The activities financed under this Project do not anticipate private land acquisition as the required land and right of way, including transmission lines, are already owned by the KWSC or the GoS. However, the Project site-specific interventions (i.e. Malir basin wastewater interceptors, treatment plant, priority sewer networks and K-IV Augmentation) will result some minor loss of structures (extended to the right-of-way), agriculture crops, and some temporary loss of livelihoods and business; 120 people have been identified as Project-affected people. In addition to the risks and impacts from resettlement, other social risks include community health and safety, as the Project will involve works in densely populated areas, labor and working conditions and occupational health and safety of workers during construction. Likewise, the Project will rehabilitate priority water and sewerage networks for some selected communities of urban informal settlements, known as *Katchi Abadis*. This investment is expected to cause very minor loss of assets and structures (such as ramps, walls, stairs) of some 34 affected people. In addition, social risks are extended to the potential exclusion of vulnerable communities from Project benefits and the lack of meaningful engagement and consultation with them. Investments in *Katchi Abadis* communities may also induce some social tension among different religious minority groups, the marginalized groups within the communities themselves.

5.22 Environmental and Social Instruments: The WB Environmental and Social Standards (ESSs), assessed as relevant to the Project, include ESS1 (Assessment and Management of Environmental and Social Risks and Impacts), ESS2 (Labor and Working Conditions), ESS3 (Resource Efficiency and Pollution Prevention and Management), ESS4 (Community Health and Safety), ESS5 (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement), ESS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources), and ESS10 (Stakeholder Engagement and Information Disclosure).

5.23 Main E&S risks and impacts are induced by the legacy issues related to the identified associated facilities, which include water conveyance system or K-IV and a power transmission line. The water conveyance system was assessed as having some legacy issues related to land acquisition and resettlement already carried out by WAPDA using national requirements. To manage these legacy issues, a gap analysis was carried out, resulting in the development of a CAP, part of the environmental and social commitment plan (ESCP) and legal agreement, which aimed to bring the resettlement implementation previously carried out by the GoS for the K-IV project in compliance with the WB requirements under the ESF. Furthermore, an ecological assessment for downstream Indus impacts and biodiversity action

plan was carried out to assess the impacts of the additional water withdrawals. As for the transmission line, an ESIA is being prepared by STDC, in line with WB ESF requirements and the local legislation.

5.24 Other Project E&S risks and impacts are generated from the following main Project investments in wastewater interceptors, treatment plants, priority sewer and water networks, investments in K-IV Augmentation and reconstruction and rehabilitation of existing water treatment filtration plants at different locations and sites. To manage these E&S risks and impacts, the following E&S instruments have been prepared: 1) a combined RAP has been prepared for specific Project interventions (Malir Basin Wastewater Interceptors, Treatment Plant, priority sewer networks and K-IV Augmentation); 2) an Abbreviated Resettlement Action Plan (ARAP) for investments in water and sewerage networks for 10 *Katchi Abadis* communities; 3) an ESIA for K-IV Augmentation; 4) ESIA for Malir basin wastewater interceptors, treatment plant; 5) LMP to manage risks and impacts associated with labor and working conditions and occupational health and safety; 6) an SEP, including Grievance Redress Mechanism (GRM) aimed to establish a systematic and inclusive approach to stakeholder engagement and consultation; 7) five ESMPs prepared for sub-projects which included: (i) rehabilitation of existing and construction of new filtration plants, (ii) improved water supply and sewerage in additional low income *Katchi Abadis*, (iii) priority sewer network rehabilitation and extension project, (iv) priority water network rehabilitation and extension project, and (v) reducing energy consumption at Dhabeji and NEK pumping stations.

5.25 **Environment Aspects:** Project activities planned under Component B involve construction and rehabilitation of large-scale water supply system, wastewater treatment plant and water and sewerage networks. The Project locations are within and in the vicinity of Karachi. The environmental impacts during the construction phase are diverse and include: (i) an increase in air and noise pollution; (ii) loss of trees and vegetation; (iii) generation of construction and solid wastes and wastewater; (iv) quarrying activities and associated soil erosion; (v) OHS and Community Health and Safety issues due to the activities in densely populated areas; and (vi) temporary blockage of access and diversion of local traffic due to mobilization of heavy machinery and localized excavation works within areas subjected to public access. Construction activities associated with Malir interceptors and wastewater treatment facility (TP-IV) may pose, besides the above-mentioned risks, the additional risk of potential land-use change related to the current agriculture practices in Malir riverbed using untreated effluent. During project operation, the environmental impacts include the generation of sludge from wastewater and water treatment, OHS hazards related to chemicals management, potential soil and groundwater contamination due to any leakages of the sewerage pipes, the mixing of sewage into the water distribution system and over-abstraction from Keenjhar Lake without offsetting or regulating additional withdrawals for K-IV Phase 1. The measures to manage these impacts are included in the relevant ESIA's.

5.26 The GoS is implementing the first phase of Greater Karachi Bulk Water Supply System Project (K-IV Main) which aims to bring additional 260 MGD water to Karachi from Keenjhar Lake via a new water conveyance system over 110 km, along with construction of transmission line providing the interconnection for the 132/11kV Grid Station with the K-IV Pumping Complex to meet the 50 MW energy load demand required for the operationalization of K-IV Main water pumps (K-IV – main or K-IV Phase 1). The K-IV Augmentation subproject under the Project will connect the K-IV reservoirs and the city's existing water network through laying

of large pipelines. The K-IV Main project is financed by the GoS. Thus, it is an Associated Facility to the Project.

5.27 A water balance study for Keenjhar Lake to assess the impacts of the additional water withdrawals was carried out as part of ESIA of K-IV Augmentation sub-project. The study concluded that fulfilling K-IV Project water needs requires a mix of structural and non-structural interventions including Kalri Baghar Feeder Upper (KBFU) lining and regional water management and efficiency improvement respectively. Sindh Irrigation Department has recently awarded a contract to rehabilitate the KBFU canal to restore its hydraulic capacity. This would allow additional delivery of Indus water to Keenjhar Lake from Kotri Barrage, enabling the reliable supply of the extra 260 MGD needed for K-IV Phase 1 while maintaining existing agricultural water withdrawals and safeguarding the lake's ecology. Based on the water balance study, withdrawals from the Indus at Kotri Barrage by the rehabilitated KBFU to offset K-IV withdrawals represent only approximately 3 percent of the historical withdrawals at Kotri Barrage and therefore additional contributions to E&S impacts at Kotri Barrage or further habitat and ecosystem services degradation downstream are foreseen as negligible. Keenjhar Lake Conservation Action Plan (KLCAP) has been developed to address the cumulative impacts of water abstraction projects and will be implemented prior to start of works on K-IV augmentation. This action plan outlines a comprehensive management framework and set of actions for conserving the lake. These actions include (i) creation of Keenjhar Lake Conservation Action Committee by GoS to further monitor and coordinate construction timelines of KBFU rehabilitation, K-IV Phase 1, and K-IV Augmentation and applying adaptive management measures in case of occurrence of any unforeseen negative environmental and social impacts; (ii) conduct critical habitat assessment in Keenjhar Lake and Indus Delta for all phases of K-IV including further biodiversity surveys for plants, mammals, reptiles, amphibians, and birds of high conservation value (HCVs) as identified in ecological assessment report; (iii) detailed mapping of habitats of conservation value; (iv) conduct bird study in Ramsar sites; (v) use of environmental flow models to assess cumulative impacts of all water supply projects; (vi) preparation of a long-term monitoring plan for the habitats and species of conservation value; (vii) community-driven lake clean up and small-scale restoration activities and awareness raising for conservation and sustainable use of Keenjhar Lake for water supply, biodiversity, livelihood and tourism; and (viii) planting of native tree species that will provide foraging and roosting places of birds and other fauna around the Lake's periphery.

