

SECTOR ASSESSMENT (SUMMARY): WATER AND OTHER URBAN INFRASTRUCTURE AND SERVICES

A. Sector Road Map

1. Sector Performance, Problems, and Opportunities

a. Overview

1. This sector assessment describes the strategic investment priorities of the Government of Khyber Pakhtunkhwa (GOKP) and the Asian Development Bank (ADB) in the water and other urban infrastructure and services (WUSS) sector of Khyber Pakhtunkhwa Province (KPK). Detailed assessments of municipal services have been carried out under policy and advisory technical assistance, the outcome of which are summarized in regional development plans (RDPs) (available upon request). This paper highlights sector performance, priority development constraints, government plans and strategies, past ADB support and experience, and the future ADB support strategy. It also serves as a basis for further dialogue and action on how ADB and the GOKP can work together to tackle the complex challenge of managing rapid urban growth and development in future years.

2. Basic urban services have failed to keep up with ever-increasing demand, leading to a gradual and pervasive degradation of urban environments and living standards in KPK. The province had a recorded population of 35.525 million in 2017; this is projected to reach 58 million by 2035.¹ By the same year, it is projected that 18.5% of KPK's population will be concentrated in cities, up from 16.8% in 2017.² KPK's rapid urban population growth rate (3.4% per annum, which outpaces the national average of 2.7% per annum) is placing a tremendous strain on its cities and the ability of cities to deliver adequate levels of municipal services. This document summarizes detailed sector assessments for the five cities carried out under ADB technical assistance for Provincial Strategy for Inclusive and Sustainable Urban Growth.³

b. Water Supply

3. Water supply in KPK is heavily dependent on groundwater resources. However, abstraction of groundwater is uncontrolled and unregulated. In Peshawar and Abbottabad, surface water accounts for about 10% of the water supply, with the balance drawn from groundwater aquifers. In all other urban areas groundwater is the only source of water.

4. Across all urban areas of KPK, piped water reaches 48% of urban households, while pumped water from shallow aquifers is tapped by a further 43% of urban households. However, water production is insufficient to cater to the entire served population because of poor maintenance; insufficient storage capacity; unreliable power supplies and increasing groundwater depletion. The water supply is intermittent, typically 6 hours or less per day.⁴ Poor maintenance and high rates of leakage result in significant losses from piped water networks (in excess of 50%

¹ Government of Pakistan. 2017. *Population Census*. Islamabad.

² Projections based on the 1998–2017 intercensal growth rates. Urban population in Pakistan is recognized to be under-reported since only the population in areas officially designated as urban are counted as urban. However, there is extensive urbanization of peri-urban margins of cities well beyond the official urban limits.

³ ADB. 2016. [Technical Assistance to the Islamic Republic of Pakistan for Provincial Strategy for Inclusive and Sustainable Urban Growth](#). Manila.

⁴ Government of Khyber Pakhtunkhwa, Planning and Development Department, Bureau of Statistics; and UNICEF-Pakistan. 2018. *Multiple Indicator Cluster Survey 2016–2017 Final Report, Bureau of Statistics*. Peshawar.

of water produced).⁵ Many piped networks are old and in need of replacement. Contamination of the piped water supply is a significant and extensive problem, with more than 70% of piped water tested unsafe for human consumption by households.⁶ Bacteriological contamination is almost universally present; this can indicate cross-contamination by sewage water where sewage lines and water supply networks are co-located.

5. Rapid groundwater depletion is a major concern in the main urban centers, where the rate of abstraction is higher than the rate of recharge. Hydrological studies have confirmed the availability of alternative sources of surface water, which, if treated properly, can provide rapidly growing urban centers with sufficient potable water while maintaining base water flows to sustain downstream ecosystems. Replacing groundwater with surface water will mitigate groundwater depletion and ensure sustainable water supplies for urban residents.

c. Sanitation

6. Operational sewerage systems serve less than 5% of urban areas of KPK; where networks exist, they are poorly maintained and prone to overflow. Most wastewater is conveyed via open drains, and there are no functional wastewater treatment plants in KPK. Wastewater and sewage are discharged, untreated, into surface water drains or onto farmland to be used for irrigation. This practice is a significant source of environmental degradation and a serious health hazard for local farmers and adjacent communities.

