Document of
The World Bank

Report No.: 27494

PROJECT PERFORMANCE ASSESSMENT REPORT

CROATIA

ISTRIA WATER SUPPLY AND SEWERAGE PROJECT
(LOAN 3069-HR)

December 10, 2003

Sector and Thematic Evaluation
Operations Evaluation Department

Currency Equivalents (annual averages)

Currency Unit = Kuna (HRK)
= Dinar (HRD)
= New Yugoslav Dinar (NYD)

1990	US$1.00	NYD10.65
1991	US$1.00	NYD19.75
1992	US$1.00	HRD798
1993	US$1.00	HRD6561
1994	US$1.00	HRK5.63
1995	US$1.00	HRK5.63
1995	US$1.00	HRK5.32
1996	US$1.00	HRK5.54
1997	US$1.00	HRK6.30
1998	US$1.00	HRK6.25
1999	US$1.00	HRK7.65
2000	US$1.00	HRK8.16

Abbreviations and Acronyms

BWTP	Butoniga water treatment plant
BWW	Butoniga Water Works
CAS	Country Assistance Strategy
ERR	Economic Rate of Return
FSFRY	Former Socialist Federal Republic of Yugoslavia
ICR	Implementation Completion Report
IWSSP	Istria Water Supply and Sewerage Project
IWW	Istria Water Works
l/s	Liters Per Second
O&M	Operation and Maintenance
OED	Operations Evaluation Department
PPAR	Project Performance Assessment Report
PWW	Pula Water Works
QAG	Quality Assurance Group
TA	Technical Assistance
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

Fiscal Year

Government: January 1 — December 31

Director-General, Operations Evaluation	:	Mr. Gregory K. Ingram
Director, Operations Evaluation Department	:	Mr. Ajay Chhibber
Manager, Sector and Thematic Evaluation	:	Mr. Alain Barbu
Task Manager	:	Mr. Ronald Parker

OED Mission: Enhancing development effectiveness through excellence and independence in evaluation.

About this Report

The Operations Evaluation Department assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, OED annually assesses about 25 percent of the Bank's lending operations. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons. The projects, topics, and analytical approaches selected for assessment support larger evaluation studies.

A Project Performance Assessment Report (PPAR) is based on a review of the Implementation Completion Report (a self-evaluation by the responsible Bank department) and fieldwork conducted by OED. To prepare PPARs, OED staff examine project files and other documents, interview operational staff, and in most cases visit the borrowing country for onsite discussions with project staff and beneficiaries. The PPAR thereby seeks to validate and augment the information provided in the ICR, as well as examine issues of special interest to broader OED studies.

Each PPAR is subject to a peer review process and OED management approval. Once cleared internally, the PPAR is reviewed by the responsible Bank department and amended as necessary. The completed PPAR is then sent to the borrower for review; the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

About the OED Rating System

The time-tested evaluation methods used by OED are suited to the broad range of the World Bank's work. The methods offer both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. OED evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (more information is available on the OED website: http://worldbank.org/oed/eta-mainpage.html).

Relevance of Objectives: The extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). *Possible ratings:* High, Substantial, Modest, Negligible.

Efficacy: The extent to which the project's objectives were achieved, or expected to be achieved, taking into account their relative importance. *Possible ratings:* High, Substantial, Modest, Negligible.

Efficiency: The extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. *Possible ratings:* High, Substantial, Modest, Negligible. This rating is not generally applied to adjustment operations.

Sustainability: The resilience to risk of net benefits flows over time. *Possible ratings:* Highly Likely, Likely, Unlikely, Highly Unlikely, Not Evaluable.

Institutional Development Impact: The extent to which a project improves the ability of a country or region to make more efficient, equitable and sustainable use of its human, financial, and natural resources through: (a) better definition, stability, transparency, enforceability, and predictability of institutional arrangements and/or (b) better alignment of the mission and capacity of an organization with its mandate, which derives from these institutional arrangements. Institutional Development Impact includes both intended and unintended effects of a project. *Possible ratings:* High, Substantial, Modest, Negligible.

Outcome: The extent to which the project's major relevant objectives were achieved, or are expected to be achieved, efficiently. *Possible ratings:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Bank Performance: The extent to which services provided by the Bank ensured quality at entry and supported implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of the project). *Possible ratings:* Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

Borrower Performance: The extent to which the borrower assumed ownership and responsibility to ensure quality of preparation and implementation, and complied with covenants and agreements, towards the achievement of development objectives and sustainability. Possible ratings: Highly Satisfactory, Satisfactory, Unsatisfactory, Highly Unsatisfactory.

Contents

This report was prepared by Tauno Skytta (Consultant) who assessed the project in June 2003. Ronald Parker was the Task Manager. The report was edited by William Hurlbut. Helen Phillip provided administrative support.

