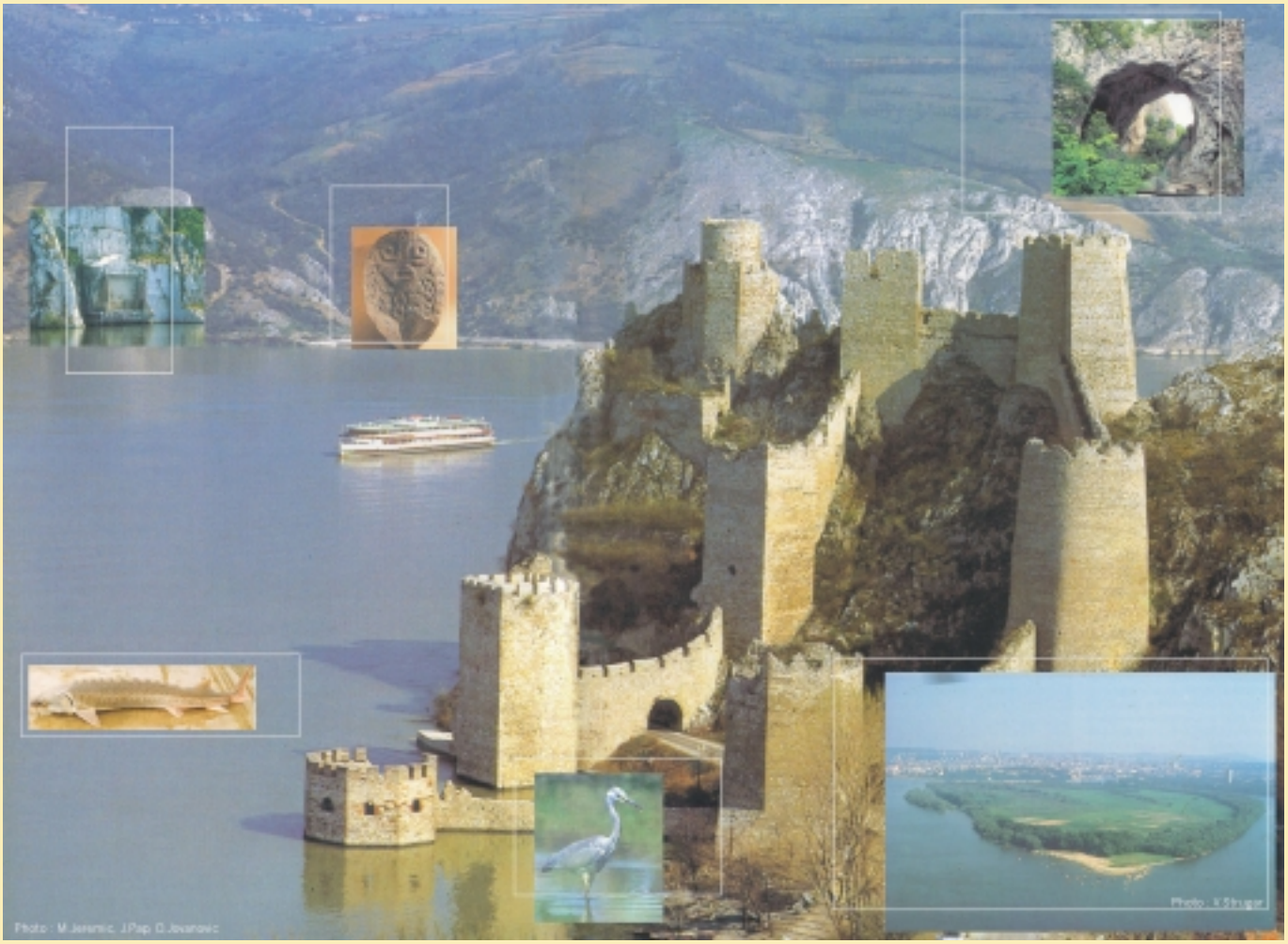
DANUBE POLLUTION REDUCTION PROGRAMME

NATIONAL REVIEWS 1998
FEDERAL REPUBLIC OF YUGOSLAVIA

PROJECT FILES



FEDERAL MINISTRY FOR DEVELOPMENT, SCIENCE AND ENVIRONMENT

in cooperation with the

Programme Coordination Unit
UNDP/GEF Assistance

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Preface

The National Reviews were designed to produce basic data and information for the elaboration of the Pollution Reduction Programme (PRP), the Transboundary Analysis and the revision of the Strategic Action Plan of the International Commission for the Protection of the Danube River (ICPDR). Particular attention was also given to collect data and information for specific purposes concerning the development of the Danube Water Quality Model, the identification and evaluation of hot spots, the analysis of social and economic factors, the preparation of an investment portfolio and the development of financing mechanisms for the implementation of the ICPDR Action Plan.

For the elaboration of the National Reviews, a team of national experts was recruited in each of the participating countries for a period of one to four months covering the following positions:

- Socio-economist with knowledge in population studies,
- Financial expert (preferably from the Ministry of Finance),
- Water Quality Data expert/information specialist,
- Water Engineering expert with knowledge in project development.

Each of the experts had to organize his or her work under the supervision of the respective Country Programme Coordinator and with the guidance of a team of International Consultants. The tasks were laid out in specific Terms of Reference.

At a Regional Workshop in Budapest from 27 to 29 January 1998, the national teams and the group of international consultants discussed in detail the methodological approach and the content of the National Reviews to assure coherence of results. Practical work at the national level started in March/April 1998 and results were submitted between May and October 1998. After revision by the international expert team, the different reports have been finalized and are now presented in the following volumes:

Volume 1:	Summary Report
Volume 2:	Project Files
Volume 3 and 4:	Technical reports containing: - Part A : Social and Economic Analysis - Part B : Financing Mechanisms - Part C : Water Quality - Part D : Water Environmental Engineering

In the frame of national planning activities of the Pollution Reduction Programme, the results of the National Reviews provided adequate documentation for the conducting of National Planning Workshops and actually constitute a base of information for the national planning and decision making process.

