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Report No: PAD2075

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT AND

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A PROPOSED LOAN

IN THE AMOUNT OF US\$46 MILLION

AND

ON A PROPOSED CREDIT

IN THE AMOUNT OF SDR 140.5 MILLION
(US\$190.2 MILLION EQUIVALENT)

TO THE

SOCIALIST REPUBLIC OF VIETNAM

FOR A

VIETNAM COASTAL CITIES SUSTAINABLE ENVIRONMENT PROJECT

April 14, 2017

Water Global Practice
East Asia and Pacific Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective February 28, 2017)

Currency Unit = Vietnamese Dong (VND)
SDR 1 = US\$1.35389
US\$1 = VND 22,755

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BC	Base Cost
BCC	Behaviour Change Communication
BOD	Biochemical Oxygen Demand
CCESP	Coastal Cities Environmental Sanitation Project
CCSEP	Coastal Cities Sustainable Environment Project
CEPT	Chemically Enhanced Primary Treatment
CPC	City People's Committee
CPF	Country Partnership Framework
CPS	Country Partnership Strategy
CSO	Combined Sewer Overflow
DA	Designated Account
DARD	Department of Agriculture and Rural Development
DOC	Department of Construction
DOF	Department of Finance
DOIT	Department of Industry and Trade
DONRE	Department of Natural Resources and Environment
DOT	Department of Transport
DPI	Department of Planning and Investment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FA	Financing Agreement
FM	Financial Management
FS	Feasibility Study
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRS	Grievance Redress Service
IA	Implementing Agency
ICB	International Competitive Bidding
IEC	Information, Education, and Communication
IFR	Interim Financial Report
IRR	Internal Rate of Return
JICA	Japanese International Cooperation Agency
JMP	Joint Monitoring Program
M&E	Monitoring and Evaluation
MARD	Ministry of Agriculture and Rural Development
MOC	Ministry of Construction
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs

MOJ	Ministry of Justice
MONRE	Ministry of Natural Resources and Environment
MPI	Ministry of Planning and Investment
NCB	National Competitive Bidding
NPV	Net Present Value
O&M	Operation and Maintenance
ODA	Official Development Assistance
PAD	Project Appraisal Document
PC	People's Committee
PDO	Project Development Objective
PMU	Project Management Unit
POM	Project Operations Manual
PPC	Provincial People's Committee
PPIAF	Public Private Infrastructure Advisory Facility
PPSD	Project Procurement Strategy for Development
PSC	Project Steering Committee
QCBS	Quality- and Cost-Based Selection
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SCADA	Supervisory Control and Data Acquisition
SIA	Social Impact Assessment
SOE	State-Owned Enterprise
STEP	Systematic Tracking of Exchanges in Procurement
SWM	Solid Waste Management
TA	Technical Assistance
URENCO	Urban and Environment Management Company
VOC	Vehicle Operating Cost
VOT	Value of Travel Time
WB	World Bank
WWTP	Wastewater Treatment Plant

Regional Vice President:	Victoria Kwakwa
Country Director:	Ousmane Dione
Senior Global Practice Director:	Guang Zhe Chen
Practice Manager:	Sudipto Sarkar
Task Team Leader(s):	Hung Duy Le, Iain Menzies

VIETNAM

VIETNAM COASTAL CITIES SUSTAINABLE ENVIRONMENT PROJECT

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PAD DATA SHEET*Vietnam**Vietnam Coastal Cities Sustainable Environment Project (P156143)***PROJECT APPRAISAL DOCUMENT***EAST ASIA AND PACIFIC**GWA02*

Report No.: PAD2075

Basic Information			
Project ID P156143		EA Category A - Full Assessment	Team Leader(s) Hung Duy Le, Iain Menzies
Lending Instrument Investment Project Financing		Fragile and/or Capacity Constraints []	
		Financial Intermediaries []	
		Series of Projects []	
Project Implementation Start Date 5-May-2017		Project Implementation End Date 30-Jun-2022	
Expected Effectiveness Date 3-Aug-2017		Expected Closing Date 31-Dec-2022	
Joint IFC No			
Practice Manager/ Manager Sudipto Sarkar	Senior Global Practice Director Guang Zhe Chen	Country Director Ousmane Dione	Regional Vice President Victoria Kwakwa
Borrower: Socialist Republic of Vietnam			
Responsible Agency: Quang Binh PMU			
Contact: Telephone No.:	Nguyen Van Thuan 84-913295390	Title: Email:	Project Director bqldavsmtdonghoipmu.org.vn
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Responsible Agency: Ninh Thuan PMU										
Contact:		Do Khoa Danh			Title:		Project Director			
Telephone No.:		84-907272777			Email:		pr.pmu.ccesp2@gmail.com			
Project Financing Data (in US\$, millions)										
[X]	Loan	[]	IDA Grant	[]	Guarantee					
[X]	Credit	[]	Grant	[]	Other					
Total Project Cost:		273.6			Total Bank Financing:		236.2			
Financing Gap:		0.00								
Financing Source								Amount		
BORROWER/RECIPIENT								37.4		
International Bank for Reconstruction and Development								46.0		
International Development Association (IDA)								190.2		
Total								273.6		
Expected Disbursements (in US\$, millions)										
Fiscal Year	2017	2018	2019	2020	2021	2022	2023	0000	0000	0000
Annual	8.00	15.59	35.38	35.38	47.18	70.77	23.90	0.00	0.00	0.00
Cumulative	8.00	23.59	58.97	94.35	141.53	212.30	236.20	0.00	0.00	0.00
Institutional Data										
Practice Area (Lead)										
Water										
Contributing Practice Areas										
Environment and Natural Resources; Governance; Social, Urban, Rural and Resilience Global Practices										
Proposed Development Objective(s)										
The Project Development Objective is to increase access to sanitation services and improve the operational performance of sanitation utilities in the Project Cities.										
Components										
Component Name						Cost (US\$, millions), Base Cost				
Sanitation Infrastructure Expansion						140.7				

Urban Connectivity Improvement	31.2
Compensation and Site Clearance	25.1
Implementation Support and Institutional Reform	11.7
Systematic Operations Risk-Rating Tool (SORT)	
Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Low
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Moderate
9. Other	
OVERALL	Substantial
Compliance	
Policy	
Does the project depart from the CAS in content or in other significant respects?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Does the project require any waivers of Bank policies?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Have these been approved by Bank management?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Is approval for any policy waiver sought from the Board?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Does the project meet the Regional criteria for readiness for implementation?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Safeguard Policies Triggered by the Project	Yes No
Environmental Assessment OP/BP 4.01	<input checked="" type="checkbox"/>
Natural Habitats OP/BP 4.04	<input checked="" type="checkbox"/>
Forests OP/BP 4.36	<input checked="" type="checkbox"/>
Pest Management OP 4.09	<input checked="" type="checkbox"/>
Physical Cultural Resources OP/BP 4.11	<input checked="" type="checkbox"/>
Indigenous Peoples OP/BP 4.10	<input checked="" type="checkbox"/>
Involuntary Resettlement OP/BP 4.12	<input checked="" type="checkbox"/>

Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Legal Covenants

Name	Recurrent	Due Date	Frequency
Institutional Arrangements	X		

Description of Covenant

Loan Agreement (LA), Section I.A.1 of Schedule 2: Requirement for each Project Province to maintain a Project Steering Committee and a Project Management Unit.

Name	Recurrent	Due Date	Frequency
Project Operations Manual	X		

Description of Covenant

LA, Section I.A.2: Requirement for each Project Province to prepare and adopt a Project Operations Manual for the implementation of its part of the Project.

Name	Recurrent	Due Date	Frequency
Revolving Fund for Household Connections	X		

Description of Covenant

LA, Section I.A.4 of Schedule 2: Requirement for Ninh Thuan province to: (a) prepare and adopt a Revolving Fund Manual, satisfactory to the Bank, setting forth the procedures and requirements for the establishment and operation of a revolving fund in the Borrower's Phan Rang-Thap Cham city; the fiduciary and other arrangements for said fund; eligibility criteria for households applying for the Sanitation Loans; and the terms and conditions of the Sanitation Loans; and (b) enter into an implementation arrangement, acceptable to the Bank, with the Women's Union, whereby the Women's Union shall manage the revolving fund in the Borrower's Phan Rang-Thap Cham city to make Sanitation Loans to eligible households, in accordance with the provisions of the Revolving Fund Manual.

Name	Recurrent	Due Date	Frequency
Safeguards (social)	X		

Description of Covenant

LA, Section I.D.1-2 of Schedule 2: Requirement for the Borrower, through the Project Provinces, to: 1. (a) take all necessary actions to avoid or minimize to the extent possible any involuntary relocation of persons, or their loss of shelter, assets, or access to assets, or loss of income sources or means of livelihood, temporarily or permanently; (b) in the event that Project activities give rise to Displaced Persons, prior to the commencement of such activities, cause to be prepared, a Resettlement Action Plan, acceptable to the Bank, in accordance with the guidelines, requirements and procedures set forth

in the Resettlement Policy Framework, and thereafter implement in a timely manner said Resettlement Action Plan as approved by the Bank; and 2. ensure that all land acquisition required for the purposes of carrying out works under the Project are financed exclusively out of its own resources, and shall provide, promptly as needed, the resources needed for these purposes, including: (a) all land acquisition required for the purposes of carrying out the Project; (b) resettlement and rehabilitation payments to Displaced Persons; and (c) all other costs associated with environmental and/or social mitigation measures set forth in the Safeguard Instruments.

Name	Recurrent	Due Date	Frequency
Safeguards (environment)	X		

Description of Covenant

LA, Section I.D.3 of Schedule 2: Requirement for the Borrower, through each Project Province, to: (a) implement in a timely manner the Environmental and Social Management Plans, in accordance with the Environmental and Social Impact Assessment acceptable to the Bank, as the case may be; (b) ensure that no civil works carried out under the Project, shall commence unless and until the relevant Safeguards Instruments are furnished to the Bank and all requisite consultation and public disclosure activities have been carried out, all in a manner and form satisfactory to the Bank; and (c) ensure, that all terms of reference for any technical assistance or studies carried out under the Project are consistent with, and pay due attention to, the Bank's Safeguards.

Name	Recurrent	Due Date	Frequency
Mid-term review		24 months after effectiveness	

Description of Covenant

LA, Section II.A.2 of Schedule 2: Requirement for the Borrower carry out jointly with the Bank a midterm review to assess the status of Project implementation, as measures against the performance indicators set forth in the Project Operations Manual.

Conditions

Source of Fund	Name	Type
IBRD/IDA	Cross-Effectiveness of Loan and Financing Agreement	Effectiveness
Description of Condition		
FA, Article IV, Section 4.01: Execution of the Loan Agreement and fulfilment of all conditions precedent to its effectiveness (other than the effectiveness of the Financing Agreement).		
IBRD/IDA	Subsidiary Agreements/Counterpart Funding/Roadmap for cost recovery and wastewater tariff	Disbursement

Description of Condition

LA, Section IV.B.1 (b) of Schedule 2: No withdrawal shall be made under each of Categories (1) – (4) unless the Borrower has furnished to the Bank evidence acceptable to the Bank that: (i) a Subsidiary Agreement has been duly authorized or ratified by the Borrower, through its Ministry of Finance, and

the respective Project Province; (ii) the counterpart fund allocation for Project Province's Respective Part of the Project has been approved by its Provincial People's Committee; and (iii) the roadmap for cost recovery and wastewater tariff increase for the respective Project City has been approved by the respective Provincial People's Committee.

Team Composition				
Bank Staff				
Name	Role	Title	Specialization	Unit
Hung Duy Le	Team Leader (ADM responsible)	Senior Infrastructure Specialist	Infrastructure Specialist	GWA02
Iain Menzies	Team Leader	Senior Water and Sanitation Spec.	Water and Sanitation Specialist	GWA02
Madhu Raghunath	Team Member	Program Leader	Urban Specialist	EACVF
Nina Masako Eejima	Team Member	Senior Counsel	Counsel	LEGES
Aristeidis I. Panou	Team Member	Senior Counsel	Counsel	LEGES
Thu Ha Le	Team Member	Associate Counsel	Associate Counsel	LEGES
Huyen Thi Phuong Phan	Team Member	Senior Urban Development Specialist	Urban Development Specialist	GSU08
Lilian Pena Pereira Weiss	Team Member	Senior Water and Sanitation Specialist	Water and Sanitation Specialist	GWA02
Aileen Bolus Castro	Team Member	Water and Sanitation Specialist	Water and Sanitation Specialist	GWA02
Chi Kien Nguyen	Team Member	Transport Specialist	Transport Specialist	GTI02
Son Van Nguyen	Team Member	Senior Environmental Specialist	Environmental Specialist	GEN2B
Roxanne Hakim	Team Member	Senior Social Development Specialist	Social Development Specialist	GSU02
Nghi Quy Nguyen	Team Member	Senior Social Development Specialist	Social Development Specialist	GSU02
Thang Toan Le	Team Member (Procurement ADM Responsible)	Procurement Specialist	Procurement Specialist	GGO08
Anna Wielogorska	Team Member	Lead Procurement Specialist	Procurement Specialist	GGO08
Ha Thuy Tran	Team Member	Senior Financial Management Specialist	Financial Management Specialist	GGO20
John Nyaga	Team Member	Senior Financial Management Specialist	Financial Management Specialist	GGO20

Huong Thi Lan Tran	Team Member	Senior Public Sector Specialist	Governance Specialist	GGO14	
Quang Hong Doan	Team Member	Senior Economist	Economist	GMF02	
Chau-Ching Shen	Team Member	Senior Finance Officer	Finance Specialist	WFALN	
Thao Thi Do	Team Member	Finance Analyst	Finance Specialist	WFALN	
Dung Viet Do	Team Member	Senior Country Officer	Country Management	EACVF	
Son Duy Nguyen	Team Member	Senior Operation Officer	Portfolio and Operation	EACVF	
Tuyet Thi Phung	Team Member	Program Assistant	Program Assistant	EACVF	
Demilour Reyes Ignacio	Team Member	Senior Program Assistant	Program Assistant	GWA02	
Violeta Wagner	Team Member	Senior Program Assistant	Program Assistant	GWA02	
Chris Banes	Team Member	Consultant	Municipal Engineer		
Thi Dieu Ly Vu	Team Member	Consultant	Environment Specialist		
Extended Team					
Name	Title	Office Phone	Location		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
Vietnam	Quang Binh	Dong Hoi		X	
Vietnam	Binh Dinh	Quy Nhon		X	
Vietnam	Khanh Hoa	Nha Trang		X	
Vietnam	Ninh Thuan	Phan Rang-Thap Cham		X	

I. STRATEGIC CONTEXT

A. Country Context

1. Vietnam has made remarkable progress in economic growth in recent years, and has recently graduated to lower-middle-income country status. Over the last two decades, the country has recorded among the highest growth rates in the world, which in turn enabled poverty reduction at a record pace. Gross domestic product growth, however, while still deemed high for international standards, fell from an average rate of 7.3 percent during 2000–2007 to 5.8 percent during 2008–2012. Growth has subsequently recovered to 6.7 percent in 2015 and 6.2 percent in 2016. The external sector has held up well despite the global situation, but domestic demand remains weak on account of subdued private sector confidence, an overleveraged state-owned enterprise (SOE) sector and shrinking fiscal space. The slowing of the growth rate has had limited impact in large cities which continue to attract domestic and foreign investment.

2. An integral part of Vietnam's transition to low-middle-income status has been its transition from a largely rural to urban economy. The country's economic progress has coincided with rapid urbanization, with Vietnam sustaining a 3 percent annual urban population growth rate from 1999 to 2011. The urban population is currently 35 percent of the total population and is expected to reach 40 percent by 2020. This growth has contributed to the significant challenges in service delivery and infrastructure in the cities, in general, and specifically, for sanitation management (wastewater, drainage, and solid waste).

B. Sectoral and Institutional Context

Urban Sanitation

3. In 2009, the Government set out its policy and targets for wastewater and drainage in Decision No. 1930/2009/QĐ-TTg - Orientation Plan for Urban Drainage to 2025 and Vision to 2050. The 2020 Government targets include the following: flooding will be eliminated in Class IV¹ and above cities, drainage system coverage will reach 80 percent, and 60 percent of domestic wastewater will be collected and treated centrally in Class III and above cities.

4. Delivery of water and sanitation services is decentralized to the provinces, which are also responsible for project preparation and implementation. The central government is responsible for policy setting and monitoring progress in meeting sectoral targets.

5. **Institutional arrangements.** In Vietnam, urban 'sanitation' services comprise drainage, wastewater collection and treatment, and solid waste management (SWM). SWM is typically undertaken by local government-owned urban and environment management companies (URENCOs). At the national level, the Ministry of Construction (MOC) is the responsible line ministry for urban sanitation (policies, regulations, and technical standards). The Ministry of Natural Resources and Environment (MONRE) is responsible for environmental protection and water resources, including the regulation of sewage and wastewater discharge to the environment. The Ministry of Planning and Investment (MPI) oversees the management of public investment and resource allocation—prioritizing

¹ Under Decree 42/2009/ND-CP, urban centers are graded into six classes (Special, I–V) according to, among others, population size/density and the standard of urban infrastructure.

public investment and assuring the availability of funds for recurrent costs and expenditures and managing the public debt.

6. At the local government level, the Provincial People's Committee (PPC) is the highest level of government, and responsible for investments and service provision in the sanitation sector. The national-level state management model is replicated at the provincial level with the respective line departments (for example, Department of Construction [DOC]) reporting to the PPC.

7. Each province/city in Vietnam has its own institutional management model for urban services. Service providers may be SOEs, single owner companies (public), joint stock companies (mainly public), or private companies. They may have service provision delegated to them with or without service contracts. Service contracts are typically very basic with limited service obligations and a one-year life—very few indeed are performance based. Most urban sanitation enterprises operate the system under the mechanism of a 'work order from the city authority' and are paid directly from the city budget. The current practice of providing the enterprises with a fixed annual budget for operations does not allow them to invest in research and development or in the optimization of the wastewater system. The budgets are often based on notional cost norms rather than on the actual costs of delivering sustainable sanitation services. There is a lack of asset management planning and preventative maintenance. Unplanned expenses (for example, failure of pumps, switchgear, and sensors) must be approved by different administrative bodies of the city which takes considerable time and has frequently resulted in rapid asset deterioration and loss of sanitation services. There is little accountability for service provision, with poor service tolerated as the price for low tariffs and fees, and there are few consequences for service failures. Transparency is also limited with regard to how service contracts are awarded (often direct negotiation) and lack of information being reported on service standards and contract performance. Annex 2 provides further details of state and province level institutional arrangements.

8. **Sector performance.** While the sector policies and institutional arrangements are relatively clear, there are a number of critical issues surrounding sector performance. In many urban areas, drainage systems have been poorly operated and maintained, and their capacity has not been upgraded in line with the demands of the rapidly urbanizing population. This has resulted in increased flooding risk in many urban centers. The Joint Monitoring Program (JMP)² estimates that access to an improved toilet facility reached 93 percent in 2012. While this figure seems encouraging, only 10 percent of urban wastewater is treated and very few towns or cities have a WWTP. The bulk of drainage networks are in fact combined surface water drainage and sewage systems and often overflow in the rainy season, discharging pathogenic waste directly into the streets and beaches in coastal cities.

9. **Wastewater treatment.** The construction of centralized WWTPs for urban areas only started in 2004. Where WWTPs exist, these tend to be underutilized because (a) household connection rates to the sewers are low due to the high costs/low incentives for connecting, and (b) most household toilets are connected to a septic tank or pit which retains the bulk of the solids—only the overflow discharges into the drainage network and then mixes with storm water so that wastewater entering the treatment plants is fairly dilute, in some cases meeting discharge standards before it is treated. This challenges the current practice, when investments are made, of building relatively expensive plants that can treat wastewater to a very high standard.

² JMP. 2014. "Progress on Drinking Water and Sanitation: 2014 Update." United Nations International Children's Emergency Fund (UNICEF) and World Health Organization (WHO).

10. **Septic tanks.** About 90 percent of urban households have septic tanks or pits which tend to be constructed without a sealed base and emptied only rarely (if at all)³ and hence function inefficiently. The removal of septage (septic sludge) is largely unregulated, with only 4 percent of septage safely disposed/treated.

11. **Investment needs.** While investment in urban sanitation has grown in recent years, almost all of this growth has been donor-funded; government expenditure—both capital and operational—has been quite limited. The country needs to spend an estimated US\$771 million per year to meet its 2020 targets for urban sanitation.⁴ With very few WWTPs, at least relative to the population, almost three-quarters of this amount (about US\$580 million per year) is needed for new treatment facilities. The estimated investment requirements are actually conservative because they focus on wastewater treatment only and ignore replacement costs of existing toilets and on-site treatment systems as well as the cost of making direct connections from household toilets to sewers. Currently, annual anticipated investments are expected to cover only about 27 percent of the annual requirements. Thus, to maximize the benefits with limited resources, it would be important that future investment decisions are based on priorities and low life cycle costs.

12. **Sustainable operations.** Additional pressure on tariffs is also expected to come from the funding needed for maintenance and operating expenditures. Wastewater and drainage services are not yet generally provided on a commercial basis, and operating costs are not fully recovered and are financed through unreliable subsidies from the provinces. There is a clear and pressing need to set up proper institutional and financial arrangements to ensure sustainable operations. There is also a need to establish a system through which the costs are accounted for properly and recovered to minimize the burden on the provinces. The sector's low revenue base has resulted in low investments, low cost recovery, low levels of asset maintenance and inadequate service levels.

13. With donor support, Decree 80/2014/ND-CP on Drainage, Sewerage and Wastewater Treatment came into effect in 2015. It introduces a number of measures to significantly improve technical and financial sustainability, including

- (a) Mandatory connection of households to sewers, with subsidies for poor households;
- (b) Performance-based management contracts (5–10 years) to be signed between the owner of the drainage and sewerage system (PPC or allocated to lower PC) and an O&M service provider (public or private). Clear elaboration of rights and obligations of each party, scope of work, service standards, contract value, mode of payment etc;
- (c) Users to pay a service 'price' for drainage/wastewater services (per m³ of wastewater generated) based on the actual costs of providing O&M services and reasonable profit, to be collected by respective water supply service providers; and
- (d) Provisions for proper septic tank sludge management, including periodic emptying.

³ WSP (Water and Sanitation Program). 2015. "Upgrading On-site Sanitation and Connecting to Sewers in Southeast Asia - Insights from Vietnam and Indonesia." Vietnam Country Report.

⁴ WSP/World Bank. 2014. "Water Supply and Sanitation in Vietnam - Turning Finance into Services for the Future. Service Delivery Assessment."

14. Decree 80 is being implemented in a number of cities, particularly where donor technical assistance (TA) support is available (for example, through Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ] who is working with cities on service contracts and cost reflective tariff mechanisms).