Principal Ratings

	*ICR**	*ICR Review**	*PPAR*
Outcome	Satisfactory	Unsatisfactory	Moderately satisfactory
Sustainability	Likely	Likely	Likely
Institutional Development Impact	Modest	Modest	Modest
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Satisfactory	Satisfactory	Satisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible operational division of the Bank. The ICR Review is an intermediate OED product that seeks to independently verify the findings of the ICR.

Key Staff Responsible

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
Appraisal	Richard A. MacEwen	Hans Apitz	Eugenio Lari
Completion	Manuel Marino	Ricardo Halperin	Andrew Vorkink

Preface

This is a Project Performance Assessment Report (PPAR) on the Istria Water Supply and Sewerage Project (Loan 3069-HR), approved for an IBRD loan of US$27.8 million on May 23, 1989. The loan closed on December 31, 2000, five years behind the original schedule.

This report is based on the Implementation Completion Report (ICR), dated June 20, 2001, and prepared by the Europe and Central Asia Region, the appraisal documents, loan documents, project files, and discussions with the relevant Bank staff. An Operations Evaluation Department (OED) mission visited Croatia in June 2003 to discuss the effectiveness of the Bank's assistance with the government, project implementing agency and operating water companies, as well as other stakeholders. The cooperation and assistance of central government officials, management and staff of the Butoniga Water Works, Istria Water Works and Pula Water Works, and other interested parties are gratefully acknowledged.

The assessed project was part of a larger project that was appraised and approved before the break-up of Yugoslavia. The original project was split into two separate projects in 1993: the Istria component in Croatia and the Slovene Coast component in Slovenia. The focus of the Istria part of the project was the elimination of water shortages that had become a serious impediment for the development of the tourism industry in the Istria region. In addition, the project aimed to strengthen the two operating water companies and to improve their operational efficiency. This PPAR also provides input to OED's forthcoming country assistance evaluation of Croatia.

Following standard OED procedures, the draft PPAR was sent to the relevant government officials and agencies for their review and comments, but none were received. In accordance with the Bank's disclosure policy, the final report will be available to the public following submission to the World Bank's Board of Executive Directors.

Summary

The **Istria Water Supply and Sewerage Project** was approved for an IBRD loan of US$27.8 million equivalent on May 23, 1989. The loan closed on December 31, 2000, after three extensions totaling five years. By the closing date, US$22.5 million had been disbursed; the rest of the loan was cancelled. The two largest water supply entities in the Istria region are the Istria Water Works and the Pula Water Works. These entities were the borrowers and sources of counterpart funding.

The assessed project was part of a larger project that was appraised and approved before the breakup of Yugoslavia. The original project was split into two separate projects in 1993 — the Istria component in Croatia and the Slovene Coast component in Slovenia. The Slovenia Project was completed at the end of 1998. The focus of the present assessment is on the Istria project.

At loan closing, a substantial part of the Istria project was completed, including water transmission mains, distribution reservoirs, and main pumping stations. One key component — the Butoniga water treatment plant (WTP) — which accounted for over one-fourth of the total project costs at appraisal, was still under construction at the time of project completion. The construction of the plant was completed in June 2002, and it was finally commissioned and certified by the local authorities for production of potable water in June 2003. The significant delay in the completion of Butoniga WTP can largely be attributed to the interruptions caused by the war, but complex contractual arrangements contributed to the delay as well.

This assessment finds that the project achieved its main objective, to eliminate water shortages in the Istria region. These shortages had become a major obstacle to the growth of the tourism industry, a mainstay of the area's economy. Improving the efficiency of the two water operators — by reducing their unaccounted-water ratio and making them financially viable — was another main objective. This objective was only partially achieved as both operators are yet to meet their cost recovery targets. The assessment, however, verifies that positive progress has continued in these two areas since loan closing in 2000. Moreover, the water companies have a growing number of service connections, and the declining staff index within both companies is a clear indication of improving efficiency. As the growth of actual water sales has been slower than anticipated, financial indicators have not yet improved as fast as expected. Similarly, the companies have been unable to reduce unaccounted water effectively enough to have an impact on their financial situation. These two aspects remain as risk factors for the long-term sustainability of benefits.

The project was reasonably successful and its overall outcome is rated **moderately satisfactory**. More substantial achievements in meeting financial goals and stronger efficiency gains would have been necessary for a higher rating. The institutional development impact is rated **modest** and sustainability **likely**, but with some reservations, as noted above. The Bank performance and the borrower performance are both rated **satisfactory.**

Following are some key lessons from the project's experience:

- ***During implementation, it is important to maintain the balance between the construction of infrastructure and institutional strengthening according to the priorities established in the project design.*** Projects with major physical investments tend to become focused on these investment components, favoring them in project supervision as well. In this project, the entities responsible for institutional aspects and operational improvements were less closely supervised by the Bank than the Project Implementation Unit and, thus, the components under their purview received less attention during project supervision. Responsibilities for implementation should be assigned in a manner that ensures that the requisite balance is maintained.

