

Document of  
The World Bank

Report No: ICR00003772

IMPLEMENTATION COMPLETION AND RESULTS REPORT  
(IBRD-76400 TF-92704)

ON A

PROPOSED ADAPTABLE PROGRAM LOAN

IN THE AMOUNT OF EUR 60 MILLION  
(US\$87.5 MILLION EQUIVALENT)

AND A

GLOBAL ENVIRONMENTAL FACILITY GRANT

IN THE AMOUNT OF US\$6.4 MILLION

TO THE

REPUBLIC OF CROATIA

FOR A

COASTAL CITIES POLLUTION CONTROL PROJECT 2

IN SUPPORT OF THE SECOND

COASTAL CITIES POLLUTION CONTROL PROGRAM

November 25, 2016

## CURRENCY EQUIVALENTS

(Exchange Rate Effective December 31, 2015)

Currency Unit	=	Croatian Kuna (HRK)
US\$1.00	=	HRK 7.016
EUR 1.00	=	US\$1.09

## FISCAL YEAR

[January 1 – December 31]

## ABBREVIATIONS AND ACRONYMS

APL	Adaptable Program Loan
CAS	Country Assistance Strategy
CCPCP	Coastal Cities Pollution Control Project
CPS	Country Partnership Strategy
CW	Constructed Wetland
COD	Chemical Oxygen Demand
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EU	European Union
GEF	Global Environment Facility
HV	Hrvatske Vode (Croatian Waters)
HVJP	Hrvatske Vode Jadranski Projekt (HV Adriatic Project)
FIRR	Financial Internal Rate of Return
FM	Financial Management
ICR	Implementation Completion and Results Report
ISR	Implementation Status and Results Report
LARPF	Land Acquisition and Resettlement Policy Framework
MENP	Ministry of Environmental and Nature Protection
MEPPPC	Ministry of Environmental Protection, Physical Planning and Construction
MRDFWM	Ministry of Regional Development, Forestry, and Water Management
MWSC	Municipal Water and Sewerage Company
NPV	Net Present Value
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PDO	Project Development Objective
PE	Population Equivalent
PIU	Project Implementation Unit
TA	Technical Assistance
UWWTD	Urban Waste Water Treatment Directive
WSS	Water Supply and Sanitation
WWTP	Wastewater Treatment Plant

Senior Global Practice Director: Guang Zhe Chen

Practice Manager: David Michaud

Project Team Leader: Stjepan Gabric

ICR Team Leader: Ivaylo Kolev

**REPUBLIC OF CROATIA**  
**COASTAL CITIES POLLUTION CONTROL PROJECT 2**

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## DATASHEET

A. Basic Information			
Country:	Croatia	Project Name:	Coastal Cities Pollution Control Project 2
Project ID:	P102732,P102395	L/C/TF Number(s):	IBRD-76400,TF-92704
ICR Date:	07/14/2016	ICR Type:	Core ICR
Lending Instrument:	Adaptable Program Loans	Borrower:	REPUBLIC OF CROATIA
Original Total Commitment:	US\$87.50 million,US\$6.40 million	Disbursed Amount:	US\$75.06 million, US\$5.69 million
Environmental Category: F, F		Focal Area: I	
Implementing Agencies: HRVATSKE VODE (HV)			
Co-financiers and Other External Partners: Global Environment Facility			

B. Key Dates				
Coastal Cities Pollution Control Project 2 - P102732				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	02/12/2008	Effectiveness:	06/04/2009	06/04/2009
Appraisal:	07/29/2008	Restructuring(s):		03/30/2012 06/11/2014
Approval:	12/11/2008	Midterm Review:	10/01/2012	10/05/2012
		Closing:	09/30/2014	12/31/2015

Second Coastal Cities Pollution Control Project - P102395				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	02/12/2008	Effectiveness:		04/06/2009
Appraisal:	07/01/2008	Restructuring(s):		10/22/2015
Approval:	12/11/2008	Mid-term Review:	09/30/2011	10/05/2012
		Closing:	09/30/2014	05/31/2016

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes	Satisfactory
GEO Outcomes	Satisfactory
Risk to Development Outcome	Low or Negligible
Risk to GEO Outcome	Low or Negligible

Bank Performance	Satisfactory
Borrower Performance	Satisfactory

### C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

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

### C.3 Quality at Entry and Implementation Performance Indicators

Coastal Cities Pollution Control Project 2 - P102732			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	Yes	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Moderately Satisfactory		

### Second Coastal Cities Pollution Control Project - P102395

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

### D. Sector and Theme Codes

#### Coastal Cities Pollution Control Project 2 - P102732

	Original	Actual
<b>Sector Code (as % of total Bank financing)</b>		
Public administration- Water, sanitation and flood protection	8	8
Wastewater Collection and Transportation	46	46
Wastewater Treatment and Disposal	46	46
<b>Theme Code (as % of total Bank financing)</b>		
Environmental policies and institutions	8	8
Pollution management and environmental health	92	92

Second Coastal Cities Pollution Control Project - P102395		
	Original	Actual
<b>Sector Code (as % of total Bank financing)</b>		
Public administration- Water, sanitation and flood protection	12	12
Wastewater Collection and Transportation	44	44
Wastewater Treatment and Disposal	44	44
<b>Theme Code (as % of total Bank financing)</b>		
Environmental policies and institutions	12	12
Environmental health and pollution management	88	88

## E. Bank Staff

Coastal Cities Pollution Control Project 2 - P102732		
Positions	At ICR	At Approval
Vice President:	Laura Tuck	Shigeo Katsu
Country Director:	Arup Banerji	Orsalia Kalantzopoulos
Practice Manager/Manager:	David Michaud	Wael Zakout
Project Team Leader:	Stjepan Gabric	Michael John Webster
ICR Team Leader:	Ivaylo Hristov Kolev	
ICR Primary Author:	Ivaylo Hristov Kolev	

Second Coastal Cities Pollution Control Project - P102395		
Positions	At ICR	At Approval
Vice President:	Laura Tuck	Shigeo Katsu
Country Director:	Arup Banerji	Orsalia Kalantzopoulos
Practice Manager/Manager:	David Michaud	Wael Zakout
Project Team Leader:	Stjepan Gabric	Michael John Webster
ICR Team Leader:	Ivaylo Hristov Kolev	
ICR Primary Author:	Ivaylo Hristov Kolev	

## F. Results Framework Analysis

### Project Development Objectives (from Project Appraisal Document)

To improve the provision of efficient and sustainable wastewater services in participating coastal municipalities; and to reduce the nutrient load entering Croatia's coastal waters from, and pilot innovative wastewater treatment solutions in, selected municipalities.

### Global Environment Objectives (from Project Appraisal Document)

Same as PDO

### Revised Global Environment Objectives (as approved by original approving authority)

#### (a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Percentage of samples from bathing areas in participating towns complying with applicable seawater quality standards			
Value (quantitative or qualitative)	98%	TBD	100%	100%
Date achieved	06/16/2009	06/16/2009	03/30/2012	12/11/2015
Comments (including % achievement)	Target achieved at the end of the project			
<b>Indicator 2 :</b>	Percentage of households in participating cities able to connect to wastewater services			
Value (quantitative or qualitative)	46%	76%		76%
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	Target achieved at the end of the project			
<b>Indicator 3 :</b>	Percentage of wastewater collected that is treated as per applicable legislation			
Value (quantitative or qualitative)	15%	71%		76%
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	107% of target achieved at the end of the project			
<b>Indicator 4 :</b>	Performance of participating MWSCs - operating ratio			
Value (quantitative or qualitative)	1.13	<1		0.84
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	Target achieved at the end of the project			



Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
achievement)				
<b>Indicator 5 :</b>	Performance of participating MWSCs - collection rate			
Value (quantitative or qualitative)	76%	>86%		90%
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			
<b>Indicator 6 :</b>	Performance of participating MWSCs - debt service ratio			
Value (quantitative or qualitative)	TBD	>1.5		2.20
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	Target achieved at the end of the project			

**(b) GEO Indicator(s)**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Reduction in pollution and nutrient load in cities with enhanced nutrient reduction wastewater treatment facilities (Biochemical oxygen demand, N, P)			
Value (quantitative or qualitative)	0%	50%		80%
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	160% of the target achieved at the end of the project			
<b>Indicator 2 :</b>	Increased knowledge of alternative nutrient reduction wastewater treatment technologies			
Value (quantitative or qualitative)	TBD	TBD	3	5
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	This indicator was revised (see section 1.8 Other significant changes). 167% of the target achieved at the end of the project. 3 Constructed wetland WWTP were build and 2 were designed.			

**(c) Intermediate Outcome Indicator(s)**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Volume (mass) of COD pollution load reduction achieved under the project			
Value (quantitative or qualitative)	0	130		370
Date achieved	12/10/2010	12/10/2010		06/10/2016
Comments (including % achievement)	285% of the target achieved at the end of the project			
<b>Indicator 2 :</b>	Number of sub-loan agreements signed in participating cities			
Value (quantitative or qualitative)	0	30	21	23
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			
<b>Indicator 3 :</b>	Km of wastewater collection systems constructed			
Value (quantitative or qualitative)	0	TBD	150	176
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	117% of the target achieved at the end of the project			
<b>Indicator 4 :</b>	Number of wastewater treatment plants commissioned			
Value (quantitative or qualitative)	0	TBD	18	19
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			
<b>Indicator 5 :</b>	Number of submarine outfalls constructed			
Value (quantitative or qualitative)	0	4	12	13
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			
<b>Indicator 6 :</b>	Number of enhanced nutrient reduction plants commissioned			
Value (quantitative or qualitative)	0	TBD	3	3
Date achieved	06/16/2009	06/16/2009	06/11/2014	06/10/2016
Comments	Target achieved at the end of the project			

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
(including % achievement)				
<b>Indicator 7 :</b>	HV and municipalities prepare projects to EU for financing			
Value (quantitative or qualitative)	0	TBD	4	5
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			
<b>Indicator 8 :</b>	Monitoring and benchmarking system is designed and operational			
Value (quantitative or qualitative)	0	Yes		Yes
Date achieved	06/16/2009	06/16/2009		06/10/2016
Comments (including % achievement)	Target achieved at the end of the project			
<b>Indicator 9 :</b>	Number of participating cities in which seawater quality monitoring system operational and baseline indicators in place prior to completion of construction			
Value (quantitative or qualitative)	11	37	21	22
Date achieved	06/16/2009	06/16/2009	03/30/2012	06/10/2016
Comments (including % achievement)	Target exceeded at the end of the project			

## G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	GEO	IP	Actual Disbursements (US\$ millions)	
					Project 1	Project 2
1	06/18/2009	S	S	S	0.00	0.00
2	11/21/2009	MU	MU	MU	0.00	0.00
3	06/11/2010	MU	MU	MU	0.00	0.05
4	01/04/2011	MU	MU	MU	2.58	0.26
5	06/25/2011	MS	MS	MS	6.42	0.29
6	04/10/2012	MS	MS	MS	15.83	0.43
7	06/13/2012	MS	MS	MS	18.86	0.43
8	12/26/2012	MS	MS	MS	24.36	0.63
9	06/26/2013	MU	MU	MU	30.74	0.80
10	12/27/2013	MU	MU	MU	41.47	0.80
11	06/28/2014	MS	MS	MS	51.03	1.15
12	12/18/2014	MS	MS	MS	59.09	1.15
13	05/12/2015	MS	MS	S	65.81	2.19
14	11/09/2015	MS	MS	S	70.83	2.66
15	12/24/2015	MS	MS	S	71.93	2.66
16	05/30/2016	MS	MS	S	75.06	3.69

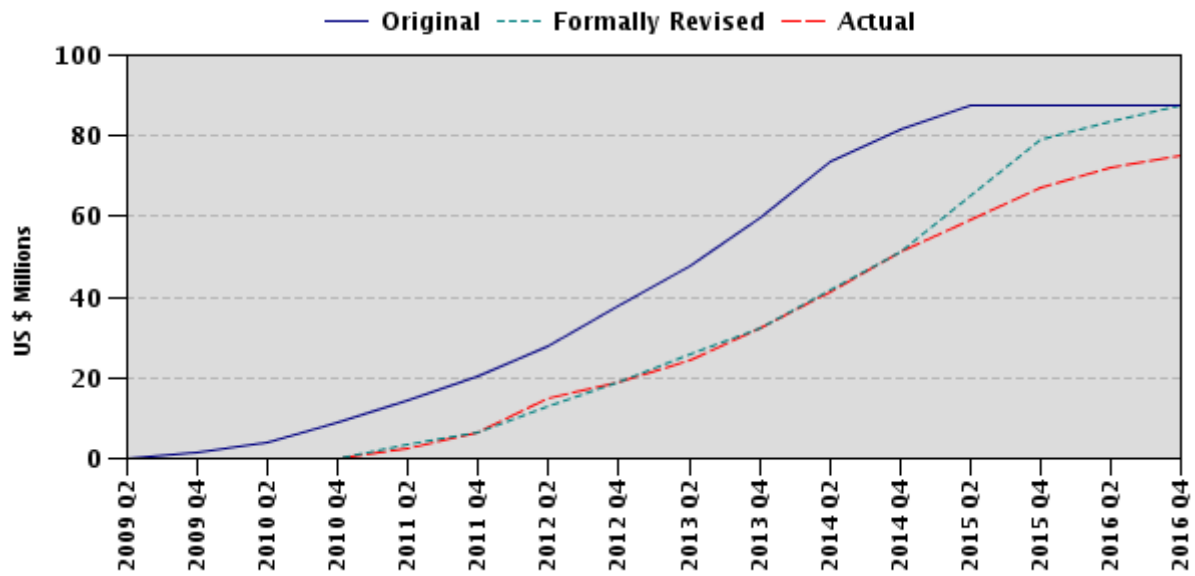
Note: S = Satisfactory; MS = Moderately Satisfactory; MU = Moderately Unsatisfactory

## H. Restructuring (if any)

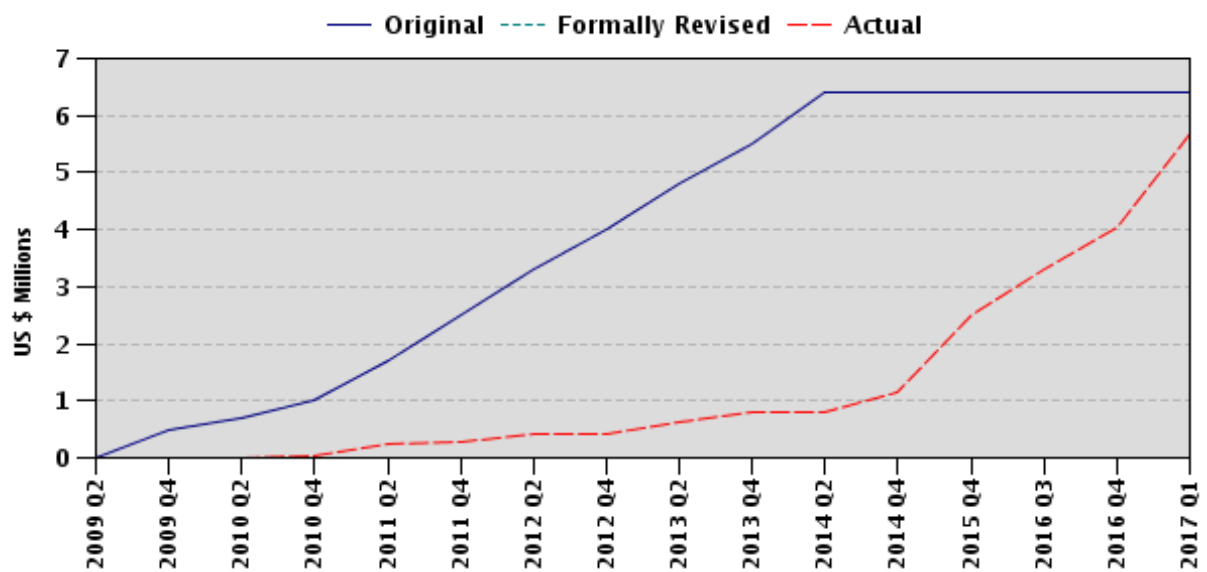
Restructuring Date(s)	Board Approved		ISR Ratings at Restructuring			Amount Disbursed at Restructuring in US\$, millions		Reason for Restructuring & Key Changes Made
	PDO Change	GEO Change	DO	GEO	IP	Project1	Project 2	
03/30/2012			MS	MS	MS	15.83		Subprojects scaled back from 30 to 23 based on project readiness and to address the initial implementation delays. Global Environment Facility (GEF) indicator measuring reduction of nutrient load modified to measure discharged nutrient load only in project participating municipalities; the second GEF indicator monitoring increased knowledge of alternative nutrient reduction technologies modified to measure just increased knowledge about nutrient reduction technologies.
06/11/2014	N		MU	MU	MU	51.03		Extension of the loan and GEF Grant closing date by 15 months; reallocation of loan and GEF Grant proceeds between different disbursement categories and project components to reflect evolving needs during the project's implementation; partial cancellation of the GEF Grant proceeds that could not be spent until the extended project closing date; and modification of target values of GEF results indicator in the Results Framework and Monitoring table to address initial project implementation delays.
10/22/2015			MS	MS	S		2.66	Five months extension of the GEF Grant closing date from December 31, 2015 to May 31, 2016, and reallocation of US\$100,000 between categories to allow the client to complete the ongoing investments financed by the GEF Grant.