Further, the basic data, as collected and analyzed in the frame of the National Reviews, will be compiled and integrated into the ICPDR Information System, which should be operational by the end of 1999. This will improve the ability to further update and access National Reviews data which are expected to be collected periodically by the participating countries, thereby constituting a consistently updated planning and decision making tool for the ICPDR.

UNDP/GEF provided technical and financial support to elaborate the National Reviews. Governments of participating Countries in the Danube River basin have actively participated with professional expertise, compiling and analyzing essential data and information, and by providing financial contributions to reach the achieved results.

The National Reviews Reports were prepared under the guidance of the UNDP/GEF team of experts and consultants of the Danube Programme Coordination Unit (DPCU) in Vienna, Austria. The conceptual preparation and organization of activities was carried out by **Mr. Joachim Bendow**, UNDP/GEF Project Manager, and special tasks were assigned to the following staff members:

- Social and Economic Analysis and Financing Mechanisms: **Reinhard Wanninger**, Consultant
- Water Quality Data: **Donald Graybill**, Consultant,
- Water Engineering and Project Files: **Rolf Niemeyer**, Consultant
- Coordination and follow up: **Andy Garner**, UNDP/GEF Environmental Specialist

The **Yugoslavian National Reviews** were prepared under the supervision of the Country Programme Coordinator, **Mr. Zoran Cukic**. The authors of the respective parts of the report are:

- Part A: Social and Economic Analysis: **Mr. Miroslav Tanaskovic**
- Part B: Financing Mechanisms: **Mr. Milorad Filipovic**
- Part C: Water Quality: **Mr. Zoran Cukic**
- Part D: Water Environmental Engineering: **Mr. Milorad Miloradov**

Federal Ministry for Development, Science and Environment

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Vienna – Austria, November 1998

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Project No. 1

WWTP “Veliko Selo”– Belgrade (Central)

PROJECT FILE:	Country	Project No:	Page: 1
BEOGRAD WWTP VS	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: WWTP "Veliko Selo"– Belgrade (CENTRAL)

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Belgrade Government

Company: Beogradski Vodovod i Kanalizacija (Belgrade Water Supply and Sewage Company)

Address: Kneza Milosa 27

11 000 Beograd

FR of YUGOSLAVIA

Phone: +381 11 361 0472

Fax: +381 11 361 0467

Project Target(s)

Target: Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Federal Government, Republic of Serbia Government, City of Belgrade Government, Private Companies, Industry, NGO`s, Professional associations, etc.

