ADB

Technical Assistance Report

Project Number: 49289-001
Regional—Capacity Development Technical Assistance (R-CDTA)
December 2015

Promoting Smart Drinking Water Management in South Asian Cities

(Cofinanced by the Republic of Korea e-Asia and Knowledge Partnership Fund)

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
NRW	–	nonrevenue water
PPP	–	public–private partnership
SAUW	–	Urban Development and Water Division
TA	–	technical assistance

NOTE

In this report, "$" refers to US dollars.

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CAPACITY DEVELOPMENT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data **Project Number:** 49289-001

Project Name	Promoting Smart Drinking Water Management in South Asian Cities	**Department /Division**	SARD/SAUW
Country	REG, BAN, BHU, IND, MLD, NEP, SRI	**Executing Agency**	Asian Development Bank

	2. Sector	**Subsector(s)**	**Financing ($ million)**
✓	Water and other urban infrastructure and services	Urban policy, institutional and capacity development	1.25
		Total	**1.25**

3. Strategic Agenda	**Subcomponents**	**Climate Change Information**	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Climate Change impact on the Project	Low

4. Drivers of Change	**Components**	**Gender Equity and Mainstreaming**	
Governance and capacity development (GCD)	Client relations, network, and partnership development to partnership driver of change Institutional development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas Knowledge sharing activities		
Partnerships (PAR)	Bilateral institutions (not client government) Implementation		

5. Poverty Targeting		**Location Impact**	
Project directly targets poverty	No	Regional	High

6. TA Category: B

7. Safeguard Categorization Not Applicable

8. Financing

Modality and Sources	**Amount ($ million)**
ADB	**0.75**
Capacity development technical assistance: Technical Assistance Special Fund	0.75
Cofinancing	**0.50**
Republic of Korea e-Asia and Knowledge Partnership Fund	0.50
Counterpart	**0.00**
None	0.00
Total	**1.25**

9. Effective Development Cooperation

Use of country procurement systems	No
Use of country public financial management systems	No

Source: Asian Development Bank

I. INTRODUCTION

1. Asia's urbanization is expected to increase from 59% in 2014 to 78% by 2050, and is likely to be a major driver of global growth in the 21st century.[1] More than half of the world's megacities are situated in Asia, while small and medium-sized cities are growing at a faster rate than larger ones. This unprecedented scale of urbanization entails more efficient and effective ways of providing basic urban services, including drinking water supply.

2. Responding to Asia's rapid urbanization, Strategy 2020 of the Asian Development Bank (ADB)[2] emphasizes the commitment to inclusive and sustainable urban development, among others, through collaboration with other development institutions and the private sector. The regional capacity development technical assistance (TA) is in line with ADB's Strategy 2020 and Midterm Review of Strategy 2020 Action Plan[3] by aiming to improve urban drinking water services in South Asia through better coordination between public and private sector operations, which is critical for inclusive and sustainable growth. The TA is also in line with ADB's Water Operational Plan, 2011–2020,[4] which promotes working with corporate water utilities to improve operational efficiencies and enhance water supply services. In addition, ADB's country partnership strategies for Bangladesh, Bhutan, India, Nepal, and Sri Lanka among South Asian countries aim at increasing the operational efficiency of drinking water supply systems through public–private partnerships (PPPs) and private sector investments.[5] The design and monitoring framework is in Appendix 1.[6]

II. ISSUES

3. Increased access to safe and reliable drinking water service plays a vital role in inclusive and sustainable urbanization, and has consistently been the focus of the international development agenda. Although many cities in South Asia have implemented reforms to improve water sector performance, a number of issues remain unresolved. In particular, service coverage in South Asia is lagging the global average of 89%,[7] nonrevenue water (NRW) levels are more than 40%,[8] water operators lack the knowledge and skills to operate water supply systems effectively; and water resources development is not keeping pace with demand projections. The majority of water utilities barely cover operation and maintenance expenses, so they depend on government subsidies for most capital expenditures.

4. In the past, developing member countries focused mainly on improving supply-side interventions to increase drinking water service coverage. More needs to be done to improve the operational efficiencies of drinking water supply systems by reducing water losses, adapting to climate change imperatives, and strengthening water security, among others.