Solid Waste Management

15. Solid waste management (SWM) is a growing challenge in rapidly urbanizing Vietnam. Per capita generation of waste increased by over 30 percent and total volume generated increased by almost 50 percent between 2007 and 2010. Solid waste generated in urban areas exceeds 28,000 tons per day. There are very few sanitary landfills in Vietnam and collection is often not well organized. As a result, solid waste is often thrown into drainage channels, lakes, and rivers which results in the degradation of water quality and flooding. Landfill leachate is an important source of water and soil pollution, with effective leachate treatment uncommon. At many open dump sites, the uncontrolled burning of solid waste causes air pollution in the surrounding environment. People living near open dumping sites and unsanitary landfills not only suffer from odor problems but also suffer from increased dermatological disease, respiratory diseases, and diarrhea. The most vulnerable groups are scavengers, most of whom are women and children.⁵

Urban Connectivity

16. Generally, urban transport in Vietnam is at an early stage of development and on an unsustainable path that will hinder long-term growth. Traffic congestion is becoming severe during peak hours in major metropolitan centers such as Hanoi and Ho Chi Minh City and is starting to worsen in cities of smaller size, including the project cities. Strong growth has brought heavy congestion along major routes and inner city areas, which impacts negatively the urban environment especially the ambient air quality. This raises a critical need for solutions to ease traffic pressure, including expanding and enhancing the connectivity of urban infrastructure.

17. The project cities have developed a range of master plans including land use and transport master plans to guide city development and respond to the rising traffic demands. Reviews of actual up-to-date implementation versus planned investments reveal that many urban roads and/or bridges remain unbuilt. A number of these planned road/bridges are critical to the development of the cities—these will contribute significantly to improved connectivity and mobility. Funding constraints have been reported, preventing the cities from investing in these essential road/bridges, and thereby improving connectivity of the road network.

18. The majority of the existing urban road networks in the project cities are of a low standard. Private vehicles, especially motorcycles, dominate transportation. Except for some arterial roads, the roads are small with basic road facilities. A considerable number of roads do not provide a suitable environment for pedestrians and do not facilitate house/shop accessibility. These shortfalls have negative impacts on the rapid intensive urbanization of the cities.

⁵ Nguyen, Duc Luong, Hoang Minh Giang, Bui Xuan Thanh and Nguyen The Hung. 2013. "Challenges for Municipal Solid Waste Management Practices in Vietnam." *Waste Tech.* 1 (1):17–21.

Project's Integrated Approach

19. The Vietnam 2035 Report⁶ noted that integrated approaches are needed to address Vietnam's burgeoning urbanization challenges, including transport, water supply and sanitation (including flooding), and environmental protection. The environmental quality of water is important not only for ecosystem health and the quality of life in general but also for income growth. In urban areas, environmental pollution from urban wastewater has resulted in toxic waterways and polluted beaches/coastal waters with impacts on economic activities. The report also noted the need to expand urban connective infrastructure by improving the level and quality of urban transport services and addressing the challenges of limited capacity of bridges and roads. This would decrease urban congestion and increase mobility of the population that will support urban economic development.

20. The project design seeks to respond to the project cities' demands for sanitation and connectivity investments as efficiently and effectively as possible. Taking an integrated approach, the project combines these investments wherever possible. Some of the proposed roads and bridges under the project will share alignments and spaces with the project's sanitation works—construction of these road/bridges will facilitate provision and O&M of the sanitation infrastructure. In return, provision of the Component 1's storm drain/culverts and canal embankments as a shared structure for roads will help save construction costs. In a number of cases, the works of the two components (1 and 2) will complement each other, producing cost-effective integrated solutions meeting both transport and sanitation needs.

C. Higher Level Objectives to which the Project Contributes

21. The project contributes to the World Bank Group's twin goals of ending extreme poverty and boosting shared prosperity. The project will reduce vulnerability to flooding, with many flood-prone areas containing poorer households. Reducing flooding risks will also reduce economic losses (reduced trading and retail activity, reduced flood damages). The project will also help improve environmental conditions through improved wastewater services, resulting in reduced incidences of waterborne diseases and associated health care costs for poorer households, about half of whom are female inhabitants. The project recognizes that many of these benefits will only accrue if households connect to the sewerage networks, and pro-poor support (for example, revolving funds) will be provided to ensure that poorer households can afford access. Fisheries and tourism are important income generators in the project's coastal cities, and the environmental improvements will reduce watercourse and beach/marine pollution and so improve the sustainability of these sectors.

22. The World Bank Group's Country Partnership Strategy (CPS, 2012–2016) for Vietnam⁷ supports investments and policies organized into a strategic framework of three pillars: (1) strengthening Vietnam's competitiveness in the regional and global economy, (2) increasing the sustainability of its development, and (3) broadening access to opportunity. The CPS also has three cross-cutting themes: (a) strengthening governance; (b) supporting gender equity; and (c) improving resilience in the face of external economic shocks, natural hazards, and the impact of climate change.

23. The project will contribute directly to pillar 2 by increasing wastewater collection and treatment, improving SWM, and reducing flooding risks in the project cities. The project will also address the issues

⁶ World Bank and Ministry of Planning and Investment. 2016. "Vietnam 2035 - Towards Prosperity, Creativity, Equity, and Democracy."

⁷ Report No. 65200-VN. Discussed by the Executive Directors on December 15, 2011.

of governance and sustainability through proposed institutional arrangements to ensure that wastewater operations and management are carried out in a more sustainable manner. In relation to the third cross-cutting theme, the project will be designed to take into account climate change impacts, in particular through increasing resilience to floods.

24. The project is also aligned with the priorities identified in the Vietnam Systematic Country Diagnostic (2016) - Sustaining Success: Priorities for Inclusive and Sustainable Growth. The project's focus on improving sanitation services (drainage/flood management, wastewater collection and treatment, SWM) and associated institutional reforms will contribute to a number of the Diagnostic's priorities: (2) delivering productive infrastructure and competitive cities, (6) augmenting resilience to climate change and generating mitigation benefits while reducing environmental pollution, and (7) strengthening institutional foundations.

25. A new Vietnam Country Partnership Framework (CPF) is under preparation (FY18-22). The project will support proposed focus areas relating to SOE reform, private sector participation, enhancing pollution management, and improving the delivery of urban services and infrastructure.

II. PROJECT DEVELOPMENT OBJECTIVES

A. Project Development Objective (PDO)

26. The Project Development Objective is to increase access to sanitation services and improve the operational performance of sanitation utilities in the Project Cities.

B. Project Beneficiaries

27. Major beneficiaries of the projects include (a) about 290,000 people living in the project cities who will benefit from improved sanitation and enhanced connectivity and (b) tourism sector benefitting from urban environmental improvement investments—reduced risk of flooding disruptions, pollution, sanitation, and health-related issues.

C. PDO Level Results Indicators

28. At the project level, PDO indicators for the proposed project are as follows:

- Direct project beneficiaries (number), of which female (percentage) (core indicator)
- People provided with access to sanitation through household connection to the sewer network (number)
- Cost recovery level for drainage and wastewater services (percentage)

III. PROJECT DESCRIPTION

A. Project Components

29. This project builds on the previous Coastal Cities Environmental Sanitation Project (CCESP) (P082295/P122940), which had an overall satisfactory rating⁸ and the following PDO: to improve the environmental sanitation in the project cities (Dong Hoi, Nha Trang, and Quy Nhon) in a sustainable manner and thereby enhancing the quality of life for city residents. The CCESP was implemented from June 2007 to November 2014. The indicators of the CCESP were met and the following results materialized in the project areas: (a) flooding decreased and no wastewater was discharged onto beaches and into canals in the project areas; (b) quality of water in lakes, canals, and rivers improved; (c) public and school toilets are now properly operated and maintained; and (d) capacity of the Project Management Units (PMUs) and relevant authorities was strengthened. With the gradual increase of wastewater and solid waste tariffs, cost recovery and project sustainability were improved. The CCSEP will increase sanitation services coverage across the three CCESP cities, extending to areas that could not be funded under the original project. Without these new investments, large parts of the project cities will remain vulnerable to the polluting effects of untreated sewage and solid waste. The new project will also significantly increase household connectivity in the project cities through focusing on connecting unconnected properties in the CCESP areas and extending tertiary sewers in unserved areas. New household connection policies and funding mechanisms will be developed with the PPC and CPCs under the CCSEP to improve connection rates.

30. This project will be implemented over a period of five years and will finance priority investments in the four participating project cities (Dong Hoi, Quy Nhon, Nha Trang, and Phan Rang-Thap Cham). Dong Hoi, Quy Nhon, and Nha Trang were selected because they had benefited under the earlier CCESP, but significant investments are still required to increase sanitation coverage and improve institutional arrangements and sustainability. Phan Rang-Tap Cham was selected because of its proximity to Nha Trang, its lagging development status, and the World Bank's strategic engagement with Ninh Thuan Province on disaster risk management and climate resilience. The project will consist of four components with a total estimated project cost of US\$273.6 million. This will be financed through (a) an IBRD loan of US\$46 million, (b) an IDA credit of US\$190.2 million equivalent, and (c) counterpart resources of US\$37.4 million from the government counterpart. Project costs are inclusive of price and physical contingencies, interest during construction, commitment fee, and front-end fee. Annex 2 provides the detailed project description. Annex 6 provides maps of the project activities. As of April 2017, the detailed design and bidding documents of about 30 percent of the investment will be available.

31. **Component 1: Sanitation Infrastructure Expansion** (US\$140.7 million, Base Cost [BC]). This component will contribute to PDO achievement (increase access to sanitation services) through investments in

- (a) Flood reduction works, including the rehabilitation/improvement of the embankments of lakes/canals/rivers, construction of a new retention lake, and rehabilitation of existing lakes;

⁸ The Implementation Completion and Results Report (Report No: ICR00003346) had the project overall outcome rated as Moderately Satisfactory.

- (b) Drainage and wastewater collection networks—over 30 km of primary/secondary sewers, over 150 km of tertiary sewers, 25 pumping stations, and over 64,000 household connections and 550 commercial connections;
- (c) WWTPs—including Supervisory Control and Data Acquisition (SCADA), construction of a new WWTP, and upgrading of three existing ones;
- (d) School sanitation (30 schools) and public toilets (10);
- (e) Revolving funds for household connections in Phan-Rang-Thap Cham;
- (f) SWM—construction of new landfill cell, upgrading leachate treatment facilities, purchase of solid waste collection vehicles and equipment; and
- (g) Design and supervision – provision of support to Project Cities for associated implementation support, including engineering design, construction supervision, financial audits, and environmental and social management.

32. Some of the subcomponents, notably (a) and (b), were designed with climate change adaptation in mind. See the Climate Change section below.

33. **Component 2: Urban Connectivity Improvement** (US\$31.2 million, BC). This includes priority roads and bridges along canals, drains, and rivers—over 7 km of strategic roads and five bridges. These infrastructures will create new key arterial roads/link roads/local roads or upgrade existing ones, thereby increasing the connectivity of the cities' road network. The roads and bridges will play an important role in relieving current traffic pressure/congestion and will also facilitate and simulate urban development in the project cities. It also includes associated implementation support, including engineering design, construction supervision, financial audits, and environmental and social management.

34. **Component 3: Compensation and Site Clearance** (US\$25.1 million, BC). This component will provide funding for compensation, site clearance, and resettlement site works. The World Bank's funding will only be used for the construction of technical infrastructure (roads, utilities, and so on) for the resettlement area in Pham Rang. The government counterpart funding will be used for site clearance, relocation, compensation expenses, and housing.

35. **Component 4: Implementation Support and Institutional Reform** (US\$11.7 million, BC—all counterpart funding). This component will contribute to PDO achievement (improve the operational performance of sanitation utilities in select cities) through a capacity strengthening program for the PMUs and relevant agencies, and reform activities⁹ related to implementation of Decree 80 (institutional reorganization, household connection policy, revolving funds in Nha Trang, Phan Rang, and Quy Nhon, service contracts and private sector participation, tariffs/cost recovery). It will focus in particular on implementing lessons learned from the CCESP relating to a number of institutional/utility issues, and the following activities will be undertaken:

- (a) Implementation of clear and consistent asset ownership structures and mechanisms;

⁹ An application for the World Bank-executed TA from the Public Private Infrastructure Advisory Facility (PPIAF) has been approved to support this component (US\$350,000).

- (b) Development of clear and consistent hand-over arrangements for O&M after project completion;
- (c) Development of transparency and accountability mechanisms for O&M activities, particularly where the private sector is to be contracted;
- (d) Development of appropriate performance-based service contracts to address the poor performance of some service providers, with associated rapid asset deterioration;
- (e) Development of household connection policies and funding mechanisms to significantly increase household connection rates to sewers constructed under the project;
- (f) Development and implementation of improved arrangements for the management of septage;
- (g) Development and implementation of cost-reflective tariff mechanisms to improve service provider financial sustainability; and
- (h) Review of the functions and capacity of the utilities and provision of capacity-building support to meet new requirements for improved utility performance.

Gender

36. The project will be gender informed at three levels: analysis, action, and monitoring. Gender analysis has been conducted in all participating cities as part of a social impact assessment (SIA) and safeguard instrument preparation—and has been structured at the household and project level. At the household level, SIAs have included an analysis on the role of women in decision-making processes, especially in household connection decisions and financial investment decisions. At the project level, SIAs have tried to understand gender-disaggregated preferences in communication/consultation channels, expected information about the project activities, prioritized investments, willingness to pay, and household demands for connection and toilet improvement. During the preparation of resettlement plans, two rounds of consultations have been conducted with a relatively high rate of participation by women (about 40–45 percent of consulted people in the four project cities). One important output of the SIAs is a gender action plan, including specific activities to maximize the project benefits to women. The plan includes provisions to: (a) maximize the use of local unskilled women labor; (b) collaborate with women unions in information, education, and communication (IEC) activities, especially for household connections; (c) consult with poor women or female-headed households; and (d) organize awareness raising for women with the messages not only related to the project but also to other issues such as health risks or community disturbance during construction. Project implementation will also recognize the important role of men as well as women in taking household financial decisions such as investing in household sewer connections. To track the results, the PMUs will develop an appropriate monitoring and evaluation (M&E) system to track not only the PDO indicator (female beneficiaries) but also specific activities/interventions in the gender action plan. Gender aspects will also be included in the midterm and final evaluation of the project as appropriate.

Citizens Engagement and Governance

37. The PMUs recognize the importance of engaging with citizens and third parties properly as a way to enhance project transparency and minimize the risk of the project being delayed or undermined because of the lack of support from local communities.

38. Citizen engagement in this project will include feedback collected from beneficiaries on the project design, implementation, results, and the way grievances in relation to the implementation of the project are addressed. As part the project preparation, consultations have been carried out to get recommendations for the project design including activities to be supported in the subprojects. The consultative process will continue to be a key feature during project implementation. The World Bank will work closely with the four PMUs of the subprojects to incorporate elements of citizen engagement in the detailed design and track them during the implementation of the different components of the project. Also, the project Environmental and Social Impact Assessments (ESIAs) provide some baseline data to track citizen engagement such as the number of citizens that have been consulted on the project design or how specific sanitation and hygiene issues flagged in the ESIAs will be addressed during the design and implementation of the subprojects.

39. As an effort to reach out the public more broadly and to enhance transparency of the project, a number of information disclosure channels will be introduced. The primary channel is the subproject information portals. Each PMU will construct a portal which provides general information of the project and all updated information of the corresponding subproject. The information includes the project general description, its components and procurement activities and settlement of grievances in relation to the project implementation. The portals will be a channel to communicate with third parties on the project design, implementation progress, as well as to receive feedback from citizens throughout the project implementation. The portal will be built as part of the information technology (IT) infrastructure of the PMU and city. Another channel for engaging with the public is through local TV and radio programs. The PMU will work with the city's TV and radio to have documentaries produced periodically to inform and communicate about the project implementation with the public at large. In addition to these two channels, the PMUs will explore using social media and IT to interact and collect real-time feedback from citizens in the project areas during the implementation of the subprojects.

40. Strengthening project governance has also been given a priority in the project design, taking into account lessons learned from the previous CCESP and other projects in the sector. In addition to the measures to enhance transparency and information disclosure under the project as part of the citizen engagement efforts, activities to address the governance and integrity risks of the project will be planned and carried out during project implementation. Process control activities, including internal audit functions shall be instituted at all the PMUs. Necessary training and activities on project governance and integrity will be conducted.

41. A seminar on project governance and integrity in procurement and financial management (FM) was held during appraisal and attended by all relevant staff from the implementing agencies (IAs). A project governance and integrity action plan, developed by the PMUs, will be included in the Project Operations Manual (POM) for implementation throughout the project cycle by the participating PMUs. The action plan will cover activities which aim at raising awareness and commitment of the PMUs and project stakeholders on integrity aspects, complying with fiduciary and safeguards requirements, instituting process control measures, and enhancing monitoring and oversight of project implementation.

Climate Change

42. **Screening for climate and disaster risks.** The team conducted a preliminary climate and disaster risk screening for the project at the concept stage. The identified climate and disaster risks include increased frequency and degree of extreme weather events: heatwaves (moderate), extreme precipitation and flooding (moderate), drought (moderate), sea level rise (moderate), storm surges (high), and strong winds (moderate). This broad range of risks was addressed during project preparation, in particular through the hydraulic modeling used to design the sewerage/drainage networks which included a range of climate-related scenarios. In this respect, Vietnam's climate change scenario B2 to 2050 was applied for the design of the drainage and sewerage investments in all four project cities (average emission scenario of Vietnam), in which rainfall is 2–4 percent higher and water level rise is in the range of 24–27 cm. Local stakeholder consultations and dialogues were also undertaken to enhance resilience measures. The overall climate and disaster risk is rated Moderate.

B. Project Cost and Financing

43. Project costs are estimated at US\$273.6 million including the proposed IBRD loan of US\$46 million (about 17 percent of total project cost), IDA credit of US\$190.2 million (70 percent), and counterpart funding of US\$37.4 million (13 percent).

44. The IBRD loan will be a U.S. dollar denominated, LIBOR-based, commitment-linked, variable spread loan with level-based repayment of principal over a period of 29 years, including a grace period of 10 years. The IDA credit will be on standard IDA blend terms for a SDR denominated credit, with a maturity of 25 years, including a five-year grace period, 2 percent interest rate (0.75 percent service charge and 1.25 percent interest rate), no front-end fee, and a commitment charge of 0.5 percent per year subject to waiver.

45. Under government Official Development Assistance (ODA) onlending policy, each province will receive a different proportion of the IDA credit as a grant or as a loan (on-lent). The proportions depend on the economic status of each province.

- (a) Dong Hoi - 80 percent grant and 20 percent onlending
- (b) Nha Trang - 50 percent grant and 50 percent onlending
- (c) Phan Rang - 80 percent grant and 20 percent onlending
- (d) Quy Nhon - 70 percent grant and 30 percent onlending
- (e) All IBRD loans are 100 percent onlent to the provinces

46. The World Bank amounts allocation is presented in the table 1. Detailed project costs and financing plan for each city are as per annex 2.

Table 1. Summary of World Bank Financing

Component Breakdown	Participating Cities (US\$, thousands)				
	Dong Hoi	Quy Nhon	Nha Trang	Phan Rang	Total
Component 1: Sanitation Infrastructure Expansion	35,876	44,958	44,243	61,344	186,421
Component 2: Urban Connectivity Improvement	14,342	5,125	16,382	10,151	46,000
Component 3: Compensation and Site Clearance	0	0	0	3,779	3,779

Component 4: Implementation Support and Institutional Reform	0	0	0	0	0
Total cost to be financed by IDA/IBRD	50,218	50,083	60,625	75,274	236,200
Proposed IDA allocation	35,876	44,958	44,243	65,123	190,200
Proposed IBRD allocation ^a	14,318	5,101	16,352	10,114	45,885
Government counterpart funding	8,210	5,221	11,400	12,650	37,485
Total project cost (including counterpart fund)	58,404	55,280	71,970	87,863	273,570

Note: an IBRD fund reduced by US\$115,000 for total fee and respectively reduced for Dong Hoi, Quy Nhon, Nha Trang, and Phan Rang by US\$24,000, US\$24,000, US\$30,000, and US\$37,000.

C. Lessons Learned and Reflected in the Project Design

47. Project design has incorporated lessons learned from the CCESP¹⁰ and other sanitation projects and studies in Vietnam, the East Asia and Pacific Region, and globally. These include the following:

- (a) **Wastewater treatment technology.** Following technical visits to Singapore, Malaysia, and Thailand under the CCESP, a better understanding of appropriate treatment technology options led to the adoption of more cost-effective and less technically complex solutions. Recognizing the low wastewater tariff/low cost recovery environment and low O&M technical capacity found in Vietnam, low-cost technology options (for example, lagoons, trickling filters) and technology innovations (chemically enhanced primary treatment [CEPT]) were introduced by the project. The project will ensure that such appropriate/efficient technologies are selected under the project to improve sustainability and affordability.
- (b) **Household connections, public awareness, and behavior change.** It is essential to maximize the number of households connected to the sewer network—to reduce environmental pollution and increase volumes and biological loadings at the treatment plant to improve treatment efficiency. Many wastewater projects in Vietnam have focused on the construction of treatment plants and primary sewer networks (for example, Binh Duong, Hanoi, and Nha Trang) and the majority of households in the project areas remained unconnected. It has also been recognized that households need to be incentivized to connect to the new sewer networks because connecting is expensive for them (typically US\$200–US\$300 for in-property plumbing) and disruptive (digging up living rooms to connect septic tanks and replumb the house). Even though it is now mandatory for households to connect (under Decree 80), cities need to do more work on public awareness, connection socialization, and promotion—information, education, and communication/behaviour change communication (IEC/BCC) campaigns backed by attractive connection incentive schemes. The need for undertaking environmental and sanitary education and promotion activities to complement and support integrated urban-environment development has been recognized in Brazil,¹¹ and this lesson has been incorporated into the implementation arrangements for this project.

¹⁰ Implementation Completion and Results Report (ICR) for the CCESP, May 30, 2015.

¹¹ See, for example: Implementation Completion and Results Report (IBRD-74370) (Report NO: ICR00002840) on Brazil Municipal Lending (APL) Program. March 31, 2014.