## I. Disbursement Profile

P102732



P102395



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

### **1.1 Context at Appraisal**

#### *Country Background*

1. Before the global financial crisis of 2008–2009, the Croatian economy grew at a healthy 4–5 percent annually, incomes doubled, and economic and social opportunities improved significantly. The prolonged crisis challenged this progress as the country struggled with recession.

2. Croatia remains an ecological treasure in Europe, with 47 percent of its land and 39 percent of its sea designated as specially protected areas and areas of conservation. Croatia's natural beauty draws in millions of tourists each year, with tourism revenues representing around 15 percent of the country's gross domestic product.

3. Croatia should comply with the European Union (EU) environmental and climate change or energy acquis. Global climate change has already left its mark as Croatia's precipitation decreases and temperatures rise. The most affected sectors are expected to be agriculture, fisheries, hydropower, and tourism, which account for more than 25 percent of the Croatian economy and employ around 35 percent of the labor force.

4. The Water Supply and Sanitation (WSS) sector struggled to cope with increased demand for wastewater services, post-conflict situation, and new challenges to comply with EU environmental requirements. The World Bank assisted several Croatian governments to transform the WSS sector and improve the performance of WSS companies.

#### *Sector Background*

5. The Adriatic coastline is one of Croatia's most valuable economic and environmental assets. Disposal of untreated wastewater has a significant impact on the quality of the seawater and is a constraint to tourism development. The coverage and quality of wastewater services in Croatia are much lower than in recent EU member countries. In 2007, only 44 percent of the population had adequate wastewater collection systems and 25 percent of the collected wastewater was treated.<sup>1</sup> As part of Croatia's EU accession agreement, the Government agreed to meet EU environmental directives, which require much higher levels of wastewater service than those existing in 2008.

#### *Rationale for Bank Assistance*

6. The project was in line with the 2004 Country Assistance Strategy (CAS) that focused on assisting Croatia in its EU accession efforts. The project supported this objective by financing investments and technical assistance (TA) intended to meet commitments for achieving EU *acquis communautaire*. The project was developed to comply with the requirements of the Investment Fund of the Mediterranean Partnership supported by the Global Environment Facility (GEF), United Nations Environment Programme, and the World Bank, and it is consistent with its strategy for partnership support.

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<sup>1</sup> 2007 data presented in the Project Appraisal Document (PAD): Of the treated wastewater, about 81 percent underwent mechanical (primary) treatment, 6 percent biological (secondary) treatment and 13 percent was pretreated industrial discharge.

7. The project supported a key theme in the Country Partnership Strategy (CPS, FY2009–2012) to assist Croatia’s EU accession and its sustainable development, particularly in the environmental areas, through investments in wastewater and protection of coastal waters.

8. This was the second phase of a successful Adaptable Program Loan (APL) that aimed to help Croatia maintain the quality of its coastal waters up to the applicable environmental standards. Both the first and second phase of the APL assisted the country to face the challenges of the WSS sector related to environmental compliance (quality of water bodies, collection, and treatment of wastewater) and address the limited budget funds available for the sector because of government fiscal limits and targets. The project attracted GEF resources to finance enhanced nutrient reduction facilities that use innovative wastewater treatment technologies. Lower nutrient loads will not only reduce eutrophication in the Neretva Delta and maritime zones in Croatia but also demonstrate whether alternative technologies (Constructed wetlands (CWs) technology compared to conventional wastewater treatment plants [WWTPs]) could have cheaper lifecycle costs, while providing the same environmental benefits, and hence be used to reduce the funding gap.

## **1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)**

9. In line with the objectives outlined in the Government Program of 2008–2011 that focused on membership and compliance with EU environmental requirements, the project development objective (PDO) was to improve the provision of efficient and sustainable wastewater services in participating coastal municipalities and to reduce the nutrient load entering Croatia's coastal waters from, and pilot innovative wastewater treatment solutions in, selected municipalities.

10. The key PDO outcome indicators are the following:

- Percentage of samples from bathing areas in participating towns complying with applicable seawater quality standards
- Percentage of households in participating cities able to connect to wastewater services
- Percentage of wastewater collected that is treated as per applicable legislation
- Performance of participating MWSCs as measured by operating ratio, collection rate, and debt service ratio

## *Original Global Environment Objectives (GEO) and Key Indicators (as approved)*

11. Same as the PDO. The key GEF outcome indicators are the following:

- Reduction in pollution and nutrient load in cities with enhanced nutrient reduction wastewater treatment facilities (Biochemical oxygen demand, N, P)
- Increased knowledge of alternative nutrient reduction wastewater treatment technologies



### **1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification**

12. The PDO and GEO were not revised; however, some of the key indicators (three out of eight) were revised during the first and second restructuring of the project. Detailed information is presented under section 1.8 Other significant changes.

### **1.4 Main Beneficiaries**

13. Coastal Cities Pollution Control Project 2 (CCPCP) scaled up CCPCP1 with the number of municipalities participating in the project increasing from 11 to 23, thus benefiting a population of around 230,000 (population equivalent [PE] of 370,000). Components 2 and 3 assisted the Ministry of Regional Development, Forestry, and Water Management (MRDFWM) and Hrvatske Vode (HV) to implement the Water Management Strategy and further align the sector to EU accession priorities and strengthened municipal water and sewerage companies (MWSCs) to improve their financial and operating efficiency as well as the capacity of the Ministry of Environmental Protection, Physical Planning, and Construction (MEPPPC) to perform enhanced seawater quality monitoring.

### **1.5 Original Components (as approved)**

14. **Component 1: Wastewater Investments (EUR 111.8 million, of which EUR 54.15 million from IBRD and EUR 3.5 million equivalent [US\$5.6 million] from the GEF).** This component was used to finance investments, engineering design, and construction supervision for the construction, expansion, and rehabilitation of wastewater collection, treatment, and disposal systems. GEF resources were used to finance enhanced nutrient reduction facilities in WWTPs, which are financed out of the loan/government funds, in areas of high-nutrient load.

15. **Component 2: Institutional Strengthening (EUR 6.25 million, of which EUR 3 million from IBRD and EUR 0.25 million equivalent [US\$0.4 million] from the GEF).** This component was used to finance equipment, TA, training, and studies in three subcomponents:

- (a) Sector development to assist the MRDFWM and HV in implementing the Water Management Strategy and further align the sector to EU accession priorities
- (b) Institutional strengthening of the MWSCs to improve their financial and operating efficiency
- (c) Project management to support the Hrvatske Vode/Project Implementation Unit/Hrvatske Vode Jadranski Projekt (HV/PIU/HVJP) in implementing the project

16. **Component 3: Seawater Quality Monitoring (EUR 5.95 million, of which EUR 2.85 million from IBRD, EUR 0.25 million equivalent [US\$0.4 million] from the GEF).** This component was used to finance equipment, civil works, and TA to strengthen HV monitoring systems and the seawater quality monitoring systems of the MEPPPC. The component has two subcomponents:

- (a) To strengthen HV's monitoring of the effluent from the WWTP to assess the impact of the program on the quality of coastal waters. Under this subcomponent, the enhanced nutrient reduction from the WWTP (financed out of the GEF co-

financing) will be monitored for their impact on the receiving waters and the impact of each different treatment technology on nutrient reduction

- (b) To strengthen the MEPPPC's monitoring activities to extend the monitoring activities financed in Phase I to all MWSCs in Phase II and increase the focus on EU compliance

## 1.6 Revised Components

17. With the first restructuring of the project, the scope of 'Component 2: Institutional Strengthening (a) sector development to assist the MRDFWM and HV in implementing the Water Management Strategy and further align the sector to EU accession priorities' was revised to take into account that the in-depth study of investment needs and the financing plan to meet EU requirements was already prepared by the Government outside of the project. Component 2 aimed initially to facilitate implementation of the country's Water Management Strategy, focusing on meeting EU directives and absorbing EU funds. Among other activities, the project had planned to finance the preparation of an in-depth study on investment needs and the financing plan to meet EU requirements.

18. The changes required project funds (Subcomponent 2a) to be used for the preparation of necessary documentation for EU financing to leverage significant amounts of grant funding in the future. This increased the number of feasibility studies, cost-benefit analyses, environmental impact assessments (EIAs), and other documents prepared for financing from EU funds. Intermediate results indicators were also revised. The indicator 'HV and municipalities submit projects to the EU for financing' was modified to read 'HV and municipalities prepare projects to the EU for financing with a baseline 0 and end target of 4'.

## 1.7 Other significant changes

19. The project went through three restructurings, as shown in table 1.

**Table 1. Summary of Project Restructuring**

Approval date	Goals of Restructuring	Comments/Justification
March 30, 2012	<ul style="list-style-type: none"> <li>(a) Redefining the scope of the project's Component 2</li> <li>(b) Reallocation of the loan and GEF Grant proceeds between different disbursement categories</li> <li>(c) Defining a new date for establishment of monitoring and benchmarking system</li> <li>(d) Modifying the Results Framework and Monitoring table</li> </ul>	<p>Due to project effectiveness delay and EU membership requirements, some proposed deadlines and measures needed correction. Subprojects were scaled back from 30 to 23 because of prioritization of investments based on project readiness and to address the initial implementation delays. In addition, the first GEF indicator 'measuring reduction of nutrient load was modified to measure discharged nutrient load only in project participating municipalities. The second GEF indicator that monitors increased knowledge of alternative nutrient reduction technologies was modified to measure just increased knowledge about nutrient reduction technologies. Baseline and target values remained the same—0 percent, 50 percent and 0, 4 respectively; the third indicator modified was the intermediate result indicator that measures the project assistance in absorption of EU funds. This indicator was modified to measure the preparation of projects for EU financing.</p>

Approval date	Goals of Restructuring	Comments/Justification
June 11, 2014	<ul style="list-style-type: none"> <li>(a) Extension of the loan and GEF Grant closing date by 15 months (until December 31, 2015)</li> <li>(b) Reallocation of the loan and GEF Grant proceeds between different disbursement categories and project components to reflect evolving needs during the project's implementation</li> <li>(c) Partial cancellation of the GEF Grant proceeds that could not be spent until the extended project closing date</li> <li>(d) Modification of target values of GEF results indicator in the Results Framework and Monitoring table</li> </ul>	Implementation progress under all three project components indicated that the activities vital for achievement of the PDO cannot be completed by the project closing date (September 30, 2014), and 15-month extension (until December 31, 2015) was required to allow for the completion of all key project activities.
October 22, 2015	<ul style="list-style-type: none"> <li>(a) A 5-month extension of the GEF Grant closing date from December 31, 2015 to May 31, 2016</li> <li>(b) A reallocation of US\$100,000 between categories</li> </ul>	The extension was necessary to allow the client to complete the ongoing investments financed by the GEF Grant.

## 2. Key Factors Affecting Implementation and Outcomes

### 2.1 Project Preparation, Design and Quality at Entry

20. **Leveraging earlier operations.** This project is the second phase of an APL for the CCPCP aiming to improve the environmental quality of the Adriatic Sea. CCPCP1 was successfully completed in November 2009 with the triggers for processing to Phase II substantially met. The strategic APL approach ensured that the design of Phase II addressed the shortcomings identified in Phase I as well as incorporated World Bank experience from earlier investment operations in Croatia and worldwide. CCPCP2 benefited from the institutional framework set up at Phase I and relied on experience and resources of HV, which acted as an implementing agency under Phase I and continued to perform these functions for CCPCP2. CCPCP2 had the same composition of components as CCPCP1. It continued to include combination of wastewater investments in the participating coastal municipalities and TA to enhance institutional capacity at the national and local levels, while the program coverage was expanded by scaling up the number of the participating cities from 11 to 30.

21. **Project relevance.** The project design was relevant and developed in line with the Croatian Government Program of 2008–2011 and key sector and national strategies.<sup>2</sup> Project objectives were responsive to Croatia's development priorities and the World Bank's CAS for Croatia focused on assisting the country in its EU accession process. In particular, CCPCP2 was designed to support some of the priority investments in wastewater based on the list prepared by HV to meet the requirements of the EU Urban Waste Water Treatment Directive (UWWTD) aimed to protect the environment from the adverse effects of wastewater discharges from households and industries. The project was also fully consistent with the GEF Strategic Program 2 'Reducing Nutrient Over-enrichment from Land Based

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<sup>2</sup> (a) Strategy Development Framework 2006–2013 which focused on full membership in the EU and addressed a key reform agenda to enhance the effectiveness of public spending by increasing the level of cost recovery from local governments and consumers and (b) Water Management Strategy adopted by the Croatian parliament in July 2008.

Sources' and developed within the Investment Fund of the Mediterranean Partnership supported by the GEF, United Nations Environment Programme, and the World Bank.

22. **The rationale for the World Bank's involvement was sound,** given the World Bank's previous contribution to implementation of the Coastal Areas Management Program in Croatia within the framework of the Mediterranean Action Plan, as well as the World Bank's sustainable sector knowledge and experience in environmental management, urban, water supply, and wastewater treatment projects in Croatia and other countries.

23. **Alternatives to an APL approach were considered and extensively discussed during the CCPCP2 preparation.** Given the successful implementation and completion of Phase I of the CCPCP and fulfillment of triggers to proceed to Phase II, the World Bank and the borrower agreed to continue with the APL scheme and use the same implementation arrangement and financing structure. However, it was pointed out that the PIU needed to be strengthened by recruiting additional staff to handle larger and more dispersed number of subprojects and provide necessary support and guidance to participating cities, some of which are much smaller than the Phase I cities and have lower institutional capacity and experience.

24. **Leveraging other partners financing.** CCPCP2 attracted co-financing from the GEF to help further reduce the nutrient loads entering Croatia's coastal waters and to pilot innovative wastewater treatment solutions in several smaller municipalities. CW<sup>3</sup> WWTPs (as alternatives to conventional WWTPs) were financed by the GEF to test both the achievement of required environmental protection and efficient investment spending.

25. **Lessons learned from previous operations.** The key lessons incorporated into the CCPCP2 design were the lessons drawn from the implementation of CCPCP1. CCPCP2 used better articulated wording of the PDO which became more attributable to the expected project results. Based on experience from Phase I, CCPCP2 improved its monitoring and evaluation approach by collecting baseline data at the start of subprojects' implementation, as well as including annual financial and operational monitoring of the MWSCs and the project impact, in addition to monitoring of physical works, fiduciary and safeguard processes, and outcomes. However, the implementation stage revealed that there were still some minor shortcomings primarily related to the wording of PDO and GEO indicators, which were improved through Level 2 project restructuring. Component 2 design was updated to provide more relevant TA focused at the MWSCs level, and it included introduction of a monitoring and benchmarking system to monitor MWSCs performance and facilitate the implementation of the Water Management Strategy.

26. **Soundness of background analysis.** Project preparation and design were based on good analysis of the technical, environmental, institutional, and social issues related to Croatia's Adriatic coastal waters. Out of 30 potential subprojects, 5 were fully appraised and documented covering financial analysis, engineering and technical designs, and environmental and social assessments. Technical feasibility studies were completed for 25 subprojects. The PAD could have benefited from more profound economic analysis while mentioning that the main economic benefits would be improvement in tourism and support to EU accession. Financial analysis was sound, highlighting the anticipated effect from the proposed wastewater investments on the MWSCs' financial performance. Affordability analysis was also conducted and concluded that the tariffs, including the investment

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<sup>3</sup> CWs are engineered systems that use natural functions of vegetation, soil, and organisms to treat wastewater.

surcharge, were affordable, based on the EU norms (WSS bill not higher than 3.5 percent of disposable household income).

27. **Risks and risk mitigation.** The risks and respective mitigation measures identified in the PAD were deemed appropriate at the time of project preparation. Even though there were a few areas where risks were relatively high/substantial, appropriate measures to manage these risks were envisaged. Procurement risk (project is scattered among several local governments and municipal utilities) was identified as high; implementation capacity and sustainability (small municipalities unable to support project objectives), financial management (FM) (same as procurement risk), and coordination with related municipal investments were identified as substantial. Procurement risk materialized during the first year of project implementation but was properly mitigated and managed once Phase I was completed and the PIU was fully staffed to support local governments and municipal utilities. During project implementation, all other risks were properly mitigated.

28. **Implementation arrangements by a competent PIU** ensured the sustainability of the project implementation and contributed to overcoming some bottlenecks at the initial stages of the project implementation, as soon as the HVJP became fully operational.

29. **Strong participatory process.** While CCPCP1 targeted relatively large wastewater systems, Phase II was designed to be more inclusive, targeting smaller municipalities and poorer areas. CCPCP2 benefited from the outcomes of the social assessments conducted in 29 municipalities that expressed interest to participate in Phase II. The project stakeholders, including local and national nongovernmental organizations, were involved in local-level community meetings. Moreover, since transparent communication was the most prominent theme highlighted by the World Bank's previous experience in wastewater management in Croatia, special communication consultants were hired to work with municipal officials and MWSC staff and increase their interest and capacity in planning and delivering public awareness and public information campaigns.