- ***In extraordinary circumstances such as following a major interruption in implementation, substantial revisions or adjustments to the project components may be needed.*** This project provides a good example of how new demand projections and corresponding changes in project design can be called for under drastically changing conditions. If such circumstances arise, a careful review and appropriate revisions should be carried out. In this case, it should have taken place around 1995 (after the war) when the project was re-launched for final implementation.

- ***The implementation plan for reducing unaccounted water, including detailed annual targets, needs to be specified in the project preparation documents.*** These are difficult issues and achieving concrete results often requires more time than is available within a normal project cycle. Had this plan been designed better with detailed annual targets, its implementation and supervision would have been less disrupted by the difficult wartime circumstances. Therefore, design of activities, and particularly the implementation priorities, have to be defined with extra care.

Gregory K. Ingram
Director-General
Operations Evaluation

BACKGROUND

1. Croatia is a middle-income country in South-East Europe progressing towards a market economy and aiming to attain full European Union membership in the next decade or so.[1] Following the break-up of the former Socialist Federal Republic of Yugoslavia (FSFRY), Croatia became independent in 1991 and joined the World Bank in 1993. The major obstacles to further progress are the costly reconstruction and difficult social reconciliation resulting from the break-up and the 1991-95 war. Croatia is now a member of the World Trade Organization and has free trade agreements with 28 countries, including all EU countries.

2. Early in the transition period, the emphasis was on a stabilization program that was launched in 1993. As a result, increased private consumption and a recovery of exports pulled the economy out of recession by 2000. Boosted by increased tourism revenues,[2] the current account deficit has been reduced to its lowest level of the past seven years.

Water and Sanitation Sector

3. The major challenge for the water sector institutions in Croatia is to increase financial resources, as the capacity to finance new investments from budgetary sources decreased significantly after the 1991-95 war. The means to achieve this goal is better resource mobilization at the utility level to be achieved through (i) efficiency improvements; (ii) increased private sector participation in utility management and operations; and (iii) streamlining of the existing institutional and regulatory framework.[3] Special attention to the cost effectiveness of investments and operation is also required.

4. Service coverage in Croatia before the war was 76 percent for water supply and 67 percent for sewerage, but with the lack of regular maintenance during the war, coverage declined significantly. Although the Istria region had reasonably satisfactory water supply coverage before the war, it was affected by water shortages, especially during dry summer seasons, thus hindering tourism, a traditional mainstay of Istria's economy; [4]some 40 percent of Croatia's tourism capacity is in the Istria region. It was in this context that the World Bank prepared the Istria and Slovene Coast Water Supply and Sewerage Project in the late-1980s. In 1993, the original project was split into two separate projects for Istria and Slovenia.[5] The present report evaluates only the Istria project.

---

1. World Bank country brief for Croatia.

2. Tourism generated some 1/3 of Croatia's foreign exchange earnings in 2001; up from about 20 percent in 1995 (Country Economic Memorandum FY04).

3. Water sector note, October 2001.

4. Tourism accounts for nearly half of the employment in the Istria region, including indirect effects, as stated by the Istria County Tourist Association.

5. The Slovenia project was completed at the end of 1998.

5. The two largest water supply operators (*vodovod*) in the Istria region are the Istria Water Works (IWW) and the Pula Water Works (PWW). For the purpose of efficiently preparing and implementing the Istria component of the original project, IWW and PWW had agreed to establish a new water company, the Butoniga Water Works (BWW), as a special project implementation unit. BWW shouldered the sole responsibility for the implementation of the water supply related components, (i) and (ii) in para. 9 below. BWW was also given the responsibility to coordinate the implementation of the institutional strengthening activities and sewerage works, (iii) and (iv) in para. 9 below, although the actual implementation was the responsibility of the two vodovods and six communities, respectively. The Bank agreed to this arrangement at project appraisal. It was then also understood that BWW would cease to exist after the project was completed.

World Bank Role

6. The World Bank has provided financial support, technical assistance, and policy advice to Croatia since the new country joined the Bank in 1993. Financial support to various projects has totaled about US$1.1 billion; 12 projects are currently underway and another 8 are under preparation. Initially, lending focused on investments in infrastructure to address the substantial needs of post-war reconstruction. These investments total about US$520 million, of which the water sector projects account for some US$105 million covering several water supply and sewerage systems, pumping stations and waste water treatment plants.

