

**Validation Report**  
December 2019

# Viet Nam: Strengthening Water Management and Irrigation Systems Rehabilitation Project

Reference Number: PVR-651  
Project Number: 42080-013  
Loan Number: 2636



*Raising development impact through evaluation*

## ABBREVIATIONS

ADB	–	Asian Development Bank
AFD	--	Agence Française de Développement
BHH	--	Bac Hung Hai
DARD	--	departments of agriculture and rural development
DMF	–	design and monitoring framework
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
IMC	–	irrigation management company
MARD	–	Ministry of Agriculture and Rural Development
MASSCOTE	–	Mapping Systems and Services for Canal Operation Technique
O&M	–	operation and maintenance
PCR	–	project completion report
WRU	–	Water Resources University

## NOTE

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

<b>Director General</b>	M. Taylor-Dormond, Independent Evaluation Department (IED)
<b>Deputy Director General</b>	V. Salze-Lozac’h, IED
<b>Director</b>	Nathan Subramaniam, Sector and Project Division (IESP)
<b>Team Leader</b>	Shimako Takahashi, Evaluation Specialist, IESP

The guidelines formally adopted by the Independent Evaluation Department (IED) on avoiding conflict of interest in its independent evaluations were observed in the preparation of this report. To the knowledge of IED management, there were no conflicts of interest of the persons preparing, reviewing, or approving this report. The final ratings are the ratings of IED and may or may not coincide with those originally proposed by the consultants engaged for this report.

In preparing any evaluation report, or by making any designation of or reference to a particular territory or geographic area in this document, IED does not intend to make any judgments as to the legal or other status of any territory or area.

## PROJECT BASIC DATA

Project Number	42080-013	PCR Circulation Date	30 May 2019	
Loan Number	2636	PCR Validation Date	Dec 2019	
Project Name	Strengthening Water Management and Irrigation Systems Rehabilitation Project			
Sector and subsector	Agriculture, natural resources and rural development	Irrigation Rural water policy, institutional and capacity development		
	Education	Tertiary education		
Strategic agenda	Inclusive economic growth			
Safeguard categories	Environment		B	
	Involuntary Resettlement		A	
	Indigenous Peoples		C	
Country	Socialist Republic of Viet Nam		Approved (\$ million)	Actual (\$ million)
ADB Financing (\$ million)	ADF: 100.00	Total Project Costs	179.00	160.20
	OCR: 0.00	Loan	100.00	89.50
		Borrower	51.00	47.80
		Beneficiaries		
		Others	28.00	22.90
Cofinancier		Total Cofinancing		
Approval Date	20 Apr 2010	Effectiveness Date	6 Dec 2010	19 Jan 2011
Signing Date	7 Sep 2010	Closing Date	31 Dec 2016	18 Jun 2018
Project Officers	D. Ellingson K. Huong	Location VRM VRM	From Apr 2011 Apr 2013	To Apr 2013 Jun 2018
IED Review Director Team Leader	N. Subramaniam, IESP Shimako Takahashi, Evaluation Specialist, IESP*			

ADB = Asian Development Bank, ADF = Asian Development Fund, IED = Independent Evaluation Department, IESP = Sector and Project Division, OCR = ordinary capital resources, PCR = project completion report. VRM = Viet Nam Resident Mission.

\*Team members: H. Hettige (Quality Reviewer), F. De Guzman (Senior Evaluation Officer), D. Corderi and F. Fragano (Consultants).

## I. PROJECT DESCRIPTION

### A. Rationale

1. To expand its agricultural production, Viet Nam made significant investments in irrigated agriculture, including the Bac Hung Hai (BHH) irrigation and drainage system. It is one of the 100 large and medium existing irrigation systems built in Viet Nam over the last several decades. This large 50-year-old irrigation scheme is located at the heart of the Red-Thai Binh River basin, an important agricultural region in northern Viet Nam. Over the years, the BHH system had deteriorated due to inadequate operation and maintenance, thus providing a poor level of service. Infrastructure facilities needed rehabilitation as the system required improved governance and management of the scheme to guarantee an adequate level of service in the context of growing competing demands for water in the basin. The report and recommendation of the President (RPP) for the Strengthening Water Management and Irrigation Systems Rehabilitation Project stated that the number of qualified water management engineers with agricultural experience was

insufficient.<sup>1</sup> The Water Resources University (WRU) in Hanoi is a 50-year-old public university that has provided education to more than 18,000 engineers, of which over 80% has continued to work in professions related to irrigation and drainage. The university had not been able to cater to the increasing demand for qualified specialists in view of its insufficient capacity to accommodate more enrollees in skills-development.

