

Validation Report
February 2022

Viet Nam: Energy Efficiency for Ho Chi Minh City Water Supply Project

Reference Number: PVR-854
Project Number: 46265-001
Grant Number: 0365



Raising development impact through evaluation

ABBREVIATIONS

ACEF-CEFPF	–	Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility
ADB	–	Asian Development Bank
CO ₂	–	carbon dioxide
CPS	–	country partnership strategy
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
GHG	–	greenhouse gas
HCMC	–	Ho Chi Minh City
km	–	kilometer
kWh/m ³	–	kilowatt-hour per cubic meter
MFF	–	multitranche financing facility
MWh	–	megawatt-hour
NRW	–	nonrevenue water
O&M	–	operation and maintenance
ODA	–	official development assistance
PCR	–	project completion report
SAWACO	–	Saigon Water Corporation
TA	–	technical assistance
WTP	–	water treatment plant

NOTE

In this report, “\$” refers to United States dollars and “D” refers to Vietnamese dong.

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PROJECT BASIC DATA

Project number	46265-001	PCR circulation date	13 Oct 2021	
Grant number	0365	PCR validation date	Feb 2022	
Program name	Energy Efficiency for Ho Chi Minh City Water Supply Project			
Sector and subsector	Water and other urban infrastructure and services	Urban sanitation Urban water supply		
	Energy	Energy efficiency and conservation		
Strategic agendas	Environmentally sustainable growth Inclusive economic growth			
Safeguard categories	Environment		C	
	Involuntary resettlement		C	
	Indigenous peoples		C	
Country	The Socialist Republic of Viet Nam		Approved (\$ million)	Actual (\$ million)
ADB financing (\$ million)	ADF: 0.00	Total project costs	3.80	3.84
	OCR: 0.00	Borrower ^a	1.80	2.13
Cofinanciers	ACEF-CEFPF	Total cofinancing	2.00	1.71
Approval date	17 Oct 2013	Effectiveness date	26 Aug 2014	26 Sep 2014
Signing date	26 May 2014	Project completion date	30 Dec 2015	30 Jun 2018
		Financial closing date	—	23 Mar 2020
Project officers	H. Jenny S. Ishii	Location ADB headquarters ADB headquarters	From Sep 2014 Dec 2016	To Nov 2016 Mar 2020
IED review Director Team leader	N. Subramaniam, IESP A. Guha, Evaluation Specialist, IESP ^b			

— = no approved financial closing date, ADB = Asian Development Bank, ADF = Asian Development Fund, ACEF-CEFPF = Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility, IED = Independent Evaluation Department, IESP = Sector and Project Division of the Independent Evaluation Department, OCR = ordinary capital resources, PCR = project completion report.

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I. PROJECT DESCRIPTION

A. Rationale

1. At the time of project approval, the water supply system in Ho Chi Minh City (HCMC) was facing increasing pressure from population and economic growth. There was a need for the Saigon Water Corporation (SAWACO), the state-owned water utility responsible for water supply in HCMC, to address shortfalls in transmission capacity which resulted in intermittent water supply from low service pressure in some parts of the city. SAWACO had a \$2.8 billion investment plan to achieve universal coverage, continuous water supply, and drinking water quality by 2025.¹

¹ ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Administration of Grant to the Socialist Republic of Viet Nam for the Energy Efficiency for Ho Chi Minh City Water Supply Project*. Manila.

Through a multitranche financing facility (MFF) approved in 2011, Asian Development Bank (ADB) was supporting water supply companies in Viet Nam by financing capital investments and capacity building to improve service delivery and commercial performance.² SAWACO received the first loan under tranche 1 of the MFF in June 2011.³ The loan project was to support the (i) construction of 10 kilometers of water transmission pipes with a diameter of 2,400 millimeters, (ii) replacement and installation of 139 kilometers of distribution pipes, (iii) installation of information and communication technology systems to strengthen operations monitoring capacities and performance, and (iv) preparation of a disaster management plan and a water conservation and safety plan.