7. The water sector projects now underway, and those being prepared, focus on support to pollution control of the Adriatic Sea, which is the major resource of the tourism industry. These projects are aligned with the most recent Country Assistance Strategy[6] (CAS), which emphasizes sustained growth by *"job creation, reducing public expenditure and development of private sector in utilities and infrastructure, and environmental sustainability."* The tourism industry is today of high priority in generating income and employment in Croatia. The Istria project assessed here, follows this general approach.

THE PROJECT

Objectives

8. The project's development objectives, as defined at appraisal, were to: (i) eliminate existing water shortages in the project area; (ii) provide additional water supply capacity needed for the expansion of the tourism industry and growth in domestic and industrial/commercial demand in the project area; (iii) reduce unaccounted water in the Pula Water Works (PWW) distribution network; (iv) protect existing water sources and coastal tourist areas from pollution; and (v) increase efficiency in the delivery of water supply and sewerage services in the project area. These original objectives were not revised during project implementation.

---

6. CAS Progress Report of September 28, 2001.

Components

9. The project had four components: (i) **Water supply and treatment** consisted of the creation of a protective zone for the Butoniga reservoir, and the construction of a water treatment plant with a capacity of 1,000 liters per second (l/s) at Butoniga, including a new raw water pumping station and a treated water pumping station (US$24.0 million), (ii) **Water transmission and storage** consisted of a raw water main of 0.8 kilometers, transmission main of 11.2 kilometers, and 46 kilometers of distribution (trunk) mains connecting various communities (Rovinj, Pazin, Pula) with the transmission main, including a pumping station at Pazin, distribution reservoirs totaling 19,000 cubic meters, and tele-metering and controls for system operations (US$52.9 million), (iii) **Institutional strengthening of the Istria and Pula Water Works** included technical assistance, studies, training and operation and maintenance equipment (US$0.6 million), (iv) **Sewerage** included construction of sewers, collectors, rehabilitation/replacement of pumping stations, and rehabilitation/construction of treatment plants in six communities, and a sewerage master plan study for Central Istria (US$40.9 million[7]). The original components were not revised during project implementation.

10. The total cost estimates of the project included US$18.9 million for physical and price contingencies. The overall goal of the project was to reach a coverage level of 95 percent of the population by 1995 in Pula, a city of nearly 100,000 inhabitants and by 2000 in the rest of the Istria region, a population of somewhat over 100,000 served by IWW.

IMPLEMENTATION

11. The completion report for the project rates the overall outcome of the project satisfactory. This rating takes into account the effects of the war and the subsequent unsettled conditions in the region, implying that the actual project achievements were all that could have been attained under the difficult circumstances. At the time of project completion, the Butoniga water treatment plant was still under construction. It was then expected that the plant would be commissioned by June 2002, at the earliest. However, by implementing an emergency program to treat somewhat smaller volumes of water from the Butoniga reservoir before the full-scale treatment plant was commissioned, BWW managed to make use of the new transmission and storage capacity to temporarily satisfy the increasing demand for water.

12. The number of service connections increased from the pre-war level of over 49,000 connections to nearly 67,000 connections (including both IWW and PWW) at the end of 2000, an increase of 37 percent over a period of 10 years.[8] Given the above, the ICR argued that the project met its objective of eliminating water shortages, in part through the completion of important transmission mains, pumping stations and service reservoirs.

---

7. This component was to be financed directly by the Government without any World Bank support.

8. See also Table 2 below to compare the progress made after project completion/closing.

13. The present assessment finds that, following the loan closing, BWW completed the construction of the BWTP on its own in June 2002. During the OED mission, the plant was still under test operations. Based on the satisfactory test results, the license for the BWTP to produce potable water was issued in June 2003 (see *para*. 18). As of July, the plant is now in full operation, thus providing the needed additional water supply capacity.

14. The OED mission met with the relevant stakeholders and they all noted that the project-built infrastructure was decisive in the eradication of water shortages, and thus the project's principal objective was fully met. The water shortages had become a critical impediment for the growth of the tourism industry already in the late 1980s. The most severe shortages occurred during the dry summer months in the peak of the tourist season causing widespread rationing of water supply especially to all tourism-related facilities, and to the general population, as well. In addition to their inadequacy, the existing water supply facilities had become unreliable. The completion of the Butoniga WTP helped restore the adequate and reliable water supply capacity for the entire Istria region. Unfortunately, other project objectives such as reduction of unaccounted water, and increased operational efficiency, were only partially met by the closing of the Bank loan. The assessment verifies that modest improvements continue to take place in these two areas since project completion (see *paras*. 21-27).

15. The war led to a complete standstill in the construction of the project components between 1993 and 1995. The most critical contract affected by the interruption was the one for the construction of BWTP (although some initial delays were of administrative nature). Because of war-related delays, however, the contract was ready for signing only in 1995. Bank reviews of issues related to the design of the plant's unit processes, delay in tender evaluation, and contract disputes during the implementation of the plant, resulted in two further extensions of the loan. Other components (transmission mains, most of the service reservoirs, and pumping stations) were, for all practical purposes, completed before project closing and were in operation during the mission's visit.

