

Ex-post Evaluation of the Hung Yen Wastewater Network and Treatment System Project

- Executive Summary -

December 2024

1. Project Overview

- This evaluation is an ex-post evaluation of the *Hung Yen Wastewater Network and Treatment System Project* in Vietnam. Its purpose is to objectively analyze the project's performance, effectiveness, and identify areas for improvement, providing evidence-based recommendations and strategic insights to inform the design and implementation of future development projects.
- The *Hung Yen Wastewater Network and Treatment System Project* involved the construction of a modern wastewater treatment facility in Hung Yen City, Hung Yen Province, located at the heart of the Red River Delta, funded by an EDCF development loan.
- According to the completion evaluation report, the project aimed to establish a modern wastewater treatment facility in Hung Yen City to mitigate environmental pollution and enhance the living conditions and public health of local residents. The project was expected to benefit around 40,000 residents across 7,000 households by treating wastewater from five districts within and surrounding the city.
- The project was implemented by the Hung Yen Provincial People's Committee, with the operation managed by the Hung Yen Urban Environment and Public Works JSC.
- The project was originally scheduled to take 45 months from the effective date of the loan agreement. However, delays in consultant selection, detailed design approval procedures, contractor selection, execution, and trial operations led to a 58-month delay, extending the total project duration to 103 months.
- The planned EDCF funding for the project, including contingencies, was USD 23,117 million at the time of appraisal. However, the actual expenditure amounted to USD 12,034 million, which is 52.1% of the initial loan ceiling.

2. Evaluation Overview

☐ Background and Purpose of the Evaluation

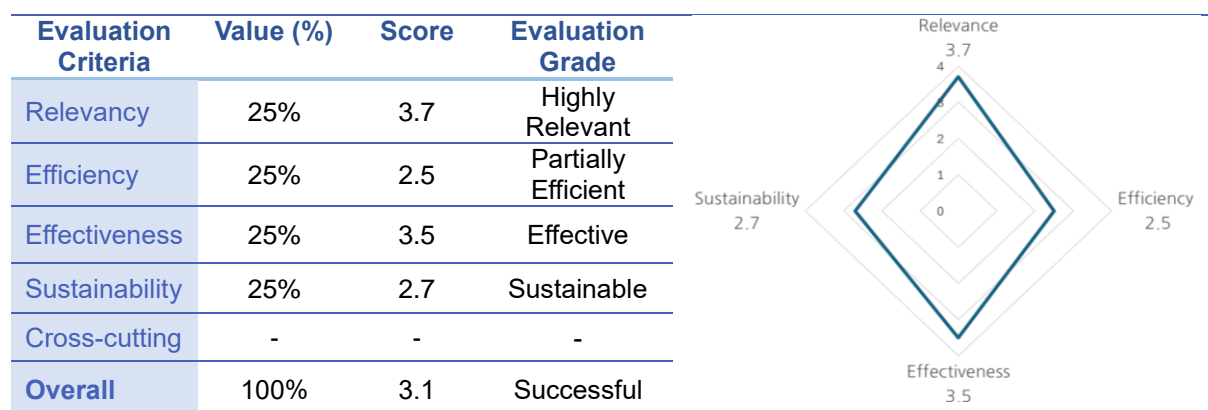
- Vietnam is the largest partner of EDCF funding, with 68 approved projects as of 2023, accounting for 10.7% of the total approved funding. It is also a key comprehensive strategic partner of South Korea. The water and sanitation sector, including wastewater management, is a priority area for EDCF support, ranking third in cumulative funding by September 2024, following transportation (39.0%) and healthcare (14.1%), with a share of 12.4%.
- While Vietnam is perceived as a country with abundant water resources, it faces a shortage of usable water due to rapid industrialization and urbanization. The detection of heavy metals in major rivers has highlighted the need for water resource protection. In response, the Vietnamese government has focused on expanding wastewater and pollution treatment infrastructure.
- This evaluation aims to provide an objective and scientific ex-post evaluation of the wastewater treatment project in Hung Yen City, Hanoi. It seeks to analyze the project's performance, effectiveness, and areas for improvement, offering actionable recommendations and implications for future similar projects.

