Technical Assistance Report

Project Number: 49378-001
Regional—Capacity Development Technical Assistance (R-CDTA)
December 2015

Strengthening Capacities to Design and Implement Smart Urban Infrastructure

Asian Development Bank

ABBREVIATIONS

ADB	–	Asian Development Bank
DMC	–	developing member country
DPR	–	detailed project report
SAUW	–	Urban Development and Water Division
TA	–	technical assistance
ULB	–	urban local body

NOTE

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

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CAPACITY DEVELOPMENT TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data **Project Number:** 49378-001

Project Name	Strengthening Capacities to Design and Implement Smart Urban Infrastructure	**Department /Division**	SARD/SAUW
Country	REG	**Executing Agency**	Asian Development Bank

2. Sector	**Subsector(s)**	**ADB Financing ($ million)**
✓ Water and other urban infrastructure and services	Urban policy, institutional and capacity development	0.50
	Total	**0.50**

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 Institutional systems and political economy Organizational development	Some gender elements (SGE)	✓
Knowledge solutions (KNS)	Knowledge sharing activities Pilot-testing innovation and learning		

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

6. TA Category: B

7. Safeguard Categorization Not Applicable

8. Financing

Modality and Sources	**Amount ($ million)**
ADB	**0.50**
Capacity development technical assistance: Technical Assistance Special Fund	0.50
Cofinancing	**0.00**
None	0.00
Counterpart	**0.05**
Government	0.05
Total	**0.55**

9. Effective Development Cooperation

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

I. INTRODUCTION

1. Between 2014 and 2050, the number of urban residents in South Asia is expected to nearly double from 472.8 million to 947.8 million.[1] In the face of this unprecedented growth, cities throughout the region have been unable to keep pace with the growing demands of urban populations, significantly lagging in the delivery of basic services (water supply, sanitation, stormwater drainage, and urban transport). A key reason is that the region's urban infrastructure ecosystem of stakeholders—comprising local, state, and central governments, private sector (consultants and contractors), and academic institutions—is constrained by weak capacities and poor coordination in the planning, design, and implementation of projects. Exposure to various innovations and good practices in the sector is limited, resulting in the continuation of business-as-usual approaches. This curbs improvements toward effective infrastructure development and service delivery, including effective response to the risks associated with the changing climate. The result is persistently slow progress in achieving key development indicators and enhancing urban livability throughout the region.

2. Strategy 2020 of the Asian Development Bank (ADB) emphasizes the need for capacity building and institutional strengthening to achieve inclusive and sustainable urban service delivery in the region.[2] ADB's Urban Operational Plan, 2012–2020 similarly highlights the need to strengthen local capacity on existing systems to undertake integrated urban development, operationalized both through projects and the establishment of networks for peer-to-peer learning and sharing of best practices among cities.[3] In addition, ADB's country partnership strategies for Bangladesh, Bhutan, Nepal, and Sri Lanka highlight the need for institutional strengthening and capacity development to ensure efficient and effective project design and delivery. This regional capacity development technical assistance (TA)[4] aims to improve the capacities of key urban sector stakeholders and the coordination between them to develop and implement smart urban infrastructure[5] that can respond simultaneously to the challenges of economic growth, environmental sustainability, climate change adaptation and mitigation, preparedness for disaster risk,[6] and inclusiveness. The design and monitoring framework is in Appendix 1.

II. ISSUES

3. To meet the large urban infrastructure deficits, governments in South Asia are looking to scale up investments and proactively manage urbanization to enhance urban livability and boost economic growth. However, the massive investments expected to flow into urban infrastructure development will encounter serious systemic weaknesses in the capacity of institutions responsible for the delivery of urban infrastructure. The need to overcome capacity bottlenecks and improve the interaction between stakeholders is urgent.