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[1] United Nations. 2014. *World Urbanization Prospects.* New York.
[2] ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank*, *2008–2020*. Manila.
[3] ADB. 2014. *Midterm Review of Strategy 2020 Action Plan.* Manila. http://www.adb.org/documents/midterm-review strategy- 2020-action-plan
[4] ADB. 2011. *Water Operational Plan 2011–2020.* Manila. http://www.adb.org/documents/water-operational-plan-2011-2020
[5] ADB. 2011. *Country Partnership Strategy: Bangladesh, 2011–2015.* Manila; ADB. 2014. *Country Partnership Strategy: Bhutan, 2014–2018.* Manila; ADB. 2013. *Country Partnership Strategy: India, 2013–2017.* Manila; ADB. 2013. *Country Partnership Strategy: Nepal, 2013–2017.* Manila; and ADB. 2012. *Country Partnership Strategy: Sri Lanka, 2012–2016*. Manila.
[6] The TA first appeared in the business opportunities section of ADB's website on 29 September 2015.
[7] United Nations. 2012. *Millennium Development Goals Report*. New York.
[8] ADB. 2010. *The Issues and Challenges of Reducing Non-Revenue Water*. Manila.

5. ADB has been promoting PPPs, design–build–operate contracts, and NRW reduction, among others, to help water utilities improve operational efficiencies and secure financial sustainability. More efficiencies can be gained through affordable technologies and scaling up best practices. Water utilities in South Asia need to be conversant with up-to-date operational knowledge and skills, relevant technologies, and best practices. Customer satisfaction and operational efficiencies can be enhanced by deploying smart drinking water management technology, which is based on a combination of information and communication technology, network solutions, and smart devices.

6. To introduce and implement smart drinking water management in South Asia, investments are required to improve the operational efficiency of drinking water supply systems through partnerships with a broad range of institutions. The TA has been developed to enhance operational efficiency and secure the financial sustainability of water utilities in South Asian countries based on smart drinking water management, among others, through partnership with advanced water utilities from within and outside the region. In particular, the TA will provide developing member countries covered by ADB's South Asia Department[9] with customized business plans as well as training programs and study visits for water utility operators to bring about much-needed transformational changes in the way drinking water is managed and provided.

III. THE CAPACITY DEVELOPMENT TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The impact will be improved urban drinking water services in South Asia, aligned with ADB's Water Operational Plan, 2011–2020.[10] The outcome will be enhanced capacity of water utilities in South Asia to raise their operational efficiency and financial sustainability.

B. Methodology and Key Activities

8. The TA will generate the following outputs: (i) operational efficiency improvement plans developed, (ii) knowledge-building and skills-development programs on smart drinking water management and technologies implemented, (iii) financial sustainability improvement plans prepared, and (iv) new drinking water PPP contract modalities introduced.

9. **Output 1: Operational efficiency improvement plans developed.** The TA will develop operational plans to strengthen efficiencies of water utilities in the selected cities by (i) identifying issues and requirements based on diagnostic assessment of the existing water supply systems; (ii) assessing and evaluating current and future demand for drinking water supply based on the development projections; (iii) introducing and suggesting new operational technologies; (iv) pilot testing the application of smart devices; (v) developing short-, medium-, and long-term implementation plans, including NRW reduction; and (vi) developing standard operating procedures, drinking water safety plans, customer-complaint management policy, and a public information program of drinking water supply systems.

[9] ADB's South Asia Department covers the following countries: Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka.
[10] ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.

10. **Output 2: Knowledge-building and skills-development programs on smart drinking water management and technologies implemented.** The TA will support sharing knowledge on up-to-date relevant technologies based on information and communication technology for improving operational efficiencies by (i) developing staff development and training programs to enhance capabilities and performance of operational staff at all levels; (ii) implementing training and skills development programs for water utilities, including training of trainers, taking into account recipients' job levels and functions within their organizational structure; (iii) holding an international workshop on smart drinking water management; and (iv) developing and conducting study visit programs to advanced water utilities in Asia.

11. **Output 3: Financial sustainability improvement plans prepared.** The TA will provide plans for effectively securing the financial sustainability of water utilities in the selected cities by (i) assessing and evaluating current and future demand for investment based on development projections; and (ii) developing short-, medium-, and long-term financial plans to improve financial sustainability based on operational efficiency improvement plans.

12. **Output 4: New drinking water PPP contract modalities introduced**. The TA will support water utilities in the selected cities to cooperate with the private sector by (i) introducing various drinking water service contract modalities, including service contracts, management contracts, lease contracts, build–operate–transfer and similar arrangements, concessions, and joint ventures; and (ii) developing and suggesting the most appropriate water service contract modality for attracting private sector investments.

