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The World Bank

Report No: ICR00003346

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(P082295; P122940; P090374)

IDA-42530; IDA-48850
IN THE AMOUNT OF XDR 126.4 MILLION
(US$190 MILLION EQUIVALENT)

GRANT No. TF056325
IN THE AMOUNT OF US$4,616,400

AND

A GEF GRANT No. TF094335
IN THE AMOUNT OF US$5 MILLION

TO THE

SOCIALIST REPUBLIC OF VIETNAM

FOR A

COASTAL CITIES ENVIRONMENTAL SANITATION PROJECT

May 30, 2015

Water Global Practice
Vietnam Country Management Unit
East Asia and Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective, April 14, 2015)

US$1.00 = VND 15,969	May 31, 2006 at Appraisal
US$1.00 = VND 21,246	November 30, 2014 at Closing
US$1.48703= SDR 1.00	May 31, 2006 at Appraisal
US$1.367590 = SDR 1.00	April 14, 2015

FISCAL YEAR
[January 1 – December 31]

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AF	Additional Financing
BOD	Biochemical Oxygen Demand
CAS	Country Assistance Strategy
CBA	Cost-benefit Analysis
CCESP	Coastal Cities Environmental Sanitation Project
CEPT	Chemically Enhanced Primary Treatment
CMC	Construction Management Consultant
CPC	City People's Committee
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
ELC	Education Learning Center
FIRR	Financial Internal Rate of Return
FM	Financial Management
GEF	Global Environment Fund
GoV	Government of Vietnam
HCP	Healthy City Partnership
HH	Household
ICR	Implementation Completion and Results Report
IDA	International Development Association
IEC	Information, Education, and Communication
IEG	Independent Evaluation Group
LCA	Least-cost Analysis
M&E	Monitoring and Evaluation
MoC	Ministry of Construction
MoE	Ministry of Education
MoF	Ministry of Finance
MPI	Ministry of Planning and Investment
NGO	Nongovernmental Organization
O&M	Operation and Maintenance

PAD	Project Appraisal Document
PAP	Project Affected People
PDO	Project Development Objective
PHRD	Policy and Human Resources Development Fund
PPC	Provincial People's Committee
PMU	Project Management Unit
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition
SWM	Solid Waste Management
TTL	Task Team Leader
URENCO	Urban Environmental Company
UWC	Urban Works Company
VAT	Value Added Tax
VND	Vietnamese Dong
WSDC	Water Supply and Drainage Company
WWTP	Wastewater Treatment Plant

Regional Vice President:	Axel van Trotsenburg
Country Director:	Victoria Kwakwa
Practice Manager:	Ousmane Dione
Project Team Leader:	Hung Duy Le
ICR Team Leader:	Tesfaye Bekalu

VIETNAM

COASTAL CITIES ENVIRONMENTAL SANITATION PROJECT

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A. Basic Information			
Country:	Vietnam	Project Name:	Coastal Cities Environmental Sanitation Project
Project ID:	P082295; P122940; P090374	L/C/TF Number(s):	IDA-42530; IDA-48850; TF056325; TF094335
ICR Date:	12/04/2014	ICR Type:	Core ICR
Lending Instrument:	Specific Investment Loan	Borrower:	SOCIALIST REPUBLIC OF VIETNAM
Original Total Commitment: (Credits and Grants)	International Development Association (IDA): US$190.243 million Policy and Human Resources Development Fund (PHRD): US$4.616 million Global Environment Fund (GEF): US$5 million	Disbursed Amount:	IDA:US$185.53 million PHRD: US$4.2 million GEF: US$4.3 million
Environmental Category: A		**Focal Area**: I	
Implementing Agencies: Project Management Unit Nha Trang Subproject Project Management Unit Quy Nhon Subproject Project Management Unit Dong Hoi Subproject			
Co-financiers and Other External Partners: Japanese PHRD Grant GEF Grant			

B. Key Dates

Coastal Cities Environmental Sanitation Project - P082295/P122940

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	05/07/2004	Effectiveness:	06/15/2007	06/15/2007
Appraisal:	01/17/2006	Restructuring(s):	3/29/2011	3/29/2011
Approval:	12/19/2006	Midterm Review:	12/31/2010	12/10/2010
		Closing:	11/30/2014	11/30/2014

VN-GEF-Coastal Cities Project - P090374

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	05/07/2004	Effectiveness:	09/01/2009	01/04/2010

Appraisal:	06/03/2008	Restructuring(s):	No	No
Approval:	06/23/2009	Midterm Review:	12/31/2010	12/10/2010
		Closing:	12/31/2014	12/31/2014

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes	Moderately Satisfactory
GEO Outcomes	Moderately Satisfactory
Risk to Development Outcome	Moderate
Risk to GEO Outcome	None
Bank Performance	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Moderately Satisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	**Overall Borrower Performance:**	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

Coastal Cities Environmental Sanitation Project - P082295

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry	None
Problem Project at any time (Yes/No):	No	Quality of Supervision	None
DO rating before Closing/Inactive Status	Moderately Satisfactory		

VN-GEF-Coastal Cities Project - P090374

Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry	None
Problem Project at any time (Yes/No):	No	Quality of Supervision	None
GEO rating before Closing/Inactive Status	Moderately Satisfactory		

D. Sector and Theme Codes

Coastal Cities Environmental Sanitation Project - P082295

	Original	Actual
Sector Code (as % of total Bank financing)		
Flood protection	18	18
Sanitation	3	3
Solid waste management	12	12
Subnational government administration	7	7
Wastewater Collection and Transportation	60	60

Theme Code (as % of total Bank financing)		
City-wide Infrastructure and Service Delivery	29	29
Municipal governance and institution building	14	14
Other social development	14	14
Pollution management and environmental health	29	29
Water resource management	14	14

VN-GEF-Coastal Cities Project - P090374

	Original	Actual
Sector Code (as % of total Bank financing)		
Public administration- water, sanitation and flood protection	10	10
Wastewater Treatment and Disposal	90	90

Theme Code (as % of total Bank financing)		
Environmental policies and institutions	4	4
Pollution management and environmental health	96	96

E. Bank Staff

Coastal Cities Environmental Sanitation Project - P082295

Positions	At ICR	At Approval
Regional Vice President:	Axel van Trotsenburg	James Adams
Country Director:	Victoria Kwakwa	Klaus Rohland
Practice Manager:	Ousmane Dione	Keshav Varma
Project Team Leader:	Hung Duy Le	William Kingdom
ICR Team Leader:	Tesfaye Bekalu Wondem	
ICR Primary Author:	Tesfaye Bekalu Wondem	

VN-GEF-Coastal Cities Project - P090374		
Positions	**At ICR**	**At Approval**
Regional Vice President:	Axel van Trotsenburg	James Adams
Country Director:	Victoria Kwakwa	Victoria Kwakwa
Practice Manager:	Ousmane Dione	Hoonae Kim
Project Team Leader:	Hung Duy Le	William Kingdom/Sudipto Sarkar
ICR Team Leader:	Tesfaye Bekalu Wondem	
ICR Primary Author:	Tesfaye Bekalu Wondem	

F. Results Framework Analysis

Project Development Objectives
The original project development objective (PDO) was 'To improve the environmental sanitation in the project cities in a sustainable manner and thereby enhancing the quality of life for city residents'.

Revised Project Development Objectives
During the additional finance processing in March 2011, the project was partially restructured to cover the price escalation as a result of the 2008 global financial crisis and there were a few changes in the scope of investments under each component. However, the original PDO was not revised during project implementation.

Global Environment Objectives
The original Global Environmental Objective (GEO) was 'To pilot and promote the replication of a new, more efficient wastewater treatment technology, which would contribute to improving in an integrated manner the health and habitat conditions of globally significant marine and coastal ecosystems along the coastline of Vietnam'.

Revised Global Environment Objectives
The original GEO remained unchanged during project implementation.

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	The number of people benefiting from reduced incidence and severity of flooding			
Value (quantitative or qualitative)	0	41,800	153,346	456,247
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	Revised target exceeded by 297%.			
Indicator 2:	Total number of people whose solid waste will be collected			
Value (quantitative or	473,000	678,900	729,898	821,056

qualitative)				
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	Compared to the revised target, the achievement is 112% and has exceeded the target.			
Indicator 3:	The number of people gaining access to improved sanitation			
Value (quantitative or qualitative)	0	180,000	768,000	821,056
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	Access to improved sanitation including solid waste collection, wastewater collection and treatment, and household (HH) sanitation facilities provided by the project. The achievement is 112% and exceeded the target.			
Indicator 4:	The proportion of wastewater service providers' costs, including loan repayments, recovered from user fees			
Value (quantitative or qualitative)	43	100	–	176
Date achieved	12/19/2006	11/30/2014	–	11/30/2014
Comments (incl. % achievement)	The above figures are the average of all three cities. While Dong Hoi and Nha Trang achieved the targets (221.5% and 222%, respectively), for Quy Nhon, it is 84.6%. The overall average achievement is 176% and exceeded the target.			
Indicator 5:	The proportion of solid waste providers' costs, including loan repayments, recovered from user fees			
Value (quantitative or qualitative)	56.7	100	–	90.4
Date achieved	12/19/2006	11/30/2014	–	11/30/2014
Comments (incl. % achievement)	The above figures are the average of all three cities. Dong Hoi and Nha Trang exceeded the targets (105% and 110%, respectively), and for Quy Nhon, it is less than the target (56.2%). The overall average achievement stands at 90.4%.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	The number of people with wastewater collected and disposed of through piped networks			
Value (quantitative or qualitative)	0	-	476,690	104,839
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	This indicator was included as part of the Additional Financing. The target was overestimated as the assumptions on the speed with which households would connect to the network proved too optimistic. The target was only partially achieved, but there is a clear trend of an increasing annual connection rate supported by the promotion			

	campaigns and outreach activities implemented under the project. Wastewater from households using septic tanks (and thus not yet connected through the piped network) is also being collected and transported for disposal at the WWTPs.			
Indicator 2:	The BOD removed by treatment plant (tons/year)			
Value (quantitative or qualitative)	0	–	1072.5	376.3
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	This target was identified during the Additional Financing and overestimated as assumptions regarding the composition of the waste water were not accurate. However given that the effluent quality that meets the Vietnamese standard for improving health and Habitat conditions, the target is considered as fully achieved.			
Indicator 3:	The amount of solid waste that will be disposed to sanitary landfills (kilotons)			
Value (quantitative or qualitative)	0	164	321.5	183.4
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	This target is was overestimated and was partially achieved.			
Indicator 4:	Project affected people (PAP) HHs that have received (a) compensation as stipulated in the Resettlement Action Plan (RAP) before the assets are taken from them; (b) relocation, transition, and subsistence allowances; and (c) incomes restored to pre-project levels (Unit: HHs).			
Value (quantitative or qualitative)	0	–	1,899	1,247
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	This indicator was not included in the Results Framework at the appraisal stage and was added at the additional financing (AF) processing. The achieved value is the cumulative actual HHs affected by the project.			
Indicator 5:	The numbers of poor people that access and repay loans to improve HH sanitation (Unit: HHs)			
Value (quantitative or qualitative)	0	2,488	5,600	8,236
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	The achievement is 147% and exceeded the target.			
Indicator 6:	The number of pupils gaining access to improved sanitation facilities in their schools			
Value (quantitative or qualitative)	0	32,000	44,800	66,516
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	The achievement is 148% and exceeded the target.			

Indicator 7:	Value of capacity-building contracts awarded in accordance with the agreed procurement plan (US$1,000)			
Value (quantitative or qualitative)	0	0	27,372	24,605
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	Component 6 is designed to have a number of interrelated capacity-building activities divided into smaller contracts. All the listed capacity-building activities were completed and the targets are considered as fully achieved.			

(c) GEO - Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Quantity of biochemical oxygen demand (BOD) removed by the treatment process (%).			
Value (quantitative or qualitative)	0	95		65
Date achieved	08/12/2009	11/30/2014		11/30/2014
Comments (incl. % achievement)	This target was overestimated at the beginning as the experience of BOD removal for chemically enhanced primary treatment (CEPT) is in the range of 50–80% removal (Metcalfe and Eddy). The BOD removal of 65% is within the range and the target is considered as fully achieved.			
Indicator 2:	Quantity of suspended solids removed by the treatment process (%)			
Value (quantitative or qualitative)	0	85		85
Date achieved	12/19/2006	11/30/2014		11/30/2014
Comments (incl. % achievement)	Assuming all the suspended materials are removed with the treated water, the target is fully achieved.			
Indicator 3:	Quantity of nutrient (N and P) removed by the treatment process (m^3/day)			
Value (quantitative or qualitative)	0	7,000	13,000	13,000
Date achieved	12/19/2006	11/30/2014	11/30/2014	11/30/2014
Comments (incl. % achievement)	Assuming all N and P in the treated water are fully removed, the result is fully achieved.			
Indicator 4:	Volume of treated wastewater (m^3/day).			
Value (quantitative or qualitative)	0	7,000		13,000
Date achieved	12/19/2006	11/30/2014		11/30/2014

Comments (incl. % achievement)	This indicator is applied only for the CEPT module in the Nhon Binh wastewater treatment plant (WWTP) financed by the GEF in the Quy Nhon subproject. The result is fully achieved.			
Indicator 5:	Number of HHs connected to the CEPT plant			
Value (quantitative or qualitative)	0	12,000	12,000	13,330
Date achieved	12/19/2006	11/30/2014		11/30/2014
Comments (incl. % achievement)	The CEPT plant benefited more than 60,000 people in Quy Nhon City, that is, about 13,300 HHs. The achievement is 110% and exceeded the target.			

G. Ratings of Project Performance in ISRs

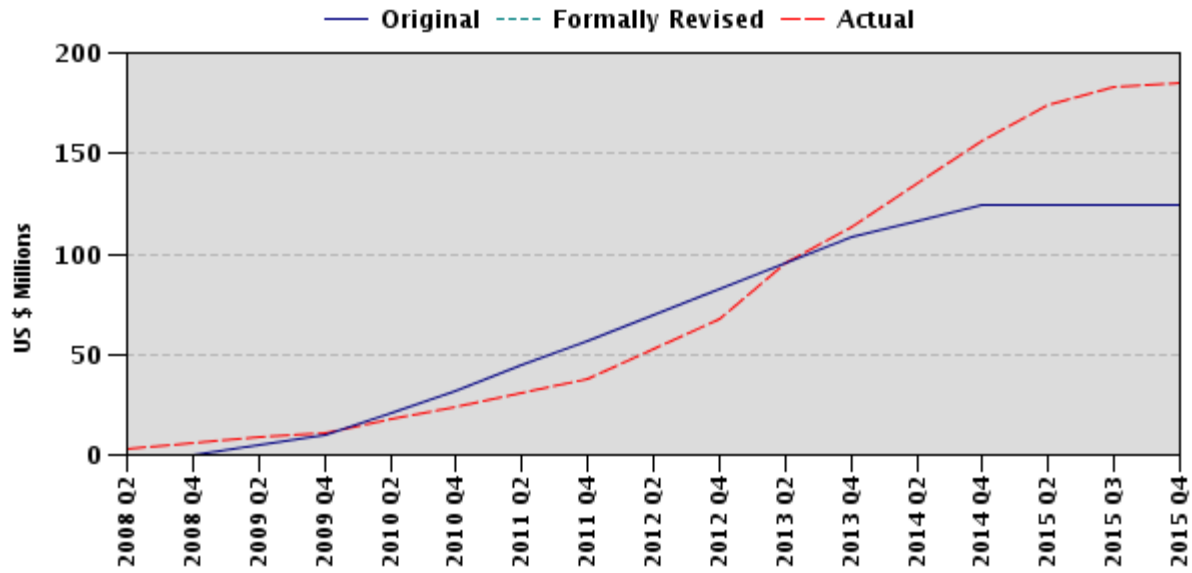
No.	Date ISR Archived	DO	GEO	IP	Actual Disbursements (US$, millions)	
					CCESP	GEF
1	06/07/2007	S	–	MS	0.00	0.00
2	06/26/2008	S	–	S	6.15	0.00
3	03/12/2009	MS	–	MS	9.61	0.00
4	03/11/2010	MS	–	MS	19.85	0.00
5	11/02/2010	S	–	MS	27.83	0.35
6	02/08/2011	S	–	S	32.26	0.00
7	02/03/2012	MS	MS	MS	57.80	1.82
8	12/01/2012	MS	MS	MS	91.79	2.67
9	06/26/2013	S	MS	MS	113.66	3.66
10	02/06/2014	S	MS	MS	137.20	4.23
11	11/24/2014	MS	MS	MS	174.31	4.34