2. The Strengthening Water Management and Irrigation Systems Rehabilitation Project was designed to address these problems.<sup>2</sup> The project included the following components: (i) the construction of new educational facilities for WRU; (ii) the construction of eight new pumping stations and rehabilitation of two existing pumping stations in the BHH irrigation and drainage scheme; and (iii) capacity development activities for water management organizations for community-based, demand driven approaches, and the provision of modern management techniques and equipment, as well as training to operate and maintain the tools and technologies introduced throughout the BHH system.

## **B. Expected Impacts, Outcomes, and Outputs**

3. The project's expected impact was increased agricultural productivity in the BHH area. The project's intended outcome was to strengthen the quality of water-related services from the Ministry of Agriculture and Rural Development (MARD). There were four expected outputs: (i) increased human resource capacity for sustainable water management; (ii) increased capacity of irrigation and drainage infrastructure in the BHH irrigation and drainage system; (iii) strengthened institutional capacity of water-related service providers in the BHH irrigation and drainage system; and (iv) operationalization of project management.

## **C. Provision of Inputs**

4. The Asian Development Bank (ADB) approved the loan in April 2010 and became effective in January 2011. The project was financially closed in June 2018, after an 18-month delay. The project completion report (PCR) indicated that the delays were due to the government's protracted procedures to approve final contract liquidations (footnote 2).

5. The total project cost was estimated at \$179.0 million, while the actual project costs were \$160.2 million. According to the PCR, the savings were from the lower than envisaged land acquisition and resettlement and WRU campus construction costs (footnote 2). It added that some reallocations of funds among components were agreed during project execution. At project closing, the savings reduced the financing from all three parties.

6. Total loan disbursements amounted to 89.5% of the \$100 million originally committed. The initial disbursement took place in November 2011 and the final disbursement was undertaken in November 2017. The PCR noted that disbursement was slow during 2011–2013 due to start-up delays and caught up in 2014 when large contracts were awarded (footnote 2). At appraisal, 292 person-months of consulting services were proposed as inputs (56 person-months of international specialists and 236 person-months of national specialists). The PCR did not provide information on consulting service inputs effectively used at project completion.

---

<sup>1</sup> Asian Development Bank (ADB). 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Socialist Republic of Viet Nam for the Strengthening Water Management and Irrigation Systems Rehabilitation Project*. Manila.

<sup>2</sup> ADB. 2019. *Project Completion Report: Strengthening Water Management and Irrigation Systems Rehabilitation Project*. Manila.

7. The project was classified as category B for its environmental impact. An initial environmental examination was prepared and disclosed by ADB in July 2010. The environmental management plan (EMP) was prepared, describing the mitigation measures, assigning responsibilities to the relevant agencies to implement measures, and perform monitoring and supervision. The EMP was updated in 2013 for the new WRU campus. A total of 28 environmental monitoring reports were prepared and disclosed by ADB.

8. The project was classified as category A for resettlement in view of land acquisition required for the WRU campus, and as category C for indigenous people. The PCR stated that a total of 2,045 households were affected at project closing, higher than the estimated 1,476 households<sup>3</sup> at appraisal. A gender action plan was prepared for the project.

9. The project had an associated technical assistance (TA)<sup>4</sup> of \$1.4 million. Of this amount, \$1.1 million was from an ADB grant,<sup>5</sup> and \$0.3 million from the government. The TA project was approved in July 2008 and closed in December 2010. It disbursed 92% of the funds at closing.<sup>6</sup> The PCR did not provide details on how the TA project contributed to the attainment of the project objectives. The TA project report summarized that work focused on a detailed design for the three main components of the project: (i) strengthening capacity of water-related service providers, (ii) improving management of irrigation and drainage systems, and (iii) constructing new infrastructure and upgrading existing irrigation systems infrastructure.

