ADB

Technical Assistance Report

Project Number: 51324-001
Knowledge and Support Technical Assistance (KSTA)
December 2017

Islamic Republic of Pakistan: Revitalizing the Ecosystem of Ravi River Basin (Cofinanced by the People's Republic of China Poverty Reduction and Regional Cooperation Fund and the Multi-Donor Trust Fund under the Water Financing Partnership Facility)

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 2 November 2017)

Currency unit	–	Pakistani rupee/s (PRe/PRs)
PRe1.00	=	$0.00949747
$1.00	=	PRs105.291

ABBREVIATIONS

ADB	–	Asian Development Bank
EPD	–	Environment Protection Department
KPA	–	knowledge partnership agreement
PRCF	–	People's Republic of China Poverty Reduction and Regional Cooperation Fund
TA	–	technical assistance
TASF	–	Technical Assistance Special Fund
WFPF	–	Multi-Donor Trust Fund under the Water Financing Partnership Facility
WWF-Pakistan	–	World Wide Fund for Nature Pakistan

NOTE

In this report, "$" refers to United States dollars.

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KNOWLEDGE AND SUPPORT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data

Project Number: 51324-001

Project Name	Revitalizing the Ecosystem of Ravi River Basin	**Department /Division**	CWRD/CWER
Nature of Activity	Capacity Development, Policy Advice	**Executing Agency**	Punjab Environment Protection Department
Modality	Regular		
Country	PAK		

2. Sector

	Sector	Subsector(s)	ADB Financing ($ million)
✓	Agriculture, natural resources and rural development	Water-based natural resources management	0.15
	Health	Health sector development and reform	0.10
	Industry and trade	Small and medium enterprise development	0.03
	Public sector management	Public administration	0.03
	Water and other urban infrastructure and services	Urban policy, institutional and capacity development	0.15
		Total	**0.46**

3. Strategic Agenda

	Subcomponents
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive
Environmentally sustainable growth (ESG)	Eco-efficiency Environmental policy and legislation Global and regional transboundary environmental concerns Natural resources conservation Urban environmental improvement
Regional integration (RCI)	Pillar 4: Other regional public goods

Climate Change Information

Adaptation ($ million)	0.50
Climate Change impact on the Project	Low

4. Drivers of Change

	Components
Governance and capacity development (GCD)	Civil society participation Institutional development Institutional systems and political economy
Knowledge solutions (KNS)	Knowledge sharing activities
Partnerships (PAR)	Civil society organizations Implementation

Gender Equity and Mainstreaming

Some gender elements (SGE)	✓

5. Poverty and SDG Targeting

Geographic Targeting	No
Household Targeting	No
SDG Targeting	Yes
SDG Goals	SDG2, SDG3, SDG6, SDG9, SDG11, SDG12, SDG13, SDG15

Location Impact

Rural	Medium
Urban	High

6. Risk Categorization

Complex

7. Safeguard Categorization

Safeguard Policy Statement does not apply

8. Financing

KNOWLEDGE AND SUPPORT TECHNICAL ASSISTANCE AT A GLANCE

Modality and Sources	Amount ($ million)
ADB	**0.46**
Knowledge and Support technical assistance: Technical Assistance Special Fund	0.46
Cofinancing	**0.75**
Multi-Donor Trust Fund under the Water Financing Partnership Facility (Full ADB Administration)	0.20
People's Republic of China Regional Cooperation and Poverty Reduction Fund (Full ADB Administration)	0.55
Counterpart	**0.00**
None	0.00
Total	**1.21**

Source: Asian Development Bank

I. INTRODUCTION

1. The knowledge and support technical assistance (TA) will operate for 18 months and will develop a plan to revitalize and build resilience in the Ravi River Basin in the province of Punjab, Pakistan. The river basin is being heavily polluted with urban, industrial, and agricultural waste, creating major human health, food, and water safety risks. These risks will continue to worsen without urgent action by the government and society. The TA will support activities to assess the pollution problem, identify and close institutional gaps, raise awareness, and develop a long-term plan to revitalize and build resilience in the basin, with detailed investment recommendations.