5.28 For the construction of transmission line for provision of power for K-IV Main water pumps, the environmental impacts are primarily foreseen as: ecological disturbances, environmental contamination, and risks to workers and community health and safety. The work for this part of the K-IV Main is yet to start. STDC has taken on board a technical consultant as well as the E&S consulting firm to carry out design work and ESIA study. STDC has agreed to carry out the ESIA in complete alignment with the WB's ESF requirements and this has been reflected in the ESCP accordingly.

5.29 **Social Aspects:** Overall, the Project will result in positive social impacts, as the improvement in services will benefit the local population in the Project area. Women, children and vulnerable groups are especially expected to benefit from the Project since they suffer most from poor or lack of access to water and sanitation services. However, given the size of the infrastructure investments, the Project will induce some significant social risks, mainly

related to working conditions and OHS of workers. In the context of congested urban environment in Karachi, other social risks are related to community health and safety, including from construction related activities, traffic accidents as well as sexual exploitation abuse/sexual harassment. In addition, since land within the right-of-way is owned by the GoS, there are some minor potential risks and impacts on losses of assets and economic displacement of affected households living along the right-of-way or in sub-project locations. There are aspects of social risks and impacts related to unequal benefit sharing among *Karachi Abadis* community members in their access to water and sanitation networks, particularly women and those religious minority groups. The Project includes consultation and stakeholder engagement measures, engagement with communities to address these risks.

5.30 In addition to these risks and impacts, the overarching social risks lie in the legacy issues related to land acquisition and resettlement, which were already carried out by WAPDA. During project implementation, attention will need to be focused on ensuring that the CAP addresses the land-related legacy issue and other related social issues and is implemented effectively.

5.31 Occupational Health and Safety, Labor and Employment Conditions: The construction and rehabilitation activities will pose significant risks and impacts associated with labor and working conditions and OHS for direct, contracted workers and in the supply chains during both construction and operations and maintenance phases. Given the nature and scale of the Project activities, which involve earthworks and use of heavy equipment and machinery including the use of cranes, the LMP has been prepared to manage these risks. LMP assesses risks related to Project activities and includes requirements on OHS procedures for ensuring basic safety around work sites, use of personal protective equipment, and training and awareness education for workers. The LMP also consists of provisions for managing risks associated with labor and working conditions including minimum age, as well as a grievance mechanism for workers. Vulnerable groups, including sanitation workers, are identified in the LMP alongside measures to address specific sanitation issues, specifically considering the nature of wastewater works that contain heavy contamination. These measures include provision of adequate welfare and sanitation facilities, first aid measures, as well as training in labor safety and sanitation before sanitation workers start their work. Aspects of the LMPs alongside mitigation measures have been included in the ESIAs and ESMPs. The PIU will ensure that these measures are specified in tender documents for civil work contracts. The contractors as part of C-ESMP will prepare traffic management plans, community health and safety measures and emergency response preparedness plan to mitigate all the health and safety risks during construction of the Project. These requirements are included in the ESCP which will be made part of the legal agreement.

5.32 Stakeholder Engagement, Consultation and Information Disclosure: Extensive consultations (179 consultation sessions including 63 consultations with women/women groups) were carried out with all relevant stakeholders throughout the course of project preparation. In addition, two stakeholder engagement workshops were conducted with 114 institutional stakeholders alongside consultations with them. A SEP has been prepared to create a system for effective and inclusive engagement with stakeholders including vulnerable groups and the Project-affected people. The SEP has identified key stakeholders including Project affected people and vulnerable groups and also created a stakeholder engagement program with a budget, which will need to be implemented throughout the Project cycle. All

the environmental and social safeguard instruments (ESIAs, ESMPs, RAP, ARAP, SEP, LMP) along with their translation of executive summaries in Urdu language were disclosed by the PIU and WB on their websites. The same documents were disclosed on AIIB website as well.

5.33 Project Grievance Redress Mechanism: A Project GRM established for KWSSIP-1 has been updated and adapted for KWSSIP-2 in line with the requirements of the WB's ESF and included in the SEP. Communities and individuals, who believe that they are adversely affected by the Project, will be able to submit complaints to the Project-level GRM for their resolution. A basic GRM, developed as part of the LMP for Project workers, will report any issues relating to workplace safety and other concerns.

5.34 Bank's Project-Affected People's Mechanism: As noted above, the WB's ESF will apply to this Project instead of AIIB's Environmental and Social Policy. Pursuant to the Bank's agreement with the WB, the Bank will rely on the WB's corporate Grievance Redress Service (GRS), its independent accountability mechanism and its Inspection Panel, to handle complaints relating to E&S 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 how to submit complaints to the WB's GRS is available on <http://www.worldbank.org/GRS>. Similarly, information on how to submit complaints to the WB's Accountability Mechanism is available at <https://accountability.worldbank.org>.

5.35 Monitoring and Supervision Arrangements: One Environmental Specialist, one Social Development Specialist and one Gender Specialist are currently working as part of the PIU for KWSSIP-1 and the same team participated in the preparation of KWSSIP-2. Keeping in view of the KWSSIP-2 activities, one additional Senior Environmental Specialist, and one Senior Social Development Specialist will be hired prior to Project effectiveness in addition to the ongoing KWSSIP-1 consultants. Within three months of Project effectiveness, two Environmental Specialists and two Social Development Specialists will be hired along with one OHS Specialist and one Senior Gender Specialist. The PIU will hire the services of an independent E&S consultancy firm for the Third-Party Validation (TPV) during the first year of construction phase. The TPV consultants will monitor the E&S parameters and conduct field surveys at the construction sites to evaluate compliance levels. They will be engaged to conduct the external and independent monitoring of the implementation of the ESIAs and ESMPs. The PMC firm hired to support PIU will also be part of the overall monitoring arrangements. One permanent E&S Cell in KWSC with a clear mandate and appropriate E&S organizational structure will be established during the first year of Project effectiveness. The PIU E&S staff will initially provide direct supervision of the implementation of the E&S instruments for the Project and the roles and responsibilities will gradually transfer to KWSC E&S Cell as it becomes fully staffed.

5.36 PIU will submit quarterly progress reports including environment and social monitoring reports to the Bank and the Bank team will coordinate with the WB and regularly conduct joint supervision missions and provide support and guidance to PIU during project implementation.

E. Climate Change

5.37 Climate Change: Pakistan in general, and Karachi in particular, are highly vulnerable to climate change. Rising temperature and heatwaves increase water scarcity and sea-level rise.

Sudden spells of intense precipitation occurring simultaneously with storm surges aggravate the problems of poor drainage and inadequate sewer infrastructure. The Project is investing in energy efficient improvements which will contribute to climate change mitigation. Energy audits are being carried out under KWSSIP-1, which will continue under KWSSIP-2. Based on the consultants' recommendations, KWSC's electro-mechanical facilities, particularly main water pumping stations will be modernized for consequential significant energy savings. In addition, major investments to reduce NRW by rehabilitating the piped network will reduce leakages and further increase energy efficiency. Improvements in water and sewer systems are also critical to successful climate change adaptation. For example, dealing with heat waves, such as one experienced in 2015, requires sufficient and continuous availability of clean water. The functioning sewer systems, adequate treatment systems and prevention of drainage system from cross-contamination of wastewater are critical to dealing with pollution of urban environment from sewer overflows and urban flooding from overflows of drainage waterways.