- (c) **Cost recovery and financial sustainability.** Service provider cost recovery is critical to ensuring services are financially sustainable. The Matanza-Riachuelo Basin Sustainable Development Project¹² in Argentina, for example, learned from previous projects that had often ignored the additional financial burden that expanded sewage collection and treatment systems place on utilities and explicitly recognized the importance of cost recovery in the project design to ensure financial sustainability. The Basic Municipal Services Project,¹³ also in Argentina, noted financial sustainability as an area of concern, identifying requirements for O&M cost recovery and providing specific options to recover these costs. The CCESP 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. Not all the cities reached this target and it is important that the provincial and city authorities under this project now follow Decree 80 and continue their commitment to establishing tariff road maps for cost-reflective tariff setting.
- (d) **Institutional and regulatory arrangements at the local level.** This is critical for sustainable sanitation service delivery but needs reinforcement with further capacity building to support the implementation of Decree 80 (service contracts between local government and service provider, fecal sludge management, tariff road maps, household connection policy).
- (e) **Resettlement and compensation.** Differences between Government norms on the basis for compensation for its self-funded projects and World Bank requirements for World Bank-supported projects can cause misunderstandings and delays. It is important to start the process as early as possible and ensure that counterpart funds are readily available.
- (f) **Early and continued engagement of all stakeholders strengthens project governance and improves project design, operation, management, and efficiency.** A key lesson learned from the Matanza-Riachuelo Basin Sustainable Development Project in Argentina was the need for strong public participation and communication to address public concerns related to project components. The additional financing for the Teresina Enhancing Municipal Governance and Quality of Life Project¹⁴ in Brazil also noted the importance of community participation as one of the main lessons learned during the implementation of the original loan. Transparency, inclusion of nonstate actors in project design, awareness campaigns, internal control measures, contingency planning, and M&E activities increase project impact and satisfaction. These lessons have been incorporated into the citizen engagement and governance activities of this project.
- (g) **Providing opportunities for peer learning from other municipalities.** The Basic Municipal Services Project (Argentina) noted the benefits of providing peer learning from other municipalities and this approach is incorporated into the implementation arrangements of

¹² Project Appraisal Document Report Number: 48443-AR. April 27, 2009. Matanza-Riachuelo Basin Sustainable Development Project Phase 1 (APL).

¹³ Implementation Completion and Results Report (IBRD-73850) (Report No: ICR00003421) on the Basic Municipal Services Project. October 27, 2015.

¹⁴ Project Paper on Additional Loan for the Teresina Enhancing Municipal Governance and Quality of Life Project (Report No: PAD1136). February 1, 2016.

this project—especially at the PMU level with respect to project management and O&M institutional arrangements.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

48. Project implementation arrangements have been set up at the provincial and county levels. Institutional responsibilities are summarized below. The current institutional setup and details on proposed institutional responsibilities are described in annex 3 and in the POM.

49. Each of the four participating provinces/cities has different institutional and implementation arrangements, but each province will establish a Project Steering Committee (PSC) chaired by a senior PPC official (PPC Vice Chairman) and comprising director-/deputy director-level representatives of key provincial departments and agencies (DOF, DPI, Department of Industry and Trade [DOIT], DOC, Department of Agriculture and Rural Development [DARD], DOT, DONRE, and the State Treasury and CPC). Each PSC will be supported by a Working Team comprising working-level line department/agency representatives which will also support the respective PMUs for each city. The PSC will convene meetings periodically to provide guidance and coordination on important aspects of the overall CCESP management and specifically, project-related issues.

50. Each of the four participating provinces has established a PMU, with many of the key staff from the CCESP PMUs (Dong Hoi, Nha Trang, and Quy Nhon) being retained to work in the new CCESP PMUs. This greatly reduces implementation risks. The PMUs for these three CCESP cities are providing advice and support to the new Phan Rang-Thap Cham PMU which has no experience in managing World Bank-financed projects. Most of the Phan Rang-Thap Cham PMU staff (10 out of 12) come from the Implementation Unit for Capacity Development and ODA Water Resources Projects, which has experience in managing six projects funded by Belgium and the Netherlands. Each PMU will comprise key staff (PMU director, deputy directors, chief accountant, chief engineer, senior procurement specialist, safeguards specialists) and support staff. The PMUs of Dong Hoi, Nha Trang, Phan Rang, and Quy Nhon have been fully established.

B. Results Monitoring and Evaluation

51. Each PMU, with the assistance of consultants, will compile data to monitor the performance of its respective subproject. A Monitoring and Results Framework with Indicators has been developed and is shown in annex 1.

52. A comprehensive assessment of performance will be made at the midterm review. Based on this assessment, the World Bank and the borrowers will, if necessary, adjust the investment allocation between the various components.

C. Sustainability

53. Sustainability will be achieved through strong government commitment, public participation and ownership of project interventions, and systematic analysis and design to ensure technical robustness, reliable, and replicable, cost effectiveness, and environmental sustainability.

54. **Institutional sustainability for project implementation.** The provinces have established project organizations at the provincial level for each of the four participating cities. Institutional sustainability will be enhanced through public participation (IEC/BCC/propaganda campaigns) and intensive consultation with a wide range of stakeholders and through capacity building for IAs, the PMUs, and line agency staff. The PPCs have committed to provide the PMUs with sufficient counterpart funds to ensure their proper functioning during project implementation.

55. **Sustainability of long-term operation and maintenance (O&M).** To ensure the sustainability of O&M arrangements, Component 4 will provide capacity building and provide TA to strengthen the institutional arrangements for handing over and operation of the project infrastructure. During preparation, the PPCs agreed to establish single-owner entities for the sanitation assets (for example, public service utility boards) to minimize overlaps and gaps in provincial delegation. It was also agreed that these asset-owner entities would enter into performance-based service contracts with service providers (as set out in wastewater Decree 80), to ensure sanitation service sustainability post project. Proper technical O&M manuals will be prepared during project implementation. Tariff road maps will be prepared and implemented to ensure O&M cost recovery at project completion.

56. **Technical sustainability.** The design of each component and major subprojects will be optimized to ensure technical robustness and cost effectiveness. The project is being designed based on the concept of (a) accurately identifying and analyzing the problems and their systematic resolution (for example, hydraulic modeling); (b) combining investment and institutional capacity-building measures; (c) using appropriate wastewater treatment technologies (low energy cost, appropriate technologies); and (d) maximizing household connections to sewers to optimize WWTP performance and efficiency.

V. KEY RISKS

57. The overall implementation risk is considered Substantial. The key risks to achieving the PDO and mitigation measures are detailed in the following paragraphs.

58. **Political and Governance (Substantial).** Projects in Vietnam may suffer from lack of political commitment at various levels of government. This can impact the establishment and funding of the PMUs (project delays) and implementation of required policy/institutional changes, tariff increases, and associated service provider performance improvements. The current low level of tariff in Phan Rang implies that a large tariff increase road map is needed for full cost recovery at the completion of the project. The project enjoys a high level of political support at the national, provincial, and city levels. It is included in the official national ODA project list and as such has the full support of the national government. Each PPC fully supports the project and has established a PSC and Working Team comprising senior provincial officials to ensure project timeliness and quality of project implementation. Each PPC has agreed to ensure that counterpart funds will be provided as required, that tariff road maps will be developed and implemented to ensure financial sustainability, and that required institutional/utility reforms will be put in place.

59. **Systemic fraud and corruption.** Conflicts of interest are widespread, and oversight institutions (for example, Inspectorate, Judiciary, and State Audit) are not fully independent from the executive. A relatively good legal framework on anticorruption is in place (for example, Law on Anticorruption, National Strategy on Anticorruption until 2020, Law on Procurement). The implementation of the first project (CCESP) brought valuable experiences. Strengthened support to implementation of the Government's Anticorruption Strategy, enhanced TA, and dialogue around transparency will be

provided. The project, to the greatest possible extent, will follow the principles that have been set out in the governance mainstreaming box of the Vietnam Country Partnership Strategy. A specific governance and integrity action plan will be developed for the project. This will be implemented by the PPCs and all related departments. A code of conduct for project staff will be established.

60. It should be noted that the World Bank's Integrity Vice-Presidency (INT) conducted an investigation that substantiated fraudulent practices by international consulting firms during the procurement and implementation of several contracts under the previous CCESP. Corrective measures are progressively being taken by the World Bank to address areas of concern, including risk mitigation planned during implementation of the CCESP.

61. **Institutional Capacity for Implementation and Sustainability (Substantial).** The lack of experience of the Phan Rang PMU may cause delays in project preparation and implementation. Although the CCESP PMUs (Dong Hoi, Quy Nhon, and Nha Trang) are highly experienced in World Bank project implementation, there were some challenges in Quy Nhon relating to outstanding resettlement compensation complaints and O&M performance of the project facilities. Experts from provincial departments will be engaged and qualified consultants recruited to provide support on financial and procurement management, safeguards, and technical issues. To oversee project preparation and implementation, the CCESP PSCs will be retained in Nha Trang, Quy Nhon, and Dong Hoi. A similar committee will be established in Phan Rang. The PSCs will be led by the Chairman or Vice Chairman of the PPC and include directors of the key departments, including the DPI, DOF, DARD, DONRE, DOT, DOC, and the head of the participating cities. The Phan Rang PMU will be further strengthened with qualified staff.

62. The current fragmented institutional responsibilities are a risk to sustainability (after hand over) and will be addressed during implementation. The provinces/cities are already developing single ownership institutions for sanitation facilities as part of project preparation activities. Additional project activities will include the development of clear and transparent local government asset ownership and O&M responsibilities, and the establishment of medium-term performance-based service agreements between local government and service providers—based on transparent contracting, improved accountability, and cost-reflective payments/tariffs. The cost recovery/tariff schedules for the service providers have been agreed with local governments and their approval by the PPCs is a disbursement condition.

63. **Fiduciary (Substantial).** The lack of experience of the Phan Rang PMU, which will manage the largest investment program of the four cities under the project, is recognized as a significant fiduciary risk for the project. Given the successful completion of the CCESP, the three cities (Dong Hoi, Quy Nhon, and Nha Trang) are already familiar with procurement and FM requirements. For the new city of Phan Rang, its capacity has been carefully evaluated and improved to enable it to manage the project. Support to the Phan Rang PMU will also be provided by the three other cities with more experienced PMUs. Management arrangements and additional support will be provided, including regular and ad hoc trainings on procurement implementation, contract management, and FM—particularly for Phan Rang. In addition, an internal audit team will be established in each city to conduct biannual internal audits for the PMU and submission to the World Bank. An annual independent audit will be implemented to provide more financial assurance for the project. There will be regular supervision and monitoring on the fiduciary aspects of the project (both procurement and FM) on at least a biannual basis. If needed, additional follow-up missions will be conducted.

64. **Environment and Social (Substantial).** The project will result in some adverse environmental and social impacts, particularly those arising from construction activities and the associated disposal of sediment to be dredged from drainage channels, rivers, and lakes, as well as impacts associated with solid waste and wastewater management during the operation phase. The safeguards instruments specify mitigation measures for these and other project activities. Land acquisition will be necessary, causing the physical relocation of affected households. Given the outstanding complaints in Quy Nhon under the CCESP and the inexperience of Phan Rang, particular attention will be paid to environmental and social safeguards, compensation, and site clearance during project implementation.

65. The participating provinces, in particular Binh Dinh (Quy Nhon) and Ninh Thuan (Phan Rang), have explored a range of different technical options during project preparation to minimize any adverse impacts, particularly relating to land acquisition. Regular supervision and monitoring of safeguard aspects will be undertaken. If necessary, a thematic review will also be conducted. Independent monitoring consultant will be mobilized to oversee safeguards performance at subproject level. Participating provinces will arrange adequate staffing for safeguards implementation. Appropriate training sessions will be organized during the project preparation and implementation to ensure a full understanding of the World Bank's policies.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

66. The project, with an estimated cost of US\$273 million, will be funded by both IDA and IBRD resources in addition to counterpart funding. The IDA amount is US\$190.2 million, accounting for 69.5 percent of the total cost. The IBRD amount is US\$46 million, or 16.8 percent of the total cost. All the IBRD resources and about 29.4 percent of IDA funds will be onlent to the participating cities.

67. The total counterpart fund requirement of the project is estimated at US\$37.4 million representing 13.4 percent of the total project cost. The counterpart financing will be shared almost equally between provincial budgets and the central government for Dong Hoi and Quy Nhon. Phan Rang will receive the counterpart funds from the central budget. Nha Trang will use provincial budgets for the counterpart funding. Assessment of the provincial budgets showed that each city has the necessary counterpart funds for their respective subprojects.

Cost Recovery for Environmental Sanitation Services

68. The project, in line with government policy, should recover from user charges the O&M costs of the wastewater, drainage and solid waste facilities, depreciation of short-lived assets, such as vehicles and equipment, and any loan interest charges. This will provide sufficient revenue to the service providers to operate the system and finance replacement of short-lived assets. Full O&M cost recovery will be achieved by the end of project implementation for drainage and wastewater services by gradually increasing tariffs each year—coupled with expansions in service coverage.

69. The project-induced expansion of wastewater treatment output will lead to substantial increase of O&M costs in 2023. Implementation of the tariff road maps will be used to monitor the financial sustainability of the project. As the revenue base (total consumption of clean water) is much larger than the cost base (volume of wastewater treated), a slower increase in tariffs is needed to ensure full cost recovery. The rise in the O&M costs ranges between 70 percent and 90 percent for Dong Hoi, Nha Trang, and Quy Nhon over 2016–2023. The increase in O&M cost in Phan Rang is significantly higher,

partly because of the completion of another wastewater treatment project, expected to be in operation from 2020.

70. The road map for wastewater tariffs, as agreed with local governments, indicates gradual increases in tariffs from 2017 to fully cover the O&M cost in 2023. The proposed increases in the average tariffs are 4.2 percent, 5.7 percent, and 8.3 percent per year for Dong Hoi, Nha Trang, and Quy Nhon, respectively. For Phan Rang, the proposed annual rate of change is 28 percent—because of the extremely low level of the current tariff. In 2016, the tariff of Phan Rang is about a quarter of the tariffs adopted in the other three cities. The proposed tariff for Phan Rang in 2023 is the lowest tariff of the project cities—if Phan Rang had a tariff similar to the other cities in 2016, it would need a much more modest average increase of 5.5 percent a year.

71. **Affordability.** The moderate increases in wastewater tariffs in Dong Hoi, Nha Trang, and Quy Nhon will result in moderate rises of expenditure of poor households for wastewater. Spending for wastewater services, however, accounts for only about a quarter of households' spending for both clean and wastewater. In Phan Rang the current wastewater tariff is very low and significant increases will be needed to ensure cost recovery. However, in all project cities the overall increase in household spending for both clean and wastewater remains well below 5 percent of poor household income.

72. **Willingness to pay monthly sanitation charges.** Most households are willing to pay for a cost recovery tariff for wastewater and solid waste services. Customers will, however, need to better understand the reason for, and basis of, payments for wastewater services. A public awareness activity is, therefore, included in Component 4 to improve beneficiaries' understanding of the benefits of improved sanitation and the costs of service provision.

73. **Collection of user fees.** Wastewater fees will be collected by the water companies, and then transferred to the wastewater service providers through the provincial budget. With the exception of Phan Rang, the local wastewater management companies are allowed to retain the wastewater revenues for O&M of the drainage/wastewater systems.

Fiscal Impact

74. The counterpart financing will be provided both by the provincial budget and contribution of the central government (44.3 percent). Assessment of the financial performance of the provincial budgets showed that they have the necessary counterpart funds for their respective subprojects. The average annual counterpart fund required will be about VND 15.7 billion for Dong Hoi, VND 40.7 billion for Nha Trang, and VND 18.2 billion for Quy Nhon or about 0.5 percent of the current provincial total annual capital expenditure. Phan Rang will need about VND 46 billion a year for counterpart funding but this will be financed by the central budget.

75. It is expected that the project will result in a significant increase in the levels of debt of four participating provinces. The shares of on lending amounts in the total costs of subprojects range from 27.2 percent in Phan Rang to 54.6 percent in Nha Trang.

76. The evaluation of the impact of project on provincial debt repayment capacity, using debt to public investment demand and debt to provincial retained revenues ratios, as per Vietnam's regulations, show that Binh Dinh (with Quy Nhon subproject) will slightly exceed the upper limit for 2018–2021. Quang Binh (with Dong Hoi subproject) and Ninh Thuan (with Phan Rang subproject) will approach their

limits from 2020, whereas Khanh Hoa (with Nha Trang subproject) is expected to have a significant headroom for additional borrowing.

Economic Analysis

77. The economic analysis of the project is based on a cost-effectiveness analysis, in which the latter was also adopted to identify the least-cost solutions for the selection of wastewater treatment technology to achieve the PDOs while keeping tariffs affordable.

78. The project is expected to benefit about 700,000 people by 2023, and 45 percent of them living in Nha Trang. The economic benefits of the project include (a) reduced flood damage; (b) health benefits; (c) savings in Value of Time (VOT) and Vehicle Operating Cost (VOC); (d) increased tourism because of an improved environment for tourists and potential investors; (e) savings in drainage maintenance; (f) enhancement of the development potential of the cities, especially the areas along canals and previously flooded areas, including the creation of new business opportunities such as restaurants, retail stores, and other entertainment activities. Given the lack of accurate and reliable data it was not possible to quantify these benefits, and as a result a cost-benefit analysis could not be undertaken for the project. Details of the financial and economic analysis are presented in annex 5.

B. Technical

79. **Drainage and wastewater management.** The drainage activities have been designed to protect project areas against one-in-ten-year storm/rainfall events. The approach used was to minimize construction costs, make maintenance as easy as possible, and maximize environmental/amenity benefits (for example, use open channels where possible [rather than culverting], design new and rehabilitated lakes for storm water retention). The project design also recognizes the integrated nature of drainage and sewerage in Vietnam (use of combined sewers) and so attention was paid to the number and location of combined sewer overflows (CSOs). The urban wastewater management activities have been designed with the target of maximizing household connections (and associated tertiary sewers). The additional wastewater will be transferred to existing WWTPs with a goal to use their existing capacity—or upgrade capacity where needed or construct new treatment plants where this was not feasible (for example, new catchments). Wastewater treatment technologies were selected on ease of O&M and lowest life cycle costing. The design is also based on the thorough analysis of projected wastewater generation through water demand projections rather than relying solely on the water consumption norms suggested in the national standards.

80. **Wastewater treatment technology.** The technology for the new WWTP in Northern Nha Trang was selected based on several criteria, including the cost, simplicity, and popularity of the technology as well as the consideration of the technology used in the city's southern WWTP. Among the four technologies under consideration, the selected technology, oxidation ditch, has the lowest unit investment cost and is highly rated through its longtime effective usage in the southern WWTP.

81. The choice of wastewater treatment technology for Dong Hoi, Quy Nhon, and Phan Rang is relatively straightforward because the objective is to increase actual treatment volume and better utilize the existing idle capacity of the treatment lagoons. Selected treatment technologies are facultative ponds in Dong Hoi and Phan Rang and trickling filters in Quy Nhon.

82. **SWM.** The SWM activities have been designed based upon priority needs assessments in the project cities, building on the investments made under the CCESP. Particular attention was paid to leachate management and realistic landfill management/expansion requirements.

C. Financial Management

83. An FM assessment for the project IAs (four PMUs) concluded that the project FM risk is Moderate, considering that three project cities (Nha Trang, Dong Hoi, and Quy Nhon) have accumulated FM experiences from nearly 10 years of implementing World Bank projects under the CCESP. The following key risks were identified: (a) Phan Rang city may not be familiar with World Bank FM and disbursement requirements, especially when a fully decentralized fund flow mechanism is applied; (b) the project design provides full decentralization and autonomy to the project provinces, which will require greater capacity and accountability on the part of the provinces in monitoring fund flows and in meeting the financial reporting requirements; and (c) successful project implementation requires strong linkages among project components and good management and coordination between all the project IAs.

84. The principal risk mitigation measures include (a) acceptable FM staff to be appointed at all IAs (priority should be given to the staff who have experience in FM from previous World Bank-financed projects) and be provided with training on World Bank FM requirements and disbursement procedures; (b) a project FM Manual will be developed as part of the Project Implementation Manual, describing in detail the roles and responsibilities of the concerned parties, as well as specifying the project FM procedures and regulations; (c) an upgraded accounting software package will be installed for the project, and training will be provided to all accounting staff; and (d) terms of reference for the audits (both internal and external audits) shall be prepared and submitted to the World Bank for review. FM actions (a) and (b) have been completed while the remaining actions (c) and (d) shall be completed before the project starts. More details of FM arrangements including the flows of funds, Designated Accounts (DAs), and disbursement are provided in annex 3.

D. Procurement

85. **Procurement arrangements, capacity assessment, and risk rating.** The PMUs, under the oversight of Quang Binh, Binh Dinh, Khanh Hoa, and Ninh Thuan PPCs, are designated as the IAs for this project and their procurement capacity has been assessed throughout project preparation. A procurement risk and capacity assessment of the PMUs was undertaken and found that although Dong Hoi, Quy Nhon, and Nha Trang had implemented the earlier CCESP, the procurement risk is still rated Substantial because of (a) applicability of an updated version of the World Bank's Guidelines which will be new for all the PMUs and (b) the Phan Rang PMU having no experience in managing World Bank-funded projects. The main risks identified and mitigation measures as well as the procurement arrangements are provided in annex 3.

86. **Applicable procurement procedures.** Procurement for the proposed project will be carried out in accordance with the World Bank's 'Guidelines: Procurement of Goods, Works and Non-Consulting Services Under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011 and revised in July 2014 (the Procurement Guidelines); 'Guidelines: Selection and Employment of Consultants Under IBRD Loans and IDA Credits and Grants by World Bank Borrowers', dated January 2011 and revised in July 2014 (the Consultant Guidelines); and the specific provisions stipulated in the Financing Agreement (FA). Guidelines on Preventing and Combating Fraud and Corruption in Projects

Financed by IBRD Loans and IDA Credits and Grants, dated October 2006 and revised in January 2011, shall apply to the project. Projects in countries and in sectors that are deemed to be vulnerable to fraud and corruption as a result of the findings of previous INT investigations should include governance action plans.

87. **Procurement Strategy and Systematic Tracking of Exchanges in Procurement (STEP).** For smoother procurement implementation, a simplified Project Procurement Strategy Document (PPSD) has been prepared by the borrower. The Procurement Strategy identifies fit-for-purpose procurement approaches to match the market and the operational context, and responds to the specific needs of the project. Additionally, under the proposed project, it is mandatory for all procurement transactions for post and prior review contracts to be recorded in, or processed through, the World Bank planning and tracking system, STEP. Details are presented in annex 3.

E. Social (including Safeguards)

88. OP 4.12 - Involuntary Resettlement is triggered. The PMUs of four participating cities (Phan Rang - Thap Cham, Nha Trang, Quy Nhon, and Dong Hoi) have prepared a resettlement policy framework (RPF) and four resettlement plans (RAPs) in accordance with the World Bank's policies and guidelines. The RPF, which lays down the principles and objectives, eligibility criteria of displaced persons, modes of compensation and rehabilitation, potential relocation of these persons, and participation features and grievance procedures relocation, has been approved by the Prime Minister in decision No 1078/TTg-QHQT dated June 22, 2016. The RPF is prepared to guide the preparation of four subproject RAPs and the policy application during project implementation in the case of any changes (for example, project scopes, design, alignment) leading to the additional (or new) land acquisition/involuntary resettlement impacts. Along with the RPF, the PMUs have prepared four RAPs (one for each project city) which were disclosed in January 2017. After having the World Bank's clearance, the PMUs will seek the approval of RAPs from the PPCs of Ninh Thuan, Khanh Hoa, Binh Dinh, and Quang Binh, enabling its full implementation. Four RAPs will be reviewed and cleared by the World Bank and will be subsequently approved by PPCs of Ninh Thuan, Khanh Hoa, Binh Dinh, and Quang Binh. Four subprojects will cause land acquisition impacts for 1,486 households, including 329 relocated households and 605 households losing more than 20 percent of their total land holding (or 10 percent for vulnerable groups). The estimated budget for land acquisition, compensation, resettlement, and support is approximately VND 474.5 billion (US\$21.6 million). The involuntary resettlement impacts caused by the implementation of the four subprojects are presented in table 2.