13. The TA will be implemented to achieve these outputs through (i) creating a partnership with an advanced water utility that operates drinking water supply systems based on smart drinking water management, and (ii) hiring experienced international and national consultants and resource persons.

14. The TA assumes the following risks: (i) lack of sufficient commitment to improve the operational efficiency of drinking water supply systems, and (ii) frequent staff turnover undermining knowledge-building efforts. These risks will be mitigated by selecting water utilities that demonstrate commitment for the reforms and objectives of the TA, and having continuous policy dialogue.

C. Cost and Financing

15. The TA is estimated to cost $1,350,000, of which $750,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-V and TASF-other sources) and $500,000 will be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund[11] and administered by ADB.[12] K-water,[13] as a technical and training partner, will provide in-kind contributions for the training programs such as resource persons, venues, and facilities. Detailed cost estimates and the financing plan are in Appendix 2.

[11] Approved by the Government of the Republic of Korea on 19 October 2015.

[12] Includes taxes and duties, if any, based on the principles that (i) the amount of taxes and duties financed by the ADB does not represent an excessive share of the TA cost; (ii) the taxes and duties apply only to ADB-financed expenditures; and (iii) the financing of taxes and duties is relevant to the TA success. The Republic of Korea e-Asia and Knowledge Partnership Fund does not finance staff consultants. On eligible and non-eligible expenditures under the fund, see ADB. 2006. *Republic of Korea e-Asia and Knowledge Partnership Fund.* Manila, para. 17.

[13] K-water is a government-owned water utility company of the Republic of Korea.

D. Implementation Arrangements

16. ADB will be the executing agency, with South Asia Department's Urban Development and Water Division (SAUW) as the focal point for administering the TA. The TA will be implemented in four cities over 48 months from January 2016 to December 2019. Those cities with ongoing or upcoming water projects funded by ADB will be prioritized. The TA activities will commence upon receipt of governments' confirmation of their participation.

17. Improving operational efficiency and securing the financial sustainability of water supply systems require practical skills and knowledge that are present in well-performing water utilities. Considering K-water's expertise and experience in operating drinking water supply systems[14] and training water operators, it will be more efficient and effective to create a partnership agreement between K-water and ADB. K-water will implement output 1 and the training and skills development programs under output 2, with support from individual consultants. The profile of K-water's smart drinking water management is in Supplementary Appendix A. Supplementary Appendix B is the draft partnership agreement with cost estimates, for signing by ADB and K-water authorities following ADB approval of the TA.

18. Aside from the partnership agreement with K-water, the TA will require about 60 person-month inputs of individual international and national consultants and 48 working days of resource persons' participation to (i) support K-water in conducting technical diagnostic works and preparing operational plans; (ii) carry out financial diagnostic works and prepare financial sustainability improvement plans; (iii) introduce and develop new drinking water PPP contract modalities; and (iv) coordinate and conduct study visits and a workshop. ADB will engage individual consultants and resource persons in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time). National consultants will be recruited from the countries of the selected cities. All consultants will work under the overall supervision of ADB. The outline terms of reference for consultants and resource persons are in Appendix 3.

19. SAUW will coordinate and monitor TA activities to ensure the effective delivery of TA outputs. K-water and the consultants will submit regular monitoring reports to SAUW. The TA will maximize the impact by encouraging the dissemination and integration of good practices among the participating water utilities and other water utilities in the region through trainings, workshops, and close monitoring of the outputs.

20. Any procurement under the TA will be in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). Disbursements under the TA will be made in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time). At the end of the TA, equipment purchased under the TA will be turned over to the selected water utilities.

[14] Since 1967, K-water has been developing and managing national water resources, including 17 multipurpose dams and 70 water supply systems, as well as conducting international training programs. K-water has also been providing operation and management services based on a concessional contract to 22 cities facing operational difficulties because of the high nonrevenue water level, poor operation skills, and severe financial loss. K-water has reduced about 21.5% of the nonrevenue water level in those cities through smart drinking water management.