H. Restructuring (if any)

Restructure Date	Board Approved PDO change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring (US$, millions)	Reason for Restructuring & Key Changes Made
		DO	IP		
03/29/2011	No	S	S	30.1	Approved AF of SDR 42.5 million without extension of closing date of both credits

I. Disbursement Profile

P082295



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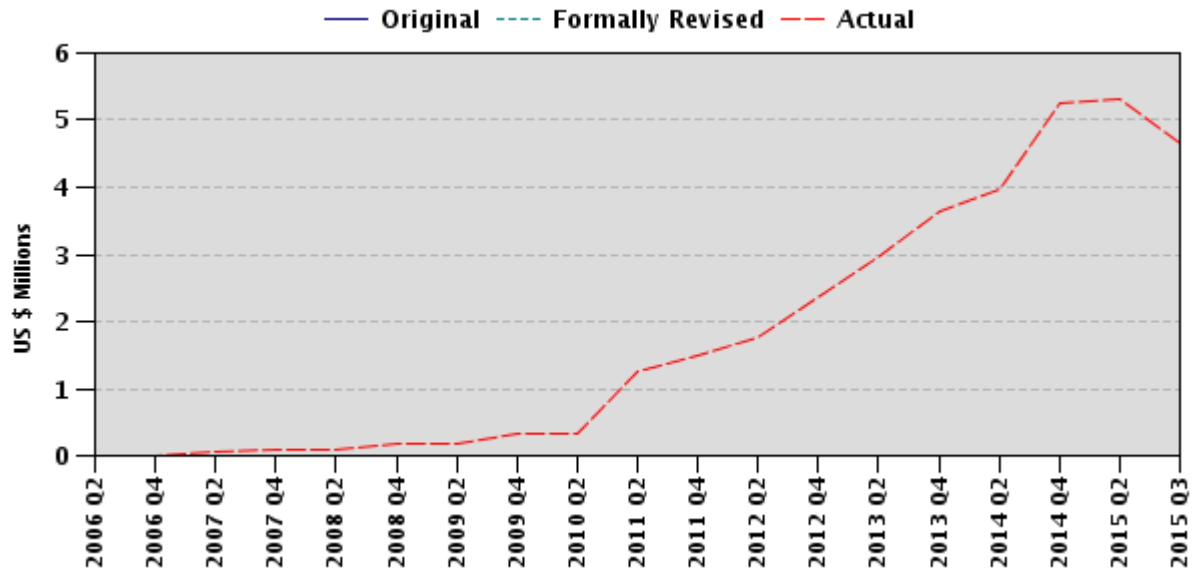


1. Project Context, Development and Global Environment Objectives, and Design

1.1 Context at Appraisal

Country Background

1. The proportion of people living in urban areas in Vietnam by the time of appraisal was one of the lowest in East Asia, comprising around 23 percent of the total population, or 19 million people. However, Vietnam is one of the countries with the fastest rate of urbanization in the East Asia and Pacific region, with the urban share of the population expected to grow to 50 percent by 2025. Rapid urban growth is largely due to urban expansion and rural-urban migration as cities play a more important role in economic growth. This contributed to challenges in service delivery and infrastructure in the cities, in general, and specifically, for liquid and solid wastes and drainage.

2. The government's sanitation sector strategy was developed in the mid-1990s with the assistance of development partners, including the World Bank. The strategy diagnosed major challenges for improving service delivery in urban areas: under-investment in sanitation works, low coverage and lack of wastewater treatment facilities, excessive subsidies for sanitation recurring costs, and an ineffective administrative structure. In response, the sector strategy sought to (a) rehabilitate existing networks and facilities; (b) develop policies and institutions to promote a more market-oriented system; (c) develop, through public education, better awareness on the importance of more effective sanitation services; and (iv) gradually phase out subsides and replace them with user charges. The strategy included measures to decentralize septage and solid waste collection to the local level, commercialize public utilities, and encourage more cost recovery for the service providers (Urban Environmental Companies [URENCOs] and/or Water Supply and Drainage Companies [WSDCs]).

Sector Background

3. At the time of appraisal, urban wastewater and storm waters were mostly discharged without treatment through combined systems to nearby watercourses. Due to lack of maintenance, flooding was common in urban centers and large sections of these combined networks, constructed decades ago, needed rehabilitation. For sanitation, the majority of households (HHs) were investing in septic tanks or latrines, depending on the location, and there were a limited number of wastewater treatment plants (WWTPs) in the country, all of them in the major cities.

4. At the time of appraisal, the country was producing around 15 million tons of solid waste per year. Solid waste was disposed of mainly to uncontrolled open dumping sites, with few sanitary landfills. Solid waste collection was estimated as serving some 70 percent of the urban population. Revenues from solid waste management (SWM) user fees covered on average only 58 percent of operation and maintenance (O&M) costs, requiring government to subsidize environmental and water companies.

5. Urban drainage master plans did not pay adequate attention to flood control, allowing uncontrolled development to encroach on the natural routes required for effective discharge and storage of floodwater.

Rationale for Bank Assistance

6. The Bank had been financing similar projects in the past, for example, the Three Cities Sanitation Project (P051553) covering Da Nang, Hai Phong, and Quang Ninh. As the urban sanitation sector was in its infancy, the Bank was well positioned to bring regional and international best practices into project design and thus further develop or consolidate the urban environmental policy agenda technically (sewerage, wastewater treatment, and SWM); financially (cost recovery charges); and institutionally (efficient and effective service providers).

7. The International Development Association (IDA) has also mobilized resources to further advance the sanitation agenda in Vietnam. The Global Environment Fund (GEF) had agreed to support the demonstration of a new, and appropriate, treatment technology in Quy Nhon while a Policy and Human Resources Development Fund (PHRD) cofinancing grant was to build the capacity of service providers or other relevant agencies and raise public awareness of the project.

8. The project was in line with the Country Assistance Strategy (CAS) at the time of appraisal. The last CAS, which links to the Comprehensive Poverty Reduction and Growth Strategy of the government of Vietnam (GoV), was completed in September 2002. The CAS described the Bank's support for each objective and the project supported the following parts of the CAS:

- Enhancing environmental sustainability (Subtheme 2.6) through improved sewerage, drainage, and solid waste services
- Public administration reform (Subtheme 3.3) through improved institutional arrangements and increased financial sustainability of service providers
- Reducing deficiencies in basic urban services (key sectoral issue) through provision of access to sanitation services

9. Moreover, the CAS Progress Report (February 19, 2004) identified the need for increased investment in infrastructure to help attain the twin objectives of poverty alleviation and growth.

1.2 Original Project Development Objectives (PDO) and Key Indicators

10. The PDO was to improve the environmental sanitation in the project cities in a sustainable manner and thereby enhancing the quality of life for city residents.

11. These were the key indicators identified to measure progress toward achieving the PDO:

- Number of people benefiting from reduced incidence and severity of flooding
- Number of people whose solid waste will be collected
- Number of people gaining access to improved sanitation
- Proportion of wastewater service providers' costs, including loan repayments, recovered from user fees
- Proportion of solid waste providers' costs, including loan repayments, recovered from user fees

1.3 Original Global Environment Objectives (GEO) and key indicators

12. The original GEO was to pilot and promote the replication of a new, more efficient wastewater treatment technology, which would contribute to improving in an integrated manner the health and habitat conditions of globally significant marine and coastal ecosystems along the coastline of Vietnam. The outcome indicators for the GEO include (a) quantity of suspended solids removed by the treatment process; (b) quantity of nutrient (N and P) removed by the treatment process; and (c) number of HHs connected to the chemically enhanced primary treatment (CEPT) plant.

1.4 Revised PDO and Key Indicators, and reasons/justification

13. Though the original PDO was not revised during project implementation, during the Additional Financing (AF) processing in 2011, some of the result indicators were updated, some targets were added, and additional important core indicators were identified and included.

1.5 Revised GEO and Key Indicators, and reasons/justification

14. The original GEOs remained unchanged during project implementation.

1.6 Components (US$ at appraisal, *US$ actual*)

15. **Component 1: Flood Control, Drainage, and Wastewater Collection (US$91.147 million, *US$118.905 million*).** This component was intended to improve the collection of sewage by building new sewers and interceptors, rehabilitating existing sewers, and transporting the wastes to new treatment plants. Drainage would be provided by rehabilitating existing drains, constructing new drains where regular flooding occurs, and enhancing the capacity of flood retention ponds. Existing combined sewer system were to be used to the greatest extent possible in the central urban core areas with high population densities. Interceptor sewers would be constructed to pick up flows that currently discharge at a number of locations along the seafront or into rivers.

16. **Component 2: Wastewater Treatment Plants (US$39.062 million, *US$42.744 million*).** New WWTPs would be built during Phase 2 of the project to meet Vietnamese national effluent standards. In Nha Trang, two plants would be constructed, one to serve the urban core and a second to serve the southern residential area. In Quy Nhon, two WWTPs would serve the old city area and a third would serve the southwestern area some 15 km from the city core. In Dong Hoi, a single new treatment plant serving the city would be constructed and the existing plant at the city hospital would be rehabilitated.

17. **Component 3: Solid Waste Management (SWM) (US$27.642 million, *US$18.355 million*).** The collection of solid wastes would be improved and waste would be transported to new or existing sanitary landfills for final disposal. In Nha Trang, a new sanitary landfill would be constructed at Luong Hoa and the existing Ru Ri dump would be safely closed. In Quy Nhon, the existing landfill at Long My would be rehabilitated and expanded. In Dong Hoi, a sanitary landfill was under development with bilateral funding and the project would provide additional equipment or functionality as determined during implementation.

18. SWM collection equipment would be financed for all cities and transfer stations/collection points were planned for Nha Trang and Quy Nhon. The amount and phasing of the SWM equipment would follow demand over the project life and would take account of possible public-private partnership activities. In Dong Hoi, the facilities for safe disposal of medical waste would be constructed. These would be operated by the Urban Works Company (UWC) under contract with the hospital.

19. **Component 4: Resettlement (US$16.074 million, *US$22.778 million*).** Construction of services (roads and utilities) to new housing plots for relocation of project affected people (PAP) in Quy Nhon and Nha Trang.

20. **Component 5: Household Revolving Fund and School Sanitation Program (US$2.24 million, *US$2.634 million*).** Revolving funds would be established in each city to provide small loans for construction of HH sanitation facilities. The funds would be managed by the Women's Union according to the procedures set out in the household revolving fund manual. Eligibility criteria and loan terms and conditions were designed to ensure that low-income HHs were able to access and pay back the loans.

21. Water supply and sanitation facilities would be built at city schools in response to demand from those schools. Demand assessment and proposed investment for different types of schools would follow the design standards set by the Ministry of Education (MoE).

22. **Component 6: Capacity Building and Project Implementation (US$27.372 million, *US$24.605 million*).** *Support to Project Management Units (PMUs) in project implementation*, including (a) overall project management support; (b) preparation of Phase 2 feasibility studies, detailed engineering designs, and bid documents; (c) construction management supervision for Phases 1 and 2; (d) independent safeguards monitoring; and (e) financial auditing. Equipment to support the PMUs would also be financed.

23. *Capacity building for the service providers and city departments*, including (a) an institutional study to establish long-term structure and staffing for service providers; (b) purchase, installation and commissioning of financial management (FM), management information, and billing/collection software for the service providers and training in its use; (c) joint development, with other city departments, of procedures and plans to support operation and management of new or rehabilitated project facilities; (d) technical and managerial training to the service providers, including in O&M of the facilities and in financial planning; (e) workshops and study tours; and (f) miscellaneous other capacity-building activities.

24. *Capacity building for design and implementation of a Healthy City Partnership (HCP)*, including (a) development of the framework for design and implementation of the HCP; (b) implementation of the HCP, including training and public awareness, small investments in goods and works, and small grants; and (c) preparation and delivery of public awareness campaigns to support sanitation behavior change and explain benefits from the project and its costs.

25. The GEF had three components: (a) constructing and operating CEPT plants; (b) raising public awareness and replicating project achievements; and (c) monitoring and evaluation (M&E).

1.7 Main Beneficiaries

26. The project was designed to benefit the population of (a) Nha Trang, located in the south and the capital of Khanh Hoa Province with a total population of 350,000 in 2002; (b) Quy Nhon, located in the south-central region of Vietnam and the capital city of Binh Dinh Province with a total population of 252,000 in 2003; and (c) Dong Hoi in the north and the capital of Quang Binh Province with a total population of 98,000 in 2003.

1.8 Revised Components

27. The components of the project remained the same.

1.9 Other significant changes

28. The unusually high inflation in the construction sector in Vietnam during 2007–2008 led to increased costs of key construction inputs such as cement and labor. This combined with underestimated costs (due to the counterparts use of national construction cost norms that were lower than the market reference) at appraisal and subsequent technical design changes not anticipated at the time of project appraisal led to a financing gap, requiring an AF. During the processing of the AF, some adjustments were made, including revision of the scope of investments in all three subprojects: (a) WWTP of the Dong Hoi hospital was cancelled; (b) solid waste transfer stations/collection points in Quy Nhon and Nha Trang were not included; (c) the capacity of the WWTPs and landfill in Quy Nhon have been reduced; and (d) the drainage and sewer collection and WWTP in the northern catchment of Nha Trang was removed.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

2.1.1 Soundness of Background Analysis and Strategic Context

29. The background analysis addressed the conditions in Vietnam and international experience at the time of appraisal and incorporated lessons learned. These included the need to enhance technical and managerial capacity of service providers and inclusion of extensive capacity building to the service providers to meet these new demands. The analysis also took into account the strong link between financial sustainability and user fees, recognizing that benefits from sanitation infrastructure significantly increase when beneficiaries are exposed to Information, Education, and Communication (IEC) programs on HH sanitation practices. This analysis was sound and project interventions were planned to addresses these issues through (a) public awareness campaigns about system benefits; (b) financing of tertiary lines close to the houses; and (c) applying wastewater fees to all HHs with water connections, thus reducing disincentives to connect to the system once it is available.

30. Decisions to adopt decentralized project implementation at a city level, inclusion of capacity building for the PMUs as part of the PHRD-funded preparation activity, and careful preparation of bidding documents showed prudent attention to lessons learned from previous Bank

projects. The financial analysis correctly demonstrated the need for tariffs to increase gradually to cover O&M costs.

2.1.2 Adequacy of Project Design

31. **Choice of appropriate wastewater treatment technology.** Based on the options and feasibilities studies prepared for each subproject, appropriate technology was selected in accordance with the cities' specific needs. Dong Hoi had chosen a lagoon and aeration pond instead of a more complex technology. This has the capacity to be upgraded at a later stage either to a complex system or to add more lagoons in line with the expected growth in the city. An oxidation ditch process was applied in Quy Nhon and Nha Trang, appropriate to the available land in these cities.

32. The project recognized the challenges associated with the sudden introduction of cost recovery and introduced an appropriate gradual approach for this. Phasing of implementation into two parts was another strategic design choice.

33. The project design also included the use of the GEF grant to pilot and promote the replication of a new and more efficient wastewater treatment technology in Quy Nhon. This grant, together with the project resources, helped the construction of a 14,000 m^3/day flow capacity CEPT at Nhon Binh.

34. Though the project is likely to have a number of intangible benefits (cleanliness, city beautification, improved esthetics, and others), the outcome indicators which quantified the number of people benefiting from reduced incidence of flooding, regular collection and disposal of solid waste, access to improved sanitation, and access to a revolving fund to improve HH sanitation were appropriate. They adequately capture the improvements in environmental sanitation that were the focus of the project.

2.1.3 Project Preparation and Implementation Time Frame

35. The project was divided into two phases: Phase 1 was planned to implement about 30 percent of the total investments, with the detailed design and bidding documents available before the Board approval date. Phase 2 was planned to include design and implementation of the remaining 70 percent of the project which covered more technically complex components for the sanitary landfills and WWTPs, as well as for the land compensation and hand over of sites. Maximum efforts were provided by both participating cities and the Bank task team for successful delivery of Phase 2 by the original closing date of November 30, 2014. Though different activities in the three project cities could be done in parallel, for a project that undertook both comprehensive capacity building and complex contracts, an implementation period from November 2006 (appraisal) to November 2014 (closing) seems an appropriate time frame.

