



Water and Other Urban Infrastructure Services Sector: Lessons from Project Evaluations

January 2017–August 2020

Synthesis Note No. 7 | March 2021



Independent
Evaluation 

Raising development impact through evaluation

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Raising development impact through evaluation

ABBREVIATIONS

ADB	–	Asian Development Bank
COVID-19	–	Coronavirus disease
DMF	–	design and monitoring framework
GAP	–	gender action plan
IED	–	Independent Evaluation Department
MFF	–	multitranche financing facility
NRW	–	nonrevenue water
OECD	–	Organisation for Economic Co-operation and Development
O&M	–	operation and maintenance
PCR	–	project completion report
PPER	–	project performance evaluation report
PRC	–	People's Republic of China
PVR	–	project completion report validation report
WSS	–	water supply and sanitation
WUS	–	water and other urban infrastructure services
WUSC	–	water users and sanitation committee

NOTE

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

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I. INTRODUCTION

1. This synthesis report of evaluations of projects in the water and other urban infrastructure and services (WUS) sector consolidates the key findings and lessons from independent evaluations of projects conducted during 2017–2020. Sector synthesis reports aim to increase the usability of the evaluation reports and to feed lessons from past WUS projects to those under preparation or in the pipeline in order to improve project quality-at-entry and delivery.
2. In July 2017, IED issued revised guidelines on streamlining the validation of project completion reports (PCRs) and extended annual review reports (XARRs). The revised guidelines stated that the lessons and recommendations from PCR validation reports (PVRs) and XARR validation reports (XVRs) should be consolidated in sector-wide synthesis reports. This is the first synthesis report for the WUS sector.¹
3. The water and urban operational plans guided the WUS portfolio.² The goals of the Water Operational Plan include greater efficiency in water use by different users, and increased efficiency and better productivity in the delivery of water services. ADB supports progress toward these goals through infrastructure investments and support for policy and institutional reforms. To deal with the water stress created by rapid economic growth, urbanization, and the uncertainties arising from climate change, the operational plan prioritized expanded wastewater management and reuse; integrated water resources management; improved risk management to mitigate floods, droughts, and other water-related disasters; expanded use of technology and innovation; and partnerships with the private sector. ADB's Urban Operational Plan aimed to reorient operations toward a more integrated approach to urban investment. It was designed to catalyze climate-friendly and resilient, inclusive, competitive, and environmentally sustainable urban development in Asia and the Pacific by focusing on improving urban systems and making them financially sustainable. Future operations will also be guided by ADB's new long-term strategy, Strategy 2030, whose priorities include making cities livable, improving gender equality, building climate resilience, and enhancing environmental sustainability.
4. The WUS sector is receiving increased attention due to the COVID-19 pandemic, presenting an opportunity for increasing investments in the sector and promoting reforms. Water supply, sanitation and hygiene help to prevent the spread of the virus. Asia and the Pacific accounts for 60% of the world's population, yet 1.5 billion people in rural areas and 600 million people in urban areas lack access to adequate water supply and sanitation.³ About three-quarters of people in least developed countries lack handwashing facilities at home with water and soap.⁴ Given that frequent hand washing is a recommended strategy for preventing the spread of the COVID-19 virus infection, water-deprived communities are likely to be badly affected by the pandemic. Measures to increase financially viable water and sanitation services to vulnerable populations are particularly relevant for the current COVID-19 health crisis.
5. The rest of the report is organized as follows. Section II describes the evaluations of projects in the WUS portfolio during 2017–2019. It shows how the projects were spread across different regions, subsectors, and modes of financing. Section III provides a summary assessment of the performance of the portfolio with respect to the core evaluation criteria, and section IV discusses the key lessons.

¹ Earlier synthesis reports included the energy sector and the safeguards assessments of sovereign and nonsovereign projects. IED. 2019. *Synthesis Note No. 1: Safeguard Assessment of Nonsovereign Projects*. Manila: ADB; IED. 2020. *Synthesis Note No. 2: Energy Sector Project Evaluations, 2015–2019*. Manila: ADB; and IED. 2021. *Synthesis Note No. 5: Safeguards Assessment of Sovereign Projects, 2018–2019*. Manila: ADB.

² ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila; ADB. 2012. *Water Operational Plan 2011–2020*. Manila; and ADB. 2013. *Urban Operational Plan 2012–2020*. Manila.

³ ADB. 2020. *Asian Water Outlook 2020: Advancing Water Security across Asia and the Pacific*. Manila.

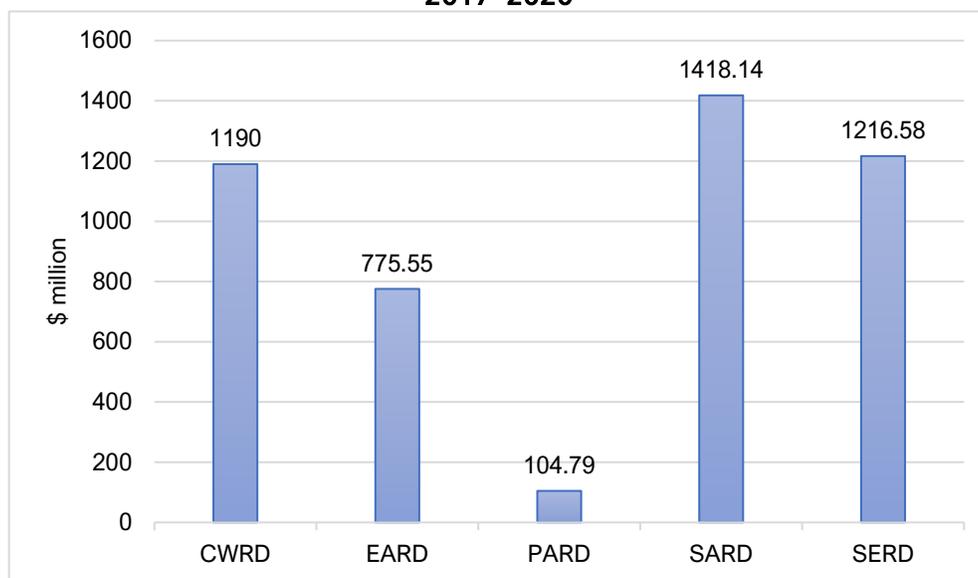
⁴ <https://www.adb.org/news/adb-help-prevent-and-control-covid-19-strengthening-wash-approach-projects> (accessed 1 February 2021).

II. PROJECT PORTFOLIO REVIEWED

6. **A total of 44 completed projects (40 validation reports), with total financing of \$4.7 billion, were reviewed.** The report synthesized lessons from projects in the WUS portfolio that were independently evaluated during January 2017–August 2020. Although there were 44 projects during the period, five were part of the Infrastructure Reform Sector Development Program multitranchise financing facility (MFF) and were assessed as a single intervention; as a result, the number of PVRs was 40. The projects were all sovereign operations and were approved between 2003 and 2016 (there were no private sector operations in the sector during the period). Of the 44 projects, 27 had WUS as their primary sector, in the remaining 17 it was a secondary sector.⁵ One of the projects was further assessed in a project performance evaluation report (PPER).⁶

7. **South Asia has the largest share of the reviewed portfolio accounting for 30% of the total WUS financing of \$4.7 billion, \$1.4 billion assistance supporting 11 projects** (Figure 1). It is followed by Southeast Asia (26%) with \$1.2 billion supporting nine projects, and Central and West Asia (25%) with \$1.1 billion supporting 12 projects. East Asia (16%) has 8 projects with a financing amount of \$775 million, while the Pacific (2%) had 4 projects with \$104 million support.