30. **Adequacy of government commitment.** The borrower, through HV, was closely involved in project preparation and implementation. Commitment from all levels of government and stakeholders was evident by the strong policy support for the project and willingness to contribute financially to the investments, particularly from local governments, local utilities, and citizens. Further utilization and scaling-up of some of the findings and systems developed by the project (as the benchmarking system) by the government is a clear sign of aligned efforts to improve the performance of the WSS sector.

## 2.2 Implementation

31. **Implementation arrangement proved adequate.** The implementation arrangements for CCPCP2 were well designed and based on the experience of Phase I. Investments were coupled with TA and strong PIU support. However, delays were observed in the CCPCP2 start-up because of the understaffed PIU. Due to a fragmented project structure and 23 subproject sites spread over a large area, progress under the project was uneven, but the PIU gradually made rapid progress and implementation over the last two years was continuously solid and stable. To address the dispersed project sites, the PIU spread its technical staff over Zagreb (five engineers), Split (four engineers), and Rijeka (five engineers), while administrative, procurement, and financial personnel were based in Zagreb.

32. **Start-up delays for investments in the first two years.** The project was approved in December 2008 and became effective in June 2009. It experienced initial implementation constraints largely due to PIU capacity issues related to overlap with the completion of activities under CCPCP1, staffing issues, and insufficient government budget allocations in 2009 and 2010. While the PAD explicitly mentioned the need to increase HVJP capacity, so that the PIU would be able to continue good and timely performance under the increased scope of works during Phase II, it took quite some time for the borrower to equip the HVJP with additional manpower in line with the CCPCP2 staffing plan. The HVJP remained understaffed till late 2010, which resulted in zero disbursement during the first year of project implementation, and just 1.7 percent of the loan was disbursed by December 2010. Implementation picked up only in the second half of 2010 after the World Bank and HV agreed and started executing a detailed action plan to address the existing bottlenecks and the HVJP was fully staffed. Running CCPCP1 and CCPCP2 in parallel proved to be extremely difficult, which affected the implementation pace of Phase II. EU environmental requirements for the WSS sector and later on Croatia becoming a member state proved to be a significant booster for the implementation of the project.

33. **Delays affected also with the implementation of GEF investments.** The project faced difficulties in utilizing allocated GEF funds. This situation was mainly caused by (a) challenges in identification of sites for GEF financing because of availability of large amount of EU funds competing for the same purpose and (b) inability to use the remaining GEF Grant proceeds for other purposes under the GEF operational framework. Only three sites instead of the originally planned four were finally identified. Consequently, the number of WWTPs with the constructed nutrient removal had to be reduced from four to three, and the remaining GEF funds of US\$700,000 (around 10 percent) had to be cancelled. Furthermore, since the EU introduced revised standard forms for studies and applications for EU financing in 2015, it led to additional requirements to the content of outputs under GEF-financed TA. Ultimately, GEF-funded TA contributed to the preparation of design documents, studies, and application forms for future EU funding of the systems for wastewater collection and treatment. The GEF Grant closing date was extended for five more months—until May 31, 2016, beyond the already extended project closing date of December 31, 2015, to allow for completion of all GEF-supported activities, including investments in WWTPs with nutrient removal and TA.

34. **Changes made under Component 2 to facilitate access to EU funding.** The component was aimed to facilitate leveraging of EU financing, and its funds were originally allocated for preparation of two particular studies needed based on the EU requirements. However, since both of these studies had been financed by HV outside the project, it was decided to replace them with new ones for preparation of projects to be financed by EU Structural Funds.

35. **Delays in implementing seawater quality monitoring component by the Ministry of Environmental and Nature Protection (MENP).**<sup>4</sup> Implementation of this component was severely delayed during the first years of the project because of an unsuccessful procurement process and extensive time taken by the MENP to define the scope of consultant tasks. However, later on, all bottleneck issues were successfully resolved, and all activities under this component that were managed by HV and the MENP were completed successfully by the project closing date.

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<sup>4</sup> The MEPPPC was renamed as Ministry of Environmental and Nature Protection (MENP).

36. **The PIU provided valuable support to small utility companies with low capacity.** While CCPCP1 targeted relatively large wastewater systems, CCPCP2 dealt with smaller municipalities and smaller utility companies which often lacked a proper institutional capacity. TA and extensive technical support provided by the PIU enabled these small municipalities and utilities to successfully implement their subprojects. Furthermore, the experience obtained from the project will allow these cities and water companies to improve the way they are operating in the future, as well as use the acquired skills and knowledge for participating in donor programs, including programs financed by the EU.

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

37. **M&E design.** M&E arrangements under the project proved to be adequate, as they were developed using the lessons learned from Phase I of the CCPCP. This included proper collection of baseline values of the indicators at the beginning of the project and a more relevant choice of indicators. HV through the PIU was responsible for the M&E of the overall program and the subprojects against their performance indicators. Based on experience from Phase I, monitoring and evaluation by the HVJP was strengthened to include the annual financial and operational monitoring of the MWSCs and the impact of the project, in addition to the monitoring of physical, fiduciary, and safeguard processes and outcomes.

38. The indicators selected to monitor the progress toward the PDO proved to be well designed and helpful to track the progress under the project. At the same time, to introduce more clarity in the monitoring indicators, the wording of three indicators was modified during the project implementation. These revisions did not eliminate any of the M&E indicators nor change their nature, but they provided more accurate and measurable formulation for three of them and were processed through Level 2 project restructuring in 2012.

39. **M&E implementation.** During the implementation of the project the indicators were properly monitored. The established mechanisms and supervision support missions provided specific recommendations in the cases where targets were not met. The monitoring and benchmarking system developed by HV allowed for provision of systematic data on the MWSC's and subprojects' performance and is now being evolved into a national benchmarking tool to monitor the WSS sector performance.

40. **M&E utilization.** The collection methods used were adequate and leveraged the know-how of HV, which had gained significant previous experience with M&E of the World Bank and other donor-funded projects. The MENP continues to utilize seawater quality monitoring system financed by the Project.

### **2.4 Safeguard and Fiduciary Compliance**

41. **Environmental assessment.** Project design was carried out according to the World Bank's safeguards policies and included procedures and implementation arrangements to ensure full consideration of environmental safeguards in accordance with OP 4.01. The project was rated Financial Intermediary (FI) given that specific physical investments to be financed were to be defined in the course of implementation on the basis of the subprojects in participating cities. The Project Operations Manual (POM) prepared by HV for Phase II included updated volume (Volume 3) on guidelines for environmental assessments and Environmental Framework which, in reflection of changes in the national legislation, introduced a screening process for the environmental assessment of all subprojects. The updated Operations Manual called for preparation of EIAs for all WWTPs regardless of their

capacity and Environmental Management Plans (EMP) as a separate document. The HVJP launched a website (<http://www.hvjp.hr>) where the status of implementation could be followed. The EIAs and EMPs were duly prepared and disclosed for all facilities, and necessary mitigation measures were fully executed in the course of construction works. In rare cases of temporary and minor non-compliances—such as short-term excess noise—they were immediately addressed to full public satisfaction. Overall, management of the environmental assessment process was carried out in a satisfactory manner and in accordance with the agreed arrangements during implementation. All project-related environmental requirements have been satisfactorily followed, and all site-specific EIAs and EMPs were delivered and implemented on time. No issues or complaints were reported.

42. **Involuntary Resettlement and Physical Cultural Resources.** The project triggered both safeguards: OP 4.11 - Physical Cultural Resources and OP 4.12 - Involuntary Resettlement. Croatian laws and regulations in both areas are consistent with World Bank policies and in line with EU requirements. The POM proved to be an effective mechanism to draw attention to the issues and offer the necessary guidance. A Land Acquisition and Resettlement Policy Framework which had been prepared and approved by the World Bank before project appraisal (July 9, 2008), were updated for CCPC2 in a manner satisfactory to the World Bank and disclosed. The CCPC2 POM (Volume 3) contained provisions for managing chance finds. Compliance was fully satisfactory and incidence of triggering the two policies during implementation was minimal since the participating municipalities and water utilities conscientiously tried to avoid disrupting private property and expropriating property or using expropriation to obtain rights-of-way, whenever possible. The PIU obtained the services of a lawyer to advise municipalities on land acquisition issues as needed. All Land Acquisition Plans were delivered and implemented on time. The land was acquired mostly for rights-of-way for the collector network, including sewer lines, connecting points, manholes, and tunnels and in some cases, larger tracts for pumping stations (about 100 m<sup>2</sup>), treatment facilities, and conveyance and outfall points. Most of the right-of-way agreements and cases of the land purchase were closed through mutual agreements without the need for the application of the expropriation law. There was a well-established practice of public consultation during obtaining of the location permits, where the routes and the proposal were discussed with the neighborhoods. Consecutive rounds of consultation were organized with the owners/users of the property through which the infrastructure passed.

43. As for OP 4.11, the EMPs contain the required measures for protection of known cultural heritage and specify that in case of chance finds the national procedure applying to archaeological chance finds will be invoked. The Ministry of Culture identified possible sites of historical value during the final design stage and oversaw construction in those areas. Country offices of the Ministry of Culture and local archaeological museums investigated and managed chance finds professionally, as demonstrated by their response to discoveries in Pula and Zadar that triggered the policy. According to a request from the World Bank, the HVJP prepared regular progress reports with respect to archeological works for all project sites and shared them with the World Bank to document the compliance with cultural heritage-related policies and general project monitoring.

44. **International Waterways.** In accordance with OP 7.50 - International Waterways, during preparation of the Coastal Cities Pollution Control APL, the Government informed the riparian countries of the Adriatic Sea about the program content and proposed investments, even though they were not expected to result in any adverse effects. No objections were received. New notifications for Phase II were not needed due to identity of the project area



and international waterways, as well as the project activities, as stipulated in the original notification letter (see paragraph 70, section F ‘Safeguard Policies’ of the CCPC2 PAD for more details).

45. **Procurement compliance.** Procurement arrangements under the project were reviewed periodically as part of World Bank supervisions and were found to be satisfactory. World Bank post reviews of procurement documentation did not reveal any serious deviations or issues of concern.

46. **FM compliance.** The FM arrangements under the project were reviewed periodically as part of World Bank supervisions and also found to be satisfactory. Adequate control procedures were in place and interim unaudited financial statements acceptable to the World Bank were submitted to the World Bank regularly. No significant inconsistencies were identified and any discrepancies were corrected promptly. All audits of financial statement reports were unqualified.

## **2.5 Post-completion Operation/Next Phase**

47. HV continues to use the monitoring and benchmarking system on MWSC performance developed under the project as a national platform. In this regard, the system is planned to be further expanded and cover all the MWSCs in the country to benchmark their performance. This demonstrates strong ownership by the implementing agency and represents a significant ‘spill-over’ benefit brought about by the project with regard to supporting institutional improvement of the WSS utilities sector in Croatia. In addition, the seawater monitoring program proved to be a great tool for the MENP; prepared EU application forms will help the country address environmental compliance issues, and the sludge management study is expected to help formulate national sludge utilization requirements.

48. While the CCPC APL was originally designed to include three phases, the Government did not ask the World Bank to prepare Phase III, mainly due to the availability of EU grant funds for the WSS sector. At the same time the Government expressed its appreciation of the assistance provided by the World Bank and remains interested in continuous cooperation in the area of implementation of water utility sector reform, development of water infrastructure in line with the EU water and wastewater requirements, and related absorption of EU funds, which would allow to further benefit from all the experience gained during the CCPCP. Besides the WSS sector, the Croatian Government expressed desire for assistance in the development of flood protection systems and structures and irrigations schemes in response to shifting rainfall patterns because of climate changes.

49. The World Bank’s future engagement in the Croatian water sector will be reflected in the next Country Partnership Framework and might come not only in the form of standard investment lending operations but through a variety of other available instruments, such as reimbursable advisory services and a results-based engagement, and could include assistance in implementation of water utility reforms at the central and local level and support country efforts to comply with the Water Framework Directive and UWWTD requirements as well as absorption of EU funding challenges.

### 3. Assessment of Outcomes

#### 3.1 Relevance of Objectives, Design and Implementation

50. **Objectives.** Rating: High. The project's objectives remain highly relevant at the time of the writing of this Implementation Completion and Results Report (ICR). The PDO reflects Croatia's developmental priorities and its economic program contributing specifically to the action 'Infrastructure development measures including for railways, port and shipping, inland waterways, broadband internet, rural areas and sustainable water management'. It is also aligned with requirements that Croatia has undertaken under the EU acquis for environment, which entails major investment efforts in water and wastewater sector as well as the 2015 National Reform Programme, Target 3 - Climate Change and Energy and Use of European Structural and Investment Funds. The PDO supports the goals of both the previous CPS FY2009–2012 and the current CPS FY2014–2017 - Pillar III: EU Membership, by maximizing the benefits of EU membership while supporting compliance achievement. The relevance of objectives, project design, and implementation are rated high, assessing the project contribution toward the country's commitments to fulfill the requirements of the UWWTD for all agglomerations above 2,000 PE by December 31, 2023.

51. **Design and implementation.** Rating: Substantial. The project's components were adequately designed to achieve the PDO and all components were developed to address key issues in the sector related to lack of wastewater treatment and monitoring and coastal water pollution. Component 1 contributed directly to improved seawater quality and wastewater services by financing new wastewater collection and treatment infrastructure. The focus on assisting small utilities and municipalities to build WWTPs and providing households with opportunities to connect and have their wastewater treated contributed to significant reduction of pollution discharge points into the Adriatic Sea. Components 2 and 3 had both direct impact on the PDO by supporting sustainable wastewater services in participating coastal municipalities, as well as monitoring the results by financing equipment, civil works, and TA to strengthen HV's monitoring systems and the seawater quality monitoring systems of the MEPPPC. The indicators selected to monitor the progress toward the PDO were well aligned with the PDO and helpful to track the progress under the project. Project outputs are contributing to Croatia's readiness and capacity to build a strong project pipeline for absorbing EU funds in selected sectors (WSS is one of the sectors, which will benefit significantly from EU grant funding to achieve compliance).

#### 3.2 Achievement of Project Development Objectives and Global Environment Objectives

52. **Objective:** To improve the provision of efficient and sustainable wastewater services in participating coastal municipalities. Rating: Substantial.

53. The project achieved improved provision of efficient and sustainable wastewater services in participating coastal cities and managed to reduce the nutrient load entering

Croatia's coastal waters from the intervention cities. All key indicators for the project have been met and are presented in table 2.1 in annex 2.<sup>5</sup>

54. It can be clearly seen from the collected data that indicators related to the MWSCs' performance and efficiency have been achieved at the end of the project—operating ratio, collection rate, and debt service ratio. These indicators show a good financial performance of supported utilities and are a good sign of their sustainability and future ability to fund the operation and maintenance (O&M) costs of the new wastewater treatment systems.

55. Indicators that were linked to institutional strengthening of the WSS sector show that the targets had been fully achieved. Operation ratio (expenses/revenues) of participating utilities improved and at the end of the project is 0.84 (target < 1), signaling that the utilities are covering their costs despite all additional expenditures associated with the new wastewater collection and treatment services. Collection rate of MWSC improved from 76 percent in the beginning of the project to 90 percent (target 86 percent) despite the tariff increase (additional surcharge), which indicates introduction of good practices and improvement of cash flow. It can be said that this is a rather significant achievement compared to WSS utility performance in the region.<sup>6</sup> This is also a good indication for financial sustainability of MWSC and a positive sign for reliable WSS services in the future.

56. Objective: To reduce the nutrient load entering the borrower's coastal waters from and pilot innovative wastewater treatment solutions in selected municipalities. Rating: Substantial

57. The achievement of reduction of nutrient load entering the Borrower's coastal waters from, and pilot innovative wastewater treatment solutions in select municipalities is captured by a number of outcome indicators related to household connection, pollution and nutrient load discharge, and nutrient reduction wastewater treatment technologies. All targets were achieved and it should be noted that in addition to the construction of three CWs WWTPs, two more CWs were designed by the project. Although these are wastewater treatment solutions that have been tested worldwide, they were innovative for Croatia and served as an important practical experience because the Government fully acknowledged the funding gap between required investments to meet the EU WSS Directives and available funding (both EU and national). These relatively economical solutions both to construct and operate and maintain WWTPs (compared to the conventional WWTP) can help the country efficiently achieve the requirements of the UWWTD for all agglomerations between 2,000 and 5,000 PE.

58. Overall, coastal water pollution in the Adriatic Sea was reduced in participating cities, resulting in improved seawater quality due to the project interventions. The first outcome indicator on the percentage samples from monitoring the water quality of bathing and shellfish areas complying with EU standards does not adequately reflect achievement of the project objective, because the actual removal of all untreated discharge points of wastewater to the sea from participating cities was unfortunately not measured or set up as an indicator.

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<sup>5</sup> A significant discrepancy between the last Implementation Status and Results Report (ISR) and ICR data exists. As indicated already in the PDO indicators' comments section, the ISR mostly used April 2015 data, while the ICR results are based on data collected as at the end of May 2016. The ICR team discovered that due to implementation and disbursement acceleration (especially GEF funding) at the end of the project, some of the results could not be presented in the last ISR.