4. The performance of ADB's urban sector assistance in South Asia needs to improve across the whole project cycle: planning, design, procurement, implementation, and operation

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1 United Nations. 2014. *World Urbanization Prospects – The 2014 Revision – Highlight.* New York.
2 ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020.* Manila.
3 ADB. 2011. *Urban Operational Plan, 2012–2020.* Manila.
4 The TA first appeared in the business opportunities section of ADB's website on 9 December 2015.
5 Smart urban infrastructure effectively integrates physical, digital, and human systems in the built environment to deliver a sustainable, prosperous, and inclusive future for its citizens.
6 Geographical hazards such as earthquakes pose a high risk to many of the region's cities in general.

and maintenance.[7] Further, the fragmentation of stakeholders prevents relationships conducive to stronger sector performance. Strong links between these stakeholders are essential to solve the systemic problems. The urban infrastructure ecosystem is also in critical need of institutional and technological partnerships with frontier urban infrastructure entities from both within and outside the region to enable the transfer of innovative ideas, practices, and technologies for the development of smart urban infrastructure.

5. Hence, it is important to strengthen the capacity and coordination of the main stakeholders to enable the delivery of smart infrastructure and services in the region's cities. The TA will provide capacity building support to the urban sector in the participating developing member countries (DMCs)[8] for the design and implementation of smart urban infrastructure projects. This involves (i) the provision of incremental consulting services to enhance project preparatory and project implementation capacity, and to assess the institutional setups for managing, operating, and regulating the delivery of urban services; and (ii) the delivery of project-related training aimed at enhancing the capacity of urban sector stakeholders to envision, design, and implement smart urban infrastructure projects. The TA also aims to catalyze synergistic partnerships and collaborations between the major urban stakeholders, which traditionally have operated in silos—e.g., pre- and in-service training of recent graduate and diploma-holding civil engineers through trainee placements in ongoing urban infrastructure development projects,[9] and providing recommendations for revamping engineering curricula to improve capacities in project design, preparation, and management. In addition, the avenues provided for learning and for sharing relevant best practices from within and outside the region (para. 11) are expected to catalyze new as well as strengthened partnerships between stakeholders for the delivery of smart urban infrastructure.

6. Stronger interaction between stakeholders coupled with dedicated capacity building in the areas of project design and implementation will be a crucial first step toward unlocking synergies for developing smart urban infrastructure and providing sustainable services. The TA will enable the application of best practices in ADB-funded projects (possibly as pilots and demonstration cases), support poorly performing projects through the provision of technical support and partnership arrangements,[10] and enable the creation of innovative stakeholder collaboration through its strong networking and knowledge-sharing focus.

III. THE CAPACITY DEVELOPMENT TECHNICAL ASSISTANCE

A. Impact and Outcome

7. The impact will be that sustainable smart urban infrastructure and services are delivered in South Asian cities, aligned with ADB's Urban Operational Plan. The outcome will be that the institutional capacity and knowledge base of urban service providers and stakeholders in the design and implementation of smart urban infrastructure projects is improved.

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[7] ADB's Independent Evaluation Department has rated only three-quarters of the urban sector projects of ADB's South Asia Department between 2007 and 2014 *successful*. Its forthcoming studies highlight several problems in project design and implementation, and point to the need for better design and stronger sustainability measures to improve development effectiveness in urban sector projects throughout the Asia and Pacific region.

[8] The anticipated participating DMCs include Bangladesh, Bhutan, Nepal, and Sri Lanka.

[9] Most urban infrastructure development is in the public domain, being implemented or operated by municipalities or state- or city-level enterprises.

[10] Includes supporting at least one poorly performing smart infrastructure project through a twinning arrangement with a successful project of a similar nature (para. 10 and Appendix 1).

B. Methodology and Key Activities

8. The TA will have three outputs: (i) design and implementation capacity of the main urban sector stakeholders[11] for the provision of smart urban infrastructure and services enhanced, (ii) strategic partnerships for smart urban infrastructure development established, and (iii) good practices in the design and delivery of smart urban infrastructure and services shared.