#### **D. Implementation Arrangements**

10. The MARD was the project executing agency through the central project management unit within MARD's central project office. Implementing agencies included: the WRU, the BHH Irrigation Drainage and Management Company, and the provincial departments of agriculture and rural development (DARDs) of Bac Ninh, Hung Yen, and Hai Duong. The PCR documented a minor change in the implementation arrangements during execution. In 2014, the implementation responsibilities were transferred from the Hai Duong DARD to the irrigation management company (IMC), with the aim of transferring the ownership of the infrastructure built and strengthening its capacity. The PCR did not mention a project steering committee although the RRP cited it.<sup>7</sup>

11. The PCR indicated that the borrower and the executing authority complied with the 12 loan covenants,<sup>8</sup> and that no covenant was modified, suspended, or waived. Appendix 9 of the PCR, however, presented different information: there were 19 covenants and 17 of them were fully complied with. One covenant was complied with late – the approval of the legal framework for water sharing, water rights, and river basin management. Another covenant was partially complied with, as the project's increase in representation of women in water user associations reached 11.7%, much below the original target of 50.0%.

<sup>3</sup> Footnote 2, Appendix 10, para. 3-4.

<sup>4</sup> ADB. 2008. *Technical Assistance to the Socialist Republic of Viet Nam for Strengthening Water Management and Irrigation Systems Rehabilitation*. Manila.

<sup>5</sup> Sources of funding were the Japan Special Fund (\$1 million) and the Technical Assistance Fund (\$0.12 million).

<sup>6</sup> ADB. Socialist Republic of Vietnam: Strengthening Water Management and Irrigation Systems Rehabilitation Project. <https://www.adb.org/projects/42080-012/main#project-pds>.

<sup>7</sup> Footnote 1, Appendix 5.

<sup>8</sup> Footnote 2, para. 33.

## II. EVALUATION OF PERFORMANCE AND RATINGS

### A. Relevance of Design and Formulation

12. The PCR rated the project relevant. The rating was based on the project outcome's alignment with government plans for improving agricultural productivity through infrastructure modernization and improved water resource management.<sup>9</sup> At design, the project was aligned with ADB's Viet Nam country strategy and program (CSP) 2007–2010 and consistent with the Water Operational Plan and the Operational Plan for Agriculture and Natural Resources, which emphasized support for irrigation efficiency and integrated water resources management.<sup>10</sup> At closing, the project was also aligned with the CSP<sup>11</sup> 2016–2020 to increase inclusiveness of infrastructure service delivery and to improve environmental sustainability. The project design was adequate for an intervention in the densely populated BHH area, which has a significant agricultural production and vulnerable to water risks. Subprojects were already identified and upgrading the existing water system was needed. The investment in the expansion of WRU was justified to build human resource capacity in water management.

13. This validation notes that the intended project's outcomes were aligned with government priorities and pertinent ADB strategies. The project design responded to the needs of strengthened water-related services in the BHH river basin. This validation notes that in the design and monitoring framework (DMF), the indicator depicting increased annual enrollment of students at WRU is not adequately linked to support the outcome indicator of improvement in water delivery services to farmers in the BHH system. The building of new facilities for the WRU (38% of project cost) was justified based on the need for qualified water engineers. Yet, most of the data provided relate to student enrollment instead of labor market outcomes. The PCR did not provide information on the demand for water engineers nor the claimed shortage of trained professionals for water resource management. The project results chain could have been more robust. Despite these issues with the DMF, this validation assesses the project relevant due to the strong alignment and other design aspects which were better.

### B. Effectiveness in Achieving Project Outcomes and Outputs

14. The PCR rated the project effective. The project's outcome was achieved as the value of water delivery services to farmers in the BHH irrigation and drainage system increased to the target value.<sup>12</sup> This indicator was measured based on the Mapping Systems and Services for Canal Operation Technique (MASSCOTE).<sup>13</sup> Services are valued based on a composite indicator that measures the volumes delivered to the farmers, their flexibility, reliability, and equity. This validation accepts the explanation and considers that the outcome was substantially achieved, given the contribution of outputs 2 and 3 to the outcome.