IV. THE PRESIDENT'S DECISION

21. The President, acting under the authority delegated by the Board, has approved (i) ADB administering a portion of technical assistance not exceeding the equivalent of $500,000 to be financed on a grant basis by the Republic of Korea e-Asia and Knowledge Partnership Fund, and (ii) ADB providing the balance not exceeding the equivalent of $750,000 on a grant basis, for Promoting Smart Drinking Water Management in South Asian Cities, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Impact the TA is aligned with
Urban drinking water services in South Asia improved. (Water Operational Plan, 2011–2020)[a]

Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting Mechanisms**	**Risks**
Outcome Enhanced capacity of water utilities in South Asia to raise their operational efficiency and financial sustainability enhanced	From 2017 to 2020 a. Business plans of four water utilities approved by their governments (2015 baseline: Not applicable)	a. Annual reports of four selected water utilities	Lack of sufficient commitment to improve operational efficiency of drinking water supply systems.
	b. At least four project proposals for water utilities of selected cities, incorporating smart drinking water management practices and use of new technologies, submitted to government (2015 baseline: Not applicable)	b. Annual reports of four selected water utilities	
Outputs 1. Operational efficiency improvement plan developed	1a. Short-, medium-, and long-term operational plans, which allow the governments to reduce operational cost, submitted by 2019 (2015 baseline: Not applicable)	1a. Consultants' semi-annual report	Frequent staff turnover will undermine knowledge-building efforts.
2. Knowledge-building and skills-development programs on smart drinking water management and technologies implemented	2a. About 100 operational staff (25 from each city, with 20% female) from four water utilities completed training by 2019 (2015 baseline: Not applicable)	2a. Consultants' semi-annual report and attendance data on training sessions	
	2b. About 32 operational staff (8 from each city, at least 25% female) of four water utilities participated in study visits to two advanced water utilities in Asia (2015 baseline: Not applicable)	2b. Summary of study visits	
	2c. One international workshop on smart drinking water management conducted by 2019 (2015 baseline: Not applicable)	2c. Summary of workshop proceedings	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
3. Financial sustainability improvement plans prepared	3a. Short-, medium-, and long-term financial plans, anchored on the operational improvement plans, submitted by 2019 (2015 baseline: Not applicable)	3a. Consultants' semi-annual report	
4. New drinking water PPP contract modalities introduced	4a. Technical advice on the most suitable PPP modalities for each of the four water utilities in the selected cities provided by 2019 (2015 baseline: Not applicable)	4a. Consultants' semi-annual report	

Key Activities with Milestones

1. Operational efficiency improvement plans developed

1.1 Establish a partnership agreement between the Asian Development Bank and K-water for knowledge sharing and training programs on smart drinking water management (Q1 2016)
1.2 Secure no objection from the beneficiary countries and select the first target city (Q1 2016)
1.3 Conduct technical diagnostic assessment on the existing drinking water systems in the first selected city (Q2 2016)
1.4 Prepare, finalize, and submit short-, medium-, and long-term operational plans and operational manuals for the first selected city (Q3–Q4 2016)
1.5 Pilot test the application of smart devices (Q4 2016)
1.6 Select the second target city (Q1 2017)
1.7 Conduct technical diagnostic works; prepare short-, medium-, and long-term operational plans and operational manuals; and pilot test the application of smart devices for the second selected city (Q1–Q4 2017)
1.8 Select the third target city (Q1 2018)
1.9 Conduct technical diagnostic works; prepare short-, medium-, and long-term operational plans and operational manuals; and pilot test the application of smart devices for the third selected city (Q1–Q4 2018)
1.10 Select the fourth target city (Q1 2019)
1.11 Conduct technical diagnostic works; prepare short-, medium-, and long-term operational plans and operational manuals; and pilot test the application of smart devices for the fourth selected city (Q1–Q3 2019)

2. Knowledge-building and skills-development programs on smart drinking water management and technologies implemented

2.1 Build up customized training program and study visits for the first selected city (Q2 2016)
2.2 Execute training modules and study visits for the first selected city (Q4 2016)
2.3 Build up customized training program and study visits for the second selected city (Q2 2017)
2.4 Execute training modules and study visits for the second selected city (Q4 2017)
2.5 Build up customized training program and study visits for the third selected city (Q2 2018)
2.6 Execute training modules and study visits for the third selected city (Q4 2018)
2.7 Build up customized training program and study visits for the fourth selected city (Q1 2019)
2.8 Execute training modules and study visits for the fourth selected city (Q3 2019)
2.9 Organize international workshop (Q4 2019)

Key Activities with Milestones

3. Financial sustainability improvement plans prepared

3.1 Conduct financial diagnostic assessment on the existing drinking water systems in the first selected city (Q2 2016)
3.2 Prepare, finalize, and submit short-, medium-, and long-term financial plans for the first selected city (Q3–Q4 2016)
3.3 Conduct financial diagnostic works and prepare short-, medium-, and long-term financial plans for the second selected city (Q2–Q4 2017)
3.4 Conduct financial diagnostic works and prepare short-, medium-, and long-term financial plans for the third selected city (Q2–Q4 2018)
3.5 Conduct financial diagnostic works and prepare short-, medium-, and long-term financial plans for the fourth selected city (Q1–Q3 2019)

