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Report No: ICR00003530

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-12620 TF-91967 TF-91969)

ON A

GLOBAL ENVIRONMENT FACILITY TRUST FUND GRANT

IN THE AMOUNT OF US\$6.0 MILLION

TO BOSNIA AND HERZEGOVINA

AND

IN THE AMOUNT OF US\$2.0 MILLION

TO THE REPUBLIC OF CROATIA

FOR

NERETVA AND TREBISNJICA MANAGEMENT PROJECT

December 29, 2015

Global Water Practice GWADR
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective 12/08/2015)

Bosnia Herzegovina

Currency Unit = BAM

1.00 = US\$ 0.5525

US\$ 1.00 = 1.81 BAM

Croatia

Currency Unit = HRK

1.00 = US\$ 0.1416

US\$ 1.00 = 7.06 HRK

FISCAL YEAR 2016

ABBREVIATIONS AND ACRONYMS

ADRICOSM	Integrated Coastal Areas and River Basin Management System
APL	Adjustable Program Lending
Bcm	Billion Cubic Meters
BEEPS	Business Environment and Enterprise Performance Survey
BiH	Bosnia and Herzegovina
BOD	Biological Oxygen Demand
BSAP	Biodiversity Strategic Action Plan (Croatia)
CARDS	Community Assistance for Reconstruction, Development and Stabilization
CAS	Country Assistance Strategy
CC	Coordination Committee
CFMS	Country Financial Management Strategy
CIS	Common Implementation Strategy
CPPR	Country Project Portfolio Review
CQS	Consultants' Qualifications Selection
CSA	National Capacity Self-Assessment
DA	Designated Accounts
EA	Environmental Assessment
ECA	Europe and Central Asia
ECSEE	Energy Community of South East Europe
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMP	Environmental Management Plan
EU	European Union
EWS	Early Warning System
FAO	Food and Agriculture Organization (UN)

FBiH	Federation of Bosnia and Herzegovina
FBS	Fixed Budget
FM	Financial Management
FMA	Financial Management Arrangements
FMAWMF	Federation Ministry of Agriculture, Water Management and Forestry
FMET	Federation Ministry of Environment and Tourism
GDP	Gross Domestic Product
GEF	Global Environment Facility
GEF4 IW	Global Environment Facility 4th Replenishment for the International Waters
GIS	Global Information System
GNI	Gross National Income
GOC	Government of Croatia
GP	Good Practice
GWP	Global Water Partnership
Ha	Hectare
HPP	Hydropower Plant
HR	Croatia
HV	Hrvatske Vode (Croatian Waters)
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICM	Integrated Coastal Management
IDA	International Development Association
IF	Investment Fund
IFR	Interim Financial Report
IMF	International Monetary Fund
ISA	International Standards on Auditing
ISWC	Interstate Water Committee
IUCN	The World Conservation Union
IW LEARN	International Waters Learning Exchange and Resource Network (of the Global Environment Facility)
IWRM	Integrated Water Resources Management
KEC	Karst Ecosystem Conservation
Kg	Kilogram
Km	Kilometer
Km ²	Square Kilometer
LCS	Least-Cost Selection
LME	Large Marine Ecosystem
M&E	Monitoring and evaluation
MAFRD	Ministry of Agriculture, Fisheries and Rural Development
MAFWM	Ministry of Agriculture, Forestry and Water Management/RS
MAP	Mediterranean Action Plan
MED TDA	Transboundary Diagnostic Analysis for the Mediterranean Sea
MFT	State Ministry of Finance and Treasury/BiH
MOC	Ministry of Culture
MOF	Ministry of Finance
MOFTER	Ministry of Foreign Trade and Economic Relations/BiH
MORDFWM	Ministry of Regional Development, Forestry and Water Management
MOU	Memorandum of Understanding

MSPCEE	Ministry of Spatial Planning, Civil Engineering and Environment/RS
NAP	National Action Plan
NCB	National Competitive Bidding
NEAP	National Environmental Action Plan
NGO	Nongovernmental organization
NTMP	Neretva and Trebisnjica Management Project
NTRB	Neretva and Trebisnjica River Basin
O&M	Operation and Maintenance
OM	Operations Manual
PAD	Project Appraisal Document
PDO	Project Development Objective
PEs	Public Enterprises
PEs	Public Enterprises
PEs	Public Enterprises
PFM	Public Financial Management
PFS	Project Financial Statement
PIT	Project Implementation Team
PIU	Project Implementation Unit
PMT	Project Management Team
PRSP	Poverty Reduction Strategy Paper
QCBS	Quality and Cost-Based Selection
RBMP	River Basin Management Plan
REA	Rapid Economic Assessment
REC	Regional Environmental Center
REReP	Regional Environmental Reconstruction Program
RFP	Request for Proposal
RS	Republika Srpska
SA	Social Assessment
SAP BIO	Strategic Action Program for the Conservation of Mediterranean Marine and Coastal Biological Diversity
SAP MED	Strategic Action Program to Address Pollution from Land-Based Activities in the Mediterranean Region
SBD	Standard Bidding Document
SC	Steering Committee
SEE	Southeastern Europe
SGP	Small Grant Program
SOE	Statement of Expenditures
SSCA	Small Scale Community Agriculture Project
TA	Technical Assistance
TAG	Technical Advisory Group
TDA-SAP	Transboundary Diagnostic Analysis and a Strategic Action Program
TORs	Terms of Reference
TTI	Trade and Transport Integration Project
TWG	Technical Working Group
UN	United Nations
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WB	World Bank

WFD	Water Framework Directive 2000/60/EC
WIS	Water Information System
WQPP	Water Quality Protection Project
WSSD POI 2002	Johannesburg Political Declaration on Sustainable Development and Plan of Implementation of the World Summit on Sustainable Development
WWF	World Wide Fund
WWT	Wastewater Treatment
WWTP	Wastewater Treatment Plant

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**BOSNIA AND HERZEGOVINA
REPUBLIC OF CROATIA
NERETVA AND TREBISNJICA MANAGEMENT PROJECT**

CONTENTS

Data Sheet

- A. Basic Information
- B. Key Dates
- C. Rating Summary
- D. Sector and Theme Codes
- E. Bank Staff
- F. Results Framework Analysis
- G. Ratings of Project Performance in ISRs
- H. Restructuring
- I. Disbursement Graph

1. Project Context, Global Environment Objectives and Design.....	1
2. Key Factors Affecting Implementation and Outcomes	4
3. Assessment of Outcomes	12
4. Assessment of Risk to Development Outcome.....	21
5. Assessment of Bank and Borrower Performance	21
6. Lessons Learned.....	24
7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners.....	25
Annex 1. Project Costs and Financing.....	26
Annex 2. Outputs by Component.....	28
Annex 3. Economic and Financial Analysis	54
Annex 4. Bank Lending and Implementation Support/Supervision Processes.....	69
Annex 5. Beneficiary Survey Results	71
Annex 6. Stakeholder Workshop Report and Results.....	72
Annex 7. Summary of Borrowers' ICR Reports and Comments on Draft ICR	73
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders	93
Annex 9. List of Supporting Documents	94
Annex 10. Project Implementation Arrangements Chart.....	95
Annex 11. Project Photos.....	96
MAP IBRD 35303	

Data Sheet

A. Basic Information			
Country:	South Eastern Europe and Balkans	Project Name:	Neretva and Trebisnjica River Basin Management Project (BiH/Croatia)
Project ID:	P084608	L/C/TF Number(s):	TF-12620,TF-91967,TF-91969
ICR Date:	12/29/2015	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	BIH AND REPUBLIC OF CROATIA
Original Total Commitment:	USD 18.43M	Disbursed Amount:	USD 10.40M
Revised Amount:	USD 10.07M		
Environmental Category: B		Global Focal Area: M	
Implementing Agencies:			
FBiH Ministry of Environment and Tourism			
FBiH Ministry of Agriculture, Water Management and Forestry			
RS Ministry of Agriculture, Forestry and Water Management			
Ministry of Agriculture			
Ministry of Environment and Nature Protection			
RS Ministry of Spatial Planning, Civil Engineering and Ecology			
Ministry of Foreign Trade and Economic Relations of BiH			
Cofinanciers and Other External Partners:			
Delegation to the European Union to Bosnia and Herzegovina			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	04/19/2004	Effectiveness:	01/07/2009	03/06/2009
Appraisal:	12/04/2006	Restructuring(s):		
Approval:	05/29/2008	Mid-term Review:	10/24/2011	10/24/2011
		Closing:	12/31/2013	06/30/2015

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Moderately Satisfactory
Risk to Global Environment Outcome	Moderate
Bank Performance:	Moderately Satisfactory

Borrower Performance:	Moderately Satisfactory
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C.2 Detailed Ratings of Bank and Borrower Performance

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

C.3 Quality at Entry and Implementation Performance Indicators

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

	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	11	11
General water, sanitation and flood protection sector	58	58
Other social services	5	5
Wastewater Collection and Transportation	13	13
Wastewater Treatment and Disposal	13	13
Theme Code (as % of total Bank financing)		
Biodiversity	14	14
Environmental policies and institutions	14	14
Land administration and management	14	14
Pollution management and environmental health	29	29
Water resource management	29	29

E. Bank Staff

Positions	At ICR	At Approval
Vice President:	Cyril E Muller	Shigeo Katsu
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F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

The development objective of the project is to provide mechanisms for the efficient and equitable water allocation amongst the NTRB users at the trans-boundary level and for enhancing the basin ecosystems and biodiversity through improved water resource management.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Increased interstate cooperation and capacity for transboundary water resource management: Institution and capacity building			
Value (quantitative or Qualitative)	Some capacity exists through Interstate Water Committee (ISWC)	Annual meetings and training; Transboundary River Basin Management (TRBM) Plan completed; and comprehensive hydrological measurement and monitoring program, linked to a transboundary water information system, in place	No revision	Five annual ISWC meetings, six semi-annual meetings of Sub-CAS basin, 28 team meetings, seven training workshops, two study tours conducted; TRBM Framework completed & adopted; hydrological measurement & monitoring program completed and in place
Date achieved	01/01/2008	01/31/2013		06/30/2015
Comments (incl. % achievement)	Target fully achieved. Both countries stressed that this is the major project achievement (see the details in Section 3.2 and Annex 2 of ICR).			

Indicator 2:	Improved maintenance of environmental flows and improved ecosystem health and biodiversity in the basin			
Value (quantitative or Qualitative)	Old requirements exist on water quality and flows; Poor management of wetland (quality and quantity); and no plans implemented for restoration	Environmental water flows maintained; improved pollutants processing and reduced outflow; and protected Management Plan prepared for 5 areas	No revision	Minimal Environmental Flow Study completed, adopted and in use; Water quality improved mainly as a result of improved pollutants processing and reduced outflow; and Management Plans for five protected areas in Croatia and one in BiH completed and in use
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	The expected result targets were fully achieved (100% of PAD targets, see the details in Section 3.2 and Annex 2 of ICR).			
Indicator 3:	Reduction of water nutrients and other pollution from municipal and industrial sources in selected municipalities			
Value (quantitative or Qualitative)	Wastewater treatment plants need improvements; and effluent water quality was poor and sub-standard	Improved quality of discharge of wastewater effluents of municipal and industrial pollutants to international waterways in project sites	No revision	All five targeted WWTPs were rehabilitated and constructed, with improved pollutants processing and reduced pollution in the basin. Additional EU funding was secured to increase the benefits of rehabilitation of WWTPs.
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Target fully achieved and exceeded (see the details for improved quality of discharge of wastewater effluents in the intermediate outcome indicators below).			
Indicator 4:	Reduction of saline water intrusion: as a result of implementation of a Pilot Scheme in Neretva Delta			
Value (quantitative or Qualitative)	0/ha, some salt intrusion in Neretva Delta	Development of solutions and implementation of pilot scheme to reduce salt	No Revision	Pilot Scheme was dropped, instead hydrological network equipment to monitor the

		intrusion in Neretva Delta (pilot scheme of 400 ha)		situation in the Neretva Delta (ND) were procured and operational
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Target not achieved as Pilot Scheme not constructed/implemented during the project duration due to unforeseen unfortunate circumstances. Hydrological network equipment to monitor water quality and quantity parameters procured and in operation.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1:	Adoption of transboundary River Basin Management Plan (TRBMP)			
Value (quantitative or Qualitative)	No available plan	Preparation and adoption of the Plan by Coordination Committees (CC)	No revision	The framework for management in transboundary Neretva and Trebišnjica river basin was prepared and adopted by both CC (RH and BiH), with three completed RBMP in respective countries.
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Target fully achieved. Both countries stressed that this is the major project achievement. Framework for transboundary management of the River Basin in place			
Indicator 2:	Comprehensive hydrological measurement and monitoring program, linked to a transboundary water information system, in place			
Value (quantitative or Qualitative)	Old hydrological data available on water flows and water quality	Updating of data, M&E and dissemination	No revision	Date/M&E system updated & disseminated; new application adopted for collection and exchange of agreed data from hydrological and meteorological stations, reservoirs linked to hydrological measurements & water monitoring program
Date achieved	01/01/2008	12/31/2013		06/30/2015

Comments (incl. % achievement)	Result targets fully achieved. Extra budget was allocated to procure additional M&E equipment and improved the water measurements for all M&E stations.			
Indicator 3:	Environmental water flow requirements established and maintained through use of Mathematical models for water management decision-making.			
Value (quantitative or Qualitative)	Old requirements exist on water quality and flows	Preparation of the model and environmental water flows maintained	No revision	Mathematical models completed for optimal management of HPPs multi-purpose reservoirs and environmental water flow requirements established and maintained
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Result targets fully achieved.			
Indicator 4:	Improved management of wetlands to better process pollutants, to reduce outflow to international waterways, and improve ecosystem health			
Value (quantitative or Qualitative)	Few samples are currently collected on water flow and quality	Improved Pollutants processing and reduced outflow	No revision	Pollutants processing and reduction of outflow improved
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Result targets fully achieved and exceeded. See the detailed information in section 3.2 and Annex 2 of ICR.			
Indicator 5:	Restoration of water management infrastructure, including wetlands, river banks rehabilitation along Krupa River			
Value (quantitative or Qualitative)	Poor management of wetlands (quality and quantity); and no plans implemented for restoration	Implementation of plans	No revision	River banks and wetlands rehabilitation works completed along Krupa River; key database/indicators for biodiversity in Hutovo Blato Nature Park in place; wetlands and spatial management plans prepared and adopted; and wetlands restored after fire
Date achieved	12/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Result targets fully achieved and exceeded. See the detailed information in section 3.2 and Annex 2 of ICR.			

achievement)				
Indicator 6:	Development of comprehensive plan for management of HPP reservoirs			
Value (quantitative or Qualitative)	No management plan	Improved management of reservoirs	No revision	The Dynamic reservoir operation model in place; comprehensive management plan of HPP reservoirs developed and in place; and improved reservoir management
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	PAD result targets fully achieved.			
Indicator 7:	Area developed under the pilot scheme to mitigate salt intrusion in Neretva Delta (total area 400 ha)			
Value (quantitative or Qualitative)	0/ha	400 ha completed. Establish M&E to monitor sustainability and replicability	No revisions	0/ha
Date achieved	12/31/2013	01/31/2013		06/30/2015
Comments (incl. % achievement)	The pilot was not implemented and the funds were reallocated to the water monitoring stations/network (monitoring, also water salinity), as requested by the clients and agreed by the Bank, as discussed in para. 25 of ICR.			
Indicator 8:	Reduced discharge through wastewater effluents of municipal and industrial pollutants to international waterways in selected municipalities			
Value (quantitative or Qualitative)	Wastewater treatment plants need improvements	Construction completed/O&M	No revision	Five targeted WWTPs rehabilitated/constructed and additional EU funding secured to increase the benefits of WWTPs' rehabilitation; M&E measurements and database established in each WWTP; improved pollutants processing and reduced pollution in the basin
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	The PAD result targets were fully achieved and exceeded. The details are reflected in section 3.2 and Annex 2 of ICR.			

Indicator 9:	Effluent BOD reduced (avg. mg/l)			
Value (quantitative or Qualitative)	155	20	No revision	6.4 – 8 for all four WWTPs, except the Konjic WWTP which was just completed by the project close, and have not reached the target yet (25* mg/l)
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Achieved and exceeded PAD result targets in all WWTPs (250-300% of PAD targets), except one WWTP completed just by the project closing in Konjic, which reduced BOD effluent from 155 to 25 (avg. mg/l).			
Indicator 10:	Effluent N reduced (avg. mg/l)			
Value (quantitative or Qualitative)	25	15	No revision	3.1 – 15
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Fully achieved and exceeded the PAD result targets in all WWTPs (100 - 480% of the expected targets)			
Indicator 11:	Nutrient load reduction (Nitrogen (N)) achieved under project (Tones/year)			
Value (quantitative or Qualitative)	0.43	N.A.	This indicator was added during project implementation	60.97
Date achieved	01/01/2008	12/31/2013	10/31/2010	10/31/2010
Comments (incl. % achievement)	No original target value available. Volume of N pollution load reduced from 0.43t/yr to 60.9t/yr based on the monitoring data collected from all waste treatment.			
Indicator 12:	Effluent P reduced (avg. mg/l)			
Value (quantitative or Qualitative)	8	2	No revision	1.6 - 2
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Fully achieved and exceeded the expected result targets for all WWTPs (100 – 125% of the expected targets).			
Indicator 13:	Industrial pollution Cr reduced (avg. mg/l)			
Value (quantitative or Qualitative)	200	0.5	No revision	0.44-0.47
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Fully achieved and exceeded the PAD result targets for all WWTPs (106 – 114% of the expected targets).			
Indicator 14:	Volume (mass) of COD pollution load reduction (Tones/year)			

Value (quantitative or Qualitative)	10.01t/year	N.A.	This indicator was added during the project implementation	917.83 t/year
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Indicator added during project implementation. Original target value not available. Volume of COD pollution load decreased through WWTPs significantly, from 10.01t/year to 917.8t/year based on data collected from all rehabilitated WWTPs.			
Indicator 15:	Increased number of civil society activities that engage stakeholders in River Basin management planning and improved use of water resources: number of workshops			
Value (quantitative or Qualitative)	None	5	No revision	5 workshops and 6 newsletter issued
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Achieved 100% of the PAD targets.			
Indicator 16:	Number of Communities' meeting to discuss RBMP			
Value (quantitative or Qualitative)	None	25 communities	No revision	27 communities
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Achieved 108% of the PAD targets.			
Indicator 17:	Number of Small grants for NGOs for activities related to project objectives			
Value (quantitative or Qualitative)	None	30	No revision	30
Date achieved	01/01/2008	12/31/2013		06/30/2015
Comments (incl. % achievement)	Achieved 100% of the PAD targets.			

G. Ratings of Project Performance in ISRs

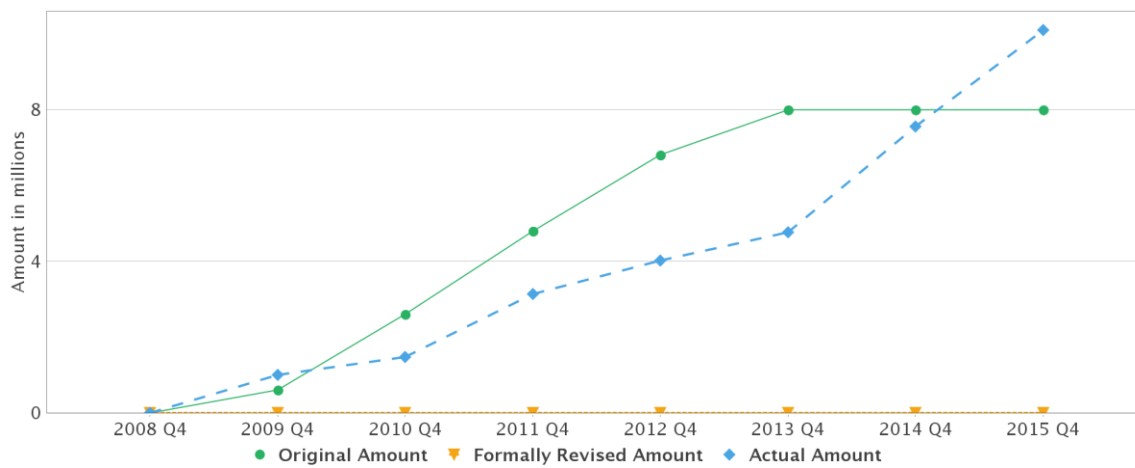
No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	06/15/2009	Moderately Satisfactory	Moderately Satisfactory	1.00
2	01/07/2010	Satisfactory	Moderately Satisfactory	1.40
3	06/29/2010	Satisfactory	Moderately Satisfactory	1.47
4	04/30/2011	Satisfactory	Satisfactory	2.73
5	08/31/2011	Satisfactory	Satisfactory	3.43
6	05/13/2012	Satisfactory	Moderately Satisfactory	3.85

7	12/30/2012	Moderately Unsatisfactory	Moderately Unsatisfactory	4.39
8	06/25/2013	Moderately Satisfactory	Satisfactory	4.76
9	01/04/2014	Moderately Satisfactory	Satisfactory	5.13
10	07/02/2014	Moderately Satisfactory	Moderately Satisfactory	6.08
11	12/18/2014	Moderately Satisfactory	Moderately Satisfactory	6.92
12	06/06/2015	Moderately Satisfactory	Moderately Satisfactory	7.62

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

1.1 Context at Appraisal

1. The Neretva and Trebisnjica River Basin (NTRB) is a transboundary basin shared by Bosnia and Herzegovina (BiH) and Croatia covering approximately 10,000 km². The Neretva and Trebisnjica rivers are hydraulically and naturally connected. They are major resources for BiH and play an important role in neighboring Croatia and Montenegro. Both rivers are crucial for the local economy as they provide transport, recreation, fisheries, tourism, drinking water, irrigation, and energy production. Winding 225 km past towns and villages in BiH, Neretva flows into the Adriatic Sea on the Croatian Coast, building a delta with the largest Mediterranean wetlands in the eastern Adriatic, so rich that they are listed under the Ramsar Convention as internationally essential. Thanks to its exceptional biodiversity, the Hutovo Blato nature park also is internationally recognized as a Ramsar Wetland of high importance. The park area ensures the purification of its water, feeding a unique karstic area with cleaner water on its way to Croatia. It also plays a vital role in preventing salinization of underground water in the lower catchment and providing water to the downstream area.

2. The Neretva and Trebisnjica Management Project (NTMP) was the first project to receive financing from the World Bank-Global Environment Facility (GEF) Investment Fund for the Mediterranean Sea Large Marine Ecosystem (LME) Partnership. The main objective of the LME partnership is to assist the recipient countries in implementing top priority pollution reduction, habitat protection measures, and to contribute to reversing the degradation of the Mediterranean LME and its coastal areas through a transboundary dimension for the improved river basin water resource management.

3. The NTMP also conforms to the International Waterways (IW) Strategic Objectives and Strategic Programming for GEF-4. The NTMP fully supports the achievement of the IW Strategic Objective 2 that calls for “a catalytic role in addressing transboundary water concerns by assisting countries to utilize the full range of technical assistance, economic, financial, regulatory and institutional.”

1.2 Original Global Environment Objectives (GEO) and Key Indicators

4. The development objective of the project (PDO) is to provide mechanisms for the efficient and equitable water allocation amongst the NTRB users at the transboundary level and for enhancing the basin ecosystems and biodiversity through improved water resource management.

Key indicators:

- Increased interstate cooperation and capacity for transboundary water resource management, and application of Integrated Water Resources Management (IWRM) principles;
- Reduction of water nutrients and other pollution from municipal and industrial sources in selected municipalities in the basin;

- Improved maintenance of environmental flows and improve ecosystem health and biodiversity in the basin; and
- Reduction of saltwater intrusion as a result of the implementation of a Pilot Scheme in Neretva Delta.

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

There were no formal revisions of the GEO and key indicators.

1.3 Main Beneficiaries

5. Approximately 430,000 people live in the NTRB (395,000 in BiH and 35,000 in Croatia) and benefitted from the improvement of water resources management and reduced pollution in the Neretva and Trebisnjica basin. Communities in both countries implemented a small grant program contributing to the improved water management and biodiversity conservation in the basin as well as to tourism development.

6. Other beneficiaries were: (i) the governments of BiH and Croatia, whose technical capacities in dealing with water and environmental issues were strengthened, through support to the new Adriatic Basin Authorities in BiH, provided by the existing Interstate Water Committee (ISWC) and a joint Coordination Committee (CC); and (ii) the municipalities of Bileća, Nevesinje and Trebinje (RS); Konjic, Ljubuski, and Ravno (FBiH); Metkovic, Opuzen and Ploče (Croatia); and concerned NGOs.

1.5 Original Components

7. **Component 1: Improved Transboundary Water Resource Management (US\$2.65 million of which GEF US\$2.01 million).** The objective of this component was to improve water resource management capacity in both countries and to strengthen the existing transboundary mechanisms (institutional, technical, and regulatory) and tools for effective water resource management. The component was designed to support both national and interstate institutions for transboundary river basin management and transboundary management tools, including basin-wide measurements, monitoring, modeling, a database management system, and training and capacity building.

8. **Component 2: Improved Management and Use of Wetlands Ecosystems and Biodiversity (US\$3.09 million of which GEF US\$2.25 million).** The objective of this component was to maintain and conserve water-dependent ecosystems and their associated biodiversity in the coastal area of the NTRB, which has been identified in the Transboundary Diagnostic Analysis for the Mediterranean Sea (MED TDA) and SAPs as critical for the health of the Adriatic-Mediterranean ecosystem. This component was designed to finance water infrastructure improvements in both countries, including improved wetlands management and a pilot scheme to address saline water intrusion in Neretva Delta in Croatia; and rehabilitation of small-scale water management infrastructure, such as gates, weirs, riverbanks, and irrigation structures in the two

countries. In addition, since maintaining environmental flow requirements in the river is key to the integrity of the ecosystems, this component also financed improvements to hydropower plant (HPP) operations to accomplish this objective. This activity was linked and contributed to the development of the NTRB IWRM Plan. This Project also supported a flood-control management intervention by improving dam safety equipment of one dam in RS in the NTRB.

9. **Component 3: High-Priority Investments for Water Pollution Control (US\$9.10 million of which GEF US\$2.46 million).** The objective of this component was to reduce water pollution, mainly nutrients, of the NTRB through high-priority investments by low-cost, appropriate wastewater technology improvements in three municipalities, and small improvements of wastewater collection and treatment infrastructure in two other municipalities and one industrial sector in BiH. Each selected site discharges wastewater into a particularly environmentally sensitive area of the NTRB. The municipalities and local industry were supposed to contribute 50 percent of the investment costs. The Project also financed capacity building for monitoring and enforcement of industrial wastewater effluents by developing effluent standards, enforcement guidelines, and training.

10. **Component 4: Public Participation and Management of Project Implementation (US\$2.51 million of which GEF US\$1.28 million).** The objectives of this component were to increase civil society participation in the decision-making process for water resource management, to establish an incentive mechanism for responsible, local-level resource management, and to manage project implementation activities. This component included scientific community involvement; civil society participation including a small grant program; development and maintenance of a website and participation in relevant IW LEARN events; participation in relevant activities of the Regional Component (UNEP) of the Mediterranean Strategic Partnership; and monitoring of projects indicators and evaluation activities.

1.6 Revised Components

There was no formal revision of the Project components.

1.7 Other significant changes

11. The following are the significant changes that occurred during project implementation:

- The original plan was to prepare and implement a pilot irrigation scheme in Neretva Delta. As a pre-requisite, a study on salinization in the Delta, a feasibility study, an environmental impact study and the detailed design were prepared. Unfortunately, the construction could not start on time due to the delays in issuing the environmental permit and obtaining the needed building permit, cost increases, and lack of counterpart funding for the increase. Eventually, the irrigation pilot site was dropped from the project at the counterpart's request (June 2014). Funds were reallocated to the new activities to extend and equip the existing network of surface water and ground water

gauging monitoring stations in the project area and on-line monitoring of water quantity and quality, salinity, flows, etc.