☐ Evaluation Method

- The evaluation followed the principles outlined in the EDCF Evaluation Manual(December 2020) and the specific terms of reference, focusing on four primary criteria: relevancy, efficiency, effectiveness, and sustainability, with an additional cross-cutting issues as recommended by OECD DAC. The scope was adjusted based on practical considerations.
 - Impact Criterion: Given the timing of this evaluation (two years after project completion), it was difficult to fully assess the long-term effects and broader impact of the project. As a result, this criterion was excluded from the evaluation.
 - Coherence Criterion: Many elements of coherence overlapped with the sub-criteria of relevance, so coherence was excluded from the evaluation to avoid redundancy.

3. Results of Evaluation

- The project was evaluated as a successful project with an overall score of 3.1/4.0.



- **(Relevancy)** The project was rated 3.7/4.0 for relevancy, classified as ‘Highly Relevant.’
- This project is highly relevant to the Vietnamese government's national development policies and the EDCF support strategy. Interviews with Vietnamese government officials confirmed their recognition of the critical role wastewater treatment projects play in urban development and climate change adaptation.
 - The decision to use a combined sewer system for wastewater discharge, along with the installation of a wastewater treatment facility, pumping stations, and sewer lines, was deemed appropriate based on the local context. Additionally, the planned target year, treatment facility capacity, layout, treatment method, and sludge treatment plan were all well-designed and suitable for the project's objectives.
- **(Efficiency)** The project was rated 2.5/4.0 for efficiency, classified as ‘Partially Efficient.’
- The project duration extended by 58 months beyond the original plan due to delays in procurement, contractor selection, contract negotiations, advance payment guarantees, heavy rainfall, construction method adjustments, and issuance of acceptance certificates. Nevertheless, EDCF actively encouraged the Vietnamese government to advance the project, noting that such delays were typical in Vietnam due to the need for consensus-building within its decision-making framework.
 - Despite the extended timeline, the project demonstrated strong cost efficiency. Changes in construction methods and reduced land compensation expenses resulted in significant cost savings, with actual expenditures amounting to only 52.1% of the planned budget. This indicates commendable financial efficiency in budget execution.

- **(Effectiveness)** The project was rated 3.5/4.0 for effectiveness, classified as 'Effective.'
 - The daily average wastewater treatment capacity of the facility met the project's target, and the effluent quality achieved the target of 50 mg/L for BOD5. Environmental analyses conducted by the Hung Yen Provincial Department of Resources and Environment in August 2020 confirmed BOD5 levels between 34.4 and 41.1 mg/L, demonstrating compliance with project goals.
 - However, during the site investigation, it was found that the final pumping station had been non-operational since June 2024 due to equipment failure, halting wastewater flow to the treatment facility. Additionally, a damaged flowmeter has prevented effluent flow measurement since May 2024. The lack of post-completion water quality analyses further hindered the verification of sustained effluent quality targets.
 - To enhance operational effectiveness moving forward, it is recommended to establish a robust water quality monitoring system by installing dedicated laboratory and water analysis facilities. This will ensure continuous assessment and maintenance of effluent standards.

- **(Sustainability)** The project was rated 2.7/4.0 for sustainability, classified as 'Sustainable.'
 - The organizational structure and staffing for project maintenance were assessed as appropriate, demonstrating solid institutional arrangements and capacity for ongoing operations.
 - Challenges were identified in financial sustainability, primarily due to the absence of a dedicated budget for maintenance and repair of machinery and difficulties in wastewater fee collection. These challenges stem from limited awareness and resistance among local residents. Developing a long-term plan for wastewater fee collection is essential to ensure the continued quality of wastewater treatment and management in Hung Yen City.
 - The non-operational status of the final pumping station and other facilities since project completion highlights the need for operational improvements. To address this, it is recommended to provide additional specialized training for operational staff or implement post-operation management support to ensure the smooth and efficient functioning of the wastewater treatment facilities.

- **(Cross-Cutting Issues)** The project was assessed to have minimal environmental impact in accordance with the EDCF Environmental Impact Assessment Guidelines. The following additional observations were noted during the evaluation:
 - (Environment) The wastewater treatment facility contributed to environmental

improvements by enhancing effluent quality. However, its environmental benefits were diminished after June 2024 due to the equipment failure at the final pumping station, which halted wastewater treatment.

- (Vulnerable Groups) The wastewater treatment facility, which is the main output of the project, was built on agricultural land, preventing displacement of residents. Interviews with local residents confirmed that land acquisition and compensation were carried out smoothly and that the compensation amount was appropriate.
- (Gender Equality) Gender mainstreaming efforts, led by ADB as the co-financing partner, faced challenges due to the limited presence of female policymakers and field experts in the partner country. While some female residents recognized the facility's benefits, awareness was generally low, indicating a need for more inclusive outreach.