Table 2. Involuntary Resettlement Impacts of the Four Subprojects in the Four Project Cities

Sub-projects	Number of Affected HHs	Relocated HHs	Severely Affected HHs	Permanent Land Acquisition (m²)	Temporary Land Acquisition (m²)	Budget (VND)
Phan Rang	947	118	479	364,064	66,890	211,196,322,455 ^a
Nha Trang	448	211	40	178,024	11,555	184,186,316,572
Quy Nhon	6	—	5	115,149	13,760	7,256,070,492
Dong Hoi	85	—	81	141,655	-	71,862,554,500
Total	1,486	329	605	798,893	92,205	474,501,264,019 (US\$21,568,239)

Note: HH = Household.

a. Excluding the costs associated with the construction of resettlement site in Phan Rang which will be financed from the project fund.

89. It is estimated that 329 households will be relocated in the Phan Rang and Nha Trang subprojects. The results of socioeconomic survey indicated that 83.3 percent of relocated households in Phan Rang (120 households) and 80.1 percent of relocated HHs in Nha Trang (169) have expressed their interest in moving to a resettlement site in the same commune/ward. Others expect to receive cash to arrange the relocation themselves. In Phan Rang, a resettlement site of 6.699 ha will be developed specifically for this project. Costs associated with the construction of technical infrastructure for this resettlement site will be financed by the project. In Nha Trang, relocated households will be arranged in three resettlement sites, namely Hon Ro 2 (29.36 ha), Dat Lanh (5.9 ha), and Ngoc Hiep (13.45 ha). The PMUs will apply the same resettlement policies to the land acquisition/compensation activities required for resettlement site in Phan Rang and Ngoc Hiep in Nha Trang. Dat Lanh resettlement site was developed since 2006 to serve the relocation needs of the previous World Bank-funded operation (CCESP). Hon Ro 2 resettlement site was developed in 2011 and completed in March 2016. The consultant team have conducted appropriate due diligence assessment of land acquisition/compensation practices applied in Dat Lanh and Hon Ro 2 resettlement sites.

90. All IAs (the PMUs of Phan Rang, Nha Trang, Quy Nhon, and Dong Hoi), through their dedicated social staff/unit, will be responsible for implementing and monitoring the social safeguard instruments (RPF, RAP) as well as mitigation measures defined in the SIAs. The implementation of social safeguard instruments will be internally monitored by the PMUs in close coordination with the respective PCs at different administrative levels and externally supervised by independent monitoring agencies. IAs will ensure that activities related to social safeguards will be properly tracked, reported, and documented. Independent monitoring will start around the same time as implementation of activities and will continue until the end of the project/subproject. The performance of, and compliance with, social safeguard instruments will also be subject to regular supervision by the World Bank Task Team. During the project implementation, appropriate training will be provided to the PMUs, consultants, and local community representatives on the safeguard instruments to be applied to the project.

F. Environment (including Safeguards)

91. **Applicable Environmental and Social Safeguard Policies.** The following World Bank environmental safeguard policies are triggered for the project: (a) Environmental Assessment (OP 4.01); (b) Natural Habitats (OP 4.04); and (c) Physical Cultural Resources (OP 4.11). The project is classified as a Category A project because of the significant environmental and social impacts associated with the following physical investments under Components 1, 2, and 3: (a) storm water drainage systems; (b) primary, secondary, and tertiary sewer systems and wastewater pump stations; (c) WWTPs; (d) a new sanitary disposal cell in the exiting Long My Landfill, Dong Hoi City; (e) construction and rehabilitation of river and canal embankments; (f) construction and rehabilitation of urban roads and bridges; and (g) construction of public and school toilets.

92. The main negative impacts during these phases include commonly known construction impacts and risks such as (a) safety risks related to unexploded ordnances left from the war; (b) loss of vegetation cover and trees and disturbance to the habitats of aquatic species; (c) increased level of dust, noise, and vibration; (d) pollution risks related to generation of waste and wastewater, particularly large amount of excavated/dredging materials; (d) traffic disturbance, and increased traffic safety risks; (e) erosion and landslide risk on slopes and deeply excavated areas as well as potential negative impacts on existing

weak facilities; (f) interruption of existing infrastructure and services such as water and power supply; (g) disturbance to daily socioeconomic activities in project area and social disturbance; (h) health and safety issues related to the public and the workers at construction sites; and (i) social impacts associated with construction disrupting businesses by construction-related activities and mobilization of workers to the site.

93. **Potential negative impacts during operations phase.** The findings of the ESIs indicate that the main adverse impacts associated with operation of the WWTPs would include odors and air pollution, infiltration of wastewater to soils and groundwater, solid wastes and sludge, and discharge of the effluent and incidental discharge into the surface water environment. The specific adverse impacts related to operation of the landfills would include leachate; wastewater from washing of garbage truck before leaving the landfill; surface runoff; air pollutants from landfill; dust, bioaerosols, and odors; impacts on water environment; impacts on soil environment; and impacts on public health and workers.

94. **Long-term impacts.** The long-term impacts are those related to the sludge and odor generated by the WWTPs, the leachate and health issues because of operation of the landfills. However, the ESIs confirmed these impacts to be moderate. Specific mitigation measures have been adopted to reduce pollution discharge, and water quality of the receiving waters will be carefully monitored.

95. **ESIs and Environmental and Social Management Plans (ESMPs).** To assess the overall environmental impacts of the proposed investments, four ESIs associated with the ESMPs for the four subprojects have been prepared. They have been reviewed by the World Bank and found satisfactory. The ESMPs will be included in the bidding and contract documents and will be closely monitored by the supervision engineers.

96. **Safeguard implementation, monitoring, and training.** All IAs and their PMUs, through their dedicated environmental and social staff/unit, will be responsible for implementing and monitoring the environmental and social safeguard instruments (RPF, RAP, and ESMPs). During project implementation, the PMUs will be responsible for regular liaison with the local authorities and communities, and externally supervised by independent monitoring agencies. The performance and compliance with environmental and social safeguard instruments will also be subject to regular supervision from the World Bank Task Team. The PMUs, contractors, construction supervision consultants, and local community representatives will receive training on the safeguard instruments to be applied to the project.

97. **Public consultation and information disclosure.** Two rounds of consultations were organized in February and July 2016. The affected people and communities and other relevant stakeholders have been consulted on the RPF, subproject ESIs, socioeconomic study, and RAPs. The feedback from the consultations have been incorporated into the project design, the final draft RPF, subproject ESIs, and RAPs. The final environmental and social safeguards instruments were disclosed locally at the subproject PMUs offices and subproject areas on December 31, 2016, and were disclosed on the World Bank's website in January 2017: (i) RPF disclosed on January 5, 2017; (ii) RAPs disclosed on January 4, 2017 (Dong Hoi and Quy Nhon), January 5, 2017 (Nha Trang), and January 9, 2017 (Phan Rang-Thap Cham); (iii) Social Assessments disclosed on January 5, 2017 (Dong Hoi, Nha Trang and Quy Nhon) and January 9, 2017 (Phan Rang-Thap Cham); (iv) ESIs disclosed on January 4, 2017 (Dong Hoi and Quy Nhon), January 5, 2017 (Nha Trang), and January 9, 2017 (Phan Rang-Thap Cham).

G. World Bank Grievance Redress

98. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and World Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

Annex 1: Results Framework and Monitoring

VIETNAM: Coastal Cities Sustainable Environment Project

Project Development Objectives							
PDO Statement							
The Project Development Objective is to increase access to sanitation services and improve the operational performance of sanitation utilities in the Project Cities.							
These results are at	Project level						
Project Development Objective Indicators							
Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries (Number) - (Core)	0	UC	UC	145,000	217,500	290,000	290,000
Female beneficiaries (Percentage - Subtype: supplemental) - (Core)	0	UC	UC	73,500	120,250	147,000	147,000
People provided with access to sanitation through household connection to the sewer network (Number)	0	UC	UC	128,000	192,000	256,000	256,000
Cost recovery level for drainage and wastewater services (Percentage)	0	UC	UC	75%	85%	100%	100%

Intermediate Results Indicators							
Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Primary, secondary, and tertiary drainage and wastewater sewage system constructed (km)	0	UC	UC	144	215	287	287
Embankment and channel constructed/improved (km)	0	UC	UC	8	12	17	17
People benefiting from reduced risk of flooding (Number)	0	UC	UC	22,000	33,000	44,000	44,000
Pupils gaining access to improved sanitation facilities in their schools (Number)	0	UC	UC	8,000	12,000	16,000	16,000
Household sewer connection policy developed and under implementation (Number)	0	3	3	4	4	4	4
Roads constructed/rehabilitated (km) - (Core)	0	UC	UC	11	16	22	22
Bridges constructed/rehabilitated (Number)	0	UC	UC	2	3	5	5
Volume (mass) of Biological Oxygen Demand (BOD) pollution loads removed by the treatment plants supported under the project (tons/year) - (Core)	0	UC	UC	4,100	6,150	8,257	8,257
Performance-based sanitation service contracts signed and in operation under the project (Number)	0	UC	UC	7	10	14	14
Tariff road map established and under implementation for cost-reflective tariffs (Number of cities)	0	4	4	4	4	4	4
Grievances registered related to delivery of project benefits that are actually addressed (Percent)	0	90	90	90	90	90	90

Note: UC = Under Construction.

Indicator Description				
Project Development Objective Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source/ Methodology	Responsible for Data Collection
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (people benefiting from reduced flooding, new sewer connection, increased urban connectivity).	Annual	Project and activity reports	PMU
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	Annual	Project and activity reports	PMU
People provided with access to sanitation through household connection to the sewer network	This indicator measures the cumulative number of people provided access through new household sewer connections constructed under the project.	Semiannual	Project and activity reports	PMU
Cost recovery level for drainage and wastewater services	This indicator measures the percentage of O&M costs recovered (including payroll, energy, chemicals, rentals, maintenance, depreciation of short-lived assets such as vehicles and equipment, and any loan interest charges) by service providers through tariffs and fees charged for drainage and wastewater services.	Semiannual	Project and activity reports	PMU

Intermediate Results Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source/Methodology	Responsibility for Data Collection
Primary, secondary, and tertiary drainage and wastewater sewage system constructed (km)	This indicator will measure the cumulative length of primary, secondary, and tertiary drainage and wastewater sewage system constructed under the project (km).	Semiannual	Project and activity reports	PMU
Embankment and channel constructed/improved	This indicator will measure the cumulative length of embankments and channels constructed/rehabilitated under the project (km).	Semiannual	Project and activity reports	PMU
People benefiting from reduced risk of flooding (Number)	This indicator is measured as the cumulative number of people in the project area benefiting from reduced flooding risk because of the structural interventions financed under the project (calculated using the hydraulic model and map overlay).	Semiannual	Project and activity reports	PMU
Pupils gaining access to improved sanitation facilities in their schools, of which female	This indicator measures the cumulative number of pupils gaining access to improved sanitation facilities under the project and the percentage of this total that are female	Semiannual	Project and activity reports	PMU
Household sewer connection policy developed and under implementation	This indicator will measure the cumulative number of household sewer connection policies developed and implemented under the project.	Annual	Project and activity reports	PMU
Roads constructed/rehabilitated	This indicator will measure the cumulative length of roads constructed/ rehabilitated under the project (km).	Semiannual	Project and activity reports	PMU
Bridges constructed/rehabilitated	This indicator will measure the cumulative number of bridges constructed/rehabilitated under the project.	Semiannual	Project and activity reports	PMU
Volume (mass) of BOD pollution load removed by	This indicator measures the cumulative volume (mass) of BOD pollution loads removed by all the treatment plants supported	Semiannual	Project and activity reports; data as	PMU

Intermediate Results Indicators				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source/Methodology	Responsibility for Data Collection
treatment plant under the project	under the project (new plants and existing plants upgraded).		derived from the monitoring systems	
Performance-based sanitation service contracts signed and in operation under the project (Number)	This indicator measures the cumulative number of new/revised sanitation service contracts (drainage, wastewater, SWM) signed and in operation under the project.	Annual	Project and activity reports	PMU
Tariff road map established and in effect for cost-reflective tariffs	This indicator will measure the number of tariff road maps established and in effect under the project.	Annual	Project and activity reports	PMU
Grievances registered related to delivery of project benefits that are actually addressed	Percentage of grievances received related to the project works and addressed on the project website	Semiannual	Project website, project and activity reports	PMU

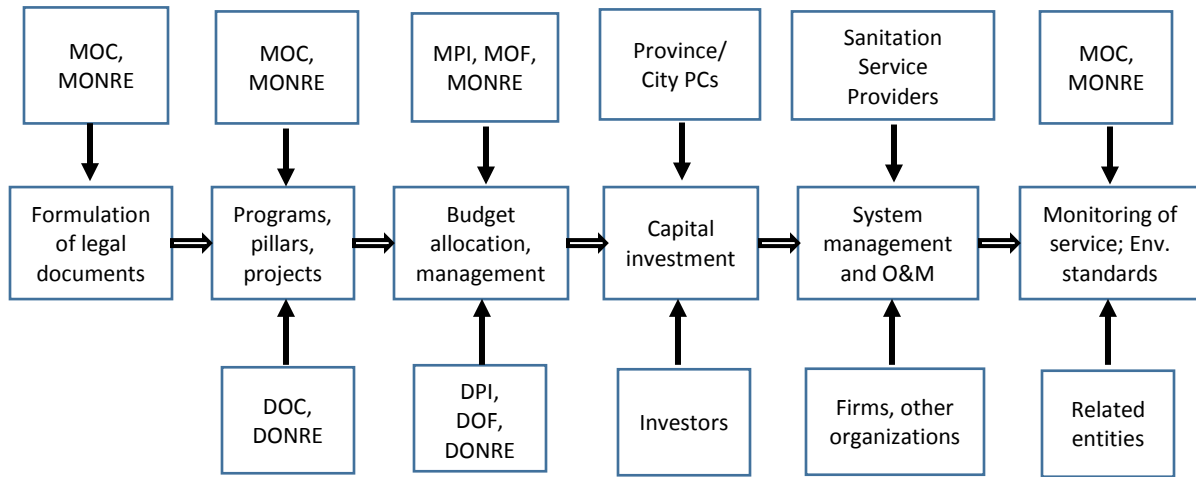
Annex 2: Detailed Project Description

VIETNAM: Coastal Cities Sustainable Environment Project

1. The project will work with four coastal cities. Map 1 in annex 6 shows the location of these cities. Three of the cities (Dong Hoi, Nha Trang, Quy Nhon) benefited from sanitation investments under the CCESP which closed in 2014. Although the CCESP had an overall satisfactory performance rating, greatly improving environment in the project cities, it could not provide comprehensive sanitation coverage across the cities. This project will fund investments that could not originally be provided under the CCESP, providing the cities with more complete and comprehensive sanitation facilities. The project will also fund sanitation investments in Phan Rang-Thap Cham, the capital city of Ninh Thuan Province. This city was selected to support the Bank's strategic engagement with this lagging province on climate resilience and economic development.
2. Annex 6 also provides detailed maps of the project cities showing the type and location of each of the main project investment activities:
 - (a) **Dong Hoi** is the capital city of Quảng Bình Province in the north central coast of Vietnam. It is a Class II¹⁵ city (as specified in Decree 42/2009/ND-CP) with an area of 155.71 km², and population of around 250,000. The economic contributors are industry and construction, services and agriculture-forestry-fishery.
 - (b) **Quy Nhon** is a port city and the capital of Binh Dinh Province. It is a Class I city with an area of 286 km² and a population of 280,000. Its economy has historically revolved around agriculture and fishing. Tourism, industry and shipping have become more important in recent times.
 - (c) **Nha Trang** is the capital of Khánh Hòa Province, on the South Central Coast of Vietnam. It is a Class I city, with an urban area of 252 km² and population of 402,000. Nha Trang's economy relies largely on tourism and industry.
 - (d) **Phan Rang-Thap Cham** is the capital city of Ninh Thuan Province. It is a Class II city with an area of 79.38 km² and population of 167,000. Phan Rang's economy relies on services, tourism and fishing.
3. **Sector Institutional Arrangements. Error! Reference source not found.** Figure 2.1 outlines the decentralized state management model for urban wastewater and drainage management in Vietnam. It shows the respective roles of central ministries in aspects of policy, standards and budget setting and monitoring, the roles of local government in capital investment and O&M, and the roles of service providers (public and private) in the delivery of services to customers.

¹⁵ There are six classes of city in Vietnam: special class (for example, Hanoi) and classes I to V. Class V cities are the smallest and least developed. The classification of a city is based on six criteria: (a) functions of an urban center (for example, national, regional, provincial, or district center); (b) population; (c) population density; (d) proportion of non-agricultural labor; (e) urban infrastructure facilities (quality and extent), and (f) urban architecture and landscape (standard, quality, and layout).

Figure 2.1. State Management Model for Wastewater and Drainage Management

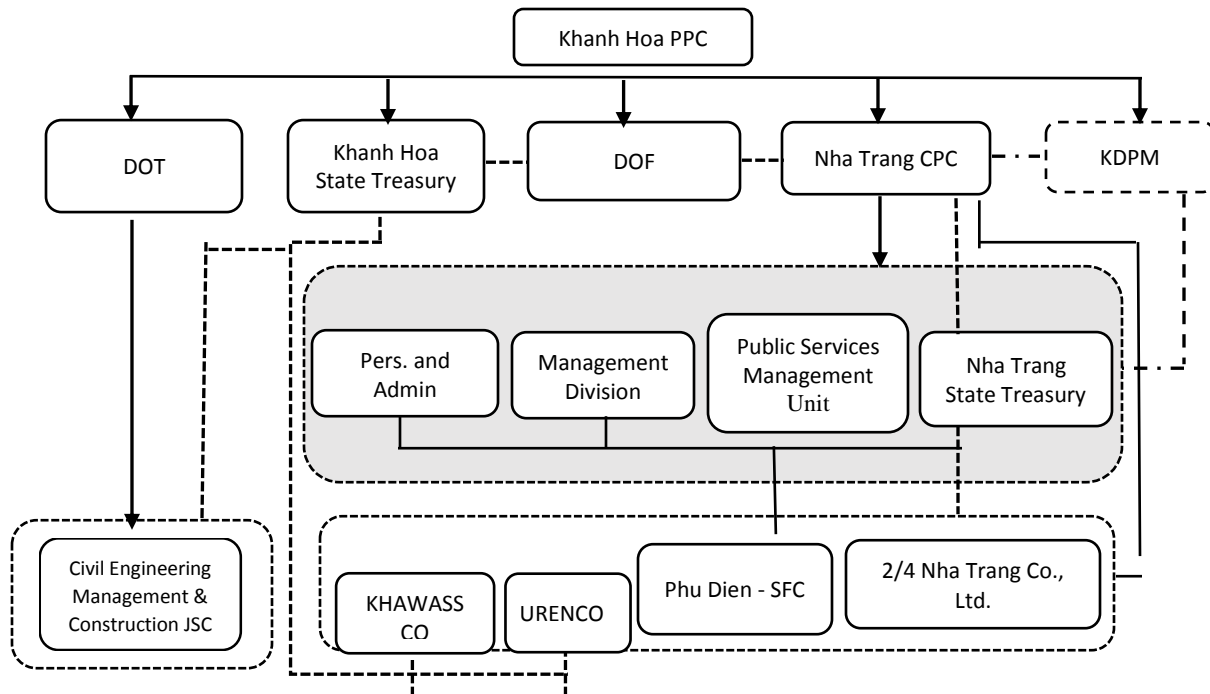


Note: DOF =Department of Finance; DONRE = Department of Natural Resources and Environment; DPI = Department of Planning and Investment; MOF = Ministry of Finance; O&M = Operations and Maintenance; PC = People’s Committee.

4. For the purposes of illustration, Figure 2.2 shows the model for Khanh Hoa Province/Nha Trang City, one of the country’s most sophisticated in urban management. Under this model, Nha Trang City People’s Committee (CPC) has entered into service contracts through its Public Service Management Unit

- (a) For the management and operation of the drainage network (excluding pumping stations and pressure pipeline from the main pumping station): publicly owned Khanh Hoa Water Supply and Drainage Joint-Stock Company (KHAWASSCO);
- (b) For the management and operation of the wastewater treatment plant (WWTP), pumping stations, and the pressure pipeline from the main pumping station to the Southern WWTP: Phu Dien - SFC Joint-Venture Company (private operator);
- (c) For the management and operation of the landfills, leachate treatment plants, and solid waste collection and transportation: publicly owned Nha Trang Urban Environment Joint-Stock Company (URENCO);
- (d) For the management and maintenance of the city’s roads: 2/4 NhaTrang Co., Ltd. (publicly owned); and
- (e) For the management and operation of the provincial roads under the management of Department of Transport (DOT): publicly owned Khanh Hoa Civil Engineering Management and Construction Joint-Stock Company.

Figure 2.2. Urban Services Management Institutional Arrangements for Nha Trang City



Note:

—	Administration and contract management
- - -	Cash flow
- . - . -	Support

5. **Project Design.** Proposed project activities have been selected based on the following criteria: (a) cost effectiveness (lowest life-cycle cost); (b) sub-projects should not cause any negative social and environmental impacts that cannot be mitigated; (c) sub-projects must be in compliance with government master plans; (d) proposed interventions should provide sustainable solutions to existing problems (technical, financial, O&M, and institutional); and (e) sub-projects should have demonstration value for other cities in Vietnam, with a view to scale up/replication in other medium cities.

6. The project is designed to provide integrated urban sanitation management solutions (drainage, flood protection, wastewater collection and treatment, leachate treatment) to the project cities. This includes the use of flood flow balancing lakes which also form attractive urban recreational amenities. The project will also improve the quality of SWM in CCESP cities, which will have additional benefits in the management of city drainage systems.

7. Maximizing the number of household connections to the drainage and sewerage networks is a core element of the project design. This is critical for optimizing WWTP operation and for maximizing the environmental/health/economic benefits of the project. Given the relatively low connection rates experienced under CCESP, the revolving funds will be established in each project city for households to borrow the funds needed for then to finance their connection to the sewer. The revolving funds provide low cost loans to households to help them afford the connection costs (internal plumbing required to connect the house to the tertiary sewer laid to the boundary of the property). This fund is allocated by IDA amount in Phan Rang and by the counterpart in Nha Trang, Phan Rang and Quy Nhon.

8. Recognizing that most urban households rely on septic tanks for wastewater treatment, the project has focused on improving the sustainability of septage (waste/sludge produced from septic tanks) management arrangements. Each project city has been tasked with formalizing and improving its septage arrangements, regulating the collection, transport and treatment to the maximum extent possible. Nha Trang has developed a system for registering all vacuum tank operators via an official website, with households directed to only use these operators. Septage must be transported to the city's WWTP for treatment, where disposal is logged by the WWTP operator (including the tanker's vehicle registration number). The other project cities have been encouraged to adopt a similar approach.