Figure 1: Water and Other Urban Infrastructure and Services Operations by ADB Region, 2017–2020



CWRD = Central and West Asia Department, EARD = East Asia Department, PARD = Pacific Department, SARD = South Asia Department, SERD = Southeast Asia Department.

Source: Asian Development Bank (Independent Evaluation Department).

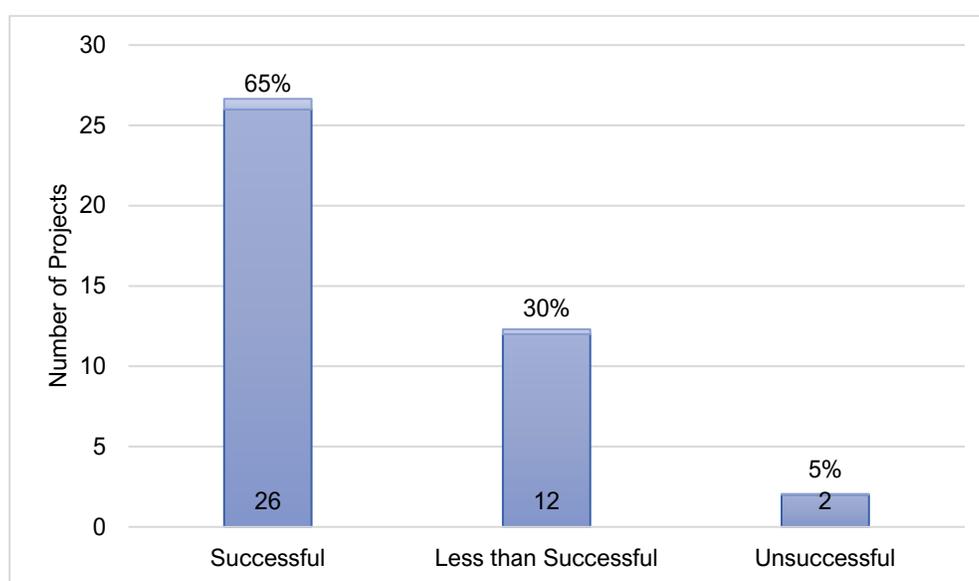
⁵ For the 17 projects that had WUS as their secondary sector, the corresponding primary sector was transport (8 projects), public sector management (6), energy (2), and agriculture, natural resources, and rural development (1).

⁶ Details of the evaluated projects are given in the appendix.

III. PERFORMANCE OF REVIEWED PORTFOLIO OF PROJECTS

8. This section summarizes the performance of projects as assessed by PVRs and PPERs during the evaluation period.⁷ Sovereign operations were assessed using the four criteria of the ADB Guidelines for Independent Evaluation.⁸ The overall success of a project is determined by its: (i) relevance to country development issues and ADB strategies, and appropriate project design; (ii) effectiveness in achieving intended outcomes and outputs; (iii) efficiency in the use of resources; and (iv) sustainability of project outcomes and outputs after project completion. Based on the evaluations covered by this report, the overall success rate of the portfolio was 65% (Figure 2). Of the 40 validations, IED rated 26 successful, 12 less than successful and 2 unsuccessful.⁹

Figure 2: Water and Other Urban Infrastructure and Services: Successful Operations, 2017–2020



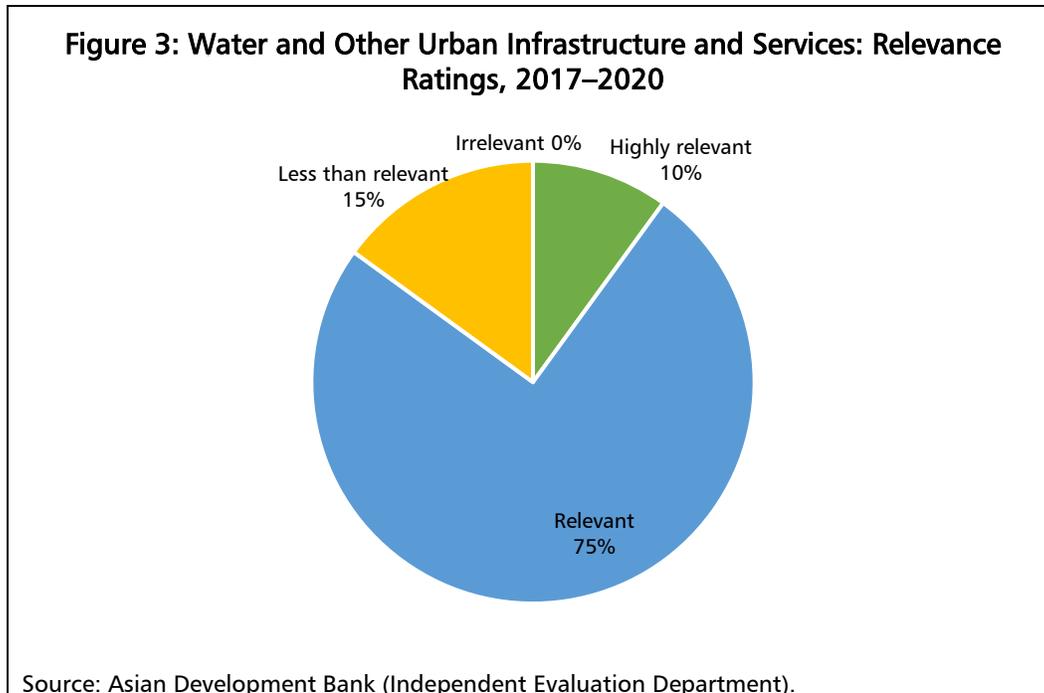
Source: Asian Development Bank (Independent Evaluation Department).

9. **Relevance.** Of the 40 validations, four (10%) were assessed highly relevant, 30 (75%) were relevant, and six (15%) were less than relevant (Figure 3). No project was assessed irrelevant. The Central and West Asia Department had two projects assessed highly relevant: (i) Emergency Assistance for Recovery and Reconstruction in the Kyrgyz Republic and (ii) Water Supply and Sanitation Investment Program (Tranche 3) in Azerbaijan. The South Asia Department had one project assessed highly relevant: Secondary Towns Water Supply and Sanitation Sector Project in Bangladesh. The Southeast Asia Department had one project assessed highly relevant: Infrastructure Reform Sector Development Program in Indonesia (Subprograms 1, 2, and 3 and the infrastructure project development facility).

⁷ Longer term trends in project performance over time and across sectors and regions are discussed in IED's Annual Evaluation Reviews.