2. SAWACO's plans to increase coverage and improve service standards could result in a sharp rise in energy consumption and nonrevenue water (NRW) due to increased pressure inside water distribution pipes. During the project preparation of the tranche 1 technical assistance (TA), SAWACO conducted an energy audit of its operations which indicated that an investment of about \$5 million would result in energy savings of 25,000 megawatt-hours (MWh) per year.⁴ This could translate to about \$1.3 million per year of energy cost savings, and an annual carbon dioxide (CO₂) reduction of about 18,889 tons. Following the results of the audit, SAWACO invested in few energy-efficient components identified in the energy audit as having a short payback period, especially to equip the treated water pumps with variable frequency drives. SAWACO requested ADB's assistance for additional investments to improve the overall water pumping scheme, including the reduction of technical water losses and grid electricity consumption, through a \$2 million grant from the Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility.⁵

3. This validation corresponds to the grant investment project, which was approved by ADB's Board of Directors in October 2013 (footnote 1). The grant was partly to finance the installation of variable frequency drive for three water pumps to efficiently maintain the water pressure. This would reduce energy usage and greenhouse gas (GHG) emissions, and better manage NRW as SAWACO's business rapidly expanded. The investment was expected to result in about 10,000 MWh or \$500,000 per year of energy savings and about 7,500 tons of annual CO₂ reduction.

B. Expected Impact, Outcome, and Outputs

4. The project's expected impact was SAWACO's improved operational performance. Its intended outcome was improved energy efficiency in SAWACO's operations. There were two major expected outputs. First, the capacity building of SAWACO in energy efficiency through consulting services to support and include monitoring and evaluation of the investment. Second, physical investment for energy savings through energy efficiency equipment.

C. Provision of Inputs

5. The project was approved by ADB's Board in October 2013. The agreement was signed in May 2014 and became effective in September 2014. The project was completed in June 2018, more than 2 years later than expected. The grant was not signed until after almost a year due to

² ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility to the Socialist Republic of Viet Nam for the Water Sector Investment Program*. Manila.

³ The loan agreement of \$138 million was signed in June 2011 and declared effective in March 2012.

⁴ ADB. 2010. *Technical Assistance to the Socialist Republic of Viet Nam for Preparing the Ho Chi Minh City Water Supply Project*. Manila.

⁵ The grant was approved on 17 June 2011 by the Government of Japan with validity until 15 November 2013.

SAWACO's unfamiliarity with grant processing and administration. There was also a delay in engaging the design consultant by SAWACO to prepare three bidding documents that were highly technical. Project financial closure was further delayed to March 2020, as the project was not registered by the government as official development assistance (ODA) for the years 2017 and 2018. The issue was only solved through the reallocation of unused ODA budget from other projects by the HCMC People's Committee. In December 2019, the government approved additional ODA budget allocation for the project, and the remaining contracted amount (\$0.7 million) was reimbursed in February 2020, 20 months after the extended grant closing date of June 2018.

6. At appraisal, the total project cost was estimated at \$3.8 million. ADB planned to finance \$2.0 million from a grant from the Asian Clean Energy Fund, and the remaining \$1.8 million were to be financed by SAWACO. At completion, actual project costs were \$3.84 million. The investment cost decreased by \$0.14 million due to lower equipment prices after the open bidding process, while the recurrent cost increased by \$0.18 million due to the prolonged project duration. ADB's grant amount was \$1.71 million, which implied a reduction of \$0.29 million from the original amount due to cost savings through procurement. SAWACO's financing was \$2.13 million, its contribution was increased by \$0.33 million due to slightly higher equipment cost for frequency converters of treated water pumps. ADB's total disbursements amounted to \$1.71 million (85.5% of the original amount committed). At grant closing, the undisbursed amount of \$0.29 million was cancelled due to the project's significant delays in disbursement.