7. About 88% of households in urban areas have access to flush toilets, 4% have access only to non-flush toilets, and 8% do not have access to any toilet facility.⁷ In addition, there are public toilets in urban areas, including bus stands and the cantonments. Effluent from toilets is discharged into open or covered drains. The overall hygiene and structural condition of these toilets is poor. Community outreach under the project will help KPK promote appropriate hygiene behaviors and practices. The GOKP estimates that 31,478 households will benefit under the project from improved sewerage and drainage systems. Fifty public toilets will also be constructed in public places. These interventions combined will help KPK reduce high incidence of malaria, dengue fever, hepatitis, water-borne diseases, and lung and skin infections.

d. Solid Waste Management (SWM)

8. SWM in KPK is poor because of inadequate infrastructure, insufficient operational equipment, weak management, and lack of technical capacity. Existing waste collection systems are labor intensive, slow, inefficient, and unhygienic, exposing personnel to unnecessary risks. Collection rates of municipal solid waste vary widely across urban areas, ranging from 20% to 80%, with an overall average estimated to be about 30%. Uncollected waste is typically burned, dumped in drains, or used to fill low-lying land.⁸ Most collection equipment in urban areas is old, poorly maintained, and insufficient to collect the volume of waste generated. In the absence of transfer stations, transportation of collected waste to disposal sites is solely by waste collection vehicles, thus restricting their availability to collect waste.

9. There are no sanitary or controlled landfills for the disposal of the estimated 2,000 tons

⁵ ADB. 2021. *Greater Peshawar Regional Development Plan, 2021–2045*. Manila.

⁶ Pakistan Council for Research in Water Resources (PCRWR) and the results of regular routine testing by Water and Sanitation Services companies in the major cities of KPK.

⁷ Government of Pakistan, Bureau of Statistics, Statistics Division. 2016. *Pakistan Social and Living Standards Measurement Survey (2014–2015)*. Islamabad.

⁸ Government of Khyber Pakhtunkhwa. 2019. *Sector Roadmap*. Peshawar.

per day of waste generated in urban areas of KPK. Disposal at open dumps within and outside the city limits, which lack engineering and operational controls to mitigate pollution of the surrounding environment, is unhygienic and unsanitary.

e. Delivery of Municipal Services

10. Responsibility for the provision of basic municipal services is shared between several organizations. The Public Health Engineering Department is responsible for province-wide health and hygiene standards. Before 2019, this department had a role in implementing its own water and sanitation schemes in rural areas through the district governments.

11. Three types of entities provide municipal services in towns and cities: city development authorities (CDAs), water and sanitation services companies (WSSCs), and tehsil local governments (TLGs).⁹ WSSCs are independent corporatized public corporations that have taken over the provision of water, sanitation, and SWM services in the main urban centers. CDAs and TLGs are tasked with the planning and delivery of urban development projects and are responsible for the provision of municipal services other than water, sanitation, drainage, and SWM (for example, green spaces, parks, city roads, transport facilities, electrification, zoning and land use plans, and town planning schemes).

2. Government's Sector Strategy

12. The WUSS sector has gained increased recognition in Pakistan and KPK through Pakistan Vision 2025, and the KPK-amended Local Government Act (2019), all of which clearly acknowledge that cities are the key to social and economic development, and that increased investment in the sector is essential.

13. The KPK Water Act (2020) and KPK Integrated Water Resource Management Strategy provide the legal and strategic framework for water regulations in KPK. The framework identifies three pillars of pro-poor growth: urbanization, regional trade and connectivity, and remittances. It considers access to safe drinking water and safe sanitation as the most effective means of improving public health and saving lives.¹⁰ To support the framework, the GOKP approved the Institutional Reform Roadmap to be implemented under the project.¹¹ A key reform is the establishment of the KPK Municipal Regulatory Office (KPRO) to regulate and supervise water supply, sanitation, and SWM services in KPK. The project will support development of operational systems and guidelines for KPRO to regulate and develop its capacity and that of WSSCs to manage the regulatory requirements.