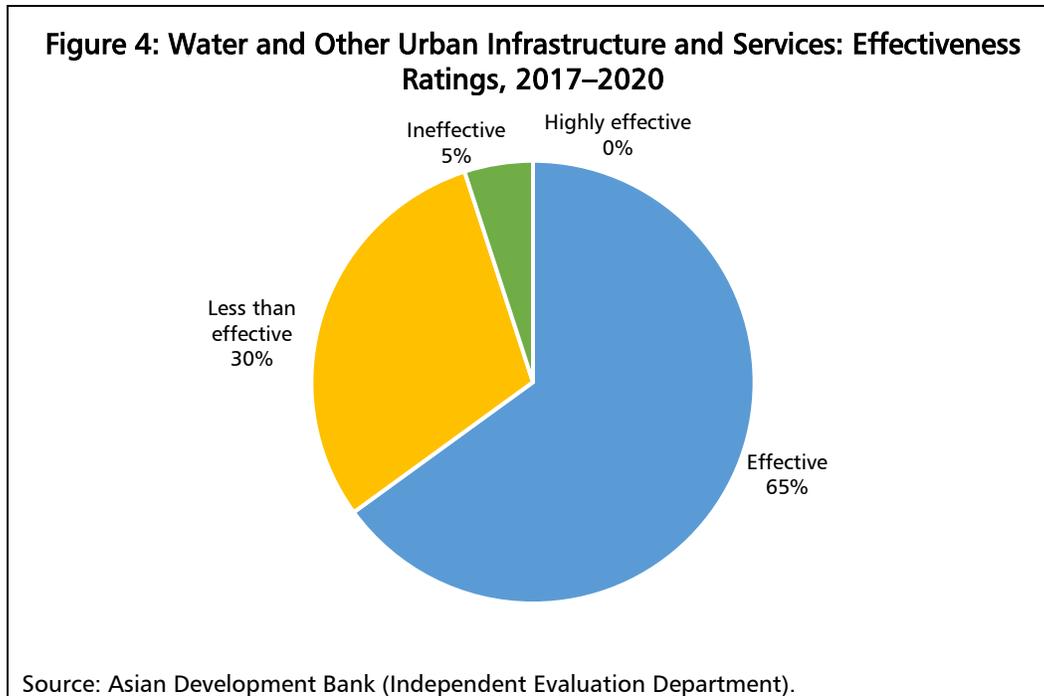
⁸ ADB. 2016. *Guidelines for the Evaluation of Public Sector Operations*. Manila.

⁹ The two unsuccessful projects were the Sindh Cities Improvement Investment Program - Tranche 1 and 2 of the MFF.



10. Ten of the 15 projects that were rated highly relevant by their PCRs were recategorized as relevant by their PVRs. One project, the Thanh Hoa City Comprehensive Socioeconomic Development Project in Viet Nam, which was assessed relevant by the PCR, was reassessed by the PVR as less than relevant. The lower ratings by the PVR in most cases revolved around late changes in scope (due to land acquisition issues) that reduced the originally intended outputs and outcomes. These changes were considered to reflect weak project design, and a failure to foresee this issue at appraisal. Three projects were assessed less than relevant by their PVRs citing reasons such as scope changes that led to alterations in certain components and abandoning the use of performance-based management contract; and weak design, failing to recognize the risks identified at appraisal which led to safeguard issues and non-materialization of succeeding project phases. In the Secondary Towns Water Supply and Sanitation Sector Project in Bangladesh, the PCR rated the project *relevant*, while the PVR considered it *highly relevant* citing the innovative measures employed in the project such as performance-based resource allocation and use of innovative contract packaging to minimize delays.

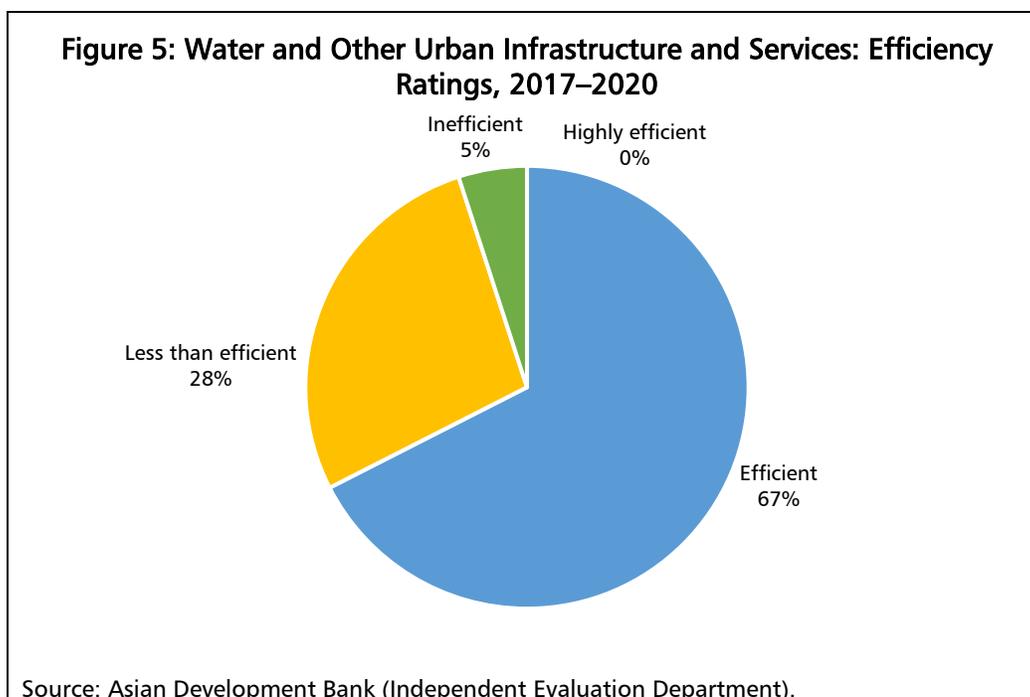
11. **Effectiveness.** Twenty six out of 40 projects (65%) were considered effective (Figure 4). Twelve projects (30%) were assessed less than effective and two (5%) were ineffective. The two projects assessed ineffective were tranches 1 and 2 of the MFF for the Sindh Cities Improvement Investment Program in Pakistan, a rating that was largely due to the fact that the infrastructure and service targets were not achieved. In tranche 1, there was no performance-based contracting, water supply service coverage declined, and wastewater management targets were not met. In tranche 2, water treatment facilities were not completed and none of the targets for institutional performance, including the raising of tariffs to achieve full cost recovery, performance-based contracting, volumetric billing, and nonrevenue water reduction, were achieved.



12. The PVRs had lower effectiveness ratings than the PCRs in six projects: (i) two projects that were rated *highly effective* in their PCRs were rated *effective* in their PVRs; (ii) three that were rated *effective* in their PCRs were revised to *less than effective* in their PVRs,¹⁰ and (iii) one project rated *less than effective* in its PCR was considered *ineffective* by its PVR. Assessments of whether outcome targets had been achieved were hampered by the lack of baselines. In some cases, it was difficult to attribute outcomes to operations. For example, the Infrastructure Reform Sector Development Program MFF did not achieve its envisaged outcome of increasing public and private sector investments to 6% of Indonesian GDP (an overly optimistic goal).

13. **Efficiency.** Of the 40 projects in the portfolio, 27 (67%) were rated efficient, 11 (28%) were less than efficient, and two (5%) were inefficient (Figure 6). No project was rated highly efficient. The two projects rated inefficient were tranches 1 and 2 of the MFF for the Sindh Cities Improvement Investment Program.