F. Gender Aspects

5.38 Gender Aspects: Women face various gender inequalities and disadvantages in the social context of Sindh, which affect their access to urban services and participation in community-based initiatives. Women are important stakeholders, both as affected persons and beneficiaries, in water and sanitation projects. It is important to address gender inequality in the Project as well as in the sector. KWSSIP-1 has implemented a Gender Action Plan (GAP), which has resulted in implementing some specific activities to support women, such as women-specific bathrooms and prayer areas, on-site daycare support, and skills training for KWSC employees. Under KWSSIP-2, the GAP implementation will be focused on addressing the gender gap in employment representation, and leadership at the KWSC. This focus has been integrated into the Project design, through Project Component A, which focuses on Capacity Building and Reform of KWSC. This will include activities to recruit women in technical and decision-making positions by developing a gender-inclusive recruitment strategy as part of the overall human resource reforms for the KWSC. In addition, the Project will support technical training programs aiming to advance women's participation in managerial positions. The Project will also support institutionalizing an internship program for women graduates from technical universities, creating pathways for fresh graduates to find employment within the utility. The Project also includes measures to address issues and risks related to sexual exploitation and abuse and sexual harassment, as well as other risk management measures, ensuring also their active participation during stakeholder engagement and consultation process.

G. Operational Policy on International Relations

5.39 The Bank's Operational Policy on International Relations (OPIR) is triggered because the Project involves the use of water from the Indus River – an international waterway under the Policy. Ecological Assessment found that the increases in withdrawals from the Indus at Kotri Barrage to offset K-IV withdrawals at Keenjhar Lake represent no more than 3 percent of historical withdrawals at Kotri Barrage. The contribution of the Project to the cumulative impacts of multiple withdrawals and degradation of the Indus watershed is therefore assessed as negligible. Since these investments do not change the nature of the existing schemes and will not adversely change the quantity or quality of water flows to other riparian, the

requirement of notification to other riparian as per Section 3.3 (a) of OPIR does not apply. WB also approved an exception to the notification requirement under Paragraphs 7 (a) and (b) of the Policy 7.50 on August 8, 2024. The Bank is satisfied with WB's assessment capacity and process, and with its assessment

H. Risks and Mitigants

5.40 The Project overall risk has been rated "High" because of high risks in the individual categories of implementation, environmental and social, political and governance, and macroeconomic risks. Fiduciary including financial and procurement risks are medium. High Project risks and proposed mitigation measures are tabulated below:

Table 2: Summary of Risks and Mitigating Measures

Risk Description	Assessment (H/M/L)	Mitigation Measures
Program/Project Implementation Risks		
Implementation capacity		
- High implementation risks because of (a) magnitude of the Project activities and its diverse nature; (b) complexity of sub-components; (c) typical startup delays; and (d) extended implementation period. - The complex political context of the Project with multiple actors at different tiers of government could create challenges to Project sustainability. Issues such as Project target areas, tariffs, or employment in KWSC can be contentious.	H	PIU's implementation capacity will be strengthened through: (i) urgent deployment of additional PIU staff (as mandated through legal covenants); (ii) induction of PMC to help PIU in speeding up the project implementation, particularly facilitating PIU in fast decision making on all implementation-related matters; (iii) engagement of construction supervision consultants for timely troubleshooting at site; (iv) deployment of KWSC senior staff in the PIU for facilitating timely execution of critical KWSC reforms. Furthermore, timely approval of the procurement-related documents/evaluations etc., by the WB will also ensure speeding-up the contract awards and disbursements. Regular involvement of PSC will help in prompting resolution of any interdepartmental issues. Both AIIB and WB will regularly field the implementation support missions to oversee and facilitate the implementation progress and ensure the achievement of intermediate result indicators as indicated in the RMF. All the above measures would help in mitigating the stated risks and ensuring that the Project is completed within the planned implementation period with quality, efficiency, and good governance. Furthermore, PPSF has

Risk Description	Assessment (H/M/L)	Mitigation Measures
		provided outstanding outputs to address the start-up delays through advance completion of engineering design and preparation of procurement documents. ▪ The PSC will bring diverse actors together and provide strategic guidance in collaborative spirit and agreements in line with the articles of CoC. Implementation of some key reforms, such as KWSC Act, approved recently, will also act as mitigant for the political and governance issues.
Land acquisition and resettlement		
▪ Central risk related to land acquisition and resettlement is the legacy issue associated with the Government-financed K-IV Project, which is assessed as an associated facility to the Project. ▪ Other risks are related to minor losses of structures and assets and inclusion of vulnerable groups.	H	▪ GoS has committed that PIU will implement the CAP before K-IV Augmentation works are awarded. ▪ Implementation of the CAP will be complemented by regular monitoring of the resettlement activities by an independent monitoring agency/ consultant. ▪ ESIA will become part of the bidding documents for the engineering, procurement, and construction contracts; and payment of compensation under the Land Acquisition and Resettlement Plan (LARP) will be completed prior to the award of the K-IV Augmentation works under sub-component B.5(ii). ▪ ARAPs and SEP, part of the ESCP, have been developed and will be implemented.
Financial management		
▪ Need for KWSB/PIU's further exposure to and experience in financial management and procurement management of MDB's financed projects.	M	▪ PIU's existing experienced financial and procurement professionals of KWSSIP-1 to continue for KWSSIP-2 and PIU to be further strengthened through recruitment of additional FM staff. ▪ Deployment of PMC to support PIU in procurement and financial matters and taking timely actions in line with the agreed Project requirements. ▪ KWSC counterpart staff at PIU to continue strengthening their capacity in FM and benefitting from the best practices under the MDB-financed projects.
Procurement of large and complex packages		

Risk Description	Assessment (H/M/L)	Mitigation Measures
▪ Delayed decision making with large value, complex contracts and PPP procurement.	M	▪ Project Director to delegate part of the decision-making power to qualified working-level staff to streamline the internal review and clearance process. ▪ Sindh Planning and Development Department has agreed to remove review and approval requirements for low value and within the budget ceiling amount contract variations. ▪ KWSC has committed to deploying additional staff, when needed.
▪ Insufficient competition by the limited number of bidders' participation.		▪ Optimization of the procurement packaging plan will attract bidders with adequate capacity. ▪ Provision of price adjustment clause in the contract to mitigate contractor's contract implementation risks. ▪ Preparation of feasibility study of PPP arrangements to identify issue and to provide solutions.
▪ Risk of contract award to AIIB debarred firm/individual consultants.		▪ PIU has been mandated to verify the eligibility of each participating firm/individual against AIIB debarment list provided through the link: https://www.aiib.org/en/about-aiib/who-we-are/debarment-list/index.html
Time and cost overrun		
▪ Cost and time overruns are possible, which will impact Project success.	H	▪ Cost estimates will be prepared based on market rates. ▪ PIU will carefully plan for the works execution by utilizing lessons learned from recent implementation of contracts under KWSSIP-1. ▪ PIU will assign independent contract manager(s) for each contract and prepare comprehensive procedures to allocate responsibilities for timely identification and resolution of issues relating to quality and progress of works. Key Performance Indicators and monitoring plans will be developed for large value contracts and regularly reviewed by PIU and the Bank for the prompt actions, when required.
E&S risks and impacts during construction and operation		
▪ Low capacity of PIU in managing complex environmental and social issues.	H	▪ Recruitment of competent E&S staff including senior environmental, social and gender specialists and field staff comprised of environmental, social and