- In BiH, the EU IPA 2010 TF071705 provided EUR 2.0 million to finance the construction and expansion of the sewerage system in the town of Ljubuski. Activities included: (i) rehabilitation of existing and construction of new sewage infrastructure; (ii) connection of new beneficiaries; and (iii) connection with the main collector and wastewater treatment plant. This resulted in an increased 1,000 people benefiting from this WWTP facility, making the total beneficiaries 6,000,000 (see details in Appendix 1 of Annex 2).
- The Project was restructured three times with extensions of a total of 18 months.¹ Additionally, the counterparts requested to restructure the project in order to revise the Results Framework as a result of dropping the Pilot Irrigation Project in Croatia. The formal request was not received on time (received from Croatia on December 2, 2014, and from BiH, on December 10, 2014), while the Grant for Croatia was supposed to close on December 31, 2014.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

12. **Relevance.** Improved water resource management and biodiversity conservation were identified by both Croatia and BiH as key environmental issues in their National Environmental Action Plans (NEAPs). The two National Action Plans (NAPs) for SAP MED implementation that were prepared by BiH and Croatia in 2005 concentrated on the coastal areas and defined priority pollution reduction investments, focusing on nutrients and urban wastewater throughout the NTRB.

13. The BiH CAS and the BiH Poverty Reduction Strategy Paper (PRSP) stressed the importance of improved water resource management for sustainable growth and as a key environmental priority. The Croatia CAS stressed the importance of water for further development of Croatia, and the Croatia Biodiversity Strategic Action Plan (BSAP 2000) identified the Neretva Delta wetlands as the most threatened ecosystem in the country.

14. In the process of EU Accession both governments'/entities' strategies in the water sector were driven by requirements and conditions through a number of directives, in particular the EU Water Framework Directive. Therefore, providing support to comply with those requirements by the Project was considered a priority.

¹ The first extension was for 12 months for BiH Grant No. TF091969 and Croatia No. TF091967 (from December 31, 2013 to December 31, 2014). Second, the closing date was also extended by 12 months for IPA Grant for Ljubuski Sewerage No. TF012620 to enable completion of activities and align the grant closing date with the project closing date (December 31, 2013, to December 31, 2014). The third extension was for 6 months to extend the closing date for BiH Grant No. TF091969 to June 30, 2015.

15. Availability of a significant GEF contribution encouraged other donors to make substantial contributions to the project financing. It is unlikely that these donor contributions would have materialized in the absence of the GEF grant.

16. ***Rationale for World Bank Involvement.*** The rationale for World Bank involvement was strongly linked to its presence and experience in the water sector through a number of projects² that were under implementation and preparation, including the ones financed by the GEF. The relevance of the NTMP was grounded in the intent to complete, complement, and harmonize these initiatives by providing both the overall environmental context and a transboundary dimension. The Bank possesses the convening power which brought the two countries together, helping them to develop good relationships, mutual respect, and recognition of the other's needs.

17. ***Design.*** The NTMP was a complex regional project, addressing sensitive and competing sectors (water and environment) and involving a transboundary river that is shared by two countries. The project design was in line with the global best practices and consistent with the two governments' strategies. The PDO and project design responded to government priorities and were consistent with the CAS. All project components were well designed towards achievement of PDO. The project design benefited from the Bank experience in working on transboundary water operations, reducing the development risks by improving interstate cooperation in transboundary water management during project preparation³ and bringing water resource management and quality standards up to EU regulatory standards.

18. ***Knowledge basis.*** During the project preparation several studies were prepared to inform the project design: (i) Transboundary Assessment of the Water Dependent Ecosystems and Water Resources Management in the NTRB; (ii) Water and Land Management Assessment in the RB; (iii) Social Assessment; (iv) Rapid Economic Assessment; (v) Environmental Impact Assessment; and (vi) Pre-Feasibility Studies for Konjic, Bileca, Ljubuski, and Konjic Industrial WWTPs.

19. ***Risk Analysis.*** Risk assessment at appraisal correctly identified risks as high, and mitigation measures were appropriately built into the project or addressed during the implementation. The detailed preparation and the World Bank proactive implementation support reduced the risk and enabled adopting mitigation measures when needed. Also, the ISWC that was established under the 1996 treaty between the two countries played a

² In BiH, the project was designed in coordination with the BiH GEF Water Quality Protection Project (WQPP) 2004, which financed a wastewater strategy for the BiH part of the Neretva River. The NTMP also benefited the ongoing Energy Community of South East Europe (ECSEE) and the Electric Power Reconstruction 3 Project in BiH, which financed repairs to dams within the NTRB. In Croatia, the project had direct linkages to three World Bank projects: The Karst Ecosystem Conservation Project (financed by GEF), the Coastal Cities Water Pollution Control Project, and the Trade and Transport Integration Project (TTI).

³ World Bank work on the Nile Initiative and on Central Asia transboundary water resources in Syr Darya and Amu Darya rivers.

significant role in project preparation and implementation which reduced the risk and ensured transboundary cooperation.

20. **Readiness.** An analysis of the project implementation readiness indicated that the project was ready for implementation. A comprehensive feasibility study and detailed cost estimates were prepared as well as the social, environmental, FM, and procurement assessments. Draft terms of reference for the river basin management plan were also prepared as were the preliminary designs for the planned WWTPs facilities.

21. The PCN was cleared in 2004, but appraisal was not completed until 2006, and project approval occurred only in 2008. Preparation took a long time because of the nature of the project: being a transboundary water project involving two countries (Croatia and BiH), and two entities in BiH (RS and FBiH). In addition, internal procedures, guidelines and agreement on the cooperation between both countries including a Memorandum of Understanding (MOU) to implement the joint activities under the project required an agreement of all parties. The project was declared effective on March 3, 2009. After a slow start in 2009, during which the internal procedures were further developed and agreed⁴ bilaterally, as well as major TORs finalized, project implementation took off in full speed in 2010.

2.2 Implementation

22. Overall: (i) the project demonstrated a flexible and programmatic approach that allowed interventions to adapt to the changing realities on the ground, to the interventions of other donors (EU), and to local communities' needs through a small grant program; and (ii) complexity of the design necessitated commensurate implementation arrangements (one PMT and three PITs) as can be seen in Annex 10⁵.

23. The Mid-Term Review (MTR) was carried out in October 2011 as planned. At that stage, no major changes were foreseen, although it was clear that there were delays in the implementation of some of the project activities, including delays in implementing the Pilot Irrigation Scheme in Croatia, and the construction of WWTP in Konjic, Ljubuski.

⁴ Regional joint activities on river basin management, optimizing hydro-reservoir management for environmental flows and software for data exchange required extensive consultations between the countries internally as well as with consultants. Feasibility studies for the rehabilitation/construction of WWTPs and arrangements for co-financing for various project activities were time-consuming.

⁵ The overall project implementation responsibilities under the Project were as follows:

- In BiH, the Ministry of Foreign Trade and Economic Relations of BiH;
- In FBiH, the Ministry of Agriculture, Water Management and Forestry, and the Ministry of Environment and Tourism
- In RS, the Ministry of Agriculture, Forestry and Water Management, and the Ministry of Spatial Planning, Civil Engineering and Ecology; and
- In Croatia, the Ministry of Regional Development, Forestry and Water Management, in cooperation with the Ministry of Environmental Protection, Physical Planning, and Construction, and the Ministry of Culture.

Disbursements lagged behind due to the delay in implementing project activities. Yet, the disbursement profile was not formally revised to account for these delays.

24. The NTMP leveraged a Euro 2.0 million grant from the EU to carry out additional works on the Ljubuski wastewater network and expand the benefits of wastewater treatment in that municipality. Although implementation was somewhat delayed due to late grant effectiveness, the result achieved at the end was remarkable. This cooperation could serve as a model of donors working together in synergy and increasing project benefits (refer to Appendix 1 of Annex 2).

25. The Pilot Irrigation Scheme (original estimated cost of US\$1.2 million) was a Sub-component under Component 2 and was associated with the 4th outcome indicator “*Reduction of saline water intrusion as a result of the implementation of a Pilot Scheme in Neretva Delta.*” Initially, it should have covered 400 ha. Yet, due to the estimated cost increase and inability of Croatian Government to secure additional co-financing, it was reduced to 100 ha. The implementation of the Pilot faced several difficulties mainly: (i) NGOs filed a complaint to the Croatian Administrative Court regarding the acceptability of the Environmental Impact Study for the Lower Neretva Irrigation Project. Consequently, the responsible Ministry failed to meet the statutory deadline to issue the required permit, which was eventually issued after a period of one year, i.e. in February 2013; and (ii) when the application for a building permit was submitted, the application was rejected in May 2014, since the site of the pumping station was contested by a private owner. However, the court determined that the pumping station plot lies on the water domain in the ownership of the Republic of Croatia. Since the Grant proceeds were available only until the end of 2014, the NTMP Implementation Team requested to drop this sub-project. All documents were handed over to HV’s Unit for Implementation of the National Program of Irrigation and Land and Water Management, which has taken further actions required for the implementation of this project, likely to be financed by the EU. After dropping the Pilot, the funds earmarked for the construction of the irrigation system were reallocated. The Bank approved financing of activities related to the procurement of works and equipment for groundwater and surface water monitoring and equipment for the Science Museum in Metković.

26. The Pilot Irrigation was supposed to rehabilitate a part of an existing state irrigation scheme (during the socialist era), and it could not be foreseen during project preparation that the rehabilitation would be contested on environmental grounds and due to landownership disputes. However, when it became clear that implementation of the Pilot was not possible within the project period, there was no revision or restructuring of the project to remedy this shortcoming or revise the outcome and intermediate indicators accordingly.

27. Also, the following small changes in relation to the original design were introduced: (i) Neretva Delta Bird Museum (Croatia): since the town of Metković (Croatia) financed the museum’s rehabilitation and a permanent display using their own funds, the project financed the furniture, IT, and other equipment for the multimedia room used for lectures, workshops, and periodic displays; and (ii) Restoration of Krupa River: the Agency for

Watershed of Adriatic Sea Mostar undertook the restoration of the Krupa River banks using its own funds.

28. Some activities were added, including: (i) the GEF Tracking Tool for biodiversity; (ii) a Post-Implementation Impact Assessment of NTMP; (iii) EU financing in support of the construction and expansion of the sewerage system in the town of Ljubuski; (iv) activities that were urgently needed to remove debris, clear drainage channels, conduct repairs to infrastructure, and provide feeding opportunities to birds as a result of a serious forestry fire in Hutovo Blato National Park; (v) equipping existing network of surface and ground gauging stations (on-line monitoring of water quantity, quality, salinity, and flows) and weather station in Croatia using the funds reallocated from the Pilot Irrigation Scheme; and (vi) using savings to co-finance the expansion of the 2nd phase of the sewage system in Bileca (RS). These additions showed that the project design was flexible to allow for changes to be included under the project and that the Bank Supervision team was proactive and responded in a timely and efficient manner to the urgent actions, like the restoration of the Hutovo Blato after the fire destruction.

29. **Completion.** Although the NTMP was a complex project with complicated implementation arrangements, most of its activities were implemented successfully as agreed and outlined in the Project Operations Manual (POM), as well as the Small Grants Manual. Project implementation lasted 18 months longer than originally planned for the following reasons: (i) the project was a regional project with two countries BiH and Croatia, two entities in BiH, but also involved the canton/county level as well as several municipalities. The project was implemented by four implementing units, while coordination and monitoring at transboundary level was by ISWC and CC; therefore additional time was needed for internal agreements and arrangements; (ii) regional joint activities on river basin management, optimization of work of hydro reservoirs, minimal environmental flows and software for data exchange required extensive consultations between the countries and internally; (iii) delay in construction of two of the five WWTPs under this Project since selection of the best affordable technology was not easy and took time, as did the formalizing of arrangements on local co-financing; and (iv) securing and managing the co-financing by EU took additional time.

30. NTMP implementation could have been rated fully satisfactory if certain activities had not been dropped, like the Pilot Irrigation, or delayed, like the construction of some of the WWTPs that resulted in trial runs late in the project implementation period.

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

31. **Design.** A common framework for M&E was developed and put in place to monitor progress toward the PDO/GEO, and it was included in the regular progress reports. The design of M&E framework was generally adequate and appropriate. However, some of the indicators could have been more specific, especially the outcome indicator *“Improved maintenance of environmental flows and improved ecosystems and natural resource management in the basin.”* This indicator should have been more specific and quantitative, in order to capture the relevant and measurable results achieved under different Project

components. Two intermediate indicators were added during project implementation: COD pollution load reduction and nitrogen load reduction (N) which are usually used to measure the reduction of pollution in river water.

32. **Implementation of the M&E framework.** Although there were difficulties in collecting data and providing the required information for the Results Framework at the project start, the process was gradually improved and all required indicators were collected and recorded. Thus, implementation of the M&E framework can be considered adequate and the PMT and PITs, after experiencing initial difficulties, did a good job in monitoring project progress and collecting data for updating the framework. At the end of the Project, the Result Framework/Monitoring Indicators were updated and the final version was presented in the Project Impact Assessment (Annex 2). However, this M&E framework was not adjusted to account for dropping the Pilot Irrigation intervention, since no restructuring was processed to reflect that. Most of the major indicators were achieved and some were exceeded, based on the expected targets identified and presented in the M&E indicator table of the Results Framework in PAD.

33. **Utilization.** Data was evaluated and used to inform decision-making and for resource allocation, such as using some of the savings to expand the work on WWTPs, responding to the fire damage in Hutovo Blato, and allocating the funds of the Pilot to procure hydrological network equipment. A new application for an automatic collection and exchange of an agreed set of data from hydrological/meteorological stations and reservoirs and their data linked to a transboundary water information system was completed. A joint website is now operational where all relevant hydrographic and water quality data are being posted and can be used to monitor and inform the two countries in real time, which is essential for the management of the basin and making timely decisions for flood protection in particular. Furthermore, and as per the requirements of the GEF, the International Waters Tracking Tool was prepared and updated at MTR stage and project completion.

2.4 Safeguard and Fiduciary Compliance

34. **Social Aspects.** The project did not trigger OP 4.12 (Involuntary Resettlement). None of the project sites did have land acquisition or resettlement issues; all sites involved were in compliance with OP 4.12. In terms of social benefits, in the discussions held with the mayors and local officials in the municipalities visited, all confirmed the high social value of the improvements made in wastewater collection, treatment, and disposal in their respective municipalities.

35. **Environment Aspects.** Safeguard policies triggered for this Project were OP/BP/GP 4.01, Environmental Assessment; OP&BP 4.04, Natural Habitats; OP&BP 4.37, Safety of Dams; and OP&BP 7.50, Projects on International Waterways. In accordance with World Bank regulations for Category B projects, an Environmental Impact Assessment (EIA) had been prepared and disclosed publicly in 2006. Parts of the EIA make up the Environmental Management Plans (EMPs) for the Bileća, Konjic, Ljubuški, Nevesinje, Hutovo Blato, Vjetrenica and Baćina lake subcomponents, along with substantial baseline data and

detailed analysis of alternatives for each of the subcomponents. An Environmental Impact Assessment (EIA) prepared during project preparation clearly indicated that the project's environmental impact would generally be positive and would lead to: (a) reducing municipal-based and industrial-based organic and other pollutants; (b) enhancing maintenance of environmental ecosystems and natural resource management in the coastal areas of the Neretva and Trebisnjica River Basin; and (c) improving water quality and agriculture efficiency in the basin. These positive impacts are described in section 3.2.

36. ***Financial Management.*** At appraisal the overall FM risk for the project was considered substantial, due to the number of implementing entities involved in the project. However, during project implementation this risk was reduced due to continuous support from the Bank team; thus, FM during implementation was considered satisfactory.

37. Overall, the internal controls while preparing withdrawal applications were adequate; the required supporting documents were in place, properly checked and authorized for payment by respective staff; and, the correct disbursement percentage and exchange rate was used. The project FM systems, including accounting, planning and budgeting, organization and staffing, audit, CF, internal controls and reporting, were assessed during implementation to be adequate and satisfied the Bank's requirements. The PMT, RS PIT, FPIT Mostar and HV PIT were well staffed and well managed for the fiduciary work and had adequate internal controls for the project implementation. Interim un-audited Financial Reports (IFRs) have been submitted regularly to the Bank and were found acceptable.

38. The audit reports for FY 2014 included unqualified audit opinions, and the audit management recommendation letters did not reflect any significant accounting issues or internal control deficiencies. The latest sets of IFRs covered the first half of 2015. All separate sets of reports had been delivered on time and found acceptable to the Bank.

39. ***The Procurement Management Assessment*** showed that the project implementation units had good experience in procurement according to the Bank Procurement Guidelines. The Project managed 114 contracts without major issues. Procurement activities under the Project were rated satisfactory. Although at the initial stage the project moved slowly, including in preparation of procurement and selection of consultants' packages, later on MOFTER staff gained necessary knowledge, resulting in an improved procurement pace and rating. The Procurement Plan was regularly reviewed and updated.

40. Procurement procedures were in accordance with the Bank's procurement and consultants' guidelines. Most of the packages were subject to prior review by the Bank. More than 114 packages were reviewed and cleared as procurement documents, contract awards, and amendments as per the provisions of the Grant Agreement and in line with prior review requirements. There were no unresolved procurement complaints, after detailed responses complainants were satisfied. All contracts were completed and paid on time. Regular training activities offered by the Bank strengthened MOFTER capacities to handle procurement and contract administration.

41. **Disbursement.** Disbursements reached US\$10.01 million from GEF and EU grants, or almost 100 percent, after a four-month grace period. Disbursement was slow at the beginning of project implementation. It picked up but never reached the original projection of disbursements until the end of the project implementation period, always lagging behind the original projected amount. However, there was no formal revision of the disbursement throughout project implementation.

2.5 Post-Completion Operation/Next Phase

42. The first PDO outcome achieved (namely, increased interstate cooperation and capacity for transboundary water resource management) contributes to a great extent to sustainability. Furthermore, government ownership and commitment to transboundary cooperation demonstrated by both BiH and Croatia during the entire Project lifecycle is yet another predictor of the sustainability of the NTRB Project. It should be particularly noted that water policy reforms and water resource management are a crucial part of the EU accession process and for EU membership. As such, sustained support for activities following the completion of the Project is reinforced by prospects for financial sustainability with assistance of EU funds, and both countries recognize that such regional activities are likely to enhance their chances for future EU grants. The financial sustainability of the supported WWTPs is improved by gradually eliminating inefficiencies and increasing revenues to adequately cover O&M costs (for details see Annex 3).

43. The existing capacities in both countries were further strengthened and a solid scientific and technical basis for establishing improved regional cooperation mechanisms was built, further enhancing the sustainability of the joint management efforts over the long-term. Fiscal sustainability of institutions involved with cross-border river basin management was ensured as project funding for technical assistance was gradually reduced over the project lifecycle and fully integrated into the respective budgets.

44. In addition, the public involvement and participation elements of the Project have contributed to building broad-based support and inclusion of the public in the decision-making process, thus contributing to the continued sustainable use of water resources. Also, the relevance of the project objectives and activities attracted funding of local communities, the private sector (the HPP on the Trebisnjica River), and the Konjic industry, proving again that a meticulously planned project which “serves a greater good” may attract the interest of a wider audience than originally intended. Also, the EU is expected to provide funds to continue the reforms and to finance other water infrastructure.

45. The Framework for River Basin Management has been recognized as a pioneering exercise for BiH as well as for the cross-border management of river basins in the Region. The new initiatives to prepare River Basin Management Plans for BiH and for the Sava (e.g., through the EU IPA Capacity Building for Water Management in BiH, 2014-2015; and the projects on the Drina River, now under preparation for implementation in 2016-2019) have stated explicitly that they will build on the experiences gained from the Neretva-Trebisnjica Framework for River Basin Management.

46. Dropping the Pilot on environmental flow sustainability will not have a direct impact on the environmental flows, since the Delta is the lowest reach of the river. If the minimum environmental flows are maintained in the upstream reaches of the river, then the Delta will get more water. In addition, Croatia is planning to restore the old irrigation schemes in the Delta using their agreed water allocations and taking into consideration the environmental flows.

47. In addition, as a result of the positive relation that prevailed between the two countries and the World Bank during the project preparation and implementation. All counterparts in BiH and HR specifically raised the request to identify the opportunities for a follow-up project, preferably as a GEF Grant, and if this were not possible, to explore other financing options.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

48. *Relevance of objectives (High)* is evident by the strong alignment to the Bank country strategies and the two governments' development priorities at the time of appraisal, during implementation, and currently. The BiH CAS for the period FY08-FY11 focused on areas that relate to the NTMP: governance challenges that remained, particularly in enforcement, planning, and management practices, with particular attention needed to improve: water management practices; management of BH's river basins for power generation, irrigation, tourism; and water and waste water services. Capacity was weak and needed to be further developed to help BiH to prepare for absorption of possible EU pre-accession funds, to meet the EU accession requirements, and to support projects on environmental protection, both to improve governance and transparency and to support tourism. The CPS program for BiH for the period FY12-FY15 focused on three pillars, two of which are fully consistent with the Project's objectives and design, namely: (i) improve social inclusion by strengthening the targeting and fiscal sustainability of social benefits and improving delivery of basic public services; and (ii) strengthen the sustainable use of key natural resources and improve climate change adaptation.

49. The Croatia CAS for the period FY05-FY08 aimed at supporting the government's growth and reform strategy for successful EU accession, while the overarching priority for the Period FY09-FY12 was to enter the EU with a competitive and growing economy and the institutional capacity to meet the demands of membership and increasing the sustainability of long-term development. Support was envisaged to the EU accession agenda in areas where the Bank has global experience and comparative advantage, such as by helping Croatia meet the environmental challenges. Though Croatia had joined the EU in 2011 and the Bank assistance focus had changed, the project objectives and design remained to be valid to support water institutional reforms, improve the environment and development of RBMP, and towards sharing regional assets (water) and as such assist in meeting some of the EU WFD.

50. The Project was fully consistent with the GEF objectives and with the GEF operational programs: The Integrated Land and Water Multiple Focal Area Operation Program (OP#9), under the GEF International Waters Focal Area, and the Coastal, Marine and Freshwater Ecosystem Program (OP#2) under the Biodiversity Focal Area.

51. ***Relevance of the Design (Substantial)***. Neretva & Trebisnjica are very important for the two countries' drinking water, irrigation, transport, industry, energy, agriculture, protected nature reserve areas, biodiversity, and tourism. The project design had a strong relevance since it was focused on addressing key constraints, and the intervention logic was clear with all the project components designed to achieve the intended outcomes. The project was adequately designed to strengthen the transboundary cooperation, reduce pollution in Trebisnjica and Neretva rivers, and improve planning and management of the protected areas. Working with two countries was the right choice since transboundary water management could not be addressed effectively through a single country project. Initial cooperation between the two countries existed before the Project (ISWC). However, none of the countries opened the discussions on difficult topics. So it was clear that there was a need for the Bank's convening power, to bring them together and to develop good relationships, mutual respect and recognition of the others' needs, which had been stressed by both countries as a big achievement gained through the Project. Both countries were aspiring to join EU accession and adopt the integrated river basin management approach as prescribed by the EU Water Framework Directive (WFD). The Project helped this process through the proposed capacity building activities, including various training, workshops, and multiple studies that were conducted under the Project.

3.2 Achievement of Global Environmental Objectives

52. With the attainment or surpassing of all of the PDO and intermediate indicators, except the PDO indicator 4 which was not achieved, as discussed below and presented in the Datasheet and Annex 2, the two PDO outcomes are assessed as substantially achieved.

PDO (1): Mechanisms for efficient and equitable water allocation (Substantial)

53. The expected PDO outcome was fully achieved as per project design through the following elements:

(i) ***A comprehensive hydrological measurement, monitoring and modeling program***, linked to a transboundary water information system, was successfully developed and is now in full operation. The basin-wide transboundary hydrological measurements, monitoring, modeling and database management systems (with about 67 monitoring stations) were successfully adopted by the water authorities both in BiH and Croatia. This resulted in significant improvements in the interstate cooperation and technical capacity for transboundary water resources management, through timely data exchange, efficient and equitable water allocation, informed decisions on water issues, reservoir management, environment and flood protection, etc., which were feeding into the overall river basin management plans and the framework for the trans-boundary water management. The results related to minimum flow are essential for the coordinated transboundary water management, and was tested jointly by the related water authorities in both countries.

Underpinning the system are the mathematical models developed for hydrological predictions, HPP operations, forecasting and decision making and plan guidelines, and training program for optimal management of HPPs multi-purpose reservoirs. All planned modeling and application studies were completed and adopted (100% of the PAD target) including:

- a. Analysis of the existing network of water gauging and monitoring including a proposal for extending and equipping the network of stations for hydrological and meteorological monitoring (100% of the PAD target);
- b. Study on development of a basin-wide water information system including GIS system, with necessary equipment and training program (100% of the PAD target);
- c. New software application for automatic collection and exchange of the agreed set of data between BiH and Croatian institutions for transboundary water management of NTRB, and the joint web-site (100% of the PAD target);
- d. Minimum Environmental flow study which determined minimum environmental flow at seven selected river profiles with known hydrological regime related to the existing hydropower plants and reservoirs on the Neretva and Trebišnjica rivers (100% of the PAD target); and
- e. Optimization of Water Discharge from Hydro-electric Reservoirs study, which identified, customized and applied the suitable mathematical and hydrologic models, and design of decision-making software.

(ii) ***The Transboundary River Basin Management Framework⁶ was completed and adopted.*** The Framework report was exhaustive and followed the recent legal requirements for basic documentation of a River Basin Management Plan, which was also in compliance with the EU Water Framework Directive. In addition, three River Basin Management Plans for: (a) Croatia, (b) FBiH, and (c) RS were completed through the Project, and they present the foundation for the Adriatic River Basin Management Plan. The NTRBM Framework is recognized as a pioneering exercise for BiH, as well as for the cross-border management of river basins in the region. The new initiatives to prepare River Basin Management Plans for Drina in BiH have stated explicitly that they will build on the experiences gained from the existing Neretva and Trebisnjica River Basin Management Framework. All parties stated that the Framework is fully endorsed and that it represents a key output as it produces the foundation for a River Basin Management Plan for the Adriatic Basin that would be fully compliant with the EU WFD.

(iii) ***Increased interstate cooperation and capacity for transboundary water resources management*** (the outcome indicator 1 achieved 100% of the PAD's expected target), including: (i) enhanced technical capacity in the increased interstate cooperation; (ii) increased managerial capacity and interstate cooperation; and (iii) strengthened national and interstate institutional capacity on transboundary water resources management of CC,

⁶ It is to be noted that the River Basin Management Plan was renamed as the Framework for Neretva and Trebisnjica Management which followed the appropriate and recent legal requirements to produce the basic documentation for a joint management plan in compliance with the EU Water Framework Directive.

ISWC, and the water management authorities in BiH and Croatia (for details on meetings, trainings, workshops, study tours, etc., see paragraph 9 of Annex 2). Overall, the results indicate clearly that the institutional, technical and managerial capacity on the NTRBM have been improved for all project-involved country water management agencies and that the interstate coordination on transboundary NTRBM has been significantly increased. This is the first time that two countries exchanged water monitoring information in real time. They jointly prepared and adopted the NTRBM to undertake technical and management measures on the efficient and equitable water allocation (e.g. the flood mitigation), the protection of water resources, pollution control and water quality improvement, conservation and maintenance of water ecosystems and biodiversity, operation of water infrastructures on agreed water allocation, and the other substantive issues.