9. Cities and projects shall be selected during the TA implementation based on demand and nominations to be provided by the DMCs in consultation with ADB operations staff. If nominations exceed the limit of support that can be provided through the TA, then the cities will be prioritized as follows: (i) those that already have development plans identifying the nature of investments required, (ii) those that are at an early stage of project design preparations, and (iii) those with urban projects emphasizing a pro-poor approach. Support through consultant inputs shall be provided to the selected cities for designing at least three innovative smart urban infrastructure projects that meet the required project-readiness criteria.[12] This is expected to help create a pipeline of investment-ready projects in the urban sector in the selected South Asian cities. The TA will support at least one poorly performing, ADB-funded smart urban infrastructure project per participating country to help tackle bottlenecks and implementation challenges through the provision of suitable consulting inputs and training programs. Training shall be provided to at least 150 urban sector stakeholders in the region (at least 50 per participating country) in the areas of design and implementation quality control, project communications, project management, and procurement support for the development and implementation of smart urban infrastructure projects. [13]

10. In terms of establishing partnerships around infrastructure projects, the TA shall support at least one poorly performing smart urban infrastructure project through a suitable twinning arrangement with a successful smart urban infrastructure project to enable knowledge transfer of successful project implementation approaches. To establish and eventually strengthen partnerships with technical education institutions, the TA will support the placement of recent graduates and diploma holders in project-related agencies. Recommendations shall also be provided for the revision of technical educational curricula to make them more relevant to the needs of the market and/or industry by undertaking a thorough analysis of current deficiencies in the curricula to produce market-ready professionals.

11. The regional and national knowledge-sharing and networking events will catalyze synergistic collaboration between stakeholders by (i) providing a platform for urban sector regional stakeholders to meet, brainstorm, and network; (ii) providing an arena to enable the sharing of project design and implementation experiences (including difficulties) within the region; and (iii) disseminating knowledge on successful, replicable international and regional best practices, which will allow participants to discuss methods for employing these in new projects. Best practices shared during these events shall take into account, and be tailored to, the needs of the various levels of development, size of market, and geographic peculiarities of the participating cities. This implies that best-practice examples need to be diverse—e.g., from advanced to "work-in-progress" models, from small- to medium-sized cities—for methods to be of use to the urban development needs of the selected cities. Resource persons shall be utilized

[11] They include government agencies, consultants, contractors, and academic institutions in the selected cities of the participating DMCs.

[12] ADB and government criteria regarding social and environmental safeguards, and other due diligence aspects. These projects will be geographically distributed among participating countries.

[13] During TA implementation, these training sessions will be closely coordinated with relevant departments for both content development and timing of their delivery to mitigate any potential overlaps.

during these events to provide participants with exposure to global innovative smart urban project design and implementation methods as well as the application of new technologies in urban sector projects. One flagship knowledge product documenting innovative smart urban development approaches in the region shall also be prepared under the TA.

C. Cost and Financing

12. The TA is estimated to cost $550,000, of which $500,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-V). The governments will provide counterpart support in the form of counterpart staff, office accommodation, training venues, office supplies, domestic transportation, and other in-kind contributions such as taxes and duties, if any. The value of the governments' contribution is estimated to account for 10% of the total TA cost. The TA activities in each participating country will start upon receipt of the respective government's confirmation of participation. The cost estimates and financing plan are in Appendix 2.

D. Implementation Arrangements

13. ADB will be the executing agency; the Urban Development and Water Division (SAUW) of its South Asia Department will be the principal administrator of the TA. SAUW shall be responsible for the overall management and coordination of the TA, i.e., implementation oversight, accountability for TA outputs, recruitment and management of consultants, supervision of knowledge-transfer activities, and reporting and communicating with the stakeholders. The TA will be implemented over 36 months from January 2016 to December 2018. SAUW, in close coordination with the Urban Sector Group of ADB's Sustainable Development and Climate Change Department and resident missions, will work in cooperation with national governments, local governments, project management units, knowledge institutions, and other urban sector stakeholders in the targeted countries and cities. Disbursements under the TA will be done in accordance with ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).[14]

14. The TA requires 30 person-months of individual consulting input in the fields of urban infrastructure (water supply, wastewater management, solid waste management, and storm water management), project management, social development, environment, procurement, economics, financial analysis, communications, coordination, and capacity building and urban institutions. Consultants will be recruited and deployed based on the DMCs' needs and specialist requirements identified in each participating city or for each project.[15] Consultants will be selected and engaged in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).[16] Consultants will work under the overall supervision of ADB. Their outline terms of reference are in Appendix 3. SAUW will develop a monitoring system for the TA to cover activities, inputs, outputs, outcomes, and overall management.