Risk Description	Assessment (H/M/L)	Mitigation Measures
▪ Potential for ecological impacts, mainly on mangroves at the mouth of the Malir River and on Keenjhar Lake due to water extraction for K-IV Phase 1. ▪ Management of sludge and OHS hazards during operational phase of wastewater treatment plant. ▪ Working conditions and OHS of workers as well as community health and safety risks due to multiple sub-project sites.		OHS specialists in the PIU, and supervision consulting firms. ▪ The rehabilitation of KBFU canal is in progress and ESCP actions requiring regular water balance studies of Keenjhar Lake and implementation of the Keenjhar Lake Conservation Action Plan, as well as increased water delivery to Keenjhar Lake before an equal or lesser amount is withdrawn for K-IV Phase 1. ▪ Sludge management plan will be prepared and implemented during operational phase. An OHS Management System will be established and implemented describing standard operating procedures (SOPs), roles and responsibilities, training needs, emergency response procedures, and reporting and documenting needs. ▪ A CAP has been developed to mitigate this risk. PIU and Supervision Consultant monitor and supervise implementation of the Labor Management Procedures and ESIAs/ESMP, which will be complemented by the regular monitoring by independent monitoring agency/consultant.

Annex 1: Results Monitoring Framework

Project Objective (PO):	The Project objectives are to provide safely managed water and sanitation services in Karachi and increase KWSC’s financial and operational performance.										
Indicator Name	Unit of measure	Base-line Data 2025	Cumulative Target Values					End Target 2030	Frequency	Data source / Methodology	Responsibility
			2026	2027	2028	2029	2030				
Project Objective Indicators:											
1. People provided with safely managed water (disaggregated by female and youth)	Number	0 (0, 0)	0 (0, 0)	7,700,000 (3,850,000, 1,446,830)	7,700,000 (3,850,000, 1,446,830)	16,000,000 (8,000,000, 3,006,400)	16,000,000 (8,000,000, 3,006,400)	16,000,000 (8,000,000, 3,006,400)	Semi-annual	PIU reports, KWSC MIS/ Details will be in the project operations manual	PIU, KWSC zonal teams
2. People provided with safely managed sanitation (disaggregated by female and youth)	Number	0 (0, 0)	1,000,000 (500,000, 187,900)	2,000,000 (1,000,000, 375,800)	3,000,000 (1,500,000, 563,700)	10,400,000 (5,200,000, 1,954,160)	10,400,000 (5,200,000, 1,954,160)	10,400,000 (5,200,000, 1,954,160)	Semi-annual	Same as above	Same as above
3. KWSC Operating Cost Coverage Ratio improved	%	80	100	110	120	125	130	130	Annual	PIU and KWSC financial audit reports/ PIU reports and KWSC entity audits	PIU
Intermediate Results Indicators:											
1. Component A-New water and wastewater tariff review framework adopted by KWSC	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Once and revised in accordance with the regulatory requirements	PIU and KWSC reports	PIU

Project Objective (PO):	The Project objectives are to provide safely managed water and sanitation services in Karachi and increase KWSC's financial and operational performance.										
Indicator Name	Unit of measure	Base-line Data 2025	Cumulative Target Values					End Target 2030	Frequency	Data source / Methodology	Responsibility
			2026	2027	2028	2029	2030				
2. Component A-KWSC customer satisfaction improved	%	0	0	60	70	70	80	80	Three surveys, first at the end of the first year, second at midterm review and the third at the Project closing	Independent customer survey commissioned by KWSC	Customer survey firm engaged by KWSC
3. Component A-Geographic Information System (GIS) including digital mapping of water supply and sewerage system functional	Yes/No	No	No	Yes	Yes	Yes	Yes	Yes	Annual	PIU reports	PIU
4. Component A-KWSC Collection efficiency improved	%	63	67	70	73	75	77	77	Semi-annual	PIU and KWSC reports	PIU
5. Component A-Water Safety Plan prescribed by the WB implemented	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Once and update as necessary	PIU and KWSC Reports	KWSC
6. Component A-Annual appointment of female staff in technical and managerial positions increased	%	0	5	10	15	20	30	30	Semi-annual	PIU and KWSC reports	PIU
7. Component A-Gender-inclusive recruitment strategy approved by KWSC Board	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Semi-annual	PIU and KWSC Reports	PIU

Project Objective (PO):	The Project objectives are to provide safely managed water and sanitation services in Karachi and increase KWSC's financial and operational performance.										
Indicator Name	Unit of measure	Base-line Data 2025	Cumulative Target Values					End Target 2030	Frequency	Data source / Methodology	Responsibility
			2026	2027	2028	2029	2030				
8. Component A-KWSC staff productivity improved	Number	9.5	8	7	6	5	5	5	Annual	KWSC Customer Digitalization Reports	KWSC
9. Component A-Performance agreement prescribed by the WB signed between KWSC and GoS	Yes/No	No	Yes	Yes	Yes	Yes	Yes	Yes	Annual	PIU and KWSC reports	PIU
10. Component B-Unplanned settlements provided with improved water and sanitation services	Number	0	1	2	4	6	7	7	Semi-annual	PIU and KWSC reports	PIU
11. Component B-Sewer network rehabilitated or extended	Kilometers	10	30	60	80	100	117	117	Semi-annual	PIU and KWSC reports	PIU
12. Component B-Water supply distribution network rehabilitated or extended	Kilometers	0	0	50	60	80	110	110	Semi-annual	PIU and KWSC reports	PIU
13. Component B-NRW reduced	%	64	55	44	30	30	30	30	Semi-annual	PIU and KWSC reports	PIU
14. Component B-Specific energy consumption for water supply reduced	kWh/cubic meter	0.43	0.38	0.34	0.32	0.32	0.32	0.32	Semi-annual	PIU and KWSC reports	PIU
15. Component B-Bulk water supply capacity increased	Million cubic meters/ year	0	0	431.4	431.4	431.4	431.4	431.4	Semi-annual	PIU and KWSC reports	PIU

Project Objective (PO):	The Project objectives are to provide safely managed water and sanitation services in Karachi and increase KWSC's financial and operational performance.										
Indicator Name	Unit of measure	Base-line Data 2025	Cumulative Target Values					End Target 2030	Frequency	Data source / Methodology	Responsibility
			2026	2027	2028	2029	2030				
16. Component B- Wastewater Recycled for Industrial Use	Million cubic meters/ year	0	0	0	66	66	66	66	Semi-annual	PIU and KWSC reports	PIU
17. Component B- Private capital mobilized through PPPs	Amount (USD million)	0	33	33	33	33	33	33	Upon PPP financial close	PIU and KWSC reports	PIU

Annex 2: Economic and Financial Analysis

A. Approach and Methodology

1. Economic analysis was conducted to assess the economic viability of the planned interventions under KWSSIP-2. The quantitative investigations included cost effectiveness and cost benefit analysis of the infrastructure investments under Component B of Safely Managed Water Supply and Sanitation Services to Karachi. Component A on Capacity Building and Reform of KWSC and Component C on Project Management and Studies are supporting the sustainability of the infrastructure investments made under Component B. For the quantitative analysis, economic cost-benefit analysis was conducted for those sub-components where benefits could be established in a reasonably reliable manner. The remaining sub-components relied on cost-effectiveness analysis.