2. This TA is included in the country operations business plan, 2018–2020 of the Asian Development Bank (ADB) for Pakistan.[1] It is in line with ADB's country partnership strategy, 2015–2019 for Pakistan, which includes support for wastewater treatment, river basin management, and pollution control.[2] The TA was requested by the Punjab Environment Protection Department (EPD) through the Punjab Planning and Development Board and the Economic Affairs Division of the federal government in July 2017, and confirmed through an aide-mémoire in November 2017. Support for the TA is included in the ADB Water Sector and Environment Thematic Group work plans.

II. ISSUES

3. The Ravi River is one of the six transboundary rivers of the Indus River system. It flows from the Himalaya in northwestern India through eastern Pakistan. The river merges into the Chenab River and then the Indus, which flows to the Arabian Sea. About 50 million people live in the basin within Pakistan.[3] This includes 24 million urban dwellers in Punjab's major cities of Lahore (population 11 million) and Faisalabad (4 million), and in about 70 other urban areas. The basin experiences huge flow variations, ranging from 10 cubic meters per second in the dry season to 10,000 cubic meters per second in the wet season.

4. The river provides critical ecosystem services that support Punjab's economy. The river forms part of the Indus Basin Irrigation System within Punjab, the world's largest contiguous irrigation system, and irrigates 2.9 million hectares of agricultural lands that account for about 30% of Pakistan's agricultural cultivation. The river's previously rich biodiversity hosted at least 31 fish species, among other wildlife, that offered livelihoods for Punjab's rural poor.[4] Its partial flow through the Lahore Canal also has recreational and cultural value to residents of Lahore.

5. **Heavy pollution.** Despite its economic value, the river basin has become heavily polluted since the 1990s. Punjab's cities, industries, and agricultural areas have developed without effective infrastructure to control, capture, and treat their discharges of polluted water, and without effective policies and regulations in place to reduce the pollution at source. This problem is not unique to the Ravi basin but is made worse there because of its large population and many farms, cities, and industries. Pakistan treats only about 1% of its urban wastewater.[5] The country partnership strategy notes that Pakistan's environmental management is weak and ineffectual,

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[1] The TA first appeared in the business opportunities section of ADB's website on 20 November 2017. ADB. 2014. *Country Operations Business Plan: Pakistan, 2018–2020*. Manila.

[2] ADB. 2015. *Country Partnership Strategy: Pakistan 2015–2019*. Manila.

[3] Pakistan Bureau of Statistics. 2017. *District-Wise Census Results: Census 2017*. Islamabad.

[4] U. Moza. 2014. *River Ravi Ecology and Fishery*. Delhi: Indian Council of Agricultural Research.

[5] Friends of Democratic Pakistan, Water Sector Task Force. 2012. *A Productive and Water-Secure Pakistan: Infrastructure, Institutions, Strategy*. Islamabad.

with root causes including policy and regulatory gaps, insufficient monitoring and enforcement, technical and capacity constraints, low public awareness, and low levels of investment.

6. Pollution of the river basin and its health risks are not well documented. The river is biologically dead (i.e., lacking dissolved oxygen) along much of its reach downstream of Lahore, according to a 2009 report by the Punjab EPD.[6] The report noted major pollution sources as household wastewater, industrial effluent, agricultural runoff, and solid waste.[7] A 2014 report by the World Wide Fund for Nature Pakistan (WWF-Pakistan) assessed the situation of the river near Lahore, mapping major urban drains and industrial discharges, and concluded that the Ravi is Punjab's most polluted river.[8]

7. **Major risks.** Notwithstanding lack of data, experts agree that pollution has been creating major health, environmental, food, and water safety risks that hurt Punjab's economy and worsen its poverty. Poor sanitation and wastewater management in Pakistan cost 3.9% of gross domestic product in 2006, of which about 90.0% was health related.[9] In 2015, more than 50% of all reported diseases in Punjab were waterborne.[10] Pakistan has insufficient water resources, and poor water quality makes this worse. Farmers, for instance, are forced to use polluted water to irrigate their crops, which creates scarcity of safe food as heavy metals and harmful chemicals can accumulate in crops irrigated with polluted water. Fish and other wildlife cannot live in a dead river, depriving rural poor people of a critical food source and livelihood. The river's recreational and cultural value has also declined, with media reports characterizing it as a "dumping pit" and "sludge carrier."[11] Pollution has a direct economic impact on local water suppliers as well. The Water and Sanitation Agency in Lahore, for example, reportedly needs to draw groundwater from depths of about 200 meters—with major pumping costs—to avoid pollutant contamination at shallower depths.