2.1.4 Adequacy of Government Commitment

36. The Government demonstrated commitment to the project through the timely provision of counterpart funds, the establishment of capable PMUs, and willingness to issue legislation to take forward the cost recovery agenda. The early preparation of prefeasibility studies for each city and

approval by the prime minister's office were strong signals right from the beginning of ownership of the project by the national and provincial authorities. The three participating provinces took a decisive lead on tariff reform by issuing provincial decisions for increase of wastewater and solid waste tariffs. All the bidding documents and bid evaluation reports (subject to prior Bank review) were reviewed and approved by the Bank in a timely manner.

2.1.5 Assessment of Risks

37. The most substantial risk was the local government's failure to implement agreed tariff increases in a timely manner. Consumers' possible refusal to pay for services was an associated risk. The risks were mitigated by relating charges to affordability, phasing increase in tariffs over time, and raising community awareness about the benefits of improved sanitation. The second risk identified was the possibility that the procurement process, with its complicated approval procedures, could delay project implementation. To mitigate this risk, the project adopted a number of methods, including smaller and simpler contract packages, raising the problem of delays in regular implementation review missions, intensive procurement supervision at the early stages of the project, and organizing a series of procurement trainings. Overall, the risk assessment and mitigation measures defined at appraisal proved adequate.

2.2 Implementation

38. After a slow start on Phase 1 activities, project implementation quickly picked up momentum in all the three cities. The Phase 2 design was carried out after the Board approval date and it required a longer preparation stage than initially planned. The participating provinces performed active project management functions throughout the implementation, with the PMU making significant efforts to designate necessary resources for component execution. All the major physical components were completed by the original project closing date of November 30, 2014.

39. High inflation in 2007 and 2008 in Vietnam and the global financial crisis of 2008 resulted in significant price increase of construction materials (mainly steel, cement, and labor) in Vietnam. The exchange rate of the U.S. dollar against the Vietnamese dong was 15,969 at the time of appraisal (2006), but by October 2014, the rate had fallen to 21,245. As indicated above under para.1.9, underestimation of costs in the design stage was also a challenge during project implementation. To address fund shortage, the project received an AF in the order of SDR 42.5 million (US$65.3 million equivalent).

40. The project scope was also reduced with some investments taken out of the project. These included WWTPs; part of the drainage system and primary, secondary, and tertiary sewerage systems; solid waste transfer stations; WWTP capacity; flood protection and drainage works; and school toilets. Different scenarios were carefully considered in making these changes and the measures taken were rational and appropriate for the situation.

41. In general, the social safeguards issues were monitored and addressed in a satisfactory manner. Independent resettlement monitoring reports have been prepared for all three project cities as specified in the approved Resettlement Action Plan (RAP). The project received complaints in 2014 from 11 HHs in Quy Nhon City related to their compensation and resettlement prior to project closure. Based on the last report submitted by the Quy Nhon subproject at the end of March 2015,

the compensation plan was endorsed by the Binh Dinh Provincial People's Committee (PPC) and the approved budget has been transferred to the state treasury accounts for the mentioned HHs.

2.3 Monitoring and Evaluation (M&E) Design, Implementation, and Utilization

42. **M&E design**. The design of the M&E system and the outcome indicators reflected the results from each of the project components and were a reasonable choice. Each PMU, supported by a technical assistance consultant, compiled data and monitored the performance of its subproject. The M&E aspect of the project at the time of design is rated as Satisfactory.

43. **M&E implementation**. The PMUs in each city were responsible for monitoring the key performance indicators and collecting data related to each of the intermediate PDO indicators. Data collection activities were carried out on a contractual basis by provincial authorities and local departments. In Dong Hoi and Nha Trang, a computerized Supervisory Control and Data Acquisition (SCADA) system was installed both for the WWTPs and the landfill sites, which allows streaming of live data feeds to the control room. The system provides actual readings on temperature, pressure levels, effluent quality, functionality of pumps, and air blowers. This system allows automatic 'on and off' function for different devices and can work in conjunction with mobile phones. In Nha Trang, the WWTP also has an automatic inlet and outlet sampling device, which allows taking and reading samples on a daily basis without physically going to the outlets and inlets. The M&E aspect of the project during implementation is rated as Satisfactory.

44. **M&E utilization.** The aspects of the M&E system that were most useful to project management were the outcome indicators. Data collected on the number of beneficiaries provided a useful gauge of the project coverage, tariff revision, and cost recovery roadmap. Comprehensive social safeguards data that were collected regularly include information on land acquisition, resettlement, and compensation. The computerized SCADA system allows the service providers to have a 24/7 monitoring of the plant, early detection of problems, and quick rectification. The system also allows automatic recording and filtering of data, which is very useful for management decisions on plant operation. However, progress information was not updated regularly and the performance of M&E during utilization is rated as Moderately Satisfactory.

2.4 Safeguard and Fiduciary Compliance

2.4.1 Environmental Safeguards Aspects

45. The project was classified as Environmental Category A. Accordingly, an Environmental Impact Assessment (EIA) was completed for the major works (WWTPs and landfill sites) before commencement of the work. The overall impacts of the project are positive during the operation phase with long-term environmental benefits to the project provinces for cleaner and more beautiful cities. The canals, rivers, and beaches became cleaner when the wastewater was collected and treated before being discharged into the environment. Living conditions of local communities have improved and the number of locations being flooded during the rainy season has reduced.

46. The environmental and social impacts observed during the construction phase include increased levels of dust, noise, and vibrations around the construction areas; traffic disruptions; disturbance to daily domestic and business activities of roadside HHs; and safety risks to local communities from deep excavations, electrical wires, materials and fuel storage, and temporary

disposal of excavated materials along the road. To address these impacts, the project applied a systematic environmental management system to manage construction impacts. Independent consultants were engaged to build the environmental management capacity of the PMUs and carry out periodical environmental monitoring. Generally, construction impacts were under control, safety risks during the construction phase were minimized, and there was no recorded fatality at construction sites. The environmental safeguards aspect of the project is rated as Satisfactory**.**

2.4.2 Social Safeguards Aspects

47. The project has substantially improved living and environmental conditions of the project cities and their people. However, in anticipation of adverse impacts that the project might have related to the need for land acquisition and involuntary resettlement, OP 4.12 - Involuntary Resettlement has been triggered.

48. A Resettlement Policy Framework (RPF) was prepared following local laws and policies of the Bank (OP 4.12). Ten RAPs for all three cities, including for activities funded by the GEF, have been prepared in accordance with the RPF. The RAPs included a detailed impact inventory, a socioeconomic survey, and an extensive consultation process with the affected population as well as with relevant government agencies.

49. At the project design stage, efforts were made to minimize adverse social impacts through design modifications, including realignment and reduction of the scale of proposed civil works. Agricultural land in the buffer zone areas was available for the people to continue agricultural activities to minimize impact on their livelihood and income sources. The project acquired around 189.4 ha of land in all three cities, with 1,247 affected HHs, of which 223 HHs had to be resettled. A total of VND 233 billion (about US$11.1 million) was paid to the affected people and VND 3 billion (about US$0.14 million) transferred to the state treasury accounts for 11 HHs in Quy Nhon City.

50. The actual number of resettled HHs (223) was decreased by about 10 percent compared with the original 245, as described in the approved RAPs. A total of 259 land plots in five different resettlement sites have been provided to HHs to be relocated, among which, one site in Quy Nhon City was built by the project. It is to be noted that although one resettlement site in Nha Trang was also developed by the project to satisfy the requests of the affected people to be relocated in the vicinity, the city allocated existing available sites to them.

51. In general, the project RPF and RAPs were implemented satisfactorily and the project resettlement policy objectives have been met. According to the independent resettlement monitoring consultant reports, all the surveyed relocated PAP have been able to restore or improve the lost assets and livelihood. The general rating is Moderately Satisfactory.

2.4.3. Financial Management Aspects

52. The FM reviews during regular supervision missions identified that an adequate FM system was in place that could provide, with reasonable assurance, accurate and timely information that Bank loan proceeds were being used for the intended purposes. The project FM rating was rated as either Satisfactory or Moderately Satisfactory since late 2007. The reviews also recognized the adequacy of FM staffing, accounting and internal control systems, maintenance of supporting

documents in the project, and implementation of auditor recommendations for annual audit. Quarterly financial reports of acceptable quality have been submitted on time. Annual audited financial reports have been submitted on time to the Bank, with mostly unqualified audit opinions in all the three cities. The project accounting systems were observed to be in order and payments were well regulated. Verification and payment for contracts were timely and accurate, consistent with the provisions of the Vietnamese government and the Bank. The FM arrangement of the revolving fund was satisfactorily maintained throughout project implementation.

53. Besides FM supervision missions, integrated FM found that procurement reviews were also regularly performed to confirm the adequacy of the project contract management arrangements. It was concluded that adequate financial arrangements are in place at the PMU to properly manage and control consultant contracts throughout the contract cycle, from planning and procurement to contract execution.

54. Regarding the fund flow arrangement, this was a fully decentralized project where each city has its own responsibilities in managing project funds. This mechanism has proved to be efficient since the project fund was allocated promptly. The capacity of all three cities has been improved during project implementation. A total project fund of about US$229.5 million from both IDA credits, the GEF grant, the PHRD trust fund, and counterpart fund was disbursed by March 31, 2015.

2.4.4 Procurement Aspects

55. The overall procurement performance under the project is assessed to be Satisfactory. The procurement actions agreed with the PMUs based on the findings of the Procurement Capacity Assessment have been largely implemented. For both the original credit and the AF, an 18-month procurement plan was prepared at appraisal. The detailed procurement plans were also prepared for each procurement package. In general, the procurement performance was found to be consistent with the Bank's Procurement Guidelines and the Legal Agreements. There were some delays in procurement primarily due to the lack of efficiency and effectiveness in the procurement management of a few complex packages and in dealing with price fluctuations. The Bank provided support to accelerate the process, including further technical training on procurement to the PMUs and joint development of the bidding documents. All the packages were then successfully awarded and implemented. Complaints have been raised during the bidding processes of different packages but they have also been dealt successfully to the satisfaction of the Bank and there has been no mis-procurement while implementing the project. The PMUs were staffed with qualified procurement staff who were familiar with the Bank's procurement procedures. The bidding processes for civil works were considered to be effective, resulting in savings compared to the pre-bid cost estimates.

2.5 Post-completion Operation/Next Phase

56. The O&M of the facilities constructed or rehabilitated under the project is crucial. The various steps taken by the national government and provincial authorities, both during appraisal and implementation of the project, are expected to contribute to the long-term use of the physical structure and sustainability of the operation. More details are provided below.

57. **Promulgation of clearer environmental decrees.** In recent years, two decrees issued by two different ministries have caused confusion and appeared to include some overlap: Decree 67/2003 issued by the Ministry of Natural Resources and Environment, jointly with the Ministry of Finance (MoF) and Decree 88/2007, issued by the Ministry of Construction (MoC). Both of these have been replaced by revised decrees, Decrees 25/2013 and 80/2014, respectively, removing some of the ambiguity. Decree 80/2014 allows a city to charge for a service that it provides. Decree 25/2013 is effectively a penalty for causing environmental pollution and its strategic objective is to reduce pollution. The environmental fee or penalty is based on a measure of the mass of pollutants discharged into the environment. The decrees encourage and allow the revenue collected through penalty and user fee to be used by the cities to cover O&M and operational costs.

58. **Contingency provisions.** The WWTPs were designed and implemented with the necessary contingency provisions, such as backup generators, and future expansion needs. The systems are also designed and implemented to accommodate the heavy runoff that Vietnam faces during the rainy season. The plants were implemented with a provision to receive and treat septage that can be collected using vacuum tracks. This has two advantages, allowing the plant to receive and treat wastewater and sewage from the sewer lines and septic tanks. Emptying of the existing septic tanks is still required on a regular basis.

59. **Considerations for follow-up operation.** The three participating provinces have proposed a combined new project of about US$119 million, pending an official request from the Ministry of Planning and Investment (MPI). Anticipating a positive response, the cities have started their planning process. In parallel, the cities have also started to explore new areas of income. This includes treatment of waste for fertilizer in Dong Hoi City, an initial project proposal on waste reuse for submission to the Gates Foundation, and others.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design, and Implementation

Relevance of objectives: High

60. The project objectives were relevant at the time of the project design. The project was aligned with the CAS at the time and continues to be highly relevant with the objectives of the current Country Partnership Strategy. The objectives of the project also continue to be relevant to the development plans of the three cities. Improving the urban environment was a central focus of the government's strategy, and the pressures on the urban environment that created the original demand for the project have only increased.

Relevance of design and implementation: Substantial

61. The project core components (that cover basic urban services) are directly targeted and the activities identified under each component have high relevance to the PDOs and to the sector policy in Vietnam that is, improving the urban environment. The PDOs were well stated, clearly set to measure, and directly related to the final outcomes. The causal link between funding and outcomes is rational and convincing, and potential exogenous factors were identified and factored

in. Implementation arrangements were relevant as they reflected the government's strategy of decentralization, which was a priority.

3.2 Achievement of Project Development Objectives and Global Environment Objectives

62. **PDO.** "To improve the environmental sanitation in the project cities in a sustainable manner and thereby enhancing the quality of life for city residents."

Improve the environmental sanitation in the project cities: Substantial.

63. **All of the Phase 1 and Phase 2 investments were put into operation, which brought benefits to more than 821,056 citizens in the three cities.** City environment and flooding improved due to the rehabilitated lakes, canals, and drains (about 456,247 people benefiting from reduced incidence and severity of flooding), and solid waste management improved (about 821,056 people benefiting from solid waste collection). The effluent quality at all four waste water treatment plants meet the national standards. Public and school sanitation operated satisfactorily, which improved the sanitation facilities in public areas (beach, riversides, and markets) and for 66,516 pupils in schools.

64. **All planned investments as per the restructured scope were completed and most of the intermediate indicators were fully achieved by project closing (November 30, 3014).** New sewers and interceptors were constructed and existing sewers were rehabilitated transporting waste water efficiently to the four new treatment plants in the three cities. Sanitary landfills were built and extended in all three cities and solid waste collection strengthened. Drains were constructed and rehabilitated and capacity of flood retention ponds enhanced. See further Annex 2 for a detailed list of all project outputs. Two intermediate results related to connections to the piped waste water network and the BOD removal amounts were only partially achieved as the underlying assumptions proved unrealistic. The rate of connection was initially slow but has been picking up during the later years of project implementation based on intensified outreach and communication campaigns.

65. **Revolving fund contributed to the improved access to sanitation**. The HH revolving fund allowed about 8,236 HHs to install toilets or get connected to the tertiary sewer lines, benefiting more than 37,062 people. Women in Vietnam have experience regarding revolving funds under the Vietnam Social Policy Bank through the facilitation of the Women's Union. This project has taken a step further in empowering participants to make an informed decision among competing demands. Understanding the impact of sanitation on health, family well-being, and productivity (and the impact on poverty) in general and making a strategic decision to invest a small amount to provide a toilet or connect a house to a nearby tertiary sewer line is the impact of the IEC used under the project. This clearly shows the project contribution to the women's decision making in the participating HHs. It also strengthened further the identification, appraisal, implementation, and monitoring capacity of the local Women's Unions.

66. **Full cost recovery of wastewater O&M is achieved in a sustainable manner: Substantial.** The tariff schedule recommended during appraisal was designed to achieve gradual and full cost recovery at project closing while ensuring affordability. All three cities have been seriously pursuing the increased tariff roadmap strategies to provide sufficient revenue to the

service provider to operate the system and finance depreciation of short-lived assets such as vehicles and equipment and any loan interest charges. While the actual tariff set for wastewater during 2008–2013 was less than the tariff recommended during appraisal, it was sufficient to fully cover O&M costs in all the three cities as early as 2008 and sustain the tariff through 2014, covering more than twice the O&M costs (221.5 percent in Dong Hoi, 222 percent in Nha Trang, and 106.84 percent in Quy Nhon). This performance could be explained by increased service coverage, improved technical and managerial capacity of service providers, and effective demand management through enhanced awareness of beneficiaries.