<sup>6</sup> See Danube Water Program, State of the Sector Review, May 2015 at <http://www.danube-water-program.org/pages/program-activities/analytical-and-advisory-work/state-of-the-sector-review.php>.

Still, while this indicator was already at 98 percent at the beginning of the project, by the end of the project this key program outcome indicator was fully achieved because 100 percent of samples taken at 181 locations in participating municipalities satisfy applicable EU and Croatian bathing water standards, despite a major increase in the number of tourists visiting Croatia coastal areas since the start of the project (thereby decreasing point source contamination of seawater on beaches during the summer season). This good performance is a result of improved efficiency of wastewater collection, treatment, and disposal in participating municipalities (directly measured in percentage of population connected to wastewater systems) and reduction in nutrient load entering coastal waters (measured in both overall pollution and nutrient load reduction). The second and third indicators also show significant improvement in managing wastewater in targeted cities. More than 80 percent of the households in these cities are able to connect to sewerage and treatment systems. This directly led to reduction of pollution measured by chemical oxygen demand (COD) of 370 tons per year. The reported data for this indicator is based on calculations using standards for installed equipment and not on actual outflow measurements since the wastewater treatment facilities were just recently constructed. This represents overall a major benefit for the Croatian tourism industry, especially in the context of Croatia's effort to gradually move into higher quality tourism.

59. The GEOs have been achieved based on the latest data received from HV. However, it is necessary to underline that by the end of the project, only one CW WWTP was commissioned.<sup>7</sup> The construction of those in Vrlika and Prud is completed and despite the fact that they were not commissioned at the time of ICR preparation, the team reported three CW WWTPs under Indicator 6 based on the technical plan and strong likelihood of their commissioning by the end of November 2016. In addition to the construction of three CW WWTPs, a project design was prepared for two more CW WWTPs in Trsteno and Gruda. The result for the first GEO indicator was calculated by HV based on the Kastelir CW (in operation), and having in mind that the other two CWs are using the same technology, it is expected that the reduction will be the same. Based on the above, it can be concluded that the project contributed to the improvement of environmental quality and sustainability while bringing indirect economic benefits such as tourism and aquaculture development, as well as strengthened the capacity of participating MWSCs.

### **3.3 Efficiency**

Rating: Substantial

60. There are a large number of subprojects—23 in southern and northern coastal areas of Croatia—that were financed under CCPCP2 (181 procurement procedures). The efficiency analysis focused on those subprojects that were reviewed and presented in detail in the PAD and covered in its economic and financial analysis section. Six projects were analyzed in 2008—Supetar, Cres, Hvar, Mali Losinj, and Metkovic. During the ICR preparation, the team discovered that the appraised investment in Supetar was dropped and decided to assess investments in Cres and Mali Losinj together since these were implemented, operated, and maintained by one municipal WSS operator.

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<sup>7</sup> At the end of the construction of the WWTP and before official handover to the WSS utility, the plant should be commissioned. Commissioning is a set of activities to ensure the validity of the components of the system and verification of its equipment, including all mechanical, electrical, and instrumentation devices to ensure sustainability of the process and quality of the effluent for satisfactory operation of the whole system.

61. Despite the fact that most of these subprojects were implemented on islands where the assessment and comparison of cost-effectiveness (unit rates) was quite challenging, it is obvious that the construction costs for Cres, Hvar, Mali Losinj, and Metkovic are very close to the original projections and not much higher compared to similar works on the mainland (for the first three). Despite the accumulated delay in project implementation, the infrastructure investments were largely delivered within the initial budget estimations.

62. Since the original economic analysis lacked monetized assessment of economic externalities of the proposed investments, the efficiency analysis focused on financial internal rate of return (FIRR) calculation and comparison to the PAD's financial net present value (NPV) and financial internal rate of return (FIRR) data.

63. The estimated FIRR for Cres-Mali Losinj is 8 percent and the NPV is HRK 6.708 million (PAD: 6 percent and HRK 3.697 million); for Hvar, FIRR is 6 percent and NPV is HRK 1.655 million (PAD: 6 percent and HRK 0.762 million); and for Metkovic, FIRR is 6 percent and NPV is HRK 0.847 million (PAD: 5 percent and HRK 0.340 million) assuming a discount rate of 5 percent and financial flows over 20 years to match the assumptions used in the PAD's financial analysis<sup>8</sup> (for further details, see annex 3). The overall financial situation of the companies is improving as demonstrated by the monitored indicators: operating ratio (baseline 1.13, result achieved 0.84, and target <1); collection rate (baseline 76 percent, result achieved 90 percent, and target 86 percent); and debt service ratio (baseline 5.61, result achieved 2.2, and target >1.5). The financial analysis of the Cres-Mali Losinj, Hvar, and Metkovic WSS companies covering 2013, 2014, and 2015 showed that the companies are constantly improving their financial results. All three companies are profitable, improving their financial performance and ratios but they continue to receive subsidies (settlements), which in the case of Hvar are quite significant.

64. It is worth mentioning that the approach from the first phase of the CCPCP to estimate and agree on a surcharge per m<sup>3</sup> for the co-financing obligations of operators and repayment of loan obligations is working quite well. All three companies are charging between HRK 2.5 and HRK 4 per m<sup>3</sup> of collected and treated wastewater, which is transferring a certain portion of the costs to the customers and contributes for the achievement of partial cost recovery of services. This, combined with the lack of significant depreciation of the Croatian kuna since the beginning of the project, ensured a smooth implementation process and now it is expected that there should not be any significant issues with the repayment of the loan (see detailed information in annex 3).

65. With regard to economic efficiency, the PAD referred to environmental, health, and economic benefits, which were not monetized (see the PAD's pages 13 and 14). Despite the significant limitations on conducting a proper economic analysis with a lack of baseline data in the PAD, the team calculated tourism benefits from the project (see detailed information in annex 3). Croatia is presented among the top five European countries with excellent bathing water quality, which is attracting more and more tourists each year.<sup>9</sup> According to the estimates, the contribution of tourists in the Adriatic area that can be attributed to the project amount to approximately EUR 25 million per year; the economic NPV for tourism benefits equals about EUR 183 million (at 5 percent discount rate). This leads to an economic internal

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<sup>8</sup> Note that these differ from the latest World Bank recommended discount rates and WSS asset life, but for comparability and consistency, the financial analysis used the original assumptions in the PAD.

<sup>9</sup> European bathing water quality in 2015 report, European Environmental Agency.

rate of return of 26 percent for the project. With all the caveats, the calculated economic NPV and internal rate of return are providing a good base for judgement on the positive economic benefits of the project. In terms of operational efficiency, it should also be mentioned that despite some delay in project implementation, the investments were delivered in line with initial budget estimations.

### **3.4 Justification of Overall Outcome and Global Environment Outcome Rating**

Rating: Satisfactory

66. The PDO remains highly relevant to the current environmental priorities of the Government of Croatia. It is also well aligned with the latest World Bank strategy for the country. Therefore, the relevance of objectives is rated High and relevance of design is rated Substantial. In terms of achievement of PDOs and GEOs the project is rated Substantial. Based on the latest data provided by the PIU, it can be concluded that all target indicators have been achieved or exceeded. Despite the cancellation of 10 percent of GEF funding, the overall efficiency is rated Substantial, because the initially estimated FIRR and NPV, as well as the construction costs were confirmed by the ICR financial and economic analysis using actual data.

### **3.5 Overarching Themes, Other Outcomes and Impacts**

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

67. Not applicable. Croatia is one of the high-income countries the World Bank is working in. There was no assessment of the project's effect on poverty, gender, and social development both at the project preparation and ICR stages.

#### **(b) Institutional Change/Strengthening**

68. The project supported the strengthening of HV as the key institution for the management of wastewater services in Croatia, resulting in more efficient management of these services. Implementation of both Component 2: Institutional Strengthening and Component 3: Seawater Quality Monitoring has been finalized within the project's time frame. Experience gained by the PIU will be very useful for further implementation of the wastewater-related projects in Croatia, especially for those to be financed under EU grant funding. PIU staff, upon closure of CCPCP2, have stayed in HV and work on similar projects.

69. Within Component 2 of the project, a national monitoring and benchmarking system for sewerage services and wastewater treatment was established. This system will help HV monitor in the future the operation, maintenance, financial performance, and environmental compliance of all utility companies. A significant number of trainings were successfully organized to strengthen capacities of local public utilities. Furthermore, a technical and economic study on 'treatment and disposal of waste and waste sludge generated by treatment of waste water from public sewerage systems of towns and municipalities in Croatian counties' was developed. The study will be used not only from participating municipalities but also from other municipalities since the Croatian Government is developing secondary legislation to regulate management of the WWTP sludge based on its findings.

70. One of the most important outputs of Component 2 was the preparation of five new packages of documentation for application of EU structural fund-financed investments. Proposed packages are totaling over EUR 200 million and direct beneficiaries would be about

150,000 citizens and 450,000 tourists—well above the number of direct beneficiaries of CCPCP2, underlining the significant leverage effect of the World Bank financing.

71. Within Component 3, HV and the MENP succeeded in strengthening and establishing an effective seawater quality monitoring system. Overall, the project contributed to Croatia's efforts to achieve its commitments related to the achievement of EU environmental acquis.

### **(c) Other Unintended Outcomes and Impacts**

72. The establishment of a national WSS utilities benchmarking system under the project brought additional value to overall WSS sector management in Croatia. In the beginning, the main idea was to set a benchmarking system only to monitor performance of participating utilities in the area of wastewater management. However, during project implementation, management of HV decided to use the established system to include water utilities from other municipalities and broaden it with parameters and indicators for water supply. By doing this, HV found an excellent tool for more efficient management of the WSS sector.

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

73. Not applicable. No beneficiary survey and/or stakeholder workshops conducted during the project preparation and ICR stages.

## **4. Assessment of Risk to Development Outcome and Global Environment Outcome**

Rating: Low

74. The risk to development outcome of the project is Low given the technical quality of the investments, high capacity for implementation at the MWSCs and HV, and commitment from all levels of government and stakeholders because of the link between sustainable wastewater treatment in coastal cities and the tourism industry. This is evidenced by the strong demand for the project and willingness to contribute financially to the investments, particularly from local government, local utilities, and citizens. All the MWSCs levied and collected adequate surcharges to the tariff to contribute to the investments and ensure that O&M costs of wastewater treatment would be duly covered. Sustainability is also strengthened by the programmatic approach of the program and the coverage of a cohesive area of the Adriatic Sea, with a long-term view that is shared by local participants to improve their own environments and health, coupled with the objective to protect and enhance the local tourism industry and economy. In addition, the long-term objective is supported at higher levels with the ambition to meet agreed EU directives on the quality of Adriatic Sea. During implementation of Phase I and recently Phase II of the CCPCP, HV acquired the capacity to solicit and prepare subprojects and implement them in accordance with Croatian and World Bank requirements.

## **5. Assessment of Bank and Borrower Performance**

### **5.1 Bank Performance**

#### **(a) Bank Performance in Ensuring Quality at Entry**

Rating Satisfactory

75. Overall, World Bank allocation of staff and resources are deemed adequate. Project preparation was carried out with a good mix of technical and sector specialists. The World Bank team conducted a substantial preparatory analytical work to facilitate sound preparation

and appraisal of the project and, in particular, to analyze and incorporate lessons learned from CCPCP1 operation that resulted in better-articulated and measurable PDO indicators. The World Bank also managed to attract co-financing from the GEF to support construction of several WWTPs with nutrient removal and provision of TA for preparation of designs, studies, and application forms for future EU funding for the sector. Preparatory activities were fully consistent with the World Bank's fiduciary and safeguards requirements. The project was consistent with the CAS and government priorities at the time. The relationship with the borrower during preparation and appraisal was consistently good. The World Bank team maintained a constructive dialogue with relevant central and local government officials that contributed to the strong support and demand for the project activities by the participating cities. Team efforts during the preparation of the second phase, while the first phase was still up and running, as well as the significant scale-up and support to much smaller and undeveloped utilities were also taken into account in the rating.

### **(b) Quality of Supervision**

Rating: Satisfactory

76. The project was intensively supervised with sufficient budget and staff resources allocated. Supervision missions were conducted on a regular basis with participation of technical, engineering, procurement, FM, and safeguards specialists and adequate mix of headquarters-based and region-based staff complementing each other. Mission Aide Memoires and ISRs were focused and candid. PDO and IP ratings in the ISR were realistic. Interviews with counterparts revealed high respect for the World Bank team and appreciation for the constructive style. The World Bank's strong technical expertise, joint approach to problem solving, and perception of continuity of the core team (despite the fact that the task team leader was changed three times since the project effectiveness) were noteworthy. In addition to day-to-day coordination of activities, supervision missions covering overall implementation progress, fiduciary aspects including procurement and FM, and safeguards aspects were carried out at least twice a year. Some minor shortcomings in the design were identified and addressed in a proactive manner. The World Bank team worked with the client on preparation of a detailed action plan to overcome the challenges encountered in the project implementation, including a slow project start and initial delays in disbursement, and timely initiated Project restructurings, as necessary, which finally allowed for successful completion of all planned project activities and PDO indicators being fully achieved.

### **(c) Justification of Rating for Overall Bank Performance**

Rating: Satisfactory

77. The ICR rates the overall World Bank performance as Satisfactory, considering the Satisfactory rating for performance in ensuring quality at entry and Satisfactory quality of supervision that led to successful project completion with PDO achieved and PDO indicators met.

## **5.2 Borrower Performance**

### **(a) Government Performance**

Rating: Satisfactory

78. The Government consistently demonstrated its commitment to the project objectives from preparation through implementation. There was close coordination and dialogue between relevant government entities and the World Bank at all times. All issues that arose



during implementation were resolved constructively and on time. The Government managed to resolve the initial issues related to insufficient budget allocations that took place during the start of the project in 2009 and 2010. There were no counterpart funding problems during all other years of the project implementation, and the PIU at HV was fully staffed starting from 2010. Having in mind the complexity of the infrastructure projects (WWTP construction on islands), which required coordination effort between central, local authorities, and utilities as well as the timely provision of project co-financing, Government performance is assessed as Satisfactory.

#### **(b) Implementing Agency or Agencies Performance**

Rating: Satisfactory

79. As the main institutional player in the provision and management of wastewater services in Croatia, HV was closely involved in the program/project preparation process. Through the PIU, it was able to ensure effective day-to-day overseeing of subprojects and TA activities under the project. After the HVJP became fully staffed with qualified experts, it contributed to overcoming the slow project start and played a key role in ensuring successful project implementation by providing necessary support, TA, and advice to the participating municipalities and their utilities. This assistance was of particular importance for those smaller cities and water companies that did not have sufficient in-house institutional capacity. The PIU was able to adequately carry out all technical, fiduciary, legal, and safeguard responsibilities with respect to the project under increased number of subprojects under CCPCP2. The HVJP delivered on a huge number of procurement procedures and submitted all required reports on time. They were informative and provided valuable feedback on project activities.

#### **(c) Justification of Rating for Overall Borrower Performance**

Rating: Satisfactory

80. Overall borrower performance considers both the Government and the implementing agency's (HVJP) performance during preparation and implementation. On the basis of justification provided above, the borrower's overall performance is rated Satisfactory.

### **6. Lessons Learned**

81. The general lessons learned are the following:

- **It is important to apply the right lending instrument.** APLs are suitable for reaching long-term objectives in the WSS sector and delivering transformational projects aiming institutional reforms.
- **Capacity increase is crucial for successful project implementation.** TA and support by the PIU and the World Bank team can enable small municipalities and utilities to successfully implement wastewater projects. The experience obtained from the project allowed these small cities and water companies to improve their daily operations and accumulate knowledge to participate in other donors programs, including programs financed by the EU.
- **Customers are willing to pay for improved wastewater services.** Household customers are willing to pay higher costs (additional surcharge between HRK 2.5 and HRK 4 per m<sup>3</sup>) for receiving wastewater collection and treatment services in

case this is affecting positively their economic livelihood by attracting more tourists.

- **It is important to achieve environmental compliance efficiently.** Compliance with Directive 2000/60/EC establishing a framework for the community action in the field of water policy (EU Water Framework Directive) can be achieved without full compliance with Directive 91/271/EEC concerning urban wastewater treatment. Alternative solutions (to conventional WWTP) such as CWs can protect the environment up to the required European standards while having significantly less lifecycle costs (investment and O&M costs).

82. **Good practices include the following:**

- **Proper institutional framework guarantee success.** HV, being a unique organization channeling government efforts and funding for the WSS sector, played a very important role in the successful implementation of the project. HV proved to be a very capable and reliable partner to enable the transformation of the sector.
- **Project funds were used to leverage additional funding for the sector.** Project funds could leverage over EUR 200 million with the prepared five projects (direct beneficiaries around 150,000 citizens and 450,000 tourists), which are ready for EU cohesion funding 2014–2020.
- **Good project results could be further used.** Project-funded methodology and system to benchmark performance of participating MWSCs was further used to cover all operating WSS utilities in the country. The Government is planning to use the benchmarking system as an important tool for improving management and efficiency of the sector.
- **Developed innovative financing scheme can provide benefits beyond the project.** Investment surcharges from customers proved to be an effective means to improve sustainability of project investments. This, coupled with the ring-fencing part of MWSC revenues, created comfort for contractor payments and debt service repayment.