14. During project readiness financing (PRF) implementation,¹² the GOKP drafted operational plans that define performance benchmarks and service standards for all WSSC operations. The project team and project management unit (PMU) will further refine these operational plans as regulations and will establish benchmarks for service quality and an accountable mechanism for monitoring and reporting on WSSC operations. A financial sustainability action plan outlining current and projected revenues, consumer willingness and ability to pay surveys, operational costs, and cost recovery tariffs of each type and level of services will be developed by project

⁹ A tehsil is a local administrative unit being a subdistrict of a division.

¹⁰ GOKP, Finance Department. 2017. *Khyber Pakhtunkhwa Province, Pakistan: Public Financial Management Assessment Report*. Peshawar.

¹¹ GOKP approved the road map on 10 June 2021 and it is included as part of PC-1 for the project.

¹² ADB. [Islamic Republic of Pakistan: Khyber Pakhtunkhwa Cities Improvement Projects: Project Readiness Financing](#).

consultants for all WSSCs. The financial sustainability action plan is being supported by institutional review and capacity building reforms supported under the PRF, and will form the basis for independent review of operations, regulation of service standards and service performance, and tariff setting for WSSCs by the regulator once established.

15. The GOKP's Sustainable Development Strategy (SDS), 2019–2023 serves as the medium-term development framework for KPK.¹³ The SDS outlines key urban development objectives in KPK such as: (i) enhanced quality, accessibility, and affordability of better municipal services through improved infrastructure, extended service areas, secured urban centers, and more efficient service delivery; (ii) balanced economic growth for jobs creation and mainstreaming services; (iii) streamlined physical and spatial planning along with effective land use regulations; and (iv) increased role of private sector and civil society.

16. In addition, the GOKP has initiated its Economic Recovery Plan 2020–2023 to cope with the economic impact of the coronavirus disease (COVID-19) pandemic. With an intended outcome of enabling environmentally sustainable urban planning and development, the plan provides for formulating a new building code in line with global best practices in climate change adaptation and environment-friendly urban development.¹⁴

B. Major Development Partners: Strategic Foci and Key Activities

17. ADB, Asian Infrastructure Investment Bank, the World Bank, the Government of Japan, and the Government of the People's Republic of China (PRC), through Exim Bank of China, have been the major development partners in supporting the Government of Pakistan's ongoing efforts to enhance infrastructure development, with a focus on energy, transport, and urban infrastructure development. Bilateral development partners such as Agence Française de Développement (AFD), the Department for International Development (DFID) of the United Kingdom, Japan International Cooperation Agency (JICA), and United States Agency for International Development (USAID) also support Pakistan in urban transport, energy, climate change planning and management, poverty reduction, livelihoods, gender, and social development.

18. In KPK, AFD finances an urban transport project (co-financed with ADB and the European Investment Bank), JICA supports an urban water project, and USAID supports poverty reduction, gender, and social sector development. The PRC is also financing the development of a hydropower plant in KPK. United Nations agencies support urban governance, master planning, and COVID-19 emergency projects.

19. Urban development is a major policy thrust for the GOKP aimed at implementing a component of the amended KPK Local Government Act (2019) that features cities as engines of growth. The key priority areas within the urban sector include supply of clean water, provision of effective and efficient sewerage and drainage systems, environment-friendly disposal of sewage, safe and efficient urban transport infrastructure, provision of consolidated SWM services, and strategic urban planning.

20. The GOKP is increasing its budget allocation for urban development. Under its fiscal year 2021 budget, it is estimated that about 22% of the provincial budget supports urban development

¹³ GOKP, Planning and Development Department. 2019. *Sustainable Development Strategy: A Medium-Term Development Framework 2019–2023 for Khyber Pakhtunkhwa*. Peshawar.

¹⁴ GOKP, Planning and Development Department. 2020. *Azm-e-Nau—The Spirit of Khyber Pakhtunkhwa: Economic Recovery Plan 2020–2023*. Peshawar.

projects, including health, water, sanitation, and livable city development. ADB and other development partners are working closely with the GOKP to complement GOKP development projects. Major urban projects in KPK are listed in Table 1.