PDO (2): Mechanisms for enhancing basin ecosystem and biodiversity (Substantial)

54. The project supported various investments to enhance basin ecosystems and biodiversity and reduce pollution.

55. ***Reduction of waterborne municipal and industrial-based pollution in selected municipalities (fully achieved as per PAD targets)***. The completed WWTPs and sewerage construction/rehabilitation activities contributed to improved quality of discharge of wastewater effluents of municipal and industrial-based pollutants to international water ways and improved wastewater treatment systems, which also enhanced ecosystems and biodiversity in the basin. At the project completion, five WWTPs in BiH (Bileca, Ljubuski, Trebinje, Hutovo Blato Nature Park, and Konjic) were rehabilitated/constructed and completed in a quality manner (100 % of the PAD target). In the Nevesinje Municipality (RS), the most significant results arising from separation of the mixed sewage, which ran in the open channel along the municipality, were protection of the environment in the inner urban zone.⁷ Additional EU funding (IPA TF071705) was secured to rehabilitate and expand the sewerage system in Ljubuski, which increased the amount of waste water collected and conveyed to the waste water treatment plant and the benefits of rehabilitation

⁷ The center of the Municipality possessed open storm sewage channels which were also used as wastewater channels, resulting in emission of unpleasant odors in the urban municipal zones, and backfilling of the Alagovac Reservoir with waste and sediment. Therefore, this subcomponent contributed to protection against pollution and filling with sediments of the Alagovac Reservoir, which supplies the municipality with potable water. This resulted in creating a healthier and environmentally friendly surroundings of the urban municipal zone by providing a separate wastewater system. The cleaner environment provided by the installation of a separate wastewater system has also created preconditions for agricultural production in the area by enabling local residents to use areas previously unsuitable due to foul odors. In the Trebinje Municipality (RS), procurement of equipment for the WWTP ensured the continuity of WWTP operation, leading to protection of the Trebisnjica River, whose pollution would lead to further significant consequences for the environment, specifically for karst underground and downstream drinking water sources, from which downstream users are supplied, such as the city of Dubrovnik (Croatia) from the Ombla source. This achievement is specifically important for Croatia, as they get the improved water quality downstream in the Neretva delta, and overall for the entire Adriatic Sea river basin.

of WWTP. By the project closing, all WWTPs have been performing highly satisfactorily with respect to meeting the national and EU regulations for effluent discharge and achieved significant project output and outcome results as follows:

- (a) The annual volume of improved quality water from six rehabilitated/constructed WWTPs (including the one in the Nature Park) is about 2,106,609 M³, based on its annual production capacity (*100% of the expected target*);
- (b) The water quality monitoring results during the trial work in the six WWTPs showed: BOD reduced from 155 mg/l to 6.4 -25 mg/l; N reduced from 25 mg/l to 3.1 – 12.4 mg/l; P reduced from 8 mg/l to 1.6-2 mg/l; and Cr reduced from 200 mg/l to 0.43-0.47 mg/l, which met EU standard and achieved expected pollution reduction targets (*100% of the PAD targets met, or exceeded in some cases by more than 400%, except BOD reduced to 25 mg/l in Konjic as WWTP just completed by the project close*);
- (c) The average Nutrient load reduction has increased from 0.43 ton to 60.97 ton per year and COD pollution reduced from 10.01 ton to 917.8 ton per year (*100% of the expected target*), based on the monitoring data collected from all waste water treatment plants rehabilitated and constructed; and
- (d) Efficiency of the WWTPs operation increased from earlier 50-60% to 95% (*100% of the expected targets*).

56. Overall, the completed Sewerage System network and upgraded WWTPs reduced water pollution in the Trebizat River and Neretva and Trebisnjica river basin, and improved the drinking water provision, especially for the protection of the water source in Prud, which is the drinking water source for the regional water supply system for Peljesac, Lastovo and Korcula in Croatia. The improved water quality of the Trebizat River has also a positive cross-border impact, as the Trebizat River flows into Neretva River (Adriatic River Basin) which is an international waterway as it flows to Croatia and Adriatic Sea.

57. ***Improved maintenance of environmental flows and improved ecosystems and natural resource management in the basin.*** The Project achieved this outcome through:

- (a) **Improved management and use of wetlands in Hutovo Blato Nature Park:**
The project significantly improved the ecosystem restoration and nature resources management through the output/outcome results achieved (100% of the PAD targets) by the implementation of the Hutovo Blato Nature Park subcomponent, including (a) developed and adopted the physical (spatial) and management plans; (b) completed the biodiversity study and the Monitoring and Biodiversity Inventory Database; (c) completed the construction and operation of the wastewater treatment plan in the park; (d) restored the wetlands following the big forestry fire with repair and construction of 12 tourist infrastructures, 24 bird feeders and fauna observation posts and sailing vessels, upgraded and rehabilitated park's O&M and service facilities and equipment (such as the tractor and amphibian machine). According to the park's observation and monitoring record, the number of species had

increased from 18 to 22 (about 122% increase), carp stocking increased to 2,500 kg, the annual number of visitors and tourists increased from 3500 to about 7000 (about 200% increase), and the annual financial income increased from 5,134KM to 10,268KM (about 200% increase) due to improved services and increased tourists, which further supported the sustainable O&M for the better use of the wetlands and its management in the Nature Park;

- (b) **Improved use of wetlands sites for ecotourism and mitigated possible adverse environmental impacts** through the restoration of water management infrastructure for wetlands, and river bank rehabilitation along Krupa River;
- (c) **Increased understanding of the values of wetlands and their resources** (achieved 100% of PAD targets);
- (d) **Improved maintenance of environmental flow through the improved operation of the reservoirs, HPPs and dams** (56.5 man months involved, 100% of PAD targets); and
- (e) The Project had promoted and increased the public participation and awareness on the IWRM, including the ecosystem and natural resource management in the basin.

58. ***Reduction of saline water intrusion as a result of the implementation of a Pilot Scheme in Neretva Delta.*** Due to the delay in solving the issues faced during the implementation of the irrigation pilot scheme in Neretva Delta, the irrigation pilot subcomponent was finally dropped just prior to the construction phase as requested by the clients and agreed by the Bank during the supervision mission, although the preparation of the component had been completed (such as the feasibility study, environmental assessment, and detailed technical design etc.). In replacement of the pilot, project budget was reallocated to strengthen the water monitoring system (discussed under PDO 1 above) by equipping existing network of surface and ground gauging stations (on-line monitoring of water quantity, quality, salinity and flows) and weather station. Consequently, this indicator remains unfulfilled in the manner envisaged by the PAD, and the related output and outcome results were not achieved.

3.3 Efficiency (Substantial)

59. The project cost including its parallel financing was budgeted at US\$21.27 million and ended up investing US\$28.25 million. The project managed to leverage US\$7 million more of additional funds than originally foreseen. The EU IPA 2 million EURO Grant supported the construction of 15.2 km of additional sewerage system ensuring additional wastewater to be treated at the WWTP Ljubuški bringing unforeseen benefits for the protection of the Prud water source, the drinking water supply for the regional water system for Peljesac, Lastovo and Korcula in Croatia. Hence, costs were increased but benefits also.

60. As it was foreseen in the PAD, the NTMP is providing a number of environmental and economic benefits that are being captured globally, regionally, and locally, most of which are very difficult to quantify. The project has demonstrated that cooperation and coordination built throughout the project life between different countries and their conflicting policies is possible, which is a significant achievement by itself. The project

managed to have an effective MOU between two countries that outlined the procedures and guidelines to implement the project. Consequently, there were no disagreements on any of the contracts issued under the project. In addition, the two countries agreed on all the outcomes and studies that were prepared under the Project that included the following:

- Framework for transboundary management of Neretva and Trebišnjica river basin prepared and adopted
- River basin management plan of Neretva and Trebisnjica rivers in Croatia
- River basin management plan of Neretva and Trebisnjica rivers in FBiH
- River basin management plan of Neretva and Trebisnjica Rivers in RS
- Study to determine the minimum environmental flow
- Mathematical models for hydrological predictions, HPP operations, forecasting and decision making and plan guidelines and training program for optimal management of HPPs multi-purpose reservoirs.

61. Even though not quantified at appraisal, since the focus was on increasing and improving transboundary cooperation and reducing pollution in the basin, the most important economic and financial benefit that is derived from the project outcomes is the expected reduction of damages from future natural flood hazards. As a result, both countries jointly became better prepared to mitigate their effects especially under the current scenario of a changing climate⁸.

62. Given the nature of the outcomes of the project, the avoided annual damages (AAD) from future hazards were estimated by assuming that the damages would be reduced by about 50 percent (see details in Annex 3). The expected value of the AAD that could result from the improved transboundary institutional capacity for the management of the NTRB water resources, including enhanced management of reservoirs and the enriched Early Warning System (EWS) were estimated at US\$7.879 million only for the lower Neretva River area. The improved EWS allows for managing the reservoirs to mitigate the wave of floods and for offering extra time for communities to react moving to higher ground out of the floodplain, elevating valuables to a higher level or by taking other measures for keeping water out of their valuables. The Economic Rate of Return (ERR) of the project investments under Components 1, 2 and 4 (US\$13.12 million) considering only the value of AAD in the lower Neretva River - without taking into account the several other benefits - was estimated at 13 percent. The described result indicates that the expected benefits from the project considering only the AAD from flood hazards in the lower basin is sufficient for demonstrating a highly positive project economic impact when considering also the non-quantified benefits.

63. In addition to financing the least-cost WWTP alternative investments under Component 3, the project worked with municipalities toward achieving also financial

⁸ The PAD recognizes that: “Although the rivers are characterized by relatively high runoff (22 l/s/h³), there is great variation in the flow, and much of this (57 percent) leaves the territory unused. In spite of the apparent wealth of water resources, this significant spatial and time variation results in areas that experience heavy flooding in winter months and suffer from drought in the summer” (page 25, PAD).

viability of the supported facilities by gradually decreasing inefficiencies and increasing revenues to adequately cover O&M costs. As a typical case the WWTP of Ljubuški Public Utility Company was analyzed. As can be seen in Annex 3, the Ljubuški system is expected to have an annual income of about BAM 1.31 million, a cost of about BAM 1.27 million, and a superavit of about BAM 36,200 during 2015, which indicates that the financial sustainability of the supported investment is adequate. For details see Annex 3.

64. Community Participation. The considerations in favor of project success are that some of the Project relevant contributions to reaching PDO have not been adequately captured by outcome indicators. Awareness raising activities and public participation and community-level support had been essential to building local capacity for adequate water management in the basin. In addition, the Project managed to raise substantial local community co-financing.

3.4 Justification of Overall Outcome Rating

Rating: *Moderately Satisfactory*

65. The project objectives were and continue to be highly relevant to the BiH and Croatia need for improving trans-boundary water resources management at the NTRB level, and enhancing the sustainable development of the basin ecosystems and biodiversity. The project design was relevant. The project achieved its objectives on improved transboundary cooperation and reduced water pollution in the river beyond the targets which definitely has contributed to improved ecological health of the rivers and quality of drinking water which in turn will further help improve the living conditions of the basin population and tourism potential in the long run. The NTMP has demonstrated that cooperation and coordination built throughout the project life between countries is possible even with complex policies and as such is a significant achievement by itself.

66. Overall at the completion, the project implemented the full intended project program (except the irrigation pilot), met or exceeded all implementation targets, the project can be considered as successful in reaching all of its PDOs except the fourth PDO indicator for the reduction of salt intrusion in the Neretva Delta. Since implementing the Pilot was important to achieving all the Project objectives and outcomes, the overall outcome is rated Moderately Satisfactory.

3.5 Overarching Themes, Other Outcomes and Impacts

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

67. Although the Project was not targeting an impact on poverty; improvement of environment in the Neretva and Trebisnjica Basin, which included improved water quality as a result of rehabilitation of WWTPs, improved drinking water quality in the river which would have a positive impact of the river communities' health and improved tourism facilities and which generated more income to the communities. Also, implementation of 30 small grants had indeed improved the living conditions in the basin.

(b) Institutional Change/Strengthening

68. Additional institutional changes were introduced during implementation including:

- In Croatia. Following the parliamentary elections held in Croatia in 2011, the Ministries involved in the Project had changed. Hence, as of 1 January 2012, the Ministries included in the Project were the Ministry of Agriculture MA (2 members) and the Ministry of Environmental and Nature Protection MENP (2 members).
- In BiH (RS). In 2013, “Vode Srpske” was established as a public institution under the supervision of the Ministry of Agriculture, Forestry and Water Management of RS, and the previous Sava River Basin Agency and the Trebisnjica River Basin Agency were closed.

69. As the achieved project results discussed in section 3.2, the existing capacities of the institutions in both countries were further strengthened, and a solid scientific and technical basis for establishing improved regional cooperation mechanisms was built, further enhancing the sustainability of the joint management efforts in the long-term.

(c) Other Outcomes and Impacts achieved

70. *Reduced Flood Hazards.* Even though not quantified at appraisal, since the focus was on increased and improved transboundary cooperation and reduced pollution in the basin, probably the most important economic and financial benefit that can be derived from the project outcomes -- particularly with the project's enhanced focus on data monitoring and sharing -- is the expected reduced damages from future natural flood hazards as both countries jointly became better prepared to mitigate their effects especially under the current climate changing scenarios.

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

71. The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina and Hrvatske Vode asked a consultant to conduct a Project Impact Assessment, which was completed in March 2015 (see files). The consultant conducted a survey for Stakeholders to discuss the Project achievements and impact. The following are some conclusions from that stakeholders' survey.

72. According to the results of the Survey, the key impacts of the NTRB may be summarized as follows:

- Reduction of pollution from municipal and industrial sources (through water treatment), resulting in improved water quality and availability of drinking water sources, and hence health-related issues and costs; and
- Development of tourism and recreation (primarily through the successfully completed Small Grants Program); specifically, 40% of the respondents stated that the Project contributed to the development of tourism (particularly ecotourism) in Project area.

73. In addition, 36% of the respondents stated that the Project activities resulted in additional benefits for individual organizations or local communities, which were not originally foreseen. These project outputs have strengthened the national flood prevention and forecasting and the operational response capability of the two countries through the new advanced equipment, the shared information system, and the mathematical simulation models that now are able to inform decision-makers faster and more reliably about coming hazards to prevent, evacuate and/or take adequate safety measures).

4. Assessment of Risk to Development Outcome

Rating: *Moderate*

74. Risks to development outcome are considered as Moderate due to the following reasons:

- Since Croatia had joined the EU and BiH is a potential candidate, the NTMP would facilitate the two countries complying with the EU WFD through the developed Framework for Water Management in Trebisnjica and Neretva that was agreed by all parties. EU WFD was transposed to national legislation. EU will provide funds to continue the reforms and to finance other water infrastructure including funding the irrigation project in Croatia which was dropped by the Bank.
- Canceling the Pilot Irrigation Project in Croatia. Although, this will affect achieving the Fourth Outcome “*Reduction of saline water intrusion as a result of the implementation of a Pilot Scheme in Neretva Delta*”, the plan now is to have EU funding for an irrigation project in Croatia that includes this Pilot.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: *Moderately Satisfactory*

75. The NTMP was a complex project, which took a long time to prepare. The Bank did a good job in bringing the two countries together to agree on the project concept, objectives, and design. The Bank facilitated preparation and made sure that a comprehensive feasibility study was prepared with detailed cost estimates and justification for all proposed activities; it did appraise the operation in such a way that it was most likely to achieve planned development outcomes and was consistent with intended project objectives and the Bank’s fiduciary role. The Bank also correctly identified the technical, economic, and financial aspects and covered adequately the social and environmental issues. The agreed implementation arrangements proved to be working through project implementation. Also, M&E was generally adequate as well as risk assessment. The initial delay in the start of project implementation was mainly due to logistic issues and not readiness for implementation.

76. The Project design had some element of flexibility. This enabled the Bank team to reallocate the funds ensuring new activities complied with the Project Objectives and

intended outcomes. However, the complexity of implementing the Pilot Irrigation in relation to the environmental sensitivity of the Neretva Delta was underestimated, and the Bank did not foresee the potential for complaints by environmental NGOs, which delayed obtaining the environment and building permit, later resulting in the cancellation of the pilot altogether. In spite of the Bank awareness of potential difficulties associated with the implementation of such interventions in an environmentally sensitive area, it hoped to succeed in NTMP, since the Pilot was rehabilitation of an existing system and not a new construction.

(b) Quality of Supervision

Rating: *Moderately Satisfactory*

77. The Bank proactively identified and resolved issues that could hinder the achievement of relevant development outcomes with the exception of reduction of salt intrusion in the Neretva Delta as a result dropping of the Pilot Irrigation. It was proactive in proposing alternatives to several situations and issues that were affecting the project outputs, including using savings to increase the work on WTTs and using the dropped irrigation pilot funds to procure hydrological equipment. Also, the quick response of the Bank to the Borrower's request to reallocate some funds from the SGP to the restoration of Hutovo Blato Park was timely and appreciated by the Borrower.

78. The Bank carried out twelve supervision missions (the last one included the ICR mission) and prepared good ISRs. The Bank's supervision performance in providing advice and guidance on fiduciary and safeguard aspects during implementation, in identifying bottlenecks and opportunities, and in resolution of threats for overcoming problems and following up before and after the project closing and working with the borrowers to prepare the Impact Assessment and the two ICRs was satisfactory.

79. The Bank supervision team managed to leverage additional EU funds for the WWTPs in BiH. This was only possible thanks to a strong Bank team and for having a high quality policy dialogue that maintained the political commitment to the objectives.

80. It is worth noting that the Bank team managed the Project very well, almost all of the project activities were completed, and funds were fully disbursed, given the project complexity and difficulty. Yet, the Bank supervision team and the borrower did not manage to document in a timely manner the dropping of the pilot irrigation and not achieving the relevant objective in a restructuring paper, even when it was clear that the pilot would not be executed during the project implementation period.

81. Although disbursements lagged behind throughout the life of project, and although it never reached the original disbursements projections until the end of the project implementation period, the Bank supervision team did not formally revise disbursement projections. For these reasons, the Bank supervision performance was rated as Moderately Satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: *Moderately Satisfactory*

82. Given the moderately satisfactory quality at entry and the moderately satisfactory quality of supervision, the overall Bank performance is rated as Moderately Satisfactory

5.2 Borrower

(a) Government Performance

Rating: *Moderately Satisfactory*

83. The two governments' ownership and commitment to achieving the development objectives were strong and they were keen to implement all project activities. They cooperated together and signed an MOU for that purpose and implemented all joint activities. BiH did introduce reforms to water sector legislation to conform to EU WFD and implement all the WWTPs works to reduce pollution.

84. The two governments had strong support to project implementation and to the timely resolution of implementation issues. They complied with the fiduciary and safeguards covenant, and also prepared a project Impact Assessment and two ICRs.

85. There were also adequate consultations with stakeholders during all the project implementation period and during preparation of the Impact assessment.

86. However, the two governments' performance was judged as Moderately Satisfactory for the following reasons:

- (i) Delays in Grant Effectiveness (Croatia and BiH);
- (ii) Not providing the timely counterpart funds for some activities (Croatia and BiH);
- (iii) Delay in solving the issues that faced implementation of the Pilot Project led to cancel that activity (Croatia);
- (iv) Delay in submitting a restructuring proposal that encompasses all the changes in the Project activities (Croatia and BiH); and
- (v) Not staffing the PITs with the needed staff such as environmental specialists (BiH and Croatia).

(b) Implementing Agency or Agencies Performance

Rating: *Moderately Satisfactory*

87. The implementing agencies in both countries had good working experience with Bank projects and were ready for project implementation. They worked closely with the Bank team to resolve implementation issues encountered during project implementation and suggested alternatives to use available resources to meet the project objectives.

88. The arrangements for M&E were adequate and they collected and compiled the needed data and prepared the required progress reports.

89. The implementing agencies have a good relation with the stakeholders and did several consultations and responded adequately to the communities' needs and suggestions.

90. Nevertheless, the performance of the implementing agencies in the two countries was judged as Moderately Satisfactory for the following reasons:

- (i) Delay in the launch of the implementation of project activities (PMT and PITs)
- (ii) Delay in implementation of some of the project activities (PMT and PITs in BiH and Croatia).

(c) Justification of Rating for Overall Borrower Performance

Rating: *Moderately Satisfactory*

91. Cooperation of the teams from Croatia and Bosnia and Herzegovina was good. Progress, coordination and technical implementation of joint activities were discussed during regular meetings. However, considering the shortcomings that are described above for the two governments during project implementations and given the moderately satisfactory rating for the two governments and the implementing agencies during project implementation, the overall Borrower performance is rated as moderately satisfactory.

6. Lessons Learned

92. The lessons that are learned from this operation can be summarized as follows:

- Transboundary basin water and environmental projects are high-risk high-reward projects. If successful, they can have significant beneficial outcomes and impact for all riparian in the basin. The NTMP can serve as a model to demonstrate that within one river basin, good results can be achieved in spite of all the complexities of transboundary water management. The rigorous preparation and full agreement of the partner countries before the project start on the project objectives and outcomes and agreeing on the Framework for River Basin Management, can result in a successful project;
- The NTMP has demonstrated that cooperation and coordination built throughout the project life between different countries even in a complex environment is possible and as such is a significant achievement by itself;
- The Project which is relevant, even when financed with limited funds will likely attract additional funds. NTMP has managed to leverage a significant amount of local, private and donors co-financing and has incited the implementation of other affined projects implemented with the aid of other financial mechanisms whilst not being large-scale in terms of financing secured by GEF;
- Increased local community participation and positive perceptions and views about the project contributed to achieving the project outcomes, thus resulting in improved living conditions of the population in the basin;

- Partnership arrangement and excellent cooperation with EU can serve as a model for synergetic approach thus increasing the project results when working towards the joint goal (WWTP and sewerage in Ljubuski);
- Strong presence of country office staff in the Bank team enables close follow-up and immediate attention to issues; and
- A difficult and innovative project such as the Irrigation Pilot Project requires stronger human resources in the PIT, better coordination between institutions and PITs, more financial resources, timely issuance of permits, and timely resolution of land and property issues.

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

(a) Borrower/implementing agencies

n/a

(b) Cofinanciers

n/a

(c) Other partners and stakeholders

93. According to the results of the Stakeholder Survey carried out under the Impact Assessment, implementation of the projects financed under the SGP has resulted in the following positive impacts / improvements:

- raised awareness among citizens of the water resource potentials that need to be utilized properly, maintained and protected;
- improved cooperation among NGOs and the involvement of the public;
- created the basis for further work and development of involved organizations;
- better understanding of the impacts of natural resources on local communities and the society at large;
- the Neretva River is cleaner and the environmental awareness of the local population is raised; and
- improved tourist signalization, infrastructure, equipment, communication.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD million equivalent)

Components	Appraisal Estimate	Actual Latest Estimate RH	Actual Latest Estimate MOFTER	Actual Latest Estimate FBiH	Actual Latest Estimate RS	Actual Latest Estimate RH and BiH	Percentage of Appraisal
	(USD thousand)						%
1. Improved Transboundary Water Resource Management	6,151.1	673.4	6,050.9	350.0		7,074.3	115,01
1.1 Institution and Capacity Building	385.0	28.0	4,665.8			4,693.8	1,219,17
1.2 Measurement, monitoring and information management	1,659.6	273.9	388.0	350.0		1,011.9	60,97
1.3 River basin management planning	4,106.5	371.5	997.1			1,368.6	33,33
2. Improved management and use of wetlands ecosystems	3,195.6	3,203.6		708.0	163.8	4,075.4	127,53
2.1 Improved management & use of water-dependent ecosystems	1,720.6	2,008.6		337	67.6	2,413.2	140,25
2.2 Water management infrastructure	782.5	979.7		242.9		1,222.6	156,25
2.3 Improved operation of reservoirs, HPPs and dams	692.5	215.3		128.1	96.2	439.6	63,48
3. High priority investments for water pollution control	9,417.7	1,500.0		9,702.0	3,929.9	15,131.9	160,68
3.1 Municipal wastewater treatment improvements	8,817.7	1,500.0		9,102.0	3,929.9	14,531.9	164,80
3.2 Industrial wastewater treatment improvements	600.0			600.0		600.0	100,00
4. Public participation and awareness	2,509,2	651.8	109.1	952.1	255.2	1,968.2	78,44
4.1 Scientific community involvement	50.0	0.0		5.0		5.0	10,00
4.2 Civil society participation	525.0	99.7		342.1	82.1	523.9	99,79
4.3 Management of project implementation	1,934.2	552.1	109.1	605.0	173.1	1,439.3	74,41
Total Project Costs	21,273.6	6,028.8	6,160.0	11,712.1	4,348.9	28,249.8	132,79

(b) Financing

SOURCE OF FUNDS	TYPE OF FINANCING	APPRAISAL ESTIMATE (US\$ MILLION)	ACTUAL/LATEST ESTIMATE RH AND BiH (US\$ MILLION)	PERCENTAGE OF APPRAISAL %
Gov. of BiH (incl. Municipal & Benef.)		4.83	7.48	154,86
Gov. of Croatia (incl. Municipal & Benef.)		4.52	4.09	90,49
Bilateral Agencies	Parallel	3.92	6,67	170.15
IPA-EU	Cofinancing		2.07	
Global Environmental Facility (GEF)		8.00	7.94	99.25
Total		21.27	28.25	132.79

Notes:

- (i) The revised total commitment amount was US\$10.07 million, including the US\$8 million from the GEF grant, and US\$2.07 million from IPA-EU.
- (ii) The actual disbursement amount was total US\$10.01 million, comparing US\$10.41 million in the Datasheet, the difference was due to the changes in the exchange rates in respective countries, and the GEF project preparation funds spent before the project effectiveness.
- (iii) Due to the strong government support for the project, actual government contributions of the counterpart funds during the project implementation were much higher than the original planned, which helped enable substantial achievement of the project targets, especially for the WWTPs component.