## **7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners**

### **(a) Borrower/implementing agencies**

83. The borrower's ICR was completed by HV and shared with the World Bank on July 15, 2016. The complete ICR provides a consistent analysis of the project background, implementation, and results, especially with regard to particular subprojects in the participating municipalities. It confirms the achievement of all project targets and PDO indicators and the strong ownership by the borrower and participating institutions (HV and MWSCs). A summary of the borrower's ICR is provided in Annex 7. The full borrower's ICR is also available for review in the project's files.

84. The borrower reviewed the draft ICR and both the Ministry of Finance and HV (with e-mails from September 20 and 21, 2016) confirmed the achievements of the project and expressed satisfaction with the content of the report and proposed ratings.

**(b) Co-financiers**

85. The project was supported by an IBRD loan of EUR 60 million and a GEF Grant of US\$6.4 million. Project processing of the IBRD loan and GEF Grant was in parallel. GEF funds enhanced the project—and the overall APL—by providing relevant local analysis of enhanced wastewater treatment technologies in areas of high nutrient loads. The GEF co-financed all three project components.

**(c) Other partners and stakeholders**

86. None.

## Annex 1. Project Costs and Financing

### (a) Project Cost by Component (in US\$, million equivalent)

Coastal Cities Pollution Control Project 2 - P102732			
Components	Appraisal Estimate (EUR, millions)	Actual/Latest Estimate (EUR, millions)	Percentage of Appraisal
<b>Component 1: Wastewater Investments</b>	108.30	105.34	97
<b>Component 2: Institutional Strengthening</b>	6.00	6.00	100
<b>Component 3: Seawater Quality Monitoring</b>	5.70	5.70	100
<b>Total Baseline Cost</b>	<b>120.00</b>	117.04	98
Physical Contingencies	0.00	0.00	
Price Contingencies	0.00	0.00	
<b>Total Project Cost</b>	<b>120.00</b>	117.04	98
Project Preparation Fund	0.00	0.00	
Front-end fee IBRD	0.00	0.00	
<b>Total Financing Required</b>	<b>120.00</b>	117.04	98
Second Coastal Cities Pollution Control Project - P102395			
Components	Appraisal Estimate (US\$, millions)	Actual/Latest Estimate (US\$, millions)	Percentage of Appraisal
<b>Component 1: Wastewater Investments</b>	5.60	4.90	88
<b>Component 2: Institutional Strengthening</b>	0.40	0.40	100
<b>Component 3: Seawater Quality Monitoring</b>	0.40	0.40	100
<b>Total Baseline Cost</b>	<b>6.40</b>	5.70	89
Project Preparation Fund	0.00	0.00	
Front-end fee IBRD	0.00	0.00	
<b>Total Project Costs</b>	<b>6.40</b>	5.70	89
Project Preparation Fund	0.00	0.00	
Front-end fee IBRD	0.00	0.00	
<b>Total Financing Required</b>	<b>6.40</b>	5.70	89

**(b) Financing**

<b>P102732 - Coastal Cities Pollution Control Project 2</b>				
<b>Source of Funds</b>	<b>Type of Financing</b>	<b>Appraisal Estimate (EUR, millions)</b>	<b>Actual/Latest Estimate (EUR, millions)</b>	<b>Percentage of Appraisal</b>
Borrower	—	60.00	58.52	98
IBRD	—	60.00	58.52	98
<b>P102395 - Second Coastal Cities Pollution Control Project</b>				
<b>Source of Funds</b>	<b>Type of Financing</b>	<b>Appraisal Estimate (US\$, millions)</b>	<b>Actual/Latest Estimate (US\$, millions)</b>	<b>Percentage of Appraisal</b>
Borrower	—	0.00	0.00	0
GEF	—	6.40	5.70	89

## Annex 2. Outputs by Component

1. The project's three components and their associated outputs and outcomes are described in the following paragraphs.

2. **Component 1: Wastewater Investments** (EUR 111.8 million, of which EUR 54.15 million from IBRD and EUR 3.5 million equivalent [US\$5.6 million] from the GEF) will finance investments and engineering design and construction supervision for the construction, expansion, and rehabilitation of wastewater collection, treatment, and disposal systems.

(a) Outputs:

- (i) 23 subprojects completed
- (ii) 19 WWTPs completed, out of which 7 are conducting pretreatment, 9 are providing mechanical treatment, and 3 are CWs
- (iii) 176 km of collectors constructed
- (iv) 83 pumping stations completed
- (v) 13 submarine outfalls completed
- (vi) 370 tons/year of COD pollution load reduction

(b) Outcomes:

- (i) Improved seawater quality in participating municipalities
- (ii) Improved environmental and health conditions in intervened cities
- (iii) 230,000 people (370,000 PE) with access to sanitation services
- (iv) Reduced pollution and nutrient load discharge in Kastelir, Metkovic (Prud), and Vrlika with enhanced nutrient reduction wastewater treatment facilities (N, P)
- (v) Increased knowledge of nutrient reduction wastewater treatment technologies

3. **Component 2: Institutional Strengthening** (EUR 6.25 million, of which EUR 3 million from IBRD and EUR 0.25 million equivalent [US\$0.4 million] from the GEF) to finance equipment, TA, training, and studies in three subcomponents: (a) sector development to assist the MRDFWM and HV in implementing the Water Management Strategy and further align the sector to EU accession priorities; (b) institutional strengthening of the MWSCs to improve their financial and operating efficiency; and (c) project management to support the PIU (HV Adriatic Project, HVJP), to implement the project.

(a) Outputs:

- (i) Benchmarking system (SIGMA 3) assessing the technical economic and financial performance of all WSS companies up and running

- (ii) Benchmarking methodology and report to measure MWSCs' performance
  - (iii) Trainings and workshops on using the benchmarking system
  - (iv) Technical and economic study 'Treatment and disposal of waste and waste sludge generated by the treatment of wastewater from public sewerage systems of towns and municipalities in Croatian counties'
  - (v) Preparation of five environmental projects (full package following the cohesion fund requirements) for EU co-financing
- (b) Outcomes:
- (i) Improved corporate governance of WSS utilities
  - (ii) Enhanced efficiency of WSS utilities
  - (iii) Developed solutions for sludge utilization and positive environmental impact
  - (iv) Increased absorption of EU grant funds for environment

4. **Component 3: Seawater Quality Monitoring** (EUR 5.95 million, of which EUR 2.85 million from IBRD, EUR 0.25 million equivalent [US\$0.4 million] from the GEF) to finance equipment, civil works, and TA to strengthen the HV monitoring systems and the seawater quality monitoring systems of the MEPPPC. The component will have two subcomponents: (a) to strengthen HV's monitoring of the effluent from the WWTP to assess the impact of the program on the quality of coastal waters; under this subcomponent, the enhanced nutrient reduction from the WWTP (financed out of the GEF co-financing) will be monitored for their impact on the receiving waters and the impact of each different treatment technology on nutrient reduction; and (b) to strengthen the MEPPPC's monitoring activities to extend the monitoring activities financed in Phase I to all MWSCs in Phase I, and increase the focus on EU compliance.

- (a) Outputs:
- (i) Adriatic Sea monitoring study
  - (ii) Detailed monitoring and implementation plan
  - (iii) Professional training for HV, authorized laboratories, MWSCs, and the MEPPPC
  - (iv) Delivered seawater quality monitoring equipment
  - (v) Delivered laboratory equipment for monitoring of the effluent from WWTPs
  - (vi) 23 participating cities in which the seawater quality monitoring system is operational
- (b) Outcomes:

(i) Adequate monitoring of WWTP effluent discharge and seawater quality

5. The project achieved improved provision of efficient and sustainable wastewater services in participating coastal cities and did manage to reduce the nutrient load entering Croatia's coastal waters from the intervention cities. All key indicators for the project have been met and Table 2.1 provides a summary of results based on achievement of aggregated key performance targets.

**Table 2.1. Summary of Results Based on Achievement of Aggregated Key Performance Targets**

Objective	Key Performance Indicators	Baseline (December 2010)	Current (May 2016)	End of Project (December 2015)	% of Target Achieved (May 2016)
PDO	Outcome/Impact Indicator		Actual	Target	
To improve the provision of efficient and sustainable wastewater services in participating coastal municipalities and to reduce the nutrient load entering Croatia's coastal waters from, and pilot innovative wastewater treatment solutions in selected municipalities	Percentage of samples from bathing areas in participating municipalities complying with applicable seawater quality standards	98%	100%	100%	100%
	Percentage of households in participating cities able to connect to wastewater services (average of subprojects) (percentage, custom)	26%	83%	76%	109%
	Percentage of wastewater collected that is treated as per applicable legislation (average of subprojects) (percentage, custom)	10%	76%	71%	107%
	Performance of participating MWSCs - operating ratio (expenses/revenues) (average) (number, custom)	1.13	0.84	<1.00	Achieved
	Performance of participating MWSCs - collection rate (average) (percentage, custom)	76%	90%	86%	105%
	Performance of participating MWSCs - debt service ratio (average) (number, custom)	5.61	2.20	>1.50	Achieved
	GEF: Reduction in pollution and nutrient load discharge in project-participating cities with enhanced nutrient reduction wastewater treatment facilities (BoD, N, P)	0	80%	50%	160%
	GEF: Increased knowledge of nutrient reduction wastewater treatment technologies*	0	5	3	167%
<b>Project Outputs</b>	<b>Output Indicators</b>				
	Volume (mass) of COD pollution load reduction achieved under the project (tons/year, core)	0	370	130	285%
Investments in wastewater collection, treatment and disposal systems in participating	Number of subloan agreements signed in participating cities (number, custom)	—	23	21	110%
	Km of wastewater collection systems constructed (number, custom)	—	176	150	117%



cities	Number of wastewater treatment plants commissioned (number, custom)	—	19	18	106%
	Number of submarine outfalls constructed (number, custom)	—	13	12	108%
	Number of enhanced nutrient reduction plants commissioned (text, custom)	—	3	3	100%
HV develops a comprehensive plan for improving wastewater services on the coast.	HV and municipalities prepare projects to EU for financing (number, custom)	0	5	4	125%
HV is able to better target TA to poor performing MWSCs.	Monitoring and benchmarking system is designed and operational (text, custom)	No	Yes	Yes	Achieved
Seawater quality monitoring system in HV and MEPPPC is improved and expanded to participating cities.	Number of participating cities in which seawater quality monitoring system operational and baseline indicators in place prior to completion of construction (number, custom)	—	23	21	110%

Note: \* This reflects the number of CW WWTPs designed and in operation that enable new knowledge of 'nonconventional' nutrient reduction wastewater treatment technologies.

### Annex 3. Economic and Financial Analysis

1. **Financial benefits.** The data in table 3.1 was presented in the PAD.

**Table 3.1. Financial Benefits**

Subproject	Financial NPV and FIRR (5%)	
	NPV (HRK, thousands)	FIRR
Cres	1,468	6%
Mali Losinj	2,229	6%
Hvar	762	6%
Supetar	687	6%
Metkovic	340	5%

2. During the ICR preparation, the team discovered that the appraised investment in Supetar was dropped and decided to assess investments in Cres and Mali Losinj together since these were implemented, operated, and maintained by one municipal WSS operator. Based on the review of the financial performance of Cres-Mali Losinj, Hvar, and Metkovic for 2013, 2014, and 2015, as well as financial projections using the original assumptions but based on actual historical figures for the past three years, the data in table 3.2 was estimated.

**Table 3.2.**

Subproject	Financial NPV and FIRR (5%)	
	NPV (HRK, thousands)	FIRR
Cres-Mali Losinj	6,708	8
Hvar	1,655	6
Metkovic	847	6

3. The analysis is confirming the initial estimations; the envisaged construction costs for Cres, Hvar, Mali Losinj, and Metkovic are very close to the actual construction costs and in general, despite being investments on islands (with the exception of Metkovic), they are slightly higher compared to similar works on the mainland.
4. Details of the FIRR and NPV are presented in **Table 3.3.**