Table 1: Major Development Partners and Urban Projects in Khyber Pakhtunkhwa Province

Development Partners	Project Name	Duration	Amount (\$ million)
ADB/AFD/EIB	Peshawar Sustainable Bus Rapid Transit Corridor Project	2017–2021	560
ADB/UCCRTF	Khyber Pakhtunkhwa Cities Improvement Project - Project Readiness Financing Facility	2019–2023	10
JICA	Abbottabad Water Supply Project	2010–2014	33 ^a
USAID	Humanitarian Assistance (include water, sanitation, and hygiene)	2014	338 ^b

ADB = Asian Development Bank, AFD = Agence Française de Développement, EIB = European Investment Bank, JICA = Japan International Cooperation Agency, UCCRTF = Urban Climate Change Resilience Trust Fund, USAID = United States Agency for International Development.

^a Converted into United States dollars from ¥3,644 million. JICA website.

^b USAID. Provincial Fact Sheet—Khyber Pakhtunkhwa.

C. Institutional Arrangements and Processes for Development Coordination

21. The Planning and Development Department (P&DD) of KPK is mandated to provide policy inputs to inform provincial and sectoral development policies, including appraising all development projects, coordinating and adding value to the project proposals of provincial departments, and coordinating all foreign-funded projects. Key activities that the P&DD undertakes include the development of the provincial annual development program, interaction with international partners and federal institutions, monitoring and evaluation of projects, and preparation of provincial statistics and long-term planning for districts. The P&DD also oversees government reform initiatives. P&DD has continued to undertake strategic level planning since 2014, including the strategies and plans outlined in paragraphs 15 and 16. For urban development, the Urban Sector Planning & Development Services Unit Pvt. Ltd. (Urban Policy Unit) serves as the technical advisor to the GOKP and the focal point for both internal and external development partners engaged in urban development initiatives in KPK.

22. The Local Government, Elections and Rural Development Department (LGE&RDD) of the GOKP oversees local governments, including the deputy commissioners and assistant commissioners heading KPK districts and tehsils, respectively, to ensure that these entities discharge their functions and adhere to federal and provincial laws. The LGE&RDD oversees provincial urban projects.

23. WSSCs have exclusive responsibility for planning, design, construction, and operation and maintenance of water supply, sanitation, sewerage, drainage, fluid, and solid waste systems and allied services, including their enhancement and improvement. In addition, WSSCs manage all activities, facilities, programs, resources, and spaces associated with these services, including machinery, tools, and vehicles. WSSCs, however, are understaffed and under-resourced to fulfil their primary mandate and lack adequate human, financial, and technical capacity. As documented in the RDPs, the performance of WSSCs is hindered by fragmented mandates; a lack of city-level systems for resource planning and management; uncertain capital investment funding (95% of their revenue is used to fund operations); low own-source revenues (service tariff rates and tax collection rates are low, with a lack of political will to increase them); and an absence of accountability to customers. Employee turnover further constrain the ability of WSSCs to

maintain programs and establish corporate institutional memory. All of these issues are perceived to be major obstacles to well-managed, prosperous, safe, and healthy cities.

D. ADB Sector Experience and Assistance Program

24. The GOKP lacks sufficient human, technical, and financial resources, and relies heavily on international assistance to achieve its development objectives and goals ADB has supported 19 WUSS sector projects in Pakistan since 1976, of which two were in KPK. Project success rates for urban projects (water and multisector combined) in Pakistan show mixed performance at 54.4%. Experience indicates that (i) the identification and selection of a qualified (or capable) executing agency with motivated staff, (ii) a clearly defined and limited scope, and (iii) sector components that ensure high project readiness, are key factors in achieving project success. Results are better for projects that apply a multisector approach or more comprehensive solutions rather than addressing urban development in a piecemeal fashion. Simplicity of project design is another key factor; requiring completion of urban reforms as a condition precedent to release funds to commence construction activities. Although urban reforms are a critical part of ADB's urban projects, the evidence shows that the provincial government is often not able to reach consensus among concerned government agencies to implement the reforms. Reform components should be supported under a separate arrangement so that any delayed reform actions do not affect physical components of the projects.