16. The completion of some of the distribution reservoirs was postponed for operational reasons. System operators determined that their utilization be directly linked with the new production capacity expected from the new plant, and that their commissioning take place at around the same time. Installations of remaining remote controls as well as other automated equipment were still being tested during the PPAR mission. The OED mission observed testing taking place during the site visit to the service reservoir at Pazin. All the above installations were scheduled for completion by the time the treatment plant entered into full operation, so it can be assumed that this has already happened.

17. The components with operational linkages such as reduction of unaccounted water in Pula, which involved technical assistance, the purchase of equipment, and staff training were chiefly carried out by the operating entities that were only loosely under the Bank's supervision. This was a result of the complex institutional setup (see *para*. 5), wherein the Bank was too removed to exercise the necessary control over the supervision of these components.

RESULTS

18. ***Butoniga Water Treatment Plant is now in operation***. The mission visit to BWTP and the review of its operation found that the plant is functioning satisfactorily. Recent regular laboratory tests of the water quality further confirm this. BWW has arranged testing of the water treatment process by official quality control laboratories. The most recent results are summarized Table 1.

Table 1: Tests of Water Quality at Butoniga WTP and Points in the System -- 2003

Quality Indicator	*Butoniga WTP*			*Monta Serpo Reservoir*		*Rovinj Reservoir*
	May 27	*June 15*	*June 23*	*June 16*	*June 23*	*July 18*
Turbidity	1	0.5	0.8	1.5	0.8	<5
Color	0	0	0	0	0	5
Total Coliform	0	0	0	0	0	0
Fecal Coliform	0	0	0	0	0	0

Note: As per the Croatian quality standards, the maximum allowed values of indicators are: Turbidity, 4 NTU; Color, 20 mg/l; Total coliform, 0 in 100 ml; Fecal coliform, 0 in 100 ml.

19. BWW's own laboratory is regularly monitoring the plant's operation and the results are consistent with the above official test results. In discussions with the operations staff of the plant and other stakeholders, it could be established that the operators received adequate training during the plant's construction and, based on the mission's on-site observations, they are now competently running the plant.

20. BWW having been the implementation unit of this project, is to be closed down soon. Many in its staff who received on-the-job training during the project now hold responsible operational positions thus benefiting the two operating organizations. The staff which still carries out the remaining duties of BWW will soon be available for other positions when their experience is needed for preparing and implementing major internationally financed projects in the sector, though there are no clear plans to this effect as yet. This invaluable experience should be of use in the preparation of new projects and their implementation.

21. ***Operational indicators show that IWW and PWW are now more efficient operators than before the project***. Operational indicators are now being used by the two vodovods to monitor the efficiency of operations on a regular basis. One clear indication of the expanding and more effective operations of IWW and PWW is the steadily increasing number of service connections. Table 2 presents the progress made between 1990 and 2002. As a result, the water consumption has increased significantly within the IWW service area, about 10 percent overall between 1996 and 2002; 16 percent increase in industrial (mainly the tourism) and commercial water sales and about 4 percent in domestic water sales. The water consumption in the PWW system has not yet picked up as anticipated. The increase in number of connections in Pula is chiefly due to the conversion of the supply system in apartment buildings with one main connection to each apartment now having an individual connection (see *para*. 29).

Table 2: Number of Service Connections of IWW and PWW

Year End	*IWW (Istria)*		*PWW (Pula)*	
	Connections	*Increase %*	*Connections*	*Increase %*
1990	30,370	–	18,990	–
1996	33,880	12	22,530	19
2000	38,750	14	28,050	25
2002	41,370	7	30,420	8

22. Since 1996, the number of IWW connections has increased on average 3.5 percent per year, compared to 2 percent before the conflict. The numbers for PWW are 5.5 percent and 3 percent, respectively. The relatively rapid increase in service connections, after the water supply capacity and reliability were improved, indicates that the water supply coverage targets have been met (see *para*. 10).

23. Despite the adequate supply capacity now from the Butoniga WTP, increasing number of service connections, and growth in water sales in the IWW system, the overall water sales have not yet gone up as expected at project appraisal. As a result, the revenues from water tariffs cover only operation and maintenance costs and no provision for future capital investments can yet be made. Data provided by BWW to the PPAR team show that both water operators are still unable to meet their agreed financial targets — an operating ratio of less than 80 percent (total operating expenses/total operating revenues x 100). In 2002, IWW achieved an operating ratio of about 90 percent, down from 100 percent in 1996, whereas PWW, despite some improvements, has not yet managed to lower its operating ratio below the 100 percent mark.