<sup>9</sup> Government of Viet Nam. 2006. *Strategy for Socio-Economic Development, 2006-2010*. Hanoi; Government of Viet Nam. 2006. Prime Minister Decision 81/2006/QĐ-TTg: Approval of National Water Resources Strategy toward 2020. Hanoi. 14 April.

<sup>10</sup> ADB. 2006. *Country Strategy and Program: Viet Nam, 2007–2010*. Manila; ADB. 2011. *Water Operational Plan, 2011–2020*. Manila; ADB. 2015. *Operational Plan for Agriculture and Natural Resources*. Manila.

<sup>11</sup> ADB. 2016. *Country Strategy and Program: Viet Nam, 2016–2020*. Manila.

<sup>12</sup> A target value of 2.5 was to be achieved by 2016 from 1.6 in 2009 (with value of services measured on a scale from 0 to 4). The PCR calculated the value based on the MASSCOTE approach but did not present the intermediate data used. It indicated that the An Thi district in Hung Yen province was selected as proxy to the BHH basin.

<sup>13</sup> Food and Agriculture Organization. 2007. Modernizing Irrigation Management – The MASSCOTE Approach. *FAO Irrigation and Drainage Paper* 63. Rome. pp. 181–182.

15. According to the DMF<sup>14</sup> in the PCR, most project outputs were substantially delivered (para. 3), except for one gender-related indicator and some were achieved with delay. Output 1 was substantially achieved though delayed. First-year bachelor-of-science enrollment was 3,600 in 2018 (target was 4,108 in 2016) and 840 master-of-science students in 2017 (target was 840 in 2016). Output 2 on increased capacity of irrigation, was achieved on time for 11,200 hectares (ha), reaching 25.2 cubic meters (m<sup>3</sup>) per second on time in 2016, and total drainage and internal irrigation capacity reached 219 m<sup>3</sup> per second in 2017, with a 1-year delay. For output 3, some components were achieved with a 2-year delay. Participatory planning and implementation arrangements were in place in 2014, and implementation agreements were signed with 14 water user groups in 2014.<sup>15</sup> A total of 79 on-farm subprojects were endorsed by July 2017. Provincial people's committees approved the annual IMC's operations and maintenance (O&M) plans and committed the O&M funding for constructed headwork facilities. Training was also provided to key staff of the IMCs and irrigation enterprises. For output 4 on training on project management for the central and provincial project management unit, officers were provided before loan effectiveness, project implementation consultants were mobilized with an 8 month-delay, and the project performance management system was installed as scheduled. The PCR emphasized other positive project achievements that were not measured in the DMF including damage prevention for residential land that comprises 30% of the land within the pumping station service areas, and improvement of inland water transport that resulted in reduced travel time (footnote 2, p. 18).

16. The PCR provided information on the results of the implementation of the social safeguards plans.<sup>16</sup> A total of 1 million square meters (m<sup>2</sup>) of land was acquired and 2,045 households were affected compared to the 1,476 households estimated at appraisal. A total of 751 households were severely affected (losing more than 10% of productive land) and 14 households were relocated. An external evaluation concluded that "no household [was] worse off than before project implementation."<sup>17</sup> The total resettlement and compensation costs amounted to D269,310 million (equivalent to \$11.9 million). However, the PCR provided limited information on environmental impacts and referred to the preparation and implementation of EMPs during construction. The safeguard assessment of the Independent Evaluation Department stressed the weaknesses of EMPs as they did not consider the environmental impacts of changing water flows in the basin, and the probable increase in the use of pesticides.<sup>18</sup> The project may have had adverse environmental impacts not addressed by EMPs such as water pollution and overexploitation, yet little information was available on these issues. The PCR considered that project implementation was successful in achieving the gender action plan: all 17 activities were completed and 5 out of 6 of the targets were achieved. The main gender specific results<sup>19</sup> were: (i) 410 women hired as unskilled locals for the construction of the new campus extension (47.7% of total); (ii) 92 women hired as unskilled civil works laborers in the construction of pumping stations (26.3% of total); and (iii) 32 women hired to operate and maintain pumping stations (36.8% of total).