B. Cost-Benefit Analysis

2. A cost-benefit analysis was conducted for sub-components where economic benefits could be quantified in a reliable manner. The key benefits included:

- a) Expenditures saved due to less illness based on out-of-pocket monthly health expenditures per household.
- b) Saved public health expenditures based on a percentage of the privately held expenditures. Cost of time saved from reduced days of illness.
- c) Reduced cost of access to alternative water sources such as purchased bowser water and pumping from own wells.
- d) Cost savings from reduced time spent on collecting water.

3. Comparing the with-project scenario with the without-project scenario, the EIRR has been estimated for sub-components where economic benefits could be reliably ascertained. The costs and benefit streams of these individual sub-components were then aggregated, which formed the basis for estimating the Project-level EIRR. Each evaluated sub-component had an EIRR above 15 percent and overall EIRR was 30 percent, illustrating the economic viability of the Project (Table 2-1). With global co-benefits from GHG reduction, the economic return will be slightly higher. However, these were not estimated separately for this component given the uncertainty in estimates. Table 2-2 shows the capital and operations and maintenance costs as well as benefits associated with the Project. It is worth noting that the main pre-condition for the economic and financial benefits to materialize is the completion of the K-IV new water source, which is outside this Project. However, the operational costs of running and managing K-IV water source are still included in the cost calculations, while the other fixed costs are considered sunk costs.

Table 2-1: Cost-Benefit Analysis Results related to Key Sub-Components of the Project

Sub Component	Description	Cost Benefit
		EIRR
A	Reform of KWSC	> 35%
B1	Improve Water Supply and Sewerage Services	21%
B2	Priority Sewer Network Rehabilitation & Extension	n/a

B3	Priority Water Network Rehabilitation & Extension	18%
B4	Reduce Energy Consumption	> 35%
B5	K-IV Augmentation and Connection of TP to Network	15%
B6a	Rehabilitation of Water Treatment Plants	> 35%
B6b	Reconstruction of Water Treatment Plants	> 35%
B7	Malir Basin Interceptors and Wastewater Treatment*	n/a

Note: Cost-effectiveness analysis was conducted for component B7

Table 2-2: Yearly Estimates of Capex, Opex, and Benefits in USD Millions

Year	Costs		Benefits for each Sub-Component & Total							
	Capex	Opex	A	B1	B3	B4	B5	B6a	B6b	Total
1	45.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	183.68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	135.49	5.24	0.00	3.55	0.00	6.43	0.00	9.87	27.29	47.15
4	87.31	10.49	0.00	7.25	0.00	7.88	0.00	11.85	32.78	59.76
5	0.00	76.71	42.25	7.39	9.76	9.37	77.51	13.84	38.28	198.40
6	0.00	76.71	48.46	7.54	11.19	10.92	88.76	15.83	43.80	226.50
7	0.00	76.71	54.70	7.69	12.63	12.54	101.28	17.83	49.32	255.99
8	0.00	76.71	54.89	7.85	12.67	14.21	111.43	19.83	54.86	275.74
9	0.00	76.71	55.09	8.00	12.72	14.49	111.68	19.85	54.92	276.75
10	0.00	76.71	55.29	8.16	12.76	14.78	111.93	19.87	54.97	277.77
11	0.00	76.71	55.49	8.33	12.81	15.08	112.19	19.89	55.03	278.82
12	0.00	76.71	55.70	8.49	12.86	15.38	112.45	19.91	55.09	279.89
13	0.00	76.71	55.91	8.66	12.91	15.69	112.72	19.94	55.16	280.98
14	0.00	76.71	56.13	8.84	12.96	16.00	112.99	19.96	55.22	282.09
15	0.00	76.71	56.35	9.01	13.01	16.32	113.27	19.98	55.29	283.23
16	0.00	76.71	56.57	9.19	13.06	16.65	113.55	20.01	55.35	284.38
17	0.00	76.71	56.80	9.38	13.11	16.98	113.84	20.03	55.42	285.56
18	0.00	76.71	57.03	9.57	13.17	17.32	114.14	20.06	55.49	286.77
19	0.00	76.71	57.27	9.76	13.22	17.66	114.44	20.08	55.56	287.99
20	0.00	76.71	57.52	9.95	13.28	18.02	114.74	20.11	55.63	289.24
21	0.00	76.71	57.76	10.15	13.34	18.38	115.06	20.13	55.70	290.52
22	0.00	76.71	58.02	10.35	13.39	18.75	115.38	20.16	55.78	291.82
23	0.00	76.71	58.28	10.56	13.45	19.12	115.70	20.19	55.85	293.15
24	0.00	76.71	58.54	10.77	13.52	19.50	116.03	20.22	55.93	294.51
25	90.33*	76.71	58.81	10.99	13.58	19.89	116.37	20.24	56.01	295.89

Notes: *We assume 20% of the capex value is retained.

C. Sensitivity Analysis

4. Sensitivity analysis is carried out considering the various negative scenarios that can affect the economic viability of the Project. Table 2-3 shows that even with these negative scenarios, the economic viability remains robust.

Table 2-3: EIRR and ENPV after Accounting for Various Potential Negative Scenarios in the Implementation of the Project

USD '000,000	Base return	Capex +10%, Opex +10% & Benefits -10%	Capex +15%, Opex +15% & Benefits -15%	Benefits Delay by Two Years
EIRR	30%	24%	21%	26%
ENPV (@10%)	837	591	468	760

D. Cost-Effectiveness Analysis

5. Cost effectiveness analysis was conducted for individual selected sub-components by applying the least-cost methodology.

6. As an example, the economic justification of sub-component B.7 the Malir Basin Interceptors and TP-IV relied solely on cost-effectiveness analysis rather than cost-benefit analysis. A main economic benefit of this environmental component derives from reduction of untreated wastewater being discharged into the Arabian Sea, which is difficult to quantify in a reliable manner. This component is a key part of the Project since without this component the discharge will continue and contribute to the eutrophication of the Arabian sea causing further ecological damages.

7. For the Malir River Basin Interceptors, alternative options of interceptor types/material and the alignment along the river were included in the cost-effectiveness analysis. For piping material, eight alternative types were compared (GRP, HDPE, DIP, RCC, PRCC, MS Pipes, FCP, Cast in Situ RCC) from selection criteria of: hydraulic efficiency, resistance to abrasion, resistance to corrosion, strength, durability, weight, imperviousness and costs. Of costs and local manufacturing reasons, the investigation suggested implementation using Reinforced Cement Concrete Conduits.

8. The implementation of TP-IV wastewater treatment plant was investigated from several aspects to identify the most cost-effective solution concerning treatment process design. The investigation identified three favorable alternative secondary treatment processes of: a) Primary Settling Tanks + Trickling Filters + Secondary Settling Tanks; b) Complete Mix Activated Sludge + Secondary Settling Tanks + Sludge Recirculation System; and c) Moving Bed Biofilm Reactor + Secondary Settling Tanks. The three alternative options were compared from a total cost perspective and assuming the total economic costs related to the total financial costs.