[14] ADB. 2013. *Guidelines on the Use of Consultants (as amended from time to time).*
[15] Output-based (lump sum) contracts will be considered for all consulting services to reduce the administrative burden and improve efficiency and economy.
[16] ADB. 2010. *Technical Assistance Disbursement Handbook (as amended from time to time).*

IV. THE PRESIDENT'S DECISION

15. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $500,000 on a grant basis for Strengthening Capacities to Design and Implement Smart Urban Infrastructure, and hereby reports this action to the Board.

DESIGN AND MONITORING FRAMEWORK

Impact the Technical Assistance Project is Aligned with
Sustainable smart urban infrastructure and services delivered in South Asian cities (Urban Operational Plan 2011–2020)[a]

Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting Mechanisms**	**Risks**
Outcome Institutional capacity and knowledge base of urban service providers and stakeholders in the design and implementation of smart urban infrastructure projects improved	By 2020: a. All smart urban infrastructure projects developed in participating DMCs meet the country-specific readiness criteria. (2014–2015 baseline: projects meeting readiness criteria—Bangladesh: design readiness 21.5%, procurement readiness 0%; Nepal: design readiness 50%, procurement readiness 50%; and Sri Lanka: design readiness 50%, procurement readiness 50%) b. At least one focal point or platform for knowledge-sharing established in each participating country[b] (Baseline: not applicable)	a. Project documents (feasibility study, detailed project reports, and number of procurement-ready packages) b. Consultants reports	Government support in prioritizing smart urban development may change as a result of changes in leadership in some participating countries.
Outputs 1. Design and implementation capacity of the main urban sector stakeholders for the provision of smart urban infrastructure and services enhanced	By end of 2018 (2015 baseline: 0): 1a. At least three innovative smart urban infrastructure projects conceived and made investment ready at local level[c] 1b. At least one poorly performing project in each participating country selected and supported on project implementation 1c. At least 150 urban sector stakeholders and individuals (at least 50 per participating DMC) receive training on design quality control, project management, and procurement support for the development of smart urban infrastructure projects	1a. Feasibility study reports, detailed project reports 1b. Quarterly progress reports 1c. Consultants reports	Frequent staff turnover will undermine knowledge-building efforts.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
2. Strategic partnerships for smart urban infrastructure development established	2a. At least two MOUs signed between knowledge institutions and local governments or implementing agencies[d] 2b. At least two recent graduates (from polytechnics and universities) from each participating country placed in local government institutions or implementing agencies as trainees on smart urban infrastructure projects 2c. Recommendation report for improvements to engineering and polytechnic curricula provided to respective governments or institutions[e] 2d. Twinning arrangement established between one poorly performing and a well-performing smart urban infrastructure project	2a. MOUs 2b–2d. Consultants' reports, recommendation report, and other TA-related documentation	
3. Good practices in the design and delivery of smart urban infrastructure and services shared	3a. At least three stakeholder knowledge-sharing events on good practices in the design and delivery of smart urban infrastructure conducted at national level.[f] 3b. At least one annual subregional knowledge-sharing event held to disseminate lessons and emerging regional and global good practices in smart urban infrastructure and service delivery 3c. One flagship knowledge product documenting innovative smart urban development approaches being implemented in the region prepared	3a–3c. Consultants' reports, brochures, and TA documents; and knowledge products or publications	