7. At appraisal, 27 person-months of consulting services inputs (5 international and 22 national person-months) were envisaged under firm contract packages and 36 person-months (8 international and 28 national person-months) were envisaged under five individual contracts. The project completion report (PCR) did not report actual person-months used at completion but only indicated that the originally envisioned six consulting service packages were rearranged into four packages (one was procured through firm selection and the rest through individual consultants).⁶ The engagement took 22 months for package 1, 6.5 months for package 2, 3.5 months for package 3, and 20 months for package 4. These involved: (i) information, communication, and education under package 1; (ii) project management under package 2; (iii) design and supervision for air-conditioning system and frequency converters under package 3; and (iv) knowledge management and clean development mechanism under package 4.

8. The project was categorized C for environment, involuntary resettlement, and indigenous peoples. It was also categorized with some gender elements. It did not require a gender action plan.

D. Implementation Arrangements

9. At appraisal, the HCMC People's Committee was the project's executing agency and SAWACO was the implementing agency. The project management unit in charge of the MFF's tranche 1 loan was put in charge to also administer this project. This project was to be implemented in parallel to the MFF tranche 1 project. All the fiduciary requirements from MFF's tranche 1 were also applied to this project. There were no changes in the implementation arrangements during project implementation.

⁶ ADB. 2021. *Completion Report: Energy Efficiency for Ho Chi Minh City Water Supply Project in the Socialist Republic of Viet Nam*. Manila.

10. The project complied with 25 out of 29 grant covenants. The two safeguards-related covenants became not applicable.⁷ One financial covenant remains to be complied with since SAWACO's budget allocation was insufficient to cover the cost of financial audits for the fiscal years of 2018–2020.⁸ Finally, the covenant on project performance monitoring and evaluation remains to be complied with and is to be assessed together with the MFF's tranche 1 loan.⁹

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

11. The PCR rated the project relevant. It was aligned with government's sector development priorities and ADB's corporate strategies at approval and at completion. It was aligned with Viet Nam's water sector development objectives, more specifically with reform priorities to improve the business efficiency and service standards of water utilities that provide service in urban areas.¹⁰ The Socioeconomic Development Plan, 2011–2015 envisaged a commercially viable water sector and the promotion of energy efficiency.¹¹ The project was also aligned with ADB's Water Operational Plan, 2011–2020 and its country partnership strategy (CPS) of 2012–2015 for Viet Nam, which emphasized the importance of reducing the water sector's energy footprint.¹²

12. The design of the project as a stand-alone grant investment pressured SAWACO to follow the grant implementation timelines, completing all energy equipment installations and capacity building activities before June 2018. Had the project been included under MFF's tranche 1, implementation would have been protracted due to tranche 1's implementation challenges and a pending proposal for a 4-year extension until 2024.

13. The project's design and monitoring framework (DMF) had deficiencies that had to be corrected during the midterm review to maintain its relevance. The outcome indicators proposed to measure energy savings at appraisal did not provide a baseline which precluded the comparison of the "with" and "without" project scenarios. Mistakes were also found in the energy-saving calculations and GHG reduction coefficients used.¹³ In the midterm review, SAWACO and ADB revisited the outcome indicator by adding the baseline data from the 2009 energy audit and making the estimates specific to the two water treatment plants equipped with the energy-saving devices. The original electricity savings target was \$1.30 million per year and a CO₂ reduction of 18,889 tons per year. The revised target was \$0.55 million per year and CO₂ reduction of

⁷ The inclusion of an initial environmental examination and an environmental management plan in the consulting service contracts became not applicable since the project was not deemed to cause any negative impact on the environment. The covenant on involuntary resettlement was also not applicable since no land acquisition nor resettlement was required.

⁸ The budget provision for financial audit from 2018 onwards was not included in the government's project extension approval and therefore, SAWACO could not allocate its own budget. Moreover, the government had already closed the grant project account and budget could not be added retroactively.

⁹ ADB and the government agreed, in principle, to extend the MFF tranche 1 loan until December 2024 to complete all expected outputs. The tranche 1 loan implementation was slow due to delays in project adjustment, procurement of 10-kilometer water transmission pipes, and approval of the technical design.