24. Another efficiency indicator, the staff index (number of staff per 1000 service connections), is currently showing a steadily improving trend. In IWW, the staff index has come down from about 10 in 1990 (8.8 in 1996) to 7.5 in 2002. PWW has fared even better, with a reduction of the staff index from about 11 in 1990 (9.5 in 1996) to 7.2 at the end of 2002.[9] These improvements show better management and should result in more efficient overall operations of the systems.

25. The reduction of unaccounted water was set as another key objective for achieving operational efficiency. IWW reached an unaccounted-water level of 19 percent in 2002, somewhat better than before the project (22 percent) and the 21 percent target set at project appraisal. During project implementation in 1996, the unaccounted-water ratio was as high as 25 percent (all numbers include water sales to Rizana Water Works in Slovenia). The progress in Pula is not quite the same; the unaccounted-water ratio there was about 30 percent before the project, about 31 percent in 1996 during project implementation, and remains at the same level today; the target set for PWW at project appraisal was 25 percent.

9. These achievements meet the goals as envisaged at the time of project appraisal; today water utilities in EU-countries for instance have staff index of 4 or lower.

26. The experience of this project reflects the well-known lesson that reducing unaccounted water requires high-level commitment, is quite time consuming, and quick positive results are hard to achieve. Appraisal documents state that the project will provide instrumentation for water loss control in the Pula distribution system. Further, both operators were required to implement a pre-agreed plan of action for the reduction of unaccounted water early in the project cycle. This did not happen in the case of PWW as it postponed these activities and have included intensified efforts for unaccounted-water reduction in its *future* operating plans. The reason for the delay was that PWW preferred not to use loan funds for this purpose. Unfortunately, Bank supervision was too lax on this point and did not follow up to specify what these "intensified efforts" would really contain, and if they could truly be acceptable substitutes for the earlier pre-agreed actions.

27. It is likely that the design of the component, and activities therein, to reduce unaccounted water was not adequate. Moreover, too little emphasis was put on activities to reduce unaccounted water during project supervision whereas other, perhaps more immediate issues such as the problems faced by BWTP, seem to have received higher priority. As a result, the Bank had only infrequent direct contacts with the two operating water companies responsible for activities to reduce unaccounted water.

28. ***The water demand in the Istria region has been increasing since the end of the war***. The key factor in this has been the growth of the tourism industry. In 1993, the number of tourists in Istria was reportedly some 700,000 per year. In 2002, the number was as high as 2.4 million and is expected to grow further.[10] The Istria region is ideally located to attract tourists from Austria, Germany, Italy, and Slovenia, which accounted for over 70 percent of the tourist visits to Istria in 2002. The rest are mostly visitors from other central European countries and the UK. Future plans are being finalized and will be based on high-end (higher quality–paying more) tourism rather than on just increased volumes of visitors. The improved water supply now supports this continued growth in tourism activities.

29. The potential peak water demand from the tourism industry alone is currently some 45,000 cubic-meters per day in the high season,[11] that is, over 50 percent of the total capacity of BWTP. The actual water sales for household consumption (excluding tourism) were 25,100 cubic-meters per day average over the year 2002 and are now starting to increase within the IWW system (see *para*. 21). The total of the two above is thus over 70,000 cubic-meters per day, that is, over 80 percent of the total capacity of the BWTP (86,400 cubic-meters per day). The unaccounted-water ratio is still very high at 30 percent of the total in the Pula system. This demonstrates the urgency of focusing on activities to reduce unaccounted water. Such a reduction would be the immediate least-cost solution to increasing available water.

10. The data is based on the information provided in the interview of officials of the Istria County Tourist Association.

11. Calculated on a maximum-day demand basis using the current availability of beds in different categories and the respective water consumption per unit; as given by the Istria County Tourist Association.

30. ***Sewerage service and treatment of waste water are still huge issues in Istria.*** Although the responsible municipalities have completed about 70 percent of the sewerage works included in the project (there was no Bank funding for this component), the environmental protection objectives are not yet met as envisaged. Out of some 20 main communities (towns) in the region, only four have secondary (biological) waste water treatment plants in operation; the rest of the towns have only primary (mechanical) treatment plants and there are still a few communities without any waste water treatment at all. This matter requires urgent attention and practical solutions for improvement.

31. The six municipalities responsible for the sewerage works were not effectively supervised by the Bank. The Bank should have committed adequate resources for supervision and progress monitoring of all these activities, as they were linked with respective project objectives. The Bank is currently emphasizing the importance of the protection of the coastal waters of the Adriatic Sea, essential to the success of the tourism industry, and has included this as a major objective in its sector strategy. Practical project preparation work is also underway to this effect.

RATINGS

Outcome

32. The project achieved most of its relevant objectives albeit relatively late as far as BWTP is concerned, but there were shortcomings in meeting financial and efficiency goals. Its overall outcome therefore, is rated ***moderately satisfactory***. The overall rating is based on the achievement of the project's various objectives in terms of relevance, efficacy, and efficiency.