Table 3.3. Financial Analysis

MWSC Cres-Mali Losinj	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>A) Total Revenues</b>	<b>41,174,643</b>	<b>22,949,025</b>	<b>28,137,274</b>	<b>29,028,781</b>	<b>29,827,148</b>	<b>30,747,514</b>	<b>31,670,092</b>	<b>32,604,129</b>	<b>33,585,562</b>	<b>34,588,802</b>	<b>35,620,600</b>	<b>36,686,855</b>	<b>37,783,150</b>	<b>38,912,339</b>	<b>40,075,940</b>	<b>41,273,965</b>	<b>42,507,952</b>	<b>43,778,983</b>	<b>45,087,995</b>	<b>46,436,241</b>	<b>47,824,879</b>
1. Revenues from sale	40,711,976	22,830,552	27,915,717	28,753,189	29,615,784	30,504,258	31,419,385	32,361,967	33,332,826	34,332,811	35,362,795	36,423,679	37,516,389	38,641,881	39,801,137	40,995,172	42,225,027	43,491,777	44,796,531	46,140,427	47,524,640
out of wich revenues from subsidies/settlements	3,618,664	3,464,752	4,757,746	4,900,478	5,047,492	5,198,917	5,354,885	5,515,531	4,026,338	3,744,494	3,107,930	1,957,996	1,233,537	0	0	0	0	0	0	0	0
2. Extraordinary Revenues	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Financial Revenues	462,667	118,473	221,557	275,593	211,364	243,256	250,706	242,162	252,736	255,991	257,805	263,176	266,760	270,458	274,802	278,794	282,925	287,206	291,464	295,814	300,239
<b>B) Total Expenditures</b>	<b>40,425,019</b>	<b>21,743,369</b>	<b>26,027,700</b>	<b>26,910,609</b>	<b>27,620,566</b>	<b>28,470,772</b>	<b>29,336,193</b>	<b>30,194,143</b>	<b>31,103,658</b>	<b>32,034,314</b>	<b>32,988,168</b>	<b>33,975,775</b>	<b>34,991,042</b>	<b>36,036,234</b>	<b>37,113,688</b>	<b>38,222,917</b>	<b>39,365,363</b>	<b>40,542,185</b>	<b>41,754,137</b>	<b>43,002,403</b>	<b>44,288,077</b>
1. Business expenditures	39,752,319	21,617,421	25,840,004	26,615,204	27,413,660	28,236,070	29,083,152	29,955,647	30,854,316	31,779,946	32,733,344	33,715,344	34,726,805	35,768,609	36,841,667	37,946,917	39,085,325	40,257,884	41,465,621	42,709,589	43,990,877
out of which Personal costs	17,162,884	5,470,126	6,355,394	6,546,056	6,742,437	6,944,711	7,153,052	7,367,643	7,588,673	7,816,333	8,050,823	8,292,348	8,541,118	8,797,352	9,061,272	9,333,110	9,613,104	9,901,497	10,198,542	10,504,498	10,819,633
out of which Depreciation	7,873,353	7,480,894	9,683,345	9,973,845	10,273,061	10,581,253	10,898,690	11,225,651	11,562,420	11,909,293	12,266,572	12,634,569	13,013,606	13,404,014	13,806,135	14,220,319	14,646,928	15,086,336	15,538,926	16,005,094	16,485,247
2. Extraordnaty Expenditures	119,531	-	6,410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Financial Expenditures	553,169	125,948	181,286	295,405	206,906	234,702	253,041	238,496	249,342	254,368	254,824	260,430	264,237	267,626	272,021	276,000	280,038	284,300	288,516	292,814	297,200
<b>C) Profit/Loss before Tax</b>	<b>749,624</b>	<b>1,205,656</b>	<b>2,109,574</b>	<b>2,118,172</b>	<b>2,206,582</b>	<b>2,276,742</b>	<b>2,333,899</b>	<b>2,409,986</b>	<b>2,481,904</b>	<b>2,554,488</b>	<b>2,632,432</b>	<b>2,711,080</b>	<b>2,792,108</b>	<b>2,876,105</b>	<b>2,962,252</b>	<b>3,051,048</b>	<b>3,142,589</b>	<b>3,236,799</b>	<b>3,333,858</b>	<b>3,433,838</b>	<b>3,536,802</b>
<b>D) Corporate Tax</b>	<b>175,694</b>	<b>40,012</b>	<b>116,661</b>	<b>423,634</b>	<b>441,316</b>	<b>455,348</b>	<b>466,780</b>	<b>481,997</b>	<b>496,381</b>	<b>510,898</b>	<b>526,486</b>	<b>542,216</b>	<b>558,422</b>	<b>575,221</b>	<b>592,450</b>	<b>610,210</b>	<b>628,518</b>	<b>647,360</b>	<b>666,772</b>	<b>686,768</b>	<b>707,360</b>
<b>E) Profit/Loss after Tax</b>	<b>573,930</b>	<b>1,165,644</b>	<b>1,992,913</b>	<b>1,694,538</b>	<b>1,765,265</b>	<b>1,821,394</b>	<b>1,867,119</b>	<b>1,927,989</b>	<b>1,985,523</b>	<b>2,043,590</b>	<b>2,105,946</b>	<b>2,168,864</b>	<b>2,233,686</b>	<b>2,300,884</b>	<b>2,369,802</b>	<b>2,440,839</b>	<b>2,514,071</b>	<b>2,589,439</b>	<b>2,667,086</b>	<b>2,747,070</b>	<b>2,829,442</b>
CAPEX	(2,691,521)	(10,766,085)	(13,457,607)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CF</b>	<b>(1,941,897)</b>	<b>(9,560,429)</b>	<b>(11,348,033)</b>	<b>2,118,172</b>	<b>2,206,582</b>	<b>2,276,742</b>	<b>2,333,899</b>	<b>2,409,986</b>	<b>2,481,904</b>	<b>2,554,488</b>	<b>2,632,432</b>	<b>2,711,080</b>	<b>2,792,108</b>	<b>2,876,105</b>	<b>2,962,252</b>	<b>3,051,048</b>	<b>3,142,589</b>	<b>3,236,799</b>	<b>3,333,858</b>	<b>3,433,838</b>	<b>3,536,802</b>
<b>NPV</b>	<b>6,708,309</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>FIRR</b>	<b>8%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWSC Hvar	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>A) Total Revenues</b>	<b>5,360,216</b>	<b>5,712,914</b>	<b>5,959,317</b>	<b>6,183,729</b>	<b>6,435,250</b>	<b>6,692,353</b>	<b>6,956,581</b>	<b>7,234,981</b>	<b>7,523,132</b>	<b>7,822,485</b>	<b>8,134,463</b>	<b>8,458,557</b>	<b>8,795,602</b>	<b>9,146,224</b>	<b>9,510,773</b>	<b>9,889,900</b>	<b>10,284,189</b>	<b>10,694,214</b>	<b>11,120,625</b>	<b>11,564,075</b>	<b>12,025,238</b>
1. Revenues from sale	5,337,602	5,672,182	5,908,060	6,144,382	6,390,158	6,645,764	6,911,595	7,188,058	7,475,581	7,774,604	8,085,588	8,409,012	8,745,372	9,095,187	9,458,994	9,837,354	10,230,848	10,640,082	11,065,686	11,508,313	11,968,646
out of wich revenues from subsidies/settlements	3,759,081	3,439,338	3,525,627	3,631,396	3,740,338	3,852,548	3,968,124	4,087,168	3,801,066	2,774,778	1,748,110	1,101,310	693,825	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
2. Extraordinary Revenues	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Financial Revenues	22,614	40,732	51,257	39,347	45,092	46,589	44,986	46,922	47,551	47,881	48,875	49,545	50,230	51,037	51,779	52,546	53,341	54,132	54,940	55,762	56,593
<b>B) Total Expenditures</b>	<b>4,986,364</b>	<b>5,117,476</b>	<b>5,445,777</b>	<b>5,592,439</b>	<b>5,754,430</b>	<b>5,934,671</b>	<b>6,107,601</b>	<b>6,289,702</b>	<b>6,478,864</b>	<b>6,671,250</b>	<b>6,870,482</b>	<b>7,075,767</b>	<b>7,286,765</b>	<b>7,504,335</b>	<b>7,728,388</b>	<b>7,959,077</b>	<b>8,196,725</b>	<b>8,441,472</b>	<b>8,693,535</b>	<b>8,953,153</b>	<b>9,220,538</b>
1. Business expenditures	4,911,903	5,085,566	5,368,254	5,529,302	5,695,181	5,866,036	6,042,017	6,223,278	6,409,976	6,602,275	6,800,344	7,004,354	7,214,484	7,430,919	7,653,847	7,883,462	8,119,966	8,363,565	8,614,472	8,872,906	9,139,093
out of which Personal costs	541,826	568,917	597,362	615,283	633,741	652,754	672,336	692,506	713,281	734,680	756,720	779,422	802,805	826,889	851,695	877,246	903,564	930,671	958,591	987,348	1,016,969
out of which Depreciation	3,438,138	3,433,861	3,476,372	3,580,663	3,688,083	3,798,726	3,912,687	4,030,068	4,150,970	4,275,499	4,403,764	4,535,877	4,671,953	4,812,112	4,956,475	5,105,169	5,258,325	5,416,074	5,578,557	5,745,913	5,918,291
2. Extraordnaty Expenditures	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Financial Expenditures	74,461	31,910	77,523	63,137	59,249	68,635	65,584	66,424	68,888	68,974	70,138	71,413	72,281	73,416	74,541	75,615	76,759	77,908	79,063	80,247	81,445
<b>C) Profit/Loss before Tax</b>	<b>373,852</b>	<b>595,438</b>	<b>513,540</b>	<b>591,291</b>	<b>680,820</b>	<b>757,681</b>	<b>848,980</b>	<b>945,279</b>	<b>1,044,268</b>	<b>1,151,236</b>	<b>1,263,981</b>	<b>1,382,790</b>	<b>1,508,837</b>	<b>1,641,889</b>	<b>1,782,386</b>	<b>1,930,823</b>	<b>2,087,464</b>	<b>2,252,742</b>	<b>2,427,090</b>	<b>2,610,921</b>	<b>2,804,700</b>
<b>D) Corporate Tax</b>	-	-	-	118,258	136,164.01	151,536.30	169,795.94	189,055.79	208,853.59	230,247.11	252,796.27	276,557.96	301,767.46	328,377.80	356,477.16	386,164.64	417,492.75	450,548.34	485,418.00	522,184.23	560,940.01
<b>E) Profit/Loss after Tax</b>	<b>373,852</b>	<b>595,438</b>	<b>513,540</b>	<b>473,033</b>	<b>544,656</b>	<b>606,145</b>	<b>679,184</b>	<b>756,223</b>	<b>835,414</b>	<b>920,988</b>	<b>1,011,185</b>	<b>1,106,232</b>	<b>1,207,070</b>	<b>1,313,511</b>	<b>1,425,909</b>	<b>1,544,659</b>	<b>1,669,971</b>	<b>1,802,193</b>	<b>1,941,672</b>	<b>2,088,737</b>	<b>2,243,760</b>
CAPEX	(1,524,917)	(6,099,669)	(7,624,586)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>CF</b>	<b>(1,151,065)</b>	<b>(5,504,231)</b>	<b>(7,111,046)</b>	<b>591,291</b>	<b>680,820</b>	<b>757,681</b>	<b>848,980</b>	<b>945,279</b>	<b>1,044,268</b>	<b>1,151,236</b>	<b>1,263,981</b>	<b>1,382,790</b>	<b>1,508,837</b>	<b>1,641,889</b>	<b>1,782,386</b>	<b>1,930,823</b>	<b>2,087,464</b>	<b>2,252,742</b>	<b>2,427,090</b>	<b>2,610,921</b>	<b>2,804,700</b>
<b>NPV</b>	<b>1,655,196</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>FIRR</b>	<b>6%</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MWSC Metkovic	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>A) Total Revenues</b>	<b>7,812,357</b>	<b>8,240,441</b>	<b>8,930,967</b>	<b>9,241,805</b>	<b>9,586,125</b>	<b>9,941,989</b>	<b>10,304,330</b>	<b>10,684,916</b>	<b>11,078,538</b>	<b>11,485,729</b>	<b>11,908,948</b>	<b>12,347,454</b>	<b>12,802,046</b>	<b>13,273,613</b>	<b>13,762,506</b>	<b>14,269,452</b>	<b>14,795,153</b>	<b>15,340,251</b>	<b>15,905,486</b>	<b>16,491,604</b>	<b>17,099,368</b>
1. Revenues from sale	7,746,400	8,166,190	8,833,304	9,160,136	9,499,061	9,850,527	10,214,996	10,592,951	10,984,890	11,391,331	11,812,810	12,249,884	12,703,130	13,173,146	13,660,552	14,165,993	14,690,134	15,233,669	15,797,315	16,381,816	16,987,943
out of wich revenues from subsidies/settlements	1,335,458	1,682,419	2,051,252	2,112,790	2,176,173	2,241,458	2,308,702	2,377,963	1,735,913	1,614,399	1,339,951	844,169	531,827	0	0	0	0	0	0	0	0
2. Extraordinary Revenues	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3. Financial Revenues	65,957	74,251	97,663	81,669	87,064	91,462	89,334	91,965	93,648	94,398	96,137	97,570	98,916	100,467	101,954	103,459	105,019	106,582	108,171	109,788	111,426
<b>B) Total Expenditures</b>	<b>8,292,579</b>	<b>8,171,918</b>	<b>8,890,035</b>	<b>9,159,334</b>	<b>9,444,561</b>	<b>9,718,628</b>	<b>10,011,483</b>	<b>10,312,676</b>	<b>10,619,610</b>	<b>10,938,095</b>	<b>11,265,654</b>	<b>11,602,547</b>	<b>11,950,018</b>	<b>12,307,741</b>	<b>12,676,129</b>	<b>13,055,648</b>	<b>13,446,498</b>	<b>13,849,059</b> </			



5. The PAD assessed the financial situation of the WSS companies in Cres-Mali Losinj, Hvar, and Metkovic. The current financial analysis is doing the same to assess the impact of the investments on the financial performance of the companies.

**Table 3.4.**

in '000 HRK	MWSC Cres-Mali Losinj		MWSC Hvar		MWSC Metkovic	
	2014	2015	2014	2015	2014	2015
<b>A) Total Revenues</b>	<b>22,949</b>	<b>28,137</b>	<b>5,713</b>	<b>5,959</b>	<b>8,240</b>	<b>8,931</b>
1. Revenues from sale	22,831	27,916	5,672	5,908	8,166	8,833
out of which revenues from subsidies/settlements	3,465	4,758	3,439	3,526	1,682	2,051
2. Extraordinary Revenues	-	-	-	-	-	-
3. Financial Revenues	118	222	41	51	74	98
	-	-	-	-	-	-
<b>B) Total Expenditures</b>	<b>21,743</b>	<b>26,028</b>	<b>5,117</b>	<b>5,446</b>	<b>8,172</b>	<b>8,890</b>
1. Business expenditures	21,617	25,840	5,086	5,368	8,098	8,854
out of which Personnel costs	5,470	6,355	569	597	3,389	3,391
out of which Depreciation	7,481	9,683	3,434	3,476	1,794	2,167
2. Extraordinary Expenditures	-	6	-	-	-	-
3. Financial Expenditures	126	181	32	78	74	37
<b>C) Profit/Loss before Tax</b>	<b>1,206</b>	<b>2,110</b>	<b>595</b>	<b>514</b>	<b>69</b>	<b>41</b>
<b>D) Corporate Tax</b>	<b>40</b>	<b>117</b>	<b>-</b>	<b>-</b>	<b>8</b>	<b>4</b>
<b>E) Profit/Loss after Tax</b>	<b>1,166</b>	<b>1,993</b>	<b>595</b>	<b>514</b>	<b>61</b>	<b>37</b>

6. The financial analysis of the Cres-Mali Losinj, Hvar, and Metkovic WSS companies covering 2013, 2014, and 2015 shows that the companies are continuing to improve their financial performance. All three companies are profitable, improving their financial results and ratios, but it needs to be mentioned that they continue to receive subsidies (settlements) between 15 percent and 55 percent (in Hvar).

7. In relation to the financial indicators that were monitored, the ICR team can report that the ratios are improving; they go beyond the targets set for the project: operating ratio (baseline 1.13, result achieved 0.84, target <1), collection rate (baseline 76 percent, result achieved 90 percent, target 86 percent) and debt service ratio (baseline 5.61, result achieved 2.2, target >1.5). The team noticed that the collection indicator was reported as 85 percent in the final ISR. The figure presented in the ISR is from April 2015 and covers the 2014 financial performance of WSS operators, while the 90 percent is reflecting their 2015 financial results. More specifically for the Cres-Mali Losinj, Hvar, and Metkovic WSS companies, the situation is as described in tables 3.5 and 3.6.

**Table 3.5. PAD (2007 data)**

Financial Ratios	Cres-Mali Losinj	Hvar	Metkovic	Average	Benchmark
Operating ratio	1.09	1.32	0.99	1.13	0.9
Collection rate	88%	79%	79%	82%	85%

**Table 3.6. Actual Data Based on 2015 Data Presented by the WSS Operators**

Financial Ratios	Cres-Mali Losinj	Hvar	Metkovic	Average	Benchmark
Operating ratio	0.93	0.77	1.00	0.90	0.9
Collection rate	99%	80%	93%	90%	85%

8. **Tariffs and cost recovery.** It is worth mentioning that the approach from the first phase of the CCPCP to estimate and agree on a surcharge per m<sup>3</sup> for the cofinancing obligations of operators and repayment of loan obligations is working quite well. All three companies are charging between HRK 2.5 and HRK 4 per m<sup>3</sup> of collected and treated

wastewater, which is transferring a certain portion of the costs to the customers and contributes to the achievement of partial cost recovery of services. The cost recovery level of wastewater collection and treatment services funded under the project is difficult to estimate since the MRDFWM and HV portions of the co-financing of the subprojects are provided as grants to the utilities and they do not charge depreciation charges on these portions of the investments.<sup>10</sup> Still, about 75 percent of the construction costs (IBRD financing and utility co-financing) are recovered. The analysis is showing that the Government might consider gradually phasing out the subsidies (settlements) transfers to these companies in the next 10 years since the affordability analysis is showing that the WSS bills are continuing to be below 3 percent of the monthly household income (see **Table 3.3**).

9. The lack of significant depreciation of HRK since the beginning of the project, ensured a smooth implementation process and now it is expected that WSS companies in Cres-Mali Losinj, Hvar and Metkovic should not have any significant issues with the repayment of the loan.

10. **Economic benefits.** With regard to economic benefits, the PAD refers to environmental, health, and economic benefits, which are not monetized (see pages 13 and 14 of the PAD). Despite the lack of baseline data, the team decided to perform economic analysis utilizing the methodology from a similar project ‘GEF Adriatic Sea Environmental Pollution Control Project (I) Croatia and Bosnia And Herzegovina’.

11. The analysis identified benefits stemming from fisheries, tourism, and improvements in health conditions. Benefits from improvements in fisheries are associated with increases in the catch value of the fish (which cannot be monetized due to lack of data); tourism benefits have been calculated from changes and increases in tourists (the only limitation here is how much can be attributed to the project) and health benefits associated with direct medical expenditures for illness treatment; and indirect costs resulting from illness, which includes the value of time lost from work, decreased human productivity, potential for demotion, money spent in care giving, and premature death (which cannot be monetized due to lack of data).

### **Tourism Benefits**

12. Croatia is presented among the top five European countries with excellent bathing water quality, which is attracting more and more tourists each year.<sup>11</sup> The number of tourists in Croatia over the past three years is constantly increasing.<sup>12</sup> In 2010, the number of tourists visiting Croatia was around 10.6 million (local 1.5, foreign 9.1), while in 2015, it was 14.3 million (local 1.6, foreign 12.7). For the economic analysis, two coefficients were used to account that not all tourists go to the seaside (0.80) and that not all increase in tourists (35 percent between 2010 and 2015) can be attributed to the project (0.60). To monetize the benefits from tourism, data from the economic analysis of similar projects was used—for Croatia, tourists were estimated to spend EUR 72 per day with a value added of EUR 36/ per day. According to the estimates, the contribution of tourists in the Adriatic area attributed to the project amount to approximately EUR 25 million per year (using the value added and the coefficients); the economic NPV for tourism benefits equals about EUR 183 million (at 5

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<sup>10</sup> As per the explanations of the utility in Cres-Mali Losinj.

<sup>11</sup> European bathing water quality in 2015 report, European Environmental Agency.

<sup>12</sup> Tourism in figures 2012–2015, Ministry of Tourism, Republic of Croatia.

percent discount rate). This leads to an economic internal rate of return of 26 percent for the project.

13. Despite the significant limitations on doing a proper economic analysis with a lack of baseline data in the PAD, the calculated economic NPV and internal rate of return are providing a good base for judgement on the economic benefits of the project.