Table 2-4: Wastewater Treatment Process Cost Comparison¹

USD '000,000	Alternative A Trickling Filters (SELECTED)	Alternative B Activated Sludge with recycling	Alternative C Moving Bed Reactor
Capital expenditures	84.8	102.2	93.3
Process cost of operation - annually	1.6	4.6	4.6
Total cost ²	117.3	194.9	186.0

¹ Comparable costs of plant of 180 MGD

² 20 years of operation – costs in real terms

E. Financial Analysis

9. A comprehensive financial analysis was conducted to assess the financial impact of investments under KWSSIP-2 and evaluate the financial sustainability of the KWSC in managing its water supply and wastewater operations. KWSC is tasked with the O&M of Karachi's primary water supply and wastewater systems, providing piped water supply to approximately half of the city's residents and managing the entire sewerage network across the metropolitan area.

10. The KWSC is currently experiencing weak financial performance, relying heavily on support from the GoS. Cost recovery from fee collection remains in its early stages, with KWSC able to cover only a portion of its O&M costs due to inefficiencies in managing the water distribution system. The level of NRW stands at approximately 75 percent, driven by a combination of leakages, illegal connections, and low fee collection rates.

11. GoS reimburses KWSC for electricity expenses, which constitute roughly one-third of the total costs associated with the O&M of the water supply and sanitation system. As sanitation services are still in the early stages of development and comprehensive wastewater treatment has yet to be implemented, the majority of KWSC's O&M expenses currently pertain to water supply services. Expenses related to sanitation services presently account for only a small share of the KWSC's overall costs.

12. **The financial status of KWSC concerning water supply services is projected to improve with the proposed Project investments.** Improving KWSC's financial performance hinges on reducing leakages and illegal tapping while enhancing billing and fee collection efficiency. To achieve this, all phases of the Project include subcomponents aimed at minimizing physical losses, eliminating illegal tapping, expanding the supply network, and introducing District Metered Areas (DMA) and metering for retail consumers. Reducing leakages and illegal tapping will not only increase delivery efficiency but also free up additional water for service expansion. Introducing metering for retail consumers is expected to improve the accuracy of billing and enhance bill collection efficiency. Evidence from bulk consumers, who have been partially metered, demonstrates that near-100 percent fee collection can be achieved. Under the Project, bulk consumers will be fully metered, and metering will also be extended to all households in *Katchi Abadis* as part of the water supply and sanitation rehabilitation investment. Most households in these areas already have meters for electricity and gas supply, facilitating the transition to water metering.

13. Additional investments to enhance water supply services include securing the conveyance of water from Phase I of the K-IV Water Source, which will increase the total water source capacity by approximately 50 percent. Furthermore, the rehabilitation and replacement of water treatment plants will improve the quality of distributed water, while energy efficiency investments will support the overall efficiency of water supply operations.

14. The financial analysis indicates that the water supply interventions are sound, considering the anticipated financial benefits. The analysis projects that following the Project completion, KWSC will be able to fully recover its operational expenses related to water supply services. Moreover, the corporation may even contribute to the debt servicing of the investments, marking a significant step toward financial sustainability.

15. **Wastewater Services will improve with the Project investments and Wastewater Services will improve with the Project investments and GoS to continue supporting**

main part of the O&M cost. The development of separate fee collection mechanisms for sanitation services is still in its early stages of planning by KWSC. Consequently, GoS is expected to provide support to cover the O&M expenses associated with the expanded services. This is particularly relevant for wastewater treatment, where significant infrastructure investments are under consideration. Notably, three major wastewater treatment plants are being planned, including the TP-4, with a capacity of 180 MGD to be financed under the Project.

16. Traditionally, GoS has assumed responsibility for counterpart funding and the debt service obligations associated with investments benefitting KWSC. This arrangement is anticipated to remain unchanged for KWSSIP-2, with GoS continuing to fulfill these financial obligations on behalf of KWSC.

Assumptions for the financial analysis for the with-project scenario

17. **Assumptions for the financial analysis for the with-project scenario.** The assumptions on the revenue side include a gradual increase in tariffs of up to 10 percent compared to a scenario without the Project. Additionally, there is an anticipated improvement in the bill collection rate, which is expected to rise from approximately 65 percent to 85 percent.

18. On the O&M cost side, there will be a significant increase in the number of laborers, from 4,920 to over 10,000. Energy consumption is also projected to nearly double, contributing to higher operational costs. Furthermore, there will be an increase in the use of water treatment chemicals, which is essential for maintaining service quality and efficiency.

Table 2-5: Water Supply Financial Forecast

Year	Collected Revenue With Project \$/yr	Total Operating Cost With Project \$/yr	Net Income With Project \$/yr
1	57,896,597	109,257,947	(51,361,350)
2	63,107,291	109,257,947	(46,150,656)
3	73,190,955	109,257,947	(36,066,993)
4	99,333,149	103,394,210	(4,061,061)
5	189,867,127	179,651,999	10,215,128
6	200,422,651	179,651,999	20,770,652
7	211,240,968	179,651,999	31,588,969
8	222,322,079	179,651,999	42,670,080
9	226,439,154	179,651,999	46,787,155
10	226,439,154	179,651,999	46,787,155
11	226,439,154	179,651,999	46,787,155
12	226,439,154	179,651,999	46,787,155
13	226,439,154	179,651,999	46,787,155
14	226,439,154	179,651,999	46,787,155
15	226,439,154	179,651,999	46,787,155
16	226,439,154	179,651,999	46,787,155
17	226,439,154	179,651,999	46,787,155
18	226,439,154	179,651,999	46,787,155
19	226,439,154	179,651,999	46,787,155
20	226,439,154	179,651,999	46,787,155
21	226,439,154	179,651,999	46,787,155
22	226,439,154	179,651,999	46,787,155
23	226,439,154	179,651,999	46,787,155
24	226,439,154	179,651,999	46,787,155
25	226,439,154	179,651,999	46,787,155

19. **FIRR analysis shows overall that water supply investments will be profitable to KWSC.** An FIRR analysis was conducted exclusively for the water supply operations, as sanitation services and their associated fee collection remain in the early stages of development and will require continued government support in the foreseeable future. To support the FIRR analysis, financial projections for KWSC's water supply operations were prepared. These projections indicate that, with the implementation of the Project interventions, KWSC is expected to strengthen its financial position. The anticipated outcomes include enhanced operational capacity, expanded water supply, reduced losses, and improved fee collection mechanisms.

20. The projections further demonstrate that the water supply services will achieve a positive OCCR under the current tariff structure, supported by reductions in NRW. Moreover, the FIRR analysis confirms that a positive FIRR exceeding 10 percent is attainable, even when sensitivities are applied. This reflects the potential for the Project to deliver sustainable financial improvements for KWSC's water supply operations over the Project timeline.

Table 2-6: FIRR from KWSSIP-2 Water Supply Investments

<i>USD '000,000</i>	Baseline return	Capex +10%	Opex +10%	Benefits -10%	Combined
FIRR	16%	14%	14%	14%	13%
FNPV (@ 8%)	204	172	156	152	120

Main assumptions made for the analysis are listed below:

- Solely the water supply component of KWSSIP-2 was included in the estimations of costs and benefits.
- The forecast included 25 years and was prepared in real terms.
- Tariffs as of 2023, with 10% increase in tariffs due to supply of treated water.

Annex 3: Paris Agreement Alignment

1. **The Project is aligned with the goals of the Paris Agreement on both mitigation and adaptation.** The Project addresses climate mitigation across various components by focusing on reducing GHG emissions and enhancing resource efficiency. All the Project's activities fall under the universally aligned list for BB1 (mitigation), and the detailed climate vulnerability assessment has been prepared to understand the key climate risks for the Project components and necessary adaptation measures have been introduced, therefore making the Project aligned with the BB2 (adaptation).