4. Lessons Learned and Recommendations

A. Lessons Learned

- ☐ The project is generally assessed to have achieved its performance objectives, albeit with partial achievements for some goals.
- ☐ **Success Factors**
 - The project demonstrated strong alignment with the Vietnamese government's economic development and regional planning strategies. It also aligned with Korea's national ODA strategy and EDCF priorities. Additionally, synergies created with aid organizations, such as the Asian Development Bank (ADB), significantly contributed to the project's success.
 - By aligning with EDCF priority country designations, Korea's ODA strategy with Vietnam, and the broader Korea-Vietnam partnership, the project serves as a critical example of sustainable urban infrastructure development. This alignment is especially noteworthy as water management projects gain prominence in addressing climate change adaptation needs.
 - The project design effectively considered the local context, such as frequent flooding and insufficient stormwater facilities. It also accounted for the capabilities and expertise of the implementing agencies, showcasing a tailored and context-sensitive approach.

- The Vietnamese Ministry of Finance designated the Hung Yen People's Committee as the executing agency, leveraging their familiarity with local conditions. Furthermore, the Hung Yen City People's Committee appointed the urban environmental development company to manage the project. This strategic selection ensured the sustainable operation and maintenance of essential urban infrastructure.

☐ **Areas for Improvement**

- The project planning phase included performance indicators that were challenging for the implementing agency to measure and monitor effectively after project completion. This limitation hindered the comprehensive evaluation of project performance. For future projects, it is recommended to establish practical and measurable indicators, supported by regular water quality testing and necessary laboratory facilities.
- Despite collaborative efforts between EDCF and the Vietnamese government to ensure efficient project implementation, significant delays occurred, extending the project duration substantially. For future initiatives, enhanced coordination between the EDCF's local offices and the Vietnamese government is crucial to streamline decision-making processes and improve monitoring efficiency.

B. Recommendations

☐ **EDCF**

- Utilize EDCF's Post-Completion Support Program to refurbish and replace faulty equipment, ensuring the wastewater treatment facilities operate effectively. Priority should be given to repairing the final pumping station. Additionally, provide maintenance training for key technical staff to enhance operational efficiency.
- For future projects, measures should be implemented to ensure sustainable maintenance and utilization of facilities post-completion. This could involve training specialized technicians, ensuring spare parts availability, and considering the deployment of Korean technicians for operational support and technology transfer. Alternatively, maintaining a reserve of spare parts and consumables from Korean or third-country suppliers could also be explored.
- To enhance the sustainability and effectiveness of projects, it is important to connect with domestic non-grant organizations with expertise in the field. Offering sufficient education

periods for operation and maintenance, along with organizing technical cooperation seminars and workshops, will help meet the partner country's long-term needs.

- Wastewater treatment facilities not only have a positive environmental impact but also symbolize modernization and development. It is essential to strategically promote Korea's contribution to Vietnam's modernization by emphasizing the role of EDCF in the construction of such facilities.
- Since wastewater treatment is a key area for urban infrastructure improvement, especially in the context of climate change, future projects should incorporate EDCF's "Climate Change Impact Response System Guidelines." This approach will promote sustainable development in wastewater treatment, reduce greenhouse gas emissions, and improve energy self-sufficiency.

□ Partner Country's Implementing Agencies

- Vietnam is still in the early stages of developing its wastewater infrastructure, and there is a need to strengthen related administrative systems. To ensure systematic operation and enhance institutional capacity, it is essential to establish a comprehensive wastewater management framework that includes specialized agencies, operation and maintenance of wastewater treatment facilities, robust data management systems, and an effective fee collection mechanism.
- To improve the sustainability of wastewater treatment and management in Hung Yen City, it is imperative to operationalize the wastewater fee collection system introduced in August 2012. This system will help secure adequate funding for ongoing facility operation and maintenance.
- Given the lack of awareness among local residents regarding the importance of wastewater treatment, it is crucial to implement public education campaigns on water quality issues. Additionally, engaging local communities in the operation and maintenance of wastewater facilities will foster greater participation and sustainability.
- As the importance of wastewater treatment projects grows in urban development and climate change adaptation, it is vital for the Vietnamese government to establish a wastewater management education system. This system should focus on developing technical expertise for the operation and maintenance of wastewater facilities, especially in the context of ongoing and future projects funded by agencies such as EDCF, ADB, and the World Bank.