Annex 2. Outputs by Component

Table 2.1: Output Results Achieved by Component

ITEM NO.	PROJECT DESCRIPTION	UNIT	PAD TARGET	PROJECT ACTUAL COMPLETI	% OF PAD TARGETS
Project Output Indicators					
<i>COMPONENT 1. IMPROVED TRANSBOUNDARY WATER RESOURCE MANAGEMENT</i>					
<i>1.1. Institution and Capacity Building</i>					
1.1.a	Office equipment for RBM authorities and technical agencies	set	3	3	100
1.1.b	Support and capacity building for operation of ISWC and TWG				
	(i) Project coordination and management related meetings	no	39	39	100
	(ii) Study tours	no	2	2	100
1.1.c	Training on preparation of RBMP & the EU WFD	no			
	Workshops on the implementation of EU WFD	no	2	2	100
	Workshops on Water Conflict and Negotiations Techniques	no	2	2	100
1.1.d.	Post Implementation Impact Assessment of NTMP	no	n.a.	1	100
<i>1.2. Measurement, monitoring and information management</i>					
1.2.a	Equipment for expansion of the network of water measurement, monitoring stations, GIS system, etc.	set	1	67	670
1.2.b	TA on expansion of the existing network of water measurement and monitoring stations	no	1	1	100
1.2.c	Develop basin-wide water information system	no	1	1	100
1.2.d	New application for automatic collection and exchange of agreed data between water management agencies	no	1	1	100
1.2.e	Technical training provided for developed basin-wide water information system including GIS system	no	3	3	100
1.2.f	Consultant services for component 1.2	man/month	n.a.	9	100
1.2.g	Procurement of gas chromatographs and instrument for electrochemical analyses	no	n.a.	3	100
1.3.	Preparation of river basin management plan	no of plan	1	4	400
1.3.1	Technical workshop for development of RBMP	no	3	3	100
<i>COMPONENT 2 IMPROVED MANAGEMENT AND USE OF WETLANDS ECOSYSTEMS</i>					
<i>2.1. Improved management and use of water-dependent ecosystems</i>					
2.1.a	Improved wetlands management in Hutovo Blato Nature Park				
a.1.	Development of a Physical Plan and Management Plan for the "Hutovo Blato" Nature Park	no of plan	2	2	100
a.2.	Monitoring and Biodiversity Inventory database developed for the "Hutovo Blato" Nature Park	no of database	1	1	100
a.3.	Design OF for the Facilities within "Hutovo Blato" Nature Park	no	1	1	100
a.4.	Improved quality water in WTP in "Hutovo Blato" Nature Park	m ³ /year	7,300	7,300	100
2.1.b	Improved use of wetlands sites for tourism				
b.1.	Construction of eco-trail at Bacina lakes	km	5	5	100
b.2.	Construction of information center at Bacina lakes	center/room	1	1	100

b.3.	Construction of Visitors' center for Vjetrenica cave	room	1	0	0
b.3.	Construction of toilet for visitors of Vjetrenica cave	toilet/m ²	0	5/50	100
2.1.c	Increased understanding of values of wetlands and their resources				
c. 1	Flora and Fauna Exhibit, the Museum of Herzegovina – Trebinje	man month	4	4	100
c. 2	Supervision of the Flora and Fauna Exhibit in Museum of Herzegovina – Trebinje	man month	2	2	100
c.3	Reconstruction of the Museum of Herzegovina – Trebinje	no	1	1	100
c.4	Rehabilitation of the Bird Museum in Neretva Delta & educational center in Metkovic	no of equipment	38	38	100
c.5	"Nasa Neretva" Transboundary Newsletter to Promote environmental protection	no of Bilten	6	6	100
c.6	"Nasa Neretva" Transboundary Newsletter issued	no	1,000	1,000	100
2.1.d	The wetlands management plan for 5 Croatian PAS developed	no	1	1	100
2.1.e	Reduction of salt water intrusion				
e.1	Preparation of salinity and land use maps	Y/N	Y	Y	100
e.2	Feasibility Study & Sociological and Environmental Assessment for the pilots	Y/N	Y	Y	100
e.3	Preparation of the detailed designs for the selected pilots	Y/N	Y	Y	100
e.4	Improvement & construction of new piezometers to monitor physical-chemical indicators of groundwater	no	n.a.	8	100
e.5	Irrigation pilot implemented	ha	400	0	0
2.2. Water management infrastructure					
2.2.a	Improved water management on the Krupa River within the Hutovo Blato Nature Park				
a.1.	Procurement of tractor for proper maintenance of Nature park Hutovo Blato	no	n.a.	1	100
a.2.	Procurement of ambient machine for proper maintenance of Nature park Hutovo Blato	no	n.a.	1	100
2.3. Improved operation of reservoirs, HPPs and dams					
2.3.a	Conduct a study to determine the minimum environmental flow	no	1	1	100
2.3.b	Mathematical models for hydrological predictions, HPP operations, forecasting and decision making & Plan, guidelines and training program for optimal management of HPPs multi-purpose reservoirs	no	1	1	100
2.3.c-1	Establishment of seismological monitoring of the dam Alagovac	no	1	1	100
2.3.c-2	Establishment of seismological monitoring of the dam Alagovac	no of equipment	14	14	100
COMPONENT 3: HIGH PRIORITY INVESTMENTS FOR WATER POLLUTION CONTROL					
3.1.	Municipality wastewater treatment plants developed and rehabilitated	no	5	5	100
3.1.a	Konjic municipality wastewater treatment plant / WWTP 5000 PE -phase I	no	1	1	100
3.1.b	Ljubuški municipality wastewater treatment plant /WWTP from 5000 PE - 6000 PE	no	1	1	100
3.1.b.1	Supervision on the re-construction of the WWTP Ljubuški.	man/month	n.a.	12.60	100

3.1.b.2	Project design for West Branch of sewerage network in Ljubuški	no	n.a.	1	100
3.1.c.	WWTP upgrade in Nevesinje Municipality	no	1	1	100
3.1.c.1	WWTP upgrade in Nevesinje Municipality	km	0.40	0.40	100
3.1.d	WWTP upgrade in Trebinje Municipality	no of equipment	3	3	100
3.1.e	Bileća municipality wastewater treatment system	no	1	1	100
3.1.e.1	Preparation a technical specification for tender Bileća	man/month	7	7	100
3.1.e.2	Environment Impact Assessment	man/month	3	3	100
3.1.e.3	Supervision of works on the Construction of the treatment plant urban area domestic and industrial wastewater	man/month	N.A	21	100
3.1.e.4	DVD film developed	no	1	1	100
3.2	Construction of new sewage network infrastructure in Alojzije Stepinac, New settlement and East Branch	km	n.a.	15.20	100
3.2.a	Works on construction of sewage network	man/month	n.a.	17.50	100
3.3	Strengthening water quality monitoring laboratories	no	2	2	100
3.4	Industrial wastewater treatment plant updated for a metallurgy company in Konjic	no	1	1	100
COMPONENT 4: PUBLIC PARTICIPATION AND AWARENESS					
4.1. Scientific community involvement					
4.1.a	Annual workshops	no	5	5	100
4.1.b	Newsletter issued	no	1,000	1,000	100
4.2. Civil society participation					
4.2.a	Training and facilitation for community involvement in RMBP	no	n.a.	10	100
4.2.b	Support to local NGOs activities - Grants program	no	30	30	100
4.2.c	Community based water pollution control & conservation - community involved	no	25	27	108
4.3. Project Management					
4.3.a GEF Tacking tool for biodiversity		no	n.a.	2	100
4.3.b	Office equipment & vehicles in BiH & Croatia	no/set	n.a.	123	100
4.3.c	Project M&E and implementation coordination system established	system	1	1	100

Note: (i) the construction of Visitors' center for Vjetrenica cave had been adjusted as needed to the toilets for the visitors to reduce the water pollution.

(ii) the output result of the irrigation scheme was not achieved (see the detailed reasons in para. 25 of ICR).

OUTPUT RESULTS ACHIEVED BY COMPONENTS

1. **Component 1: Improved Transboundary Water Resource Management (US\$6.15 million of which GEF US\$2.01 million)** expended US\$7.07 million, fifteen percent more than the PAD budget (including contingencies).

2. **Institution and capacity building.** All activities under this component had been fully completed and all implementation output targets expected at the project appraisal had been fully achieved, as presented in Table 2.1. The component had contributed to the Institutional capacity building of the two water authorities in Mostar and Trebinje in BiH by procurement of IT equipment and office supplies, conducted training workshops and project implementation coordination and operation meetings, and also organized the 6th GEF International Waters Conference (IWC6) in Dubrovnik, Croatia, in October 2011 for members of PITs and PMT. Under this subcomponent, two Study Tours to Spain were organized for the members of Project Implementation Teams from Croatia and Bosnia and Herzegovina in 2013 and 2014. The aim of the study tours was to gain insights into Spain's experience in adopting the RBMP and analysis of transboundary impacts, and establishment of regular communication and automatic data exchange with Portugal, with whom it shares a long history of cooperation in transboundary basin water management.

3. This subcomponent also included a series of workshops on the implementation of the WFD and water conflicts and negotiation techniques, while part of the financial resources had been reallocated for preparation of the mathematical model and Management Plan for reservoirs and HPP. The workshop on the implementation of WFD enabled the PITs, especially from BiH, to gain insights into the implementation of the WFD and the importance of RBMP as a water management instrument (this workshop was coached by a member of Hrvatske vode who transferred Croatia's knowledge as a Member State in the implementation of this directive). The workshops on water conflicts and negotiation techniques showed that PITs are ready and willing to adopt tools on effective and clear communication. The adoption of effective communication skills would enable a greater understanding within the team, as well as during negotiations. Additionally, the transfer of incorrect information would be reduced and a positive, supportive environment would be formed.

4. **Measurement, monitoring and information management.** All expected implementation output and intermediate outcome targets expected at the project appraisal had been fully achieved or exceeded. This subcomponent included a study with the proposal of measures to improve monitoring undertaken by the water agencies which was used by the agencies to upgrade monitoring stations using own funds. This study had been described as useful for both countries by respective PITs as it pointed out the shortcomings in existing monitoring activities. Croatia had subsequently contracted funds for the purchase of equipment for this activity in place of the dropped irrigation pilot project (including improvement of old and establishment of new piezometers with equipment for ground water monitoring in Neretva delta; installation of equipment for surface water monitoring in Neretva (Metkovic) and Ombla River; installation of additional equipment on the Opuzen-Jasenska Agriculture Weather Meteorological station. This subcomponent

also included and completed the development of a new application for automatic collection and exchange of agreed data between institutions for water management of NTRB. This activity is very significant for the water agencies, as it will enable obtainment of real-time data, which will in turn facilitate flood protection planning, which is a key achievement both for Croatia and Bosnia and Herzegovina. 4. A model for hydrological predictions, forecasting and decision making and a plan, guidelines and training program for optimal management of multi-purpose reservoirs in the river basins of Neretva and Trebisnjica were developed in a form of a study under this subcomponent and have been in operation. The general goal of this study was to introduce a framework of harmonization and synchronization of the existing two systems in Trebisnjica and Neretva Rivers during periods of adverse water impacts (but also during its normal operation), and to increase the efficiency of already constructed multipurpose hydropower capacity. The study aimed to harmonize and consolidate all relevant framework rules for the management of the hydropower plant system related to a variety of operational conditions. Hence, a system for optimal management of multi-purpose reservoirs and hydro power plants in the Neretva and Trebisnjica Rivers was developed, entailing the situations where coordination of joint activities is necessary to achieve defined objectives in both systems. This was particularly relevant for the cases for extreme hydrological conditions, accidents, or the cases when there is a need to coordinate and harmonize water management activities of different water users.

5. This subcomponent also produced a set of mathematical models, including hydrological and hydraulic models and decision-making software as well as a rainfall study. A joint website has been in operation, where all relevant hydrographic and water quality data have been posted, enabling data exchanges in real-time between the two countries, which is a significant step forward for water management planning.

6. The hydrologic model was designed to simulate the complete hydrologic processes of dendritic watershed systems. It had been developed for the rivers of Trebisnjica and Neretva to the border with Croatia. The software included traditional hydrologic analysis procedures such as event infiltration, unit hydrographs, and hydrologic routing. It also included procedures necessary for continuous simulation, including evapotranspiration, snowmelt, and soil moisture accounting. Advanced capabilities are also provided for gridded runoff simulation. Supplemental analysis tools were provided for parameter estimation, depth-area analysis, flow forecasting, erosion and sediment transport, and nutrient water quality. The decision-making software was a tool for assisting decision-making in hydraulic and hydrogeological modeling across the NTRB.

7. **Preparation of river basin management plan.** All activities under this subcomponent had been fully implemented and completed, and all expected output targets have been fully achieved. A key subcomponent under Component 1 comprised the development of IWRM Plan. The Project supported development of water management plans for:

- Watershed of the river basin district of Neretva and Trebisnjica rivers in Croatia;
- Watershed of the river basin district of Neretva and Trebisnjica rivers in FBiH; and
- River basin district of Neretva and Trebisnjica Rivers in RS.

8. The IWRM planning, consisting of the above-mentioned plans, meant to address the issues of interest for the whole area in a coordinated manner, while emphasizing the valuation of transboundary impacts and influences between units of the whole area. The Framework Plan, although not obligatory as per the Water Law of Croatia, enabled Croatia to fulfill its obligations towards the EC to prepare joint documents with non-EU member countries. The State and Entity authorities in BiH stated that the experience with the Framework Plan preparation led to the issuance of specific by-laws to the Water Laws, in particular with respect to the identification of water bodies. In FBiH, the Plan was being used in the process the preparation of the Adriatic Sea WMP. ***The Project CC adopted the Neretva and Trebisnjica Framework in December 2014. All parties stated that the Framework is fully endorsed and a key output, since it produced the foundation for a RBMP that would be fully compliant with the EU WFD.***

9. The institutional capacity on the transboundary water resources management had been improved through a series of meetings, training, workshops and study tours, which were successfully conducted and completed (100% of the appraisal targets), including: (a) the five annual meetings of ISWC, six semi-annual meetings of Sub-Commission for Adriatic Sea Basin and 28 team meetings on the project coordination and management and operation of ISWC and TWG conducted, with the additional meetings organized for the 6th GEF International Waters Conference (IWC6) held in Dubrovnik, Croatia in October 2011 for members of PITs and PMT; (b) seven professional staff training and technical workshops conducted on the transboundary river basin monitoring and management, preparation of the river basin management plans, water conflict and negotiation techniques and implementation of EU WFD, which improved effective and clear communications and enabled a greater understanding between the two water management agencies in BiH and Croatia, especially enabled the PITs to gain insight into the implementation of the WFD and the importance of RBMP as a water management instrument; (c) two study tours to Spain held for the members of PITs from Croatia and BiH, which gained insight into Spain's good practice and experiences for the optimal management of multi-purpose reservoirs in the river basin, adopted RBMP and analysis of transboundary impacts, and established regular communication and automatic data exchange with Portugal (with whom it shares a long history of cooperation in transboundary basin water management); and (d) sets of the IT equipment and office supplies procured and installed for the two river basin management authorities in Mostar and Trebinje in BiH. The aforementioned activities had formed a positive and supportive environment, and improved everyday communication mechanisms of transboundary water cooperation. Thus, the ***strengthened broader interstate communication and collaboration and institutional capacity for trans-boundary water resources management*** were achieved.

10. The fundamental difference between individual RBMPs is in the dynamics and deadlines for adoption and implementation of individual management plans, the procedures for their incorporation into the existing legislation, and the management organization framework for each state and entity in the field of water resources management and environmental protection, as well as in the economic power and development goals set up for each of the areas, upon which determination of exceptions

and ability to assume obligations according to the WFD objectives depends. Other very important differences ensue from the interpretation of rules set up by the WFD (with regard to Annex III and Annex VII to the WFD) by the individual states and entities.

11. It was taken into consideration that the WFD requires that water management plans include inland waters (surface and ground), transitional water, and coastal water of an area or basin. National legislation requires that water management plans are based on river watersheds (Republic of Croatia and the Federation of BiH), or river basin districts (RS) as management units. The individual plans were prepared and accepted by all PITs and PMT of BiH and Croatia. In addition to developing individual management plans, the Project also envisioned the development of a joint water management plan comprising the entire basin, for which the ToR was developed. However, during the attempt to draft the joint plan, the activities and new projects in the RS Plan for management of the river basin district of Neretva and Trebisnjica were not within the scope of activities agreed by the involved parties. Involved authorities subsequently decided to compile a framework plan entitled the “Framework for Management of NTRB” in its place, containing the provisions of individual plans to which all sides agreed. The WB approved this alteration. The Coordination Committee of both countries approved the Framework for Management of NTRB.

12. Croatia adopted its five-year water management plan upon joining the EU. The revision of this plan, however, was envisioned in 2015. It is expected that Croatia will further utilize the water management planning provisions entailed in the state-level plan developed by the Project within the revision process.

13. **Component 2: Improved Management and Use of Wetlands Ecosystems and Biodiversity (US\$ 3.19 million of which GEF US\$ 2.25 million)**. Under this component the project spent US\$ 4.07 million, twenty-seven percent more than the PAD budget (including contingencies). Overall, all investment activities have been implemented and completed and all output and intermediate outcome targets expected at the project appraisal have been fully achieved, except the reduction of salt water intrusion subcomponent that was not completed; thus its related output and PDO outcome results were not achieved. Overall, the achievements of this component are rated as MS.

14. **Improved management and use of water-dependent ecosystems.** The Project results under this subcomponent were focused on data collection and management planning for 5 PAs in Croatia and the Hutovo Blato Nature Park in BiH. All project activities were completed before 2014. The final drafts of the Physical Plan and the Management Plan for Hutovo Blato were completed in June 2013, approved by the relevant ministries, and submitted to the institutions of Herzegovina-Neretva Canton for adoption. Hutovo Blato also conducted a biodiversity study with the Project’s support. All envisioned construction works aimed to improve the management of this protected area were completed as planned, including the installation of wastewater treatment plant for Hutovo Blato, which is

operational.⁹ Based on the type of interventions implemented, it can be argued that the water quality has improved significantly. It should be noted that Hutovo Blato is of significant importance for the ecosystem functions and the services of Neretva Delta, especially because of its water quality and biodiversity values. In addition, this protected area is regionally significant, being a resting place for migratory birds flying from the European continent to Africa in the winter season, for which it earned protection status under the Ramsar Convention. The Project interventions were timely and proved to be crucial for establishing foundations for future management and improving future resilience of this regionally important biodiversity hotspot, in addition to improvements of the water quality prospects for the entire Neretva Delta. The interventions in Hutovo Blato are especially important for reaching the goals under the CBD and for biodiversity.

15. As part of construction works, the Project also supported biking and hiking trail for the Bacina Lakes in Croatia, and construction of visitor toilets in the vicinity of the Vjetrenica Cave in BiH. The Project support for Bacina and Vjetrenica has shown to have particular positive impacts on the local communities and municipalities. The Bacina Lakes were the only tourist attractions of the City of Ploče. Adjacent municipalities in Croatia have very competitive tourist opportunities; the main livelihood of the population in Dalmatia depends on the summer tourist season on the Adriatic Sea. Local tourism entrepreneurs had reported improvements in their businesses after the trail was installed.

16. ***The Management Plan for 5 PAs in Croatia was completed in December 2012, approved by the relevant ministry, and submitted to Public Institution for Nature Protection of Dubrovnik-Neretva County.*** The NIP was further developed to include the research and education center in Neretva Delta called Natura LAB, which was also based on the Action Plan. Project activities under this subcomponent raised awareness on biodiversity values of NTRB through support to museums in both Croatia and BiH, printing of the Nasa Neretva newsletter and various promotions/education materials, some of which can be found on the WB website.

17. The Project supported renovation of the Museum of Herzegovina in Trebinje, which serves as an exhibition space dedicated to flora and fauna of the Trebisnjica river basin, including Popovo Polje (karst field) and surrounding mountains. In addition to the exhibit, the space is being used for digital media materials, such as short movies and pictures of biodiversity values of the Trebisnjica Basin. The stakeholders have recognized

⁹ Also, the Project restored the wetlands following the big forestry fire with repair and construction of 12 tourist infrastructure, 24 bird feeders and fauna observation posts and sailing vessels, upgraded and rehabilitated the park's O&M and service facilities and equipment (such as the tractor and amphibian machine). According to the park's observation and monitoring record, the number of species increased from 18 to 22 (about 22% increase), carp stocking increased to 2,500 kg, the annual number of visitors and tourists increased from 3,500 to about 7,000 (about 200% increase), and the annual financial income increased from 5,134 KM to 10,268 KM (about 200% increase) due to improved services and increased tourists, which further supported the sustainable O&M for a better use of the wetlands and its management in the Nature Park.

the added value of the new museum space through increasing possibilities for cultural events and gatherings for the city of Trebinje as well as wider Herzegovina Region.

18. The support to the Science Museum in Metkovic consisted of equipping a multimedia room that is being used for holding lectures, conducting workshops, and occasionally presenting exhibits. A contribution of the Ministry of Environment and Nature of the Republic of Croatia and the City of Metkovic to the Museum was obtained to equip the Museum with a permanent ornithological collection, containing 340 bird diorama specimens that belong to Neretva delta and Mediterranean habitats, as well as collections of fish and cave fauna.

19. The newsletter Nasa Neretva was supported by the Project, throughout project lifecycle, in both BiH and Croatia that resulted in the publication of 6 cross-border newsletters by the two ecological associations, Lijepa Nasa (BiH) and Modro Zelena Zadruga Branitelja (Croatia). As the newsletters were well received, these associations expressed their intention to continue publishing them after project completion with their own funds. They had already requested permission from the Project to continue publishing after 2014; this request was granted.

20. **Water management infrastructure.** Originally, a planned activity had been the restoration of river banks along the Krupa River. However, this activity was revised early during the project preparation phase, as consultations revealed that it would not contribute to the project outcome. So the Agency for Watershed of Adriatic Sea Mostar along with the final beneficiary, the Public Utility Nature Park Hutovo Blato, dropped this activity and, in agreement with the WB, proposed procurement of necessary equipment for the proper maintenance of Nature Park Hutovo Blato in the form of an amphibian vehicle and a tractor, as many parts of the nature park are hard to access with conventional vehicles. But the Agency for Watershed of Adriatic Sea Mostar, within their regular activities related to flood protection, undertook the restoration of the Krupa River banks (L= 851 meters) with their counterpart funds to ensure an adequate water regime which contributed to the restoration of wetlands within Hutovo Blato Nature Park.

21. **The pilot irrigation scheme Subcomponent.** Due to several issues that faced implementation of the pilot irrigation scheme, including mainly the delay in obtaining the building permit, the irrigation pilot scheme was dropped just prior to the construction phase, with all the previous steps completed. The funds were reallocated to new activities to enable extending and equipping of existing network monitoring stations on both surface and ground water in the Neretva area, and online monitoring of water quantity and quality, salinity, and flows. The new activity will provide valuable information on the intrusion of salt water into the Neretva River and the source of the Ombla River and enable adequate planning for the most appropriate management measures. Originally, the PAD envisaged 400 ha of irrigated areas within the scope of the irrigation pilot project. The Feasibility study conducted as part of the assignment showed that the most favorable location in terms of technical conditions was that of Glog which consisted of 300 ha. For this location, a Conceptual, Main and Detailed design were drafted, and the total estimated value of construction works was determined at about HRK16 million. However, the GEF grant only

provided about USD 700,000, with the remaining funds to be secured by the Government of Croatia. Due to the insufficiency of local funding available, the pilot project area was then decreased to 100 ha, and this was approved by the WB and all necessary documentation prepared. Hrvatske vode was responsible for obtaining all necessary permits, including the construction permit, which it did not manage to obtain in time due to unresolved property and legal issues for one pumping station of the irrigation system during the project implementation life (this is now being resolved in favor of HV). The irrigation pilot scheme may be funded by EU funds in the future, as the entire project documentation was passed on to the Irrigation unit at Hrvatske vode which was planning a large-scale irrigation project for the wider Opuzen area, including the investigated 300 ha within the pilot project.

22. **Improved Operation of HPP reservoirs.** The Study and Mathematical Models were prepared and finalized in 2014, along with the management plans. It is expected that they will be used in the post-implementation phase. A model for hydrological predictions, forecasting and decision making; and a plan, guidelines and a training program for optimal management of multi-purpose reservoirs in the river basins of Neretva and Trebisnjica were developed under this subcomponent. These are a "starting" basis for defining a harmonized framework management system for hydropower plants, especially under conditions when interstate (inter-entity) cooperation is necessary. *As stated by representatives of the PITs, the model is a valuable tool to be used by the water agencies for basin management which they plan on further developing and improving.*

23. This model was also a significant basis for the development of new flood risk maps and defining maritime regulations for the management of HPPs located in transboundary basins. The Study and the Model will facilitate joint actions of the water sector and the energy sector during the implementation of regular and extraordinary flood protection measures. The Environmental flow study was already being used in FBiH during the procedure of issuing water permits. *Its most significant achievement, however, is that it has harmonized the approach to environmentally acceptable flows for BiH and Croatia, which has not been the case until now.*

24. The main project stakeholders, consulted during the development of this Project Impact Assessment, consider the activities under this subcomponent to be of paramount importance for future agreements on joint water basin management. The stakeholders regard it as a baseline and basis on which the multipurpose management approaches can be built in the future. It should be noted, however, that consensus building and political negotiations at the highest level would still remain a challenge in the post-implementation phase, as the three entities involved in river basin management have different strategic interests for Neretva and Trebisnjica.

25. The success of project Component 1 had directly influenced the success of this result in the long term. In addition, as BiH was approaching EU accession, joint management visions had become even more important and were high on the political agenda of both countries and the two BiH entities. Monitoring of seismologic occurrences had also been introduced for the dam Alagovac, located in Nevesinje.

26. **Component 3: High-Priority Investment for Water Pollution Control** (US\$ 9.41 million of which GEF US\$ 2.46 million) spent US\$ 15.13 million, sixty percent more than the PAD budget (including contingencies). All project investment activities had been fully implemented and completed, and all expected output and outcome targets had been fully achieved (100% of PAD targets). Overall, achievements are considered satisfactory.

27. **Municipal Wastewater Treatment Improvements:** Improvements of sewerage systems in five municipalities in BiH were carried out and completed within this subcomponent, which had led to the contributions to the improved water quality of environmentally sensitive receptors providing downstream users with drinking water. In the Nevesinje Municipality (RS), the most significant results arising from separation of the mixed sewage that ran in the open channel along the municipality, were protection of the environment in the inner urban zone (see footnote 8 for details).

28. The construction of WWTPs for urban and industrial wastewater (see Annex 8) for Bileca Municipality (RS) enabled protection of the largest reservoir for supply of drinking water in the Balkans, with a volume of 1.3 billion m³. The water of Bileca Lake was used for supply of local settlements as well as parts of Neretva-Dubrovnik County in Croatia and Herceg Novi Municipality in Montenegro with drinking water. With a completely devastated WWTP, wastewater was directly discharged into the Bileca Lake, leading to substandard water quality reduction and eutrophication of algae along the water surface. Therefore, reconstruction of this tertiary-level WWTP, processing over one ton of waste weekly, and the waste water collection system, contributed to the lake remaining at a 'level 2 status', meaning it is safe for human consumption. Additionally, this subcomponent had provided local residents with numerous livelihood opportunities, such as development of tourism and recreation, restaurants, and fisheries along the lake. According to employees of the Bileca water facility, there was even an opportunity to produce bottled water from the lake's water, which would create even more employment opportunities. This subcomponent had attracted private sector money (e.g. the HPP on the Trebisnjica River), proving again that a meticulously planned project which "serves a greater good" may attract the interest of a wider audience than originally intended.

29. A promotional video was shot for this subcomponent, detailing the positive effects of construction of the WWTP11. The newest 12 reported measurements on water quality (Table 7) are partially in line (reported minor excess of N content) with the Regulation on the conditions for the discharge of wastewaters into surface recipients (Official Gazette of RS, no. 44/01) and the (91 /271 /EEC) Directive (UWWD Directive).

30. The reconstruction and upgrade (see Annex 8) of the WWTP in Ljubuski Municipality (FBiH) had led to an increase of effluent quality, with a reported 70% reduction of COD and BOD in one month of the trial run (which commenced on October 1, 2014, and was expected to last until March 1, 2015).

31. This GEF project had attracted 2 million Euros funding from the IPA 2010 grant through which construction of 15.2 km of a separate sewerage system was funded, which

in turn ensured additional amounts of wastewater to be treated at the WWTP.¹⁰ Part of the wastewater discharged into the Trebizat River, a major tributary of the Neretva River, from Ljubuski Municipality with its 30,000 inhabitants, directly jeopardizes the downstream river ecosystem as well as the ecosystem in the Neretva and Trebisnjica Basin and the Adriatic Sea Region. In Ljubuski Municipality wastewater from households that are not connected to the municipal sewage system, is collected by individual septic tanks. However, because of the porous soil composition, this wastewater reaches the sensitive groundwater and produces a negative pollution effect to the drinking water resources.

32. The objective of the IPA-funded project was to support the rehabilitation and expansion of the part of the sewerage system of the town of Ljubuski to increase the amount of wastewater collected, and conveyed to the wastewater treatment plant. It consisted of the following segments: the rehabilitation of the existing sewage network infrastructure; the construction of new sewage network infrastructure; the connection of beneficiaries to the sewage system; and the connection of the sewage network with the main collector and WWTP. **The detailed investment activities and results are presented in the attached notes on EU-financed sewerage system below.**

33. This WWTP was significant for the protection of water source Prud which is the source for the regional water supply system for Peljesac, Lastovo, and Korcula in Croatia. The construction of the WWTP in Konjic Municipality (FBiH), whose operation is expected to reduce nutrient load to the Neretva River, is in its final construction phase. This WWTP will use state-of-the-art membrane filter technology which cannot operate until wastewater is channeled to the WWTP. Construction of these collectors is the subject of a different project (WATSAN project) funded by the EIB. In June 2014 the Konjic Municipality signed the contract for works pertaining to the construction of the left Neretva River bank collectors and sewerage network through which Konjic Municipality is included in the Project WATSAN FBiH16. Project WATSAN FBiH (funded by EIB) was initiated to respond to needs of the FBiH municipalities for improvement of water supply and the public health situation, with reduction of water pollution through collection and treatment of wastewater that is presently discharged directly into the environment without any treatment. This project was thus fully complementary to the NTMP as it contributes to the improved water quality of the Neretva River by bringing wastewater for treatment at the Konjic WWTP. A trial run of the WWTP in Konjic indicates that this WWTP will reduce load to the Neretva River by 173 t /year of COD and by 14,5 t /year of N (see details in the result framework M&E table).

¹⁰ Thereby the amount of sewerage water collected in sanitary conditions increased by an additional 134,685 m³ per year bringing the total to 438,000 m³ annually (100% of the expected targets), which increased the number of households connected to the public sewerage by an additional 700 to a total of 2,085, bringing the number of inhabitants connected to public sewerage to 6,255 (100% of the expected targets). Also, the annual improved volume of quality water from six rehabilitated/constructed WWTPs (including the one in the Nature Park) is about 2,106,609 M³, based on its annual production capacity (100% of the expected target).