Key Activities with Milestones
1: Design and implementation capacity of the main urban sector stakeholders for the provision of smart urban infrastructure and services enhanced 1.1 Obtain no-objection assurance from the beneficiary countries and select the first target city (Q1 2016) 1.2 Identify the key stakeholders, and the cities to receive subsequent support (Q1–Q3 2016) 1.3 Initiate dialogue with identified stakeholders to get their commitment to participate (Q1–Q4 2016) 1.4 Begin the recruitment of consultants based on specialist needs identified in different countries (Q1 2016) 1.5 Provide support for project development, as required, for identified projects (Q2 2016 onward) 1.6 Field consultants for project implementation support, as required (Q1 2016 onward) 1.7 Provide training to urban stakeholders to enhance design and implementation capacity (Q2 2016 onward) **2: Strategic partnerships for smart urban infrastructure development established** 2.1 Identify partner knowledge institutions (by Q2 2016) 2.2 Have draft MOUs circulated and agreed by signing parties (Q3 2017) 2.3 Place students for on-the-job training in implementing agencies to support ongoing projects (2016–2018) 2.4 Prepare draft recommendations for revision to curricula of engineering institutions and polytechnics (by Q1 2018) **3: Good practices in the design and delivery of smart urban infrastructure and services shared** 3.1 Conduct workshops and other knowledge-sharing events (2016–2018) 3.2 Prepare a knowledge dissemination program, including publications (Q2 2016) 3.3 Prepare draft flagship knowledge product report (by Q3 2018)
Inputs Asian Development Bank: $500,000 Technical Assistance Special Fund (TASF-V) Note: The governments will provide counterpart support in the form of counterpart staff, office accommodation, training venues, office supplies, domestic transportation, and other in-kind contributions such as taxes and duties estimated to account for 10% of the total TA cost.
Assumptions for Partner Financing Not applicable.

DMC = developing member country, MOU = memorandum of understanding, Q = quarter, TA = technical assistance.

[a] Asian Development Bank. 2011. *Urban Operational Plan, 2011–2020*. Manila.

[b] These will facilitate the connections between DMCs and the sharing of internal knowledge resources. The number and nature of focal points or platforms will vary depending on stakeholders identified in each participating DMC.

[c] Innovative projects may include projects with innovative contract modalities, projects for enhanced climate resilience and disaster risk mitigation, and projects introducing innovative technological solutions in urban environmental infrastructure. Projects shall be geographically distributed among participating countries.

[d] MOUs to cover areas pertaining to the placement of recent graduates and diploma holders for on-the-job training, and revision of civil and environmental educational curricula to make them more relevant to the needs of the market.

[e] To ensure that the civil and environmental engineering and polytechnic curricula respond to developing high-quality professionals that can meet the needs of the market.

[f] Equitable allocation will be ensured between participating DMCs.

Source: Asian Development Bank.

COST ESTIMATES AND FINANCING PLAN

($'000)

Item	Amount
Asian Development Bank[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	107.25
ii. National consultants	220.50
b. International and local travel	74.00
c. Reports and communications	13.00
2. Training, seminars, and conferences	
a. Resource persons	19.25
b. Trainings and workshops	30.00
3. Surveys	5.00
4. Miscellaneous administration and support costs	5.00
5. Contingencies	26.00
Total	**500.00**

Note: The technical assistance is estimated to cost $550,000, of which contributions from the Asian Development Bank are presented in the table above. The governments will provide counterpart support in the form of counterpart staff, office accommodation, training venues, office supplies, domestic transportation, and other in-kind contributions such as taxes and duties. The value of government contribution is estimated to account for 10% of the total technical assistance cost.

[a] Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF-V).

Source: Asian Development Bank estimates.

OUTLINE TERMS OF REFERENCE FOR CONSULTANTS

1. This regional capacity development technical assistance will be administered through inputs from individual consultants, including but not limited to urban infrastructure experts, urban institutional experts, experts in water supply, solid waste management, project management, social development, environmental safeguards, procurement, economic and financial analysis, and coordination and capacity building. These will be deployed on an intermittent basis as per the requirements and requests of the targeted cities. Therefore, other expertise may become necessary as well. The technical assistance will engage 5.5 person-months of international consultants and 24.5 person-months of national consultants, as shown in the table below.

Summary of Consulting Services Requirement

Position	Person-Months
International	
Urban infrastructure expert	3.0
Urban institutional expert	2.5
National	
Urban infrastructure experts (water supply, wastewater management, solid waste management, stormwater management)	8.0
Project management specialist	2.0
Environment expert	2.0
Social development expert	2.0
Procurement expert	3.0
Economics expert	1.5
Financial analysis expert	3.0
Coordination and capacity building expert	3.0
Total	**30.0**

Source: Asian Development Bank estimates.