Box 1. Tariff increases.
Despite the sensitivity of issues related with cost recovery, provincial and city authorities have taken consistent measures in the right direction.

- In Nha Trang, the wastewater and solid waste tariff has been increased progressively since 2008 by the PPC and now stands at an average of VND 1,400 per m^3 and VND 20,000 per HH per month, respectively, for 2014.
- For Quy Nhon, the average wastewater tariff and solid waste has been increased progressively since 2008 and stood at VND 2,260 per m^3 and VND 29,634 per HH per month, respectively, in 2013.
- Similarly, in Dong Hoi, the average wastewater tariff has been increased progressively under a roadmap, from VND 365 per m^3 in 2007 to VND 3,111 per m^3 in 2017. The solid waste tariff has also been increased progressively since 2008 and was VND 21,007 per HH per month in 2014. The respective PPCs have also agreed to provide financial resources to mitigate the short-term financial constraint that service providers might face.

67. **Full recovery of solid waste provider costs from users fees in two out of three cities.** The actual tariff recommended for solid waste during appraisal for Nha Trang and Dong Hoi was slightly increased to achieve full cost recovery by 2014. However, despite a significant increase (on average, 41 percent higher than recommended during appraisal) of the actual solid waste tariff in Quy Nhon, the city was only able to cover 30 percent of the O&M cost, leaving 70 percent of the cost to be covered through subsidy.

68. **Capacity to ensure long term sustainability of achievements strengthened.** The complementary co-financing PHRD grant contributed significantly to carry out a program to build the institutional capacity of the implementation agencies' relevant service providers and city and provincial departments; to ensure the long-term effectiveness of the project investments; and to the community groups and nongovernmental organizations (NGOs) to support project implementation and maximize benefits from the project investments. The capacity-building component addressed critical elements through the PHRD grant with the co-financing of this grant for the service providers and city departments to ensure long-term sustainability of the project investments, including (a) institutional study to establish long-term structure and staffing for service providers; (b) assistance in installation and commissioning of FM, information monitoring, and billing/collection software for the service providers and training in its use; (c) joint development of procedures and plans to support O&M of new or rehabilitated project facilities; (d) technical and managerial training to the service providers; (e) organization of relevant training, workshops, and study tours; and (f) miscellaneous other capacity-building activities. The PHRD grant was further extended to build the capacity of

the city and provincial departments to ensure long-term effectiveness of the project investments and to the community groups and NGOs to support project implementation and maximize benefits from the project investments. The PMUs have equally benefited from the grant.

69. Capacity building for design and implementation of an HCP includes (a) development of the framework for design and implementation of the HCP; (b) implementation of the HCP, including training and public awareness, small investments in goods and works, and small grants; and (c) preparation and delivery of public awareness campaigns to support sanitation behavior change, benefits from the project, and its costs.

70. **The project resulted in important health, environmental, and aesthetic benefits thereby enhancing the quality of life for city residents.** There are substantial economic benefits arising from the project for service quality, wastewater collection and treatment, and improved sanitation, resulting in important health, environmental, and aesthetic benefits. Economic activities related to the East Sea off the three coastal cities, such as tourism and fisheries, are dependent on water quality and will also be enhanced with the reduction of untreated wastewater effluent discharges to the ocean. All the physical project outputs have been important in facilitating environmentally sustainable growth in the project cities. Reduction in the discharge of untreated wastewater and improved solid waste collection and disposal have improved the urban environment and living conditions in the cities, reduced the risks to health due to groundwater contamination, and helped preserve the viability of fishery resources. It was recorded that the annual economic growth of the participating cities has significantly increased about 12–14 percent in recent years.

71. **Contribution to property value appreciation.** In the three project cities, the rehabilitated channels, flood drainage systems, sewer intercepts, dredged waterways, and constructed embankments are greatly contributing to appreciation of property values and improved quality of life for residents. In the participating cities, the impact from the rehabilitated lakes, channel, river, and drains is very visible. Apart from the sprouting of small businesses (coffee houses, restaurants, convenience stores, and others), residents whose backyards faced the lake and the river earlier have started to convert their backyard into a front yard to face the beautiful scenery. The positive changes that the project has introduced have been duly recognized by the national governement. For example, Dong Hoi City has been upgraded from a Class III city to Class II, as approved by the Prime Minister on July 8, 2014.

72. **GEO. "To pilot and promote the replication of a new, more efficient wastewater treatment technology, which would contribute to improving in an integrated manner the health and habitat conditions of globally significant marine and coastal ecosystems along the coastline of Vietnam." Substantial**

73. The GEF grant, together with financing from the project, enabled successful completion of the Nhon Binh WWTP (14,000 m^3/day capacity) in Quy Nhon City. This plant benefited about 60,000 people. The plant was connected to a sewerage system financed under the project. The plant was formally handed over to the service provider in October 2014. The actual average flow to the plant is 13,000 m^3/day, influent BOD_5 quality is in the range of 60–100 mg/l, and the effluent BOD_5 is less than 20 mg/l, meeting the standards of QCVN 14/2008 and TCVN 7222/2002. The results of recent monitoring undertaken on influent and effluent at the WWTP shows that the

effluent is of high quality and meets the objective of improving the health and habitat conditions of the East Sea. The achievement of the GEO is rated as Substantial.

3.3 Efficiency

74. The financial and economic analysis of the project was updated at completion based on the actual financial and economic data. Overall, the efficiency is rated as Substantial.

3.3.1 Financial Analysis

75. **Fiscal impact**. As indicated earlier, the high inflation rate in Vietnam[1] and the global financial crisis during the life of the project affected the project financing and increased the level of counterpart funding. The total resources spent from all sources at project closing was US$229.5 million, of which US$35.36 million (15 percent of total project expenditure) was covered by counterpart funding. However, the fiscal burden to the cities due to the increased counterpart funding did not exceed the manageable limit, accounting for 14.24 percent of the expenditure in Nha Trang, 4 percent in Quy Nhon, and 9 percent in Dong Hoi.

76. **Financial Internal Rate of Return (FIRR).** The actual FIRR for wastewater, updated based on data at project closing, is significantly higher than the discount rate (10–12 percent) and varies among cities, ranging from 25.5 percent for Quy Nhon to 43.7 percent for Nha Trang. Though slightly lower than the return estimated at appraisal, the FIRR for solid waste is also higher than the discount rate, 21.6 percent for Dong Hoi and 19.5 percent for Nha Trang. Though the solid waste in Quy Nhon shows a negative FIRR (-0.7 percent), the economic benefit has justified the project. This is mainly explained by the small proportion (30 percent) of O&M costs covered from revenue collected from tariff.

3.3.2 Economic Analysis

77. The project is expected to have various economic benefits, including reduced flood damage, improved health, increased tourism, creation of new business opportunities, appreciation of land values, and savings in drainage maintenance. However, the only benefits considered in the analysis are from reduced flood damage, increase in tourism income, septage and drainage cost savings, and health expenditure savings. Other benefits are excluded due to data limitations and lack of bases for making reasonable assumptions. The actual overall Economic Internal Rate of Return (EIRR) at project closing was estimated at 29.3 percent compared with 18.5 percent at project appraisal.

78. The benefits mainly arise from economic growth through reduced flood damage (67 percent of total annual benefits at the ICR stage compared to 60 percent at the project appraisal stage) and health benefits (21 percent at the ICR stage compared to 10 percent at appraisal). The benefit from tourism decreased from 18 percent at the Project Appraisal Document (PAD) stage

[1] The exchange rate of the U.S. dollar to the Vietnamese dong was 15,969 at the time of appraisal (2006), but by October 2014, the rate had fallen to 21,245.

to 5 percent at the ICR stage due to the conservative estimate as a result of lack of quantitative evidence on the contribution of sanitation to tourism growth.

79. The actual FIRR and EIRR of the project in both wastewater and solid waste are significantly higher than the opportunity cost of capital, implying that the project is still financially and economically viable.

3.4 Justification of Overall Outcome and Global Environment Outcome Rating

Rating: Moderately Satisfactory

80. The project's development objectives and design were highly relevant and the achievement of the PDO/GEO outcomes were substantial with very good efficiency. However, there were some minor shortcomings - the costs at appraisal were underestimated (due to the use of national construction cost norms that were lower than market reference) which led to a significant increase in implementation costs. Also, two of the intermediate indicator targets were overestimated and only achieved partially. Overall outcome achievement is thus rated as "Moderately Satisfactory".

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

81. The water, wastewater, and solid waste components have directly provided local temporary job opportunities in the three cities during construction and over 150 permanent jobs on the WWTPs, conveyance cisterns, and SWM. Reduction in the discharge of untreated wastewater and improved solid waste collection and disposal have improved the urban environment and living conditions in the cities, reduced the risks to health due to groundwater contamination, and helped preserve the viability of fishery resources. As a facilitator of sustainable economic development, the project will have continuing beneficial poverty alleviation and social impacts.

(b) Institutional Change/Strengthening

82. The Vietnamese government is devolving responsibility and accountability from the central government to the provinces and cities. The experience of the PPC, the PMUs, and service providers through the implementation of this project and experience in Bank procurement, FM, and safeguards procedures has enormously helped to have a clear institutional roadmap. To this end, the project was able to support the strengthening of the URENCOs with a comprehensive program to produce accounting systems, an O&M manual, a regulatory framework for private sector participation, environmental monitoring, and HR training.

83. The project has stimulated discussion and played a catalytic role for authorities to look into the legal framework. The promulgation of Decree 25/2013 and Decree 80/2014 was the right action at the right time. These important legal frameworks will help strengthen the institutional setup of environmental sanitation in Vietnam, with clear mandates, source of revenue, and the right instrument for enforcement.

(c) Other Unintended Outcomes and Impacts (positive or negative)

84. The project has created numerous intangible benefits that were not anticipated during the design of the project. Among many, the ones worth mentioning are listed.

85. **Shelter and refuge for fishing boats during cyclone and heavy storm.** Vietnam has a long sea shoreline and annual storms and occasional cyclones cause heavy damage. The primary victims in such situations are fishing boats, which are the main source of livelihood for many people. Since most of the storm sanctuaries were filled with weeds and silt that denied the fishing boats access to safe havens to avoid the first direct hits, the dredging of these access routes and removal of the weeds and silt in the Dong Hoi subproject proved highly beneficial.

86. **Education learning centers (ELCs).** The construction of the WWTPs has made it easy to make research and training facilities available in all three cities. Three ELCs within the WWTP's area were established to support research and serve as education centers. The newly built plants are well organized, with state-of-the-art technology for collecting, organizing, and disseminating relevant data. In Dong Hoi and Nha Trang, different delegations and groups have visited the ELCs. In recent months, it was reported that some teams of overseas and Vietnamese students used the facility for partial fulfillment of the requirements for their studies.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

87. A review workshop on the draft ICR was conducted that brought together more than 30 participants, including representatives from the MoF, MoC, the PPCs, City People's Committees (CPCs), and PMUs from the three subproject cities; representatives from the design and construction supervision consultants; and the World Bank team. The three project cities presented project details, including cumulative achievements, areas of physical implementation, financial performance, procurement and safeguards, and challenges and lessons.

88. Participants, particularly the PMUs from the three cities, shared presentations with pictures to demonstrate the positive environmental contribution of the project to their cities. Canals, rivers, and beaches have become cleaner when the wastewater has been collected and treated before being discharged into the environment. Living conditions of local communities have improved and the number of locations being flooded during the rainy season has reduced.

89. The Bank team shared the draft rating on various aspects of the project and reminded the gathering that this will be finalized after the review by the Bank's Independent Evaluation Group (IEG). Participants expressed their general satisfaction and endorsement of the current rating.

4. Assessment of Risk to Development Outcome and Global Environment Outcome
Rating: Moderate

90. The main risk to the development outcome relates to the ability to operate and maintain the infrastructure. In the coming years, for proper services, O&M costs are estimated to increase but would still be recoverable according to the approved city roadmaps. This risk is assessed as Moderate given the measures taken to strengthen the PMUs and the service providers and the progress toward cost recovery. The results of recent monitoring undertaken on influent and effluent

at the WWTPs of the three cities shows that the effluent is of high quality and meets the objective of improving the health and habitat conditions of the East Sea. This led to the conclusion that there are no risks to the global environmental outcomes.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry
Rating: Moderately Satisfactory

91. The project was designed appropriately for the conditions at the design stage and incorporated lessons learned from the previous operation in the wastewater and solid waste subsector. The PDO and the intermediate indicators were properly designed and reflect that sufficient attention was paid to designing practical M&E systems. The project design attempted to simplify procurement procedures. The design of the project correctly anticipated the associated risks in dealing with cost recovery and put in place a pragmatic step-by-step approach to the risk. However, the survey exercise and cost projection was somehow underestimated and thus led to a significant increase of implementation costs. The performance of the Bank to ensure quality at entry is thus rated as Moderately Satisfactory.

(b) Quality of Supervision
Rating: Moderately Satisfactory

92. The project supervision team carried out regular implementation support missions twice a year. For some urgent and important issues, a number of intensive follow-up missions were also conducted. The project benefited from a high level of continuity within the IDA team and co-financiers throughout preparation and supervision. The task team leader (TTL) for the project was also a TTL for the predecessor IDA project (Three Cities Sanitation Project - P051553) and as most team members were based in Vietnam, it was possible to carry out supervision continuously, on an as-needed basis rather than intermittently. The task team consistently raised areas of concern, such as cost recovery and delays in procurement and site compensation. However progress data was not updated regularly, leading to a rating of Moderately Satisfactory.

93. The task team focused much of its attention on the implementation of the civil works, RAPs, proper functioning of the revolving fund, and raising of awareness on hygiene and sanitation issues among the community at large and women and students in particular. This attention no doubt contributed to the generally satisfactory delivery of the engineering outputs with good workmanship, commissioning of all WWTPs and solid waste sites, and construction of 72 latrine blocks with hand washing facility to schools and others by the original closing date. The team's oversight and participation in strengthening of the PMUs and service providers was critical and contributed to the improved managerial and technical capacity of the entities.

(c) Justification of Rating for Overall Bank Performance
Rating: Moderately Satisfactory

5.2 Borrower Performance

(a) Government Performance
Rating: Moderately Satisfactory

94. By the time the project was presented to the Board, all prefeasibility studies were approved by the prime minister's office and review and approval of detail designs was fully delegated to the provincial authorities. However, the use of national construction cost norms that are lower than market reference led to underestimation of the project cost, which, coupled with high inflation and the global financial crisis, created a financing gap. Though this was addressed by processing an AF, the Government's performance during the project preparation was rated as Moderately Satisfactory.

(b) Implementing Agency or Agencies Performance
Rating: Moderately Satisfactory

95. The implementation arrangement as discussed in this ICR was largely decentralized to project cities, with oversight and facilitation from the center. As this was the first project to be decentralized at the city level, the start-up activities were slow. The measures taken to strengthen the PMUs and the service providers and the progress toward cost recovery vary from city to city. The Government provided good support in many areas, including the provision of counterpart funds. In the first stage of the project, the Government was not able to adequately respond to the Bank's concern about procurement. However, following enhanced implementation support and training from the Bank, the PMUs remained proactive and effectively used consultant inputs. The low turnover of the implementing agency staff in the course of project implementation helped maintain institutional memory.

(c) Justification of Rating for Overall Borrower Performance
Rating: Moderately Satisfactory

96. The performance of the Government in the initial approval of prefeasibility studies, delegation of detail design clearance to the provincial authorities, meeting counterpart funds, and putting in place clearer legislation are all positive steps for the success of the project. The introduction of gradual cost recovery measures are also steps in the right direction. The Women's Union's role in managing the revolving fund component and the participatory manner in which that component was designed and implemented are good examples of the client's commitment to the project.

6. Lessons Learned

97. **WWTP technology selection.** In the past, the decision makers' lack of clear understanding on appropriate technical options and the limited land available for the WWTPs resulted in the use of more expensive and technically complex facilities. WWTPs which emphasize low power consumption, resource recovery from sludge, or reuse of treated wastewater were not given high priority. This project has from the initial stage exposed the decision makers to the available options by organizing visits to neighboring countries (Singapore, Malaysia, and Thailand). The result of this exercise is the decision taken by the Dong Hoi CPC to opt for lagoons with the option to

upgrade the system later to an oxidation pond and a full-fledged WWTP or to add more lagoons to treat more waste in the future. The decision taken by the other two cities on the choice of technology also clearly reflects the results of this approach and their due consideration for the availability of land for the chosen technology.