34. The water quality monitoring results during the trial work in all WWTPs showed that the reduced effluent ranged in 6 WWTPs as follows: BOD reduced from 155 mg/l to 6.4 -25 mg/l; N reduced from 25 mg/l to 3.1 – 12.4 mg/l; P reduced from 8 mg/l to 1.6-2 mg/l; and Cr reduced from 200 mg/l to 0.43-0.47 mg/l, which met EU standard and achieved expected pollution reduction targets (100% of the PAD targets, or exceeded the PAD targets by more than 400% times in some cases). Further, the average nutrient load reduction has increased from 0.43 ton to 60.97 ton per year and CDO pollution reduced from 10.01 ton to 917.8 ton per year (100% of the expected target), based on the monitoring data collected from all waste water treatment plants rehabilitated and constructed; and increased efficiency of the WWTPs operation from earlier 50-60% to 95% (100% of the expected targets).

35. GEF funding and procurement procedures undertaken in accordance with WB policy aided the municipalities of Konjic and Ljubuski in obtaining part of local funding from the Environmental Fund of the Federation of BiH.

36. **Industrial wastewater treatment improvements.** This subcomponent envisaged reduction of pollution stress to the Neretva River by installing a WWTP at two private metal-processing industries. Both Unis Gal and Sur Tec financed project documentation for the WWTP and subsequently PIT FBiH conducted two procurement processes which indicated necessary funds for this equipment would surpass those that the industries could afford, with a GEF contribution of 300,000 USD. This caused the industries to drop out of the project and the funds were used for municipal wastewater improvements instead. However, the industries had subsequently, using their own resources, procured equipment (the facility was designed with Project funds) that enabled effluent treatment, and the results (Table 7) indicate that discharged wastewater is in compliance with national and EU regulations - Decree on Conditions for Discharging Wastewater into Natural Recipients and the Public Sewage System (Official Gazette of FBiH, no. 6/12) and the (91 /271 /EEC) Directive (UWWD Directive). This facility consists of three phases, of which the Phase 1 comprising hydraulic connection of all waste flows and automated equalization and neutralization of wastewater has been operational since spring 2014. Therefore, the NTMP served as a catalyst for industries to undertake significant improvements in their technological process with regards to reduction of their environmental footprint which may have been considerably slower otherwise. Similar initiatives could be undertaken with the aid of the Environmental Protection Fund of FBiH and Environmental Protection and Energy Efficiency Fund of RS which would provide assistance to other industries to fulfill their legal obligations regarding pollution control.

37. **Component 4: Public Participation and Management of Project Implementation (US\$ 2.51 million of which GEF US\$ 1.28 million).** Under this component US\$ 1.96 million were expended, twenty-two percent less than the PAD budget (including contingencies). Overall, all investment activities have been implemented and fully completed, and all expected output and outcomes have been achieved. Thus, the project achievements are considered satisfactory.

38. **Workshops aimed at scientific community involvement and civil society participation.** In BiH, the first workshop for NTRB Management Plan was held on May 15, 2012 in Mostar after a Water Bodies Characterization Report was submitted. A public discussion was organized in June 2013 in Mostar for the purpose of presenting the activities undertaken under the framework of the NTRB Project to a wide range of stakeholders, including the scientific community. Three workshops were organized in 2014 in Mostar, Livno, and Posusje under the framework of preparation of the draft Adriatic Sea Watershed Management Plan in FBiH. The training and facilitation for community involvement in RBMP had been held in December 2014, during which the Project presented NTRB Management Plans in FBiH and RS.

39. Given that the National Plan for Water Basin Management of Danube and Adriatic Basins of Croatia was adopted on June 26, 2013, and that it had already passed the entire stakeholder engagement procedure together with the strategic environmental assessment, no additional consultations were held for the NTRB Management Plan. The final document was, however, presented to the stakeholders in December 2014.

40. NTMP was presented on several occasions, at various gatherings, and workshops were attended by the academic community and NGOs dealing with water management and environmental protection. The PIT representatives from both countries participated in the 6th GEF Biennial International Waters Conference in Dubrovnik in 2011 with the aim to present the Project. It included an oral presentation and posters, both aimed to present the materials developed by the Project and its activities. Visits were organized for the participants of the Conference to three project sites financed by Project: Vjetrenica Cave in FBiH, Bacina Lakes in RH, and WWTP Bileca in RS. NTMP was additionally presented during the following events:

- Diktas Project workshop in Trebinje, 2010;
- 3rd Croatian Water Conference in Opatija, 2011 (international conference);
- Construction Sector Meeting in Cavtat, 2012; and
- Regional Environmental Network for Accession (RENA): Regional training for water management (sub-group 3.2, water management) in Istanbul, 2012.

41. **Small Grants Program.** A total of 30 grants were awarded under the Small Grants Program (SGP) in both Croatia and BiH. The grants supported a range of financially sustainable projects that benefit the livelihoods of the local population and relieve pressures on natural resources and use of natural resources in the protected areas. An Operations Manual for the Small Grants Program defining the eligibility criteria and the conditions for awarding grants was developed in the beginning of the Project, and used as the basis for conducting the procedure of awarding small grants in both countries. The civil society sector implementing the aforementioned activities were provided with information, training, and education in the area of qualitative and quantitative conservation of natural resources. Community-based projects on water pollution control and conservation, implemented by the private sector, the government sector and the non-governmental sector were included in the Small Grants Program as well, and successfully completed. Such projects involved ecotourism and rural tourism projects related to water and nature

protection and conservation; small investments related to water conservation and protection; and small investments in production and training.

42. The detailed investment activities and output and outcome results achieved under the EU IPA-financed component - **Ljubuski Sewerage System** are presented in Appendix 1 of this Annex.

APPENDIX 1: EU IPA TRUST FUND TF071705 - LJUBUSKI SEWERAGE SYSTEM

Summary and context

43. The EU IPA TF071705 financing supported the NTMP project objective through rehabilitation and expansion of the sewerage system in the town of Ljubuski to increase the amount of waste water collected, and conveyed to the waste water treatment plant (WWTP), which rehabilitation and extension was supported by the World Bank. Activities included: rehabilitation of existing and construction of new sewage infrastructure; connection of new beneficiaries; and connection with the main collector and wastewater treatment plant.

Activities carried out financed by IPA Grant

44. The EU **IPA 2010** TF071705 provided **EUR 2.0 million** financing in support of the construction and expansion of the sewerage system in the town of Ljubuski. Activities included: (i) rehabilitation of existing and construction of new sewage infrastructure; (ii) connection of new beneficiaries; and (iii) connection with the main collector and wastewater treatment plant.

45. The EU IPA TF was declared effective on July 24, 2013, after long delay due to a dispute between the state level Ministry of Finance and Treasury, and the Federation BH Ministry of Finance over a guarantee issued by the Ministry of Finance and Treasury for three municipalities, including Ljubuski in lieu with the Spanish in-kind (goods) credit. Given the significant effectiveness delays, the Administration Agreement between the EC and the World Bank was extended by one year, until June 30, 2015. Subsequently, the closing date of the Grant Agreement between the World Bank and the BiH was also extended by one year until December 31, 2014, in order to allow for completion of project investments.

46. Due to effectiveness delay, construction started later than originally planned. However, since funds became effective, project implementation was fully satisfactory. The FBiH Project Implementation Team (PIT) invested considerable efforts in working with the Municipality of Ljubuski, to procure the main design for the new sewerage (streets A. Stepinca, Novo naselje, and East branch), financed by the municipality's own funds, prior to project effectiveness. This enabled considerable time saving and made up for some of the time lost.

47. Although implementation of the activities supported by the IPA Grant started on the ground only in July 2013, due to the reasons stated above, all contracts in support of the listed activities were completed by end December 2014 (Table 2.1), including: (i) rehabilitation and construction of the new sewerage (streets A. Stepinca, Novo Naselje, and East Branch); (ii) supervision of works on the above listed streets; (iii) design preparation for the Western Branch; (iv) supervision of works on rehabilitation and

expansion of WWTP Ljubuski; and (v) Preparation of Terms of References (TORs for design and supervision).

48. Despite the initial delay and the difficulties the contractor experienced related to excavation works due to the quality of the soil (mainly rocks), which required more time and effort, the project was completed with only one extension. 15.2 km of the sewage pipes were constructed, along with the two pump/sludge stations. All activities were completed in a quality manner.

49. Changes introduced during the implementation included reallocation of the funds from the construction of the Western branch to the sewerage construction on streets A. Stepinca, Novo naselje, and East branch to enable their completion, given the increased quantities in goods and works on those streets, as well as the fact that funds originally allocated to the Western branch had been found insufficient for its construction, as per the estimate which became available after the design completion.

50. Contract execution for WB-financed WWTP rehabilitation works, which were closely linked with the sewerage construction, started in September 2013. The works on the WWTP were completed in October 2014, followed by the trial work which was finalized in March 2015. In the initial period WWTP testing was based on a 5,000 population equivalent (PE), until the works on the IPA-financed sewerage works were completed. After the completion of IPA-financed sewerage at the end of December 2014, new beneficiaries (households) were connected to the WWTP increasing its capacity to a total of 6,000 PE. The water quality results proved during the trial work meet BH and EU standards.

Achievements/results by using indicators specified in the Description of the Project

51. The Sewerage System network with WWTP project aimed at a reduction of water pollution in the Trebizat River and Neretva and Trebisnjica river basin, and improving on the drinking water provision, thus enhancing the protection of the public health and the environment. It is additionally significant for the protection of water source Prud, which is the drinking water source for regional water supply system for Peljesac, Lastovo, and Korcula in Croatia. In addition, improved water quality of the Trebizat River also has a positive cross-border impact, as the Trebizat River flows into the Neretva River (Adriatic River Basin) which is an international waterway as it flows to Croatia and Adriatic Sea.

52. The results achieved measured by project indicators are:

- amount of sewerage water collected in sanitary conditions increased for an additional 134,685 m³/a, bringing the total to 438,000 m³/a; and
- number of households connected to the public sewerage increased for an additional 700 to a total of 2,085, bringing the number of inhabitants connected to public sewerage to 6,255.

53. This investment is closely linked with the rehabilitation and expansion of the WWTP, which was carried out with the support of the World Bank and which included: (i)

expansion by an additional 1,000 PE to 6,000 PE, and (ii) improvement of the secondary treatment performance based on more appropriate technology. It resulted in improved quality of the WWTP effluent, bringing it in line with EU and BiH standards and increasing efficiency of the WWTP operation from the earlier 50-60% to 95%. Projected parameters were proved during the trial run from October 2014 to February 2015.

Table 2.2: Project Results Framework/Monitoring Indicators

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY	
Increased interstate cooperation and capacity for transboundary water resource management				Croatia	Bosnia & Herzegovina
Institution and capacity building	Some capacity exists through ISWC	Annual meetings and training	PAD Target / Results fully achieved by both country	<ul style="list-style-type: none"> 39 meetings of ISWC, CC, and PMUs were held during the project implementation, including five annual ISWC meetings, six semi-annual meetings of Sub-CAS basin, 28 team meetings. 2 Study tours were organized for members of PMT/PITs, and some members of the Coordination Committee and ISWC. 4 Workshop related to the implementation of the EU WFD were organized for PMT/PIT members and some CC and ISWC members also attended. 6 Workshops related to the conflicts and negotiation techniques and development of RBMP were conducted for PMT/PITs members and some CC and ISWC members also attended. 	
Intermediate Results Indicators by Component				Croatia	Bosnia & Herzegovina
Component 1: Improved transboundary water resource management of the Neretva and Trebišnjica River Basin					
Adoption of Transboundary River Basin Management Plan	No plan exists	Preparation and adoption of the plan by the CC	The Framework for management in the transboundary	<ul style="list-style-type: none"> Management Plan for the Neretva and Trebišnjica River Basin in the Republic of Croatia completed Joint document 	<ul style="list-style-type: none"> Neretva and Trebišnjica River Basin Management Plan in the Federation of Bosnia and Herzegovina prepared. Management Plan for the Neretva and Trebišnjica River Basin in the Republic of Srpska prepared.

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY	
			Neretva and Trebišnjica river basin was adopted by both Coordination Committees (RH and BiH), with three completed water resources management plans in respective countries	<ul style="list-style-type: none"> ▪ Framework for management in transboundary Neretva and Trebišnjica river basin/s <p>The Management Plan for the Neretva and Trebišnjica River Basin in the Republic of Croatia is as an integral part of the Croatian River Basin Management Plan systematically implemented through regular activities of the Ministry of Agriculture, Hrvatske vode, municipal service companies and other competent bodies. The status of the implementation of the Croatian RBMP is analyzed in detail in the document "Overview of Significant Water Management Issues" made public in mid-February 2015 on the web sites of the Ministry of Agriculture and HV: http://www.voda.hr/hr/pregled-znacajnih-vodnogospodarskih-pitanja-0</p>	<p>Joint document:</p> <ul style="list-style-type: none"> ▪ Framework for management in transboundary Neretva and Trebišnjica river basin prepared and adopted.
Comprehensive hydrological measurement and monitoring program, linked to a transboundary water information system	Old hydrological data exist on water flows and water quality	Updating of data, M&E and dissemination	Completed and adopted a new application for automatic collection and exchange of agreed set of data from hydrological; meteorological stations and reservoirs and their linked to	<ul style="list-style-type: none"> ▪ Study "Technical assistance regarding analyses of equipment and expansion of the existing network of water measurement and monitoring stations" - The study put forward a proposal for improving and extending the existing network of stations for hydrological and meteorological monitoring, which has significantly contributed to existing monitoring. ▪ Study "Development of a basin-wide water information system including GIS system, equipment and training" - A set of information to be exchanged agreed; information publicly available defined ▪ Development of a new application for automatic collection and exchange of agreed set of data between BiH and Croatian institutions for water management of NTRB – Based on the study described above, an application was developed which made possible for the water management agencies in Croatia, RS and FBiH to exchange in real time data collected from the existing hydrological stations on watercourses and reservoirs and from meteorological stations. 	

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY	
			an updated transboundary water information system.		
			All data and M&E information updated and disseminated	<ul style="list-style-type: none"> ▪ According to the Study "Technical assistance regarding analyses of equipment and expansion of the existing network of water measurement and monitoring stations" the equipment to monitor surface waters of the Neretva River in Metković and the Ombla River in RH was installed with which the measured values of flow and quality parameters are received in real time ▪ Procurement of gas chromatographs – enables quantitative determination of organic priority substances for which low EQS are prescribed and measurement of easily volatile hydrocarbons in the list of priority substances ▪ Procurement of electrochemical analyses equipment – enables measurement of metals (priority substance) in a low concentration range in saltwater and salinized waters 	<p><u>Federation of B&H</u></p> <p>Note: The Agency for Watershed of Adriatic Sea Mostar had been invested in the last five (5) years in improving the system for monitoring of water status as well as in the software for WIS in the total amount of approximately \$ 350,000.00.</p>
Component 2: Improved management and use of wetland				Croatia	Bosnia & Herzegovina
					<div>FB&H</div> <div>RS</div>

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY		
ecosystems and biodiversity						
Environmental water flow requirements established and maintained through use of mathematical models for water management decision-making	Old requirements exist on water quality and flow	Preparation of the model and Environmental water flows maintained	Environmental flow requirements established and maintained; The Study and mathematical models were prepared and completed	<ul style="list-style-type: none"> Study to determine the minimum environmental flow at seven (7) profiles on the Neretva and Trebišnjica rivers – the values of the minimum environmental flow for each of the seven profiles recommended in the study and established; Mathematical models completed for hydrologic al predictions, HPP operations, forecasting and decision making and plan guidelines and training program for optimal management of HPPs multi-purpose reservoirs <p>The Study and mathematical models were prepared, along with the management plans.</p> <p>The environmental flow was determined on the basis of the provisions of the FBiH and RS Water Acts, as well as on the basis of the Draft Ordinance on EF. The EF was determined on the seven selected profiles next to the existing HPPs and reservoirs on the Neretva and Trebišnjica.</p> <p>Under this project, methods were developed and tested taking into account the specific characteristics of the water regime in individual watercourses, as well as of the entire aquatic ecosystem. Since the term “biological (water management) minimum” had been applied earlier in this region, this Study has created a starting point for continuous improvement of methodological approaches to determine the EF.</p> <p>The analyses, made in order to determine the minimum environmental flow, are an important step in integrated analysis of conditions for coordinated management of the Neretva and Trebišnjice waters.</p>		
Improved management of wetlands to better process pollutants, to reduce outflow to international waterways, and improve ecosystem health	Few samples are currently collected on water flow and quality	Improved pollutants processing and reduced outflow	Improved pollutants processing and reduced outflow achieved	<ul style="list-style-type: none"> Completed Management Plans for 5 protected parts of nature in the Neretva delta - the Public Institution partially uses it in its work, i.e. the proposals of the Action Plan which is integral part of the Management Plan are financed from different sources Improvement of old and construction of new piezometers in the Neretva river valley and installation of groundwater monitoring equipment – this activity provides valuable information on the intrusion of salt water into the Neretva Delta as a consequence of reduced water flows and climate change. Comprehensive monitoring conducted resulting in 	<p>Nature Park Hutovo Blato:</p> <ul style="list-style-type: none"> Both physical and management Plans for Hutovo Blato Nature Park had been completed and adopted <p>Note: The Draft Spatial Plan of the Nature Park "Hutovo Blato" that is an area with specific characteristics for an area of importance for the Herzegovina-Neretva Canton for the period from 2013 to 2023 has been accepted by the</p>	<ul style="list-style-type: none"> Completion and display of the Flora and fauna exhibit within the Museum of Herzegovina Engaged preparatory and biologist for preparation a Exposure Civil works on one level of building Museum for the exposure

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY		
				more efficient preparation of protection measures	Assembly of Herzegovina-Neretva Canton at its session held on 09 March 2015.	
Restoration of water management infrastructure, including wetlands, river banks rehabilitation along Krupa River	Poor management of wetland (quality and quantity) No plans implemented for restoration	Implementation of plans	River banks rehabilitations works along Krupa River completed. The physical management plans completed and adopted to restore the wetlands and protect the ecosystem.	Improvements of wetland sites for ecotourism at Baćina Lakes: <ul style="list-style-type: none"> Construction of Baćina Lake bike and hike trail. Preservation of wetlands used for ecotourism in order to mitigate possible adverse environmental impacts enabling visitors to have controlled access to sensitive ecosystems was achieved through the construction of app. 5 km of the bike and hike trail around Baćina Lakes 	<ul style="list-style-type: none"> Management Plan for Hutovo Blato Nature Park has been completed. (Adoption procedure is on-going) Monitoring and biodiversity inventory for Hutovo Blato Nature WWTP – 100 PE for the facilities within Nature Park Hutovo Blato completed. Total reduction of: <ul style="list-style-type: none"> COD = 3,497(t/god) The Agency for watershed of Adriatic Sea, carried out rehabilitation works on the right embankment on Krupa River, in the total length of L = 851.00 m, at the location Karaotok, Capljina, in the amount of 417,000.00 KM (approximately \$ 285,000.00) within its financial plan and program for the years 2013 and 2014. 	
Development of a comprehensive plan	No plan exists	Improved management	Expected PAD Target /	<ul style="list-style-type: none"> Mathematical models for hydrological predictions, HPP operations forecasting and decision-making completed and adopted. 		

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY		
for management of HPP reservoirs		nt of the reservoirs	Results fully Achieved by Countries	<ul style="list-style-type: none"> Design of a plan, guidelines and training program for optimal management of HPPs multi-purpose reservoirs completed and adopted. <p>The prepared Plan and Model for HPP operations are highly relevant for improving the impact of operations of the existing HPPs in the Neretva and Trebišnjica basins. The construction of HPPs in the basin was preceded by preliminary water management approvals. Through this Plan and Model detailed investigations were done and high-quality data was collected to revise the existing Operational Rules to manage the HPPs in the Neretva and Trebišnjica basin.</p>		
Area developed under the pilot scheme to mitigate salt intrusion in Neretva Delta (total area 400 ha)	0/ha	400 ha completed. Establish M/E to monitor sustainability and replicability	The target was not achieved because the pilot scheme was dropped	<p>Although the pilot scheme was finally dropped the following activities were completed:</p> <ul style="list-style-type: none"> Study “Level of salinity and sustainable use of soil in lower Neretva Region” Feasibility study and preliminary design for an Irrigation pilot project Detailed Design of the pilot project completed. Yet, construction did not start since a building permit could not be obtained due to unresolved property issues on the pumping station plot which couldn’t be resolved in the NTMP lifetime Procurement and installation of equipment for Opuzen-Jasenska agricultural weather station, improved data collection at the agricultural weather station, in order to maintain the groundwater level for the needs of amelioration areas used in agricultural production, but also for the needs of draining the wider area not covered by amelioration 		<ul style="list-style-type: none"> Establish of seismological monitoring of the dam Alagovac – elaborate of needs for adequate equipment Based on elaborate we buy equipment for seismological monitoring
Component 3: Improved Water Pollution Control				Croatia	Bosnia & Herzegovina	
					FB&H	RS

OUTCOME INDICATORS	BASELIN E/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED		TARGETS/RESULTS ACHIEVED BY COUNTRY							
Reduced discharge through wastewater effluents of municipal and industrial pollutants to international waterways in selected municipalities	Wastewater treatment plants need improvements	Construction completed/O&M	All expected WWTP targets were fully achieved. Construction completed and O&M in place. Nutrient and COD pollution reduction achieved		<ul style="list-style-type: none">• WWTP Ljubuški, capacity 6000 PE completed. It is in function.• WWTP Konjic, capacity 5000 PE completed and in operation• WWTP. Industry completed and in operation.			<ul style="list-style-type: none">• Wastewater treatment plants in Bileća completed• WWTP upgraded in municipality Bileća and Nevesinje				
BOD reduction in Average	155 mg O ₂ /l	20	8	25						< 0.5	6.4	
COD reduction in Average												
N reduction in Average	25 mg/l	15	12.4	15						3,1	1,38	
P reduction in Average	8 mg/l	2	1.61	2						0,15	< 0.01	
Industrial pollution: Cr – reduction in Average	200 mg/l	0.5								0,47	0.44	
Component 4: Increased public participation in IWRM					Croatia			Bosnia & Herzegovina				
								FBiH		RS		
Increased number of civil society activities that engage stakeholders in river basin management	Ad hoc meetings	Annual M&E reports	Annual M&E reports completed									

OUTCOME INDICATORS	BASELINE/UNIT	PAD TARGETS	TARGETS & RESULTS ACHIEVED	TARGETS/RESULTS ACHIEVED BY COUNTRY		
planning and improved use of water resources:						
Number of workshops	None	5 workshops	5 workshops	5 workshops jointly organized on river basin management plans, and water pollution control and conservation.		
Number of communities' meeting to discuss RBMP	None	25 communities	27 communities	Total 27 communities involved on community based water pollution control and conservation.		
Number of small grants for NGOs for activities related to project objectives	None	30 grants	30 grants	8 contracts awarded under the Small Grants Program	16 contracts	6 contracts awarded under the Small Grants Program

Annex 3. Economic and Financial Analysis

General Background

1. The Neretva River Basin is shared by BiH and Croatia, and through the Trebišnjica River, which is hydraulically connected with the Neretva, also by Montenegro. Some 10,100 km² of the basin area is in BiH, and 280 km² in Croatia. The Neretva and Trebisnjica rivers are a major resource for BiH and play an important role in neighboring Croatia and Montenegro. Together, they account for almost 40 percent of all flowing water in BiH. They are a showcase for outstanding biodiversity and play a crucial socio-economic role in electricity production, drinking water, tourism, and agriculture. The Neretva River is one of the biggest in the Adriatic Sea, feeding a complex blend of cultures, industries, and nature reserves. Winding 225 km past towns and villages in BiH it spills out into the Adriatic Sea on the Croatian Coast, building a delta with wetlands so rich that they are listed under the Ramsar Convention as internationally essential. Thanks to its exceptional biodiversity, the Hutovo Blato nature park is internationally recognized as a wetland of high importance. The park area ensures the purification of its water, feeding a unique karstic area with cleaner water on its way to Croatia. It also plays a vital role preventing salinization of underground water in the lower catchment area, providing water to most of the downstream area. The hydrological situation of Hutovo Blato is a good indicator of the hydrology of the entire basin: when something has an impact on its wetlands, the lower basin, specifically the Neretva delta which is currently suffering lack of water, is also affected.

2. Both the Neretva and Trebišnjica are particularly important in terms of energy production. In BiH's part of the Neretva and Trebišnjica basins, there are 13 reservoirs. Dams with accompanying reservoirs on the Neretva include those of Jablanica, Grabovica, Salakovac and Mostar. A hydroelectric production system has been constructed on the Trebišnjica including two dams (Trebinje I and II, in BiH) and two channels: one through Popovo polje towards the Čapljina plant (BiH), and a second one across the borders towards the Dubrovnik plant (Croatia). Additional infrastructure is planned to be constructed through the "Upper horizons" project, which involves regulation of Gatačko, Nevesinjsko, Dabarsko, and Fatničko Fields. A hydropower plant exists also in the Rama River. These rivers are also crucial for transport, recreation, and fishing. They are also used for drinking water, irrigation, gravel, and sand extraction. The most pressing issue is increasing demand for water from various sectors including hydropower, drinking water, industry, and agriculture, which is increasingly difficult to satisfy.

Project Objectives and Investments

3. *The project development objective was to "provide a mechanism for the efficient and equitable water allocation among the NTRB users at the transboundary level and for enhancing the basin ecosystems and biodiversity through improved water resource management".* Key outcome indicators included: (i) increased interstate cooperation and capacity for transboundary water resource management, the enhanced maintenance of environmental flows and developing ecosystem health and biodiversity in the basin; and

(ii) reduction of water nutrients and other pollution from municipal and industrial sources in selected municipalities in the basin, and reduction of saltwater intrusion as a result of the operation of an irrigation pilot scheme in the Delta.

4. *The project cost, including its parallel financing, was budgeted at US\$21.27 million and ended up investing US\$28.25 million.* The project managed to leverage US\$7 million additional funds than originally foreseen with which the construction of 15.2 km of additional sewerage system was built ensuring additional wastewater to be treated at the WWTP Ljubuški bringing unforeseen benefits for the protection of the Prud water source, the drinking water supply for the regional water system for Peljesac, Lastovo and Korcula in Croatia. Hence, costs were increased but benefits also.

5. Most of the anticipated investments, activities and targets have been met and several surpassed, with the exception of the US\$1.2 million pilot irrigation scheme in the Neretva river delta that could not go ahead because of legal claims of some landowners.

6. *Component 1 of the project aimed to finance US\$6.15 million to improve water resource management capacity in both countries and to strengthen the transboundary mechanisms and tools for effective water resource management.* The component spent US\$7.07 million in supporting both national and interstate institutions for transboundary river basin management and necessary tools including basin-wide measurements, monitoring, modeling, and a database management system. It supported basin management planning, training and capacity building¹¹.

7. *Component 2 (US\$3.2 million) aimed to maintain and conserve water-dependent ecosystems and their associated biodiversity in the coastal areas of the NTRB identified as critical for the health of the Adriatic-Mediterranean ecosystems.* This was mostly attained by balancing conservation, mitigation, and prevention in supporting activities to maintain the coastal wetlands by financing: (i) improved wetland management; (ii) small-scale water management works; and (iii) improved management of reservoirs, hydro power plants and dams¹². To mitigate the impacts of saline water intrusion that threatens water quality and ecosystems in the delta region the irrigation pilot scheme aimed to test a sustainable solution for the negative impact of salt intrusion in a Croatian priority area and for developing irrigated agriculture. This subcomponent was dropped and the funds reallocated to new activities under the hydrological measuring and monitoring program for

¹¹ Results of the measurement, monitoring, and water information system activities have greatly enhanced the capacity of the HPPs to improve operational performance. Operation of the HPPs in NTRB need to serve several conflicting functions: i.e. maintenance of environmental flows which is often inadequate due to requirements of the HPPs for energy production. Flood management in the Neretva River Basin, which can be handled within certain limits by the existing reservoir and water management infrastructure, can be compromised by either poor operations or intentional interference to meet other water use demands.