A. International

2. **Urban infrastructure expert** (international, 3 person-months). The expert will have a degree preferably in urban planning, civil engineering, or related field, and a minimum 15 years of experience in designing and implementing urban infrastructure projects. The expert will support the respective state government entities and selected cities in identifying urban sector investment projects that are in line with sector plans and policies of the governments and the Asian Development Bank (ADB). The expert will (i) identify critical urban infrastructure investments to improve the competitiveness and livability of the selected cities that can lead to possible projects, and work with the economic and financial analysis experts to prepare preliminary cost estimates for the same; (ii) prepare urban infrastructure investment plans specific to each selected city outlining the nature of investments to be made; (iii) assist the state and urban entities in preparing urban infrastructure investment projects for selected cities, including preparation of feasibility studies and/or detailed project reports (DPRs) as required; (iv) work closely with the social development expert to assess the land acquisition requirements for the identified critical and prioritized projects; and (v) support the development of the knowledge product.

3. **Urban institutional expert** (international, 2.5 person-months). The expert will have a postgraduate degree, or equivalent or higher professional qualifications, in urban planning, public policy or administration, governance, development, or related field, and at least 10 years'

experience in institutional capacity development, specifically in the urban sector. The expert will (i) conduct an institutional and organizational capacity assessment of implementing agencies for implementing, managing, and maintaining the proposed projects; (ii) develop capacity-building objectives and strategies; (iii) provide recommendations and develop action plans to boost the capacity of urban local bodies (ULBs) in particular in terms of project management, implementation, and operation and maintenance; (iv) provide capacity-building training to identified stakeholders; and (v) prepare a recommendation report for improvements to engineering and polytechnic curricula in the region.

B. National

4. **Urban infrastructure experts** (national, 8 person-months total)

(i) **Water supply expert.** The expert will have a bachelor's or a master's degree preferably in civil engineering or water or wastewater engineering or related fields. The expert will have a minimum 10 years of experience in the water sector, preferably on ADB-financed projects. The expert will also support the technical aspects of project implementation of ongoing ADB projects (as per requirement). The expert will (a) conduct technical due diligence of the components and packages of identified projects (including climate change resilience and disaster risk preparedness or mitigation) in accordance with the government's and ADB's relevant policies and procedures; (b) support the provincial and local entities in preparing preliminary engineering designs, cost estimates, draft bidding documents, and other documents for the proposed projects; (c) assess land acquisition requirements; and (d) help solve (as required) technical challenges in ongoing projects.

(ii) **Wastewater management expert.** The expert should be a civil engineer with a postgraduate qualification in civil, environmental, public health, or related field, and with preferably 15 years of overall experience in design and implementation of sewerage networks, process design, including sludge treatment and disposal, and operation of water treatment plants. The expert will support the respective government entities and selected cities in conducting overall technical due diligence of proposed wastewater projects to ensure that they meet all requirements and policies of the government and ADB. The expert will (a) determine and prepare preliminary designs of sewerage network expansion in the selected cities; (b) determine and prepare preliminary designs of wastewater treatment facilities; (c) establish adequate quality standards for treated water in accordance with national effluent standards and ADB guidelines, and ensure that proposed treatment solutions can achieve these standards; (d) conduct technical due diligence of the components and packages of identified projects (including climate change resilience and disaster risk preparedness and mitigation), in accordance with the government's and ADB's relevant policies and procedures; (e) prepare the due diligence reports as required, including reports and annexes for input into the feasibility studies or DPRs; and (f) help solve (as required) technical challenges in ongoing projects.

(iii) **Solid waste management expert**. The expert should have a master's degree in civil or environmental engineering, solid waste management or similar area, or a combination of a first degree, postgraduate or professional training, and extensive relevant experience. The expert will support the respective state government entities and selected cities in determining solid waste management interventions and projects for their cities. The expert will (a) consult with the

formal and informal sectors on the current solid waste management situation and outline bottlenecks, responses, and possible solutions for moving the sector forward; (b) identify the potential for solid waste management—including low-cost measures for vulnerable and poor people, women, and the informal sector—as well as waste-to-energy options; (c) provide technical support in the preparation of solid waste management projects; (d) provide inputs to feasibility studies or DPRs pertaining to the proposed solid waste management projects; and (e) ensure that the proposed projects are compliant with ADB's safeguard requirements.