8. Pakistan is among the world's most climate-vulnerable countries, and climate change may alter the river's flow and increase floods and droughts that worsen pollution risks. Regional climate change models project that, by mid-century, the river's seasonal flow variations may increase because of rainfall variability, glacial melt, and rising water demand from higher temperatures.[12] Climate change could raise the risk of extreme floods or droughts, which pose major economic threats to the basin's 50 million people. Droughts and reduced flows can concentrate pollutants in the river, while floods can create pollution spikes by washing polluted soil and solid waste into the river.

9. **Required actions.** Risks will worsen without urgent action by the government and society. The government needs to strengthen its policies, institutions, and regulations to improve water quality management in the basin. Punjab's cities, industries, and agricultural areas need to invest in pollution control infrastructure and services. Policies and investments also need to be resilient to reduced river flows and increased flow variability that may be caused by climate change.

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[6] Government of Punjab, EPD. 2009. *Environmental Monitoring of River Ravi*. Lahore.

[7] The report, however, has questionable data because of flawed sampling methodologies.

[8] A. Qureshi and A. H. Sayed. 2014. *Situation Analysis of the Water Resources of Lahore: Establishing a Case for Water Stewardship*. Lahore: WWF-Pakistan. The report also lamented the lack of available data on pollution levels and impacts.

[9] World Bank. 2011. *The Economic Impacts of Inadequate Sanitation in Pakistan*. Islamabad.

[10] Government of Punjab, Planning and Development Department. 2015. *Punjab Growth Strategy 2018: Accelerating Economic Growth and Improving Social Outcomes*. Lahore.

[11] I. Gilani. 2015. River Ravi Pollution Puts Lives at Risk. *The Nation*. 2 February; and S. Malik. 2012. Water Pollution: Ravi No Longer a River, but a Sludge Carrier. *The Express Tribune*. 12 April.

[12] ADB. 2017. *Climate Change Profile of Pakistan*. Manila.

10. Punjab has requested ADB support to ensure that its actions avoid repeating past failures. Pollution in the Ravi River has been a known problem since at least 1995, though past clean-up efforts rarely moved beyond the concept stage.[13] Two national water sector strategies from 2002 and 2012 highlighted the need to clean up the river and included investment proposals, but these have not materialized.[14] A government-endorsed wastewater treatment feasibility study prepared with financial support from the Japan International Cooperation Agency in 2009 recommended a $413 million investment, while a similar study by a French consultant in 2011 recommended a $118 million investment. Neither project went ahead (footnote 13). In 2012, the Lahore High Court ordered the establishment of the Ravi River Commission to help clean up the river. The commission reviewed the situation and prepared a report recommending a low-cost ($500,000) bioremediation plant in Lahore as a first step (footnote 13). Soon after, however, the Lahore Development Authority proposed a $3 billion waterfront urban development project for the river that could preclude the treatment plant and pose further environmental risks. These organizations have been debating the issue in court and progress has stalled.

11. Technical and institutional constraints prevented the success of these efforts. The government has struggled to prioritize pollution risks to date because of lack of data and awareness on the risks and impacts of pollution, and cost-effective ways to reduce pollution. Solving the problem also needs a coordinated, multistakeholder response to reduce pollution at different sources, including local governments, industries, and urban service providers in basin cities and towns. The Ravi lacks a river basin management agency or its equivalent that could coordinate its many stakeholders and decide on issues such as the conflicting bioremediation and waterfront development projects mentioned in para. 10.