9. An innovative element of the project is to fund the upgrading of sanitation facilities in a number of schools in the project cities. This will be important in improving the health and wellbeing of schoolchildren, especially schoolgirls. The project will ensure the facilities will be safe, attractive and functional, with handwashing facilities provided. When designing and constructing school sanitation facilities, the project will ensure they provide adequate privacy for girls. The construction will be accompanied by sanitation and hygiene education for the children and confirmation of facility maintenance arrangements with the school and parents.

10. The design of Component 2 recognizes the benefits of combining drainage/flood protection work with the opportunity to enhance urban road transport networks, with some of the roads being constructed on top of upgraded river/canal embankments and drainage culverts, and road bridges being upgraded to also increase river/canal hydraulic capacity.

11. Component 4 will help ensure that the project will not only focus on engineering aspects but also on enhancing institutional arrangements, improving O&M and monitoring systems to help the selected cities to enhance sanitation services.

12. The proposed project will embrace the lessons learned from the CCESP and will build on the successes of that project. Investments proposed are priorities of each of the cities and accord with the respective development plans of each city. The components are:

- (a) **Component 1: Sanitation Infrastructure Expansion** (US\$140.7 million, BC). This component will contribute to PDO achievement (increase access to sanitation services and enhance flood protection in select areas) through investments in: flood reduction works (rehabilitation/improvement, including dredging, of the embankment of lakes/canals/rivers); drainage and wastewater collection (including household connections); WWTPs; school sanitation and public toilets; revolving fund for household connections in Phan Rang; and SWM. Also included is design and supervision – provision of support to Project Cities for associated implementation support, including engineering design, construction supervision, financial audits, and environmental and social management.
- (b) **Component 2: Urban Connectivity Improvements** (US\$31.2 million, BC). This includes priority roads and bridges along canals/rivers to support drainage and sewer investments and urban development. Also included is design and supervision – provision of support to Project Cities for associated implementation support, including engineering design, construction supervision, financial audits, and environmental and social management.

- (c) **Component 3: Compensation and Site Clearance** (US\$25.1 million, BC). This component will provide compensation, site clearance and construction of technical infrastructure for the resettlement area in Phan Rang.
- (d) **Component 4: Implementation Support and Institutional Reform** (US\$11.7 million, BC). This component will contribute to PDO achievement (the operational performance of sanitation utilities in select cities) through a capacity strengthening program for the PMUs and relevant agencies, and reform activities related to implementation of Decree 80 (institutional reorganization, household connection policy, revolving funds in Nha Trang, Phan Rang and Quy Nhon, service contracts and private sector participation, tariffs/cost recovery).

Component 1: Sanitation Infrastructure Expansion

13. Infrastructure investments in each city under Component 1 include:

Phan Rang - Thap Cham (Phan Rang)

14. **Tan Tai Channel Rehabilitation.** This irrigation channel has become an urban drainage channel as the city has developed. About 250 ha of agricultural land are still irrigated by the channel but this arrangement will phase out as more agricultural land is developed for residential use. The channel (6,670 m) has four sections where cross-sectional proposals differ. With the aim of alleviating flooding and reducing pollution from wastewater discharge the channel will be improved. Three sections will be retained as open channel and one section will be culverted. Operational roads will be constructed, where space permits, and interceptor sewers provided on both sides (with ten CSOs).

15. **Cha La Channel Improvement.** This irrigation channel through the city will remain as a channel to irrigate rice padis but will also be improved to incorporate flood protection and amenity measures. Culverts will be created in some parts and others will remain as an open channel. The existing simple earth/gravel operational roads on both sides of the channel will be rehabilitated.

16. **Dong Nam Channel.** This open channel (1,379 m) will link Tan Tai channel with Cha La channel thus improving the system and improving the overall drainage system.

17. **Nhi Phuoc Channel.** This open channel currently terminates in a padi field where its contents are dissipated. The project proposes to link the channel from where it currently terminates with the Cha La Channel, a total length of 1,709 m.

18. **Rehabilitation of Dong Hai Lakes.** The two lakes, formerly shrimp ponds are strewn with refuse. One of the lakes is to be retained (the other filled) and dredged and improved to form a residential park and retention lake.

19. **Improvement of Connection Canal TH5 between Tan Hoi and Tan Tai.** This small, shallow, overgrown earth channel provides an important connection from the Tan Hoi irrigation channel to the Cha La channel. The channel of average 1 m width will be upgraded as a lined rectangular channel of 2–3 m width with an operational road on one side of 3–5 m width.

20. **Improvement of small section of Tan Tai Channel.** This channel, partly a culvert, from the Kinh Dinh Lake runs through a small market. Works on the dyke where the channel enters the Dinh River and an interceptor sewer will be constructed.

21. **Retention Lake.** A major feature of the Central lake will be the introduction of a retention lake with 1.7 ha of water surface. This is intended to take the peaks off of storms of over 1 in 5 years (Cha La Channel design) as well as form an amenity for citizens. Interceptor sewers will be constructed around the lake to prevent/reduce pollution of lake water from wastewater discharge.

22. **Southern WWTP, Tertiary Sewers and Household Connections.** The existing WWTP to the south of the city is designed for 5,000 m³/day capacity and currently receives about 3,000 m³/day. It will be expanded to 7,500 m³/day. Tertiary sewers and connecting households to reduce pollution and optimize the treatment capacity of the WTP will be constructed. The project aims to provide 41 km of tertiary sewers and connect a further 15,500 households. A septage reception facility where septage collected is mixed with regular wastewater influent for treatment will also be provided.

23. **Pumping Stations.** A total of 15 wastewater pumping stations will be constructed at various locations in the wastewater collection networks to deliver wastewater to the WWTP.

24. **School and Public Sanitation.** The project will provide three school sanitation blocks and four public toilets at locations in parks and public areas.

Nha Trang

25. **Tertiary Sewers and Household and Other Connections in the Center and South.** The project will provide tertiary sewers in the center and south area to develop programs commenced under CCESP. Approximately 43 km of tertiary sewer will be constructed and a program will be implemented with counterpart funds to connect almost 15,000 households and about 760 other establishments.

26. **Southern WWTP.** The WWTP designed and constructed under the CCESP is operating well. It has 2 modules installed, each of 20,000 m³/d capacity. Only the first module has been operationalized but given that this is operating at an average of about 19,000 m³/d the second module will be put online soon. This will be vital to cope with household flows from the house connection program. No additional investment is required at the WWTP under the Project.

27. **Drainage Balancing Lake and Storm Water Pumping Station.** Proposals for a retention basin (referred to as a “balancing lake”) have been made to address areas in the north which are said to be “frequently flooded” from runoff from the adjacent mountains and high ground. The concept of addressing flooding by introducing large areas where flood waters can be temporarily stored to reduce peak run off from storm events is prudent. Modelling has however shown that in addition to the flood retention basin, a storm water pumping station is also required to pump water into Cai River when storm water from the area is unable to drain naturally or when the level in the Cai River is unusually high. The proposed pumping station will initially be designed to deliver 10 m³/s. To prevent possible flooding from the Cai River a dyke along the relevant section of the north bank of the Cai River will be constructed with local funds.

28. **Sewerage network to the north of the Cai River.** A network of primary and secondary combined sewers (approx 18 km) with six CSOs, five wastewater pumping stations plus tertiary wastewater sewers (51 km) is to be constructed for wastewater collection. The sewage collected will be pumped to the

proposed WWTP North. An intensive house connections program will be embarked upon to reduce pollution from wastewater and to optimize WWTP capacity which is targeted to connect about 7,400 households.

29. **WWTP for the area north of the Cai River.** The first stage of the WWTP (15,000 m³/d) will be constructed with oxidation ditch technology similar to the existing Southern Plant. Possible inundation (or isolation of the WWTP in an extreme flood event of the Cai River will be addressed by the provision of the dyke along the Cai River.

30. **School Sanitation Program.** Four primary schools are to benefit from new/upgraded sanitation facilities.

Quy Nhon

31. **Phu Hoa Channel Drainage.** The Channel is currently an uncovered channel built of stone and concrete. This will be replaced with a double box culvert on the same alignment which would form a footpath and be planted to form a linear park. Retaining structures to support adjacent steep slopes would be provided as would solid waste containers to improve the environment. An interceptor sewer would be laid to collect wastewater from houses on the northern side of the culvert conveying it to existing sewers on the south side.

32. **Drainage and wastewater collection to communities upstream of Bau Sen Lake.** The area (about 79 ha) upstream of Basin Lake (Le Hong Phong To) has narrow access ways. The access ways are in many places formed by slabs which cover an existing, dilapidated combined drainage culvert. The area which is adjacent to Ba Hoa Mountain is often flooded with run-off from the mountainside. Existing slabs will be removed, bed and walls consolidated and new slabs laid with gullies and small manhole chambers constructed to accept wastewater from septic tank overflows from households. Larger, anti-odor, manholes with grit traps will also be constructed. The narrow alleys would be resurfaced on completion of the drainage works. Flooding times will be reduced from an average 2–3 hours at a depth of 60–80 cm after heavy storms to about 0.5 hours. Over 500 houses (2,000 people) will benefit.

33. **Hoa Ba Bep Drainage.** The area has many narrow alleys with only small drains and few gullies. Larger combined drains are to be constructed to reduce flood times (1–2 days in times of heavy storm) to only a few hours (2 h). The area served contains about 1190 households. The new combined drain will enable about 630 further households to make wastewater connections. The alleys would be re-paved on completion of the drainage works. To drain the area to the river (for storm water) and to the existing interceptor by the river (for wastewater), three new railway crossings will be constructed.

34. **Tran Hung Dao Drainage.** This road serves the Hoc Ba Bep area and existing drainage is inadequate as significant run-off from Ba Hoa mountain flows onto Tran Hung Dao Road. Three sections of new drain, either box culverts or pipes, will be provided with total length approximately 1,710 m. Flow will discharge to the Ha Thanh River via existing CSOs.

35. **Bach Dang Road.** The existing sewer in Bach Dang Road is degraded with limited capacity. Also some inlets to the drain have been sealed and odor-prevention manholes are inefficient. To address the problems three new sections of drain are to be constructed totaling about 635 m.

36. **Tertiary Sewers and Household Connections.** About 30 km of tertiary sewers are to be constructed to permit the connection of more households thus reducing environmental pollution and

optimizing the investments in secondary and primary sewers and wastewater treatment facilities. The existing primary, secondary and tertiary sewers completed under the CCESP are able to serve a total of about 53,000 households. The number of households actually connected to date is about 24,000. Thus, there are still about 29,000 households that could be connected to the existing system and of these some 20,000 households are targeted for connection under the project.

37. **Nhon Binh WWTP.** The design capacity of Nhon Binh WWTP (CEPT technology) will be doubled to 28,000 m³/d. Currently flow to the WWTP averages about 13,200 m³/d thus flow will exceed current design capacity shortly. Improvements to reduce odor from the plant will also be incorporated. Septage storage facilities will be provided such that the existing sludge acceptance facility may be brought into operation.

38. **SCADA System.** A comprehensive SCADA system linking WWTPS and Pumping Stations is to be provided. This will facilitate better O&M and general management of the wastewater and leachate treatment systems.

39. **School Sanitation.** A further 12 primary and junior secondary schools will be provided with new sanitation facilities.

40. **Long My Landfill Site.** The landfill site appeared to be in good condition and is operating satisfactorily. The remaining cell which is now about one-third full and a new cell (8.5 ha) is to be provided for future use under the project. The existing leachate ponds, which are also in good condition, periodically pump leachate to the Bau Sen WWTP (2A). To avoid shock loading at the WWTP further primary leachate treatment arrangements are to be carried out.

Dong Hoi

41. **Cau Rao River.** Sections of the Cau Rao river embankments were improved under the previous CCESP and it is proposed to provide improvement to about 460 m to complete the improvements in the area. The profile of the channel will be expanded to increase capacity and access for maintenance. Dredging, rehabilitation and embankment strengthening will be carried out.

42. **Cong Muoi Bridge.** The Cau Rao river has been widened upstream and downstream of the existing Cong Muoi bridge (12 m) such that the bridge now presents a bottleneck to flow. It is thus proposed to remove the old bridge and provide a new arched bridge of 48-m length and width 17-m.

43. **Storm water Drainage.** Storm water drainage improvements (that is, culverts and piped drains) are to be carried out in six wards (three new). A total of about 10 km of drain will be constructed.

44. **Wastewater Collection.** The wards selected to benefit from wastewater collection systems were of the highest priority. Approximately 14 km of primary and secondary sewers will be constructed. It is estimated that about 50 percent of the total population of the city would be connected after completion of the CCSEP.

45. **Tertiary Sewers and House Connections.** Approximately 41 km of tertiary sewer of size ranging from 200 mm to 300 mm is to be provided to permit the connection of about a further 7,700 households. To ensure that households connect, the revolving fund already established under the previous CCESP will continue to operate and be expanded to be available for all households, including the poor.

46. **WWTP and Equipment (aerators and SCADA system).** Current flow to the WWTP averages about 7,600 m³/day compared with the design flow of 10,000 m³/day. With further expansion of primary and secondary sewer networks, together with tertiary sewer provision and a household connection program, flow to the WWTP will increase to 14,800 m³/day by 2022. Currently the ponds at the WWTP treat wastewater naturally but to cope with the increased flow 16 aerators will be provided to ensure effluent treatment standards are constantly met. The SCADA system will be upgraded (for example, five new wastewater pumping stations are to be provided under the project).

47. **Septage Management.** Septage management initiatives are to be supported (Component 4) and the septage acceptance facility provided at the WWTP brought into operation.

48. **School Sanitation and Public Toilets.** New/improved sanitation facilities will be provided in 11 schools, and six new public toilets are to be provided.

49. **SWM Equipment.** The project aims to increase current SWM collection from about 70 percent to near a 100 percent. To do this a further 300 waste bins of 240 litres capacity and 200 bins of 500 litres capacity are required plus 500 handcarts for local collection operators. In addition, a further 5 compaction vehicles from 3 to 4.5 tons will augment the existing fleet of 8 compaction vehicles.

Component 2: Urban Connectivity Improvement

50. Infrastructure investments in each city under Component 2 include:

Phan Rang- Thap Cham (Phan Rang)

51. **Roads Alley 150 and Huynh Thuc Khang.** The two roads each about 1 km long are proposed and will connect the City's two main arterial roads, 21 August and Phan Dang Luu. These two proposed roads will function as a short local street providing access to the neighborhoods, and additionally provide a link between the two main arterial roads. The roads are proposed with 15 m-wide carriageway, 6 m-wide sidewalk each side and complete lateral and longitudinal drainage systems as well as ducts for underground utilities.

Nha Trang

52. **Road No. 4.** The proposed road's length is 1.8 km approx., the cross-section includes a 14 m-wide carriageway and 4 m-wide sidewalk on each side. It will follow the alignment of a proposed axial road and will link the two existing roads, Road 21 April and Nguyen Khuyen. It will also function as a collector road for the neighborhood. For the majority of its length, it will share the alignment with the Project's proposed major culvert located beneath the road's carriageway. This combination can be seen as a cost effective solution meeting the needs of transport and drainage of the City. The road will travel along the existing railway and share a side ditch system with this railway and include retaining walls in places to ensure stability of the embankments of the road and railway.

53. **Road on southern bank of the Cai River.** This proposed road about 2.2 km long will run along the Cai River on the river's bank. It will provide a dual carriageway of two lanes on each side, a center median and a sidewalk on both sides. In addition to the accessibility improvements, this proposed urban road will also improve conditions of the river bank and streetscape of the City.

54. **Chu Dong Tu road.** The road will traverse in a densely populated area following an existing narrow alley. Proposed construction of this road together with a culvert below (proposed to be constructed under Component 1) will improve accessibility for the local residents and also improve drainage conditions of the City.

Quy Nhon

55. **Chu Y and Huynh Tan Phat Bridges.** The proposed two bridges are located on a link between the City's center and district centers. They will provide accesses for the districts, catering for traffic between these districts and the City's center. The proposed Chu Y Bridge will replace the existing bridge which has deteriorated so badly that it only serves motor-cycles. The proposed bridge consists of four (4) spans of pre-stressed reinforced concrete beams with total length of 90 m. A 12 m-wide carriageway and 1.5 m-wide sidewalks on both sides will be provided on the bridge. Also provided on bridge are utility ducts. The proposed Huynh Tan Phat Bridge located further north is of similar construction with five spans. The bridge is 112 m long and has a cross-section of 12 m-wide carriageway and 1.5 m-wide sidewalks each side.

Dong Hoi

56. **Road from the Nhat Le II Bridge to Dong Hoi City bypass.** The proposed urban road will be an arterial road linking Dong Hoi City with the City bypass. The 1.4 km long road will provide the City with an access to the bypass and to the Ho Chi Minh Trail, when it is extended further west in the future. The proposed cross-section consists of 24 m wide carriageway (including a center 3 m-wide median) and 6 m wide sidewalks. The proposed road includes two major bridges, Le Ky and Tay. The former is approximately 212 m long and the latter is 24 m long. Both bridges have a width of 30 m and will use pre-stressed reinforced concrete beams.

Component 3: Compensation and Site Clearance

57. This component will provide funding for compensation, site clearance and resettlement site works. The World Bank's funding will only be used for the construction of technical infrastructure (roads, utilities, and so on) for the resettlement area in Phan Rang City. Funding for site clearance, relocation, compensation expenses and housing will be provided from government counterpart funds (state and provincial).

Component 4: Implementation Support and Institutional Reform

58. This component will support the overall capacity of the PMUs to coordinate, manage and supervise the implementation of the including: (a) provision of consulting services to enhance engineering design, construction supervision, and environmental and social management (b) carrying out of capacity building activities through workshops, and training; (c) carrying out of FM, procurement, contract supervision and M&E including procurement of external social, resettlement and environmental monitoring services; and (d) the operation of Project management offices (including the purchase of office equipment. This component will contribute to PDO achievement (strengthen the operational performance of sanitation utilities in select cities) through a capacity strengthening program for the PMUs and relevant agencies, and reform activities related to implementation of Decree 80 (institutional reorganization, household connection policy, service contracts and private sector participation, tariffs/cost recovery).

59. This component will build on the key lessons of the CCESP, and undertake the following activities:

- (a) Implementation of clear and consistent asset ownership structures and mechanisms;
- (b) Development of clear and consistent hand-over arrangements for O&M after project completion;
- (c) Development of transparency and accountability mechanisms for O&M activities, particularly where the private sector is to be contracted;
- (d) Development of appropriate performance-based service contracts to address the poor performance of some service providers – with associated rapid asset deterioration;
- (e) Development of household connection policies and funding mechanisms to significantly increase household connection rates to sewers constructed under the project,
- (f) Development and implementation of improved arrangements for the management of septage; and
- (g) Development and implementation of cost-reflective tariff mechanisms to improve service provider financial sustainability.

60. Other key lessons learned that will be addressed under this component relate to the need for effective and focused IEC/behavior change campaigns, backed by financial incentives (for example, low interest rate loans), to maximize household connections to the network. The project will review household connection policies and financing mechanisms adopted in other provinces/cities in Vietnam (for example, Binh Duong) and in East Asia/other regions to develop and implement comprehensive approaches to increase household connection rates.

61. Market-based arrangements for sanitation services have been given an impetus with the passage of Decree 80. However, much still has to be done in institutional strengthening, market development and capacity building to make service contracts and public-private partnerships effective solutions to increasing access to improved sanitation service. Management contracts were entered into under the CCESP but the results to date have been mixed as operations and maintenance is in many cases sub-optimal. Poor performance occurred where local government ownership and O&M responsibilities were changed frequently, were unclear with overlaps and gaps, contracts were not properly managed due to lack of capacity and resources, where unplanned costs were not covered, where service providers were appointed through direct negotiation, and where contracts were weak. This component, with PPIAF support, will address the key success factors for a market-based commercial arrangement: creating an enabling environment conducive for private sector participation in public services, clarity and robustness of service/PPP contracts - particularly responsibility and risk allocation, and capacity of implementing parties. Outputs will include model performance-based management contracts and tariff models.

62. Project costs summary and by city are presented below.

Table 2.1. Summary of Project Costs

Components	Funding (US\$ million)						
	IDA	%	IBRD	%	CF	%	Total
Component 1: Sanitation Infrastructure Expansion	140.7	67%					140.7
Component 2: Urban Connectivity Improvement			31.2	15%			31.2
Component 3: Compensation and Site Clearance	3.4	2%			21.7	10%	25.1
Component 4: Implementation Support and Institutional Reform					11.7	6%	11.7
Total Base Cost	144.1	69%	31.2	15%	33.4	16%	208.7
Contingencies	28.8		6.3		2.8		37.9
Total Cost incl. Contingencies	172.9		37.5		36.2		246.7
Taxes VAT	17.3		3.7		1.2		22.3
Total Invest. Cost	190.2		41.2		37.5		268.9
Capitalization of Fees and Interest			4.8				4.8
GRAND TOTAL	190.2	69%	46.0	17%	37.5	14%	273.7

Note: The Front End Fee of US\$115,000 to be paid by the IBRD amount.

Table 2.2. Project Costs: Dong Hoi City

No	Basic Items	Total (US\$)	Financing (US\$)			
			% WB	WB		CF
				IDA	IBRD	
Component 1: Sanitation Infrastructure Expansion						
1	Dredging and Embankment of Caurao river including Cong Muoi bridge	1,782,556	100	1,782,556		
2	Storm drain in six wards	5,752,095	100	5,752,095		
3	WW Interceptor (2 km),CSO (1), PSs (5), primary and secondary sewers (12 km) and SCADA	7,276,308	100	7,276,308		
4	Tertiary system	8,080,566	100	8,080,566		
5	School sanitation and public toilet	574,106	100	574,106		
6	Duc Ninh WWTP equipment	579,299	100	579,299		
7	SWM equipment	591,641	100	591,641		
8	Design, Supervision and Project support	2,591,841	100	2,591,841		
Sub total (Component 1)		27,178,788		27,178,788		
Component 2: Urban Connectivity Improvement						
1	Road from Nhat Le 2 bridge to the city bypass	9,314,632	100		9,314,632	
2	Supervision	558,878	100		558,878	
Sub total (Component 2)		9,873,510			9,873,510	
Component 3: Compensation and Site Clearance						
1	Land, poverty compensation and support resettlement	3,226,230	0			3,226,230
2	Mine Clearance	437,478	0			437,478
Sub total (Component 3)		3,663,708				3,663,708

Component 4: Implementation Support and Institutional Reform						
1	Utilities reform	151,504	0			151,504
2	Technical Assistant for PMU	75,758	0			75,758
3	Implementation support (Establish PDO/FS/Design/BD/ Complete Auditing ...)	860,431	0			860,431
4	Administration and Operation cost for PMU	1,483,752	0			1,483,752
5	Other cost (Review/Appraisal/Insurance...)	419,775	0			419,775
Sub total (Component 4)		2,991,220				2,991,220
Total Base Cost		43,707,226		27,178,788	9,873,510	6,654,928
Contingencies		8,741,446		5,435,758	1,974,702	1,330,986
1	Price Contingency (10%)	4,370,723		2,717,879	987,351	665,493
2	Physical Contingency (10%)	4,370,723		2,717,879	987,351	665,493
Total cost		52,448,672		32,614,546	11,848,212	7,985,914
1	VAT (10%)	4,670,362		3,261,454	1,308,967	224,086
Total investment cost		57,119,033		35,876,000	13,033,033	8,210,000
Capitalization of Fees and Interest		1,308,967			1,308,967	
1	Front-end fee and commitment fee	116,333			116,333	
2	Interest during construction	1,192,433			1,192,433	
GRAND TOTAL		58,428,000		35,876,000	14,342,000	8,210,000

Note: FS = Feasibility Study; WW = Wastewater.