¹² The project financed activities to enhance HPP operations including: (i) studies to determine the minimum environmental flow (also linked to the development of the NTRB-IWRM Plan); (ii) plans, guidelines, and training programs for optimal management of HPP reservoirs for multipurpose use; (iii) a comprehensive dynamic management model for reservoir operations; (iv) development and application of mathematical models for hydrological predictions; and (v) HPP operations, forecasting, and decision-making.

enhancing the water monitoring network and thus also contributing to the project PDO's¹³. The irrigation scheme, for which most prerequisites have been met through the NTMP, will be implemented shortly by Croatian government once the legal issues are solved.

8. *Component 3 proposed high priority investments for water pollution control aiming to invest US\$9.4 million (44 percent of the total costs) for financing on cost-sharing basis waste water treatment (WWT) system construction and rehabilitation for selected municipalities, including WWT in two industrial plants in Konjic. The actual investment in component 3 reached about US\$15.3 million (62 percent over the budget and 54 percent of the project investment costs)*¹⁴.

9. *Component 4 supported public participation and awareness and overall project management (US\$2.51 million budget and US\$1.97 million actually spent). It contributed to increased civil society participation in the decision-making process for water resource management and to establish an incentive mechanism for responsible, local level resource management.*

Project Benefits

10. *As was foreseen in the PAD, the NTMP is providing a number of environmental and economic benefits that are being captured globally, regionally, and locally, most of which are very difficult to quantify. Some of the benefits were described as follows:*

- *Global benefits* arising from: (i) the protection to the endangered flora and fauna of the NTRB, notably in the wetlands of the delta region; and (ii) the reduction in pollutants from land-based sources reaching the Adriatic and Mediterranean Seas reversing the degradation of these globally significant bodies of water.
- *Regional benefits* shared by the citizens of BiH, Croatia, and of the Adriatic Sea littoral countries (Albania, Italy, Montenegro, and Slovenia) and mostly related to tourism and recreation in the NTRB, including ecotourism to the wetland areas, and all along the Adriatic Coast. The attained reduction of pollution from municipal and industrial sources is now helping to improve bathing-water quality and supporting marine biodiversity;
- *Local benefits* including those to the Croatian tourism sector in the vicinity of where the Neretva River flows and drains into the Adriatic Sea; as well as those related to

¹³ The reallocation supported the extending and equipping of existing network of surface and ground water gauging monitoring stations in the project area and on-line monitoring of water quantity and quality, salinity, flows, etc.

¹⁴ Selection of technology was based on *least-cost economic analysis* following an agreed process including: (i) estimation of the demand for collection, treatment, and safe return to the environment of wastewater; (ii) analysis of technical options to identify the cheapest way of collecting, treating, and safely disposing of wastewater from the project towns; (iii) costing of each of the technical option using economic and constant prices; and (iv) annual O&M costs associated with each technical option. The present values of O&M and investment costs for different technical options were compared and the least-cost alternative chosen. Environmental cost-effectiveness, in terms of the average cost of reducing nutrients and BOD, and annual amounts of these elements reduced was also taken into account in the selection process.

other sectors: aquaculture, agriculture, and services. In the Delta, the introduction of environmentally friendly agriculture and irrigation practices targeting at reducing salinization of the wetlands would lead to higher production quality, and increased incomes to farmers in the area. Other local benefits related to the improved quality in drinking water sources in upstream BiH cities along the Neretva River were successfully achieved. Municipal and industrial water treatment project investments are also reducing costs associated with public health problems (treatment, precautionary expenses, and loss of work-days as waterborne diseases are reduced due to enhanced quality of drinking water), and also reducing the water treatment costs required for human consumption.

11. *The NTMP has demonstrated that cooperation and coordination built throughout the project life between different countries and their conflicting policies is possible, which is a significant achievement by itself.* Cooperation and mutual understanding among the institutions in BiH and Croatia are necessary prerequisites for sustainable management, efficient use and allocation, and proper protection of shared water resources in NTRB. The project contributed to building capacity of the water agencies in both countries by procurement of IT equipment and office supplies, as well as by providing training, study tours and facilitating specialized meetings. It also included workshops on implementation of the WFD and on water conflict negotiations and resolution. The measurement, monitoring and information management subcomponent also provided assistance regarding analyses of available equipment and expansion of the existing network of water measurement and monitoring stations, and developed a basin-wide water information system including GIS, sophisticated equipment and targeted training. A new application for automatic collection and exchange of agreed set of data between the institutions for water management of the NTRB was developed, and mathematical models for hydrological predictions, HPP operations, forecasting and decision making were developed and implemented with the required support training. Guidelines and training programs for optimal management of HPPs multi-purpose reservoirs is now available for enhanced basin water resource management.

12. *One of the most important achievements of the project was the development of the model for hydrological predictions, forecasting and decision making, and the plan, guidelines and training program for optimal management of multi-purpose reservoirs in the river basins of both rivers.* This study introduced the framework of harmonization and synchronization of the existing two systems in the Trebisnjica and Neretva Rivers during periods of adverse water impacts (but also during its normal operation), increasing the efficiency of the constructed multipurpose HPPs capacity. The project harmonized and consolidated all relevant framework rules for the management of the HPP systems related to a variety of operation conditions. This is particularly relevant for cases of extreme hydrological conditions including floods, accidents, or cases when there is a need to coordinate and harmonize water management activities of different water users¹⁵.

¹⁵ The PAD recognized that: “Although the rivers are characterized by relatively high runoff (22 l/s/h3), there is great variation in flows, and much of this (57 percent) leaves the territory unused. In spite of the

Impact Assessment

13. *The financial and economic justification for the proposed project at the time of appraisal stated that: (i) cost-effectiveness of WWT investments would be ensured by selecting technology options that have the lowest present value of investment and O&M costs, and by assisting municipalities to improve financial viability of their operations through the business plan approach, which had proven successful at the ongoing Water Quality Protection Project; (ii) fiscal sustainability of institutions responsible for cross-border river basin management was ensured, since in both countries, government staff were adequately compensated through their state budgets when traveling for official duty; and (iii) the feasibility analysis of the US\$1.2 million - 400 ha pilot scheme to mitigate saltwater intrusion in the Neretva Delta indicated that both the scheme and the overall pilot activities were potentially financially and economically feasible.*

14. *With the exception of the irrigation pilot scheme whose implementation had to be dropped, the rest of the expected benefits were attained.* As the pilot scheme is still to be implemented, it is not possible to measure the actual benefits and results of the only proposed investment for which an economic and financial analysis was prepared ex-ante. Nevertheless, the Project laid out the foundation for the mid-term and long-term planning in the Neretva Delta. It is known that reduction of saline water intrusion is extremely important for the maintenance of productive landscapes, and sustainable agriculture purposes, which affect water quality in sensitive wetland habitats.

15. *The Project was successful in supporting the implementation of solutions for some of the basic and adverse pollution effects on water bodies of NTRB, arising from urban settlements and the local industry.* The Project activities led to the reduction of pollution of these important global watercourses. It has led to the protection and restoration of the endangered wetlands and other habitats, which will in turn lead to increased biodiversity. The reduction of pollution, and improved water and protected area management reflects positively on the protection of globally important species and sub-species of the Mediterranean wetlands and karst areas containing unique and rare life forms specific to the karst Dinaric area.

16. *Regardless of the fact that impacts on the local economy and communities are still difficult to quantify, a qualitative assessment undertaken indicates that the Project has resulted in a number of significant regional and local economic and social benefits.* The impact on local communities was assessed through a Stakeholder Survey and the key results are summarized as follows:

- Reduction of pollution from municipal and industrial sources (through water treatment), ensuing in improved water quality and availability of safer drinking water sources, and hence, in public health-related issues and costs;
- Development of tourism and recreation (primarily through the successfully completed Small Grants Program). About 40% of the respondents stated that the Project

apparent wealth of water resources, this significant spatial and time variation results in areas that experience heavy flooding in winter months and suffer from drought in the summer” (page 25, PAD).

contributed to the development of tourism (particularly ecotourism) in the Project areas; and

- In addition, 36% of the respondents stated that the Project activities resulted in additional benefits for individual organizations and local communities which were not originally foreseen. Outputs have strengthened the national flood prevention and forecasting and the operational response capability of the two countries through the new advanced equipment, the shared information system, and the mathematical simulation models that now are able to inform decision-makers faster and more reliably about coming hazards allowing to adequately preventing, evacuating and/or taking opportune safety measures.

17. *One significant effect of the NTMP was ensuring improved downstream water quality in the Neretva delta provided benefit to Croatia and Montenegro with regard to drinking water.* The Trebisnjica and Neretva Rivers are ecologically sensitive areas located in porous karst terrain characterized by sinkholes, caves, and underground drainage systems susceptible to long-range transport of polluting substances. Wastewater discharged by one city travel for kilometers into others' water sources causing health hazards for those consuming that water. The protection of these natural resources is vital for maintenance of a sound transboundary ecosystem where all users have the right of access to clean and safe water. The Project provided a significant step towards improvement of regional and transboundary water sources and water supply systems by putting in place WWTPs and other infrastructure for stress reduction in selected municipalities. It also unlocked the potential for local community development by enabling inhabitants along the affected areas to develop tourism and agricultural opportunities where none were possible due to the poor water quality. Almost all of the surveyed stakeholders are of the opinion that the Project contributed to reduction of pollution caused by municipal and industrial wastewater discharges.

Flood Risk and Avoided Damages in the Lower Neretva Region

18. *Even though not quantified at appraisal, probably the most important economic and financial benefit that can be derived from the project outcomes is the expected reduced damages from future natural flood hazards as both countries jointly became better prepared to mitigate their effects especially under the current climate changing scenarios.* Avoided damages will result from the enhanced capacities and tools for improving river basin management from both: (i) the more effective early warning system (EWS), and (ii) the improved capacity and coordination to operate the water reservoirs, hydro power plants (HPPs) and the dams' system along the NTRB.

19. *River basin management capacity was improved with project activities implemented jointly by Croatia and BiH including the development of:* (i) the Framework for Neretva and Trebisnjica Management and the individual River Basin Management Plans for Croatia, BiH and RS; (ii) the Environmental Flow Study; (iii) the Optimization of Hydropower Reservoirs Study; and (iv) the software application for exchange of water monitoring data between both countries on-line and in real time. Mathematical models applied for hydrological predictions, HPP operations, forecasting and decision making,

together with the plans, guidelines and training programs for optimal management of HPPs multi-purpose reservoirs are the starting basis for enhancing a harmonized framework management system for HPP especially in conditions when interstate and inter-entity cooperation is necessary. *The models are valuable tools now being used by the water agencies in both countries for basin water management, which they are committed to further develop and improve.* Models are also the basis for the development of flood risk maps and planning mitigation measures for the risk areas, and defining regulations for the management of HPPs located in transboundary basins. The floods of 1999 and 2010 in the lower Neretva Region have shown that the region is highly vulnerable. The high Neretva waters that flow in from the upstream part of the basin are under a direct influence of the operation of the existing HPPs and reservoirs in BiH. The maximum levels of the high waters of the Lower Neretva Region largely depend on the reservoir management regime, primarily the operating regime of the HPP Mostar and the discharge of water from the pumping HPP Čapljina.¹⁶

20. *An effective EWS requires continuous monitoring systems, hardware, software, plans, and procedures, and personnel that work in an integrated manner to maximize the mitigation time available prior to the onset of flooding*¹⁷. The mitigation time increases result from reducing the time necessary to collect-process and share data to evaluate and identify the flood threats, and then to notify the emergency personnel and the public, while making timely decisions about proper responses, including HPP reservoir management to mitigate the wave of floods. Gains in mitigation time yield direct and indirect, tangible and intangible quantifiable benefits. Direct tangible benefits – i.e. inundation damage reduction - was estimated with standard expected damage computation procedures using modified depth-damage flood maps, and functions that include mitigation time as independent variable¹⁸. The Flood Risk Maps have been prepared for Croatia by the PIT technical staff,

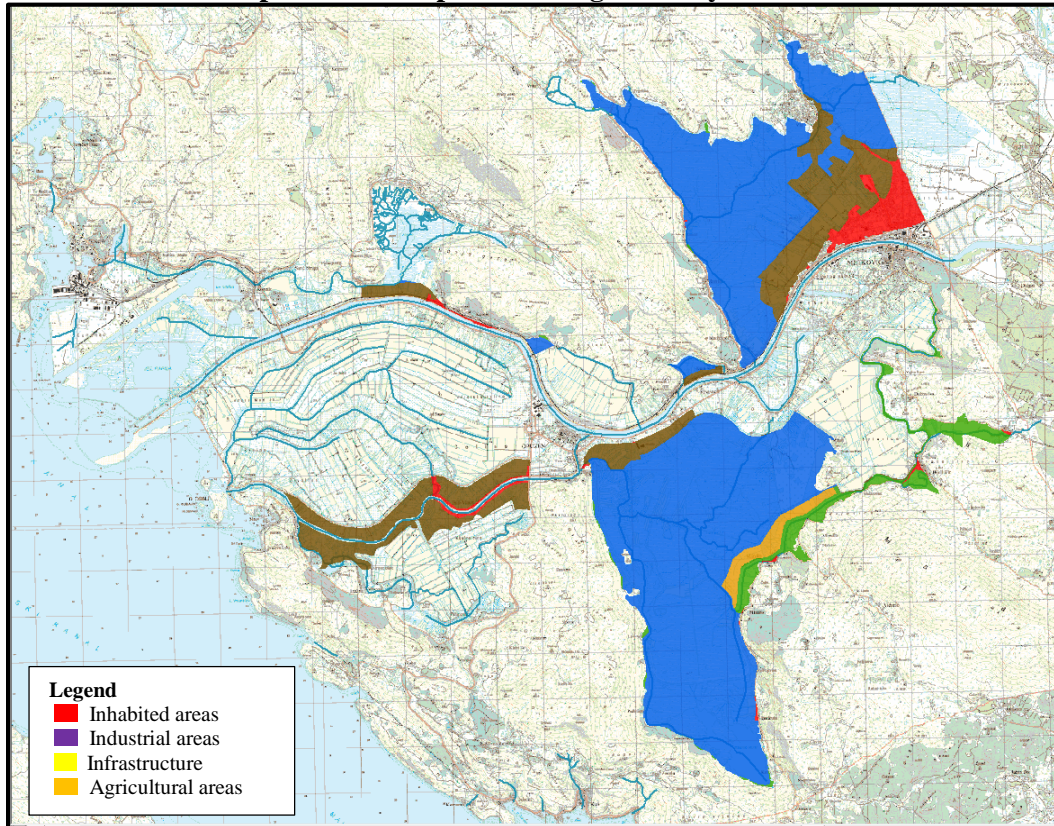
¹⁶ The function of the HPP Mostar is to balance the operation of the upstream reservoirs of the HPP Grabovica and HPP Salakovac, which mostly operate in the peak section of the load diagram since the existing dikes along the Neretva and its left branch Mala Neretva have largely been transformed into traffic infrastructure (a road and a railway), they have a double function, i.e. they are used both for traffic and for flood control. The Neretva channel is regulated along its entire stretch from Metković to the sea in the length of 21.6 km, and the Mala Neretva channel is regulated along its entire stretch from Opuzen to the sea in the length of 10.0 km. At the beginning and end of the course of the Mala Neretva there are two dams equipped with gates and navigation locks. The purpose of the dam at the beginning of the course in Opuzen is to control the entry of water from the Neretva, and the purpose of the dam at the mouth is to prevent the intrusion of salty seawater into the Mala Neretva and its riverbank area and to control the discharge of water from the area behind the riverbanks. During high water periods, all the culverts in the left and right dikes along the Neretva downstream of Metković are closed, except the mouths of the Norin and Crna Rijeka on the right riverbank. The high Neretva waters enter through the Norin mouth and flood the Vid-Norin wetland. When the Neretva water levels drop, the water drains from the Vid-Norin wetland back into the Neretva.

¹⁷ The objective of the EWS is to induce people in the face of an approaching catastrophe to take proper action to reduce the risk to life and property damage. Effectiveness depends on the time needed for activating the response.

¹⁸ The reduced damage from floods was estimated based on the expected value of avoided Annual Average Damages determined by the integration of a series of single event damages for a sequence of floods with progressively infrequent return periods. Flood maps were drawn for the different recurrence periods for the main risk area. Hazard areas were determined by water table ordinates, resulting from the mathematical hydraulic models using GIS, based on a digital terrain. The hazard areas were then presented with surface

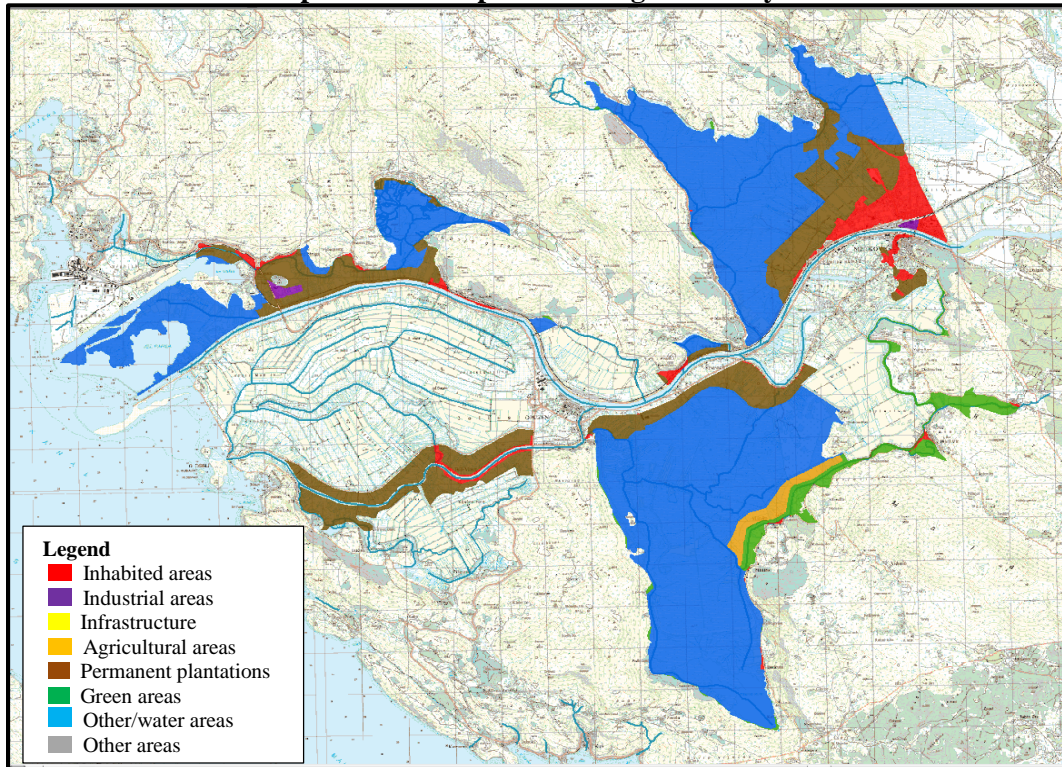
and are now being further developed with the new available tools. Flood maps were prepared for the lower Neretva River for return periods of 1 in 25 years, 1 in 100 years, and 1 in 1,000 years and are shown in Maps 1 to 3 below.

Map 1: Flood Map and Damage for 25-year RP – Land use

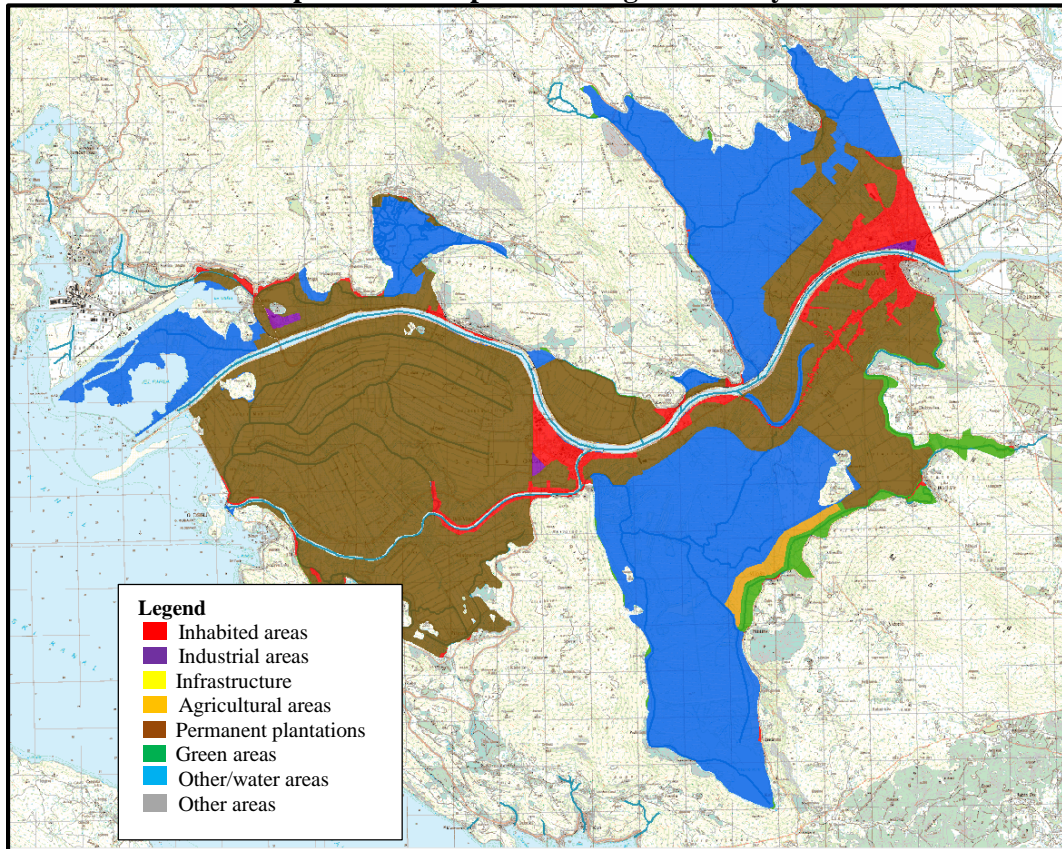


objects with assigned values together with the likelihood of flooding. The maps for the assessment included: (i) areas where flooding likelihood is low (once in 1,000 years: 0.1 percent likelihood); (ii) areas where the flooding likelihood is medium (once in 100 years: 1 percent likelihood); and (iii) areas with flooding likelihood high (once in 25 years: 4 percent likelihood).

Map 2: Flood Map and Damage for 100-year RP – Land use



Map 3: Flood Map and Damage for 1000-year RP – Land use

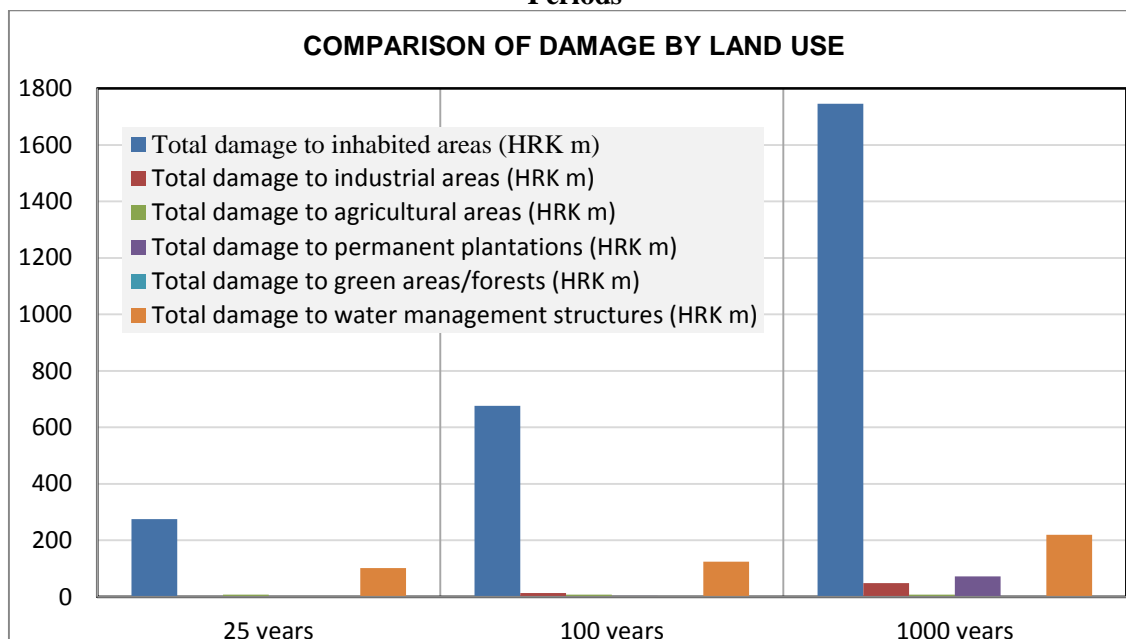


21. The estimated areas affected by flood events in the Lower Neretva Region for the three mentioned return periods are shown on the maps of flood vulnerability (population, material assets, industry, infrastructure, environment); and are associated with the corresponding flood risks (potential flood damage as function of the return period including direct and indirect effects)¹⁹. The preparation of the flood maps for the recurrence periods mentioned above included the following activities: (i) preparation of GIS hydraulic model to generate flood inundation maps for different flood intensities and levels on the lower Neretva River; (ii) use of satellite images for areas defined under the inundation maps to prepare land use and socioeconomic maps; and (iii) estimation of the value of the flood damages and the mitigation benefits assuming a percentage of those damages that would become protected with the project new tools.

22. The method for quantifying avoided flood losses due to the project flood protection development was primarily based on the calculation of the weighted *average annual damage* (AAD) expected under the pre-project situation (“without project”). The AAD can be defined as an average of a series of flood damages of increased severity, and weighted by its correspondent decreasing frequency. The values of estimated damage for each of these events were assessed by the experts of the Croatian PIT and are presented in Table 3.1. These values allowed for the determination of three points of the curve, and the simulation of the ADD curve with its probability in the x axis.

¹⁹ Digitalization of the flood maps for the selected flood events with different return periods from satellite images and hydrological modeling was prepared for this flood assessment by the Hrvatszke vode from Croatia. Land use, settlements, infrastructure and other layers of maps associated with the economic analysis were overlaid with the flood maps for calculating the value of damages under each event.

Table 3.1: Estimated Value of Damages under Flood Hazards under Different Return Periods



23. The area under the flood loss probability curve before the project was estimated by the integral (area below the curve) which in turn corresponds to the density of standard normal distribution function. Using the principles of standardization, the calculation of the area under the normal curve over any section was reduced to the calculation of the corresponding values of the cumulative distribution. Flood AAD for the 25, 100, and 1,000-year flood recurrence and related probabilities in the pre-project and current conditions were estimated as shown in Table 3.2.

Table 3.2: Weighted Annual Average Damage Calculations (in US\$ million)

Recurrence period	Exceedance probability	Damage (US\$ M)	Probability of flood in interval	Mean Damage (US\$ M)	Annual interval damage (US\$ M)
Weighted AAD Without the Project					
1 in 25	0.04	54.8	0.125	27.4	3.425
1 in 100	0.01	117.4	0.13	86.1	11.193
1 in 1000	0.001	297.5	0.0055	207.45	1.141
Total Weighted AAD without the Project					15.759
Weighted AAD with the Project					
1 in 25	0.04	27.4	0.125	13.7	1.212
1 in 100	0.01	58.7	0.13	43.05	5.596
1 in 1000	0.001	198.25	0.0055	103.725	571
Total Weighted AAD with the Project					7.879
EXPECTED AVOIDED AAD					7.879

24. *Given the nature of the outcomes of the project, the avoided AAD was estimated by assuming that the expected damages would now be reduced by about 50 percent.* The expected value of the AAD that could result from the improved transboundary institutional capacity for the management of the NTRB water resources, including enhanced management of reservoirs and the enriched EWS were estimated at US\$7.879 million only for the lower Neretva River.