12. With growing public awareness of the pollution crisis, the government of Punjab has appointed new environmental managers in the EPD and committed to take actions for the river basin with ADB assistance. The EPD has already budgeted for a contribution of up to PRs200 million to support this effort. The TA aims to contribute to addressing the pollution crisis by improving monitoring and enforcement capacity, filling regulatory and institutional gaps, raising awareness on pollution risks and cost-efficient ways to reduce pollution, and increasing levels of investment and public priority toward this crisis.

III. THE TECHNICAL ASSISTANCE

A. Impact and Outcome

13. The TA is aligned with the following impact: water quality in the Ravi River Basin in Pakistan improved.[15] The TA will have the following outcome: environmental water management in the Ravi River Basin improved.[16]

B. Outputs, Methods, and Activities

14. **Output 1: Comprehensive situation assessment of the river basin completed.** Output 1 will assess the pollution situation in the basin and its health impacts, its climate change risks

[13] ADB. 2015. *Fourth ASEAN Chief Justices' Roundtable on Environment: Role of the Judiciary in Environmental Protection—The Proceedings*. Manila.
[14] Footnote 5; and Government of Pakistan, Ministry of Water and Power. 2002. *Pakistan Water Sector Strategy*. Islamabad.
[15] Footnote 5; and Government of Punjab, Planning and Development Department. 2017. *Medium Term Development Framework, 2017–2020*. http://www.pndpunjab.gov.pk/mtdf.
[16] The design and monitoring framework is in Appendix 1.

and vulnerabilities, and its related institutional gaps and development needs. This will include reviewing existing data sets, reports, lessons learned, and best practices to ensure that each of these four assessments is broader and deeper than previous efforts. Output 1 will summarize the results of these assessments in an ADB knowledge product aimed at public and government audiences in Pakistan and other ADB member countries. The output will raise public awareness to make the scale of the pollution problem clear and create support needed to achieve output 2.

15. **Output 2: Environmental water management plan for the river basin completed.** Output 2 will develop a long-term, multisector plan to revitalize and build resilience in the basin, including recommendations for investment projects and institutional reforms. The output will facilitate multistakeholder visioning exercises that will develop an analytical framework for the plan. Through a structured process that the TA will develop, the TA will select key government officials who will receive local training from international experts and go on international study trips to learn the best practices for river basin management and river revitalization in the People's Republic of China and elsewhere. Output 2 will draft the plan, which will be digitally disseminated to local stakeholders, and identify priority infrastructure or institutional reform projects for follow-on ADB investment.[17] The plan will identify and prioritize projects through a structured consultation process and ranking method that the TA will develop and validate with its steering committee. Output 2 will prepare one or two prefeasibility studies, or update existing ones, and provide inputs to ADB's project processing documents to seek clearance for the project concept(s).

16. **Methods and activities.** For both outputs, the TA will take a reflective and multistakeholder approach to learn from past failures and coordinate with key departments, major polluters, civil society, and development partners. This approach is a lesson learned from this context, where previously unsuccessful efforts were attempted without broad consultation between various departments and other stakeholders. The TA team will review and consult on existing data sets, reports, feasibility studies, and plans, and will structure the TA in a way that will update and add value to these inputs.

17. The TA will coordinate, through an internal working group, with three ADB activities.[18] The first activity will transform the Punjab Irrigation Department into a holistic water resources department. The TA will align its work with this transformation and will ensure that the department is consulted regularly during the process. The second activity aims to promote investments in natural capital and ecosystem services, and may work in the Ravi River Basin. The TA may include the natural capital assessments and investments it develops into output 1's public knowledge product and output 2's proposed projects. The third activity is a new ADB investment project for wastewater treatment in Sahiwal city, which lies in the Ravi basin. The TA will coordinate with this project, which will offer lessons on designing sustainable operation and maintenance arrangements for wastewater treatment in the river basin.

[17] Future investments may include urban planning and wastewater treatment, industrial and agricultural effluent control, solid-waste management, surface water and groundwater storage and control infrastructure, and waterborne disease control. Institutional reforms may include setting up a river basin management agency, strengthening the EPD, or developing more flow transfers to the Ravi River using Punjab's system of link canals.