Table 2.3. Project Costs: Quy Nhon City

No.	Work Items	Total (US\$)	Financing (US\$)			
			% WB	WB		CF
				IDA	IBRD	
Component 1: Sanitation Infrastructure Expansion						
1	Phu Hoa channel	5,176,231	100	5,176,231		-
2	Bau Sen lake up-stream channel	1,063,334	100	1,063,334		-
3	Hoc Ba Bep and Tran Hung Dao box-culvert and pipeline	3,896,475	100	3,896,475		
4	Bach Dang street pipeline	692,522	100	692,522		-
5	Tertiary pipeline network	4,379,084	100	4,379,084		-
6	School sanitation	570,869	100	570,869		-
7	Nhon Binh WWTP	8,446,162	100	8,446,162		-
8	O&M equipment and SCADA system	1,184,815	100	1,184,815		-
9	Solid waste management	6,462,353	100	6,462,353		-
10	Design, supervision and implementation support	2,187,382	100	2,187,382		-
	Sub total (Component 1)	34,059,228	100	34,059,228		-
Component 2: Urban Connectivity Improvement						
1	Y-Bridge	1,384,065	100		1,384,065	-
2	Huynh Tan Phat Bridge	1,845,991	100		1,845,991	-
3	Supervision and implementation support	226,104	100		226,104	-
	Sub total (Component 2)	3,456,160	100		3,456,160	-
Component 3: Compensation and Site Clearance						
1	Compensation and site clearance	564,399	0			564,399
	Sub total (Component 3)	564,399	0			564,399
Component 4: Implementation Support and Institutional Reform						
1	Utilities reform	500,000	0			500,000
2	Technical assistance for PMU	150,000	0			150,000
3	Prepare FS/Detail design/Bidding document	552,564	0			552,564
4	Project management cost	1,610,000	0			1,610,000
5	Costs for verification, preparing bidding documents and bid evaluation; mapping; demining	115,000	0			115,000
6	Other costs	552,989	0			552,989
	Sub total (Component 4)	3,480,553	0			3,480,553
	Total Base Cost	41,560,339		34,059,228	3,456,160	4,044,952
Contingencies		8,255,628		6,811,847	691,232	752,550
1	Physical contingency: 10%	4,156,034		3,405,923	345,616	404,495
2	Price contingency: 10%	4,099,594		3,405,923	345,616	348,055
	Sub-Total	49,815,968		40,871,074	4,147,392	4,797,502
	Taxes VAT (10%)	4,925,156		4,087,107	414,739	423,309
Total Investment Cost		54,741,124		44,958,182	4,562,131	5,220,811
	Capitalization of Fees and Interest	562,965			562,965	
1	Front-end fee and commitment fee	33,047			33,047	
2	Interest during construction	529,918			529,918	
	GRAND TOTAL	55,304,089		44,958,182	5,125,096	5,220,811

Table 2.4. Project Costs: Nha Trang City

No.	Work Items	Total (USD)	Financing (USD)			
		US\$	%WB	WB		CF
				IDA	IBRD	
Component 1: Sanitation Infrastructure Expansion						
1	Balancing lake in the North	155,400	100	155,400		
2	Box culvert, primary and secondary sewers in the North	7,083,080	100	7,083,080		
3	Drainage pumping station in the North	2,592,068	100	2,592,068		
4	Tertiary sewers in the North	2,943,035	100	2,943,035		
5	WW interceptor and CSOs in the North	4,075,677	100	4,075,677		
6	WW pumping station in the North	1,793,075	100	1,793,075		
7	WWT Plant in the North	9,593,334	100	9,593,334		
8	Tertiary sewers in the South	2,786,711	100	2,786,711		
9	School sanitation	118,013	100	118,013		
10	Design, supervision and project support	2,377,108	100	2,377,108		
	Subtotal (Component 1)	33,517,501		33,517,500		
Component 2: Urban Connectivity Improvement						
1	Dykes and embankments of Cai River	5,545,412	100		5,545,412	
2	Road along the south bank of Cai River	3,028,494	100		3,028,494	
3	Road No,4 in the North	1,474,737	100		1,474,737	
4	Chu Dong Tu road	434,484	100		434,484	
5	Design, supervision and project support	726,931	100		726,931	
	Subtotal (Component 2)	11,210,058			11,210,058	
Component 3: Compensation and Site Clearance						
1	Compensation and site clearance	8,250,227	0			8,250,227
	Subtotal (Component 3)	8,250,227	0			8,250,227
Component 4: Implementation Support and Utilities Reform						
1	Institutional reform	454,545	0			454,545
2	Technical assistance for PMU	136,364	0			136,364
3	Prepare FS/Detailed design	427,137	0			427,137
3	Project management cost	1,057,235	0			1,057,235
4	Verification, bidding support and mapping	93,203	0			93,203
5	Other costs	320,291	0			320,291
	Subtotal (Component 4)	2,488,775	0			2,488,775
	Total Base Cost	55,466,560		33,517,500	11,210,058	10,739,001
Contingency		9,325,085		6,703,500	2,242,012	379,573
	Physical contingency (10%)	4,662,542		3,351,750	1,121,006	189,787
	Price contingency (10%)	4,662,542		3,351,750	1,121,006	189,787
	Total Cost	64,791,644		40,221,000	13,452,070	11,118,575
	Taxes VAT (10%)	5,652,982		4,022,100	1,345,207	285,675
Total Investment Cost		70,444,626		44,243.100	14,797.277	11,404,250
Capitalization of Fees and Interest		1,584,757			1,584,757	
	Front-end fee and commitment fee	131,372			131,372	
	Interest during construction	1,453,386			1,453,386	
	GRAND TOTAL	72,000,000		44,243,100	16,382,034	11,400,000

Table 2.5. Project Costs: Phan Rang - Thap Cham City

No.	Work Items	Total (US\$)	Financing (US\$)			
			% WB	WB		CF
				IDA	IBRD	
Component 1: Sanitation infrastructure expansion						
1	Rehabilitation of Tan Tai channel	12,687,000	100	12,687,000		-
2	Rehabilitation of Cha La channel	4,939,000	100	4,939,000		-
3	Rehabilitation of Nhi Phuoc channel	5,660,000	100	5,660,000		
4	Rehabilitation of Dong Nam and TH5 channels	1,867,000	100	1,867,000		-
5	Reservoir at the City's centre	3,148,000	100	3,148,000		-
6	Rehabilitation of Dong Hai reservoir	1,901,000	100	1,901,000		-
7	Secondary combined sewers	1,135,000	100	1,135,000		-
8	WW sewers along Tan Tai, Cha La and Nhi Phuoc canals	2,119,000	100	2,119,000		-
9	WW sewers in new urban and coastal areas	4,655,000	100	4,655,000		-
10	WW sewers in Dong Hai and My Dong wards	1,378,000	100	1,378,000		-
11	CSO and WW pumping stations	701,000	100	701,000		-
12	Pressure sewers	263,000	100	263,000		-
13	Upgrading PR-TC WWTP to 7,500 m3/day	1,953,000	100	1,953,000		-
14	Public toilets and school sanitation	274,000	100	274,000		-
15	Revolving fund	273,000	100	273,000		-
16	Design, supervision and project support 7%	2,988,000	100	2,988,000		-
	Sub total (Component 1)	45,941,000	100	45,941,000		
Component 2: Urban connectivity Improvement						
1	Expansion of Alley 150 Road	2,685,000	100		2,685,000	-
2	Expansion of Huynh Thuc Khang Road	1,931,000	100		1,931,000	
3	Road along Cha La channel	1,652,000	100		1,652,000	
4	Design, supervision and project support 7%	439,000	100		439,000	-
	Sub total (Component 2)	6,707,000	100	-	6,707,000	
Component 3: Site Clearance and Resettlement Site						
1	Infrastructure of resettlement site	3,172,000	100	3,172,000		
2	Compensation and site clearance	9,252,000	0	-		9,252,000
3	Design, supervision and project support 7%	222,000	100	222,000		
	Sub total (Component 3)	12,646,000	23.4	3,394,000		9,252,000
Component 4: Implementation Support and Institutional Reform						
1	Utilities reform	623,000	0			623,000
2	Technical assistance for PMU	200,000	0			200,000
3	Preparation of FS/DD/BD	784,000	0			784,000
4	PMU cost	840,000	0			840,000
5	Appraisal, evaluation, bid docs and bidding	157,000	0			157,000
6	Other cost	101,000	0			101,000
	Sub total (Component 4)	2,705,000				2,705,000
Total Base Cost		67,999,000		49,335,000	6,707,000	11,957,000
Contingencies		11,595,000		9,868,000	1,343,000	384,000
1	Physical contingency: 10%	5,797,500		4,934,000	671,500	192,000
2	Price contingency: 10%	5,797,500		4,934,000	671,500	192,000
	Sub-Total	79,594,000		59,203,000	8,050,000	12,341,000
	Taxes VAT (10%)	7,034,000		5,920,000	805,000	309,000
Total Investment Cost		86,628,000		65,123,000	8,855,000	12,650,000
	Capitalization of Fees and Interest	1,296,000			1,296,000	
1	Front-end fee and commitment fee	48,000			48,000	
2	Interest during construction	1,248,000			1,248,000	
	GRAND TOTAL	87,900,000		65,123,000	10,151,000	12,650,000

Annex 3: Implementation Arrangements

VIETNAM: Coastal Cities Sustainable Environment Project

Project Institutional and Implementation Arrangements

1. Each of the four participating provinces/cities has different institutional and implementation arrangements, but each province will establish a PSC chaired by a senior PPC official (PPC Vice Chairman), and comprising director/deputy director level representatives of key provincial departments and agencies (DOF, DPI, DOIT, DOC, DARD, DOT, DONRE, and the State Treasury and CPC). Each PSC will be supported by a Working Team comprising working level line department/agency representatives which will also support the respective PMUs for each city. The PSC will convene meetings periodically to provide guidance and coordination on important aspects of the overall CCESP management and specifically, project related issues.
2. Each of the four participating provinces has established a PMU, with many of the key staff from the CCESP PMUs (Dong Hoi, Nha Trang, Quy Nhon) being retained to work in the new CCESP PMUs. This greatly reduces implementation risks. The PMUs for these three CCESP cities are providing advice and support to the new Phan Rang-Thap Cham PMU which has no experience in managing World Bank financed projects. Each PMU will comprise key staff (PMU director, deputy directors, chief accountant, chief engineer, senior procurement specialist and safeguards specialists) and support staff.
3. The PMUs of Dong Hoi, Nha Trang, Phan Rang, Quy Nhon have been fully established. All four participating provinces/cities plan to each have a separate unit primarily responsible for contract signing and monitoring/enforcement, headed by officials with authority to implement integrated management among concerned key agencies. In order to ensure that the project assets will be sustainably operated, the service providers are planned to be operational at least one year prior to new assets hand-over.
4. The chart below (figure 3.1) shows the project institutional and implementation arrangements for Khanh Hoa Province/Nha Trang City. The other three project provinces/cities will have similar arrangements. Under these arrangements the roles and responsibilities of the provincial departments and agencies is as follows:
5. **Nha Trang CPC:**
 - (a) Coordinate with related departments, agencies in appraisal and counseling tasks, assisting the PPC in project approval;
 - (b) Coordinate with the DONRE to appraise the project's RAP and advise the PPC in project on approval of the plan;
 - (c) Instruct site clearance of the project; approve plans for compensation, support and resettlement; issue decisions on acquiring land from individuals and organizations; and settle all complaints and claims from people affected by land acquisition within the PC's authority;
 - (d) Assume prime responsibility in instructing the PMU to prepare traffic diversion plans; carry out organization and inspection tasks related to urban order management, traffic diversion and manage traffic safety during project implementation;

- (e) Exercise owner's rights to the assets coming from the project; coordinate with the PMU to supervise, inspect and approve the quality of the construction works of the project; organize the reception and hand-over of assets, and manage and operate the assets obtained from the project; and
- (f) Coordinate with relevant departments and agencies to advise the PPC in addressing all problems arising from project implementation.

6. The Department of Planning and Investment:

- (a) Coordinate with related departments and agencies in appraising the project and advising the PPC on project approval;
- (b) Assume the prime responsibility and coordinate with the DOF in preparing plans and allocating the project budget;
- (c) Monitor and evaluate the project implementation process; address issues within own scope of authority or propose to the Chairman of the PPC to handle arising problems in allocating counterpart funds and disbursement for project implementation; and periodically submit summarizing reports on the status and efficiency of project fund usage;
- (d) Guide, supervise and inspect the PMU's preparation and implementation in line with the approved plan;
- (e) Appraise and be responsible for the contents of the documents to be submitted to the Chairman of the PPC regarding contractor selection plan for the project;
- (f) Assume the prime responsibility and organize the supervision and monitoring procurement activities; inspect and check the compliance with the provisions of the bidding law; and submit summary reports on the performance of the bidding process in accordance with regulations;
- (g) Coordinate with relevant departments and agencies to advise the PPC in addressing all problems arising from project implementation; and
- (h) Assist the PPC in providing instructions and guidance, checking information, propagating and disseminating regulations on planning and investment; and organize the implementation of related legal documents, policies and plans within the management scope of the Department.

7. The Department of Finance:

- (a) Coordinate with related departments and agencies in appraising the project and advising the PPC on project approvals;
- (b) Coordinate with the DPI in preparing plans and allocating the project budget;

- (c) Assume the prime responsibility in advising the PPC on proposing the Provincial People's Council to issue resolutions on drainage and solid waste collection tariff in the City;
- (d) Appraise the PMU's operational expenses for PPC's approval;
- (e) Verify the project's final account documents for the PPC's approval; and
- (f) Coordinate with relevant departments and agencies to advise the PPC in addressing all problems arising from project implementation.

8. The Department of Construction:

- (a) Assume the prime responsibility in coordinating with relevant departments and agencies in appraisal and consultation for PPC's approval on the project, construction drawings and cost estimates of the Project construction works;
- (b) Provide guidance and inspect the compliance with legal regulations on construction, including preparation and management of the implementation of the investment project, surveys, designing, construction, acceptance (of quantity and quality), hand-over, warranty and maintenance of the project's works;
- (c) Coordinate with relevant departments and agencies in improving institutions and enhancing management in drainage, wastewater treatment, and waste collection and treatment;
- (d) Coordinate with relevant departments and agencies to advise the PPC on the approval of regulations on connecting wastewater into the drainage and sewer system of the respective city; and
- (e) Coordinate with relevant departments and agencies to advise the PPC in addressing all issues arising from project implementation.

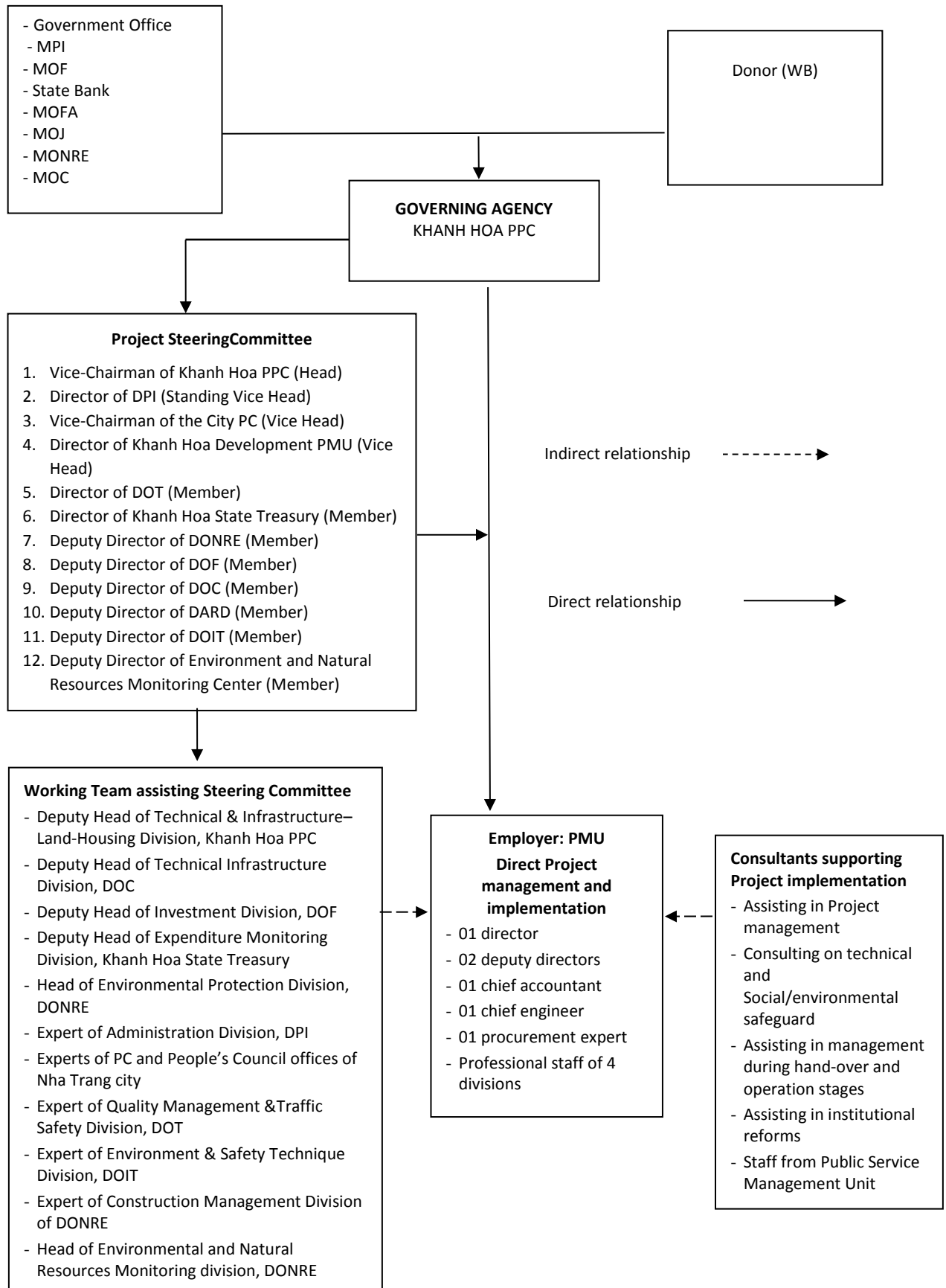
9. The Department of Natural Resources and Environment:

- (a) Coordinate with relevant departments, sector and divisions in appraising the project and advising the PPC on project approval;
- (b) Assume the prime responsibility in appraising the environmental impact assessment report of the project and advising the PPC on project approval; organize the inspection and supervision on the compliance with the environmental management plan of the project;
- (c) Assume the prime responsibility in appraising the RAP, compensation amounts for acquired land upon site clearance activities under the project for the PPC's approval; and
- (d) Coordinate with relevant departments and agencies to advise the PPC in addressing all issues arising from project implementation.

10. **The Department of Transport:**

- (a) Coordinate with relevant departments, sector and divisions in appraising the project and advising the PPC on project approval;
- (b) Coordinate with and guide the PMU to prepare the plan for traffic diversion; arrange the implementation and inspection on traffic diversion and traffic safety management during the Project's construction stage on the streets under the management of DOT; and
- (c) Coordinate with relevant departments and agencies to advise the PPC in addressing all issues arising from project implementation.

Figure 3.1. Project Institutional and Implementation Arrangements



Financial Management, Disbursements and Procurement

Financial Management

11. An FM Assessment has been conducted for the project IAs in the four project cities of Nha Trang, Dong Hoi, Quy Nhon and Phan Rang. The following key risks were identified: (a) Phan Rang PMU may not be familiar with World Bank FM and disbursement requirements, especially when a fully decentralized fund flow mechanism is applied; (b) the project design adopts full decentralization and autonomy to the project provinces, which will require greater capacity and accountability on the part of the provinces in monitoring fund flows and in meeting the financial reporting requirements; and (c) successful project implementation requires strong linkages among project components and good management and coordination between all project IAs. The FM risk is rated Moderate.
12. The principal risk mitigation measures include: (a) acceptable FM staffing to be appointed at all IAs (priority should be given to the staff that have experience in FM from other World Bank-financed projects) and provided with training on World Bank FM requirements and disbursement procedures; (b) a Project FM Manual has been developed as part of the POM, describing in detail the roles and responsibilities of the concerned parties, as well as specifying the project FM procedures and regulations; and (c) an upgraded accounting software package will be installed for the project and training be provided to all accounting staff.
13. **FM staffing.** It was noted during the assessment that major key accounting positions were mobilized from the CCESP and are now working for the new Project Preparation Units. All key project staff and key accounting positions for all four of the CCESP PMUs have been officially appointed.
14. **Budgeting and counterpart funding arrangement.** Provincial participating provinces will provide commitments to ensure that counterpart funds are available for project implementation and subsequent operation. The counterpart funds will be made available for the IAs through the State Treasury system. Budgeting procedures, including the roles and responsibilities of each concerned party within PPCs, DOFs and PMUs will be described in the FM Manual.
15. **Accounting system.** A consistent accounting system, based on the accounting policies and procedures under the Accounting System for Investment Owner (Decision 195 of the MOF) will be applied. The chart of accounts will be modified as necessary to meet the World Bank FM requirements. Accounting records will be maintained in a computerized accounting system.
16. **Accounting software.** It was agreed that the project accounting software used under the earlier CCESP will be upgraded to use in the new CCESP for Dong Hoi, Quy Nhon and Nha Trang PMUs. It is required that the upgraded accounting software will be installed at all three IAs, followed by FM staff training to ensure consistency in project accounting and financial reporting by project signing. Phan Rang PMU has its own software installed and trained accounting staff - which is assessed as acceptable.
17. **Financial reporting.** Each PMU will prepare Semi-annual Interim Financial Reports (IFRs) for monitoring of financial performance of the project in a format agreed between the representative of the Government of Vietnam and the World Bank. IFRs will be based on the Aligned Monitoring Tool, which is regulated under an MPI Decision, and will be sent to the World Bank within 45 days of the end of the semester.