A. Alignment against mitigation goals of Paris Agreement (BB1) and GHG calculations

2. All Project activities are on the universally aligned list of the Joint MDB Methodological Principles for Assessment of Paris Agreement Alignment of New Operations and AIIB Methodology for Assessing the Alignment of AIIB Investment Operations with the Paris Agreement²⁴. The Project will reduce physical NRW through rehabilitation of the water supply system which will help improve water and energy efficiency. Moreover, the households who currently use groundwater will be able to switch the water source to safely managed piped water, that will improve their health and save pumping energy. Sewerage service improvement in *Katchi Abadis* and rehabilitation of sewer network will improve non-sewered sanitation systems and reduce the users, which will contribute to reduction of methane emissions. The electricity utilized for the WASH services will be sourced from the grid and not from on-site fossil fuels as the main energy source. The Project incorporates energy-efficient technologies and solar energy solutions, and the replacement and repairment of equipment, appliances and systems (i.e. HVAC system, water heating) to be provided for the office spaces will reduce energy consumption. For the relevant sub-components, the Project will use LED lights, insulation of walls and ceiling, and double-glazed windows for improving energy efficiency.

3. The estimation of GHG impact was prepared in tCO₂eq by applying with/without project methodology and using the WB's Water Global Practice's Greenhouse Gas Accounting Tool for Water Sector Lending, applied to the water supply wastewater treatment and sewerage interventions, where transformation to piped water supply, improving energy and process inefficiencies, as well as sewerage collection service have a mitigation impact. The annual GHG emissions reduction is estimated at -877,942 tons of CO₂ equivalent. Over the economic lifetime, the Project is expected to generate a net emissions reduction of -17,558,840 tons of CO₂ equivalent.

B. Alignment against adaptation goals of the Paris agreement (BB2)

Step 1: Climate change vulnerability context

4. Pakistan consistently ranks among the top 10 countries most affected by climate change worldwide.²⁵ More frequent and extreme weather events adversely impact ecosystems, people, and their settlements and infrastructure. Droughts, flooding, and heat waves are prevalent high risks for the Project areas, with various parts of Karachi being

²⁴ aiib.org/en/news-events/news/2023/pdf/MDB-PA-DL-Principles_final_14.06.2023.pdf, and [Methodology for assessing AIIB Investment Operations Alignment with the Paris Agreement](#)

²⁵ Eckstein, David, Vera Künzel, and Laura Schäfer. 2021. "Global Climate Risk Index 2021." Germanwatch Briefing Paper.

exposed to extreme heats, wildfires and water scarcity risks²⁶. Projected temperature increases in Pakistan are significantly higher than the global average. The Intergovernmental Panel on Climate Change (IPCC) projects a global average temperature increase by 2081–2100 of 3.7°C under the highest emissions pathway (RCP8.5)²⁷. Monthly and annual average temperatures are also projected to rise, affecting key variables such as the viability of ecosystems and human health impacts, which are often disproportionately influenced by temperature extremes. Progressive warming of the air and soil will result in the reduced availability of water. Periodic heatwaves will intensify these effects and contribute to more severe, more frequent, and longer droughts.

5. Climate change and deposits of anthropogenic black carbon (BC) will hasten the melting of the Himalaya, Hindu Kush, and Karakorum (HKHK) glaciers, leading to changes in the flow of the vital Indus River system and seriously affecting Pakistan’s economy and ecology. A more variable monsoon regime, and more intense storm and cyclone events, will induce landslides and result in floods.

6. Coastal cities such as Karachi are also vulnerable to climate change-induced sea level rise, cyclones, saltwater intrusion, and coastal erosion. The risks from climate change and environmental degradation could further aggravate Pakistan’s economic fragility and ultimately reduce annual GDP by 18 to 20 percent per year by 2050.

Step 2: Definition of climate resilience adaptation (and mitigation) measures

7. The rising risk of droughts and floods will negatively impact the critical WSS infrastructure in Karachi as well as the availability and quality of water resources. The Project intends to address the climate risks arising in the Project area to limit their impacts on the infrastructure and the wider beneficiaries.

8. Below is the list of specific adaptation measures to be applied for the Project based on the climate resilience context established above:

Table 3-1: Specific Adaptation Measures

Components	Proposed adaptation measures
Component A: Capacity Building and Reform of KWSC	This component will finance the technical assistance (TA) and capacity building that will integrate climate resilience considerations: The TA for GIS and data systems hydraulic modeling, billing, and revenue management, and NRW will improve the utility’s ability to enhance energy and water use efficiency, leading to reduction in water and energy losses due to improved reforms and capacity building. Under activities (i), (iv) and (vi), water pressure management boost climate change adaptation through protection of water sources from contamination and pollution via burst pipes, water quality protection that prevents contamination in delivery pipes and channels thus reducing vulnerability to water-borne illnesses and child stunting exacerbated by flood water contamination. Managing the water pressure in delivery systems reduces energy requirement for pumping and risk of pipe failure thus contributing

²⁶ [Think Hazard - Karachi East District](#)

²⁷ Climate risk country profile, Pakistan, WB Group, ADB, 2021

	to emissions mitigation and climate resilience. The development and approval of cost recovery water and wastewater tariffs will strengthen demand management and efficient use of water, preparation and implementation of water safety plans, including the establishment of a centralized energy efficient water quality testing laboratory.
Component B: Safely Managed Water Supply and Sanitation Services	Climate risks to water and sewerage services infrastructure have been considered for all sub-components. The Project intends to limit these risks by adopting hard and soft measures recommended by the WB working paper on Resilient Water Infrastructure Design Brief . Such design principles include the use of submersible pumps, flood-proofing hard components, water quality and quantity data collection, structural bracing and/or use of reinforcements as applicable to Project component thus enhancing the reliability of the water supply and sanitation services provided, especially during extreme weather events. Specifically, the sub-components will finance the rehabilitation and expansion of water supply systems to provide reliable supply of water supply in low-income communities to ensure resilience of the beneficiaries while also achieving climate resilience through resilience of the system itself. Installation of in-line chlorination units will improve the quality of water delivered to beneficiaries, increasing metered house connections will reduce commercial losses and enhance safe access to water supply while also reducing commercial losses in the new system. Additionally, the sewerage network rehabilitation will improve public health outcomes, especially during climate-exacerbated flooding and drought events.
Component C: Project Management and Studies	Under this component, technical assistance for advance studies of subsequent potential water and wastewater infrastructure projects will be conducted as per master plan that integrates climate change considerations, including feasibility studies, engineering designs, environmental and social studies, and special studies on applicability of trenchless technology in water and wastewater infrastructure development in Karachi.

Step 3: Assessment of broader climate resilience context

9. **The Project is consistent with and supports Pakistan's climate change strategies**, including the National Water Policy (2018), the National Climate Change Policy (2021), the National Adaptation Plan (2022), and the Nationally Determined Contribution (2021), as well as the Pakistan CCDR, prepared by the WB [Footnote 14]. CCDR recommends urgent public investment to expand access to safely managed WASH services and investment in climate-resilient water and wastewater infrastructure and services as a priority to transition to a green and resilient economy.

10. The Project will contribute to the following priorities laid out in the National Adaptation Plan Pakistan 2023-2050: (1) Improving Municipal Service Delivery for coping with droughts and other water-related challenges, (2) Strengthening Municipal Financial Capacity through the improvement of cost recovery, and (3) Improving Human Capital (Health) by reducing disease incidences through the expansion of WASH services.