## Annex 4. Bank Lending and Implementation Support/Supervision Processes

### (a) Task Team Members

Names	Title	Unit	Responsibility/Specialty
<b>Lending</b>			
Hana Huzjak	Operations Analyst	ECSUW - HIS	Operation analyst
Lamija Marijanovic	Financial Management Specialist	GGO21	FM specialist
Manuel G. Marino	Lead Water and Sanitation Specialist	GWADR	Water engineer
Maria Teresa D. Lim	Program Assistant	ECSSD - HIS	Program assistant
Michael John Webster	Senior Water Supply and Sanitation Specialist	GWA01	TTL
Natasa Vetma	Senior Environmental Specialist	GEN03	Environment specialist
Norval Stanley Peabody	Consultant	GEEDR	Social safeguard specialist
Salim Benouniche	Lead Procurement Specialist	GGODR	Procurement officer
Stjepan Gabric	Senior Water Supply and Sanitation Specialist	GWA03	Water engineer
<b>Supervision/ICR</b>			
Amelito Velasco	Consultant	INTSC	Procurement officer
Antonia G. Viyachka	Procurement Specialist	GGO03	Procurement officer
Hana Huzjak	Operations Analyst	ECSUW - HIS	Operation analyst
Lamija Marijanovic	Financial Management Specialist	GGO21	FM Specialist
Ljiljana Boranic	Team Assistant	ECCHR	Team Assistant
Bogdanka Krtinic	Team Assistant	ECCHR	Team Assistant
Majed El-Bayya	Lead Procurement Specialist	GGO03	Procurement officer
Natasa Vetma	Senior Environmental Specialist	GEN03	Environment specialist
Bekim Ymeri	Senior Social Development Specialist	GSU03	Social safeguard specialist
Nikola Ille	Senior Environmental Specialist	GEN03	Cultural heritage specialist
Stjepan Gabric	Senior Water Supply and Sanitation Specialist	GWA03	TTL, Water engineer



**(b) Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	US\$, thousands (including travel and consultant costs)
<b>Coastal Cities Pollution Control Project 2 - P102732</b>		
<b>Lending</b>		
FY08	28	74.5
FY09	15	34.5
<b>Total:</b>	43	109.0
<b>Supervision/ICR</b>		
FY09	11	26.2
FY10	15	31.9
FY11	35	90.3
FY12	23	54.0
FY13	14	40.8
FY14	16	41.2
FY15	28	66.8
FY16	18	30.8
<b>Total:</b>	160	382.0
<b>Second Coastal Cities Pollution Control Project - P102395</b>		
<b>Lending</b>		
FY08	6	20.2
FY09	9	34.5
<b>Total:</b>	15	54.7
<b>Supervision/ICR</b>		
FY09	8	25.8
FY10	5	18.4
FY11	14	27.8
FY12	9	20.5
FY13	5	8.8
FY14	18	37.9
<b>Total:</b>	59	139.2

**Annex 5. Beneficiary Survey Results (if any)**

Not applicable

**Annex 6. Stakeholder Workshop Report and Results (if any)**

Not applicable

## **Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR**

### **Coastal Cities Pollution Control Project II**

1. The basic ideas while planning the project were the following:
  - Protecting seawater quality
  - Creating conditions for safe economic development in accordance with the objectives of environmental protection
  - Protecting and improving the achieved level of environmental protection
2. The general PDO through three foreseen implementation phases was to improve the quality of Croatia's Adriatic coast and seawater and to meet and maintain EU ambient quality standards in the participating municipalities.
3. The improvement of the system for collection, treatment, and disposal of wastewater in the participating municipalities had significant environmental benefits for the municipalities. First, it improves the quality of the Adriatic Sea bathing water. In the medium and long term, the issue of discharge of nutrients into urban and industrial wastewater is an important factor in the treatment strategy. In the short term, dealing with bathing water quality is justified because of its impact on public health.
4. The project-financed activities have reduced environmental pollution associated with inadequate wastewater management through (a) extension of sewer networks for wastewater collection, thus reducing the number of septic tanks which often leak into the karst underground and which are not managed properly; (b) improved quality of discharged wastewater through establishment of primary and/or advance wastewater treatment; and (c) reduction of direct discharge of wastewater into coastal waters, waterways, and beaches by constructing outfalls from WWTPs.

### **Sub-project Selection**

5. The initial selection of subprojects was conducted during project preparation. The preliminary selection criteria included the following:
  - Subproject eligibility with regard to environmental protection, technical feasibility and economic viability (assessed on the basis of prepared studies: environmental impact assessment, technical feasibility study, and social-institutional analysis)
  - Capacity of the MWSC to obtain a sub-loan
  - Willingness of the LSGU to increase the water tariff for the purpose of repaying the loan and financing construction
  - Willingness of the LSGU to accept the terms of subproject implementation
6. A preliminary list of subprojects was prepared on the basis of the above criteria.

7. The additional criteria for the final selection of subprojects for financing under Phase II were the following:

- Status/level of completion of design documents
- Technical and economic acceptability of the proposed option/scope of the investment
- Obtained location permit for the system/part of the system
- Introduced surcharge, that is, 'development fee' to finance construction and repay sub-loan
- Financial capacity of the final beneficiary to obtain a sub-loan

8. All subprojects that have passed the preliminary selection and met the additional selection criteria were included in Phase II of the project in accordance with the available funds for Phase II of the project.

9. The IBRD offered a loan to the Republic of Croatia to finance the CCPCP. Every subproject was financed with loan proceeds up to 50 percent of its costs. Based on the estimated loan commitment, an amount (a surcharge to the water tariff) was defined, which would ensure the repayment of the loan. The amount, which was thus collected during construction was invested in construction, and the potentially missing part of construction costs was covered from the local budgets.

10. A Loan Agreement in the amount of EUR 60 million between the IBRD and the Croatian Government, a GEF Grant Agreement in the amount of US\$6.4 million between the IBRD and the Croatian Government, and a Project Agreement between the IBRD and HV were signed on February 6, 2009. A Subsidiary Loan Agreement between the Croatian Ministry of Finance and HV was signed in May 2009.

11. In its session held on April 6, 2009, the Croatian Parliament adopted the Act on Ratification of the Loan Agreement between the IBRD and the Croatian Government for CCPCP2.

12. The loan came into effect on June 4, 2009, with the signing of two Sub-loan Agreements (Rab and Cres). The signing of other Sub-loan and Sub-grant Agreements with the MWSCs and LSGUs followed.

13. With the conclusion of the Loan Agreement, funds were ensured for financing of projects whose objective was to improve the provision of efficient and sustainable wastewater services in the participating coastal municipalities, to reduce the nutrient load entering Croatia's coastal waters, and pilot innovative wastewater treatment solutions in the selected municipalities.

14. The project was developed according to the following framework:

- The program is implemented in the coastal area with a high potential for tourism, and important for the economic development of Croatia.

- The project finances technical solutions that are
    - technically rational;
    - socially and economically feasible; and
    - environmentally acceptable.
  - During project implementation, the possibility of improving organizational and financial efficiency of municipal utilities was analyzed.
15. Consistent with its scope and objectives, the components of the project are as follows:
- Wastewater Investments Component
    - Construction of wastewater treatment and discharge systems
  - Institutional Strengthening Component to finance equipment, TA, training and studies to
    - prepare engineering designs and environmental and social assessments for investments during project implementation and supervise project investments;
    - strengthen the capacity of HV for project implementation, evaluation, and monitoring, including FM; and
    - strengthen and bring the MWSCs to reasonable levels of management, operational efficiency, and financial viability and potentially facilitate private sector participation.
  - Seawater Quality Monitoring Component involving strengthening of the coastal waters monitoring network, to finance equipment, training and studies to
    - improve the capacity of laboratories of HV to assess the individual discharges of municipalities and industries, determine the overall pollutant load contributed by Croatia to the Adriatic Sea, and evaluate and control the efficiency of the financed infrastructure; and
    - improve the capacity of the Ministry of Environment network of laboratories for environmental monitoring to assess the impact of the program on coastal waters quality.
16. The implementation of the project in the amount of EUR 57.65 million of the loan and US\$6.4 million of the grant (for Components 1, 2, and 3a) was under the responsibility of HV, which had established a CCPCP PIU.
17. The MENP was responsible for implementation of Subcomponent 3b in the amount of EUR 2.35 million of the loan.
18. The project was designed to be implemented through Sub-loan and Sub-grant Agreements concluded with the MWSCs and LSGUs. Every subproject was financed with

loan proceeds up to 50 percent of its costs. Based on the estimated loan commitment (the investment value financed from the loan), an amount (a surcharge to the water tariff in the form of a development fee) was defined, which every LSGU was supposed to introduce before joining the subproject. This amount was supposed to ensure the repayment of the loan. The amount which was thus collected during construction was invested in construction and later on into repayment of annuities.

19. During construction, apart from the loan, the funds were also provided from the following sources (the remaining 50 percent of the funds), on the project-average level:

- State budget - 22 percent
- HV- 9 percent
- Final beneficiaries - MWSCs - 19 percent

20. The share of funds from the State Budget was limited to large systems and to systems where costs were significantly higher than in the other locations, based on a request by a local self-government unit, and provided that no special protected areas are involved (national parks, closed and sensitive local waters, and Category I sea).

21. The participation of HV in loan repayment (from the collected proceeds of the water protection fee in the amount of HRK 0.90 per m<sup>3</sup>) was defined as follows:

- For the systems with the overall required increase in the water tariff up to 50 percent of the average increase, the participation of HV amounted to half of the required increase.
- For large systems, the participation of HV amounted to HRK 0.45 per m<sup>3</sup> (half of the fee amount).
- For all other systems, the participation of HV amounted to HRK 0.9 per m<sup>3</sup> (full amount of the fee).
- If a local self-government unit nominated a subproject with exceptionally high costs, significantly higher than in the other locations, based on a request by a local self-government unit, regardless of the required increase in the water tariff, the participation of HV was limited to HRK 0.45 per m<sup>3</sup>.
- If for the special protected areas (national parks, closed and sensitive local waters and Category I sea), with application of the criteria mentioned above, it was identified that the water tariff needs to increase by more than HRK 4 per m<sup>3</sup> for debt servicing purposes, the MWSC accepted an increase in the water tariff by HRK 4 per m<sup>3</sup>, while the remaining part of loan obligations was covered by applying the principle of solidarity and with the help of the budgetary resources.

22. The loan was granted for a period of 15 years, including 5 years intended for the construction of infrastructure (grace period) and 10 years of loan repayment. The loan is repaid in semiannual instalments with an interest rate equal to 6-month EuroLibor plus the fixed spread.

23. The loan was repaid by HV and the MWSCs in the average share of 40:60.
24. The CCPCP used the proceeds of an APL. The APL allowed HV to adopt a phased approach to identify funding sources while building the necessary regulatory, monitoring, and management capacities.
25. Phase I was implemented over a five-year period (2005–2009). The loan was in the amount of EUR 40 million, and the total value of Phase I was EUR 80 million.
26. Phase II was foreseen for the 2009–2014 period, but due to its complexity, the planned project closure date was based on the project restructuring requests of 2011 and 2014 and the request to extend the GEF Grant closure date extended until December 31, 2015, for the loan and May 31, 2016, for the grant, as well as additional four months for the payment of all the activities completed by the loan and grant closure dates.
27. The following legal agreements are in effect:
- The Loan Agreement between the IBRD and Croatia (Ministry of Finance).
  - The Grant Agreement between the IBRD and Croatia (Ministry of Finance).
  - The Project Agreement between the IBRD and HV.
  - The Subsidiary Loan and Grant Agreements between the Ministry of Finance and HV, by means of which the proceeds of the IBRD loan and GEF Grant are transferred to HV and the responsibilities of HV are laid down.
  - The Sub-loan and/or Sub-grant Agreements between HV and the relevant municipal water and sewerage companies and municipalities for implementation of individual subprojects. Such an agreement contains (a) conditions of sub-project financing; (b) financial aspects, including the tariffs required to recover the O&M costs and an investment surcharge introduced for the purpose of financing construction and repaying the sub-loan; and (c) technical project aspects, including the aspects related to project implementation, supervision and reporting obligations. In case of local municipalities that were granted the GEF Grant, the grant element of GEF financing was reflected in the sub-loan agreement.
28. During implementation of CCPCP2, a total of 23 sub-loan and sub-grant agreements were signed (Table 2) with the MWSCs and municipalities which had passed the initial selection and met the additional criteria already mentioned in the introductory part of this report.
29. Table 7.1 presents the subprojects and their amounts:



**Table 7.1. Subprojects and Loan Amounts**

Subprojects and Status June 2016		Phase II		IBRD Loan	GEF Grant	
		HRK, millions	EUR, millions	EUR, millions	HRK, millions	EUR, millions
1.	Cres	10.55	1.40	0.70		
2.	Rab	58.87	7.80	3.90		
3.	Mali Lošinj	50.00	6.62	3.31		
4.	Rijeka-Grobnik	93.96	12.45	6.22		
5.	Opatija	102.50	13.58	6.46	2.52	0.33
6.	Metković	14.00	1.85	0.74	9.00	1.19
7.	NP Mljet	26.38	3.49	1.75		
8.	Hvar	24.03	3.18	1.59		
9.	Murter-Betina	19.91	2.64	1.32		
10.	Sukošan-Bibinje	43.67	5.78	2.89		
11.	Novigrad	9.28	1.23	0.61		
12.	Vela Luka	21.54	2.85	1.43		
13.	Pula	84.61	11.21	5.36	1.82	0.24
14.	Zadar	80.57	10.67	5.34		
15.	Dugi Rat	15.87	2.10	0.69	2.74	0.36
16.	Krk	22.38	2.96	1.48		
17.	Omišalj	22.20	2.94	1.47		
18.	Malinska-Njivice	21.31	2.82	1.41		
19.	Medulin	57.87	7.66	3.83		
20.	Kaštelir	26.18	3.47	0.84	11.96	1.58
21.	Dubrovnik	78.47	10.39	4.73	3.56	0.47
22.	Sv. Filip i Jakov	10.31	1.37	0.68		
23.	Vrlika	3.50	0.46	0.23	3.50	
<b>Subcontracted Total</b>		<b>897.96</b>	<b>118.94</b>	<b>56.99</b>	<b>35.10</b>	<b>4.19</b>

30. For project implementation to be successful, the procurement procedures for goods, works, and services had to be carried out using the World Bank Guidelines for procurement of goods, works and services (prior and post review). A Procurement Plan was prepared, which was regularly updated every six months.

31. As presented in table 7.2, 181 procurement procedures in total were conducted.

**Table 7.2. Procurement Procedures Conducted**

Category	Number
Goods	14
Works	70
Consultants' services	97
<b>Total</b>	<b>181</b>

32. The project was implemented through three categories (table 7.3), three components (table 7.5) and several subcomponents:

**Table 7.3. Categories for Project Implementation**

Category	Loan (EUR millions)	% of Expenditures to be Financed
<b>Goods</b>		
(a) Under Parts 1, 2, and 3.1 of the project	1.70	50
(b) Under Part 3.2 of the project	0.25	50
<b>Works</b>		
(a) Under Part 1.1 (a) of the project	51.85	50
(b) Under Part 1.1 (b) of the project	0.00	40
<b>Consultants' services</b>		
(a) Under Parts 1, 2, and 3.1 of the project	4.70	50
(b) Under Part 3.2 of the project	1.50	50
Unallocated	0.00	
<b>Total</b>	<b>60.00</b>	

**Table 7.4.**

Category	Grant (US\$, millions)	% of Expenditures to be Financed
<b>(1) Works</b>		
(a) Under Part 1.1 (b) of the project, excluding those financed under Category (1)(b) hereof	0.00	20
(b) For the constructed treatment wetlands facility under Part 1.1 (b) of the project	3.30	100
<b>(2) Consultants' services</b>		
(a) Under Parts 1, 2, and 3.1 of the project	2.40	100
<b>(3) Unallocated</b>	0.00	
<b>Total</b>	<b>5.70</b>	

**Table 7. 5. Loan Disbursements per Component**

Component	Loan Disbursements per Component			
	IBRD (EUR, millions)	Government (EUR, millions)	Loan Total (EUR, millions)	GEF (US\$, millions)
<b>Component 1: Wastewater Investments</b>	<b>53.85</b>	<b>53.85</b>	<b>107.70</b>	<b>3.70</b>
1a Wastewater investments	51.85	51.85	103.70	3.40
1b Engineering design and construction supervision	2.00	2.00	4.00	0.30
<b>Component 2: Institutional Strengthening</b>	<b>3.70</b>	<b>3.70</b>	<b>7.40</b>	<b>2.00</b>
2a Sector development and EU accession support	1.80	1.80	3.60	2.00
2b Strengthening MWSCs	1.70	1.70	3.40	0.00
2c Project management	0.20	0.20	0.40	0.00
<b>Component 3: Seawater Quality Monitoring</b>	<b>2.45</b>	<b>2.45</b>	<b>4.90</b>	<b>0.00</b>
3a Monitoring - HV	0.70	0.70	1.40	0.00
3b Monitoring MEPPC	1.75	1.75	3.50	0.00
<b>Total</b>	<b>60.00</b>	<b>60.00</b>	<b>120.00</b>	<b>5.70</b>

## **Component 1: Wastewater Investments**

33. **Subcomponent 1a: Wastewater investments** financed construction and expansion of sewerage networks, main sewers, pumping stations, WWTPs, and WWTPs with enhanced treatment and nutrient removal (CWs). The investments were financed by HV using a combination of loan proceeds, HV own resources (collected from the water protection fee), a specific project investment surcharge levied by the MWSCs (development fee), and targeted subsidies from Government budgetary transfers. The GEF proceeds financed the construction of CWs for wastewater treatment for the reduction of nutrients.

34. **Subcomponent 1b: Engineering design and construction supervision.** This included preparation of feasibility studies, EIAs, and other documentation necessary to obtain location and building permits, preparation of preliminary and detailed designs and bidding documents, and supervision over construction works.