(i) *Relevance.* All components were relevant considering agreed Bank/borrower priorities and the region's needs at the time of project appraisal. As a result of the break-up of Yugoslavia, the economic life of the Istria Region changed. Industrial activities in particular experienced substantial reductions. For this reason, the BWTP provided large excess capacity that did not immediately produce incremental revenue for the water supply operators. Their financial situation is gradually improving as the number of service connections is increasing, and especially with the growth of the tourism industry, all available water production capacity will be in great demand.
Rating: substantial

(ii) *Efficacy*. The project's objectives were achieved although with a delay of five years. The key component, BWTP, was delayed by another year and a half, and was completed only in June 2002 and commissioned in June 2003. Other components have been implemented to their fullest extent and in a timely fashion and were ready for full-scale operation as the WTP became operational.
Rating: modest

(iii) *Efficiency.* The large transmission mains, technical assistance, and operation and maintenance equipment were implemented well below (roughly about 20 percent below) their original cost estimates. BWTP, a major exception, exceeded the original estimates (taking into account the compensation for delays) by nearly 40 percent. The service reservoirs exceeded their original estimates by some 80 percent, but the effect of this component was minor as it made up only about 5 percent of the total project costs. Overall, the project was implemented within its original cost estimates. The delays are the main reason for not rating project efficiency higher.
Rating: modest

33. The project's economic rate of return (ERR) estimate at the appraisal was 15.5 percent for the original project concept. OED's review of the calculations indicates rather optimistic assumptions that the benefit stream would start early during project implementation. On the other hand, the ICR estimate for ERR was much lower (2 percent) as it took quite a conservative view of the growth potential of tourism (which was severely affected by the war and weighs heavily in these calculations) and no incremental benefits were assumed on account of domestic consumption; in fact the benefit stream was assumed to start only some five years after project completion. The latest information indicates that the tourism activities have increased rather rapidly after project completion. In addition, domestic consumption is beginning to grow, and there are significant other benefits, such as increased productivity and health benefits which are not captured in the ICR analysis. Therefore, it is likely that the actual economic benefits from this project are more substantial than estimated in the ICR as various indicators observed in this assessment suggest (see *paras*. 21 — 25 and 29).

Institutional Development Impact

34. *Institutional development impact is rated* ***modest***. The project provided effective training in project finances, disbursements, and procurement. The results of the training and experience that the staff gained through project implementation is now evident in improved financial records and overall monitoring of operations. Further, various contractors, especially the WTP contractor, provided substantial training of operational staff, the result of which is skillful and effective operation of the facilities. Field visits to selected facilities verified this point.

35. The project included three studies covering future institutional set-up, tariff structure, and sewerage master plan for Central Istria. The first two studies were carried out as planned and were completed in 1994, well before the original project completion date. None of the study recommendations were implemented and, for reasons not known today, the Bank did not pursue them either. As the project was designed under quite a different situation than what now prevails, it is likely that the recommendations of the studies are outdated; this certainly applies to the recommendations of the tariff study. The sewerage master plan was finalized much later, but its results are now available to the organizations responsible for local sewerage systems.

Sustainability

36. *Sustainability is rated **likely** with some reservations*. The operating water companies, IWW and PWW, are not yet meeting their financial targets — an operating ratio of less than 80 percent — as spelled out in the project agreement. However, this is likely to happen in the next few years after all new facilities have been in full operation for some time, and water demand has increased to the anticipated level, given the increasing number of service connections and further progress made in the reduction of unaccounted water. Pending improvements in financial performance through further efficiency gains and increasing water sales are the main risk factors for sustainability. In technical terms, the two water companies are experienced operators, and with the new and technically sound facilities they can be expected to provide reliable water services.

Bank Performance

37. *Bank performance is rated **satisfactory***. Bank staff provided substantive support during project preparation to streamline the documentation for procurement of goods and services and construction of new facilities. The same practice continued during project supervision. This was recognized by the Quality Assurance Group (QAG) review of this project in 1999, as it rated the supervision of the project *highly satisfactory*. The assessment findings reveal that the Bank paid less attention to (i) the implementation of study recommendations, (ii) activities to reduce unaccounted water, and (iii) the supervision of sewerage works. Most of this is a result of the complex design of the project's institutional set-up. This made the Bank focus in its supervision role on the physical construction of facilities by BWW and only remotely to deal with the operating companies and the various parties responsible for sewerage. The total resources used by the Bank in the preparation and supervision of this project were only US$0.17 million, or just about 0.6 percent of the loan amount; supervision costs were some 27 percent of the total Bank costs. In this respect, there certainly was room to allocate more resources to cover the areas that received less attention during project supervision.