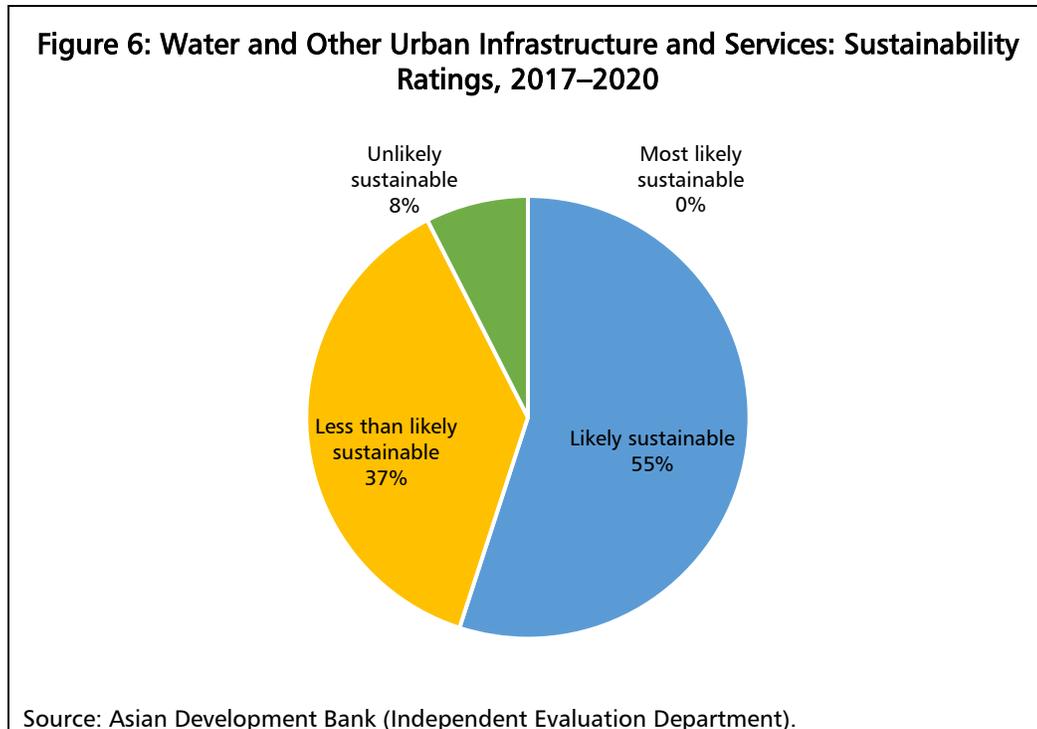
¹⁰ The three projects rated less than effective by the PVRs were: (i) Rajasthan Urban Sector Development Investment Program (Tranche 1), (ii) Qingdao Water Resources and Wetland Protection Project, and (iii) Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility).



14. Two of the 27 projects assessed efficient at completion, were rated less than efficient by the validation reports. These were (i) the Emergency Assistance for Recovery and Reconstruction in the Kyrgyz Republic, and (ii) the Guangxi Wuzhou Urban Development Project in the People's Republic of China (PRC). Reasons mentioned in the PVRs for the rating revisions included delays in implementation, poor performance of contractors, shortage of skilled labor, inefficient equipment procurement processes, unsound EIRR calculation methodology and weak process efficiency. One of the 11 projects assessed less than efficient by its PCR, the Second Small Towns Water Supply and Sanitation Sector Project in Nepal, was upgraded to efficient by its PVR.

15. **Sustainability.** The weakest aspect of the portfolio of WUS projects was the projects' sustainability. The validations rated 22 out of 40 projects (55%) likely sustainable, 15 less than likely sustainable, and 3 unlikely sustainable (Figure 6). No project received a most likely sustainable rating, and three projects were considered unlikely sustainable.¹¹ Of the 30 projects rated likely sustainable in their PCRs, 10 were assessed less than likely sustainable in their PVRs.

¹¹ The projects rated unlikely sustainable were the two tranches of the Sindh Cities Improvement Investment Program and the Dili Urban Water Supply Sector Project.



16. The weak sustainability of WUS projects was often caused by weak institutional capacities and poor operational and financial management, affecting utilities' ability to operate assets efficiently and recover operating costs. In the first tranche of the Sindh Cities Improvement Investment Program, for example, sustainability was affected by the lack of a clear financial operational plan after the project. The operator, the North Sindh Urban Services Corporation Limited, was disbanded as it had failed to achieve technical and financial sustainability. The operation of the assets reverted to the government, but it also lacked the capacity to manage them efficiently, and hence both the operational and environmental sustainability of the program was in doubt.

17. As discussed in the *2015 Annual Evaluation Review (AER)* and a topical paper on WUS operations, ensuring the sustainability of WUS project outcomes is a hard task.¹² Many of the sustainability lessons identified for the WUS sector by the topical paper continue to hold true, including the difficulty of making realistic cost estimates and plans for operation and maintenance (O&M), a political reluctance to charge appropriate tariffs for services, and the failure to tap the potential for improving efficiency in O&M expenditure. The report also noted that a long-term view needs to be taken for cost recovery, since the institutional reform process involving metering and tariff structure reform is a time-consuming process, even in developed economies.

¹² Independent Evaluation Department (IED). 2015. *Annual Evaluation Review 2015*. Lessons from Water Supply and Sanitation Projects (accessible from the list of linked documents in Appendix 3). Manila: ADB. <https://www.adb.org/sites/default/files/linked-documents/F-Lessons-on-WSS-Projects.pdf>; and IED. 2015. Sustainability of Urban Water Supply and Sanitation Operations: Findings and Lessons. Topical Paper. Manila: ADB.

IV. LESSONS SUMMARY

A. Project Readiness and Quality at Entry

18. **Early preparation of subproject designs and bid documents, advanced land acquisition, and obtaining appropriate permissions and approvals in time for contract implementation can prevent implementation delays.** In the Kerala Sustainable Urban Development Project, for example, frequent changes in leadership and poor inter-agency coordination gave rise to procurement and implementation delays.¹³ As a result, project outlays, outputs, and outcomes were curtailed, despite the timely availability of counterpart funds. Intersectoral and inter-agency coordination is particularly relevant to achieving the goal of livable cities, an operational priority for ADB under its Strategy 2030. As ADB prepares to employ an integrated approach involving the transport, energy, and water sectors, rigorous and systematic screening of projects for readiness by specialists from other sectors will be needed, and the capacity of prospective executing and implementing agencies will have to be built in advance. Advance procurement helps in completing a project on schedule as was the case in the Hebei Small Cities and Towns Development Demonstration Sector Project in the PRC.¹⁴ In that case, early procurement of works packages under the core subprojects by the project management office meant that the contract could be awarded within 3 months after loan effectiveness.

19. **Success in achieving outcomes can be enhanced by identifying critical constraints early on and addressing them through additional funding or technical assistance before loan closing.** In the case of a project in Uzbekistan, for example, the expected project outcome of a 24-hour daily supply of potable water was hampered by power disruptions and limited power allocation, which should have been discussed in the RRP or other initial reports.¹⁵ The RRP did, however, identify other risks to outcomes, including a lack of government commitment to institutional and financial reforms supported by the project; lack of community awareness of the relationship between health, hygiene and sanitation, and clean water use; and the inadequate capacity and motivation of utilities to manage, operate, and maintain the new system properly. These risks were presumably managed well since there was no mention of these problems in the completion reports.