4. New drinking water PPP contract modalities introduced

4.1 Assess and propose the most appropriate contract modalities for the first selected city (Q3–Q4 2016)
4.2 Assess and propose the most appropriate service contract modalities for the second selected city (Q3–Q4 2017)
4.3 Assess and propose the most appropriate service contract modalities for the third selected city (Q3–Q4 2018)
4.4 Assess and propose the most appropriate service contract modalities for the fourth selected city (Q2–Q3 2019)

TA Management Activities

Recruit and mobilize national consultants in Q1 of 2016–2019 after the cities are selected.

Recruit and mobilize international consultant in Q1 2016.

Inputs

Asian Development Bank: $750,000

Republic of Korea e-Asia and Knowledge Partnership Fund: $500,000

K-water (in-kind contribution such as resource persons, training venues and facilities for the training programs): $100,000

Assumptions for Partner Financing

Not applicable.

PPP = public–private partnership, Q = quarter, TA = technical assistance.
[a] ADB. 2011. *Water Operational Plan, 2011–2020*. Manila.
Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN

($'000)

Item	Amount
A. Asian Development Bank [a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	170.0
ii. National consultants	254.6
b. International and local travel	58.0
c. Reports and communications	10.0
2. Workshop [b]	76.0
3. Study visits	142.0
4. Contingencies	39.4
Subtotal (A)	**750.0**
B. Republic of Korea e-Asia and Knowledge Partnership Fund [c]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	340.0
b. International and local travel	64.0
c. Reports and communications	8.0
2. Equipment [d]	80.0
3. Contingencies [e]	8.0
Subtotal (B)	**500.0**
Total	**1,250.0**

Note: The technical assistance (TA) is estimated to cost $1,350,000, of which contributions from the Asian Development Bank (ADB) and the Republic of Korea e-Asia and Knowledge Partnership Fund are presented in the table above. To support the TA, K-water will provide the equivalent of $100,000 in the form of resource persons, venues, facilities, and other in-kind contributions for the training programs under its partnership agreement with ADB.

[a] Financed by ADB's Technical Assistance Special Fund (TASF-V and TASF-other sources). This includes taxes and duties, if any.

[b] Includes the cost for resource persons, venue, and other logistics arrangements.

[c] Administered by ADB and will support the partnership agreement between ADB and K-water. This includes taxes and duties, if any.

[d] Includes the cost of smart devices. Equipment will be turned over to the selected water utilities upon technical assistance completion.

[e] Assumed to be about 10% of equipment only.

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

A. Objectives

1. The main objective of the technical assistance (TA) is to improve operational efficiencies and secure the financial sustainability of water utilities to respond to the increasing needs in urban drinking water supply services. In light of this, the Asian Development Bank (ADB) is taking a proactive role as a catalyst in sharing expert knowledge in Asia and the Pacific that is relevant for its developing member countries.

2. Improving the operational efficiencies of water utilities requires broad skills that cannot be provided by individual consultants or a single firm. The TA also requires advanced water utilities to share their knowledge in operating drinking water supply systems and reducing the nonrevenue water level for effective implementation. Considering K-water's experience and technology in the operation of drinking water supply systems and training water operators, ADB will establish a partnership agreement with K-water[1] on technical diagnostic works, operational efficiency improvement plans, and training programs. ADB will engage the individual consultants and resource persons for financial diagnostic works, financial sustainability improvement plans, new drinking water service contract modalities, study visits, and a workshop in accordance with its Guidelines on the Use of Consultants (2013, as amended from time to time).

Table 3.1: Summary of Indicative Individual Consulting Experts Required

Positions	No. of Experts	Person-Months per Expert	Total Person-Months
International			
1. Public–private partnership specialist	1	8	**8**
National (1 per selected city)			
1. Finance specialist	4	3	**12**
2. Water supply specialist	4	4	**16**
3. Procurement specialist	4	2	**8**
4. Program manager	4	4	**16**
Resource Persons	**No. of Experts**	**Working Days per Expert**	**Total Working Days**
International and/or national	6	8	**48**

Source: Asian Development Bank.