98. **HH connections.** For public sewerage systems, HH connections are essential components to ensure that most of the organic loading is conveyed to the treatment facility and sufficient flow is maintained for the system to function properly. Connection to the HH was an issue in the past because tertiary lines were not extended close to the HHs, thereby imposing heavy financial burden on HHs if they attempted to connect. The project's extension of the secondary sewer lines to tertiary lines make it much easier for HHs to connect. This helped a lot in increasing the number of houses connected. However, there are still houses that are not connected because their septic tanks are in the backyard and any attempt to connect requires excavation in the middle of the living room of the houses. City authorities need to enhance their sensitization and promotion activities using the available IEC tools but also need to think of other incentive mechanisms to encourage the remaining HHs to connect.

99. **Adaptability to context, timely design review, and enhanced contract management.** As referred to in this ICR, the project required an AF to meet financing gaps that arise as a result of the global financial crisis and the cost underestimation due to the use of the national construction cost norms at appraisal that were less than the market costs. The initial price contingency factored in (5 percent) at appraisal was not sufficient to meet such gaps. These and associated challenges were the reasons for the project's low disbursement rate in the initial years of implementation. Realizing this, the borrower and the Bank team took proactive measures that reversed the disbursement trend around the last quarter of 2011. The measures included review of designs and costs, revising the implementation schedule, strengthening of contract administration, and others. The need to adapt and timely respond to emerging context is what this project renders as as a lesson. This was the result of strong contract management that allowed complex engineering structures to be completed to the required quality, tested, and commissioned on time and within the allowable variation orders.

100. **Financial commitment and cost recovery.** One of the important lessons from this project is the role that cost recovery has in insuring the financial health of such an operation. Understanding cost recovery as key for financial sustainability, the project has set a target and made it a condition for each city to raise the tariff to a level that will allow the city to cover O&M costs. In Nha Trang, the conditions have been fully met for wastewater and SWM services but for Dong Hoi and Quy Nhon, the conditions have only been partially met. As indicated in the PAD, this is an understandable challenge as in some cases the increase means more than double and triple the tariffs in a short span of time. Though provincial PPCs have injected resources for service providers to run smoothly during the transition period, having a clear roadmap, as is the case in Dong Hoi (from VND 365 per m^3 in 2007 to VND 3,111 per m^3 in 2017), will help the cities set a clear and measurable target. The recently issued revised Decrees 80/2014 and 25/2013 clearly state the cost recovery principle, but provincial and city authorities should continue their commitment and not slip back.

101. **Public awareness and behavior change.** The project has raised the profile of public awareness, the benefits of which were otherwise forgotten. Whereas it is important for the local

authorities to have the necessary tools to charge customers for sanitation services, it is equally important that the customers themselves be aware of the benefits and be willing to pay for those services. This helps in enhancing participation by communities, makes investment planning more participatory, and minimizes the top-down approach. The result of such an approach is better understanding of the community regarding the environment and public health benefits of a well-designed and operated wastewater system. The outcome is a willingness to pay to achieve cost recovery and encouragement to connect to the wastewater system. However, public awareness, particularly related to public health, should not be a one-time activity but has to be continuous. As there is a danger of missing critical messages and slipping back and since there are still HHs that are not connected, the aggressive IEC campaign at the beginning of the project has to continue with the same momentum. New messages, such as proper sorting of waste at the HH level, need to be introduced in the IEC packages.

102. **Compensation and resettlement process.** All coastal cities in Vietnam had weak soil formation and hence, construction methods are critical to minimize the damages to existing structures located near deep excavation sites. Damages could be reduced if the scope of land acquisition at the start of work is determined taking into account the soil foundation factor. Related to this, as the land management system in Vietnam is still weak, identification of land ownership and land use history should be more accurate to avoid ongoing complaints from the affected people. Avoiding changes to compensation policy during resettlement implementation is also critical in minimizing complaints, and there is a need for timely redress of grievances in close dialogue with the PAP to make the compensation and resettlement process a success.

103. **Promoting efficient institutional and regulatory arrangements at the local level.** To improve the effectiveness of service delivery, the current relationship of the PMUs in each city with the service providers needs to be changed in line with the provisions of Decrees 80/2014 and 25/2013. The relationship with the service providers has to be replaced with a clear management contract for O&M of the wastewater systems. Regulations by the local authorities regarding wastewater should include standard designs for the construction of septic tanks, mandatory desludging, and step-by-step measures to encourage HHs to connect. The complementary co-financing PHRD grant to implementation agencies, relevant service providers, city and provincial departments, community groups, NGOs, and other relevant agencies has proved to be a support at the right time and at the right place. Lessons can be drawn from this on the importance of preceding capacity building to investments and the positive impact this will have on the long-term use of project benefits.

104. **Programmatic or city-by-city approach.** Vietnam has quite a number of medium-sized cities that are growing fast and looking for an intervention on environmental sanitation. The rational question to raise here would be whether a programmatic approach for this situation would fit better rather than the traditional single investment lending for each city. Urban environmental sanitation intervention is highly contextual and varies widely from city to city (characteristic of waste, differences in urban economy, land, sources of waste, and others). Both approaches have their own pros and cons and opening up wider consultation and debate will help arrive at a more informed and sustainable instrument.

105. **Potential for self-standing women's development operation.** One of the successful components under this project is Component 5 (HH revolving fund and school sanitation program).

It has benefited 8,236 HHs with 37,062 people (at an average 4.5 people per HH), the loan return rate is 100 percent, and the efficiency and ownership of both the Women's Unions and the beneficiaries is quite exemplary. A small financial injection (US$200 per HH at a service charge of 0.5 percent per month in two years) has brought transformational change to the HHs and the community at large. The Women's Union has been following clearly set objective criteria that are poverty focused, to select the first round of beneficiaries and has a long waiting list. The Women's Union has similar experience under the Vietnam Social Policy Bank. Currently, a quick review of the Bank dashboard for Vietnam shows that the portfolio does not include an operation solely geared toward women. Projects and programs under the Bank's portfolio might have elements here and there that include gender dimensions. The experience under Component 5 of this project clearly shows that there is great potential for this kind of operation. The Women's Unions have sufficient experience, an extensive network at the grassroots level, and there is a demonstrated demand. It will be helpful for both the government and the Bank to further explore this.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners
(a) Borrower/implementing agencies

(b) Co-financiers
(Not applicable)

(c) Other partners and stakeholders
(Not applicable)

Annex 1. Project Costs and Financing

(a) **Project cost by component (in US$ equivalent)** at appraisal in 2006 - Cr 4253, PHRD, GEF, and counterpart funding for each city (US $).

Component	Nha Trang	Quy Nhon	Dong Hoi	Total
Component 1	24,547,391	20,785,897	19,659,626	64,992,914
Component 2	19,266,000	10,938,500	2,887,788	33,092,288
Component 3	6,398,750	5,431,000	1,013,749	12,843,499
Component 4	5,626,103	3,517,100	1,638,311	10,781,514
Component 5	668,104	619,000	541,500	1,828,604
Component 6	8,921,200	7,186,100	6,601,100	22,708,400
Contingency	5,180,076	3,879,740	2,386,116	11,445,932
Tax/VAT	6,406,784	4,844,814	3,148,128	14,399,725
Total	**77,014,408**	**57,202,151**	**37,876,318**	**172,092,876**

Note: VAT = Value added tax.

(b) Revised cost table after the AF in 2011 - Cr 4253, 48850, PHRD, GEF, and counterpart funding for each city (US $ Million).

Components	Nha Trang	Quy Nhon	Dong Hoi	Total
Component 1	26.274	32.562	38.311	**97.147**
Component 2	19.45	12.764	6.848	**39.062**
Component 3	12.785	9.055	2.802	**24.642**
Component 4	5.916	3.517	6.641	**16.074**
Component 5	0.724	0.711	0.805	**2.240**
Component 6	8.921	8.069	10.382	**27.372**
contingency	12.666	5.978	5.363	**24.007**
Tax/VAT	6.885	6.767	7.389	**21.041**
Total	**93.621**	**79.423**	**78.541**	**251.585**

(c) Actual values for Cr 4253, 48850, PHRD, GEF, and counterpart funding for each city

Component	Revised Estimate (US$)	Actual (US$)	Percentage of Revised (%)
Component 1	97.147	118,905,000	122.39
Component 2	39.062	42,744,000	109.43
Component 3	24.642	18,335,000	74.39
Component 4	16.074	22,278,000	138.55
Component 5	2.24	2,634,000	117.59
Component 6	27.372	24,605,000	89.87
Contingency	24.007	0	0.00
Tax/VAT	21.041	0	0.00
Total	**251.588**	**229,501,000**	**91.21**

(d) **Financing:** Actual values for each city by source of financing (US $).

Coastal Cities Environmental Sanitation Project - P082295				
Source of Funds	**Nha Trang**	**Quy Nhon**	**Dong Hoi**	**Total**
IDA	67,816,295.05	58,088,801.69	59,628,000	185,533,996
GEF	0.00	4,334,808.71	0	4,334,809
PHRD	1,629,599.82	1,275,724.08	1,365,456	4,270,780
Counterpart	11,535,507.00	11,111,031.00	12,714,609	35,361,147
Total	**80,981,401.87**	**74,810,365.48**	**73,708,155**	**229,500,732**

(e) Summary of revised and actual cost for the three cities by source of financing.

Coastal Cities Environmental Sanitation Project - P082295					
Source of Funds	**Cities**	**Type of Financing**	**Revised Estimate (US$,)**	**Actual (US$,)**	**%**
IDA	All cities	Joint	190,245,588	185,533,996	**97.5**
GEF	Quy Nhon	Parallel	4,950,000	4,334,809	**87.6**
PHRD	All cities	Joint	4,616,400	4,270,780	**92.5**
Counterpart	All cities	Joint	51,776,000	35,361,147	**68.3**
Total			**251,587,988**	**229,500,732**	**91.2**

(f) GEF costs

VN-GEF-Coastal Cities Project - P090374			
Component	**Revised Estimate (US$)**	**Actual (US$)**	**Percentage of Revised**
Component 2	4,500,000	4,196,171	93.25
Component 6	450,000	138,638	30.80
Total	**4,950,000**	**4,334,809**	**86.70**

Annex 2. Outputs by Component for Each Subproject City

Component	As Appraised	As Implemented
Component 1: Flood Control, Drainage, and Wastewater Collection	Building new sewers and interceptors, rehabilitating existing sewers, transporting waste to new treatment plants, rehabilitating existing drains, constructing new drains, and enhancing the capacity of flood retention ponds	**Dong Hoi** • Drains and sewers rehabilitated and constructed in the following wards: Dong Phu, Dong My, Hai Dinh, and Hai Thanh and partly in Duc Ninh Dong, Bac Ly, and Nam Ly. • Embankment constructed and dredged for Cau Rao River, Phong Thuy channel, and Nam Ly Lake. • Truck and winch systems procured for the collection and transportation of sewer sludge and sewer dredging. • Sewage interceptors constructed throughout Dong Hoi.
		Quy Nhon • Reinforced concrete box culverts and pipeline constructed, manholes rehabilitated, new anti-odor manholes installed, roads and drainage ditches rehabilitated, bridges over channels constructed, channel embankments rehabilitated, and new conveyance piping constructed throughout the city and surrounding areas. • Roads affected by new pipes were reinstated and in many cases, improved.
		Nha Trang • Constructed culverts, drainage pipes, and new drainage system in south Nha Trang; constructed culverts, wastewater interceptors, conveyance sewers, pump stations and combined sewer overflows, and connections from central and southern areas to the WWTP.
Component 2: Wastewater Treatment Plants	Building of new WWTPs that meet the Vietnamese national effluent discharge standards. This includes construction of two plants in Nha Trang. In Quy Nhon, two WWTPs were to be constructed to serve the inner city area and a third to serve the south-western area around 10 km from the city Center. In Dong Hoi, a single new treatment plant was to be constructed and the existing plant at the city hospital was to be rehabilitated.	**Dong Hoi** • A new WWTP was constructed at Duc Ninh with an initial capacity of 10,000 m^3/day. Influent BOD_5 is 70–147 mg/l and effluent is 27–30 mg/l, which meets the required quality standards.
		Quy Nhon • Two new WWTPs constructed: Ha Thanh (Nhon Binh) with a capacity of 14,000 m^3/day and Bau Lac (Western) with a capacity of 2,350 m^3/day.
		Nha Trang • A new oxidation ditch WWTP with a capacity of 40,000 m^3/day was constructed.
Component 3: Solid Waste Management	Activities under this component include construction of a new sanitary landfill in Nha Trang at Luong Hoa and decommissioning of the existing landfill site at the Ru Ri dump. In Quy Nhon, the existing Long My landfill was to be expanded and rehabilitated.	**Dong Hoi** • To enhance the URENCO's capacity, various equipment (solid waste collection vehicles, handcarts, and waste bins) were procured. • The Ly Trach landfill was developed with Swiss funding and the project also supported the construction of a hazardous waste reception facility and procurement of further landfill equipment and vehicles, including a bulldozer.

Component	As Appraised	As Implemented
	In Dong Hoi, a sanitary landfill was to be developed with bilateral funding and with the project providing additional equipment. SWM collection equipment was to be procured for all cities and transfer stations/collection points were planned for Nha Trang and Quy Nhon. In Dong Hoi, the facilities for safe disposal of medical waste were to be constructed. These will be operated by the UWC under contract with the hospital.	**Quy Nhon** • The existing Long My landfill was extended, and a 200 m^3/day leachate treatment facility was constructed. Waste disposal facilities were also constructed, including lined waste disposal cells; cut-off drains; and equipment to weigh, spread out, and compact the waste and to excavate materials. **Nha Trang** • The new solid waste landfill and leachate treatment plant at Luong Hoa started operation with a Phase 1 area of 12.8 ha, design capacity of 3.3 million tons and a projected design life of 12–21 years. The leachate treatment plant has been completed and is in operation, with a treatment capacity of 186 m^3/day and achieving BOD_5 reductions <50 mg/l. The previous Ru Ri dumpsite has been closed.
Component 4: Resettlement	Construction of services (roads and utilities) to new housing plots for relocation of the PAP in Quy Nhon and Nha Trang	**Dong Hoi** • There was little resettlement required, and that was managed and funded by the PPC. Resettlement and compensation has been successfully completed. **Quy Nhon** • A total of 136 displaced people were moved and 126 were provided with land plots for relocation before the project closing. Resettlement of the remaining 11 HHs in the buffer zone of the WWTP was finalized in December 2014. This included the provision of graded sites accessed by surfaced roads, with drainage, power, telecommunications, and safe and secure water supply. The total area of these sites was 4.1 ha, and 33 ha of land was acquired for the projects. **Nha Trang** • Resettlement of 51 HHs at Phuoc Hai is completed. The resettlement site funded under the project will be used for the other cities' projects since all the project-affected HHs were provided with land plot(s) in other cities' resettlement sites in line with their wishes to be relocated in the vicinity.
Component 5: Household Revolving Fund and School Sanitation Program	This component aimed to establish revolving funds in each city to provide small loans for the construction of HH sanitation facilities. The funds were to be managed by the Women's Union according to the procedures set out in the HH revolving fund manual. Eligibility criteria and terms and conditions were to be designed to ensure that low-income HHs are able to avail and pay back the loans.	**Dong Hoi** • A total of 2,818 HHs benefited from the revolving fund and fully repaid. • 17 toilets were constructed for primary schools and kindergartens. **Quy Nhon** • A total of 2,703 HHs benefited from the revolving fund and fully repaid. • 37 sanitation blocks were constructed for primary schools and kindergartens.