20. **Identifying potential weaknesses in systems and resources and addressing potential impediments such as land acquisition, at appraisal rather than after approval, play a central role in the success of operations.** The delay in implementation of Suva-Nausori Water Supply and Sewerage Project in Fiji was due to the limited staffing and capacity of the project management unit in the early stages of the project.¹⁶ The loan covenants were insufficient to motivate increases in staffing or capacity. The executing agency's commitment in terms of capacity and resources should have been assessed at appraisal. In the Issyk-Kul Sustainable Development Project in the Kyrgyz Republic, the local council rejected the land allocation for sanitary landfills agreed on by the central and municipal administrations at the time of appraisal and loan negotiations.¹⁷ The local self-government in the Kyrgyz Republic consists of an executive body (municipal administration) and a representative body (local council) and the council had the right to make decisions on the land allocation for sanitary landfills.

¹³ IED. 2019. *Validation Report: Kerala Sustainable Urban Development Project in India*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/542286/files/pvr-606.pdf>.

¹⁴ ADB. 2018. *Completion Report: Hebei Small Cities and Towns Development Demonstration Sector Project in the People's Republic of China*. Manila. <https://www.adb.org/sites/default/files/project-documents/40641/40641-013-pcr-en.pdf>.

¹⁵ IED. 2019. *Validation Report: Water Supply and Sanitation Services Investment Program (Project 3) in Uzbekistan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/529491/files/pvr-646.pdf>.

¹⁶ IED. 2017. *Validation Report: Suva-Nausori Water Supply and Sewerage Project (Supplementary Loan) in Fiji*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/363651/files/pvr-513.pdf>.

¹⁷ ADB. 2019. *Completion Report: Issyk-Kul Sustainable Development Project in Kyrgyz Republic*. Manila. <https://www.adb.org/sites/default/files/project-documents/41548/41548-013-pcr-en.pdf>.

B. Design of Results Framework

21. **It is imperative that output and outcome targets are realistic, and designs made as simple as possible.** This is particularly the case when ADB is dealing with an inexperienced project management office. In the Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project in the PRC, it was excessively optimistic to expect water quality improvement in Baiyangdian Lake to be restored to class III at project completion. Reducing pollution in the lake is a complex and challenging task, given the economic activities in the basin and the fact that pollution has been accumulating over a long time. The target for the reduction of pollutants by the wastewater treatment plants was also set too high.

22. **Inadequate formulation of indicators at the design stage and lack of ownership by the executing agencies can affect the effective implementation of gender action plan (GAP) activities.**¹⁸ ADB should conduct an in-depth assessment of the country and sector context as part of transaction technical assistance to guide the design of gender and capacity development components of public utility projects. The design of components such as gender and capacity building need adequate stakeholder consultations to ensure the components are feasible and have been adapted to the local context.¹⁹ Taking feedback from all stakeholders, including project beneficiaries, can help improve the quality of targets and to make them realistic, attributable, and measurable.

23. **Gender-differentiated indicators in the DMF are crucial for gender mainstreaming efforts.** The Dili Urban Water Supply Sector Project in Timor-Leste had a covenant that gender disaggregated data would be collected for the baseline and target indicators. However, the household surveys did not collect gender disaggregated data on benefits.²⁰ Such data are especially important to monitor the impact on women and to find out whether a project has been responsive to Strategy 2030's operational priority of accelerating progress in gender equality.

24. **Measuring and reporting on performance indicators throughout implementation is essential to determine whether a project is on track to meet its intended outputs and outcomes.** This was noted in the PVR for the Emergency Assistance for Recovery and Reconstruction project in Kyrgyz Republic. Since measurable performance indicators were not included in the DMF at appraisal, it was difficult to assess progress or gauge project success. If performance against indicators is not measured throughout implementation, it is hard to demonstrate the effects of best practices in project design and implementation, including environmental and resettlement safeguards. This is particularly important for projects intended to provide demonstration effects.²¹

C. Implementation Efficiency and Effectiveness

1. Government Commitment and Executing Agency Capacity and Accountability

25. **Strong commitment, ownership, and accountability of executing agencies can make a significant difference to project success.** Strong government commitment, the timely release of counterpart funding, and well-designed core subprojects were the key factors determining the success of the Liaoning Small

¹⁸ The PCR for the MFF and Tranche 3 of the Azerbaijan Water Supply and Sanitation Investment Program reported that Azersu abolished the PMO in 2015 due to streamlining efforts. This event led to the cancellation of a would-be Tranche 4. It also resulted in the ignoring of monitoring and reporting of GAP components.

¹⁹ IED. 2020. *Validation Report: Water Supply and Sanitation Investment Program (Tranche 2) in Azerbaijan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/618916/files/pvr-691.pdf>.

²⁰ IED. 2019. *Validation Report: Dili Urban Water Supply Sector Project in Timor-Leste*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/529496/files/pvr-628.pdf>.

²¹ IED. 2018. *Validation Report: Emergency Assistance for Recovery and Reconstruction in Kyrgyz Republic*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/427846/files/pvr-568.pdf>.

Cities and Towns Development Demonstration Sector Project in the PRC, where all the outputs were achieved on time and without cost overruns.²²

26. **Conducting rigorous due diligence and addressing the executing and implementing agencies' capacity limitations are important for project success.** In the case of the National Capital Region Urban Infrastructure Financing Facility in India, implementing agencies had only limited understanding of safeguard policies and were not able to identify risks and mitigation strategies.²³ This led to implementation problems and delays and the subsequent phase of the project failed to materialize. The lack of an approved DMF for the project at appraisal made it difficult to monitor and assess project success and to identify and mitigate risks.

27. **Including dedicated safeguard staff in the project core team is critical to avoid weaknesses in complying with the ADB's Safeguard Policy Statement, 2009.** The absence of environmental or social safeguard specialists on most project missions contributed to delayed and inadequate safeguard reporting and missed opportunities to improve project sustainability. This was evident in the PRC's Qingdao Water Resources and Wetland Protection Project.²⁴ Even if other team members are knowledgeable on safeguard issues, they are likely to focus on their primary areas of responsibility. Timely safeguard interventions and impact assessments with implementation plans greatly improve project designs and directly benefit the project beneficiaries and their surroundings.

28. **Effectively engaging key government agencies can provide much-needed oversight to monitor progress and facilitate the resolution of implementation issues.** In the case of the Water Supply and Sanitation Investment Program in Azerbaijan, although the executing agencies submitted quarterly reports on overall project implementation, they did not meet the requirement to submit annual reports to ADB on the performance monitoring indicators.²⁵ Water supply and sanitation (WSS) tariff revisions, which are important for sustaining operations and maintaining the completed facilities, were not carried out annually as recommended in the facility framework agreement.

2. Use of a Phased Approach

29. **A phased approach is appropriate when the project's influence area involves several municipalities, and the project scope covers several subsectors.** As in the case of the Kerala Sustainable Urban Development Project in India, this will enable interventions to be piloted in some towns before they are expanded (footnote 13). Efficient implementation requires frequent review missions by ADB and detailed reviews of project management units to ensure systems are operating effectively. In addition, reducing the number of components in urban projects can improve their overall performance. For example, water supply and sanitation components are complementary, but if other subsectors are added, this may complicate project management since the project will now have to engage with multiple agencies. However, ADB's Strategy 2030 calls for a more integrated approach, which for projects in urban settings is unavoidable in most cases since cities are inherently complex and require holistic and system-oriented solutions.

30. **A cautious and phased approach can help mitigate the risks that arise from working with an implementing agency that is new to ADB or when an institution is new to certain responsibilities.** A phased approach could have yielded better results in the Sindh Cities Improvement Investment program

²² IED. 2018. *Validation Report: Liaoning Small Cities and Towns Development Demonstration Sector Project in the People's Republic of China*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/474531/files/pvr-595.pdf>.