[18] ADB. 2016. *Technical Assistance to the Islamic Republic of Pakistan for the Institutional Transformation of the Punjab Irrigation Department to a Water Resources Department*. Manila; ADB. Forthcoming. *Proposed Technical Assistance for Protecting and Investing in Natural Capital in Asia and the Pacific*. Manila (project number 50159-001); and ADB. 2017. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Islamic Republic of Pakistan for the Punjab Intermediate Cities Improvement Investment Project*. Manila.

C. Cost and Financing

18. The TA is estimated to cost $1,210,000, of which (i) $460,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF 6), (ii) $550,000 will be financed on a grant basis by the People's Republic of China Poverty Reduction and Regional Cooperation Fund (PRCF) and administered by ADB, and (iii) $200,000 will be financed on a grant basis by the Multi-Donor Trust Fund [19] under the Water Financing Partnership Facility (WFPF) and administered by ADB. The key expenditure items are listed in Appendix 2.

19. The PRCF finances TA operational expenses in all ADB developing member countries, including institution and capacity building, demonstrative programs, knowledge sharing, and networking. Eligible expenses include TA consulting services; ineligible expenses include staff consultants, activities involving civil works, and large-scale equipment procurement. The PRCF will finance different ratios of each output as described in Appendix 2.

20. The WFPF finances TA operational expenses in all ADB developing member countries, including project preparation, knowledge sharing, technology transfer, and institution and capacity building. Eligible expenses include consulting services, equipment, and works. The WFPF will finance different ratios of each output as described in Appendix 2.

21. The government will provide counterpart support in the form of counterpart staff, office space and utilities, secretarial assistance, domestic transportation, meeting venues, pollution sampling equipment and laboratory analysis costs, data and documents, coordination among government departments, and other in-kind contributions. The EPD has additionally budgeted up to PRs200 million in funds to support the TA outputs, which it will administer separately from ADB's fund flow and will not involve jointly financed contracts with ADB. The EPD may use these funds to support its counterpart contributions and to develop a pollution control project using nature-based treatment methods that align with the TA outputs. The TA will provide advice to the EPD on how best to use these funds. The EPD will confirm the allocation and use of these funds during TA implementation, in consultation with ADB and the TA consultants and partners. The EPD's eventual use of these funds will be considered when ADB assesses the government's commitment to ensuing loan projects.

D. Implementation Arrangements

22. ADB will administer the TA and will select consultants. ADB and the government of Punjab will coordinate the TA activities and will oversee the timely delivery of the deliverables of each partner and consultant. The indicative implementation period will be March 2018–September 2019, which is sufficient to mitigate risks of delay. The Punjab Planning and Development Board will chair a TA steering committee of government departments. The EPD, through its Strategic Planning and Implementation Unit, will be the executing agency and provide day-to-day support to the activities and coordination of the steering committee and its technical working group(s). The implementation arrangements are summarized in the table.

23. The TA steering committee will convene to make key decisions on TA progress and deliverables, and may comprise senior staff from the following Punjab government agencies and partners (subject to confirmation and after TA approval): EPD; Irrigation Department; Agriculture Department; Local Government and Community Development Department; Primary and Secondary Health Care Department; Housing, Urban Development, and Public Health

[19] Financing partners are the governments of Australia, Austria, Norway, Spain, and Switzerland.

Engineering Department; Industries, Commerce, and Investment Department; and WWF-Pakistan.

24. The TA will convene technical working group(s) to support the consultants and partners with their day-to-day activities, and these groups may comprise mid-level staff from the steering committee member agencies, as well as from agencies such as the Punjab Food Department; Punjab Forest, Wildlife and Fisheries Department; local chambers of commerce; prominent local academics; Indus Waters Commission; urban water and sanitation agencies; urban waste management companies; urban development authorities; and the Urban Unit.[20] The TA may also engage national agencies where relevant, including the Ministry of Water Resources, the Pakistan Environmental Protection Agency, and the Planning Commission.