Component	As Appraised	As Implemented
	Water supply and sanitation facilities were to be built at city schools in response to demand from those schools. Demand assessment and proposed investment for different types of schools followed the design standards set by the MoE.	**Nha Trang** • A total of 2,414 HHs benefited from the revolving fund and fully repaid. • 17 sanitation blocks were constructed for primary schools and kindergartens.
Component 6: Capacity Building and Project Implementation	This component planned a series of capacity-building and training packages for the service providers and city departments that include project management support, preparation of Phase 2 feasibility studies, construction management and supervision, independent safeguards monitoring, financial auditing, and others. This component also included a co-financing PHRD grant that was fully linked to the progress of the project and provided assistance to carry out a program to build institutional capacity of the implementation agencies, relevant service providers, city and provincial departments, community groups, NGOs, and other relevant agencies.	**Dong Hoi** • The implementation of this component included 12 contract packages covering construction supervision, capacity building, procurement of office equipment, quality control, auditing, and independent environment and resettlement monitoring. Subsequent phases covered design consultancy, cost estimates, the EIA report, strengthening the capacity of service providers for operation of the facilities, capacity building for the PMU, construction supervision consultants, and independent auditing and monitoring of the environment and resettlement activities.
		Quy Nhon • This consisted of 17 contract packages, including construction supervision, design consulting services, assistance for the PMU in project implementation, capacity building for service providers and city departments, and capacity building for the design and implementation of an HCP. Objectives were met for capacity building.
		Nha Trang • Capacity-building and institutional-strengthening contracts for service providers and for the PMU were implemented in Nha Trang. For the south WWTP, the contractor will operate the plant for a period of 3 months after completion and has provided training.

Annex 3. Economic and Financial Analysis

1. This annex provides an update of the financial and economic analysis at the completion of the project based on the actual performance of the project activities and assumptions, especially tariff roadmaps, and other finance-related commitments consistently following the methodology and models developed during project appraisal.

Financial Analysis

Financing Arrangement and Fiscal Impact

2. The counterpart funds have been properly allocated for the project, as in table 3.1. As envisaged during appraisal, the counterpart fund in Dong Hoi that accounted for 7–18 percent of the city's annual expenditure has received significant support from the central government. In the other cities of Nha Trang and Quy Nhon, the average annual counterpart fund required about VND 21–23 billion or about 4 percent of the current total annual city capital expenditure. Except in Dong Hoi, during peak implementation periods, counterpart funds did not exceed a manageable level of 9 percent of the city's capital expenditure budget.

Table 3.1: Counterpart funding and Fiscal Impacts (VND, billions)

	2007	2008	2009	2010	2011	2012	2013	2014	Total
Nha Trang									
IDA, PHRD, GEF	10.70	17.07	66.07	77.15	119.87	216.09	304.40	455.11	1,266.47
Counterpart	2.95	27.93	10.59	11.20	22.41	33.48	29.84	48.16	186.56
% of project cost	22	62	14	13	16	13	9	10	13
% of city expenditure	1	6	2	2	3	3	3	–	3
Quy Nhon									
IDA, PHRD, GEF	–	27.31	49.85	48.34	171.78	250.34	278.57	262.92	1,089.12
Counterpart	4.15	5.77	22.49	7.79	15.01	44.92	49.93	18.83	168.89
% of project cost	100	17	31	14	8	15	15	7	13
% of city expenditure	1	2	5	2	3	7	7	–	4
Dong Hoi									
IDA, PHRD, GEF	18.25	47.74	55.21	109.10	165.84	347.60	254.67	215.31	1,200.01
Counterpart	11.00	16.26	21.00	16.00	59.00	41.9	46.7	39.0	250.86
% of project cost	38	25	28	13	26	10	17	15	16
% of city expenditure	7	9	12	8	18	9	11	8	9

Wastewater and Solid Waste Cost Recovery and Tariff

3. It was assumed in the PAD that wastewater and solid water tariffs, in line with government policy, were recovered through O&M costs, deprecation of short-lived assets such as vehicles and equipment, and any loan interest charges, by the end of the project. It was also assumed that tariffs have been gradually increased from 2007 to 2014 to allow the service providers to achieve the required levels of cost recovery so that subsidies to the WSDCs and URENCOs can be eliminated before project implementation completion in 2014. The cost recovery schedules for the service

providers have been agreed with local governments and their implementation is a project covenant. In practice, the implementation of the project covenant on tariff roadmap is as in these tables.

Table 3.2: Implementation of Wastewater Tariff Roadmap

City	2006	2007	2008	2009	2010	2011	2012	2013
Nha Trang								
Average wastewater tariff (VND/m^3)								
PAD	196	325	512	762	975	1,347	1,737	1,916
ICR	–	–	250	400	600	800	1,000	1,350
Recovery rate (%)								
PAD	–	74	76	87	92	96	99	100
ICR	–	–	128	136	149	135	163	241
Quy Nhon								
Average wastewater tariff (VND/m^3)								
PAD	126	258	462	776	1,128	1,514	1,966	2,260
ICR	–	200	350	500	700	1,000	1,300	1,500
Recovery rate (%)								
PAD	–	41	45	59	71	81	92	100
ICR	–	107	114	119	117	108	94	108
Dong Hoi								
Average wastewater tariff (VND/m^3)								
PAD	170	365	627	1,032	1,507	2,067	2,597	3,111
ICR	–	–	420	538	627	1,032	1,507	1,600
Recovery rate (%)								
PAD	28	33	44	56	66	75	88	100
ICR	–	–	141	171	151	168	260	256

Table 3.3: Implementation of Solid Waste Cost Recovery and Charges

City	2006	2007	2008	2009	2010	2011	2012	2013
Nha Trang								
Average solid waste tariff (VND/HH/month)								
PAD	8,000	8,558	9,565	12,585	14,095	16,612	18,122	18,626
ICR	–	–	9,000	10,000	13,000	16,000	19,000	23,000
Recovery rate (%)								
PAD	59	66	71	75	81	94	98	100
ICR	–	–	32	70	76	91	87	105
Quy Nhon								
Average solid waste tariff (VND/HH/month)								
PAD	7,000	7,695	8,699	10,037	14,004	16,857	18,737	20,744
ICR	–	10,993	12,427	14,339	19,119	23,899	26,766	29,634
Recovery rate (%)								
PAD	42	52	62	73	79	83	94	100
ICR	–	–	29	31	32	28	27	30
Dong Hoi								
Average solid waste tariff (VND/HH/month)								
PAD	7,000	7,780	8,818	10,114	14,004	16,857	18,932	21,007
ICR	–	–	12,135	15,027	15,193	15,207	19,716	21,483
Recovery rate (%)								
PAD	51	56	60	71	77	83	94	100
ICR	–	–	73	78	84	95	98	102

4. All three cities have been seriously pursuing the increased tariff roadmap strategies to recover O&M costs and gradually recover capital investment. The data show that wastewater tariffs in all three cities have been recovered well through O&M costs although actual tariffs have been lower than recommended by the PAD for 2007–2014. In the coming years, for proper services, O&M costs are estimated to be increased but still recoverable with the approved city roadmaps. Solid waste charges, on the other hand, which have been set close to the rates in the PAD have enabled the URENCOs in Nha Trang and Dong Hoi in recovering their O&M costs in 2013. However, the solid waste recovery rate of Quy Nhon is only 30 percent despite its higher charges as calculated at appraisal.

Affordability Analysis

5. Besides the recovery target, the tariff and charge roadmaps need to ensure affordability of the poor in the project cities as well. Updated analyses show that the combined costs of water supply, wastewater, and solid waste charges in 2013 account for 3.1–3.4 percent of the monthly income of poor HHs in the three cities, which still remain around the affordability level of 5 percent of HH income.

Table 3.4: Affordability

Water and sanitation cost as % of monthly income of low-income HHs	2007	2013	
	PAD	PAD	ICR
Quy Nhon	2.4	3.1	3.4
Nha Trang	1.9	2.5	3.1
Dong Hoi	2.1	3.2	3.1

Financial Internal Rates of Return

6. The updated FIRR for each subproject is summarized below. The FIRRs of 25.5–43.7 percent (wastewater) and 19.5–21.6 percent (solid waste) are slightly higher compared to the PAD due to adjustments and changes during project implementation. The rates are higher than the weighted average cost of capital of 10–12 percent. It is to be noted that the updated financial analysis for purchase of VND 18 billion equipment for the URENCO Quy Nhon results in an FIRR of -0.7 percent. This arises from the fact that solid waste charge revenues in Quy Nhon have not been sufficient to recover O&M costs as specified in the above section on recovery analysis.

Table 3.5: Financial Internal Rates of Return (%)

City	Wastewater		Solid Waste	
	PAD	ICR	PAD	ICR
Quy Nhon	28.2	25.5	29.5	-0.7
Nha Trang	27.6	43.7	32.6	19.5
Dong Hoi	18.6	35.0	25.9	21.6

Economic Analysis

7. At the appraisal phase, the economic analysis of the project was based both on cost-benefit analysis (CBA) and least-cost analysis (LCA) because of the uncertainties with CBA, particularly the difficulties in accurately quantifying some of the environmental benefits and local economic development benefits. LCA was therefore conducted throughout component selection and preliminary design to ensure that the selected investments are the most economical interventions. At the ICR stage, an updated CBA was carried out to reflect project design changes—cost as well as assumptions.

8. The benefits of the project as listed in the PAD include (a) reduced flood damage; (b) health benefits; (c) savings in installation and emptying of septic tanks; (d) savings in drainage maintenance; (e) increased tourism due to an improved environment for tourists and potential investors; (f) improved financial positions of the WSDC and URENCO as tariffs are increased, resulting in better management in the provision of services, which will eventually eliminate subsidies from the provincial governments; (g) enhancement of the development potential of the cities, especially the areas along canals and previously flooded areas; (h) creation of new business opportunities such as restaurants, retail stores, and other entertainment activities; and (i) land value appreciation in the area, the extent of which will largely depend on the new economic activities that will be created arising from the proposed investments. The following five benefits were quantified in the PAD and repeated consistently in the updated analysis for compatible results:

(a) **Reduced flood damages.** Damages due to floods include direct and indirect damages. Direct damages result when houses, buildings, and other structures; HH goods; shop merchandise; roads; and vehicles are affected by floodwater. Indirect damages are the consequential losses, including loss of trade, loss of income for employers and employees, restrictions on traveling, costs of evacuation and reinstatement, and costs of cleaning-up operations. Flood control and drainage improvement projects primarily stabilize land and infrastructure, which otherwise are at risk of destruction and loss from floods. Benefits have been measured as the avoided costs of damaged structures and the additional maintenance costs that would have been incurred on inundated major roads. Although, in principle, the costs of delays in economic activities and disruption to traffic should be included among the benefits, these costs are difficult to estimate and therefore were not accounted for. To produce the flood damages savings, the analysis relied on updated data on loss due to floods in Vietnam, in general, and in project cities, in particular.

(b) **Health benefits.** An improved hygienic environment will directly benefit the populace of each of the cities. It is anticipated that the construction of new WWTPs will improve the quality of receiving waters by reducing the pollution load to rivers, beaches, and seashores. Drainage improvement will also significantly reduce stagnant water, thereby reducing the breeding grounds of mosquitoes and other disease-bearing insect vectors. Construction of new sewers will decrease the amount of wastewater discharged into open drainage channels, thereby reducing the risk of water-related health problems. The solid waste subprojects will promote safe and hygienic disposal of solid waste, reduce blockages of sewers and drains, and reduce airborne particulate concentration arising from burning garbage and windblown dust. Also, garbage piles will be reduced and hence improve the environmental condition of the cities. All these are expected to translate into a reduction in risks of diseases and

illnesses associated with an unhygienic environment as well as water-related diseases such as diarrhea, dysentery, cholera, and typhoid. Health benefits were measured from expected savings in medical care and loss in income due to illness and death. The benefit was calculated based on the findings of surveys and research by the World Health Organization (WHO) and the Asian Development Bank (ADB) on the impact of floods on public health and the updated data on HH incomes in project cities in 2014.

(c) **Savings in installation and desludging of septic tanks.** All new construction in the participating cities are required to have a septic tank to avoid direct discharge of wastewater into the drainage system. For old urban areas in all cities, as the drainage system is partially separate from the sewer system (the combined sewer system includes interceptor sewers to split and transmit wastewater to the WWTP), it is necessary to maintain most septic tanks for preliminary treatment of black water before the tanks are connected to the city's sewer network. Disconnection of septic tanks is a major issue for most HHs as the entire house plumbing has to be reconstructed. Septic tank disconnection is a major and difficult issue which has to be carefully addressed and implemented in the future. Costs for installation and desludging of septic tanks in 2014 in the project cities have been updated.

(d) **Savings in drainage maintenance.** The drainage operating costs are expected to be reduced with the improvement of the SWM system due to a reduction in the need to clean waste from open drains. The analysis has been updated using the current unit costs for drainage maintenance at the 2014 price and the cost of the drainage network built and/or rehabilitated by the project in each of cities.

(e) **Increase in tourism income.** Tourism is an emerging industry in the participating cities. The project will play an important role in accelerating the development of tourism in these cities. For the analysis, the benefits are measured by the increase in tourist arrivals due to an improved environment for the tourists and an increase in expenditures per tourist primarily because of the longer duration of visits. In the PAD, an annual growth rate of 5 percent in tourist arrivals for the participating cities was assumed in the 'without' project case. Implementation of the project is assumed to increase the growth rate to 5.5 percent. In the updated analysis, statistics on tourist arrivals, revenue, and expenditure in each of the three cities from 2007 to 2014 were used.

9. The whole project brings in an annual benefit of VND 1,658 billion and benefit composition is similar to that in the PAD. The benefits mainly arise from economic growth through reduced flood damage (67 percent of total annual benefits at ICR compared to 60 percent at PAD) and health benefits (21 percent at ICR compared to 10 percent at PAD). The benefit from tourism decreases from 18 percent at PAD to 5 percent at ICR as a conservative assumption has been made because of lack of quantitative evidence on contribution of sanitation to tourism growth.

Table 3.6: Composition of Annual Benefits in Project Cities

Benefit	Nha Trang		Quy Nhon		Dong Hoi	
	VND, Billion	%	VND, Billion	%	VND, Billion	%
Heath expenditure savings	167	21	56	12	119	30
Flooding damage savings	518	66	361	76	227	57
Septic and drain maintenance savings	83	10	31	7	13	3
Increase in tourism income	23	3	24	5	36	9
Total annual benefits	**790**	**10**	**472**	**100**	**395**	**100**

10. **Summary of the CBA.** The project has an EIRR of 29.5 percent, which is higher than the 12 percent discount rate that was assumed. The updated analysis confirms the robustness of the project in its contribution to economic growth in the participating cities. Further benefits that could not be readily quantified include the financial sustainability of the service providers, enhancement of the development potential of the cities in general, creation of new economic opportunities, and land value appreciation in the area.

Table 3.7: Summary of Project CBA

City	Project Cost (VND, millions)		Net Present Value (VND, millions; r = 12%)		Internal Rate of Return (%)	
	PAD	ICR	PAD	ICR	PAD	ICR
Nha Trang	696,059	1,381,050	41,461	1,562,505	14.6	39.5
Quy Nhon	535,999	1,298,981	94,587	635,054	16.0	25.9
Dong Hoi	343,566	1,254,076	320,294	488,462	22.7	21.6
Total project	**1,575,625**	**3,934,106**	**456,243**	**2,686,020**	**18.5**	**29.3**

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team Members

Names	Title	Unit	Responsibility/ Specialty
Lending			
William D. Kingdom	Lead Water and Sanitation Spec.	GWADR	TTL
Hung Duy Le	Sr Infrastructure Spec.	GWADR	Co-TTL
Alan Coulthart	Lead Municipal Engineer	EASIN - HIS	
Sudipto Sarkar	Lead Specialist	GWADR	
Hoi-Chan Nguyen	Senior Counsel	LEGES	
Cuong Duc Dang	Sr Urban Spec.	GSURR	
Hoa Thi Hoang	Sr Urban Spec.	GSURR	
Hoa Thi Mong Pham	Sr Social Development Spec	GSURR	
Phuong Thi Thanh Tran	Sr Environmental Specialist	EASVS - HIS	
Kien Trung Tran	Sr Procurement Specialist	GGODR	
Hung Viet Le	Financial Management Spec.	EACVF	
Chris Banes	Municipal Engineer	Consultant	
Giang Thi Huong Nguyen	Program Assistant	GSURR	
Vellet E. Fernandes	Program Assistant	GSURR	
Supervision/ICR			
Hung Duy Le	Sr Infrastructure Spec.	GWADR	TTL
Lixin Gu	Sr Infrastructure Spec.	GWADR	Co-TTL
Huyen Thi Phuong Phan	Urban Specialist	GSURR	
William D. Kingdom	Lead Water and Sanitation Spec.	GWADR	
Hoonae Kim	Sector Manager	MNSSD - HIS	
Jennifer Sara	Sector Manager	GWADR	
Dean A. Cira	Program Leader	AFCE4	
Parameswaran Iyer	Program Leader	EACVF	
Hisham A. Abdo Kahin	Lead Counsel	LEGES	
Nina Masako Eejima	Sr. Counsel	LEGES	
Hoa Thi Mong Pham	Sr Social Development Spec	GSURR	
Phuong Thi Thanh Tran	Sr Environmental Specialist	EASVS - HIS	
Ly Thi Dieu Vu	Environmental Specialist	Consultant	
Kien Trung Tran	Sr Procurement Specialist	GGODR	
Thang Toan Le	Procurement Specialist	GGODR	
Ha Thuy Tran	Financial Management Spec.	EACVF	
Thao Thi Do	Finance Analyst	WFALN	
Ninh Quang Nguyen	Program Analyst	EACVF	
Chris Banes	Municipal Engineer	Consultant	
Giang Thi Huong Nguyen	Program Assistant	GSURR	
Tuyet Thi Phung	Program Assistant	GWADR	
Demilour Reyes Ignacio	Program Assistant	GWADR	

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of Staff Weeks	US$, thousands (including travel and consultant costs)
Lending	208.08	674,597.80
Supervision/ICR	149.42	446,604.31
Total	**357.50**	**1,121,202.11**

Annex 5. Beneficiary Survey Results

No beneficiary survey was conducted.