Investment Cost

215,000,000 US $ (2,150,000,000 Yu din.)

Status of the Project

Final project design to be renewed

(Design Project was made in 1987 by; Institute for Water Resources " Jaroslav Cerni" - Belgrade and Degremont - Paris)

Language of Project Documents

Project documents are available in Serbian, summaries available in French and English.

1. Project Title

WWTP "Veliko Selo"– Belgrade (CENTRAL)

2.1. Investor Details

Company Name: Beogradski Vodovod i Kanalizacija (Belgrade Water Supply and Sewage Co.)

Address: Kneza Milosa 27

11 000 Beograd

FR of Yugoslavia

Phone: +381 11 361 0472

Fax: +381 11 361 0467

E mail:

2.2. Contact Persons

Mr. Predrag Uskokovic, general manager

Mr. Sinisa Andric, Head of Developing Dept.

2.3. Advisor/Consultant

1. Energoprojekt - DD Hidroinzenjering - Belgrade
   Mr. Miomir Zikic, Project manager
   phone: + 381 11 131516 (ext. 2433)
2. Institute for Water Resources " Jaroslav Cerni" - Belgrade
   Mr. Miljan Djukic, General director
   phone : + 381 11 649 865

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of Water Supply and Sewerage Network, Wastewater Collection, Transport, Treatment and Disposal
- Annual turnover: 66,000,000 US $ (660,000,000 Yu din.)
- Employees: 5200

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 5200 employees, 150 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Energoprojekt, DD Hidroinzenjering – Belgrade
- Institute for Water Resources " Jaroslav Cerni" – Belgrade
- Foreign Consulting Company (to be chosen)
- Institute for Health Protection of City of Belgrade
- Institute for Health Protection of Serbia

3. Project Description

3.1. Project Outline

1. The construction of Main Collector – Interceptor (large diameter, 4 pumping station)
2. Central Wastewater Treatment Plant "Veliko Selo" (1,600,000 p.e.)
   - High Load Biological Treatment with P removal
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry, Agriculture
- Stakeholders: Federal and Republic of Serbia Government, City of Belgrade Government. Belgrade Water Supply and Sewage Co., Industry
- Location of WWTP : 10 km downstream of City of Belgrade (see map enclosed)
- Site location: Right Bank of Danube River (see map enclosed)
- Existing Site Use : Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit : reducing risks of hydric epidemia, improving of drinking water quality
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation (contact recreation)
- Aesthetics: Improvement of aesthetic value of Danube River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Pollution Reduction on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Prefeasibility Level

Final Project Design made in 1987 (to be renewed)

Summary of the Project documentation could be obtained in French and English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). Nutrients (N/P) removal as well as the technology of removal ought to be studied. Cost-Benefit analysis is needed. As a minimum, P removal by precipitation is foreseen.

- Special features: not analyzed

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Prefisibility Study

Project design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Construction of the Main Collector - Interceptor

The Construction of the WWTP “Veliko Selo”

Pretreatment of waste water of some Industry

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest of citizens the environment to be improved, even with their participation through especial public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Large Industrial City as Belgrade is has an immediate adverse effect (water supply, recreation, etc.) but also a cumulative adverse effect on the aquatic ecosystems (Iron Gate Reservoir, Black Sea)
- Locality is moderately sensitive. Danube River is large recipient having high dilution and self-purification capacity. By the construction of WWTP water quality will be improved to the II category (according with the Yugoslav regulations) immediately downstream of Belgrade. The influence of wastewater discharge will be localized on the short stretch downstream of Belgrade.