11. The Project is also consistent with the provincial policies and strategies on urban WASH services and water resources management.

12. **Climate finance estimation.** Based on the joint MDB methodologies for tracking mitigation and adaptation finance, 85.2 percent (USD204.42 million) of AIIB financing is considered as climate finance using proportional approach, with the following breakdown as per the table below. Most adaptation activities are classified as Type 1 or Type 2.

Table 3-2: Estimated Climate Financing under the Project

Components	Climate adaptation (USD million)	Climate mitigation (USD million)	Dual benefits (USD million)
Component 1: Capacity Building and Reform of KWSC	0.3	0.3	
Component 2: Safely Managed Water Supply and Sanitation Services	14.65	116.61	71.3
Component 3: Project Management and Studies	1.26		
Total climate finance (USD million)	204.42		

Annex 4: Country Credit Fact Sheet

A. Background.

1. Pakistan is a lower-middle-income country with a GDP per capita of around USD1,570 and a population of around 236 million (FY2023/24). Pakistan's economy grew at an average annual rate of 3.3 percent over the last decade, lower than other economies in the region. Several factors have contributed to this relatively poor economic performance, including structural issues like limited capital accumulation, low productivity growth, and a lack of investment in human capital over the years. Furthermore, subsequent governments have persisted with policies of protection, subsidies, and tax-concessions, which have yielded an economy that is uncompetitive. At the same time, a history of boom-bust cycles and fiscal policy weaknesses have increased external financing needs, leaving the economy vulnerable to domestic and external shocks.

2. The strong post-pandemic recovery in 2021 was another instance of the economy's reliance on expansionary fiscal policies, which led to an overheated economy. As the global monetary policy tightened and the food and fuel prices surged following geopolitical tensions, Pakistan was left with unsustainable levels of current account and fiscal deficits, inflation above 20 percent, and depleted foreign exchange (FX) reserves. Macroeconomic imbalances were further exacerbated by devastating floods in 2022, which caused damages worth USD16 billion to public infrastructure.²⁸

3. In addition, political volatility, particularly in 2022, created high uncertainty, sapped confidence and cast doubt on the authorities' ability to stabilize the economy. Delays in the progress on the IMF program and public statements about a potential debt restructuring led to market jitters, a near-stop of external financing, leading to a downgrade of Pakistan's sovereign rating to the 'CCC' range, and causing yields to spike. Overall, growth in FY23 ground to a halt, due to the crisis. In the two years since mid-2021, the rupee lost 50 percent of its value, while FX reserves declined by 75 percent.

Table 4-1: Selected Macroeconomic Indicators – Pakistan (FY21-FY27)

Selected Economic Indicators	FY21	FY22	FY23	FY24*	FY25*	FY26*	FY27*
Real GDP growth (% change)	5.8	6.2	-0.2	2.4	3.2	4.0	4.1
Inflation (average, % change)	8.9	12.1	29.2	23.4	9.5	7.8	6.5
Fiscal balance 1/	-6.0	-7.8	-7.7	-6.8	-4.7	-3.6	-3.0
Public debt 1/	73.5	76.2	77.3	70.0	71.4	69.8	67.3
Public gross financing needs	19.9	24.5	23.5	22.7	22.5	19.0	17.0
Current account balance	-0.8	-4.7	-1.0	-0.2	-0.9	-0.9	-0.8
External debt	35.1	32.2	40.2	33.7	31.3	31.5	30.6
Gross external financing need	6.4	9.0	6.6	5.3	4.7	4.9	5.5
Gross official reserves (USD billion)	17.3	9.8	4.5	9.4	12.8	15.5	20.2
Exchange rate (PKR/USD) 2/	157.3	204.6	287.6	278.4	..		

Source: IMF Country Report No. 24/310 and WEO; in percent of GDP, unless otherwise indicated; * denotes projections; fiscal year runs July-June
Notes: 1/ General government, including IMF obligations; 2/ Data from central bank, end-of-period, for FY25: as of February 11, 2025.

²⁸ <https://www.worldbank.org/en/news/press-release/2022/10/28/pakistan-flood-damages-and-economic-losses-over-usd-30-billion-and-reconstruction-needs-over-usd-16-billion-new-assessme>

B. Recent Developments

4. In response to the above-mentioned challenges, Pakistan underwent a 9-month IMF program, which concluded in April 2024. Under this program, Pakistan took key steps to restoring economic stability. Recognizing Pakistan authorities' efforts to restore macroeconomic stability under the 9-month 2023-24 Stand-by Agreement (SBA), the IMF approved a 37-month program worth about USD7 billion in September 2024. Implementation of IMF's program through tight fiscal and monetary policies helped considerably with easing inflationary pressures. Growth also rebounded to 2.4 percent in FY24 and is forecasted to be around 3 percent in FY25. Stability in current account as well as foreign exchange markets have enabled the rebuilding of reserve buffers. Consequently, these conditions have allowed the State Bank of Pakistan to reduce the policy rate from the high of 22 percent in June 2023 to 12 percent in January 2025.

5. The recommendations in the current IMF's EFF program broadly include (i) consistent implementation of sound fiscal, monetary, and exchange rate policies along with broadening of the tax-base to create space for spending on health, education, and social protection; (ii) increase competition through removing distortionary subsidies and improving the foreign direct investment (FDI) regime; (iii) reform loss making State Owned Enterprises (SOEs) and improve energy sector viability; and (iv) build climate resilience by consistent implementation of the National Action Plan. IMF's recent review of the EFF, conducted in February-March 2025, suggests that Pakistan has done well to implement the program, making strides towards achieving the targets set out in the program. Because of this progress on the EFF program, IMF and Pakistan agreed on a new arrangement of about USD1.3 billion under the Resilience and Sustainability Facility (RSF) with the aim to support Pakistan's efforts in building resilience to climate change and reducing climate-related vulnerability.

C. Outlook and Risks

6. Expectations for growth in FY25 are to be 3.2 percent, aided by implementation of reforms, and improving financial conditions. Inflation is likely to drop to an average of around 9.5 percent, helped by continued tight fiscal and monetary policies. The implementation of sound macroeconomic policies over the past year have restored economic stability and reduced short-term risks. The current account deficit, after having declined sharply due to depreciation, is expected to remain below 1.5 percent of GDP over the medium-term. Gross reserves are expected to reach USD22.5 billion (3.1 months of imports) by end-FY28.

7. However, risks to debt sustainability remain high and only through continuation of sustainable macroeconomic policies with the public debt declined to below 70 percent in FY26. The key immediate risk is related to liquidity, namely high external financing needs, while interest payments are absorbing more than half of government revenue. Debt sustainability could also be threatened in case of policy slippages, higher interest rates, lower growth, and exchange rate pressures. Fiscal consolidation under the EFF program, financial commitments by multilateral and bilateral partners and the ability of the banking system to roll over domestic debt will be key to maintaining debt sustainability. Fast and sustained implementation of structural reforms is required to overcome issues such as energy sector circular debt, a low tax-GDP ratio (only about 9 percent), low productivity, and climate vulnerability.

8. Pakistan's sovereign ratings are in the 'CCC'-range. On account of the demonstrated support from partners and the IMF during 2023 and 2024, Fitch upgraded the country from CCC to CCC+ in July 2024. Moody's upgraded Pakistan's rating to Caa2 (outlook positive) in August 2024, while S&P upgraded Pakistan to CCC+ (outlook stable) in June 2024.