18. **Internal controls and internal auditing.** Internal control procedures will be established in the project FM Manual which will be reviewed and updated regularly to take into account changes in procedures. An Internal Audit function will be established in each PMU and an internal audit team will be formed. Training will be provided to develop the required capacity to conduct internal audits (following a ToR acceptable to the World Bank). Internal audit reports will be prepared on a semi-annual basis and submitted to the World Bank twice a year, by March 31 and September 30 of each year.

19. **External audit.** Each PMU will appoint independent auditors acceptable to the World Bank. The project financial statements will be audited annually in accordance with International Standards on Auditing and terms of reference acceptable to the Bank. The auditors' reports will be made available to the World Bank within six months of the close of each fiscal year. The project's audited financial statements will be made available to the public according to the World Bank's information disclosure policy.

20. **Measures to address fraud and corruption.** The IAs will implement strict contract management to avoid overpayment/overrunning contract budgetary allocations. The contract management will be part of IFRs. The following will be carried out to mitigate the risks of fraud and corruption: (a) clear FM responsibilities in the FM Manual; (b) internal and external audits; and (c) enhanced disclosure and transparency of financial information.

Disbursements

21. **DAs.** Four (04) Segregated DAs - one (01) for Nha Trang, one (01) for Dong Hoi, one (01) for Quy Nhon and one (01) for Phan Rang - will be opened in US Dollars (US\$) at commercial banks under terms and conditions satisfactory to IDA. The DAs will have variable ceilings following approved forecast of a three- month financial plan.

22. **Funds Flow Arrangements.** The project will use the following disbursement methods as stipulated in the Disbursement Letter: advance, reimbursement, special commitment and direct payment. All Project IAs will report to the World Bank on the operation of the DAs on a quarterly basis. Reporting on the use of Advances and Reimbursement requests will be documented based on the Statements of Expenditure. Replenishment applications will be submitted quarterly. The Minimum Application Size for Reimbursement, Special Commitment and Direct Payments will be specified in the Disbursement Letter.

23. The project will have a Disbursement Deadline Date (final date on which the World Bank will accept applications for withdrawal from the borrower or documentation on the use of credit proceeds already advanced by the World Bank) four months after the Closing Date. This "Grace Period" is granted in order to permit orderly project completion and closure of the Credit Account via the submission of applications and supporting documentation for expenditures incurred on or before the Closing Date. Expenditures incurred between the Closing Date and the Disbursement Deadline Date are not eligible for disbursement.

24. The World Bank financing for the project will be at 100 percent, inclusive of taxes, for eligible expenditures including goods, works, consulting services, non-consulting services and capitalization of front-end fee, commitment fee and interest during construction – See the table 3.1. Government counterpart funds will be used to finance items such as compensation and resettlement, salaries, salary allowances or supplements for civil servants working on the project, incremental operating costs and training and workshops.

Table 3.1. Disbursement Table

Category	Amount of the Loan Allocated (Expressed in US\$)	Amount of the Financing Allocated (Expressed in SDR)	Percentage of Expenditures to be Financed (Inclusive of Taxes)
(1) Goods, works, non-consulting services, and consultants' services for Quang Binh Province's Respective Part of the Project	13,033,000	26,501,400	100%
(2) Goods, works, non-consulting services, and consultants' services for Binh Dinh Province's Respective Part of the Project	4,562,000	33,210,400	100%
(3) Goods, works, non-consulting services, and consultants' services for Khanh Hoa Province's Respective Part of the Project	14,797,000	32,682,200	100%
(4) Goods, works, non-consulting services, consultants' services and Sanitation Loans for Ninh Thuan Province's Respective Part of the Project	8,855,000	48,106,000	100% and 100% of amount disbursed under Sanitation Loans
(5) Front-end Fee	115,000		Amount payable pursuant to Section 2.03 of the Loan Agreement in accordance with Section 2.07 (b) of the General Conditions
(6) Interest and other charges on the Loan accrued on or before the last Payment Date immediately preceding the Closing Date	4,638,000		Amount payable pursuant to Sections 2.04 and 2.05 of the Loan Agreement in accordance with Section 2.07 (c) of the General Conditions
(7) Interest Rate Cap or Interest Rate Collar premium	0		Amount due pursuant to Section 2.08 (c) of the Loan Agreement in accordance with Section 4.05 (c) of the General Conditions
Total amount	46,000,000	140,500,000	

Procurement

25. **General.** Procurement under the project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and revised July 2014 (hereafter called Procurement Guidelines) and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits and Grants by World Bank Borrowers" dated January 2011 and revised July 2014 (hereafter called Consultant Guidelines), as well as the specific provisions stipulated in the Loan Agreement. In the case of any conflict between the Loan Agreement and national laws/regulations, the Loan Agreement takes precedence.

26. **Procurement Risk Assessment and Rating.** The PMUs under the PPCs are the designated agencies for implementing all procurement activities under this project. Dong Hoi, Quy Nhon and Nha Trang PMUs are experienced PMUs and have implemented a number of urban upgrading/drainage/sanitation construction projects financed by government funding as well as a project financed by the World Bank (CCESP). Procurement units have been established within each PMUs and include several staff who have previous procurement experience under CCESP. The Phan Rang PMU is a new PMU with no experience in managing World Bank funded projects or of the World Bank's procurement procedures. The procurement risk and capacity assessment identified several risks in the following areas that could cause substantial delays in project implementation, possible irregularities and noncompliance in the procurement process, and potential fraud and corruption:

- (a) Cumbersome and protracted government procedures for internal reviews and approval of procurement actions; lack of transparency and accountability;
- (b) Tendency of the PMUs and relevant appraising/approving authorities to follow government procurement rules and procedures rather than the World Bank Guidelines; unjustified rejection of bids based on minor deviations;
- (c) Inadequate capacity and competence of PMU and government staff in procurement planning, preparing procurement related documents, and inadequate contract supervision and management, especially for large contracts;
- (d) Lack of counterpart funding as well as insufficient budget allocation in a timely manner that would also result in contract execution delays; and
- (e) Limited oversight by citizens, communities, civil society and independent audit organizations.

27. Given the above findings and also considering the level of complexity of procurement under the project, the procurement risk for this project is assessed as Substantial.

28. **Mitigation measures.** Measures to mitigate the identified risks have been discussed and agreed with the PMUs as described below (and see table 3.2). A downgrading of the residual procurement risk rating to "Moderate" is possible if the mitigation measures are implemented satisfactorily.

Table 3.2. Procurement Risk Mitigation Measures

No.	Actions	Agency	Time frame
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1	Prepare, finalize, and adopt a detailed procurement section into the POM (clear rules, procedures and division of responsibilities, timeline requirements for procurement activities, actions and decisions, sample documents and evaluation report for small procurements, an effective complaint handling mechanism, full decentralization and empowerment to the PMU, as well as a code of conduct).	PMUs	Completed and approved during project preparation
2	Hiring project management/procurement consultants to support the PMUs	PMUs	1st year of project implementation and throughout project/procurement implementation period
3	Intensive training on procurement, contract management and anti-fraud and corruption for PMU staff	World Bank/ PMUs	Throughout implementation
4	Requesting bid evaluators to sign and execute a Transparency and Ethics Statement when carrying out their duties	PMUs	Throughout project procurement implementation period
5	Employing qualified international/national consulting firms for construction and contract management	PMUs	Supervision consultants for Component 1 and 2 hired by Jul. 2017;
6	Carry out regular implementation support missions and annual procurement post review.	World Bank/ PMUs	Implementation
7	Establish/operate/manage an appropriate procurement record keeping and monitoring system (including adequate storage).	PMUs	Implementation

29. **Procurement Strategy.** The simplified Project Procurement Strategy for Development (PPSD) prepared by the PMUs identifies fit-for-purpose procurement approaches to suit their specific needs, based on the market and the operational context of the project. Based on the project nature and complexity, the PPCS has been reviewed by the World Bank and noted to be proportional, providing adequate justifications for the selection methods selected in the accompanying Procurement Plan which has been agreed with the World Bank. A summary of the market analysis findings under PPCS are as follows:

- (a) **Construction sector:** Local contractors are familiar with, and have enough experience and capacity to solely undertake, the works defined under this project. More importantly, given the small-scale scope of works contracts in the project, international contractors may have limited interest to participate in the bidding process - as demonstrated in several similar contracts in other World Bank funded projects. In terms of anticipated ability of the market to generate a sufficient level of competition, there are several private contractors in Hanoi, Da Nang, Ho Chi Minh City and other provinces that are likely to participate in the bidding process and so ensure that the most competitive bids will deliver value for money for the clients. In addition, there are several state-owned construction corporations under the MOC that have experience in this field, although the Borrower will have to exercise extra due diligence to ensure that conflict of interest situations do not occur.
- (b) **Consultancy sector:** National consultants in the field of sewerage and sanitation have sufficient capacity to perform the services including consulting firms formerly under the

MOC and now equitized, and other private companies. The ability of the market to meet the requirements of the project is high.

- (c) **Goods sector:** There are many international and national suppliers that can supply goods as required by the project, therefore, the ability of the market to respond to the requirements of the project is high. However, where equipment is required to have the same characteristics or be compatible with equipment procured and now operational under the CCESP (to ensure effective operations), this may limit/restrict the ability of the supply market.

30. **Procurement Plan.** Based on the outcome of the PPSD, the PMUs have prepared acceptable procurement plans for the initial 18 months of project implementation. They have been approved by their PPCs. The various items under different expenditure categories are described/summarized below in table 3.3. The procurement plan includes contracts that are to be awarded under advance procurement – see table 3.4. The Procurement Plan shall be updated annually or as needed. All the Procurement Plans and their updates will be published on the World Bank’s external website in accordance with the Guidelines as well as the Government’s Public Procurement Review.

Table 3.3. Summary of Initial 18 months Procurement Plan

Ref. No.	Description	Estimated Cost (US\$, millions)	No. of Packages	Review by the Bank (Prior/Post)
1	Summary of NCB (Works/Goods) packages	68.00	23	Prior/Post
2	Summary of number of contract \geq US\$0.3 million that will be let under QCBS	6.94	9	Prior/Post
3	Summary of number of contracts $<$ US\$0.3 million that will be let under CQS, LCS, IC (including contracts $>$ US\$0.3 million)	2.86	16	Post
4	Summary of Shopping packages (Works and Goods)	0.13	1	Post
	Total	77.93	49	

Note: NCB = National Competitive Bidding; QCBS = Quality- and Cost-Based Selection.

Table 3.4. Procurement Plan for Advance Procurement Activities

Contract No.	Description	Estimate Cost (US\$, millions)	Procurement Method	Review by the World Bank	Expected Bid Opening
Dong Hoi					
DH-1.20	Construction supervision for Component 1 and 2	2.69	QCBS	Prior	March 2017
DH-1.21	Consultant for survey, detailed design and bidding document for remaining works of Component 1	0.47	QCBS	Post	March 2017
Quy Nhon					
QN-1.21	Consultant for survey, detailed design and bidding documents for remaining works of Component 1	0.81	QCBS	Prior	March 2017
QN-1.22	Construction supervision consultant for 18-month period for Component 1 and Component 2	0.39	QCBS	Post	March 2017
QN-1.23	Individual Team Leader for project management.	0.37	IC	Prior	March 2017
Nha Trang					
NT-1.21	Consultant for survey, detailed design and bidding documents for remaining works of Component 1	0.57	QCBS	Prior	March 2017
NT-2.21	Consultant for survey, detailed design and bidding documents for Component 2	0.37	QCBS	Post	March 2017
Phan Rang					
PR-1.21	Construction supervision consultant for Component 1 and 2 (18-month period)	0.52	QCBS	Post	March 2017
PR-1.22	International Team Leader for contract management, supporting of bid evaluation	0.37	IC	Prior	March 2017
PR-1.23	Consultant for survey, detailed design and bidding documents for remaining works of Component 1	1.12	QCBS	Prior	March 2017

31. **Procurement Support and Post-review.** Contracts that are not subject to the World Bank's prior-review will be subject to post-review as per procedures set forth in paragraph 5 of Appendix 1 of the Procurement Guidelines and Consultant Guidelines. The sampling rate for post review will initially be 20 percent. This rate will be adjusted periodically based on procurement performance. The PMU will send to the World Bank, on a biannual basis, a list of all awarded contracts for goods, works, and consultants' services that are subject to post-review.

32. **Procurement Thresholds and World Bank's Prior Review.** The thresholds for procurement methods and World Bank prior review are presented in table 3.5, below. These thresholds may be updated and adjusted as needed.

Table 3.5. Procurement Method and Prior Review Thresholds

Category	Procurement Method Thresholds	Prior Review Thresholds
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	Applicable Thresholds (in US\$, millions)	Remarks	Applicable Thresholds (in US\$, millions)	Remarks
Works/Supply and Installation				
ICB	≥20.0	–	All ICB contracts	–
NCB	<20.0	–	Above US\$10 million and first NCB contract (value ≥ 0.2 and < 20.0)	Risk-based approach (according to procurement risk rating)
Shopping	<0.2	–	None	–
Goods				
ICB	≥3.0	–	All contracts	–
NCB	<3.0	Where goods are not normally available from within Vietnam, the method of procurement will be ICB even if the contract value is less than US\$1 million.	Above US\$2 million and first NCB contract (value ≥ 0.1 and < 3)	Risk-based approach (according to procurement risk rating)
Shopping	<0.1		None	
Consultant Services				
CQS	<0.3	Para 3.7 of Consultant Guidelines (January 2011). Other methods (QCBS, and LCS) may also be applied for contracts below US\$0.3 million.	<ul style="list-style-type: none"> • Firms: ≥US\$1 million (for competitive selection) plus the first contract for each method (QCBS and LCS) regardless of value. • SSS: For SSS, US\$50,000 (Para 3.9 of Consultant Guidelines, January 2011) and all other SSS contracts. • Individuals ≥ US\$0.3 million; and for essential assignments (procurement/legal consultant). For SSS, US\$20,000 (Para 5.6 of Consultant Guidelines, January 2011) 	<p>All QCBS contracts ≥ US\$1 million shall be subject to prior review.</p> <p>Essential individual assignments will be defined in the Procurement Plan agreed with the Bank.</p>

Note: International Competitive Bidding.

33. **Monitoring by STEP.** Through mandatory use of STEP by the Borrower, the World Bank will be able to consolidate procurement/contract data for monitoring and tracking of all procurement transactions. Using STEP, comprehensive information of all contracts for goods, works, technical services and consultants' services awarded under the whole project, no matter those are subject to the World Bank's prior-review or post-review, will be available automatically and systematically on an annual basis and/or whenever required, including but not limited to: (a) reference number as indicated in the Procurement Plan and a brief description of the contract; (b) estimated cost, (c) procurement method; (d) timelines of the bidding process, (e) number of participated bidders, (f) names and reasons of rejected bidders, (g) date of contract award; (h) name of awarded supplier, contractor or consultant; (i) final contract value and (j) contractual implementation period.

Environmental and Social (including safeguards)

Social

34. **Involuntary Resettlement (OP 4.12).** Four subprojects will cause land acquisition impacts for 1486 households, including 329 relocated households and 605 households losing more than 20 percent of their total land holding (or 10 percent for vulnerable groups). The total area of affected land is estimated at 798,893 m² (permanent) and 92,205 m² (temporary).

35. **SIAs.** Four SIAs have been conducted in parallel with the ESIA for each of the cities to identify social impacts caused by the project and propose associated mitigation measures. Findings of SIAs provided strong inputs to other social safeguard instruments such as the RAP (especially on the livelihood pattern of affected households, or their resettlement preference). Outputs generated from SIA are also being used to inform other mitigation measures, enhancing meaningful consultation with local people and their participation; strengthening the gender responsiveness of the project.

36. **RPF.** The RPF has been prepared in accordance with the World Bank's policies and guidelines governing preparation and implementation of subprojects and/or components. It also lays down the principles and objectives, eligibility criteria of displaced persons (DPs), modes of compensation and rehabilitation, potential relocation of these persons, approval procedures, participation features and grievance procedures. The RPF also includes guidance on screening, policy application implication for potentially linked activities.

37. **Resettlement Action Plans (RAPs).** Four RAPs have been prepared, detailing subproject related impacts, compensation policies, compensation and relocation packages, consultation/participation, GRS and monitoring arrangement. Regarding relocation arrangements, the results of the socio-economic survey indicated that 83.3 percent of relocated households in Phan Rang (120 households) and 80.1 percent of relocated households in Nha Trang (169) have expressed their interest in moving to a resettlement site in the same commune/ward. Others expect to receive cash to self-arrange the relocation. In Phan Rang, a resettlement site of 6.699 ha will be developed specifically for this project. Costs associated with construction the technical infrastructure of this resettlement site will be financed from project funds. In Phan Rang, relocated households will be arranged in three resettlement sites, namely Hon Ro 2 (29.36 ha), Dat Lanh (5.9 ha) and Ngoc Hiep (13.45 ha). PMUs will apply the same resettlement policies to the land acquisition/compensation activities required for resettlement site in Phan Rang and Ngoc Hiep in Nha Trang. Dat Lanh resettlement site was developed since 2006 to serve the relocation needs the previous World Bank funded operation (CCESP). Hon Ro 2 resettlement site was developed in 2011 and completed in March 2016. The consultant team have conducted appropriate due diligence assessment of land acquisition/compensation practices applied in Dat Lanh and Hon Ro 2 resettlement sites. The estimated budget for land acquisition, compensation, resettlement and support is approximately VND 654 billion (US\$29.7 million).

Environmental

38. **Applicable Environmental Safeguard Policies.** The following World Bank environmental safeguard policies are triggered for the project: (a) Environmental Assessment (OP 4.01); (b) Natural Habitat (OP 4.04); and (c) Physical Cultural Resources (OP 4.11). The project is classified as Category A for environment due to the significant environmental and social impacts associated with the construction and operation the storm water and wastewater collection systems, WWTPs, landfills, and embankments in the project cities.

39. **Investment types under the project.** The proposed project covers four coastal cities of Dong Hoi, Quy Nhon, Nha Trang and Phan Rang – Thap Cham. The project would mainly involve the following physical investments under Components 1, 2, 3: (a) Construction of rainwater drainage systems; (b) Construction of secondary and tertiary sewer systems and wastewater pump stations; (c) Construction of WWTPs; (d) Construction of a new sanitary disposal cell in the existing Long My landfill, Dong Hoi city; (e) Construction and rehabilitation of river and canal embankments; (f) Construction and rehabilitation of urban roads and bridges; and (g) Construction of public and school toilets.

40. **Positive social and environmental impacts.** The project's overall potential socio-environmental impacts would be positive as it is expected to bring about: (a) improved environmental conditions and urban landscape in many public and residential areas; (b) increased wastewater collection and treatment; (c) minimized discharge of untreated wastewater into the environment; (d) reduction of public health risks associated with water-borne diseases and related healthcare cost; (e) improvements in solid waste collection service and communication activities, addressing uncontrolled garbage disposal issues; (f) reduction of traffic jam or safety risks caused by inundation; (g) increased the accessibility of local people to nearby areas.

41. **Negative impacts during preconstruction and construction phases.** The main negative impacts during these phases include commonly known construction impacts and risks, such as: (a) safety risks related to unexploded ordnances left from the war; (b) loss of vegetation cover and trees, disturbance to the habitats of aquatic species (c) increased level of dust, noise, vibration; (d) pollution risks related to generation of waste and wastewater, particularly large amount of excavated/dredging materials; (e) traffic disturbance, and increased traffic safety risks; (f) erosion and land slide risk on slopes and deeply excavated areas as well potential negative impacts on existing weak facilities; (g) interruption of existing infrastructure and services such as water and power supply; (h) disturbance to daily socio-economic activities in project area and social disturbance; (i) health and safety issues related to the public and the workers at construction sites; and (j) social impacts associated with construction disrupting businesses by construction related activities and mobilization of workers to the site.

42. **Negative impacts during operation phase.** The findings of the ESIA's indicate the main adverse impacts associated with operation of the WWTPs would include: odor and air pollution; infiltration of wastewater to soils and groundwater; solid wastes and sludge; discharge of the effluent and incidental discharge into the surface water environment. The specific adverse impacts related to operation of the landfills would include: Leachate; wastewater from washing of garbage truck before leaving the landfill; surface runoff; air pollutants from landfill; dust, bioaerosols, and odors; impacts to water environment; impacts on soil environment; and impacts on public health and workers.

43. **Addressing impacts during preconstruction and construction phase.** Most of the preconstruction and construction related impacts can be effectively mitigated through application of the Environmental Codes of Practice (ECOPs) by the contractor and enforced and supervised by the construction supervision consultant. The ECOPs are included in the subproject ESIA's. The ESMPs also include site-specific mitigation measures that cannot be adequately and effectively implemented through the ECOPs.

44. **Natural Habitats (OP 4.04).** The environmental and social screening and scoping of the subprojects confirmed that natural habitats are present in the project areas. However, the subprojects would not have impacts on any protected area nor would they affect important/endangered flora or fauna species or biodiversity areas of high value. Construction and operation of the embankments

would have moderate potential impacts on natural habitats of the rivers, canals, and estuaries including loss of benthic habitats and disturbance of benthic organisms. While the project will be implemented in urban areas, some civil works will be implemented on existing waterways such as dredging of the Cau Rao river in Dong Hoi and Cai river in Nha Trang for flood control, or construction of two bridges in Quy Nhon. Appropriate measures to mitigate the potential biological impacts, particularly aquatic biology, have been proposed as part of the subproject ESMPs. Impacts and mitigation measures will be included in the relevant subproject ESIAs and ESMPs to address these impacts.

45. **Physical Cultural Resources (OP 4.11).** In all four cities there are temples, pagodas, and churches located within the area of direct influence by the project. These PCRs include: (a) Phan Rang: Quan Thanh Temple (50 m from construction sites); (b) Nha Trang: Po Nagar Cham Tower (30–100 m from construction sites), An Ton Church (10 m), Ngoc Thuy Vihara (20 m), Ba Lang Parish (20–50 m); (c) Quy Nhon: Nguyen Hue pagoda (5 m from construction site), Quy Nhon twin tower and Tay Ninh church (5 m from construction site); Truc Lam pagoda (2 m from construction site), Ngoc Nhon monastery (5 m); and (d) Dong Hoi: Dai Giac pagoda (200 m from dredging area). The potential impacts would be Decreased aesthetical values; Disturbance by workers' presence and activities, or noise from trucks; Traffic safety risks to local people, particularly at peak hours; and Increased traffic safety risks.

46. **Long-term impacts.** The long term impacts are those related to the sludge and odor generated by the WWTPs, the leachate and health issues due to operation of the landfills. However, the ESIAs confirmed these impacts to be moderate. Specific mitigation measures have been adopted to reduce pollution discharge, and water quality of the receiving waters will be carefully monitored.