25. Adequate project preparation is a fundamental requirement. Prior acquisition of land for infrastructure components (for example, sites for landfilling of solid waste) is critical. In procurement, adoption of larger, more comprehensive works packages is preferable to the multiple small-value contracts that some executing agencies prefer (integration between and supervision of multiple subprojects has proven to be problematic). The most effective project implementation arrangement is for a PMU to be established within the executing agency to implement all project components in partnership with relevant city implementation offices.

26. In November 2016, ADB approved policy and advisory technical assistance for Provincial Strategy for Inclusive and Sustainable Urban Growth in KPK (footnote 2), with the following four primary outputs: (i) development of a new road map document for the urban sector, (ii) preparation of RDPs, (iii) capacity building program for relevant stakeholders, and (iv) mainstreaming innovations in the urban sector. In Pakistan ADB has historically concentrated investments on infrastructure, but not always with a holistic and integrated understanding of the overall strategic context. The RDPs,¹⁵ which cover the period 2021 to 2045, support a more integrated approach to creating livable and sustainable cities, including focused involvement of a wider range of public and private partners, and leveraging ADB resources to attract a wider range of funds. There is a fundamental need for policy continuity and holistic planning for a long-term sustainable future.

27. The country partnership strategy for Pakistan, 2021–2025 states that ADB will support the government's priorities for urban renewal, with improved infrastructure and institutions for municipal services at the national, provincial, and city levels.¹⁶ The country partnership strategy identifies five drivers of change, all of which apply directly to urban development in Pakistan and KPK, and which are captured in the proposed project: (i) private sector development and private sector operations, (ii) good governance and capacity development, (iii) gender equity, (iv) knowledge solutions, and (v) partnerships.

¹⁵ There are three RDPs: Greater Peshawar RDP; Greater Abbottabad RDP; and Swat RDP.

¹⁶ ADB. 2020. [Country Partnership Strategy: Pakistan, 2021–2025—Lifting Growth, Building Resilience, Increasing Competitiveness](#). Manila.

28. The proposed project focuses on five cities (Abbottabad, Kohat, Mardan, Mingora, and Peshawar), which were selected based on various criteria including their status as district headquarters, their strategic position along trade routes and major transport corridors, their demographic significance within KPK (they are the five most populated cities), and the presence of functioning WSSCs in each city. Selection criteria were included in the PRF paper approved in March 2019. These cities are witnessing significant population growth, extensive urban sprawl, rapidly deteriorating urban environments, and have poor to inadequate municipal infrastructure (Table 2 and Figure 1). Detailed assessments of municipal services for each of the five project cities have been prepared and are presented in the respective RDPs.

Table 2: Project Cities: Key Statistics on Municipal Services (Estimates as of 2020)^a

	Abbottabad	Kohat	Mardan	Mingora	Peshawar
Total population (2020)	273,000	324,000	382,300	369,700	2,242,400
Estimated potable water demand (m ³ /day)	37,000	43,800	51,600	55,450	302,725
Potable water availability (after losses, m ³ /day)	21,100	11,350	15,000	26,150	234,400
% of daily potable water demand provided	57.0%	25.9%	29.1%	47.2%	77.4%
Estimated nonrevenue water	> 50%	50%	46%	60%	63%
Estimated wastewater generation (m ³ /day)	25,000	26,000	30,000	33,300	300,000
Functioning sewage treatment plants	0	0	0	0	0
Solid waste collection/generation (tons/day)	35/45	31/146	157/172	100.175	770/1,010
Sanitary waste treatment/disposal (tons/day)	0	0	0	0	0

m³ = cubic meter, O&M = operation and maintenance.

^a Population estimates for 2020 computed by the Regional Development Plan (RDP) technical assistance (TA) team from 1998 and 2017 census data. Government of Pakistan, Bureau of Statistics. 2017. *Provisional Summary Results of 6th Population and Housing Census 2017*. Islamabad. Water and sanitation demand and coverage computed by the RDP TA team using data from WSSCs in Abbottabad, Kohat, Mardan, Mingora, and Peshawar.

Source: Asian Development Bank.

Figure 1: Problem Tree for Water and Other Urban Infrastructure and Services