The main contribution will be done on the regional level (general reduction of pollution and nutrient load)

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of River water quality within wider Urban Area, Protection of Drinking Water Resources, Protection of Recreational Zones
- Region level: Reduction of Pollution and Nutrient Impute into Black Sea
- Transboundary level: No significant Immediate Effects but long-term effect.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 1200 people will be employed during 3-year construction period
  - 100-150 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 210,000,000 US $ (2,150,000,000 Yu din.)
  - Land 5,000,000 US $ (50,000,000 Yu din.)
  - Construction and machinery 200,000,000 US (2,060,000,000 Yu din)
  - Planning and supervision 6,500,000 US $ (65,000,000 Yu din)
  - Other costs 2,500,000 US $ (25,000,000 Yu din)
- Total cost 215,000,000 US $ (2,150,000,000 Yu din)
- on an annual basis (I year 70,000 000; II year 95,000000; III year 50,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 26,500,000 US $ (265,000,000 Yu din.)
- 3,000,000 US $ (30,000,000 Yu din.)
- 29,500,000 US $ (295,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2.5 din/m^3 of treated water, 0.25 US $/$m^3$ of waste water
- 1998
- Based on the Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	125,000,000	/
(11) International grant	/	15,000,000	/
(12) Commercial Bank loan	/	30,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	45,000,000*	170,000,000	170,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 2

WWTP “Ostruznica” – Belgrade

PROJECT FILE:	Country	Project No:	Page: 1
BEOGRAD WWTP OS	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project title: WWTP "Ostruznica" – Belgrade

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Belgrade Government

Company: Beogradski Vodovod i Kanalizacija (Belgrade Water Supply and Sewage Company)

Address: Kneza Milosa 27

11 000 Beograd

FR of YUGOSLAVIA

Phone: +381 11 361 0472

Fax: +381 11 361 0467

Project Target(s)

Target: Sava River and Danube River Pollution Reduction**. The Protection of Belgrade Water Supply Resources.**

Benefit: Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection.

Beneficiaries: Population of 1,000,000 supplied by drinking water, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Federal and Republic of Serbia Government, City of Belgrade Government, NGO`s, Professional associations, etc.

Investment Cost

12,500,000 US $ (125,000,000 Yu din.)

Status of the Project

Emerging Concept (to be renewed)

Conceptual Design was done in 1987 by; Institute for Water Resources "Jaroslav Cerni" - Belgrade and Degremont -Paris)

Language of Project Documents

Project documents are available in Serbian, summaries available in French and English.

1. Project title

WWTP “Ostruznica” – Belgrade

2.1. Investor Details

Company Name	Beogradski Vodovod i Kanalizacija (Belgrade Water Supply and Sewage Co.)
Address:	Kneza Milosa 27
	11 000 Beograd
	FR of Yugoslavia
Phone:	+381 11 361 0472
Fax:	+381 11 361 0467
E mail:	

2.2. Contact Persons

Mr. Predrag Uskokovi}, general manager

Mr. Sini{a Andri}, Head of Dept. for Development

2.3. Advisor/Consultant

1. Energoprojekt - DD Hidroinzenjering - Belgrade
   Mr. Miomir Zikic, Project manager
   phone: + 381 11 131516 (ext. 2433)
2. Institute for Water Resources “ Jaroslav ^erni” - Belgrade
   Mr. Miljan Djukic, General director
   phone : + 381 11 649 865

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply, maintenance of water supply and sewerage network, wastewater treatment
- Annual turnover: 66,000,000 US $ (660,000,000 Yu din.)
- Employees: 5200

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 5200 employees, 150 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Energoprojekt, DD Hidroin`enjering – Belgrade
- Institute for Water Resources "Jaroslav Cerni" – Belgrade
- Foreign Consulting Company (to be chosen)
- Institute for Health Protection of City of Belgrade
- Institute for Health Protection of Serbia