(iv) **Stormwater management expert**. The expert should be a civil engineer with a postgraduate qualification in civil, environmental, public health, or related field, and with preferably 10 years of specialized experience in the design and implementation of drainage networks, including the calculation of stormwater peak flows and associated network modeling. The expert will support the respective government entities and selected cities in conducting overall technical due diligence of proposed stormwater or drainage projects to ensure that they meet all requirements and policies of the government and ADB. The expert will also support the technical aspects of project implementation of ongoing ADB projects, as required. The expert will (a) collect available data and carry out comprehensive analysis of current systems of drainage networks; (b) carry out urban flood risk assessment in selected cities, taking into account climate projections and potential geographical disaster risks; (c) determine and prepare preliminary designs of stormwater or drainage network expansion, taking into account climate change resilience and disaster risk mitigation of system design; (d) apply innovative approaches in drainage system design (e.g., sponge city concepts, rainwater harvesting through swales and rain gardens, detention and retention ponds, sustainable urban drainage systems aquifer recharging) to ensure greater environmental sustainability and climate change resilience; (e) explore possibilities of stormwater reuse in the urban systems and apply such principles to the design of stormwater systems; (f) integrate first flush parameters or other water quality measures into stormwater system design to ensure that the quality proposed for stormwater recharge and reuse meets international standards; (g) conduct technical due diligence of the components and packages of identified projects (including climate change resilience and disaster risk preparedness and mitigation), in accordance with the government's and ADB's relevant policies and procedures; (h) prepare due diligence reports as required, including reports and annexes for inputs into the feasibility studies and/or DPRs; and (i) help solve technical challenges in ongoing projects, as required.

5. **Project management specialist** (national, 2 person-months). The specialist should preferably be an engineer with a minimum of 15 years of relevant experience, including several years in a senior advisory or managerial level, or equivalent combination of education and experience. The expert should have demonstrated experience of working in complex projects and should be competent in various aspects of urban sector projects, e.g., planning, design, contract management, quality assurance and quality control, safety, compliance with safeguards. For proposed projects and loans, the specialist will design and establish sound systems to guide subproject preparation, approval, implementation and portfolio management, and monitoring and reporting. For ongoing loans, the specialist shall (i) review the role of, and interrelationship between, important stakeholders and suggest ways to improve cooperation and coordination to boost pace and quality of implementation; (ii) liaise effectively with government agencies concerned, and identify and assess key issues, problems, and remedial measures related to all

aspects of portfolio management, including procurement and contract management; (iii) advise ADB on the overall implementation and progress of ongoing loans, as requested; (iv) review the mobilization of the contractor's resources (e.g., personnel, equipment, machines, materials, funds), recommend additional resources to be mobilized, and help prevent delays on the contractor's part; (v) advise project management units in effective contract management; and (vi) provide training as required.

6. **Environment expert** (national, 2 person-months). The expert will preferably have a master's degree in environmental management or related field, and a minimum of 10 years of experience conducting environmental safeguard assessments of infrastructure projects. He or she will support the respective state or local government entities in conducting environmental assessments of proposed projects. Experience in ADB's environmental safeguard policies will be an advantage. The expert will (i) work closely with urban experts to ensure compliance of proposed projects with national and provincial (or state) environmental rules, regulations, procedures, and practices; (ii) review status, quality, and compliance of the proposed projects with ADB's Safeguard Policy Statement (2009) to ensure that adequate due diligence and environmental management systems are incorporated during project design and included in the city's overall investment program; (iii) prepare environmental safeguard sections of the feasibility studies and/or DPRs (including preparation of initial environmental examinations and environmental impact assessments, if required); (iv) assess organizational capacities to implement environmental safeguards and propose recommendations to strengthen their capacity; (v) prepare required reports and give relevant input to other project-related documents as needed; and (vi) contribute to capacity building such as training in ADB's environmental safeguards, and support knowledge sharing during peer learning events, seminars, and workshops.