25. The improved EWS allows for managing the reservoirs to mitigate the wave of floods and for offering extra time for communities to react moving to higher ground out of the floodplain, elevating valuables to a higher level or moving their assets out of the floodplain, and/or building walls with sandbags to keep water out of valuables. Day's methodology was used in estimating benefits of the enhanced EWS²⁰. Considering the expected outcome from a more effective EWS and an adequate management of reservoirs, it was assumed that the mitigation of the flood wave by proper management of the HPP reservoirs, together with the warning time increase from about an average of 3 to 6 hours would result on an average AAD of floods by about 50 percent.

²⁰ The method states that tangible benefit of a EWS could be estimated as a function of warning time due to the system. This predicts damage reduction in terms of percentage of maximum potential inundation damage as a function of the mitigation time. If the warning time is 0 h, the curve predicts that the flood warning system will provide no tangible benefit. If the warning time is 12 h, the Day curve predicts that the damage will decrease by 23%. It also suggests that no matter how great the warning time, the maximum possible reduction is about 35% of the total damage due to the flood, as some property, including most structures, simply cannot be moved to safety.

Economic Assessment

26. The *Economic Rate of Return (ERR)* of the NTMP investments under Components 1, 2 and 4 (US\$13.12 million) considering only the AAD benefits in the lower Neretva River - without taking into account the several other benefits mentioned above - was estimated at 13 percent²¹.

27. Component 3 investments financing the construction and rehabilitation on a cost-sharing basis of WWT systems for selected municipalities (US\$15.3 million), has also led to the non-quantified protection and restoration of endangered wetlands and other habitats, which will in turn lead to increasing biodiversity²². The NTMP component has also made significant improvements of regional and transboundary water sources and water supply systems by putting in place WWTPs and other infrastructure for stress reduction in selected municipalities and downstream areas.

28. The described partial ERR result indicates that the expected benefits from the project considering only the AAD from flood hazards in the lower basin is sufficient for demonstrating a highly positive project impact. The analysis assumed a 20-year horizon for the benefits (2016-2045) and using constant 2015 prices.

Financial Viability of WWT Facilities

29. In addition to financing the least-cost selection of WWTP alternative investments under component 3, the project worked with municipalities toward achieving greater financial viability of the supported WWTPs by gradually decreasing inefficiencies and increasing revenues to adequately cover O&M costs. Each municipality was supported to develop annual business plans for the O&M of their services. These plans showed the overall targets for each year, such as the increase in the number of people to be served; intended improvements in the quality of water; improvements in the collection-to-billing ratio; reduction of energy per cubic meter treated, and of the number of staff per 100 connections; and were also encouraged to increase tariffs and cost-recovery levels, at least up to their break-even points. The utilities are incorporating the planned improvements in institutional capacity, such as a billing collection systems, tariff policy, and structure and proper financial accounting and reporting that are leading to the strengthening of their commercial and financial management capacity. Some other results include the updating

²¹ The only data about damages from floods that could be obtained for BiH are as follows: The Municipality of Čapljina is located on the banks of Neretva River approximately 30 km downstream of the City of Mostar (BiH). According to the draft Main Preventive Plan that had been developed in 2008, the estimated damage in the area of the Municipality at the return period 1/100 years, the profile of the HPP Mostar, (5 km upstream from the City of Mostar) was about 3.8 million KM. In the same period, the estimated damage in the Municipality of Ravno (approx. 25 km downstream of Trebinje) was approximately 2 million KM. Both municipalities had damages of an equivalent of US\$3.3 million. Similar events and damages occur in other municipalities of BiH.

²² The reduction of pollution, and improved water and protected area management reflects positively on the protection of globally important species and sub-species of the Mediterranean wetlands and karst areas containing unique and rare life forms specific to the karst Dinaric area.

of their financial statements (income statement, balance sheet, and cash-flow statement). The overall aim was to assist them in managing all of their resources and defining measures toward the planned targets, and to improve those aspects that directly affect their financial performance.

30. *As a typical project supported case, the WWTP of Ljubuški Public Utility Company was analyzed. With an investment of US\$800,000 the project financed US\$467,800. The utility maintains the WWTP under the management of the Municipality of Ljubuški. Based on current data obtained from the Company, the following tariffs have been established in 2015:*

Consumption	Price (BAM/m³) of consumed water	Sewage price (BAM/m³) for those having a connection
≤ 15 m ³	1.21 BAM/m ³	0.30 BAM/m ³
15-30 m ³	1.31 BAM/m ³	0.30 BAM/m ³
≥30	1.45 BAM/m ³	0.30 BAM/m ³
		0.31

31. *The expected income from tariffs and the O&M numbers below show that their income covers the O&M cost and hence, that the sustainability of the WWTP is assured. During the period 1997-2015 the price/tariff averaged 1.21 BAM/m³ for water, and 0.30 BAM/m³ for wastewater. The numbers below indicate that the WWTP is being managed in a sustainable manner.*

Operation and maintenance cost/annual	BAM
Operation cost for the first year of operation (electricity cost):	64,537
Regular maintenance for the one year (WWTP +sewerage network)	50,000
Staff (five -5 persons):	75,000
Amortization: (i) civil engineering structures: rate 2% x 586.749 BAM; (ii) mechanical & electrical equipment: rate 8% x1.173.498 BAM	105,000
Total:	295,000

32. *On average, 1.31 BAM/m³ for potable water consumption and of 0.30 BAM/m³ for wastewater connection is being collected. The estimation was made based on: (i) a total for water collection amounting 750,000 m³ in 2014; (ii) projections for 2015 with an estimated increase of about 20% which amounts to 900.000 m³/year and a volume of wastewater that comes to the WWTP of about 438.000 m³/year; and (iii) an overall cost related to water supply and sewerage (WWTP plus the network) that was projected in the amount of BAM 979,200 for 2015 and with the above stated WWTP costs which adds up to BAM 1,274,200.*

Concept	INCOME (BAM)	COST (BAM)
Water	$900,000 \text{ m}^3 \times 1.31 \text{ BAM/m}^3 = 1,179,000 \text{ BAM}$	979,200 ⁽¹⁾
Sewage	$438,000 \text{ m}^3 \times 0.31 \text{ BAM/m}^3 = 131,400 \text{ BAM}$	295,000
Total:	1,310,400	1,274,200

(1) Including costs of: salaries, lubricants, fuel, electricity, repairs, etc.

33. *As can be seen, the Ljubuški Public Utility Company system is expected to have an income of about BAM 1.31 million, a cost of about 1.27 million, with a superavit of about BAM 36,200 during 2015, which indicates that the financial sustainability of the utility is adequate.*

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Tijen Arin	Senior Environmental Economist	GENDR	
Marjory-Anne Bromhead	Consultant	GCCDR	
Valencia M. Copeland	Program Assistant	GFADR	
Vera Dugandzic	Senior Operations Officer	GSURR	
Usaid I. El-Hanbali	Consultant	GWADR	
Ruxandra Maria Floroiu	Senior Environmental Engineer	GENDR	
Daniel P. Gerber	Rural Development Specialist	GFADR	
Mirjana Karahasanovic	Operations Officer	GENDR	
Nikola Kerleta	Procurement Specialist	GGODR	
Rita Klees	Senior Environmental Spec.	CPF - HIS	
Paula F. Lytle	Senior Social Development Spec	GSURR	
Martin Schneider-Jacoby	Consultant	ECSSD - HIS	
Kathy E. Sharrow	Program Assistant	ECSSD - HIS	
Viktor Simoncic	Consultant	ECSSD - HIS	
Mark Walker	Chief Counsel	LEGSO	
Supervision/ICR			
Vera Dugandzic	Senior Operations Officer	GSURR	
Usaid I. El-Hanbali	Consultant	GWADR	
Ruxandra Maria Floroiu	Senior Environmental Engineer	GENDR	
Mirjana Karahasanovic	Operations Officer	GENDR	
Nikola Kerleta	Procurement Specialist	GGODR	
Lamija Marijanovic	Financial Management Specialist	GGODR	
Ama Esson	Program Assistant	GFADR	
Guy Alaerts	Lead Water Resources Specialist	GWADR	
Esma Kreso	Senior Environmental Specialist	GENDR	
Karina Mostipan	Senior Procurement Specialist	GGODR	
Ljiljana Boranic	Team Assistant	ECCHR	
Damir Leljak	Financial Analyst	WFALA	
Samra Bajramovic	Team Assistant	ECCBM	
Qun Li	Senior Operation Officer	GWADR	ICR Author

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD thousands (including travel and consultant costs)
Lending		
FY04		76.56
FY05		93.46
FY06		183.11
FY07		131.84
FY08	24.64	114.21
FY09	.33	3.34
Total:	24.97	602.52
Supervision/ICR		
FY09	14.63	41.36
FY10	22.03	87.20
FY11	23.76	142.57
FY12	20.20	83.95
FY13	18.54	78.61
FY14	17.07	44.02
FY15		13.2
Total:	116.23	490.91

Annex 5. Beneficiary Survey Results

1. The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina and Hrvatske Vode asked a consultant to conduct a Project Impact Assessment, which was completed in March 2015 (see files). The consultant conducted a survey for Stakeholders to discuss the Project achievements and impact. The following are some conclusions from that stakeholders' survey.

2. According to the survey, the key impacts of the NTRB may be summarized as follows:

- Reduction of pollution from municipal and industrial sources (through water treatment), resulting in improved water quality and availability of drinking water sources, and hence health-related issues and costs; and
- Development of tourism and recreation (primarily through the successfully completed Small Grants Program); specifically, 40% of the respondents stated that the Project contributed to the development of tourism (particularly ecotourism) in Project area.

3. In addition, 36% of the respondents stated that the Project activities resulted in additional benefits for individual organizations or local communities which were not originally foreseen. These project outputs have strengthened the national flood prevention and forecasting and the operational response capability of the two countries through the new advanced equipment, the shared information system, and the mathematical simulation models that now are able to inform decision-makers faster and more reliably about coming hazards to prevent, evacuate and/or take adequate safety measures (details in the Impact Assessment Report).

Annex 6. Stakeholder Workshop Report and Results

N/A

Annex 7. Summary of Borrowers' ICR Reports and Comments on Draft ICR

Summary of Croatia Report

1. The Project Development Objective (PDO)

1. Based on the overview of achieved project results and project outcomes covered by project indicators, the Project can in terms of fulfilling its development objectives be considered as successful to moderately successful.
2. All but one outcome-level indicator have been fulfilled.
3. The Project has built capacities and improved essential inter-state cooperation. The prepared river basin management plans, reservoir management plans and management plans for protected parts of nature, the established data exchange and investments in wastewater collection and treatment infrastructure contribute further to improved transboundary water resource management.

2. Implementation

4. Project implementation started with minor delays in July 2009 due to the time required for the preparation of Terms of Reference on the national level, preparation of teams for the implementation of the joint projects, establishment of the Coordination Committee to monitor the joint projects, and approval of the first joint Terms of Reference by the Coordination Committee.
5. The key activities in the Procurement Plan on the territory of Croatia were the following: a Management Plan for Protected Parts of Nature; development of a bike and hike trail around Baćina Lakes; equipping a bird museum; an irrigation pilot project; and a Small Grants Program (SGP).
6. Although the original Project closing date was December 31, 2013, a need arose to extend the period during which the Grant proceeds could be used to enable the completion of the implementation of the last joint BiH-Croatia project, "A model for hydrological predictions, forecasting and decision making and a plan, guidelines and training program for optimal management of multi-purpose reservoirs in the river basins of Neretva and Trebisnjica", and the implementation of the irrigation pilot project which had been delayed due to administrative issues (a procedure to have a location permit issued; a procedure before the Croatian Administrative Court concerning a complaint submitted by NGOs to a Decision approving an Environmental Impact Study for the Lower Neretva Irrigation Project (issued by the then Ministry of Environmental Protection, Physical Planning and Construction)). On November 30, 2013, the World Bank approved the extension of the Project closing date to December 31, 2014.

3. Assessment of project outcomes in comparison with agreed objectives

i) *Increased interstate cooperation and capacity for transboundary water resource management (process)*

7. Cooperation and mutual understanding between institutions in BiH and Croatia are crucial for sustainable management, efficient use and allocation and proper protection of shared water resources in the NTRB. Institutions possessing the necessary capacities and a cohesive legal framework for water resources management and environmental protection are instrumental in transboundary cooperation and facilitating water monitoring and information exchange as decision-support tools for regional water management.

8. In order to achieve this outcome, numerous regional and national activities were organized mainly under Component 1. The aforementioned activities enabled the strengthening of broader interstate collaboration on the protection of water resources, addressing pollution control and water quality; conservation and maintenance of water ecosystems and biodiversity; improved operation of water infrastructure and a number of other substantive issues. Thus, the everyday mechanisms of transboundary water cooperation, including exchange of information and monitoring and participation of stakeholders were improved.

9. Numerous joint meetings were organized to discuss the progress, coordination, and technical implementation of joint project activities.

10. In addition, activities aimed at exchange of knowledge were initiated during Project implementation. This included the participation of members from Croatia, FBiH and RS PITs at the 5th GEF International Waters Conference (IWC5) held in Cairns, Australia in October 2009 and the 6th GEF International Waters Conference (IWC6) held in Dubrovnik, Croatia in October 2011.

11. Apart from improved cooperation between water management institutions, important project results that have a significant contribution to this indicator are as follows:

- Established transboundary information system for exchanging the agreed set of data from existing hydrological stations on waterways (water levels, flow, water temperature), reservoirs (water levels, total discharge, overflow discharge, water temperature), and meteorological stations (rainfall, air temperature, relative humidity, wind speed and air temperature) in both countries;
- Improved monitoring of groundwater and surface water in the Lower Neretva Region;
- Completed River Basin Management Plans in accordance with three Water Acts. The joint Framework Management Plan could not be prepared due to different approaches, but it's a good thing that the water management agencies were able to prepare, with the understanding of the other side's

policies, a document improving transboundary cooperation in water management; and

- Completed Management Plan for reservoirs and hydropower plants and Mathematical Model whose results represent the basis for defining a harmonized framework for managing the system's hydropower facilities, especially under conditions when inter-state cooperation in the Neretva and Trbišnjica river basin is imperative.

12. This indicator is a direct requirement of the PDO as its fulfillment is a precondition for all subsequent indicators. Strengthened capacities and interstate cooperation that properly addresses the conservation of ecosystems, biodiversity, water quality, safety of hydro infrastructure and measures needed for adequate water protection are crucial for achieving sustainable transboundary water resource management and proper protection of shared water resources. Strong institutions, capacities and collaboration are the key mechanisms in efficient and equitable water use and allocation among the Project beneficiaries.

13. The importance of this outcome for Project medium-term and long-term impacts is high. The current complex political setting has proven to be a limiting factor in the development of full-scale transboundary river basin management. However, as it is expected that BiH will accede to the EU in the following period, activities under this component are a significant catalyst for integrated river basin planning as under the WFD.

ii) Reduction of waterborne municipal and industrial-based pollution in selected municipalities (stress reduction)

14. Projects that contribute to this outcome indicator were implemented on the territory of Bosnia and Herzegovina and are of extreme importance for improving water quality in the entire basin, including the part of the basin located in the Republic of Croatia. This outcome indicator will be discussed in Bosnia and Herzegovina's Completion Report.

iii) Improved maintenance of environmental flows and improved ecosystems and natural resources management in the basin (process)

15. The success in reaching this outcome is dependent on activities under Component 2 of the Project, but also other project components, particularly the ones resulting in increased capacities of stakeholders for sustainable and multi-functional water management, civil society participation, and the SGP. The reduced quantity of pollutants in the river basin will directly lead to reduced pressures, and hence improved status of fragile and unique habitats of Neretva and Trebišnjica and their tributaries.

16. This outcome indicator directly contributes to reaching the PDO for enhancing basin ecosystems and biodiversity through improved water management. The indicator should be more specific in order to capture the relevant and measurable results achieved under different Project components. For the purpose of this assessment, the success of this outcome is regarded through the analysis of Project results that contributed to: (i) collection

of relevant data on ecosystems and biodiversity in the NTRB, (ii) establishment of adequate and mutually non-conflicting management goals and monitoring tools of 5 PAs in Croatia and Hutovo Blato Nature Park in BiH, and (iii) impacts of works and small infrastructure improvements within these areas that minimize disturbances and mitigate anthropologic influence to ecosystems.

17. Project results that contribute to this outcome indicator are the following:

- Completed Study that makes recommendations for the value of environmental flow on seven (7) profiles on the Neretva and Trebišnjica, which is an important step in taking into consideration all prerequisites for coordinated water management of the Neretva and Trebišnjica rivers, i.e. ecosystem and natural resources;
- Completed Management Plan for reservoirs and hydropower plants and Mathematical Model whose results represent a basis for managing the system's hydropower facilities which are expected to produce maximum hydropower with maximum benefit for all other water users in the basin with minimum downstream damage from floods or minimum water levels, sudden changes in flow, reduction of sediment transport, etc. Apart from contributing to the improvement of inter-state cooperation, the results of this Study are an important step for better management of ecosystems and natural resources;
- Preservation of wetlands used for ecotourism in order to mitigate possible adverse environmental impacts enabling visitors to have controlled access to sensitive ecosystems was achieved through the construction of the bike and hike trail around Baćina Lakes, for which the town of Ploče is competent;
- Completed Management Plan for 5 protected nature areas in the Neretva Delta, which was handed over to the competent Public Institution for the Management of Protected Natural Values. This public institution still has not adopted the Plan, but partially uses it in its work, which can be seen through the implementation of certain projects that were mentioned as proposals in the Management Plan, and which receive further funding from various sources;
- Equipping sections of the Bird Museum, i.e. Science Museum Metković, which apart from offering a permanent display of a rich ornithological collection also offers educational activities for school children, as well as consultation and lending books to higher education institutions, which also contributes to better understanding of wetland values, thus directly contributing to improved management of ecosystems left for future generations;
- Dissemination of information promoting environmental protection and preservation through the “Naša Neretva” newsletter which was published during the 3 years of the project implementation. Associations that prepared the newsletter have shown interest to continue working on the newsletter through some other financial sources; and
- Projects by NGOs implemented through the Small Grants Program, especially those targeting biodiversity, sustainable natural resource management and sustainable tourist practice.

18. In conclusion, the outcome of improved maintenance of environmental flows and improved ecosystems and natural resource management in the basin is considered relevant for reaching the PDO, measured based on the contribution it made to data collection, management tools and infrastructure improvements in PAs. All the relevant results that contribute to the PDO were reached.

iv) Reduction of saline water intrusion as a result of implementation of a Pilot Scheme in Neretva Delta (stress reduction)

19. Due to unresolved property issues in the Project area, the Irrigation Pilot Project was dropped immediately prior to the construction phase, even though all prior steps had been taken (feasibility study, preliminary design, environmental management plan, detailed design, as well as bidding documents). Consequently, this indicator remains unfulfilled in the manner envisaged by the PAD.

20. In order to compensate for dropping or prolonging the construction of the Irrigation Pilot Project in Glog and to contribute to achieving the Project outcomes, the Croatian PIT proposed to reallocate the funds originally allocated for the irrigation pilot project funds to new activities. This enabled extending and equipping the existing network of monitoring stations for both surface water and groundwater in the Project area, including on-line monitoring surface water and groundwater quantity and quality (salinity, flow etc.) for the purpose of improving water management, as well as improving data collection at the agricultural weather station in order to maintain the groundwater level for the needs of amelioration areas used in agricultural production, but also for the needs of draining the wider area not covered by amelioration. This new activity, although not directly linked to the outcome, will provide valuable information on the intrusion of salt water into the Neretva Delta as a consequence of reduced water flows and climate change. In this way comprehensive monitoring conducted so far will result in achieving more efficient preparation of protection measures.

21. Additionally, Hrvatske vode has undertaken all steps so that the Irrigation Pilot Project in Glog is financed by the EU as a single completely prepared (with regard to design documents) project taken out from the Lower Neretva Irrigation System (for the need of the NTMP). In the long term, it may be concluded that, although not carried out within the scope of the NTMP, the irrigation pilot project will stimulate faster implementation of the entire Lower Neretva Irrigation System by attracting new and acceptable sources of financing.

4. Evaluation of the recipient's own performance during the preparation and implementation

22. The Grant recipient (Ministry of Finance), the Ministries responsible for this project (in the project's final stage the Ministry of Agriculture and the Ministry of Environmental and Nature Protection) and the implementing agency Hrvatske vode with its Project Implementation Unit have worked together during the project preparation and implementation in a satisfactory manner. The problems the PIT encountered during the

implementation were of a financial nature. During the project implementation certain changes occurred that caused difficulties in financing projects in the field of environmental protection. However, this problem was solved with the understanding of the competent Ministry in charge of water management, which compensated the lack of funds needed for the monitoring of contracts related to environmental and nature protection.

23. In the project's initial phase, when it was established that the planned state contribution was not sufficient for financing the Pilot Irrigation Project, the Ministry of Agriculture demonstrated a certain level of readiness to provide additional resources, which became a problem in the second phase of the project implementation due to the recession which occurred in Croatia.

24. Problems of an administrative nature, such as time-consuming procedures for obtaining various consents, authorizations and licenses are always present, in this project as well. Activities related to procurement procedures were conducted by the PIT set up in Hrvatske vode, whereas joint projects were managed by the PMT from Sarajevo with the cooperation from other PITs. Ministry representatives who were members of the PIT in charge of the technical implementation of the project actively participated in all tasks. Cooperation between all units related to procurement was excellent.

25. Since changes in competences by certain ministries occurred halfway through project implementation, this meant that members of the Coordination Committee changed, which resulted in delays in reviewing and authorizing certain tasks. Permanent members frequently had to take responsibility given that new members were not actively involved in the subject issues, some of them were not even competent enough for the topic to which they were supposed to give their consent.

26. During the duration of the project, the Croatia PIT changed three Project Managers, which did not significantly affect the implementation itself, i.e. the time for the implementation of sub-projects which at the time were either being implemented or their implementation was in initial stages. Other PIT members, apart from ministries' representatives, were permanent during the entire implementation. The implementation of certain activities was delayed, even though it had started on time, due to certain administrative obstacles and problems with certain part of the local population who usually give consent to certain activities during the design phase, but express their discontent during the implementation phase. Certain joint projects between the Republic of Croatia and Bosnia and Herzegovina were also delayed due to time period necessary for harmonization between three water management agencies, and subsequently obtaining consent from established Coordination Committees and the Inter-State Committee for Water Management Relations of the Republic of Croatia and Bosnia and Herzegovina.

27. Cooperation with teams from Bosnia and Herzegovina was good. Even though there were completely opposing views in some tasks, the teams showed understanding of the neighboring country's policies implemented by water management agencies. Progress, coordination and technical implementation of joint activities were discussed during regular meetings.

5. Lessons learned

28. Lessons learned included:

- A complex project such as the Irrigation Pilot Project requires stronger human resources in the PIT, better coordination between institutions and PITs, more financial resources, and timely issued permits.
- More attention needs to be paid to the selection and qualifications of members of the Coordination Committee in order for their engagement in Project-related issues to be high-quality and professional.
- A decision on dropping certain sub-projects needs to be made earlier, at the beginning of the final year of Project implementation, in order to have enough time to implement new bidding procedures.

Croatia Comments on the World Bank Draft ICR

Evaluation of the performance of the bank, any co-financiers, or of other partners during the preparation and implementation with special emphasis on lessons learned

1. The Bank's TTL was changed during the project implementation, but the change did not have impact on the continuity of the project performance.
2. Supervision and procurement review were performed in a timely manner providing advice to the PIT whenever needed. The Bank's team has established a very effective relationship with the PIT.
3. The engagement of the Bank, from the phase of project preparation, through the implementation itself, was very efficient, beneficial, and has, together with all the aforementioned factors, contributed to the successful finalization of the project. The readiness of the Bank to get involved at any time and to assist through its engagement in the resolution of all the problems that have occurred has also helped the successful realization of the project.
4. Cooperation with other partners during the project implementation was good. We cooperated with the following partners: the towns of Opuzen, Ploče and Metković, as well as Dubrovnik-Neretva County and the Public Institution for the Management of Protected Natural Values.
5. Cooperation with the town of Opuzen was excellent. Cooperation with the town of Ploče was also good, especially in the beginning of the construction of the bike and hike trail around Baćina Lakes.
6. In the town of Metković supported the project and participated in the opening of the Center. In the project's final phase, the town requested that the Bird Museum receive some help in equipping its premises, which was done. It can be said that the cooperation with the town of Metković was also good.
7. Cooperation with Dubrovnik-Neretva County was achieved through the envisaged irrigation project, through the Neretva and Trebišnjica River Management Plan, and through the Management Plan for Protected Parts of Nature.

Summary of Bosnia and Herzegovina (BiH) ICR Report

1) Project Development Objectives

8. The Neretva and Trebišnjica Management Project (NTMP) was a joint project of the Republic of Croatia and Bosnia and Herzegovina which will regulate transboundary water resource management. The objectives of the Project were the following:

- To improve the quantitative and qualitative status of the Neretva and Trebišnjica Rivers, especially in terms of achieving good ecological status of surface water and chemical status of groundwater;
- To preserve the biodiversity of aquatic and water-dependent ecosystems; and
- To improve active inclusion of the public into the planning and decision-making processes.

2) Implementation

Project results:

Legal document between countries

9. Since the Project is a joint Project between BiH and Croatia, a Memorandum of Understanding on Implementation of Joint Activities under the Neretva and Trebišnjica Management Project between Bosnia and Herzegovina and Republic of Croatia was signed on September 9, 2008.

10. Under the Memorandum of Understanding on Implementation of Joint Activities under the Neretva and Trebišnjica Management Project, a Coordination Committee (CC) was established consisting of eight members from Bosnia and Herzegovina and 5 members from Croatia. The members of the CC from BH were appointed by the Council of Ministers from various ministries on October 22, 2009. The Decision on that appointment was amended by the CC Decision dated 21 March 2012. The members from Croatia were appointed by the MRDFWM on June 8, 2009, from the competent ministries and Hrvatske vode.

1. Implementation by the Project Management Team (PMT)

11. ***Component 1. Improved Transboundary Water Resource Management of the Neretva and Trebisnjica River Basin.*** This component included three subcomponents: 1.1 Institution and Capacity Building; 1.2. Measurement, monitoring and information management; and 1.3. River basin management planning.

12. ***Subcomponent 1.1 - Institution and Capacity Building.*** This subcomponent contributed to the capacity building of the two water agencies in Mostar and Trebinje in BiH by procurement of IT equipment and office supplies. This component also included meetings organization for the 6th GEF International Waters Conference (IWC6) held in Dubrovnik, Croatia in October 2011 for members of PITs and PMT. The PIT representatives from both countries participated in 6th GEF Biennial International Waters

Conference in Dubrovnik in 2011 with the aim to present the Project. It included an oral presentation and posters, both aimed to present the materials developed by the Project and its activities. Within this subcomponent, the PMT and the Project implementation teams from B&H and Croatia realized a study tour to Spain in 2013 to gain insight into Spain's experience in adopting the RBMP and analysis of transboundary impacts, and establishment of regular communication and automatic data exchange with Portugal, with whom it shares a long history of cooperation in transboundary basin water management. The Study Tour was held from 12-18 May 2013 in Madrid, Spain.

13. This subcomponent also included workshops on the implementation of the WFD and water conflicts and negotiations. The workshop under the title "Water Framework Directive – Water Management" was held from 7 - 9 November 2012 in Bijeljina. The workshop on the implementation of WFD enabled the PITs, especially from BiH to gain insight into the implementation of the WFD and the importance of RBMP as a water management instrument (this workshop was coached by a member of Hrvatske vode, Mrs. Sanja Barbalic who transferred Croatia's knowledge as a EU Member State in the implementation of this directive). The workshops on water conflicts and negotiation techniques showed that PITs are ready and willing to adopt tools on effective and clear communication. The adoption of effective communication skills would enable a greater understanding within the team, as well as during negotiations. Additionally, transfer of incorrect information would be reduced and a positive and supportive environment would be formed. A workshop under the title "Negotiating, Communication, Resolution of Conflicts and Business Behavior" was organized on 23-25 May 2012 at the Sveti Martin na Muri thermal resort. The workshop was attended by 21 participants (PIT/PMT members), and was led by two lecturers.