Implementation Arrangements

Aspects	**Arrangements**		
Indicative implementation period	March 2018–September 2019		
Executing agency	Punjab EPD		
Consultants	To be selected and engaged by ADB		
	International firm: quality-based selection, full technical proposal, performance-based procurement	Consultancy services for river basin assessment and management planning	$1,055,000
Advance contracting	Procurement of the international consulting firm is undergoing advance contracting by ADB.		
Disbursement	The TA resources will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). Disbursement arrangements will follow different ratios specified for each cost category under allocated components, as agreed with each fund and described in Appendix 2.		
Asset turnover or disposal arrangement upon TA completion	The consultants will turn over any fixed assets they purchase during the TA, such as office equipment, to the EPD upon TA completion. ADB will encourage the consultants to rent or lease fixed assets where possible.		

ADB = Asian Development Bank, EPD = Environment Protection Department, TA = technical assistance.
Source: Asian Development Bank estimates.

25. **Consulting services.** ADB will select an international consulting firm to lead the two TA outputs using the quality-based selection method; a full technical proposal; output-based terms of reference; and a performance-based contract with lump-sum, milestone-based payments according to the quantity of outputs delivered at the required level of quality. ADB may reduce or retain payments for lower-quality outputs and pay a premium for higher-quality outputs, which will be negotiated with the first-ranked bidder. The winning firm will act as a credible scientific assessment center and as a change management agent to facilitate the planning process, liaising regularly with the government and other key stakeholders. ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and its associated project administration instructions and/or staff instructions.[21] TASF 6, the PRCF, and the WFPF will finance the cost of engaging the firm (Appendix 2). The consulting firm may propose to include in its contract its procurement of small, low-value goods or fixed assets using the shopping method, such as office equipment or pollution sampling equipment. Any procurement will follow

[20] The TA should engage urban agencies from at least three major cities in Punjab, including Lahore.
[21] Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 3).

the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).[22]

26. **Knowledge partnership.** WWF-Pakistan will provide research, advisory support, and public engagement to output 1 on industrial pollution assessment and ecosystem assessment, and to output 2 on facilitating nature-based industrial investment in pollution control in the river basin through a knowledge partnership agreement (KPA). WWF-Pakistan will facilitate work within the context of the TA to improve understanding of the nature and risk of pollution discharges from large industries and small and medium-sized enterprises to ecosystems in the river basin, and to help engage them in the river basin planning process. KPA activities are designed to capitalize on WWF-Pakistan's local experience and existing knowledge production on the subject, and to work alongside, but not duplicate, the consulting firm's activities. ADB approved the KPA nomination paper, including the financial management system review, in October 2017. The draft negotiated KPA is accessible from the list of linked documents in Appendix 3. ADB and WWF-Pakistan will finalize and sign the KPA after TA approval and effectivity, following relevant staff instructions. TASF 6 will finance the cost of the KPA (Appendix 2).

27. **Cofinancier requirements.** For both the PRCF and the WFPF, ADB will prepare and make available the TA records and accounts, following its normal procedures, to show the contributions, interest, and investment income of and the expenditures financed by each fund.

28. **Printed external publications.** Output 1 will develop an ADB knowledge product that summarizes its four technical assessments into a public document for use by the Pakistan government and civil society. The TA will print and distribute 500 copies to members of the TA steering committee and technical working group(s) for local distribution, and will digitally publish a copy on the ADB website.

IV. THE PRESIDENT'S DECISION

29. The President, acting under the authority delegated by the Board, has approved (i) the Asian Development Bank (ADB) administering a portion of technical assistance (TA) not exceeding the equivalent of $550,000 to be financed on a grant basis by the People's Republic of China Poverty Reduction and Regional Cooperation Fund, (ii) ADB administering a portion of TA not exceeding the equivalent of $200,000 to be financed on a grant basis by the Multi-Donor Trust Fund under the Water Financing Partnership Facility, and (iii) ADB providing the balance not exceeding the equivalent of $460,000 on a grant basis to the Government of Pakistan for Revitalizing the Ecosystem of Ravi River Basin, and hereby reports this action to the Board.

[22] ADB. 2017. *Procurement Regulations for ADB Borrowers: Goods, Works, Nonconsulting, and Consulting Services*. Manila.