<sup>14</sup> Footnote 2, Appendix 1; The participation of women in water user groups increased to 11.7% of membership. The target was 50%.

<sup>15</sup> The PCR did not properly document the achievement of "[water user groups] strengthened and achieving seasonal and/or annual targets by 2014." It referred to the training of the 14 water user groups on the project implementation annually, without referring to the seasonal targets.

<sup>16</sup> Footnote 2, Appendix 8.

<sup>17</sup> Footnote 2, para. 30.

<sup>18</sup> ADB (Independent Evaluation Department). 2019. Project Safeguard Assessment: Strengthening Water Management and Irrigation Systems Rehabilitation Project. 6 August (internal). IED safeguard assessment report rated the work quality at appraisal and supervision of the environment "less than satisfactory."

<sup>19</sup> Footnote 2, Appendix 8.

17. Project outcome and outputs were substantially achieved, albeit with various delays for 1 to 2 years. This validation assesses the project effective.

### **C. Efficiency of Resource Use**

18. The PCR rated the project less than efficient. The economic internal rate of return (EIRR) was estimated at project completion using the same methodology at appraisal. Benefits pertained to higher crop and aquaculture yields from improved irrigation water availability. Benefits stemming from the reduction of flood damages in project areas were quantified and included in the EIRR. However, benefits of the investments in educational facilities (38.6% of the total project investments) or their cost were not included in the estimation of the EIRR. The estimated project level EIRR at completion was 15.7%, compared to the estimated 22.6% at appraisal, which only included benefits from increased yields. The PCR's estimated EIRR was above 12.0%. However, it showed that the delays of the new campus investments in achieving full development justified a less than efficient rating.

19. This validation notes that the EIRR at completion cannot be directly compared to the EIRR at appraisal since additional flood damage reduction benefits were included in the calculation at completion. Considering only the comparable benefits from increased yields, the EIRR at completion is 11.7%, almost half of the EIRR calculated at appraisal. The main differences stemmed from lower than anticipated cultivated area and yields. This validation notes that the investment costs associated with the educational facilities were not included (38.6% of all project costs) in the computation. These costs should have been included even though benefits were not quantified. When including them, the EIRR is likely to be much lower than 12.0%. If benefits cannot be quantified, a least unit cost analysis should be included in efficiency assessment. In sum, economic analysis was undertaken for one of two components, indicating the project did not provide economic analysis for the whole project.

20. The methodology for calculating the EIRR was valid. However, it had some limitations in the quantification of benefits: (i) limited information was provided to justify the validity of the counterfactual (agricultural producers outside of BHH project area); (ii) sensitivity analysis was based on variation of overall benefits at project level and did not provide much information on how factors such as variations in crop production costs, cropped area, water availability, yields, and prices affect project benefits; (iii) the approach used to estimate flood damages did not follow the standard methodology to calculate expected annual damage. Process efficiency was mixed. There were no major cost overruns. However, project implementation was delayed by 6 months in terms of physical execution of major civil works and 18 months for the financial closure. This validation rates the project less than efficient.

### **D. Preliminary Assessment of Sustainability**

21. The PCR rated the project likely sustainable. It referred to the institutional capacity in the MARD and DARDs to manage and operate irrigation and drainage systems based on their 60-year experience in operating the BHH system. The PCR indicated that the project contributed to improving this capacity, through strengthening of state-owned IMCs. At the financial level, IMCs have relied on subsidies to cover for the O&M costs of the system since no irrigation fees were charged to farmers. The PCR indicated that provincial governments would own the irrigation infrastructure and would be directly responsible for O&M funding. It also indicated that the MARD has assured funding for O&M for a minimum of 30 years through a cost-sharing arrangement between national and provincial governments. The new law on hydraulic works that became effective in 2018 introduced irrigation service fees to cover for O&M costs. However, it is not clear

how and when it will be implemented. As far as the WRU's facilities, the university has enough budget for O&M expenditures, according to the PCR. Yet, university fees do not cover the O&M's financing needs. The PCR did not discuss environmental and social sustainability.