B. Scope

3. **Public–private partnership specialist** (1 international, 8 person-months, intermittent). The specialist will have a master's degree in a relevant discipline such as business, finance, or economics; and 7 years or more of relevant professional experience in developing and managing public–private partnerships (PPPs). The specialist will hold a professional certification such as certified public accountant, chartered accountant, chartered financial analyst, or its equivalent. The consultant should, in particular, have excellent understanding of and expertise in (i) PPP methodology and framework; (ii) PPP formulation, appraisal, and approval procedures; (iii) legal and contractual arrangements and concession agreements; and (iv) various methods of structuring PPPs. The tasks of the consultant will include but not be limited to the following:

(i) assess and summarize the level of institutionalization and status of the PPP enabling environment;

[1] K-water is a government-owned water utility of the Republic of Korea.

(ii) identify gaps, develop strategies for PPP institutionalization, and strengthen the PPP enabling environment;
(iii) introduce various drinking water service contract modalities based on PPP, including service contracts, management contracts, lease contracts, build–operate–transfer and similar arrangements, concessions, and joint ventures; and
(iv) develop and suggest the most appropriate contract modality for effectively attracting the private sector to the selected water utilities.

4. **Finance specialists** (4 national, 12 person-months, intermittent). The specialists will have a master's degree in a relevant discipline such as business, finance, or accounting; and 7 years or more of work experience in structuring and implementing financing plans for water utilities or water-related projects. The consultants will hold a professional certification such as certified public accountant, chartered financial analyst, or its equivalent. The specialists will be from the countries of the selected cities. The specialists should, in particular, have excellent understanding of and expertise in (i) water projects financed by multilateral development banks, and (ii) attracting private sector investment to the water sector. The specialists' assignments will include the following:

(i) conduct diagnostic assessment on the last 5 years of financial statements of the selected water utilities;
(ii) review investment plans and development strategies of the selected water utilities; and
(iii) develop short-, medium-, and long-term financial plans for the selected water utilities based on the operational efficiency improvement plans.

5. **Water supply specialists** (4 national, 16 person-months, intermittent). The specialists will have a master's degree in a relevant discipline such as water supply or water management; and 7 years or more of experience in the design, construction, and operation of water supply systems. The specialists will be from the countries of the selected cities. The specialists should, in particular, have excellent understanding of and expertise in issues and requirements for improving the operational efficiency of water supply systems. The specialists' assignments will include the following:

(i) conduct diagnostic works on the existing water supply systems of the selected cities with K-water, which is the technical partner of the TA;
(ii) review and assess the development plans on water supply systems of the selected cities; and
(iii) develop plans for both operational efficiency improvement and financial sustainability enhancement of the selected water utilities in cooperation with K-water and the finance specialists.

6. **Procurement specialists** (4 national, 8 person-months, intermittent). The specialists will have a master's degree in a relevant discipline such as business administration, economics, engineering, public procurement, or public policy; and 7 years or more of relevant experience in procurement and contract management, preferably in projects financed by multilateral organizations. The specialists will be from the countries of the selected cities. The specialists' assignments will include the following:

(i) review procurement-related documents of the selected water utilities;
(ii) provide mentoring support to the selected water utilities to provide support during the bidding process;
(iii) assist in the preparation of bidding documents and bid evaluation reports, leading to the timely award of contracts;

(iv) conduct project management and procurement clinics and on-the-job training in response to demand, and document best practices in procurement; and
(v) assist in the preparation of specific bidding documents for projects in the pipeline to improve project readiness.

7. **Program managers** (4 national, 16 person-months, intermittent). The managers will have a bachelor's degree in communications or similar fields, and 5 years or more of experience and a good reputation coordinating events (e.g., workshops and study visits). The consultants will be from the countries of the selected cities. The tasks of the managers will include but not be limited to the following:

(i) arrange and support the site visits and meeting of K-water and consultants with selected water utilities;
(ii) coordinate with resource persons and participants in relation to their engagement and participation in training programs;
(iii) coordinate study visits with well-managed water utilities; and
(iv) prepare and disseminate materials for training programs and study visits to participants.

8. **Resource persons** (6 individuals, 48 working days total). The resource persons will be engaged for short periods during the workshop to deliver lectures and make presentations on selected topics for smart drinking water management and new water PPP contract modalities. The resource persons should have vast experience in water supply systems and/or PPP contracts, including teaching these subjects to government officials with various backgrounds. They will also design and present case studies for the workshop topics. Facilitators may also be engaged for the study visits and the workshop.