Borrower Performance

38. *Borrower performance is rated **satisfactory***. The borrower provided an effective team for the project implementation unit, but faced serious problems in contracting BWTP. Its implementation continued to be hampered by various problems causing substantial delay and extra costs. In the end, the contractor consented to BWW's demand for compensations of US$6.0 million. Overall, BWW's contract management was firm and, under the circumstances, effective. Where it failed, to some extent, was the administration of the turn-key contract to construct BWTP. The two operating water companies did not perform as anticipated in achieving efficiency gains in their operations, but some visible improvements were made and the progress seems to have continued after loan closing.

LESSONS

39. Following are some key lessons from the project's experience:

- ***During implementation, it is important to maintain the balance between the construction of infrastructure and institutional strengthening according to the priorities established in the project design.*** Projects with major physical investments tend to become focused on these investment components, favoring them in project supervision as well. In this project, the entities responsible for institutional aspects and operational improvements were less closely supervised by the Bank than the Project Implementation Unit and, thus, the components under their purview received less attention during project supervision. Responsibilities for implementation should be assigned in a manner that ensures that the requisite balance is maintained (see *paras*. 13-17).

- ***In extraordinary circumstances such as following a major interruption in implementation, substantial revisions or adjustments to the project components may be needed.*** This project provides a good example of how new demand projections and corresponding changes in project design can be called for under drastically changing conditions. If such circumstances arise, a careful review and appropriate revisions should be carried out. In this case, it should have taken place around 1995 (after the war) when the project was re-launched for final implementation (see *paras.* 17 and 29).

- ***The implementation plan for reducing unaccounted water, including detailed annual targets, needs to be specified in the project preparation documents.*** These are difficult issues and achieving concrete results often requires more time than is available within a normal project cycle. Had this plan been designed better with detailed annual targets, its implementation and supervision would have been less disrupted by the difficult wartime circumstances. Therefore, design of activities, and particularly the implementation priorities, have to be defined with extra care (see *paras*. 25-26).

Annex A. Basic Data Sheet

ISTRIA WATER SUPPLY AND SEWERAGE PROJECT (LOAN 3069-HR)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	*Actual or current estimate*	*Actual as % of appraisal estimate*
Original commitment	27.8	22.5	95
Total project cost	137.30	123.00	90

Project Dates

	Original	*Actual*
Board approval	5/23/89	
Effectiveness	7/31/89	5/31/90
Closing date	12/31/95	12/31/2000

Staff Inputs

	Actual/Latest Estimate	
	N° Staff weeks	*USUS('000)*
Preappraisal	18.3	50.6
Appraisal/Negotiations	16.5	46.7
Supervision	13.9	45.1
Other	6.0	26.7
Total	54.7	169.1

Mission Data

	Date (month/year)	*No. of persons*	*Specializations represented*	*Performance Rating*	
				Implementation Progress	*Development Objective*
Identification/ Preparation	9/87	2	WSE, FNA		
Identification/ Preparation	12/87	2	WSE, FNA		
Identification/ Preparation	4/88	3	WSE, FNA, ECO		
Appraisal/Negotiation	7/88	2	WSE,LAW		
Appraisal/Negotiation	12/88	3	WSE, FIN, ECO		
Appraisal/Negotiation	4/89	2	WSE, ENE		
Supervision	1089	1	WSE	S	S
Supervision	10/90	1	WSE	S	S
Supervision	3/91	1	WSE	S	S
Supervision	4/92	2	WSE, FNA	S	S
Supervision	3/93	1	WSE	S	S
Supervision	3/94	3	WSE, FNA, ECO	S	S
Supervision	3/96	1	WSE	S	S
Supervision	5/97	1	WSE	S	S
Supervision	5/98	1	WSE	S	S
Supervision	4/99	2	WSE, OPO	S	S
Supervision	1/2000	2	WSE, WSE	U	S
Supervision	7/2000	2	WSE, OPO	S	S
Completion	5/2001	2	FNA, OPO	S	S

WSE=Water & Sanitary Engineer; FNA=Financial Analyst; ECO=Economist; ENE=Environmental Engineer; OPO=Operations Officer

Other Project Data

Borrower/Executing Agency:

FOLLOW-ON OPERATIONS

Operation	*Loan no.*	*Amount (US$ million)*	*Board date*
Reconstruction Project for Eastern Slavonia, Baranja, and Western Srijan	4351-HR	40.6	6/18/1998
Municipal Environmental Infrastructure Project	4352-HR	36.3	6/18/1998
Coastal Cities Pollution Control Project (under preparation)	N.A.	100.0	N.A.

Helen Phillip
O:\INFRA\PARKER\Croatia Audit\Audit December 10, 2003 Final to Print Shop.doc
December 15, 2003 11:45 AM