22. This validation notes that financial sustainability for the BHH system seems guaranteed by the government's budget commitment of O&M funds, although limited evidence on budget availability has been presented. The same applies for the WRU's investment. The MARD and DARDs have accumulated experience in managing irrigation systems thus assuring some institutional sustainability. Information on the content of the annual IMC's business plans for O&M would have been informative. The new law on irrigation service fees was indicated in the PCR. However, limited information was provided to assess the project's impacts on farmers' earnings and their willingness/capacity to pay in the future. Finally, environmental sustainability can decrease the project's benefits over time if water resources availability is not guaranteed. The PCR did not provide information on these aspects, although impact and outcome indicators suggest that initial targets for water related services were achieved. The validation assesses the project likely sustainable, although risks exist for not being able to maintain the existing level of service.

### **III. OTHER PERFORMANCE ASSESSMENTS**

#### **A. Preliminary Assessment of Development Impact**

23. The PCR rated the project's development impact satisfactory. It presented evidence on the achievement of impact indicators as established in the DMF. The productivity of paddy increased to an average of 6.6 ton per hectare (t/ha) in 2017, suggesting that the 6.7 t/ha target for 2020 is likely to be achieved ahead of schedule. The cropping intensity increased to 2.22 crops per year in 2015, suggesting that the 2.24 crops per year target for 2020 is on the way to be achieved. The PCR stated that a shift to higher value crops (from rice to fruits and vegetables) also occurred in the project area. The reduction in flood damages to crops was acknowledged as another positive impact. The capacity building of the MARD, DARDs, and other entities operating the BHH system, together with the human capital formation on water resource management promoted by the WRU campus were considered to have medium- to long-term positive impacts.

24. This validation rates the project's development impact satisfactory based on the positive impacts on productivity of paddy and cropping intensity. Additional positive impacts are expected to come from the capacity building of both government agencies and WRU students. The introduction of higher value crops is likely to increase agricultural incomes and improved water resource management will increase resilience to extreme weather events.

#### **B. Performance of the Borrower and Executing Agency**

25. The PCR assessed the performance of the borrower and the executing agency satisfactory. It emphasized that the executing agency provided sufficient counterpart funds and adequate staff resources during implementation. It had extensive experience in implementing ADB-financed projects and technical capacity was proven for irrigation projects. The executing agency was also able to recover from the delays during the first 2 years and completed the activities by the original closing date. Coordination between the executing agency and the implementing agencies was effective, successfully building project ownership across implementation stakeholders. The PCR also highlighted that most loan covenants were complied with.

26. This validation notes some shortcomings from the executing agency during project preparation and implementation. Project implementation progress was slow at the beginning mainly due to delays in consultant mobilization, the relocation of the new WRU campus, and the long procurement process for some irrigation investments. This resulted in a project start-up delay of almost 2 years, which could have been anticipated. However, the delays did not affect the original loan closing date and procurement of services and goods financed by ADB was completed in the original timeframe. Financial closing was extended for 18 months due to the government's protracted procedures to approve final contract liquidations. This validation assesses the performance of the borrower and the executing agency satisfactory.

### **C. Performance of the Asian Development Bank and Cofinanciers**

27. The PCR rated the performance of ADB satisfactory. ADB fielded 12 missions from March 2011 to December 2016, indicating sufficient supervision of project preparation and implementation. ADB's responses to requests of the executing agency was timely and constructive, providing adequate support on procurement, disbursement, and safeguards matters. A good working relationship was developed with the executing agency and the co-financier. The PCR assessed the performance of AFD, the co-financier, as adequate. During implementation, AFD worked closely with ADB staff, conducting joint review missions. The activities financed by AFD were completed by April 2018.

28. This validation finds that although ADB's activities for design, supervision, and implementation seemed appropriate, some shortcomings were evident. Some of the project implementation delays could have been anticipated such as the relocation of the WRU's campus or procurement plans for consultants<sup>20</sup> and the pilot pumping stations. Technical support and supervision could have been provided in the initial application of social and environmental safeguards. These project design issues were solved without affecting the initial project physical implementation timeframe. Supervision was adequate. This validation assesses ADB performance satisfactory.