¹⁰ Government of Viet Nam. 2009. *Orientation for Developing Water Supply in Viet Nam's Urban Centers and Industrial Parks up to 2025, and a Vision Towards 2050*. Ha Noi; and Government of Viet Nam. 2010. *National Unaccounted-for Water, Nonrevenue Water Program to 2025*. Ha Noi.

¹¹ Government of Viet Nam. 2011. *Socioeconomic Development Plan 2011–2015*. Ha Noi.

¹² ADB. 2011. *Water Operational Plan 2011–2020*. Manila; and ADB. 2012. *Country Strategy and Program: Viet Nam, 2012–2015*. Manila.

¹³ The Government of Viet Nam uses a factor of 0.000913 tons of carbon dioxide equivalent per kilowatt-hour (tCO₂e/kWh), while the harmonized International Financial Institution factor for the country is 0.000479 tCO₂e/kWh.

6,600 tons.¹⁴ The output indicators were also revised during the midterm review to better measure the two originally approved output statements.

14. This validation finds that the project design was adequate to meet the envisaged outcome of improved energy efficiency in SAWACO's operations as the installation of new equipment was to result in energy savings. In addition to the project's alignment with government and ADB corporate strategies presented in the PCR, this validation finds that the project was also aligned with ADB's CPS for 2016–2020 at completion.¹⁵ The project contributed to the CPS' objective of environmental sustainability and climate change response. However, the project had design deficiencies as highlighted in the PCR. Although midterm review corrected some of the issues, this validation also finds that the project's outcome indicator could have been more explicit about the values for electricity prices, electricity consumption in kilowatt-hour per cubic meter (kWh/m³), and cubic meter of water pumped to better understand the sources of energy cost changes. The choice and calculation of outcome indicator targets seem to have underestimated achievements based on the information presented in the PCR. The outcome indicator on NRW at appraisal was also recategorized as impact indicator in the midterm review and its target revised.¹⁶ This was reasonable as it was not entirely attributable nor a direct result of the project. Apart from some shortcomings of the DMF, the project design was adequate to meet the outcome. It was also aligned with the government's and ADB's plans. This validation assesses the project relevant.

B. Effectiveness in Achieving Project Outcomes and Outputs

15. The PCR rated the project less than effective. The project outcome was achieved. Two of the three output indicators were achieved, and one output was partially achieved. Regarding the outcome, the electricity cost savings presented in the PCR were \$3 million and GHG reduction was 34,905 tons of carbon dioxide equivalent per annum. This represented an overachievement with respect to the initial target of \$1.3 million and 18,889 tons of carbon dioxide equivalent.¹⁷ The PCR clarified that one reason for this overachievement was the method of converting energy use intensity into financial and environmental benefits. However, it did not present actual numbers on the different parameters used at appraisal and completion. Electricity tariffs and CO₂ emission factors per unit of power generation had supposedly increased steadily from the time of the energy audit (2009) to the year of project evaluation (2020).

16. As presented in the DMF of the PCR, the first output was capacity building of SAWACO in energy efficiency. The first performance indicator—to implement energy efficiency policy within SAWACO—was partially achieved. SAWACO prepared a 10-year energy efficiency strengthening program in October 2017 with specific short-, medium-, and long-term actions, and in April 2018 assigned its technical division to implement the actions. However, SAWACO did not keep track of its own energy-savings programs and could not measure progress against the program's targets. The second indicator was energy efficiency training to SAWACO staff. A total of 94 staff participated (the target set at midterm was 75),¹⁸ with 45% of administrative officers trained were women (revised target was at least 40%). The second output was investment in energy savings, which was achieved as frequency converters were installed, mobile monitoring equipment purchased, and central air-conditioning replaced.

¹⁴ Original baseline energy target for 2009 was 0.171 kWh/m³ for Thu Duc water plant and 0.404 kWh/m³ for Tan Hiep.

¹⁵ ADB. 2016. *Country Strategy and Program: Viet Nam, 2016–2020*. Manila.

¹⁶ From a 32% by 2015 to 25% by 2020.