7. **Social development expert** (national, 2 person-months). The expert will preferably have a master's degree in urban planning, sociology, or related field, and at least 10 years of experience in assessing social safeguard compliance in infrastructure projects. Experience with ADB's social safeguard policies is an advantage. The expert will (i) assess national or provincial laws and acts that govern involuntary resettlement; (ii) assess the social and resettlement impacts of the proposed projects and work closely with the state entities and other urban experts to ensure that adverse social effects are minimized or mitigated during project design; (iii) ensure that social and resettlement management procedures for proposed projects fully comply with the government's land and other social safeguard rules and regulations as well as ADB's Safeguard Policy Statement (2009); (iv) undertake organizational capacity assessment and propose recommendations to strengthen capacity; (v) prepare social safeguard sections of the feasibility studies and/or DPRs, including full assessment of the extent of involuntary resettlement, and preparation of resettlement plans and indigenous peoples plans, as required; and (vi) contribute to capacity building such as conducting training in social safeguards and supporting communications and knowledge sharing during peer learning events, seminars, and workshops.

8. **Procurement expert** (national, 3 person-months). The expert will preferably have a degree in civil engineering or related field, and a minimum of 10 years of experience in handling procurement for infrastructure projects. Experience in ADB or World Bank procurement guidelines is preferred. The expert will (i) assess the procurement capacity and existing procurement performance of state agencies and ULBs that will be involved in implementing the proposed projects, including a procurement capacity assessment of these organizations using ADB templates; (ii) provide recommendations and action plans for improving the procurement capacities and mitigating procurement-related risks of project implementation agencies;

(iii) provide inputs to the assessment of fraud and corruption risks during project implementation, and recommend mitigation measure for the same; (vi) prepare draft procurement and contract administration plans (including indicative contract packaging) for the proposed projects in each selected city; (iv) provide procurement-related inputs to the feasibility studies and/or DPRs; (v) assist in the preparation of draft terms of reference, request for proposal, and contract documents for recruitment of consultants; and (vi) provide training to stakeholders as required.

9. **Economics expert** (national, 1.5 person-months). The expert will have a degree in economics or related subject, and preferably 10 years of relevant experience. Previous work on ADB or similar externally financed programs is preferred. The expert will (i) undertake detailed economic assessments of proposed projects to ensure that these are compliant with the investment guidelines of ADB and the governments, (ii) review the methodology and provide support for conducting economic evaluation with sensitivity analysis for the various subprojects, and (iii) assist provincial or city entities in preparing reports by providing economic analysis assessments for input into the project feasibility studies and/or DPRs.

10. **Financial analysis expert** (national, 3 person-months). The expert will preferably have a degree as chartered accountant or master in business administration (finance and accounting) or in related subjects, and a minimum of 10 years of relevant financial management experience in infrastructure projects. Previous work on ADB or similar externally financed programs is preferred. The expert will (i) undertake detailed financial viability assessments of proposed projects to ensure that these comply with the investment guidelines of ADB and the governments; (ii) update and gather information to conduct sample financial models for the proposed projects in the selected cities; (iii) assist provincial or city entities in preparing reports by providing financial analysis assessments for input into the project feasibility studies and/or DPRs; (iv) prepare an assessment of the revenue streams of the ULBs for urban services and prepare recommendations to enable sustainable service delivery with adequate operation and maintenance cost recovery; (v) conduct financial management assessment of the respective ULBs to include accounting and reporting systems,[1] auditing arrangements, internal control, and governance and anticorruption; and (vi) work with the water supply, wastewater management, and solid waste management experts in the analysis of the proposed projects and develop a program expenditure framework and financing plan.

11. **Coordination and capacity building expert** (national, 3 person-months). The expert will have a postgraduate degree or equivalent or higher professional qualifications in public policy or administration, governance, development, or related field with at least 10 years of experience in institutional capacity development. The expert will be engaged to develop the capacity of urban sector stakeholders and facilitate interactions between them to strengthen sector coordination. The expert will (i) undertake consultations with officials, implementing agencies (including ULBs), private sector representatives (including consultants and contractors), and other stakeholders to assess cooperation issues and opportunities for synergistic collaboration and sector coordination; (ii) prepare a capacity development plan for various entities; (iii) conduct training programs as approved by ADB and participating countries; (iv) support with establishing partnerships between educational and project entities; and (iv) help determine and prepare strategic public–private partnerships for delivery of efficient and sustainable urban infrastructure and services.

[1] Recommendations could look at structuring of ring-fenced accounts for water and sewerage operations.