### **D. Others**

29. The PCR provided information on project procurement. A total of 19 consulting service package contracts and 32 goods, works, and related services contracts were procured under ADB financing. Some issues were noted with the structuring of the consulting services in many small packages, which took long to recruit. The piloting of an engineering procurement contract for one of the pumping stations faced difficulties as the MARD had no previous experience with this arrangement. The performance of consultants, contractors, and suppliers was considered satisfactory. Contract award projections were made annually; yet, achievement was low during the first 2 years of the project. The slow start-up and the long time it took to comply with readiness conditions were the major reasons for these delays.

---

<sup>20</sup> The PCR documented that too many small consulting services packages were included in the original procurement plan, contributing to the delays in project start-up. Footnote 2, para. 22; The PCR documented that the pilot engineering-procurement contract for Co Ngua pumping station "faced difficulties during procurement and execution because (i) MARD was not familiar with ADB's plant standard bidding document; (ii) joint ventures for engineering, procurement and construction (EPC) arrangements were uncommon in Viet Nam; and (iii) ADB and counterpart agencies interpreted work allocation and contractual obligations among the joint venture partners differently. Thus, it took a long time to prepare bidding documents, evaluate bids, and execute and liquidate the contract." Footnote 2, para. 25.

## IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

### A. Overall Assessment and Ratings

30. Overall, the PCR rated the project successful given that it was rated relevant, effective, less than efficient, and likely sustainable. This validation assesses the project successful based on the core criteria. The project was relevant as it was aligned with the country's and ADB's priorities and had an appropriate design, although the investment in WRU's expansion was not entirely aligned with the project's outcome. For the effectiveness rating, project outcomes and outputs were substantially achieved, albeit with some delay of about 1-2 years. The project earned a less than efficient rating, as the EIRR for the whole project was lower than 12%. The process was also delayed for more than two years. Likely sustainability was based on the agencies' long track-record in the management of irrigation schemes and the government's commitment to providing O&M funds. However, the changes in the regulatory framework of irrigation water pricing and water availability in the basin may be a risk in the future. The table summarizes the ratings.

**Overall Ratings**

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Effective	Effective	
Efficiency	Less than efficient	Less than efficient	
Sustainability	Likely sustainable	Likely sustainable	
<b>Overall Assessment</b>	<b>Successful</b>	<b>Successful</b>	
Preliminary Assessment of Impact	Satisfactory	Satisfactory	
Borrower and executing agency	Satisfactory	Satisfactory	Financial closing was delayed by 18 months.
Performance of ADB	Satisfactory	Satisfactory	
Quality of PCR		Less than satisfactory	Para. 35.

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

### B. Lessons

31. The main project-level lessons identified in the PCR are summarized as follows: (i) the liaison between an experienced executing agency, ADB and the provincial implementation agencies was an effective arrangement for project implementation and capacity building; (ii) the project procurement plan needs to be prepared in consultation with the executing agency and suitable selection methods and packaging should be considered based on the nature of the project and the implementation needs; (iii) advance actions could be clearly specified and adjusted, taking into account the existing government regulations to ensure project implementation readiness; (iv) the indicators chosen for the DMF needs to be easy to understand and implemented by the executing agency to allow for effective project monitoring and evaluation; and (v) the inclusion of vulnerable women-headed households in the consultations for land acquisition is a valuable mechanism to empower women through participation.

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

(i) **Sector-level lesson.** The introduction of participatory approaches and the transfer of management to IMCs for large irrigation schemes can promote sustainable irrigation services. These processes need to be accompanied by irrigation service fees and operational performance targets such that the financial sustainability of systems is guaranteed based on the revenue generated by the project rather than the government's transfer of funds. Capacity building is also needed to ensure all stakeholders (such as farmers and IMCs) understand these critical aspects to ensure a sustainable and adequate irrigation service provision.