¹⁷ There is also an overachievement compared with the revised target from midterm review of \$0.55 million and 6,600 tons of carbon dioxide equivalent.

¹⁸ No total staff target was set at appraisal.

17. This validation finds that the project's outcome was achieved with a delay. Actual savings in electricity costs in 2020 were almost 2.4 times higher than the target of \$1.3 million. The total electricity savings per year amounted to 42,828 MWh in 2020, greatly surpassing (71% increase) the target of 25,000 MWh at appraisal.¹⁹ Electricity prices in 2020 were also 50% higher than the implied price at appraisal.²⁰ Electricity consumption per cubic meter in the three water treatment plants (WTPs) that installed energy efficiency equipment was also reduced when compared to the baseline levels. Baseline consumption in 2009 was 0.171 kWh/m³ in Thu Duc WTP, 0.404 kWh/m³ in Tan Hiep 1 WTP, and 0.089 kWh/m³ in Tan Hiep 2 WTP. The reported consumption in 2019 was 0.140 kWh/m³ in Thu Duc WTP, 0.141 kWh/m³ in Tan Hiep 1 WTP, and 0.081 kWh/m³ in Tan Hiep 2 WTP. Electricity savings from Tan Hiep 1 represented 80% of total project savings, followed by Thu Duc (16.7%) and Tan Hiep 2 (3.2%). This validation finds that although some project outputs were partially achieved, the outcome performance targets were achieved, albeit with delay. This validation assesses the project less than effective.

C. Efficiency of Resource Use

18. The PCR rated the project efficient. At appraisal, no economic analysis specific to this grant project was conducted. Instead, an incremental cost-saving calculation for the grant investment in energy efficiency was included as a supplementary document.²¹ The analysis was included in the report and recommendation of the President for the MFF's tranche 1 loan, which evaluated the benefits associated with a reduction in NRW and increased and improved water supply. An estimation of the economic internal rate of return (EIRR) was conducted at project completion. The economic analysis at completion accounted for the benefits associated with energy efficiency savings, mainly the reduction of GHG. Economic analysis considered the benefits and costs based on actual observed data and estimated an EIRR of 37.2%. Sensitivity analysis was conducted for a reduction in energy savings, an increase in operation and maintenance (O&M) costs, and both. The project's economic returns were robust to changes in those variables, being above 20%. However, while project cost was almost unchanged from initial estimates, there was a 2-year delay in implementation.

19. This validation finds that on the whole, the methodology used to calculate the EIRR was valid. The benefits quantified were only for GHG reduction. If the benefits associated with the reduced electricity consumption were to be included, the estimated EIRR would have been higher. Process efficiency of the project implementation was mixed. Although there was no cost overrun, the project had a 2-year delay. This validation assesses the project efficient.

D. Preliminary Assessment of Sustainability

20. The PCR rated the project most likely sustainable. The financial internal rate of return was not recalculated at completion, but the investment cost was recovered in only 1.5 years through energy savings. ADB confirmed that SAWACO has been operating its water treatment plants and intake facilities and the equipment purchased has received appropriate O&M since its installation. The PCR indicated that SAWACO generated enough revenue between 2018 and 2020 to sustain its operations and was able to allocate operational budget for the O&M of all equipment.²² Net

¹⁹ Footnote 6, Appendix 8, Table A8.1.

²⁰ At project closing, a price of D1,653 per kWh was used, the implied price at appraisal was D1,096 per kWh.

Currency equivalent during appraisal was D1.00 = \$0.0000474, and at project completion, D1.00 = \$0.0000426.

²¹ This was requested by the Asian Clean Energy Fund under the Clean Energy Partnership Facility.

²² Footnote 6, Appendix 8.

income has been steadily growing from \$16.2 million in 2018 to \$32.6 million in 2020. No information was presented on the debt service coverage ratio.