Safeguard Implementation Experiences and Lessons from Previous World Bank-Financed CCESP

47. The project succeeds the CCESP which was implemented from 2006 to 2014. A number of lessons from the CCESP on environmental management and supervision will be effected during implementation, including: (a) full supervision of ESMP implementation by the Construction Supervision Consultant (CSC); (b) close coordination with local authorities and people in the project areas; (c) effective communication and provision of clear information on the subproject contents and construction schedule to the local authorities; (d) close coordination between PMUs and the Independent Environmental and Social Monitoring Consultant; (e) regular coordination between PMUs and the consultants to evaluate contractor compliance with environmental and social requirements; (f) use of appropriate techniques for sewer and drainage system construction (including counter measures for landslide risks); (g) use of appropriate odor treatment technology on WWTPs; and (h) school toilets designed to enhance pupil awareness of environmental sanitation.

Due Diligence Review

48. A due diligence review was undertaken by the Borrower for treatment plants, landfills, and potential construction material sources. A summary is provided below:

49. For Nha Trang, due diligence was conducted on the Luong Hoa Landfill which will receive sludge from the subproject WWTP. Quarterly analysis of effluent quality at the leachate treatment plant shows that key parameters are within the permitted limits of national standards.

50. Waste generated by the Dong Hoi subproject will be disposed to Ly Trach landfill. The operator, URENCO, is performing satisfactorily, although there is scope for improvement. The most recent

environmental quality monitoring results show that the air, water and groundwater quality are mainly within the permissible limits.

51. For Quy Nhon, a due diligence review was undertaken for the 14,000 m³/day Nhon Binh WWTP (constructed under the CCESP). A second 14,000 m³/day module for the WWTP has been proposed under the CCESP. The effluent monitoring results of Nhon Binh WWTP during operation indicate compliance with the national standards QCVN 40:2011/BTNMT, column B. The odor issue will be addressed under the CCESP. The environmental monitoring report for the Long My landfill (constructed under the CCESP) shows that air, surface, leachate and groundwater quality is within national standards.

52. For Phan Rang, the waste generated by the subproject during construction and operation will be disposed of at the Nam Thanh solid waste treatment complex. The complex is in operation and in compliance with government regulations. A due diligence review of the project ‘Construction of the Wastewater Collection, Treatment and Reuse for Phan Rang – Thap Cham City Project’ financed by another donor (to be implemented from 2016–2020) was also conducted. The EIA for the project was approved by the provincial authority, and the mitigation measures proposed under this EIA are in line with those proposed in the CCESP ESIA - no conflicts with CCESP ESIA were identified.

53. A due diligence review was also conducted on potential construction materials sources - sand mines, borrow pits, and quarries which may be used by the project. The results of the review show that they are licensed and operated in line with the related national regulations.

54. The following environmental safeguard documents have been prepared, reviewed, and found satisfactory by the World Bank Task Team:

55. **ESIA.** An ESIA has been prepared for each of the cities to assess the potential impacts and risks of the proposed investments. The ESIA's include the World Bank Group Guidelines on Environmental, Health and Safety, due diligence review of existing landfills, WWTPs, and materials sources in the project cities; cumulative impact assessment of potential environmental and social impacts and the potential impacts of transporting materials to the landfill related to dredging; potential social impacts. The ESIA of each city took into account the approved ESIA's of the work items implemented under the CCESP (such as the WWTPs in Dong Hoi and Quy Nhon) or originally proposed under the CCESP (such as the North WWTP in Nha Trang or dredging of the Cau Rao river in Dong Hoi, but not yet be implemented or fully completed), and social and environmental management experiences gained through the implementation of the CCESP.

56. **ESMP.** The ESMPs consist of the set of good practice mitigation measures to address common construction related impacts which referred to as Environmental Codes of Practices (ECOP), site-specific environmental and social measures to deal with the impacts specific to the subproject areas and activities. The ESMPs also include monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels. Each subproject ESMP includes a Compliance Framework which lays out the role and responsibilities of the contractor and a penalty system to address non-compliance cases of the contractor to the environmental management requirements of the subproject. The ESMPs include the budgets for their implementation including for capacity building in project environmental management.

57. **Safeguard Implementation, Monitoring, and Training.** All IAs and their PMUs, through their dedicated environmental and social staff/unit, will be responsible for implementing and monitoring the

environmental and social safeguard instruments (RPF, RAP, and ESMPs). During project implementation, the PMUs will be responsible for regular liaison with the local authorities and communities, and externally supervised by independent monitoring agencies. The performance and compliance with environmental and social safeguard instruments will also be subject to regular supervision from the World Bank Task Team. The PMUs, contractors, construction supervision consultants, and local community representatives will receive training on the safeguard instruments to be applied to the project.

58. **Public Consultation and Information Disclosure.** Two rounds of consultations were organized in February and July 2016. The affected people and communities and other relevant stakeholders have been consulted on the RPF, subproject ESIAs, socio-economic study, RAPs. The feedback from the consultations has been incorporated into the project design, the final draft RPF, subproject ESIAs, RAPs. The final environmental and social safeguards instruments were disclosed locally at the subproject PMUs offices and subproject areas on December 31, 2016, and were disclosed on the World Bank's website in January 2017: (i) RPF disclosed on January 5, 2017; (ii) RAPs disclosed on January 4, 2017 (Dong Hoi and Quy Nhon), January 5, 2017 (Nha Trang), and January 9, 2017 (Phan Rang-Thap Cham); (iii) Social Assessments disclosed on January 5, 2017 (Dong Hoi, Nha Trang and Quy Nhon) and January 9, 2017 (Phan Rang-Thap Cham); (iv) ESIAs disclosed on January 4, 2017 (Dong Hoi and Quy Nhon), January 5, 2017 (Nha Trang), and January 9, 2017 (Phan Rang-Thap Cham).

Monitoring & Evaluation

59. Each PMU, with the assistance of consultants, will compile data to monitor the performance of its respective sub-project. A Monitoring and Results Framework with Indicators has been developed and is shown in annex 1.

60. A comprehensive assessment of performance will be made at the Mid-Term Review. Based on this assessment, the World Bank, and the Borrowers will, if necessary, adjust the investment allocation between the various components.

Annex 4: Implementation Support Plan

VIETNAM: Coastal Cities Sustainable Environment Project

Strategy and Approach for Implementation Support

1. A project launch workshop will be organized as part of the first supervision mission shortly after project effectiveness. During implementation, the World Bank will field semi-annual supervision missions throughout the project life. Based on the implementation schedule, a midterm review mission will be undertaken in 2019, with the actual date and duration depending on the progress in implementation. The approach for the implementation support plan was built on the experience gained from the previous World Bank operations in the country and globally. It has also been developed based on the nature of the project and its risk profile.

Implementation Support Plan and Resource Requirements

2. **Technical.** Hydraulic engineering, flood risk management, irrigation, water, sanitation, transportation, and other related expertise will be required during implementation, including review of bidding documents and technical proposals, providing technical and engineering advice, and site visits for quality inspections to ensure smooth progress of the construction and implementation.

3. **Fiduciary.** Training will be provided by the World Bank's FM and procurement specialists during project implementation. The team will also help the PMUs identify capacity-building needs to strengthen the FM capacity and improve procurement management efficiency. Both the FM and procurement specialists will be based in the country office to provide timely and continuous support. Formal FM and procurement supervision will be carried out semiannually as part of the overall project supervision.

4. **Safeguards.** The World Bank's supervision team includes an environmental specialist and a social safeguard specialist. The World Bank team will supervise implementation of the social and environmental management instruments and provide guidance to the PMUs to address any issues. In addition, the Bank team will provide guidance to the independent monitoring consultants and review their reports so as to minimize the potential social and environmental risks.

Implementation Support Plan

5. The implementation support plan below (table 4.1) describes the World Bank support for the implementation of risk mitigation measures and provides the technical advice necessary to facilitate achieving the PDO (linked to results/outcomes identified in the result framework). The plan also takes into account the requirements to meet the World Bank's fiduciary obligations.

Table 4.1. Implementation Support Plan

Skills Needed	Number of Staff Weeks/Year	Number of Trips	Comments
Task Team Leader	12	Two per year, three in first year	Country office based
Co-task Team Leader	8	Two per year, three in first year	Country office based
Water and Sanitation Specialist	8	Two per year	
Transport Specialist	4	Two per year	Country office based
Institutional Specialist		Fields trips as required	
Social Specialist		Fields trips as required	Country office based
Environment Specialist		Fields trips as required	Country office based
Procurement Specialist	2	Two per year	Country office based
Financial Management Specialist	2	Two per year	Country office based
Monitoring and Evaluation Specialist	2	Two per year	Consultant
Municipal Engineer	8	Two per year	Consultant

Annex 5: Financial and Economic Analysis

VIETNAM: Coastal Cities Sustainable Environment Project

Financial Analysis

1. The financial analysis assumes that tariffs for wastewater (and solid waste in Quy Nhon) will recover operating and maintenance (O&M) costs, depreciation of short lived assets, such as vehicles and equipment, and any loan interest charges, by the end of the project. Currently tariffs are sufficient to cover these costs in Nha Trang, Quy Nhon and Dong Hoi, but not in Phan Rang. However, the O&M costs will increase substantially from 2023 as a result of the operation of newly installed capacity. As a result, the tariffs for wastewater need to be increased gradually, starting from 2017, to allow the service providers to achieve the required levels of cost recovery before project implementation completion in 2023. The current low level of tariff in Phan Rang implies that a radical increase road map is needed for full cost recovery at the completion of the project.

2. The cost recovery schedules for the service providers have been agreed with local governments and their implementation will be used to monitor the financial sustainability of the project.

Financing Arrangement and Fiscal Impacts

3. The project with an estimated cost of about US\$273.6 million will be funded by both IDA and IBRD resources in addition to counterpart funding. The IDA amount is US\$190.2 million, accounting for 69.5 percent of the total cost. The IBRD amount is US\$46 million, or 17 percent of the total cost. All the IBRD resources and about 29 percent of IDA funds will be onlent to the participating cities and making up to 37 percent of total cost. Poorer cities (Dong Hoi and Phan Rang) will be on-granted 80 percent of IDA whereas Quy Nhon and Nha Trang will get 70 percent and 50 percent of their IDA on-granted, respectively.

4. The total counterpart fund requirement of the project is estimated at US\$37.4 million representing 13 percent of the total project cost. The counterpart funding requirements for Dong Hoi, Nha Trang, Phan Rang and Quy Nhon subprojects are US\$8.2 million, US\$11.4 million, US\$12.7 million, and US\$5.2 million respectively. Table 5.1 provides a summary of the sources of funding by city.

Table 5.1. Sources of Funding by City (US\$, millions)

City	On-granting	Onlending	Counterpart Funding	Total
Dong Hoi	28.7	21.5	8.2	58.4
Share (%)	49.4	37.0	13.6	100.0
Nha Trang	22.1	38.5	11.4	72.0
Share (%)	30.7	53.5	15.8	100
Phan Rang	52.1	23.2	12.7	87.9
Share (%)	59.2	26.4	14.4	100.0
Quy Nhon	31.5	18.6	5.2	55.3
Share (%)	56.9	33.6	9.5	100.0
Project	134.4	101.8	37.4	273.6
Share (%)	49.2	37.4	13.4	100.0

5. The counterpart financing will be provided both by the Provincial budget and contribution of the central government (50.6 percent). Assessment of the financial performance of the provincial budgets showed that they have the necessary counterpart funds for their respective sub-projects. The average annual counterpart fund required will be about VND 15.9 billion for Dong Hoi and VND 40.8 billion for Nha Trang and VND 18.3 billion for Quy Nhon or about 0.5 percent of the current provincial total annual capital expenditure. Phan Rang will need about VND 46.1 billion a year for counterpart funding but this will be financed by the central budget.

6. The credit will be onlent or on-granted to the relevant service providers with the exception for investment in resettlement sites which will be onlent to the provinces. The terms of the financing are summarized in table 5.2.

Table 5.2. Terms of Financing

Component	Onlending Arrangements
1. Sanitation Infrastructure Expansion	IDA fund used for this component. Part of IDA fund was on-granting to provinces as 80%, 50%, 80% and 70% for Dong Hoi, Nha Trang, Phan Rang and Quy Nhon respectively.
2. Urban Connectivity Improvement	100% IBRD fund was onlending to provinces for component 2
3. Compensation and Site Clearance	Counterpart fund and IDA-funded resettlement site in Phan Rang
4. Implementation Support and Institutional Reform	Counterpart fund

7. During the grace period the borrower will be exempt from making interest payments or repayments on the principal. No interest will be accrued on the loan amounts during the grace period.

Repayment Capacity of the Loan

8. It is expected that the project will result in significant increase in the levels of debt of four participating provinces. The shares of onlending amounts in total costs of subprojects range from 27.2 percent in Phan Rang to 54.6 percent in Nha Trang.

9. The onlending arrangements require mandatory evaluation of repayment capacity of provinces. At the time when the project intention report was approved, Decree 78/2010 required the calculation of the ratio debt-investment demand as the relevant indicator for the determination of debt ceiling. Provinces with net contribution to the central budget (like Khanh Hoa where Nha Trang locates) cannot borrow more than 60 percent of their investment demand whereas the upper limit for poorer provinces (in case of Dong Hoi, Phan Rang and Quy Nhon) is only 30 percent. With the promulgation of the State Budget Law (SBL) and Decree 16 on ODA management, the indicator for upper limit of debt now becomes the ratio debt-provincial retained revenue. The limit is now 30 percent for rich provinces like Khanh Hoa and 20 percent for poor provinces. However, the SBL and Decree 16 only becomes into effect after the approval of the project.

Table 5.3. Repayment Capacity of Provinces

City		2016	2017	2018	2019	2020	2021	2022
Dong Hoi	Debt/Investment	23.8	24.7	27.7	28.7	26.3	28.5	27.7
	Debt/Revenue	22.2	21.1	21.7	20.6	17.3	17.2	15.3
Nha Trang	Debt/Investment	19.3	18.6	19.0	13.2	25.6	24.5	21.6
	Debt/Revenue	7.4	6.7	6.4	4.2	7.5	6.6	5.3
Phan Rang	Debt/Investment	1.1	6.8	18.7	23.4	29.0	29.2	27.6
	Debt/Revenue	0.2	3.6	9.2	10.6	12.1	11.2	9.7
Quy Nhon	Debt/Investment	23.3	28.9	31.7	32.2	31.4	30.8	29.8
	Debt/Revenue	11.7	14.7	16.2	16.6	16.4	16.2	15.8

Source: DOFs of Participating Provinces.

10. The evaluation of these two indicators for participating provinces (see table 5.3) shows that Binh Dinh (with Quy Nhon subproject) will slightly exceed the upper limit for 2018–2021. Quang Binh (with Dong Hoi subproject) and Ninh Thuan (with Phan Rang subproject) will approach their limits from 2020, whereas Khanh Hoa (with Nha Trang subproject) is expected to have room for additional borrowing.

Cost Recovery and Tariffs

11. The project, in line with government policy, will recover from user charges the O&M costs of the wastewater and drainage facilities, depreciation of short lived assets, such as vehicles and equipment, and any loan interest charges. This allows for affordable tariffs and gives sufficient revenue to the service provider to operate the system and finance replacement of short lived assets. The wastewater tariffs will be levied as an amount for each cubic meter of water consumed. The wastewater tariffs will be increased annually during the implementation period so that the wastewater net revenue can fully cover the substantially risen O&M cost before the project completion. In addition, the service coverage and tariff collection efficiency will be gradually improved to increase revenues to the service providers.

12. The detailed financial projections demonstrate the possibility of full cost recovery before the project implementation period ends while keeping the charges affordable to households including poor families. Table 5.4 shows the proposed cost recovery tariffs for wastewater services for the four cities. The proposed increases in the average tariffs are 4.2 percent, 5.7 percent and 8.3 percent per annum for Dong Hoi, Nha Trang, and Quy Nhon, respectively. For Phan Rang, the current tariff of VND 564 per cubic meter is very low - about one quarter of the rates adopted in the other three project cities. Phan Rang will need to raise the tariff to 3,173 VND in 2023 to fully recover the cost of operation and maintenance.

Table 5.4. Wastewater Cost Recovery and Tariffs

Calendar Year	2016	2017	2018	2019	2020	2021	2022	2023
Nha Trang: average WW tariff VND/m ³	2,174	2,403	2,647	2,647	2,647	2,912	2,912	3,203
Nha Trang cost recovery (%)	116%	119%	125%	117%	123%	117%	111%	103%
Quy Nhon: average WW tariff VND/m ³	2,161	2,471	2,471	2,881	2,881	3,314	3,314	3,784
Quy Nhon cost recovery (%)	108%	117%	109%	124%	131%	146%	141%	102%
Phan Rang, average WW tariff	564	721	924	1,182	1,513	1,937	2,479	3,173
Phan Rang cost recovery (%)	n.a.	307%	263%	260%	101%	111%	133%	100%
Dong Hoi: average WW tariff VND/m ³	2,628	3,111	3,173	3,237	3,302	3,366	3,432	3,500
Dong Hoi cost recovery (%)	124.4	133.1	126.8	114.1	105.1	106.4	107.8	109.2

Note: WW = Wastewater.

Affordability

13. The assessment of affordability is based on the combined costs of water supply and wastewater charges using the above cost recovering tariffs. The existing provincial road maps for tariff for clean water show a slight increase of the tariff over time, because water supply already achieves full cost recovery. This will moderate the impact of the proposed increases in tariffs for wastewater. The monthly water-related cost to households, including for low income families, remain below the affordability level of 5 percent of household income. Table 5.5 below shows the affordability assessment (for combined water supply and wastewater) for low income households.

Table 5.5. Affordability for Low Income Households

	Dong Hoi		Nha Trang		Phan Rang		Quy Nhon	
	2015	2023	2016	2023	2016	2023	2016	2023
Average income of poor HH (000 VND/month)	2,081	3,074	2,838	4,629	2,970	4,466	3,287	4,942
HH WW tariff (VND/m ³)	1,156	2,850	1,760	2,602	503	2,833	1,500	2,600
Total expenditure on water (VND, thousands)	45.40	100.64	66.86	143.11	34.67	78.25	55.24	106.75
Affordability (%)	2.18%	3.27%	2.36%	3.09%	1.17%	1.75%	1.68%	2.16%

Source: Data provided by participating provinces.

Note: HH = Household; WW = Wastewater.

Economic Analysis

14. The economic analysis of the project is based on cost-effectiveness analysis to identify the least cost solutions to achieve the PDO, whilst keeping tariffs affordable. The economic benefits of the project include: (a) reduced flood damage, (b) health benefits, (c) savings in vehicle travel time and operating cost, (d) increased tourism due to an improved environment for tourists and potential investors, (e) savings in drainage maintenance, (f) enhancement of the development potential of the cities especially the areas along canals and previously flooded areas, including creation of new business opportunities such as restaurants, retail stores, and other entertainment activities. Given the lack of accurate and reliable data it was not possible to quantify these benefits, and as a result a cost benefit analysis could not be undertaken for the project.

15. Flood control, drainage and wastewater collection network. To mitigate flooding, priority was given to (a) the rehabilitation of the rivers and lakes that have a buffer function for the floodplains and serve as the main drainage channels for the city core area and new development areas, (b) the construction of drains at the base of the mountains to capture run-off, and (c) the construction of tide gates to prevent backflow in the drainage system during high tides and salt intrusion from the rivers. This approach addresses the major sources of flooding in the cities which arise from the mountain run-off during heavy rainfall and ocean or sea backflow into the drainage systems during periods of high tide.

16. In the drainage network, existing combined sewers will be rehabilitated and expanded to ensure sufficient capacities to service the catchment areas and design rainfall values, while utilizing ponds and lakes wherever possible to buffer the flow. Using combined sewers in the city core and in the highly dense areas, maximizes efficiency of investments and addresses constraints on land availability. In less dense areas, and where a drainage system is not yet in place, separate storm water drains and wastewater sewers will be considered. Priority catchment areas are the city core and major flooding areas of the cities.

17. In line with good engineering practice the combined sewers will include the installation of CSOs to spill excess storm flows to nearby water courses. This ensures that the interceptor pipes and pump stations, which transfer sewage to the wastewater plants, can be designed for cost effective operations.

18. Treatment technology. Both the previous CCESP and new CCSEP paid attention during preparation to the employment of appropriate technologies for treatment lagoons. The choice of technology for Dong Hoi, Quy Nhon and Phan Rang is relatively straightforward since the objective is to increase to actual treatment volume and better utilize the existing idle capacity of the treatment lagoons.

19. The technology for the new WWTP in Northern Nha Trang was selected based on several criteria, including the cost, simplicity and popularity of the technology as well as the consideration of the technology used in the city's southern WWTP. Among the four technologies under consideration, the selected technology (Oxidation Ditch) has the lowest unit investment cost and is highly rated through its long-time effective usage in the Southern WWTP.

20. The relatively weak wastewater currently entering the plants reduces the efficiency of treatment processes, which is an additional driver for increasing household connectivity and associated loading.

Annex 6: Project Maps

VIETNAM: COASTAL CITIES SUSTAINABLE ENVIRONMENT PROJECT

VIETNAM COASTAL CITIES SUSTAINABLE ENVIRONMENT PROJECT

-  PROJECT CITIES
-  PROVINCE CAPITALS
-  NATIONAL CAPITAL
-  PROVINCE BOUNDARIES
-  INTERNATIONAL BOUNDARIES

PROVINCES:

- | | | | |
|----|----------------|----|------------------|
| 1 | Lai Chau | 32 | Da Nang |
| 2 | Dien Bien | 33 | Quang Nam |
| 3 | Lao Cai | 34 | Quang Ngai |
| 4 | Ha Giang | 35 | Kon Tum |
| 5 | Cao Bang | 36 | Gia Lai |
| 6 | Son La | 37 | Binh Dinh |
| 7 | Yen Bai | 38 | Phu Yen |
| 8 | Tu Yen Quang | 39 | Dac Lac |
| 9 | Bac Can | 40 | Dac Nong |
| 10 | Lang Son | 41 | Khanh Hoa |
| 11 | Phu Tho | 42 | Binh Phuoc |
| 12 | Vinh Phuc | 43 | Lam Dong |
| 13 | Thai Nguyen | 44 | Ninh Thuan |
| 14 | Bac Giang | 45 | Tay Ninh |
| 15 | Quang Ninh | 46 | Binh Duong |
| 16 | Ha Noi | 47 | Dong Nai |
| 17 | Bac Ninh | 48 | Binh Thuan |
| 18 | Hung Yen | 49 | T.P. Ho Chi Minh |
| 19 | Hai Duong | 50 | Ba Ria-Vung Tau |
| 20 | Hai Phong | 51 | Long An |
| 21 | Hoa Binh | 52 | Tien Giang |
| 22 | Ha Nam | 53 | Dong Thap |
| 23 | Thai Binh | 54 | Ben Tre |
| 24 | Ninh Binh | 55 | An Giang |
| 25 | Nam Dinh | 56 | Vinh Long |
| 26 | Thanh Hoa | 57 | Tra Vinh |
| 27 | Nghe An | 58 | Kien Giang |
| 28 | Ha Tinh | 59 | Can Tho |
| 29 | Quang Binh | 60 | Hau Giang |
| 30 | Quang Tri | 61 | Soc Trang |
| 31 | Thua Thien Hue | 62 | Bac Lieu |
| | | 63 | Ca Mau |



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