Annex 6. Stakeholder Workshop Report and Results

An ICR stakeholder workshop was carried out on April 15, 2015, at the World Bank office in Hanoi. The minutes of the meeting are given below.

Introduction and Background

1. A World Bank team led by Mr. Le Duy Hung (Senior Infrastructure Specialist, Task Team Leader) and including Mr. Tesfaye Bekalu (Senior Water and Sanitation Specialist, ICR Lead Author) and Ms. Phung Thi Tuyet (Program Assistant), visited Vietnam on the final mission for the Vietnam Coastal Cities Environmental Sanitation Project (CCESP) (P082295) during April 13–21, 2015. The objectives of the mission were are to (a) share the draft ICR and confirm the consistency of the project indicators and cost tables; (b) conduct an ICR review workshop on April 15, 2015, for representatives of the line ministries and participating provinces to discuss the project findings, assessment, and relevant ratings; and (c) discuss the views and recommendations of the line ministries on the project design and implementation.

2. The workshop was well attended, with more than 30 participants and included representatives from the MoF, MoC, MPI, PPC, CPC, PMUs from the three subproject cities, representatives from the design and construction supervision consultants, the Bank team (the list of participants is attached in this annex).

3. The workshop commenced with a round of participant introductions and opening remarks by Mr. Son Duy Nguyen (Senior Operations Officer, EACVF) representing the World Bank Vietnam country office. This was followed by the Bank team sharing the ICR key findings, including evaluations and ratings. The PMU members shared the respective presentations from the three subproject cities on the lessons learned and their comments on the draft ICR. All the three PMUs presented an excellent, detailed project end summary that includes cumulative achievements, areas of physical implementation, financial performance, procurement and safeguards, and challenges and lessons learned from the project.

4. The ICR mission early findings of project achievements, major challenges, and lessons learned are consistent with the government presentations and the issues raised during the discussion. The workshop saw active participation from the line ministries, subproject cities, and relevant consultants. It was very important to exchange ideas and factor in lessons in the design of future projects. The following section highlights the major areas of observation as shared by the participants.

5. **Positive contribution to the cities.** The participants, particularly the PMUs from the three cities, shared presentations with pictures to demonstrate the positive environmental contribution of the project to their cities. Canals, rivers, and beaches have become cleaner when the wastewater has been collected and treated before being discharged into the environment. Living conditions of local communities have improved and the number of locations being flooded during the rainy season has reduced.

6. **Rating.** The Bank team shared the draft rating on various aspects of the project and reminded the gathering that this will be finalized after the review by the Bank's IEG. Participants

expressed their general satisfaction and endorsement of the current rating. Some participants expressed their reservation on the Moderately Satisfactory rating of the Bank's performance, with a view that this rating is based more on the borrower performance and external factors than the Bank's performance. The meeting noted that this rating is to be left for management and IEG decision.

7. **Procurement.** Participants expressed their satisfaction with the Bank's procurement guidelines and procedures in ensuring value for money regarding public resources, efficiency, and accountability. However, participants noted the difference between the procurement guidelines and the GoV practices. It was agreed that it will be beneficial if the GoV practices are aligned more to the Bank's procurement guidelines and procedures to ensure benefits. Both the MoF and the Bank team have made a note to look into areas that need refinement and contribute to the procurement reform discussion in Vietnam at appropriate and relevant forums.

8. **Inflation and its effects.** The participants narrated the effects of inflation that Vietnam experienced during 2007–2008, particularly on the cost of some basic construction items such as cement, steel, and labor. The subproject cities also shared information about the adjustments that they have made in response to inflation and confirmed that the inflation does not have an impact on the outcomes of the project.

9. **Technical.** There were several interrelated technical issues such as (a) undertaking topographical surveys and geological investigations before the commencement of works contracts; (b) expediting issuance of construction permits; (c) continuously involving design consultants in project implementation; and (d) closely monitoring the influent quality from the combined sewer. Specific reference was made to the observations on CEPT technology and the quality of the effluent coming from the trickling filter. The representative from the MoC has taken note of these technical issues and acknowledged that these are important observations that need to be considered in designing and implementing similar operations in the future.

10. **Social safeguards and compensation.** The example of delayed social safeguards action and the compensation issue in Quy Nhon was discussed at length and it was agreed that there is a need to address these kinds of social safeguards issues as early as possible. The meeting learned that based on the 2011 estimate, a compensation package has been deposited at the province's treasurer and both the PPC and CPC are following up closely.

11. **Follow-up operation.** The follow-up operation was also discussed. The meeting learned that all the three subproject cities have prepared a follow-up intervention with a cumulative scope of about US$119 million. The MPI acknowledged that the request is with the ministry and shortly an internal discussion as well as a discussion with the Bank on the various instruments will be conducted.

12. **Contents of the ICR and the way forward.** Participants raised concerns that the ICR presentation missed some major factors affecting implementation; strategic approaches adopted and their evaluation; and the performance, weaknesses, and recommendations. However, it was stated that what has been shared in this workshop is an abridged PowerPoint presentation, and the team assured that the main ICR has more details and responds to the concerns raised. However, the Bank team also took on the task to double-check and review the ICR again to address the

comments and inputs from the meeting and update the ICR. The Bank team promised to share the final version with all the implementing agencies.

Table 6.1: Participants of Stakeholder Workshop

No.	Name	Title
Quang Binh Province/Dong Hoi Subproject		
1.	Mr. Nguyen Van Thuan	Dong Hoi PMU Director
2.	Mr. Truong Tan Lam	PMU Deputy Director
3.	Mr. Nguyen Anh Tuan	PMU Deputy Director
4.	Mr. Nguyen Tien Hung	PMU Chief Accountant
5.	Mr. Nguyen Huu Phuoc	PMU Office Manager
6.	Mr. Nguyen Van Nam	D. Team Leader, Construction Supervision Consultant
7.	Mr. Nguyen Phan Anh	Team Leader, CSC
8.	Mr. Truong Cong Huu	Director of IMTC, CB-2 Consultant
Binh Dinh Province/Quy Nhon Subproject		
1.	Mr. Phan Cao Thang	Vice-Chairman, PPC
2.	Mr. Le Van Lich	Quy Nhon PMU Director
3.	Mr. Dinh Cong Hoang	PMU Deputy Director
4.	Mr. Fernando Requena	Team Leader, CDM International Inc.
Khanh Hoa PPC/Nha Trang Subproject		
1.	Mr. Le Huy Toan	Vice chairman, Nha Trang PPC
2.	Mr. Chau Ngo Anh Nhan	PMU Director
3.	Mr. Nguyen Nhu Nguyen	PMU Deputy Director
4.	Mr. Le Luan	Chuyên gia cao cấp NT-6.11 (CES)
5.	Mr. Nguyen Thanh Hai	Deputy Director General of VIWASE
6.	Mr. John Block	Team Leader, Construction Supervision Consultant Project Completion Reports Author
Line Ministries		
1.	Mr. Vu Thua An	Expert, Infrastructure Department, MPI
2.	Mr. Vu Thua An	Expert, Infrastructure Department, MPI
3.	Mr. Nguyen Tuong Van	Vice Director, ATI, MOC
4.	Ms. Tran Ngoc Thanh	Vice Director, MABUTIP, MOC
World Bank		
1.	Le Duy Hung	Task Team Leader
2.	Son Duy Nguyen	Sr. Operation Officer
3.	Lixin Gu	Co-Task Team Leader
4.	Tesfaye Bekalu	Sr. Water &Sanitation Specialist, ICR Author
5.	Huyen Thi Phuong Phan	Urban Specialist
6.	Thang Toan Le	Procurement Specialist
7.	Iain Menzies	Sr. W&S Specialist
8.	Hung Sy Pham	Water & Sanitation Specialist

Annex 7. Summary of Borrower's Project Completion Report and/or Comments on Draft ICR

1. **Project objectives, changes, and quality at entry.** The original objective of the CCESP, as defined in the PAD; Report No 34507-VN, dated June 21, 2006, was to improve environmental sanitation in project cities in a sustainable manner and thereby enhance residents' quality of life. The project was divided into three subprojects for each of the three project cities: Nha Trang, Dong Hoi, and Quy Nhon. The GEO of the GEF grant to Quy Nhon was to improve the health and habitat conditions of the East Sea, which is seen as a globally significant marine and coastal ecosystem along the coastline of Vietnam.

2. Although there have been some changes in project content and the detailed design of some components during implementation, there has been no change in the overall project objectives during implementation. There were some minor changes in the subprojects, for example, deletion of two planned WWTPs (in Nha Trang and Quy Nhon) as well as the transfer of responsibility for the construction of a small hospital WWTP in Dong Hoi. The extent of the primary, secondary, and tertiary sewerage networks was reduced in the project cities.

3. With regard to the project's quality at entry, preparation of the physical investments at appraisal has proved generally satisfactory. The feasibility studies and engineering design for each project component (as well as for the overall project) proved to be appropriate. Most of the technical designs employed advanced yet commercially available technologies that proved to be fit for the purpose. The procurement plan, as appraised, proved to be executable. However, some of the appraised cost estimates were too low and had insufficient contingency. This was exacerbated by the severe inflation arising during 2008–2012 which caused major increases in construction cost throughout Vietnam.

4. **Project components, outputs, and outcomes.** The project has six components: flood control, drainage, and wastewater collection; WWTPs; SWM; resettlement; HH revolving fund and school sanitation program; and capacity building and project implementation. The project was implemented in two phases. The following table summarizes the actual project costs in the three cities in U.S. dollars.

Table 7.1: Actual Project Costs (in US$)

City	Total PAD Estimate	IDA Cr. 4253	IDA Cr. 4885	PHRD	GEF	Counterpart Funding	Total Disbursed
Nha Trang	77,014,000	53,451,855	14,364,440	1,629,600	0	11,535,507	80,981,000
Quy Nhon	77,252,150	38,951,525	19,137,276	1,275,724	4,334,809	11,111,031	74,810,000
Dong Hoi	78,543,318	29,175,300	30,452,700	1,365,456	0	12,714,609	73,708,000
Total	232,809,468	121,578,680	63,954,416	4,270,780	4,334,809	35,361,147	229,500,000

5. **Lessons learned.** The CCESP has been largely successful and achieved most of its original objectives in all three project cities, especially with respect to the physical interventions. The entire implementation process has been a valuable experience for all the agencies involved, and considerable capacity building of the PMU and service providers has been achieved that will help them with future projects. Specific lessons learned in the three subproject cities are as follows:

- The consulting services provided for the project have varied in quality.
- There is a need for the PMU and agencies to act promptly to caution and, if necessary, terminate poorly performing consultants. It may be necessary to apply financial sanctions to determine the responsibilities of consultants for contract management.
- It is necessary to come to an agreement with consultants on work procedures and applied forms at the beginning of the project to facilitate quality and quantity management and accelerate disbursement.
- The PMU/Construction Management Consultants (CMCs)/contractors need to mobilize quickly and start work promptly to reduce the effects of inflation and escalation costs. If there are land access problems, contracts should not be signed.
- The CMC, PMU, and contractors need to act promptly in terminating poorly performing subcontractors.
- A comprehensive design review of detailed design drawings is required at the start of the CMC contract. There were too many variations in some cities because of poor design.
- Contractors need to focus more on site safety and the health and safety of workers at work sites. This requires more proactive involvement of the CMC staff and the client.
- Improved procedures are required in some cities to get construction certificates from the Department of Construction and Department of Transport before digging a road.
- There is a need for improved knowledge of and compliance with conditions of contract requirements by clients and contractors, for example, termination of poorly performing contractors/subcontractors. This might be addressed by additional training during project execution by the Bank or donor agency.
- Design consultants need to identify and show utilities on drawings and the CMC staff need to facilitate this. A lot of delays and obstruction to construction are caused by finding unmarked utilities in the road.
- Site clearance and compensation should be assigned to the employer to directly perform the work with maximum support from the local authorities, and the resettlement site should be constructed based on the affected HHs' requirements.
- Project physical and financial contingencies at appraisal were insufficient. Contingencies should also be reflected in the International Competitive Bidding and National Competitive Bidding documents.
- During engineering design, comprehensive geotechnical and geological investigations are required to anticipate difficult foundation conditions. This will help reduce unnecessary and preventable variations during construction and avoid construction delays. Geotechnical investigations may need to be separately budgeted and contracted.

6. **Project photos.** The following set of project pictures shows the situation before the project and the visible impacts and changes after the implementation of the project.

Figure 7.1: Dong Hoi - Duc Ninh WWTP - Before and After the Project

Source: PMUs.

Figure 7.2: Dong Hoi - Cau Rau River Dredging/Embankment Construction - Before and After the Project

Source: PMUs.

Figure 7.3: Nha Trang - Closed Ru Ri Landfill and Luong Hoa Leachate Treatment Plant

Source: PMUs.

Figure 7.4: Long My Landfill Construction Quy Nhon - Before and After the Project

Source: PMUs.

Figure 7.5: The Junction of Hoang Quoc Viet - Hoang Hoa Tham in Quy Nhon before and After Investment in Flood Control and Drainage Systems

Source: PMUs.

Figure 7.6: Phong Thuy Canal - Before and After the Project

Source: PMUs.

Annex 8. Comments of Co-financiers and Other Partners/Stakeholders

The draft ICR was shared with the two co-financiers (the GEF and the Japan PHRD).

The GEF, through a mail communication from Jiang Ru (Senior Environmental specialist, GENDR) on March 10, 2015, expressed its agreement with the GEO rating. Jiang has advised the need to double-check some baseline figures for consistency, and the team has addressed this in the updated version of the ICR.

The PHRD, through a mail communication from Helena Y. Nkole (Senior Operations Officer, DEPTF) on March 24, 2015, expressed its concern on the manner in which the outcome of the PHRD grant is portrayed in the ICR and advised a revision of sections of the ICR to reflect the extent to which the PHRD grant contributed to the development outcomes of the project.

The team accepted this comment and updated the ICR to reflect the PHRD's contribution. These sections were revised to the extent of including separate paragraphs: Component 6 (Page 3–4); description of the main beneficiaries (Page 5); assessment of outcomes (Page 12); lessons learned (Page 19–21); annex 2 (Page 24); and annex 10. A revised version of the ICR has been shared with the PHRD for a final check.

Annex 9. List of supporting documents

Project Concept Note, July 2004
Project Appraisal Document, June 2006
GEO – Project Appraisal Document – May 2009
Financing Agreement, March 2007
Additional Financing Project Paper, March 2011
Financing Agreement Additional financing, May 2011
Aide memoires
Implementation Support Reports, 11 total from June 2007 to November 2014.
Project closing reports from the three cities and compiled for all of them.