21. This validation assesses that at the institutional level, the project delivered training on energy efficiency to the company's staff. However, SAWACO did not effectively implement a corporate energy efficiency program. Instead of the policy, SAWACO prepared its 10-year Energy Efficiency Strengthening Program and instructed its technical department to implement it. However, the technical department did not keep records to demonstrate the contribution of the program. This suggests a potential shortcoming in terms of the company's ownership about energy efficiency. This validation finds that positive environmental effects stemming from the reduction of GHG are also likely to be sustained through time. This validation assesses the project likely sustainable.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

22. The PCR rated the project's development impact satisfactory based on the achievement of GHG emission reductions and energy savings as well as the potential demonstration effects for other utilities in the country. It further added that the grant contributed to the MFF's tranche 1 loan expected impact, which was a more environmentally sustainable and cost-efficient water supply in HCMC, benefiting more than 3.9 million people.

23. This validation finds that overall impacts were positive. In addition to achieving emissions reduction and energy savings, the project contributed to decreasing the level of NRW. In 2020, NRW reached 18.5%, surpassing the target of 25.0% (baseline was 40.0% in 2010). This validation notes that this achievement is not entirely attributable to the project. This validation assesses the project's development impact satisfactory.

B. Performance of the Borrower and Executing Agency

24. The PCR rated the performance of the borrower and the executing agencies less than satisfactory, based on the project delays due to the slow mobilization of consultants and procurement of equipment, and the government's budget allocation challenges. SAWACO demonstrated commitment to the project by allocating its counterpart budget and using its own budget to pay contractors and consultants when disbursement was stalled due to ODA issues. However, the agency failed to submit annual audited financial statements for the years 2018–2020, one of the project's financial covenants.

25. This validation finds that the implementation shortfalls from the borrower and executive agency resulted in delays in project implementation. SAWACO had limited capacity to design and evaluate bidding documents for energy efficient equipment as external support had to be provided. This validation assesses the performance of the borrower and executing agency less than satisfactory.

C. Performance of the Asian Development Bank and Cofinanciers

26. The PCR rated the performance of ADB less than satisfactory. Although designed to add value to the MFF program, the project grant should have been processed together with tranche 1 of the loan in 2011. This would have avoided the government's budget allocation issues. On the other hand, the project team fielded missions and responded to issues during implementation in

a timely manner, ensuring project completion. However, the project implementation performance was rated potential problem or for attention for 45% of its duration, 32% of the time as actual problem, and on track for only 23% of the project duration.

27. This validation notes that the shortcomings during project design had to be corrected during supervision and implementation of activities, aside from its weakness to document baselines and measure project performance. Preparatory work at design stage could have finalized the design of bidding documents and provided technical advice on the acquisition of specialized equipment. This could have avoided some of the delays during implementation. This validation assesses ADB performance less than satisfactory.

D. Others

28. The PCR provided information on consultant recruitment and procurement but did not rate the performance of contractors, suppliers, or consultants. There were three goods packages that were advertised in June–October 2016 and were awarded in April–July 2017, taking 8 months for the first goods package, 10.5 months for the second, and 8 months for the third. This was longer than the average for Viet Nam. The delay was caused by the protracted technical evaluation process.

29. At appraisal, the project was designed to have six consulting service packages, but these were adjusted to four packages during implementation (para. 7). The exceptionally slow processing times occurred since SAWACO stopped processing these packages in 2015 in case the grant would not be extended after June 2016, which would have prevented the consultants from finishing their tasks. The grant was only extended in December 2016, 6 months after the original closing date due to the delay in the submission of the government's official grant extension request. SAWACO resumed its engagement process and signed these contracts in April and June 2017.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

30. Overall, the PCR rated the project successful based on its ratings of relevant, less than effective, efficient, and most likely sustainable. This validation assesses the project successful but finds the project likely sustainable. The investment cost was recovered in only 1.5 years through energy savings, positive environmental effects were to be sustained, and institutional capacity was strengthened.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Less than effective	Less than effective	
Efficiency	Efficient	Efficient	
Sustainability	Most likely sustainable	Likely sustainable	Energy efficiency policy has not been effectively adopted at the company level.
Overall Assessment	Successful	Successful	
Preliminary assessment of impact	Satisfactory	Satisfactory	

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Borrower and executing agency	Less than satisfactory	Less than satisfactory	
Performance of ADB	Less than satisfactory	Less than satisfactory	
Quality of PCR		Satisfactory	Para. 36.