²³ IED. 2019. *Validation Report: National Capital Region Urban Infrastructure Financing Facility in India*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/538971/files/pvr-612.pdf>.

²⁴ IED. 2020. *Validation Report: Qingdao Water Resources and Wetland Protection Project in the People's Republic of China*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/632536/files/pvr-706.pdf>.

²⁵ IED. 2020. *Validation Report: Water Supply and Sanitation Investment Program in Azerbaijan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/630081/files/pvr-691a.pdf>.

in Pakistan.²⁶ The implementing agency, North Sindh Urban Services Corporation (NSUSC), which lacked capacity, was given both the roles of infrastructure development and service delivery. A phased approach of transferring responsibility of operations to NSUSC after the development of infrastructure would have been more appropriate. Also, instead of operating in a large geographic area, focusing on one or two cities in the first tranche would have allowed more comprehensive packages, yielding tangible results. In another example, the National Capital Region Planning Board in India was new to implementing safeguard measures and needed capacity support on operationalizing Environmental and Social Management System and in appraising and approving subprojects under the Financial Intermediary Loan (footnote 23). In such cases a phased approach would allow gaining of experience with simple projects before moving on to more complex ones.

31. **A programmatic approach allows flexibility in identifying, selecting, designing, and modifying subprojects in the early years under a sector loan modality.** This was seen in the case of the Hebei Small Cities and Towns Development Demonstration Sector Project in the PRC (footnote 14). The programmatic approach in Hebei proved to be effective to offer a model for replication in other cities of the PRC.

3. Choice of Project Components

32. **Combining emergency assistance projects with more standard assistance packages may affect the performance of the standard projects since some of the essential detailed engineering assessments to develop infrastructure may be shortened due to the emergency.** This was the case with developing a major urban water supply source under the Emergency Assistance for Recovery and Reconstruction project in Kyrgyz Republic. While finance was clearly urgently needed to ensure uninterrupted water services and to reconstruct houses after the political disturbances, the PVR felt that funding for the undamaged but old water supply and sanitation systems should have been taken up as a separate project (footnote 21).

33. **When projects have the potential to serve as models for similar interventions in other regions or countries, incorporating an explicit component for dissemination can help disseminate experiences and lessons of complex and innovative projects.** It was anticipated at the outset that the Qingdao Water Resources and Wetland Protection Project would be a model of an innovative integrated approach to environmental protection that other coastal or riverside cities could learn from and replicate (footnote 24). However, the project design did not include specific activities and financial resources to support the documentation of good practices (or failures) and to support knowledge transfer. In the case of the Guangxi Wuzhou Urban Development Project, the PVR argued that it was important to encourage dissemination activities such as making available knowledge products and videos on the regional knowledge hub.²⁷

4. Avoiding Implementation Delays

34. **Streamlining project feasibility studies, consultant recruitment, procurement review, and approval procedures can minimize implementation delays.** This was evident in the Water Supply and Sanitation Services Investment program (Tranche 1) in Uzbekistan.²⁸ In the case of Issyk-Kul Sustainable Development Project in Kyrgyz Republic, the PCR noted the need for careful establishment of selection method and evaluation criteria for expressions of interests to preclude technically and financially unqualified consultants, and to avoid implementation delays (footnote 17). It also stressed the need for

²⁶ IED. 2018. *Validation Report: Sindh Cities Improvement Investment Program in Pakistan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/470501/files/pvr-572.pdf>.

²⁷ IED. 2018. *Validation Report: Guangxi Wuzhou Urban Development Project in the People's Republic of China*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/470491/files/pvr-580.pdf>.

²⁸ ADB. 2020. *Validation Report: Water Supply and Sanitation Services Investment Program (Tranche 1) in Uzbekistan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/625781/files/pvr-712.pdf>.

rationalized procurement packages. Procurement packages were fragmented into small ones and only a few consultants, contractors, and suppliers were interested in most of the contracts. Misprocurements can be avoided by ensuring proper pre-qualification of bidders and clearly defining evaluation guidelines so that the winning bidder has the financial and technical capacity to perform.

35. **The capacity of contractors needs to be carefully examined before a contract is awarded to avoid potential delays in the execution of civil works.**²⁹ In the case of the Second Urban Governance and Infrastructure Improvement (Sector) Project in Bangladesh, it was also clear that civil works contracts need to be the right size.³⁰ During the review missions ADB recommended the executing agency to reduce the number of contracts by increasing the contract size to expedite contract award and disbursement. A small contract has the advantage that it encourages competition and possibly lower prices. However, a small contract may also discourage technically and financially capable contractors from participating and may require more frequent supervisory visits and rectification.

36. **Proper synchronization of country procedures with those of the development partners is important to avoid implementation problems and delays.** In the case of the Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project in the PRC, government projects were guided by standardized management procedures, which were also applicable to internationally funded projects.³¹ However, for the Global Environment Facility (GEF) component, no budget provision was made for the domestic processing of feasibility studies and environmental impact assessments in support of the component, which affected the implementation of GEF activities.

D. Ensuring Sustainability

37. The 2018 Annual Evaluation Review,³² identified the factors affecting sustainability as: (i) insufficient cost recovery, (ii) lack of assurance of funds for post-project O&M, (iii) persisting weakness in institutional capacity, and (iv) lack of government commitment to bring about essential reforms. Below are some sustainability related lessons identified in the PCRs and PVRs reviewed for this paper.

38. **Sources of finance for O&M from taxes, tariffs, and/or transfers are critical to ensure the sustainability of WSS services.** The Water Supply and Sanitation Services Investment Program (Tranche 1) in Uzbekistan showed that covenants on policy and institutional reform, tariff structure review and collection efficiency, the project performance monitoring system, O&M, and financial management must be efficiently implemented to ensure the operational and financial sustainability of utilities (footnote 28). The program also demonstrated that the government allocation of funds for O&M was helpful in ensuring the sustainability of the built assets. However, in the Urban Development Sector Project in Mongolia, there is an over reliance on subsidies, which will reduce the effectiveness of tariff reforms.³³ In assessing sustainability IED looks for evidence of predictable and assured support from governments, or from development agencies. Assurances from the government can take the form of ringfenced budgets for O&M.

39. **Institutional and managerial measures go together with rehabilitation works in reducing nonrevenue water (NRW).** Reducing NRW is an essential element of financial sustainability but it can take a long time and requires a plan, funding, capacity building, and incentives for utility operators, managers,

²⁹ IED. 2018. *Validation Report: Water Supply and Sanitation Services Investment Program—Project 2 in Uzbekistan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/474546/files/pvr-593.pdf>.

³⁰ IED. 2018. *Validation Report: Second Urban Governance and Infrastructure Improvement (Sector) Project in the People's Republic of Bangladesh*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/467346/files/pvr-550.pdf>.

³¹ IED. 2020. *Validation Report: Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin in the People's Republic of China*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/603211/files/pvr-676a.pdf>.

³² IED. 2018. *2018 Annual Evaluation Review: The Quality of Project Design and Preparation for Efficiency and Sustainability*. Manila: ADB.