## **Component 2: Institutional Strengthening**

35. **Subcomponent 2a: Sector development and EU accession support.** The main purpose of this subcomponent was to implement all activities related to meeting EU directives and absorption of EU funds. It implies strengthening of sector institutions and preparing projects. Eligible expenditures for World Bank financing included consulting services and equipment for the following:

- Institutional strengthening of HV and MWSCs by establishing a monitoring and benchmarking system in HV to monitor the operational, financial, and environmental performance of MWSCs (benchmarking). Even though the MWSCs operate quite well, the study has identified a number of areas where efficiency can be improved with regard to improved management, improved financial performance, reduction in water consumption, more efficient operation of water supply systems, and reduction of water losses in the network. The reforms and improvements in this area were essential for the MWSCs to take on heavy investments required for wastewater management and guarantee their sustainability.
- Preparation of a study to plan, coordinate, and monitor sludge treatment and waste disposal. The technical-economic study ‘Treatment and Disposal of Waste and Waste Sludge Generated by Treatment of Wastewater from Public Sewerage Systems of Towns and Municipalities in Croatian Counties’ was completed on March 15, 2014. The objective was to improve and develop the system for the treatment and disposal of waste and waste sludge generated by treatment of wastewater in public sewerage systems in Croatia. The study included the following:
  - Analysis of the current status and demand analysis
  - Preparation of a technical and economic-financial feasibility study, identification of the existing quantities and characteristics of sludge, and the planned quantities and characteristics of sludge due to the planned construction of WWTPs in Croatia aimed at meeting the requirements of EU directives

- Analysis and preparation of technological/process solutions to design infrastructure for the treatment of wastewater and disposal of sludge, with a proposal to select the best available solution and infrastructure for treatment and disposal
- Analysis and assessment of environmental impact, including strategic national level
- Detailed analysis and proposal for harmonization of the existing legal and other regulations with real needs on the national and international levels, a proposal of the optimum procedure for the issuing of requirements and permits concerning wastewater treatment, treatment and disposal of waste and sludge
- Financial and economic analysis, including project application forms (EU cohesion and/or structural funds), and international financing institutions
- Preparation of an implementation plan
- Institutional strengthening of capacities, organization of workshops, and transfer of knowledge
- Preparation of designs and studies to prepare EU application forms. This included a feasibility study, EIA, and preparation of preliminary and detailed designs and tender documents for the projects meeting the requirements for EU financing. Documents for a total of five agglomerations are in preparation (Pula-centar, Opatija, Dugi Rat, Metković, and Dubrovnik). The said studies were supposed to enable improved absorption of EU grants.

36. **Subcomponent 2b: Strengthening MWSCs.** Institutional strengthening of MWSCs had to be financed to improve their financial and operating efficiency through the purchase of leak detection equipment (CCTV to inspect the sewerage) and purchase of equipment to improve operating efficiency (maintenance of sewers and emptying of septic tanks, and so on).

37. **Subcomponent 2c: Project management.** Project management included support to HV to implement the project, through financial audit of the project and the audit of HV as the implementing agency, review of WWTP detailed designs and bidding documents, project management services, legal and financial consulting services during project implementation, procurement of accounting software to generate semiannual and annual cash-flow statements, and so on.

### **Component 3: Seawater Quality Monitoring**

38. **Subcomponent 3a: Strengthening HV monitoring.** Within Subcomponent 3a, the Adriatic Sea Monitoring Study was prepared for every location foreseen for Phases I and II of project implementation. The monitoring program within CCPCP Component 3 represented a comprehensive program for monitoring wastewater and its impact on the coastal water quality in Croatia. It was supposed to supplement the already existing seawater monitoring programs and contribute to the improvement of the overall Adriatic Sea monitoring. The monitoring criteria were based on the past results of seawater quality tests, experience gained

in Croatia and EU Member States, complying with the Croatian Legislation, the Water Framework Directive and the wastewater-related directives. Monitoring was conducted at a total of 38 locations along the Adriatic coast.

39. Project tasks completed by the consultant:

- ASSIGNMENT A - Preparation of a list of monitoring stations and related beaches
  - A1: Preparation of a list of monitoring points and stations on planned outfalls
  - A2: Preparation of a list of control stations along the coast
  - A3: Preparation of a list of the beaches closest to the planned outfalls and control stations along the coast
  - A4: Preparation of a list of wastewater quality monitoring stations
- ASSIGNMENT B - Implementation of the monitoring program
  - B1. Monitoring of effluent quality from public sewerage systems—collection and analyses of results of wastewater monitoring conducted by users of public sewerage systems
  - B2. Monitoring of the impact of effluent discharged from public sewerage systems on seawater quality at beaches close to outfalls—collection and analyses of results from the database of the Sea Water Quality Monitoring Program conducted by the MEPPPC
  - B3. Monitoring of the impact of effluent discharged from public sewerage systems on seawater quality—measurement and analyses of results according to the program defined from subprojects in assignments A1 and A2
- ASSIGNMENT C – Professional training

40. Professional training was conducted through capacity-building workshops, laboratory training, meetings, and counselling for the staff of:

- HV
- Authorized laboratories (Public Health Institutes) and the Central Water Management Laboratory of HV
- MWSCs

41. Project implementation was monitored through the preparation of project progress reports: inception reports, quarterly progress reports, annual reports, and the final report.

42. **Subcomponent 3b: Strengthening MEPPPC (now called MENP) monitoring.** Under this subcomponent, three contracts were implemented, aimed at meeting the

obligations deriving from the Marine Strategy Framework Directive (2008/56/EC), that is, the obligations from the regulation on preparation and implementation of documents of the Marine Environment and Coastal Zone Management Strategy (OG 112/2014) by means of which the Marine Strategy Framework Directive was transposed into the Croatian Legislation.

## GEF Objectives

43. The GEO was to reduce the nutrient load entering Croatia's coastal waters from participating municipalities and pilot innovative wastewater treatment solutions. This contributed to the program objective to maintain the quality of Croatia's coastal waters to meet EU/national standards. This requires reducing organic and nutrient emissions (phosphorus and nitrogen) from municipal wastewater sources into the Adriatic and Mediterranean Seas and into inflowing rivers. The specific objective was the reduction of organic pollution and nutrient emissions from point sources in selected Croatian towns, that were either located directly at the coast or near it. This required the new construction of WWTPs designed for the removal of organics and nutrients.

44. The impacts of this project will be two-fold: (a) improved water quality in the coastal zones near the project towns and (b) improved water quality in the Mediterranean Sea. Lower nutrient loads reduce eutrophication. Avoiding eutrophication and hence protecting good water quality is a prerequisite for long-term viability of tourism. People come to the Croatian coast precisely because they associate it with intact and unpolluted waters. Less polluted waters will also have a positive impact on biodiversity, increase in fish populations and bird breeding.

45. This also has positive impacts on ecosystems, biodiversity, and wetlands. All this is not meant to be an end in itself, but it will eventually maintain positive economic impacts, for example, long-term viability of tourism and abundance of fish populations. Three CWs (Kaštelir, Vrljika, and Prud) have been built using the GEF Grant.

46. Under CCPCP2, a total of 19 WWTPs have been built with a total capacity of 370,000 PE and different levels of treatment (pretreatment, primary treatment, tertiary treatment - CWs), 13 submarine outfalls for treated wastewater, 176 km of primary sewer network, and 83 pumping stations. The details for specific subprojects are presented in table 7.6.

**Table 7.6. Planned and Completed Investments**

Subloan Agreements		Planned Investments		Completed Investments			
		WWTP		Sewers (km)	Pumping stations	Submarine Outfall	WWTP
		Level	PE				
1	Cres	Pretreatment	9,928	0.00	0	Yes	Yes
2	Rab	Primary	25,000	9.70	8	Yes	Yes
3	Mali Losinj	Primary	30,000	5.20	5	Yes	Yes
4	Rijeka - Grobnik			35.40	8		
5	Opatija	Primary	58,100	18.70	16		Yes
6	Metkovic (Prud)	CW	800	0.00	0		Yes
7	Mljet	Pretreatment	1,500	8.80	7	Yes	Yes
8	Hvar	Primary	25,000	0.10	0	Yes	Yes
9	Murter - Betina	Pretreatment	10,000	4.20	2	Yes	Yes

10	Sukosan - Bibinje	Primary	20,180	12.90	7	Yes	Yes
11	Novigrad	Primary	33,000	0.00	0		Yes
12	Vela Luka	Pretreatment	27,000	6.50	5		Yes
13	Pula			2.60	0	Yes	
14	Zadar			11.30	5		
15	Dugi Rat			5.40	3		
16	Krk, island Krk	Pretreatment	20,800	3.00	1	Yes	Yes
17	Malinska - Njivice	Pretreatment	45,000	4.40	0	Yes	Yes
18	Omisalj	Pretreatment	9,200	2.00	2	Yes	Yes
19	Dubrovnik - Zaton Orasac	Pretreatment	9,000	9.00	5		Yes
20	Medulin-Marlera	Pretreatment	34,500	3.50	1	Yes	Yes
	Medulin-Premantura	Pretreatment	8,400	13.80	2	Yes	Yes
21	Kastelir	CW	1,900	14.20	3		Yes
22	Sv.Filip i Jakov			5.20	3		
23	Vrlika	CW	700,000	0.00			Yes
<b>TOTAL</b>			<b>19</b>	<b>370,008.00</b>	<b>175.90</b>	<b>83</b>	<b>13</b>

47. The PIU had established an FM system for the project. The project's financial statements were audited by independent auditors acceptable to the World Bank based on the Terms of Reference acceptable to the World Bank. The audited annual statements and the auditor's report were submitted to the World Bank within six months from the end of each fiscal year. In addition, HV financial statements were also audited by independent auditors, with copies of such auditor's reports also submitted to the World Bank. Semiannual interim unaudited financial reports were submitted to the World Bank at the latest 45 days after the end of every half-year. For project implementation purposes, the PIU had opened separate designated bank accounts for the loan proceeds, the grant proceeds, the State Budget proceeds (line ministry), HV proceeds, respectively, and one account for each participating MWSC. A total of 28 designated accounts were opened, which in itself illustrates the complexity but also the transparency of financial project management.

48. The project's financial statements were prepared on a cash-flow principle, that is, an invoice was verified when received and registered in the document registration module of the accounting system, and expenses were acknowledged only after payment. The statements were prepared in Croatian kuna. The project used the existing accounting principles and procedures of the HVJP detailed in the Financial Manual which had been used in Phase I and was deemed acceptable by the World Bank. The accounting regulation applicable to HV is the regulation on accounting for nonprofit organizations, including the rulebook on accounting and accounting plan of nonprofit organizations. Additional accounting principles and procedures that were applied in the project included the following main assumptions:

- Cash-flow accounting is the basis for recording transactions

- Reporting is in Croatian kuna
- Consolidated interim unaudited financial statements are prepared for all the components, including all donor funds
- The financial statements present all the funds of the Croatian side

49. The World Bank carried out risk-based FM supervision in regular time intervals by reviewing the semiannual project financial statements, audited project annual financial statements, management letters, and corrective measures. During field supervision missions, the World Bank regularly reviewed the project's accounting system and internal control system, arrangements of preparing annual budgets and financial plans and their sufficiency within the fiscal year, management of payments, and financial flows, including the counterpart funds (national co-financing component).

### **Monitoring of Project Results**

50. The key program performance indicator is the percentage of samples from bathing areas in participating municipalities complying with applicable seawater quality standards.

51. The PDO was to improve the provision of efficient and sustainable wastewater services in participating coastal municipalities to reduce the nutrient load entering Croatia's coastal waters from, and pilot innovative wastewater treatment solutions in, the selected municipalities.

52. The indicators used to assess progress were the following:

- Percentage of samples collected in the bathing areas covered by the project
- Percentage of households in participating towns able to connect to wastewater services
- Percentage of wastewater collected that is treated as per applicable legislation
- Performance of participating MWSCs as measured by operating ratio, collection rate, and debt service ratio is above a minimum threshold
- Reduction in nutrient load in municipalities with enhanced nutrient reduction facilities
- Increased knowledge of alternative nutrient reduction wastewater treatment technologies

53. The collection of data began at the start of the subproject and continued throughout project implementation. As part of the subproject proposal, the participating MWSCs submitted baseline data and the estimated target values. Data was collected in parallel with subproject development and each year during subproject implementation through the established benchmarking system. All the indicators monitored during implementation of this project (table 7.7) comply with the final target values or even exceed them, which suggests project success.



Table 7.7.

Indicators*	Unit of Measure	Baseline**	Last Mission	Actual (Current)	End-Target	Comments
			(December. 2015)	(May 2016)		
Percentage of samples from bathing areas in participating towns complying with applicable seawater quality standards	%	98	98	100	100	
Percentage of households in participating cities able to connect to wastewater services (average of subprojects)	%	26	72	83	76	
Percentage of wastewater collected that is treated as per applicable legislation (average of subprojects)	%	10	48	76	71	
Performance of participating MWSCs - operating ratio (expenses/revenues) (average)	Number	1.13	0.78	0.84	< 1	
Performance of participating MWSCs - collection rate (average)	%	76	85	90	86	
Performance of participating MWSCs - debt service ratio (average)	Number	5.61	2	2.2	> 1.5	
GEF: Reduction in pollution and nutrient load in cities with enhanced nutrient reduction wastewater treatment facilities (BoD, N, P)	%	0	0	80	50	
GEF: Increased knowledge of alternative nutrient reduction wastewater treatment technologies	Number	0	1	5	3	
<b>Component 1: Wastewater Investments</b>						

Indicators*	Unit of Measure	Baseline**	Last Mission	Actual (Current)	End-Target	Comments
Volume (mass) of COD pollution load reduction achieved under the project	Tons/Year	0	281	370	130	
Number of sub-loan agreements signed in participating cities	Number	0	22	23	21	
Km of wastewater collection systems constructed	Km	0	162	176	150	
Number of wastewater treatment plants commissioned	Number	0	8	19	18	
Number of submarine outfalls constructed	Number	0	6	13	12	
Number of enhanced nutrient reduction plants commissioned	Number	0	0	2(3)	3	Vrlika, Kaštelir, Prud
<b>Component 2: Institutional Strengthening</b>						
HV and municipalities prepare projects to EU for financing	Number	0	0	(5)	4	Still under preparation
Monitoring and benchmarking system is designed and operational	Text	No	Yes	Yes	Yes	
<b>Component 3: Seawater Quality Monitoring</b>						
Number of participating cities in which seawater quality monitoring system is operational and baseline indicators in place prior to completion of construction	Number	5	7	23	22	

54. The conclusions resulting from the experience in implementing Phase I and in particular Phase II can be summarized as follows:

- The financing package which requires a local contribution to the capital project investment and loan repayment (national component) has proven successful and it would be good to apply or adjust it in similar projects cofinanced by the EU. The system established on the basis of water sold and revenue from the development fee has defined investment size, that is, the total annual revenue from the development fee had to enable unhindered construction (in the construction phase) and later repayment of annual annuities (in the repayment phase). In that way, the subprojects became self-sustainable throughout project duration.

- Project implementation through the PIU has proven to be very efficient. During Phase II, the PIU operated as part of HV, unlike in Phase I, when a subsidiary company had been established. Both of these methods had their strengths and weaknesses. A small number of people (engineers, an economist, a lawyer, and other staff) managed to handle a large number of contracts in such a way that they prepared them from the very beginning through preliminary and detailed designs, environmental impact studies and feasibility studies, and later construction. In that way, those managing a subproject had a full picture of the facility to be built from the very beginning, which eventually led to seeing the big picture, being aware of the problems, and faster and better project implementation.
- Procurement was done in such a way that HV acted as a commission agent. With its knowledge and experience, it provided assistance to the MWSCs (especially the smaller ones) which often lacked expert staff capable of fulfilling the set tasks and obtaining a finished and functional facility.
- The system of an agent bank that was introduced in Phase II proved to be highly efficient. The MWSCs concluded a contract for the collection of the fee for financing construction and later sub-loan repayment with the agent bank. They thus committed to a standing order and transfer of the collected development fee to the account opened for the implementation of the specific subproject. In that way, the funds of individual subprojects were kept separate, which made the entire project transparent. In addition to that, a discipline in the transfer of collected funds was introduced, which automatically minimized the risk of nonpayment to the contractors. In that way, regular repayment of annuities is not compromised.
- The safeguards concerning land acquisition, environmental protection, and physical cultural heritage were managed in a highly satisfactory manner owing to appropriate regulations in Croatia. During Phase II, environmental monitoring was improved and compliance was ensured to better define the baseline for future monitoring.
- Such a method of project implementation in every segment, such as preparation, implementation, and monitoring, has proved to be a highly efficient method of implementing capital investments. As such, its application and adjustment in the future activities, where possible, would be preferred.

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

Not applicable

## **Annex 9. List of Supporting Documents**

1. Project Appraisal Document, Mission Aide Memoires, Management Letters, Borrower Letters, and Project Implementation Status Reports.
2. Loan Agreements, Financial management Supervision Reports, Project Management and Audit Reports.
3. Benchmarking Project Report
4. Quarterly Progress Reports
5. World Bank Group's Croatia Country Partnership Strategy (CPS) FY09-12
6. World Bank Group's Croatia Country Partnership Strategy (CPS) FY 2014-2017
7. Project reports prepared by PIU – especially those at December 2015 and June 2016.

# CROATIA COASTAL CITIES POLLUTION CONTROL

- PROJECT CITY
- COUNTY (ŽUPANIJA) CAPITAL
- ★ NATIONAL CAPITAL
- COUNTY (ŽUPANIJA) BOUNDARIES
- INTERNATIONAL BOUNDARIES



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