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = project completion report.
Source: ADB (IED).

B. Lessons

31. The main lessons identified in the PCR can be summarized as follows: (i) ADB and the government should confirm the process of grant budget allocation and disbursement in the design stage of a project given the existing regulations on ODA in Viet Nam;²³ (ii) grant project documents that are complementary to another investment project must be specific to the funds to be invested, identifying their own rationale and specific achievements attributable to the project; (iii) appropriate mechanisms to institutionalize new corporate programs (such as the energy efficiency promoted by the project) must be in place to monitor and report progress adequately; and (iv) large-scale water supply services can obtain significant energy savings from selecting the best suitable technology based on energy audits, and this type of investments has the potential of a short payback period if well targeted.

32. This validation builds on the key lessons identified by the PCR and suggests the following additional lessons.

- (i) **Project level lesson.** Timely preparation of bidding documents and adequate technical support for the evaluation of bids are critical to streamline the implementation of the project. During the design stage, developing the institutional and technical capacity of executing agencies with no previous experience in new specialized technology helps support the initial administration of project activities. For example, TA support through the provision of training and capacity building would have helped in strengthening the agencies' procurement-related operations.
- (ii) **Results framework and methodology level lesson.** It is important to prepare meaningful monitoring frameworks with relevant indicators to assess energy efficiency gains objectively. At the outcome level, assumptions about baseline and target electricity costs savings must be clearly spelled out to understand the source of cost savings. Key parameters to be documented in a water supply project are cubic meters of water pumped, kilowatt-hours consumed, and electricity price per kilowatt-hours consumed.

C. Recommendations for Follow-Up

33. Based on the PCR's recommendations, this validation suggests that ADB should monitor: (i) the submission of audited project financial statements for 2018–2020, (ii) SAWACO's operational and financial performance, and (iii) possibilities to replicate SAWACO's experience in other water utilities in the country.

²³ For example, central and provincial governments need to allocate budget and secure a quota for loan and grant disbursements under their ODA budget plan.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

34. The PCR presented data collected through the project completion review mission. It suggested that DMF indicators at appraisal could have been established more accurately to assess the benefits attributable to the project. These were corrected during midterm review.

35. This validation holds a similar view on the limitations of the project monitoring and evaluation framework, and further adds the following limitations of the DMF at appraisal: (i) project's outcome indicator of electricity cost savings should have been explicit about the values for electricity consumption (kWh/m³), cubic meters of water pumped, and electricity price (dong per kWh) to better understand the sources of energy cost changes; (ii) outcome indicator targets seem to have been underestimated based on the information presented in the PCR; and (iii) the outcome indicator on NRW at appraisal was not entirely attributable nor a direct result of the project, it was recategorized as an impact indicator in the midterm review and its target revised.

B. Comments on Project Completion Report Quality

36. This validation assesses the quality of the PCR satisfactory. It was candid in documenting the main issues during project design and implementation. It identified the issues in DMF design and provided documentation of the project's achievements in terms of outcomes and outputs. The lessons provided were valid and useful for future projects. However, some fundamental data to understand the sources of electricity cost savings (cubic meters of water pumped, electricity consumption, electricity prices) were left in the appendix rather than presented in the main document. Additional institutional aspects could have been discussed in the sustainability assessment. The assessment of development impacts could have been improved by incorporating the evidence of NRW reduction presented in the appendix.

C. Data Sources for Validation

37. Data sources used for this validation were the PCR, the report and recommendation of the President for this project and the MFF, the period financing request for the MFF's tranche 1, TA documents, review mission reports, and CPSs.

D. Recommendation for Independent Evaluation Department Follow-Up

38. This validation does not recommend further Independent Evaluation Department follow-up.