DESIGN AND MONITORING FRAMEWORK

Impact the TA is Aligned with Water quality in the Ravi River Basin in Pakistan improved (A Productive and Water-Secure Pakistan; and Punjab Medium Term Development Framework, 2017–2020)[a]			
Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting Mechanisms**	**Risks**
Outcome Environmental water management in the Ravi River Basin improved	By 2019: a. Environmental water management plan for Ravi River Basin endorsed by the Punjab Planning and Development Board (2017 baseline: not applicable) b. At least one of the five cities[b] in the basin adopted physical or nonphysical measures on environmental water management (2017 baseline: 0) c. At least one proposed project received ADB concept clearance (2017 baseline: 0)	a. Final reports from the consultants and WWF-Pakistan b. City reports and communications on the subject measures c. ADB department review meeting minutes and aide-mémoire for subject project	New government after elections in 2018 is unwilling to invest in revitalizing the basin. Adverse economic conditions prevent the public or the private sector from investing in action to reduce pollution and build resilience.
Outputs 1. Comprehensive situation assessment of the river basin completed	1a. Pollution assessment report disseminated by December 2018 (2017 baseline: no report) 1b. Health impact assessment report disseminated by December 2018 (2017 baseline: no report) 1c. Basin-level climate resilience assessment report disseminated by December 2018 (2017 baseline: no report) 1d. Institutional and political economy assessment report disseminated by December 2018 (2017 baseline: no report)	1a. Final reports from the consultants and WWF-Pakistan 1b. Final report from the consultants 1c. Final report from the consultants 1d. Final report from the consultants	Extreme weather conditions during the TA influence pollution sampling results and the resulting situation assessments.
2. Environmental water management plan for the river basin completed	2a. Multistakeholder visioning report proposing an analytical framework for the plan disseminated by December 2018 (2017 baseline: no report)	2a. Final reports from the consultants and WWF-Pakistan	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	2b. Final long-term, multisector revitalization and resilience plan for the basin, including detailed recommendations for investment projects and institutional reforms, disseminated by September 2019 (2017 baseline: no plan)	2b. Final reports from the consultants and WWF-Pakistan	
	2c. At least one ADB project concept paper drafted for a priority project selected by the government and ADB by September 2019 (2017 baseline: 0)	2c. Final report from the consultants and ADB project concept paper draft and communications	
	2d. At least 10 government officials improved their knowledge on environmental water management from international exposure and training by April 2019 (2017 baseline: 0)	2d. Final reports from the consultants and WWF-Pakistan	

Key Activities with Milestones

1. Comprehensive situation assessment of the river basin completed

1.1 Prepare methodologies for the four assessments (April–August 2018)
1.2 Carry out pollution assessment, health impact assessment, climate resilience assessment, and institutional and political economy assessment (April–December 2018)
1.3 Draft knowledge product manuscript (February 2019)

2. Environmental water management plan for the basin completed

2.1 Undertake multistakeholder visioning exercises (April–December 2018)
2.2 Engage at least three cities in the multistakeholder planning process (September 2019)
2.3 Conduct training on the PRC's best practices on pollution control and arrange a study tour for selected officials to the PRC (on or before April 2019)
2.4 Develop draft plan, scope potential investments, and prioritize roles and actions (December 2018–March 2019)
2.5 Provide advisory support to the EPD on the use of about $1.9 million of its budgeted contribution to support the TA outcome (April 2018–September 2019)
2.6 Finalize plan with feedback from stakeholders (April–September 2019)
2.7 Develop at least one or two prefeasibility studies or update existing feasibility studies for priority projects (April–September 2019)
2.8 Provide inputs to ADB's project concept paper and transaction TA proposals (September 2019)

TA Management Activities

Mobilize international consulting firm, WWF-Pakistan, and the TA steering committee by April 2018
Prepare (i) inception report by May 2018, (ii) interim reports by December 2018 and April 2019, and (iii) final report by September 2019