(ii) **Results framework and methodology-level lesson.** It is important to have a clear results chain logic when designing the DMF to extract valuable lessons from the project. At the impact level, farmer's livelihoods (incomes and assets) and the status of water resources (water quantity and quality in the river basin) are critical aspects to be monitored. At the outcome level, information on farmers' use of irrigation water and changes in cropping patterns beyond cropping intensity provide valuable information on the mechanisms that result in project's benefits. Possible control groups need to be identified to measure benefits attributable to the project.

### C. Recommendations for Follow-Up

33. This validation builds on the key recommendations identified by the PCR and suggests the following: (i) the implementation of the regulation that introduces irrigation service fees and the effects on the potential generation of revenues should be monitored in the BHH system; (ii) the operational and financial performance of the IMCs should be monitored, including the provision of O&M funds from provincial governments; and (iii) the evolution on the student use of the new WRU campus should be monitored and compared with its total capacity and measures may need to be taken to promote student enrollment in the new campus.

## V. OTHER CONSIDERATIONS AND FOLLOW-UP

### A. Monitoring and Reporting

34. The PCR presented data collected through the project completion report mission and documented problems that arose with the use of a highly technical outcome indicator, which was difficult for the executing agency to monitor and resulted in incomplete monitoring. This validation notes the PCR's assessments on the limitations of the project monitoring and evaluation framework, and adds the following limitations of the DMF: (i) no metric was established to assess project's impact on the livelihoods (e.g., household incomes), equity (poverty rates) or the environment (water quality and pollution sources); (ii) a valid control group was not established to determine project attribution; (iii) indicators could have been included to better measure changes in cropping patterns, water use efficiency at the plot level, and crop sales; and (iv) additional indicators could have been included to measure the institutional capacity of water service providers in the area (e.g., number of staff trained, skills composition, etc.).

### B. Comments on Project Completion Report Quality

35. The PCR was detailed but did not properly discuss the environmental impacts as part of its environmental safeguards (para. 16). This validation notes the shortcoming on the economic analysis regarding the WRU component. An EIRR analysis and a least unit cost analysis were

not undertaken for the education facility component despite its investment portion (38%). The PCR did not offer an explanation for it (para. 19). There were some aspects in the PCR that could have been improved, as follows:

- (i) The information provided on consulting service inputs at project completion was inadequate.
- (ii) The documentation of the inputs used from the TA project and their contribution to project preparation could be more informative.
- (iii) The summary discussion of covenants was inconsistent with the analysis presented in the Appendix. In particular, the PCR did not mention the partial completion of some covenants.
- (iv) It failed to document some of the output indicators properly and could have provided more information in the calculation of the outcome indicator.
- (v) Additional analysis should have been provided on some of the weaknesses in safeguard related design (such as the differences in the number of affected people between appraisal and closing) and implementation (environmental impacts from agriculture and water that were not properly measured nor mitigated).
- (vi) Some methodological shortcomings were identified in the calculation of the EIRR for the efficiency analysis.
- (vii) Additional evidence could have been provided to support the sustainability rating.

36. In view of these deficiencies, this validation assesses the quality of the PCR less than satisfactory.

### **C. Data Sources for Validation**

37. Data sources for this validation were the PCR, the RRP, the government's PCR,<sup>21</sup> TA project documents (footnote 4), and back-to-office reports and aide memoire relating to ADB review missions. The Government Strategies and decisions (para. 12) and Viet Nam Country Partnership Strategies for 2007-2010 and 2016-2020 were also reviewed.

### **D. Recommendation for Independent Evaluation Department Follow-Up**

38. This validation recommends the elaboration of a Project Performance Evaluation Report (PPER) to observe project impacts and whether these are sustainable. The PPER should focus on assessing changes in household income level, agricultural productivity (including yields, prices and cropping patterns), water availability and use, flood damages, and poverty rates. The financial and operational performance of IMCs should also be analyzed, particularly in light of the introduction of the irrigation service fee. Environmental impacts such as changes in water quantity and quality in the basin should also be measured.

---

<sup>21</sup> Government of Viet Nam, Ministry of Agriculture and Rural Development. 2016. *Project Completion Report for Strengthening Water Management and Irrigation Systems Rehabilitation Project*. Hanoi.