Annex 10. PHRD Grant TF056325 - Summary of Activities under the Grant

1. With the primary objective of (a) sustaining improvements to public health, particularly for poor residents and (b) increasing growth and economic development, the purpose of the PHRD grant was to reduce incidence of flooding, reverse environmental degradation, and strengthen the capacity of the URENCOs in all three project cities. The grant is part of a wider cooperation within the urban sector that is being organized through the national Urban Forum and the Official Development Assistance Partnership, which operates in Ho Chi Minh City, where Japan Bank for International Cooperation, the Bank, and the ADB are all supporting environmental sanitation projects.

2. With a scope of US$4.6 million, the grant agreement was approved on February 9, 2006 and signed on March 19, 2007. The grant is complementary to the project and therefore tied 100 percent to the progress of the main project. The project has an eight-year implementation period and the use of the PHRD grant falls mainly in the mid to later years. The designed activities funded by the PHRD grant have been integrated in the overall implementation of the umbrella project.

3. Though the co-financing of the main project, CCESP, the PHRD grant has assisted the recipient in carrying out a program to build institutional capacity of the implementation agencies, relevant service providers, and other relevant agencies. With the participating cities providing maximum efforts, good performance has been recorded not only for civil works contracts (financed by IDA credits and the counterpart fund) but also for the capacity-building activities (funded by IDA credits, the PHRD grant, and the counterpart fund). Encouraging achievements have been realized on the consulting contracts funded by the PHRD grant for strengthening the capacity of the PMUs, service providers, and relevant line departments. These results are assessed as Moderately Satisfactory.

4. By the reporting date, all relevant contracts were substantially completed. The overall disbursement is about 85 percent. The key achievements under capacity building of service providers include a comprehensive capacity-building program to strengthen the overall capacity of the service providers, initially comprising six tasks to cover (a) corporate management and development; (b) institutional and organizational aspects; (c) technical areas of asset management; (d) costs of operations and FM; (e) customer relations; and (f) human resource management. Later, three tasks were added covering technical assistance for O&M of the landfill and leachate treatment plant and the WWTP and pumping stations, with support to the asset owners by providing service contracts, performance indicators, and monitoring processes.

5. In Nha Trang, a total of 75 courses comprising 100 training days had over 1,000 participants attending. In Quy Nhon, the similar figures were 40 courses, 87 training days, and 740 participants. Capacity building for related city departments and the service provider has been provided. Moreover, the IEC programs prepared as part of the capacity-building package for NGOs and community groups have been successfully carried out in the project cities. The PMU staff have received regular training on procurement, contract management, and project management. Relevant consultants have been mobilized to provide necessary assistance.

Annex 11. GEF Grant TF094335 - Summary of Activities under the Grant

1. The prime purpose of the GEF grant was to improve the health and habitat conditions of the East Sea, which is seen as a globally significant marine and coastal ecosystem along the coastline of Vietnam. In 2009, an amount of US$5 million was made available through the GEF grant to Quy Nhon, which together with counterpart funding of US$2.67 million provided an additional US$6.67 million for the following components:

- **Component 1:** Construction of the CEPT plant with secondary treatment provided by trickling filters.
- **Component 2:** Public communication and replication strategy. This component makes reference only to those activities of communication and replication that will be developed for the CEPT plant implementation and operation.
- **Component 3:** Project management, monitoring, and evaluation. This component will finance only those monitoring activities that are directly related to measure and evaluate the GEF project outcomes.

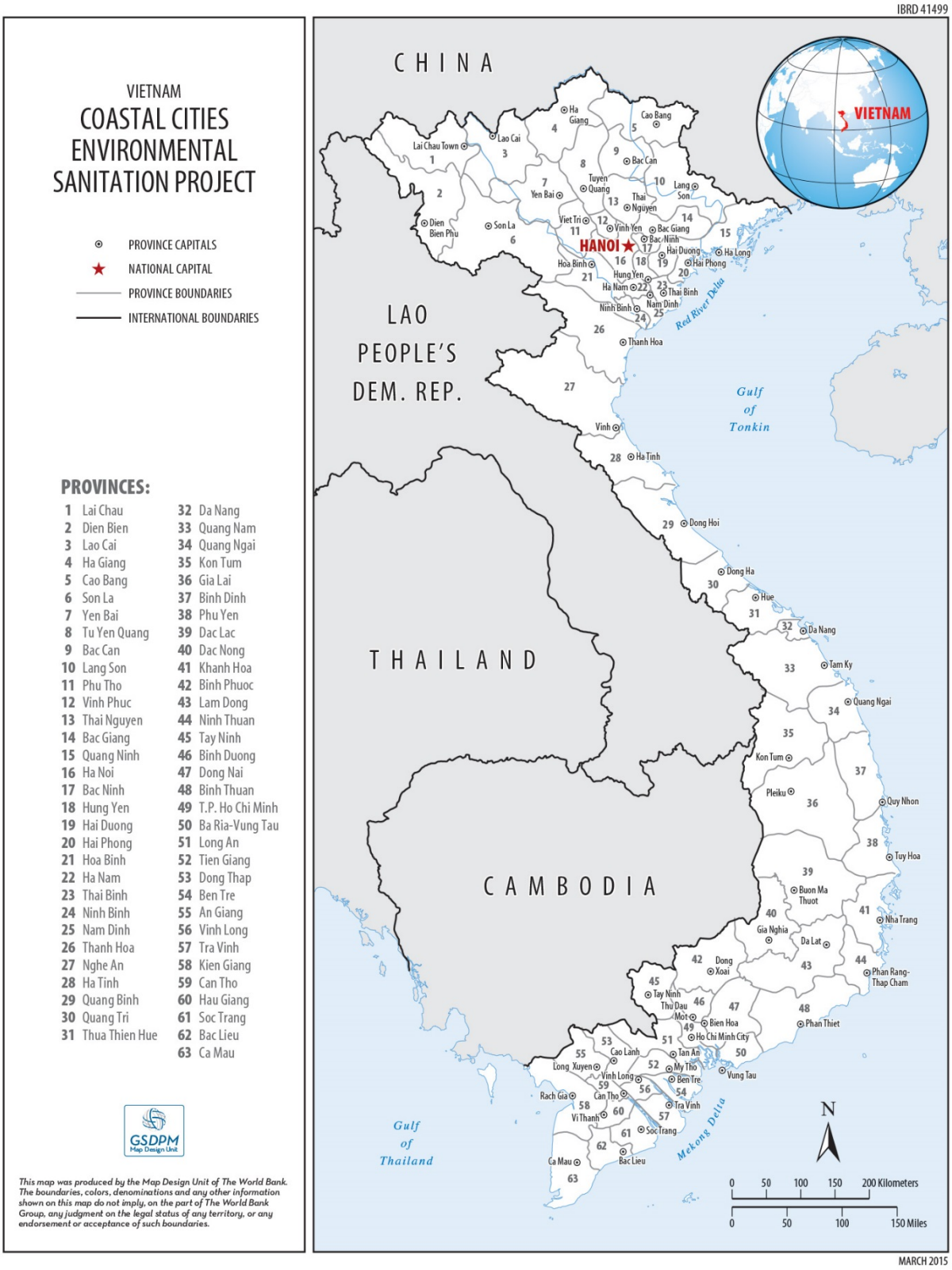
2. The capacity of the plant was originally intended to be 7,000 m^3/day and intended to serve about 60,000 people. The plant was to be connected to a sewerage system financed under the IDA CCESP. The capacity was increased to 14,000 m^3/day following detailed design and after discussions with the Bank.

3. The GEF-Vietnam Coastal Cities Project was the fifth project to be financed under the fund. It builds on the IDA CCESP, which contributes to improve environmental sanitation and enhance the quality of life for residents in the project cities. The GEF project is designed to pilot and promote the replication of a new and more efficient wastewater treatment technology, which would contribute to improving the health and habitat conditions of globally significant marine and coastal ecosystems along the coastline of Vietnam and, through global oceanic circulation, other areas of the Pacific Ocean.

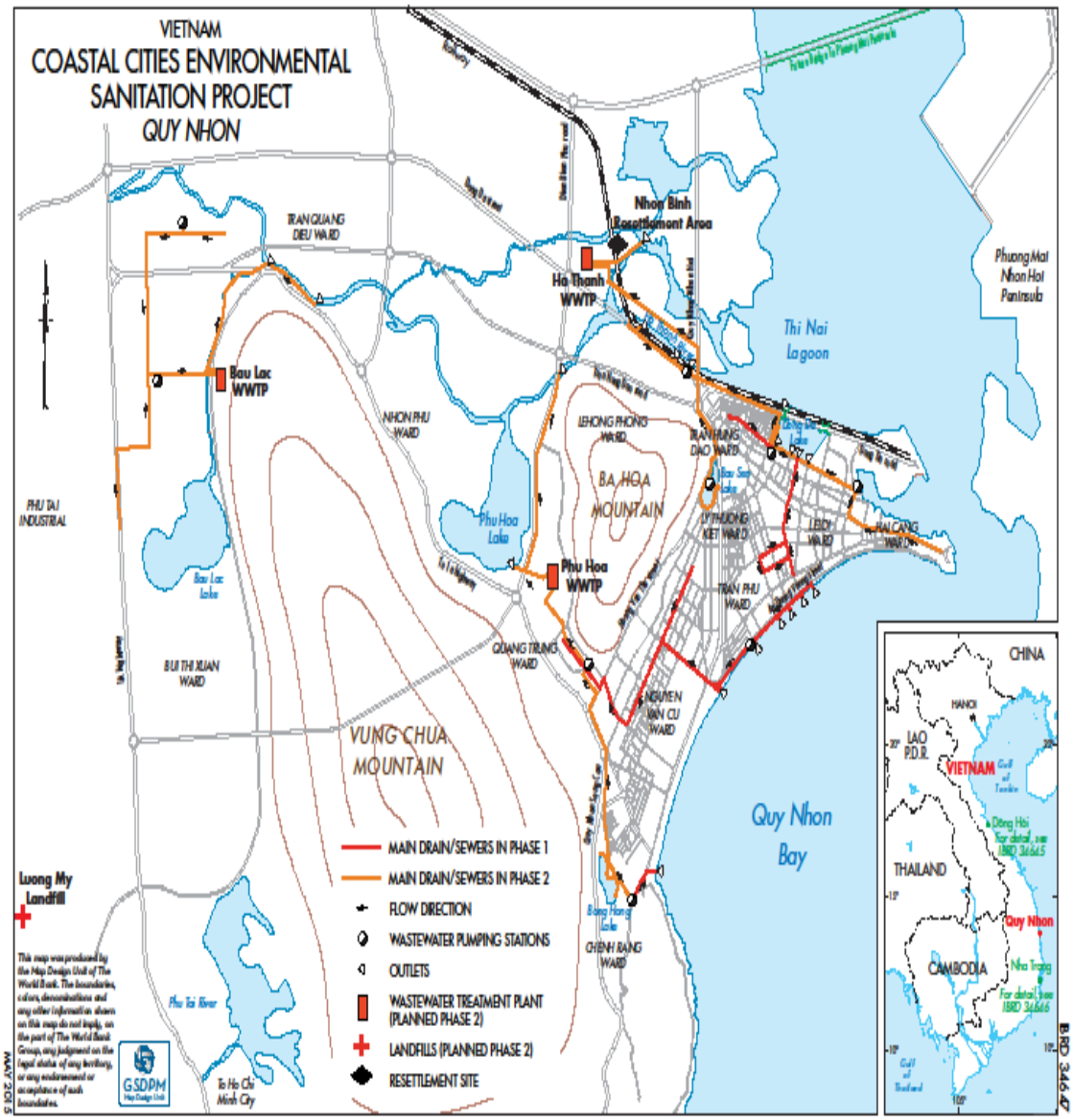
4. Till October 23, 2014, disbursement of the GEF grant was US$3.982 million against US$4.5 million allocation for the CEPT WWTP construction and US$0.041 million against US$0.5 million allocation for capacity building.

5. The 14,000 m^3/day Nhon Binh WWTP, partially funded by the GEF grant, was formally handed over to the service provider on October 1, 2014. It has made a largely smooth and trouble-free transition to normal operations with both the treatment capacity and effluent quality achieving design requirements. Flow to the plant is 13,000 m^3/day, influent BOD_5 quality is in the range of 60–100 mg/l, and the effluent BOD_5 is less than 20 mg/l, meeting QCVN 14/2008 and TCVN 7222/2002.

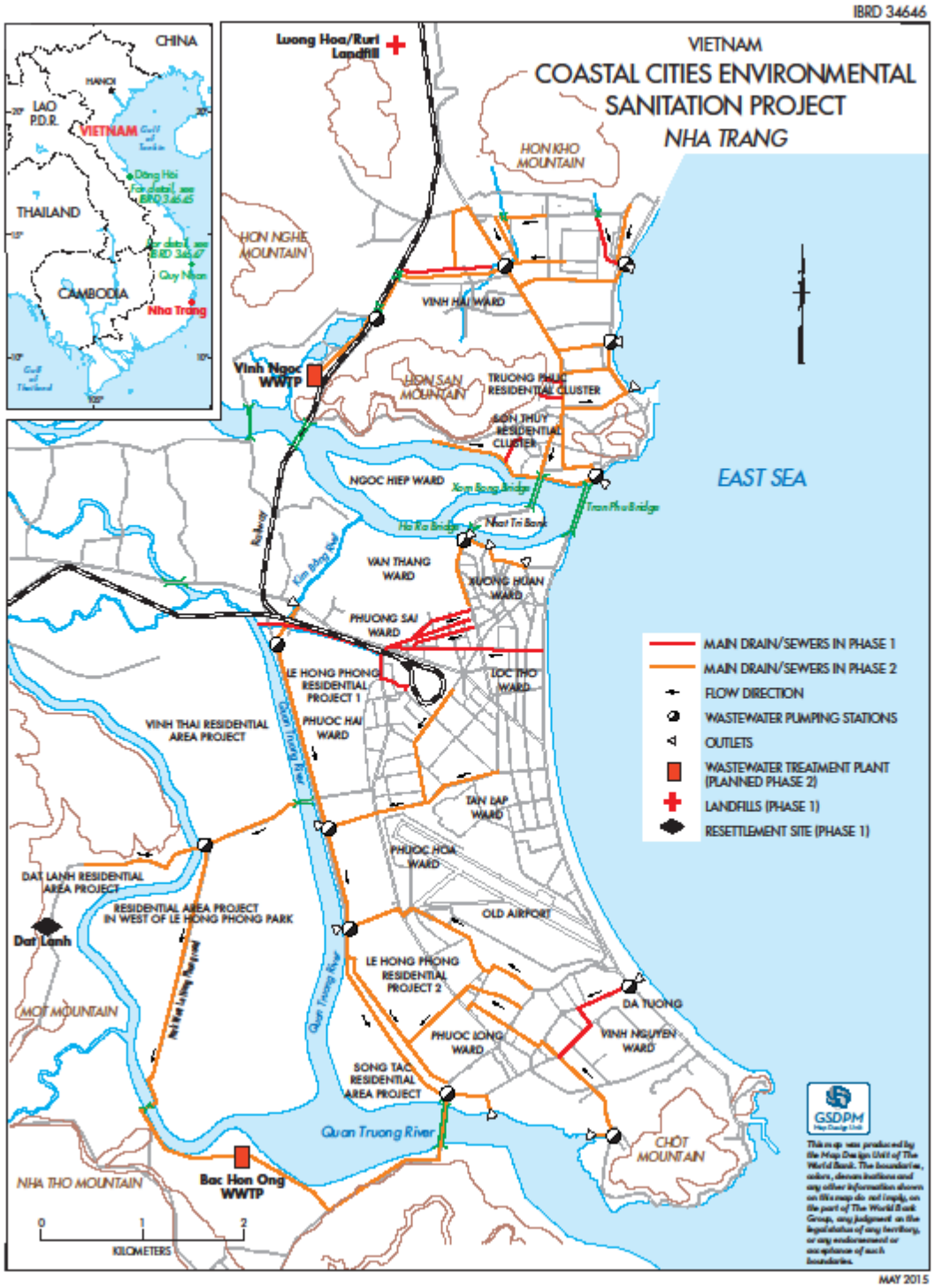
Map 1: Vietnam - Coastal Cities Environmental Sanitation Project



Map 2: Vietnam - Coastal Cities Environmental Sanitation Project - As-built Map - Quy Nhon



Map 3: Vietnam - Coastal Cities Environmental Sanitation Project - As-built Map - Nha Trang



Map 4: Vietnam - Coastal Cities Environmental Sanitation Project
- As-built Map - Dong Hoi