Inputs
ADB: $460,000 (TASF 6) People's Republic of China Poverty Reduction and Regional Cooperation Fund: $550,000 Multi-Donor Trust Fund under the Water Financing Partnership Facility: $200,000 Notes: 1. The government will provide counterpart support in the form of counterpart staff, office space and utilities, secretarial assistance, domestic transportation, meeting venues, pollution sampling equipment and laboratory analysis costs, data and documents, coordination among government departments, and other in-kind contributions. 2. The EPD has additionally budgeted up to PRs200 million in funds to support the TA outputs, which it will administer separately from ADB's fund flow and it will not involve jointly financed contracts with ADB. The EPD may use these funds to support its counterpart contributions and to develop a pollution control project using nature-based treatment methods that align with the TA outputs. The TA will provide advice to the EPD on how best to use these funds. The EPD will confirm the allocation and use of these funds during TA implementation, in consultation with ADB and the TA consultants and partners.
Assumptions for Partner Financing
Not applicable

ADB = Asian Development Bank, EPD = Environment Protection Department, PRC = People's Republic of China, TA = technical assistance, TASF = Technical Assistance Special Fund, WWF-Pakistan = World Wide Fund for Nature Pakistan.

[a] Friends of Democratic Pakistan, Water Sector Task Force. 2012. *A Productive and Water-Secure Pakistan: Infrastructure, Institutions, Strategy*. Islamabad; and Government of Punjab, Planning and Development Department. Medium Term Development Framework, 2017–2020. http://www.pndpunjab.gov.pk/mtdf.

[b] A "city" is either a "metropolitan corporation" or a "municipal corporation" as per Pakistan's administrative divisions.

Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN

($'000)

Item	Amount		
	ADB[a]	PRCF[b]	WFPF[c]
A. Consultants[d]			
1. Remuneration and per diem			
a. International consultants	123.0	260.0	66.0
b. National consultants	75.0	162.0	40.0
2. Out-of-pocket expenditures			
a. International and local travel	50.0	50.0	20.0
b. Office space rental and related facilities	20.0	20.0	15.0
c. Goods (rental and/or purchase)	4.0	0.0	2.0
d. Surveys	20.0	15.0	15.0
e. Training, seminars, and conferences	30.0	30.0	30.0
f. Reports and communications	2.0	1.0	1.0
g. Miscellaneous administration and support costs	1.0	2.0	1.0
B. Contributions to knowledge partner	100.0	0.0	0.0
C. Printed external publications	5.0	0.0	0.0
D. Contingencies	30.0	10.0	10.0
Total	**460.0**	**550.0**	**200.0**

ADB = Asian Development Bank, EPD = Punjab Environment Protection Department, PRCF = People's Republic of China Poverty Reduction and Regional Cooperation Fund, TA = technical assistance, WFPF = Multi-Donor Trust Fund under the Water Financing Partnership Facility.

Notes:

1. The TA is estimated to cost $1,210,000, of which contributions from ADB, the PRCF, and the WFPF are presented in the table above. The government will provide counterpart support in the form of counterpart staff, office space and utilities, secretarial assistance, domestic transportation, meeting venues, pollution sampling equipment and laboratory analysis costs, data and documents, coordination among government departments, and other in-kind contributions. The value of government contribution is estimated to account for 10% of the total TA cost.
2. The EPD has additionally budgeted up to PRs200 million in funds to support the TA outputs, which it will administer separately from ADB's fund flow and it will not involve jointly financed contracts with ADB. The EPD may use these funds to support its counterpart contributions and to develop a pollution control project using nature-based treatment methods that align with the TA outputs. The TA will provide advice to the EPD on how best to use these funds. The EPD will confirm the allocation and use of these funds during TA implementation, in consultation with ADB and the TA consultants and partners.
3. Disbursement arrangements will follow different ratios specified for each cost category under allocated components.

[a] Financed by ADB's Technical Assistance Special Fund (TASF 6). Disbursement will be by cost sharing.

[b] Administered by ADB. Disbursement will be by cost sharing.

[c] Financing partners: the governments of Australia, Austria, Norway, Spain, and Switzerland. Administered by ADB. Disbursement will be by cost sharing.

[d] Consultants' costs are indicative. The firm will propose an output-based, lump-sum payment schedule that will form part of its contract. Lump-sum payments will cover all necessary expense items within the restrictions of ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).

Source: Asian Development Bank estimates.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/LinkedDocs/?id=51324-001-TAReport

1. Terms of Reference for Consultants
2. Knowledge Partnership Agreement