³³ IED. 2017. *Validation Report: Urban Development Sector Project in Mongolia*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/375451/files/pvr-524.pdf>.

and employees. This was evident in the Issyk-Kul Sustainable Development Project (footnote 17). A good understanding of the link between the designed outputs and the targeted level of NRW is required. An NRW management program, using a zoning approach or district metered areas, can bring about sustainable reductions in NRW. The Water Supply and Sanitation Investment Program (Tranche 1) in Azerbaijan demonstrated that advanced leak detection systems could be used to reduce the risk of NRW.³⁴

40. Connecting households to sewerage systems is critical to ensuring the financial sustainability of urban projects with sewerage components. This was the case for the Rajasthan Urban Sector Development Investment Program (Tranche 1) in India.³⁵ If not enough households are connected to the system, the sewage treatment plants will not have a sufficient revenue stream, and this will affect their sustainability. It is critical to include enough household connections for water supply and sanitation in the project design to ensure that the full benefits of the built infrastructure accrue to beneficiaries, as was the case in the Urban Development Sector Project in Mongolia (footnote 33). This will require government regulations to make connections mandatory and loan covenants to this effect. A World Bank report has identified affordability, lack of information on how to obtain a connection, and social norms as among the major reasons stopping households from becoming connected to sewer systems.³⁶ Poor households cannot afford to pay the connection fees, the necessary plumbing within the household, or the subsequent monthly bills. Government subsidies or cross-subsidization by the utilities are often needed. Households may need guidance on accomplishing the necessary paperwork to become connected. Community leaders and influential people can often lead the way in connecting households to the sewerage system.

41. Effective communication is crucial to raise awareness and induce behavior change and ensure that policy guidelines relating to O&M are accepted. Constant policy dialogues with local authorities and service providers (municipal water, sewerage, and solid waste management) led to good project ownership in the Kyrgyz Republic (footnote 17). In India, incorporating a communications strategy into the project has proved important for the success of solid waste management projects (footnote 35). A good communications strategy helps to raise awareness and encourage behavior change, as well as to improve beneficiary buy-in and lower resistance to sanitation projects.

42. Sustainable water supply and sanitation outcomes are possible through strong community commitment. The Second Small Towns Water Supply and Sanitation Sector Project in Nepal showed that the water users and sanitation committees (WUSCs) are highly effective institutions for engendering strong community commitment to and ownership of WSS services. The WUSCs were able to administer financial and revenue collection operations of the water supply and sanitation system.³⁷ Their lack of capacity to manage the technical and engineering aspects of the project operations can be addressed through contracting with firms to provide technical services, along the lines of a “circuit rider” approach.³⁸

³⁴ IED. 2020. *Validation Report: Water Supply and Sanitation Investment Program (Tranche 1) in Azerbaijan*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/618911/files/pvr-695.pdf>.

³⁵ IED. 2019. *Validation Report: Rajasthan Urban Sector Development Investment Program (Tranche 1) in India*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/486211/files/pvr-557a.pdf>.

³⁶ Kennedy-Walker, Ruth; Mehta, Nishtha; Thomas, Seema; Gambrill, Martin. 2020. *Connecting the Unconnected: Approaches for Getting Households to Connect to Sewerage Networks*. Washington, DC: World Bank. <https://openknowledge.worldbank.org/handle/10986/34791> License: CC BY 3.0 IGO.

³⁷ IED. 2020. *Validation Report: Second Small Towns Water Supply and Sanitation Sector Project in Nepal*. Manila: ADB. <https://www.adb.org/sites/default/files/evaluation-document/614201/files/pvr-688.pdf>.

³⁸ The term “circuit rider” is used for technology assistance providers to small organizations to troubleshoot or support their technology needs by visiting them or by phone or email.

APPENDIX: LIST OF EVALUATED WATER AND OTHER URBAN INFRASTRUCTURE SERVICES PROJECTS, 2017–2020

Loan No.	DMC	Project Title	Primary Sector	Secondary Sector	Approved Amount (US\$ million)					Utilization Rate	Approval Date	Closing Date	Rating			Year		
					Loan	Grant	TA	Co-financing	Total				PCR	PVR	PPER	PCR	PVR	PPER
2201	SRI	Local Government Infrastructure Improvement Project	WUS		50.00				50.00	78%	24-Nov-05	30-Jan-13	Successful	Successful		2016	2017	
2244	PRC	Hunan Flood Management Sector Project	WUS		200.00				200.00	96%	29-Jun-06	31-Dec-14	Successful	Successful		2016	2017	
1993/2275/2276/2757/2758	SRI	Secondary Towns and Rural Community-Based Water Supply and Sanitation Project	WUS		259.44				259.44	98%	16-Jan-03 / 29-Nov-06 / 8-Jun-11	30-Sep-11 / 31-Mar-13 / 30-Jun-12 / 31-Dec-14	Less than successful	Less than successful		2016	2017	
2046/2456	IND	Urban Water Supply and Environmental Improvement in Madhya Pradesh	WUS		252.00				252.00	83%	12-Dec-03 / 13-Oct-08	23-Sep-13 / 24-Jun-14	Successful	Successful		2016	2017	
2265/8225	BAN	Secondary Towns Water Supply and Sanitation Sector Project	WUS		41.00			9.00	50.00	85%	16-Oct-06	31-Jul-16	Successful	Successful		2016	2017	
2603/2055	FIJ	Suva-Nausori Water Supply and Sewerage Project (Supplementary Loan)	WUS		68.79				68.79	100%	18-Dec-03 / 15-Dec-09	3-Sep-13 / 14-Apr-15	Successful	Less than successful		2016	2017	
360	SAM	Public Sector Financial Management Program	PSM	WUS		14.00			14.00	100%	24-Sep-13	12-Oct-15	Successful	Successful		2016	2017	
2151	IND	Multi-sector Project for Infrastructure Rehabilitation in Jammu and Kashmir	TRA	WUS	250.00				250.00	100%	21-Dec-04	16-Apr-14	Less than successful	Less than successful		2016	2017	
2526	PRC	Xinjiang Urban Transport and Environmental Improvement Project	TRA	WUS	100.00				100.00	98%	29-Jun-09	26-Jun-15	Highly successful	Successful	Successful	2016	2017	2019
2301/9138	MON	Urban Development Sector Project	WUS	WUS	28.20			2.10	30.30	116%	19-Dec-06	18-Dec-15	Successful	Successful		2016	2017	
2768	INO	Urban Sanitation and Rural Infrastructure Support to the PNP Mandiri Project	WUS	ANR	100.00				100.00	96%	05-Aug-11	23-Nov-16	Successful	Successful		2017	2017	
2691/2692	PAL	Water Sector Improvement Program	WUS		16.00				16.00	100%	09-Nov-10	02-Apr-14	Successful	Less than successful		2017	2017	
2511/0147	VIE	Thanh Hoa City Comprehensive Socioeconomic Development	WUS	EDU	72.00	2.00			74.00	89%	05-Mar-09	31-Mar-17 / 6-Sep-12	Successful	Less than successful		2017	2017	
2258	BHU	Urban Infrastructure Development Project	WUS		24.60				24.60	96%	27-Sep-06	31-Aug-16	Successful	Successful		2017	2018	
2366	IND	Rajasthan Urban Sector Development Investment Program (Tranche 1)	WUS	TRA	60.00				60.00	83%	08-Nov-07	22-May-15	Successful	Less than successful		2017	2018	
2499	PAK	Sindh Cities Improvement Investment Program - Tranche 1	WUS	FIN	38.00				38.00	97%	19-Dec-08	31-Mar-16	Less than successful	Unsuccessful		2017	2018	
2462	BAN	Second Urban Governance and Infrastructure	TRA	WUS	87.00			40.80	127.80	99%	28-Oct-08	09-Oct-16	Successful	Successful		2017	2018	