14. **Subcomponent *Measurement, monitoring and information management* (Subcomponent 1.2).** This Sub-component included the following activities:

- Technical assistance regarding analyses of equipment and expansion of the existing network of water measurement and monitoring stations;
- Develop basin-wide water information systems including GIS system, equipment and training;
- Development of new applications for automatic collection and exchange of agreed set of data between institutions for water management of NTRB; and
- Develop and implement mathematical models for hydrological predictions, HPP operations, forecasting and decision making and prepare a plan, guidelines and training program for optimal management of HPPs multi-purpose reservoirs.

15. All these activities were successfully realized. The key activity under this subcomponent was "Developing a model for hydrological predictions, forecasting and decision making and a plan, guidelines and training program for optimal management of multi-purpose reservoirs in the river basins of Neretva and Trebisnjica." This study was financed under both subcomponent 1.2 (54,91 %) and subcomponent 2.3 (PIT Croatia - 25%, PIT FBiH 13,38% and PIT RS - 6,69%). The general goal of this study was to

introduce a framework of harmonization and synchronization of the existing two systems in Trebisnjica and Neretva Rivers during periods of adverse water impacts (but also during its normal operation), and to increase the efficiency of constructed multipurpose hydropower capacity. The study aimed to harmonize and consolidate all relevant framework rules for the management of hydro power plant system related to a variety of operation conditions. Hence, the project for optimal management of multi-purpose reservoirs and hydro power plants in the Neretva and Trebisnjica Rivers was developed entailing the situations where coordination of joint activities is necessary to achieve defined objectives in both systems. This was particularly relevant for the cases for extreme hydrological conditions, accidents, or the cases when there is a need to coordinate and harmonize water management activities of different water users.

16. The realization of the activity “Development of a new application for automatic collection and exchange of agreed set of data between institutions for water management of NTRB” is very important for the water agencies since the developed application makes it possible to exchange the agreed set of data between all the users at the same time, under the principle “everyone collecting and exchanging all.”

17. Within this subcomponent there was planned a study with the proposal of measures to improve the monitoring undertaken by the water agencies, but given that the equipment for this monitoring should have been obtained from national budgets, this monitoring was not realized due to lack of funds.

18. Croatia has subsequently contracted funds for the purchase of equipment for this activity in place of the dropped irrigation pilot project Glog (improvement of old and establishment of new piezometers with equipment for ground water monitoring in Neretva delta; installation of equipment for surface water monitoring in Neretva (Metkovic) and Ombla River; installation of additional equipment on Opuzen-Jasenska Agriculture Weather (Meteorological) station).

19. **The subcomponent 1.3 Rivers basin management planning.** As a key subcomponent of the component 1 comprised the development of IWRM Plan. Because of their physical-geographical, historical and administrative-territorial characteristics, Neretva and Trebisnjica Rivers are particularly complex for management. In addition to the cooperation needed for water management, the basin requires cooperation in (i) planning the use of continental and coastal areas of the basin, and in (ii) maintaining continuous economic development. Historically speaking, the use NTRB on different locations upstream and downstream evolved differently, with sometimes overlapping or conflicting use. Consequently, Neretva and Trebisnjica rivers are the backbone of both regional and national economies for energy production, irrigation, etc.

20. The basis for water management is the management plan for the catchment areas/river basin districts. The Project supported development of water management plans for:

- Watershed of the river basin district of Neretva and Trebisnjica rivers in Croatia,

- Watershed of the river basin district of Neretva and Trebisnjica rivers in FBiH,
- River basin district of Neretva and Trebisnjica Rivers in RS.

21. During the realization of this activity, there were held three workshops for BiH and Croatia stakeholders. First Workshop was held in Mostar at which the Consultant presented the activities on the preparation of the Neretva and Trebišnjica River Basin Management Plan carried out so far was held on 15 May 2012 in Mostar.

22. The other two workshops (closing) were held in Zagreb on December 29, 2014 and in Mostar, on January 30, 2014. At the workshop held in Zagreb, the Framework for Management in Transboundary Neretva and Trebisnjica River Basin/s was presented for the RH stakeholders. At the workshop held in Mostar, there were presented individual Management Plans and the Framework for Management in Transboundary Neretva and Trebisnjica River Basin/s was presented for the BiH stakeholders.

23. Within this activity the Consultant prepared three individual NTRB Management Plan: for Federation of BiH, for Republic of Srpska and Croatia. These documents are accepted by the PITs concerned. The fourth document prepared by Consultant prepared is entitled the "Framework for Management of NTRB." This document has been prepared instead of the Framework NTRB Management plan. This change was proposed by the all PITs and approved by the World Bank. The all the PITs and the Coordination Committee of both countries approved the Framework for Management of NTRB.

2. Implementation By FBIH Management Team

Component 2: Improved Management and Use of Wetlands Ecosystems

24. The proposed program of activities was systematized into 3 parts (sub-components):

2.1. Improved management and use of water-dependent ecosystems

2.1.a Improved wetlands management in Hutovo Blato Nature Park

a.1. *Development of a Physical Plan and Management Plan for the "Hutovo Blato" Nature Park.*

Physical plan –accepted by the Assembly of Herzegovina-Neretva Canton at its session held on 09 March 2015.

Management plan –addoption procedure is on-going.

2.1. a.2. *Monitoring and Biodiversity Inventory database developed for the "Hutovo Blato" Nature Park.*

2.1. a.3. and a.4. *Design for WWTP and Construction of WWTP for the Facilities within "Hutovo Blato" Nature Park.*

-The total reduction of COD : 3,497 t/annual

-Through this program, and five contracts were realized:

- Carp stocking in the Nature Park Hutovo Blato : 2500 kg
 - Repair and construction of tourist infrastructure: 12 pcs
 - Construction of bird feeders and fauna observation posts and reconstruction of sailing vessels: 24 pcs
 - Construction and revitalization of access road and new fire protection tracks: 50 km
- Rehabilitation of burn areas were purchased in order to increase annual income from the visitors of Nature Park Hutovo Blato.

2.1.b Improved use of wetlands sites for tourism

b.3. Construction of Visitors' center for Vjetrenica cave – was dropped out.

b.3. Construction of toilet for visitors of Vjetrenica cave – revised original items. This activity to be considered with activity “Promotion of ecological and rural tourism in the area of Ravno Municipality” under “Small Grant Program - Support community based demonstration projects“.

25. This sub-component improved use of wetlands sites for tourism,, is in the close relation with the Component IV, Subcomponent 4.2. Civil society participation under 4.2.c) Support community-based demonstration projects, and realized activity, “Promotion of ecological and rural tourism in the area of Ravno Municipality.”

26. Promotion of ecological and rural tourism in the area of Ravno Municipality through presentation of natural and cultural values of Ravno municipality area (Popovo field, Vjetrenica cave –wind cave and other limestone phenomena, river Trebišnjica, Monestry, birth home of Ruđer Bošković, ganges, old houses etc., through organized guiding of groups and visits to rural areas highlighting the Vjetrenica cave as the main tourist attraction. By production of corresponding tourist leaflets (3,000 pcs), posters (500 pcs), jumbo posters, batteries (10 pcs), hood (100 pcs), shoes (4 pcs) and promoting brochures (2000), the main goal is to present to tourists all opportunities by introducing them with possibilities that the space of Ravno Municipality may offer.

2.1.c Increased understanding of values of wetlands and their resources

27. Nasa Neretva Transboundary Newsletter Promoting Environmental Protection: six (6) Biltten was issued (500 pcs for Federation of b&H and 500 pcs for R.Croatia)

2.2. Water management infrastructure improved

2.2.a) Improved water management on the Krupa River within the Hutovo Blato Nature Park –was dropped out

2.2.a) Procurement of equipment for proper maintenance of Nature Park Hutovo Blato: tractor and amphibian machine

28. The infrastructure improvements were envisaged at Krupa River in the form of a moveable metal Dam. However, this activity was revised early during Project preparation

phase as consultations revealed that it will not contribute to the project outcome and the Agency for Watershed of Adriatic Sea Mostar with Final Beneficiary Public Utility Nature Park Hutovo blato dropped this activity and, in agreement with WB, proposed procurement of necessary equipment for the proper maintenance of Nature Park Hutovo blato in the form of amphibian vehicle and tractor as many parts of the nature park are hard to access with conventional vehicles.

29. Additionally, the Agency for watershed of Adriatic sea Mostar, within their regular activities related to flood defense under, undertook the restoration of the Krupa River banks using their own funds to ensure adequate water regime which will contribute to the restoration of wetlands within Hutovo Blato.

30. Actually Flood protection facilities within the Watershed of the Adriatic Sea are the property of FBiH, and pursuant to the Decision of the FBiH Government, they have been transferred to the Agency for management and use. In order to perform the specified function, the Agency is required to perform regular maintenance of these facilities. Maintenance of the beds of water courses is also a legal obligation of the Agency. As Krupa River is a watercourse of Category I, the Agency is required to carry out said works pursuant to the provisions of the Water Act. Accordingly, the Agency carried out rehabilitation works on the right embankment on Krupa River, in the total length of L = 851.00 m, at the location Karaotok, Capljina, in the amount of 417,000.00 KM (approximately US\$ 285,000.00) within its financial plan and program for the years 2013 and 2014.

3. Increase annual income from O&M for 2.2.a) : ***18000 BAM/annual***

2.3. Improved operation of reservoirs, HPPs and dams

2.3.a) Environmental water flow requirements established/implemented

2.3.b) Mathematical models applied for hydrological predictions, HPP operations, forecasting and decision making (1.2.c) & Plan, guidelines and training program for optimal management of HPPs multi-purpose reservoirs

31. These are a "starting" basis for defining a harmonized framework management system for hydro power plants especially in conditions when interstate (inter-entity) cooperation is necessary.

32. The model is a valuable tool to be used by the water agencies for basin management which they plan on further developing and improving. This model is also a significant basis for the development of new flood risk maps and defining maritime regulations for the management of HPPs located in transboundary basins. The Study and the model will facilitate joint actions of the water sector and the energy sector during the implementation of regular and extraordinary flood protection measures.

Component 3: Improved Water Pollution Control

Sub-component 3.1 a; and 3.2.

33. The activities carried out under this component relate to direct reduction of pollution from urban and industrial wastewater to international waterways in project sites (Municipality Ljubuški and Konjic and two private processing industries: SurTec Eurosjaj I UnisGal Konic).

TOTAL REDUCTION		
COD (t/year)		431 t/year
WWTP in function:	257,406 t/year	
Expected by WWTP Konjic:	173,375 t/year	
N (t/year) :		34 t/year
WWTP in function:	19,052 tona/godinu	
Expected by WWTP Konjic:	14,600 tona/godinu	
<u>Note:</u>		
WWTP Ljubuški (added WWTP Hutovo Blato) and Industry WWTP are in operation. WWTP Konjic – expected result		

34. After the public procurement procedure had been implemented, it was obvious that the assessed value of this component had been underestimated in the PDA phase of the project preparatory project phase, as follows:

- The WWTP Konjic and the WWTP Ljubuški -60%
- Industry WWTP - 300%

35. According to the Project implementation and the Subsidiary Financing Agreement signed between the Final Beneficiaries and the Federation of Bosnia and Herzegovina these exceeded amounts were to be provided by the Final Beneficiaries.

36. The activity under Subcomponent 3.2: Industrial wastewater treatment improvements was dropped out of the project because the Final Beneficiaries -two legal entities SurTec Eurosjaj and UnisGal were not able to secure the additional funding. The GEF funds in the amount of 300,000 USD were used for municipal wastewater treatment plants instead. The WB approved reallocation of this fund as follows:

1. Municipality Konjic – 200,000 USD
2. Municipality Ljubuški – 100,000 USD

37. However, the industries have subsequently, using their own resources, procured equipment that enabled effluent treatment and the results indicate discharged wastewater is in compliance with national and EU regulations - Decree on Conditions for Discharging Wastewater into Natural Recipients and the Public Sewage System (Official Gazette of FBiH, no. 6/12) and the (91 /271 /EEC) Directive (UWWD Directive).

38. The Municipality of Ljubuški and the Municipality of Konjic invested further efforts to secure the missing funds, for which they needed some time and it has caused the postponement of the project completion date.

39. *A positive result* of this Project is that the Component 3.1. i.e. the Municipal WWTP has attracted other donors to co-finance the construction of the WWTs as follows:

- The Environmental Protection Fund of the Federation of Bosnia and Herzegovina
- The EIB through the WatSan Project.

40. On the basis of the procurement procedure carried out in accordance with the World Bank rules, the Fund has approved the majority of the missing funds for the Municipality of Konjic and the Municipality of Ljubuški, while a part of the funds for the WWTP Konjic was approved by the EIB through the WatSan Project.

Newly added activities 3.1.b); 3.1.c); 3.1.d) 3.1.e):

41. This GEF project has attracted funding from the: EC IPA Grant 2010 (administrated by WB) through which construction of 15.2 km of separate sewerage system was funded, which in turn ensured additional amounts of wastewater to be treated at the WWTP Ljubuški. This sewerage system – network with WWTP is significant for the protection of water source Prud which is the drinking water supply for the regional water supply system for Peljesac, Lastovo and Korcula in Croatia. Activity 3.1.c – „Strengthening water quality monitoring laboratories“ were completed within activity 3.1.a i 3.2.

42. This GEF project has also attracted funds from EIB (loan) and grant (IPA) through WATSAN Project: Currently four contracts are being implemented in Konjic (main collectors and secondary sewerage network) within the WatSan project with a total value of approximately 8,0 million EUR. The construction of the left river bank collector that will ensure supply of wastewater to the WWTP Konjic, should be completed in June 2015, which will create preconditions for commissioning of the plant.

Component 4: Public Participation and Management of Project Implementation

43. There are three subcomponents: Scientific Community Involvement; Civil Society Participation; and Project Management:

4.1. Scientific community involvement

4.1.a. 3 Annual workshops : Total number of participants: 250

4.2. Civil society participation

4.2.a Training and facilitation for community involvement in RMBP. Total number of participants:180

4.2.b Support to local NGOs activities - Grants program: number of NGO participated 7

4.2.c Support community based demonstration projects: number of community participated 4

4.2.c Support community based demonstration projects / Projects for rehabilitation and revitalization of the Nature Park Hutovo blato after the fire: number of community participated 5

c.1. Carp stocking in the Nature park Hutovo Blato. 2,500 kg

c.2. Repair and construction of tourist infrastructure.: 12 pcs

c.3. Construction of bird feeders and fauna observation posts, and reconstruction of sailing vessels:24 pcs

c.4. Construction and rehabilitation of access roads new fire protection tracks:50 km

Related to the 4.2.b and c.: A total of sixteen "Small Grants" contracts were awarded. On June 04, 2013, the workshop was held – “Presentation of the activities implemented through the small grant program.” The fourteen "Small Grants" contracts were presented.

Total number of participants: 55

44. Leaflets and all informative materials produced during the contract implementation were displayed in the lobby and available for the participants.

Implementation of the activities under this sub-component named "Small Grants Program" was conducted in two cycles through two public calls, noting that the second cycle was related only to the protected area of the Nature Park “Hutovo Blato”.

45. In the first cycle a total of eleven (11) contracts were signed, out of which seven (7) for the Program I - Support to NGOs and four (4) for Program II - Projects for preservation and protection of water from pollution within the community. The second cycle of the small grants program was for projects on rehabilitation and revitalization of Nature Park “Hutovo Blato” after the fire.

46. Namely in October 2011 fire occurred in the Nature Park „Hutovo Blato“, and in order to rehabilitate the burned areas of the Nature Park as soon as possible, and at the instruction of the World Bank, the second cycle only related only to the Nature Park. In the second cycle, in total five (5) contracts were signed.

Implementation by RS Project Management Team

R.B.	PROJECTS COMPONENTS
1	Completion and Display of the Flora and Fauna exhibit within the Museum of Herzegovina-Trebinje
2	WWTP upgrade in Nevesinje Municipality
3	Establishment of seismological monitoring of the dam Alagovac in Nevesinje
4	WWTP upgrade in Trebinje Municipality
6	Small grants program

47. The results achieved by individual activities:

- (a) " Completion and Display of the Flora and Fauna exhibit within the Museum of Herzegovina-Trebinje";
- (b) Museum of Herzegovina Trebinje is a cultural and educational institution, with the organization of thematic settings. The renovation and adaptation of the part of the attic of the museum of nature in Trebinje created the ideal conditions in the newly built area for the exhibition of flora and fauna that will be dedicated to the local flora and fauna that is Trebišnjica river basin area of Popovo Polje and the surrounding mountains (e.g. Leotar). Because of space limitation, in addition to setting of exhibits, digital exposure (short films, pictures etc.) with certain recognizable representatives of the local fauna and flora have been displayed to visitors. By the realization of this investment, the town Trebinje and the complete Herzegovina received additional cultural space that attracts more and more visitors;
- (c) "Upgrading of wastewater Municipality Nevesinje";
- (d) The big problem of the sewage system in Nevesinje was a part of a fecal sewage system in the town center, where the waste water is directly introduced into the canal for precipitation sewerage and where the waste water is collected and with through the stream Sepovci flowed into the accumulation Alagovac from where Nevesinje supplies with drinking water. The problem is particularly expressed in the summer months, when due to a small amount of rainfall sewage accumulates in depressions stream Sepovci, so you can feel the unpleasant smell even in downtown;
- (e) By implementation of this project, separation of fecal waste water and precipitation water sewerage has been done so that sewage waste water has been taken away from households in this area (60 households with about 300 users), and conducted by the system pipes into the public sewerage system;
- (f) "Establishment of seismological monitoring of the dam Alagovac in Nevesinje"
- (g) The most important results of these investments are: protection of the environment in the inner urban zone where the life along the canal became unbearable (unpleasant smell, appearance of various animals); protection from environmental pollution and from filling with sediment the accumulation Alagovac from which Nevesinje is being supplied with the water; creating the preconditions for agricultural production on part of the land along the stream Sepovci, and so on;
- (h) WWTP upgrade in Trebinje Municipality;
- (i) In Trebinje Municipality (RS), procurement of equipment for the WWTP ensured the continuity of WWTP operation leading to continued protection of the Trebisnjica River, whose pollution would lead to significant consequences for karst

underground and downstream drinking water sources from which downstream users are supplied such as the city of Dubrovnik (Croatia) from Ombla source;

(j) "Bileca municipality wastewater treatment system";

(k) The construction of WWTP for urban and industrial wastewater for Bileca Municipality (RS) enabled protection of the largest reservoir for supply of drinking water in the Balkans, with a volume of 1.3 billion m³. The water of Bileca Lake is used for supply of Herceg Novi Municipality in Montenegro. The reported measurements on water quality are partially in line (reported excess of N content) with the *Regulation on the conditions for the discharge of wastewater into surface recipients* (Official Gazette of RS, no. 44/01) and the (91 /271 /EEC) Directive (UWWD Directive). In order to demonstrate that the WWTP can be managed in a sustainable manner the following annual operation and maintenance costs were calculated:

(l) Operation and maintenance cost/annual	(m) BAM
(n) Operation cost for the first year of operation	(o) 40,000.00
(p) Regular maintenance for the one year	(q) 10,000.00
(r) Staff :	(s) 240,000.00
(t) Amortization	(w) 120,209.09
(u) civil engineering structures – rate 2%	
(v) mechanical and electrical equipment – rate 8%	
(x) Total:	(y) 410,209.09

(z) Small grants program;

(aa) The activities of the program of small grants were conducted by the non-governmental sector by which the wider community has been introduced into the specific environmental conditions of water flows in the Trebišnjica Basin. The education of young staff was carried out through workshops, brochures, advertising material and the like and the participants were presented actions and measures to be implemented with the purpose of qualitative and quantitative preservation of natural resources;

(bb) The above activities on the development of devices for wastewater treatment plants and sewerage in the municipality of Bileca primarily aimed at achieving good water status. This objective was fully supported by the World Bank, which is primarily next to the device that has been completed, built an additional part of the sewage network with relatively small involvement from the project;

- (cc) In the municipality of Trebinje, equipment was purchased or replacement sludge pump on an existing device for waste water treatment with the financing of 50% of the project and 50% of its own share of municipalities; and
- (dd) On the dam Alagovac activities were aimed on seismological monitoring the quantity of water on the lake. These activities are divided on two activities of making a study and on the basis of the same proceed with procurement of equipment for the purposes of seismological monitoring.

Comments by BiH on the World Bank Draft ICR

N/A

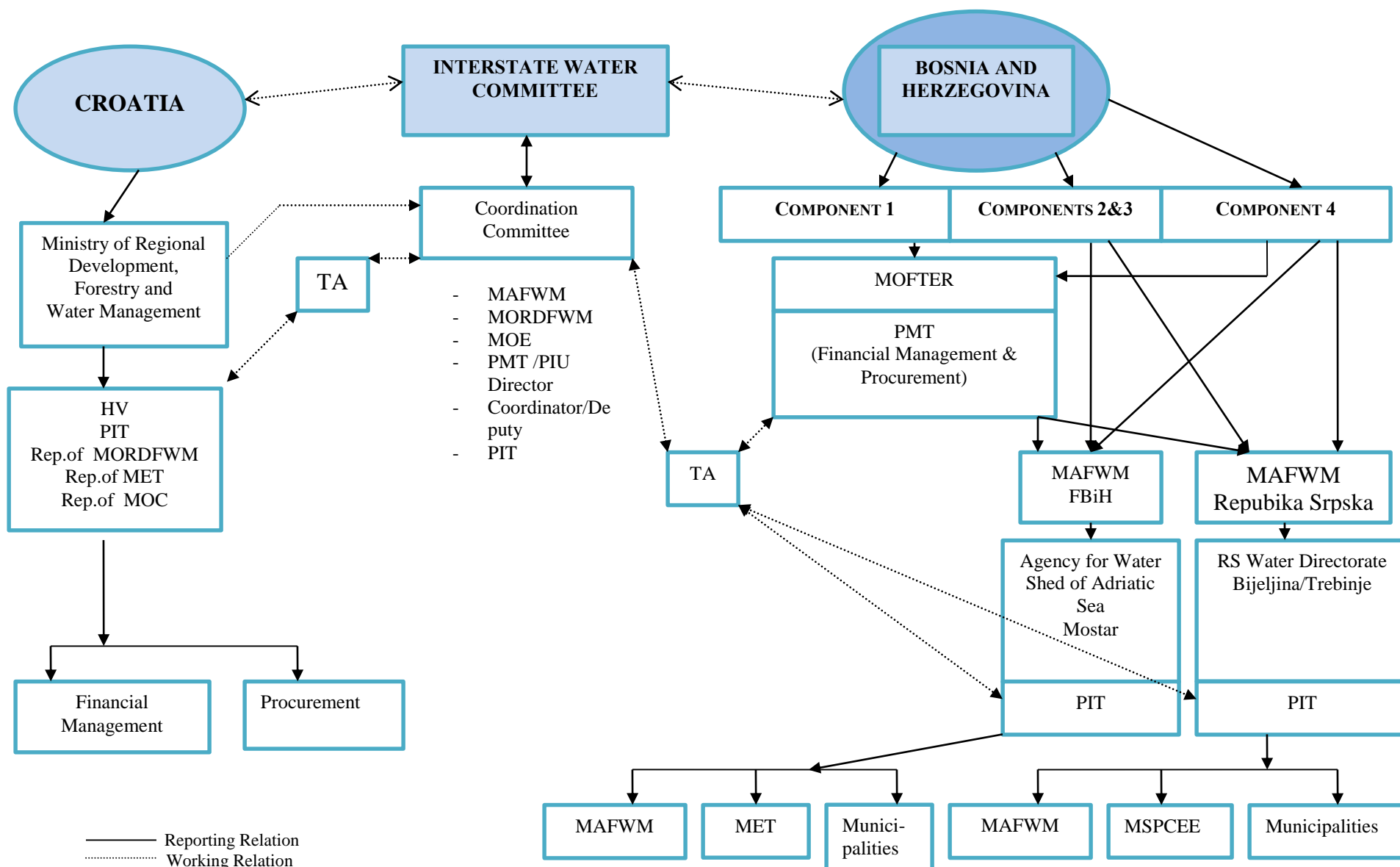
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

N/A

Annex 9. List of Supporting Documents

1. Implementation Completion Report – BiH, July 2015
2. Implementation Completion Report – Croatia, Feb 2015
3. Post Implementation Impact Assessment- MOFTER & HV, March 2015
4. Project Appraisal Document – Neretva and Trebisnjica Management Project, May 09, 2008
5. Project ISRs
6. Supervision Missions' Aide Memoires




Annex 10. Project Implementation Arrangements Chart



Annex 11. Project Photos

Neretva and Trebisnjica Management Project




BILECA WASTE WATER TREATMENT PLANT





Photo	Caption
<p>Bileca Waste Water Treatment Plant.jpg</p> 	<p>The Bileca Waste Water plant cleans sewage from neighboring towns, and assures that the tens of thousands of people who depend on Bileca for potable water are safe.</p>
<p>Bileca lake.jpg</p> 	<p>The plant sits near the banks of Bosnia and Herzegovina.</p>
<p>Men fishing at Bileca lake.jpg</p> 	<p>The people living in Bosnia and Herzegovinian cities and towns nearby the lake are using the new pristine waters as a source of fresh fish.</p>





<p>Man at work - Bileca water utility.jpg</p> 	<p>The World Bank is funding a project aimed at improving water management for people in Bosnia and Herzegovina and neighboring Croatia.</p>
<p>Men at work at Bileca WWTP.jpg</p> 	<p>A government management project constructed the waste water plant at Bileca, using funds from international donors, including the World Bank.</p>
<p>Testing quality of water.jpg at Bileca Water utility</p> 	<p>Sewage that used to run directly into the lake now passes through the WWT plant.</p>

Neretva and Trebisnjica Management Project

VJETRENICA CAVE, HUTOVO BLATO and BACINA LAKES

Photo	Caption
<p style="text-align: center;">Vjetrenica cave.jpg</p> 	<p>The Vjetrenica Cave has been around for 10 million years, but only recently did tourists gain access to the cave, in a manner that protects cave's sensitive flora and fauna.</p>
<p style="text-align: center;">Vjetrenica cave - singing fairy.jpg</p> 	<p>A tour guide doubles as a singer inside the ancient cave, in southern Bosnia and Herzegovina.</p>
<p style="text-align: center;">Hutovo Blato Nature Park Tourists, boat ride</p> 	<p>The World Bank supports an environmental project, which aims at improving water-dependent areas in Bosnia and Herzegovina and Croatia.</p>

<p>Hutovo Blato Nature Park Birds</p> 	<p>Through improved management of those water basins, the well-being of the birds, fish, other animals, and the local population is improved., are doing here is to prepare that area, and wet to try and make deal to find some way to sell their handmade stuff.</p>
<p>Hutovo Blato Nature Park</p> 	<p>Hutovo Blato Nature Park in southwestern Bosnia and Herzegovina benefited from the project to renovate facilities used to feed and watch birds.</p>
<p>Hutovo Blato animal feeder.jpg</p> 	<p>The project contributed to restoring the habitat needed so that previously diminishing species return! Hutovo Blato is on one of four routes through which the birds fly from western Europe to Africa</p>
<p>Hutovo Blato - bird watching tower - to be replaced</p> 	<p>Towers for bird watching are one of the park facilities being restored under the World Bank project.</p>

<p>Bacina lake, Croatia</p> 	<p>Baćina Lakes have a relatively small area (138 hectares) but a very high landscape value. They lie in a karst depression in the western part of the Town of Ploče. They consist of a total of six lakes, five of which are connected - Crniševo, Očuša, Podgora, Sladinac, and Plitko Lakes, while the smallest lake, Vrbnik, is completely detached from other lakes.</p>
<p>Bacine lake, Croatia - trail along the lake rehabilitated under the project</p> 	<p>These eco-friendly bike and walking paths constructed with project funds now surround the famous Bacina lakes in Croatia's Dalmatia.</p>
<p>Small business/boat owner-Bacine Lakes Croatia</p> 	<p>The new trails near the lakes and his home, says Niksa Bogunovic, are leading to an increase in tourist numbers, as well as to an increase in the number of boats he rents out to them by the hour!</p>
	<p>Completed tourist facilities at Bacina Lakes.</p>



Improved water quality and flows, along with proper ecosystem and nature resource management contributed to tourism development.