Loan No.	DMC	Project Title	Primary Sector	Secondary Sector	Approved Amount (US\$ million)					Utilization Rate	Approval Date	Closing Date	Rating			Year		
					Loan	Grant	TA	Co-financing	Total				PCR	PVR	PPER	PCR	PVR	PPER
		Improvement (Sector) Project																
2263/2264/2475/2708/0064	INO	Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility)	PSM	FIN TRA ENE WUS ICT	400.00				400.00	100%	21-Nov-06	29-Nov-06	Successful	Successful		2017	2019	
2475	INO	Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility)	TRA	ENE ICT WUS	280.00				280.00	100%	27-Nov-08	18-Dec-08	...	...		2017	2019	
2708	INO	Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility)	PSM	ENE ICT WUS TRA	200.00				200.00	100%	01-Dec-10	29-Dec-10	...	...		2017	2019	
2264	INO	Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility)	ENE	TRA WUS	26.50				26.50	84%	21-Nov-06	01-Feb-16	...	no rating		2017	2019	
64	INO	Infrastructure Reform Sector Development Program (Subprograms 1, 2, and 3, and an Infrastructure Project Development Facility)	ENE	TRA WUS				7.56	7.56	39%	21-Nov-06	01-Feb-16	...	...		2017	2019	
2668/0217	KGZ	Emergency Assistance for Recovery and Reconstruction	PSM	WUS	48.50	51.50			100.00	98%	23-Sep-10	23-Nov-16 / 26-Sep-16	Successful	Successful		2017	2018	
2491	PRC	Guangxi Wuzhou Urban Development Project	TRA	WUS	100.00				100.00	98%	15-Dec-08	31-Dec-16	Successful	Successful		2017	2018	
3155	ARM	Infrastructure Sustainability Support Program	PSM	WUS TRA	49.00		0.90		49.90	93%	28-Aug-14	11-Nov-15	Successful	Successful		2017	2017	
2633	UZB	Water Supply and Sanitation Services Investment Program–Project 2	WUS		140.00				140.00	95%	21-Apr-10	31-Dec-16	Successful	Successful		2018	2018	
2574/0171	PRC	Hebei Small Cities and Towns Development Demonstration Sector Project	WUS	ENE	100.00				100.00	97%	06-Nov-09	30-Jun-16 / 30-Jun-13	Successful	Successful		2018	2018	
2226	IND	Kerala Sustainable Urban Development Project	WUS	TRA	221.20				221.20	51%	20-Dec-05	25-Nov-16	Less than successful	Less than successful		2018	2019	
2609	VIE	Central Region Rural Water Supply and Sanitation Sector Project	WUS		45.00				45.00	83%	17-Dec-09	30-Jun-17	Successful	Successful		2018	2019	
100	TIM	Dili Urban Water Supply Sector Project	WUS			6.00			6.00	99%	18-Dec-07	25-Aug-16	Less than successful	Less than successful		2018	2019	
2825	UZB	Water Supply and Sanitation Services	WUS		58.00				58.00	86%	07-Dec-11	20-Feb-18	Successful	Successful		2018	2019	

Loan No.	DMC	Project Title	Primary Sector	Secondary Sector	Approved Amount (US\$ million)					Utilization Rate	Approval Date	Closing Date	Rating			Year		
					Loan	Grant	TA	Co-financing	Total				PCR	PVR	PPER	PCR	PVR	PPER
		Investment Program (Project 3)																
2826	VIE	Comprehensive Socioeconomic Urban Development Project in Viet Tri, Hung Yen, and Dong Dang	TRA	WUS	70.00			13.52	83.52	91%	08-Dec-11	26-Feb-18	Successful	Successful		2018	2019	
3453	ARM	Infrastructure Sustainability Support Program (Phase 2)	PSM	WUS TRA ENE	90.00				90.00	100%	10-Nov-16	31-Dec-17	Highly successful	Successful		2018	2019	
m0044/2660	IND	National Capital Region Urban Infrastructure Financing Facility	TRA	WUS	78.00				78.00	77%	10-Aug-10	31-May-17	Successful	Successful		2018	2019	
2550/159	PRC	Liaoning Small Cities and Towns Development Demonstration Sector Project	TRA	WUS ANR	100.00			0.25	100.25	92%	18-Sep-09	31-Dec-13 / 31-Mar-16	Successful	Successful		2018	2018	
2556/0163	KGZ	Issyk-Kul Sustainable Development Project	WUS		16.50	13.50			30.00	79%	30-Sep-09	02-Aug-18	Successful	Less than successful		2019	2020	
2428/0194	PRC	Integrated Ecosystem and Water Resources Management in the Baiyangdian Basin Project	WUS		100.00				100.00	86%	24-Jun-08 / 23-Jun-10	5-Mar-18 / 7-Mar-18	Successful	Successful		2019	2020	
0157	NEP	Second Small Towns Water Supply and Sanitation Sector Project	WUS			45.10			45.10	92%	17-Sep-09	18-Mar-19	Less than Successful	Less than successful		2019	2020	
3079/0032	AZE	Water Supply and Sanitation Investment Program (Multitranches Financing Facility and Tranche 3)	WUS		150.00				150.00	99%	05-Dec-13	10-Dec-18	Successful	Successful		2019	2020	
2842	AZE	Water Supply and Sanitation Investment Program (Tranche 2)	WUS		300.00				300.00	100%	22-Dec-11	04-May-18	Successful	Successful		2019	2020	
2571	AZE	Water Supply and Sanitation Investment Program (Tranche 1)	WUS		75.00				75.00	99%	14-Oct-09	08-Nov-17	Successful	Less than successful		2019	2020	
2975/2976/0028	PAK	Sindh Cities Improvement Investment Program (Tranche 2 and MFF)	WUS		99.10				99.10	28%	18-Dec-12	31-May-18	Unsuccessful	Unsuccessful		2019	2020	
2494	PRC	Qingdao Water Resources and Wetland Protection Project	ANR	WUS	45.00				45.00	100%	17-Dec-08	13-Feb-18	Successful	Less than successful		2019	2020	
2564	UZB	Water Supply and Sanitation Services Investment Program (Tranche 1)	WUS		60.00				60.00	95%	08-Oct-09	09-Jan-19	Successful	Successful		2020	2020	

ANR = agriculture and natural resources, ARM = Armenia, AZE = Azerbaijan, BAN = Bangladesh, BHU = Bhutan, DMC = developing member country, EDU = education, ENE = energy, FIJ = Fiji, FIN = finance, ICT = information and communications technology, IND = India, INO = Indonesia, KGZ = Kyrgyz Republic, MFF = multitranches financing facility, MON = Mongolia, NEP = Nepal, PAK = Pakistan, PAL = Palau, PCR = project completion report, PPER = project performance evaluation report, PRC = People's Republic of China, PSM = Public Sector Management, PVR = project completion report validation report, SAM = Samoa, SRI = Sri Lanka, TA = technical assistance, TIM = Timor-Leste, TRA = transport, UZB = Uzbekistan, VIE = Viet Nam, WUS = water and other urban infrastructure services.

Source: Asian Development Bank (Independent Evaluation Department).