3. Project Description

3.1. Project Outline

1. The upgrading of Sewage (Main Collectors)
2. Wastewater Treatment Plant "Ostruznica" (55,000 p.e.)
   - Low Load Biological Treatment (nitrification) plus desinfection
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population (Water Supply, Recreation) Aquatic Environment, Fisheries
- Stakeholders: Federal and Republic of Serbia Government, City of Belgrade Government. Belgrade Water Supply and Sewage Co., Industry
- Location of WWTP: 10 km upstream of the Impoundment of Sava River Water using for Water Supply of City of Belgrade (see map enclosed) Also, 10 km upstream of the Main Recreational Zone on the Sava River.
- Site location:
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: reducing risks of hydric epidemia, improving of drinking water quality
- Aquatic environment: Improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation (contact recreation)
- Aesthetics: Improvement of aesthetic value of Sava River Water and Banks
- Biodiversity: Rehabilitation of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, recreation, tourism, fishing)
- Transboundary effects: General reduction pollution on the regional base

3.3. Status of Project Preparation

Pre-feasibility Level

Concept was made in 1987. (to be renewed)

Summary of the documentation is done in Serbian. It could be obtained in French and English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, low load activated sludge process (nitrification), secondary clarification, desinfection), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

- Special features: nitrification, desinfection

3.5. Ownership of Project Site

Mixed (Municipal and Private property)

3.6. Specific Project Items

Feasibility Study

Project design (Main Collectors and WWTP)

Environmental Impact Assessment Study

The Construction of the Main Collectors

The Construction of the WWTP "Ostruznica"

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest of citizens for this project, even with their participation through especial public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- A part of City of Belgrade lies upstream of the Impoundment of Sava River Water using for Water Supply of City of Belgrade (see map enclosed) Also, 10 km upstream of the Main Recreational Zone on the Sava River. Discharge of wastewater has the adverse effect on water supply (even water treatment comprises ozone and activated carbon) and recreation.
- Locality is sensitive. Sava River is large recipient having high dilution and self-purification capacity but water is used for water supply and recreation of large population. By the construction of WWTP water quality will be improved. The risk of hydric epidema will be greatly decreased.
- The main contribution will be done on the local level but also on the regional level (general reduction of pollution and nutrient load)

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of Sava River water quality upstream of the Impoundment for Water Supply and Recreational Zone. Protection of Municipal Drinking Water Resources, Protection of recreational Zones
- Region level: Reduction of Pollution Load.
- Transboundary level: No significant Immediate Effects but long-term effect.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects :
  - 200 people will be employed during 2-year construction period
  - 15-20 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, decreasing of health risk, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 12,500,000 US $ (125,000,000 Yu din.)
  - Land 100,000 US $ (1,000,000 Yu din.)
  - Construction and machinery 11,500,000 US $ (182,000,000 Yu din)
  - Planning and supervision 650,000 US $ (8,500,000 Yu din)
  - Other costs 350,000 US $ (4,500,000 Yu din)
- Total cost 12,500,000 US $ (125,000,000 Yu din)
- on an annual basis (I year 5,000 000; II year 6,500,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 1,150,000 US $ (11,500,000 Yu din.)
- 250,000 US $ (4,000,000 Yu din.)
- 1,400,000 US $ (14,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2.5 din/m^3 of treated water, 0.25 US $/$m^3$ of waste water
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	12,500,000	/
(11) International grant	/	2,500,000	/
(12) Commercial Bank loan	/	1,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	4,000,000*	16,000,000	16,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 3

City of Novi Sad WWTP (Left Bank)

PROJECT FILE:	Country	Project No:	Page: 1
NOVI SAD WWTP LB	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Novi Sad WWTP (Left Bank)

Responsible/Legal Body

Authority: Government of Republic of Serbia, Vojvodina Province Government, City of Novi Sad Authority

Company: JKP Vodovod i Kanalizacija – Novi Sad (Novi Sad Water Supply and Sewage Company)

Address: Masarikova 17

21 000 Novi Sad

FR of YUGOSLAVIA

Phone: +381 21 613 850

Fax: +381 21 423 396

Project Target(s)

Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Federal Government, Republic of Serbia Government, City of Belgrade Government, NGO`s, Professional associations, etc.

Investment cost

52,500,000 US $ (525,000,000 Yu din.)

Status of the project

Feasibility Study in Progress

Language of Project Documents:

Project documents are available in Serbian, summaries available in English.

1. Project Title

WWTP - City of Novi Sad (Left Bank)

2.1. Investor Details

Company Name : JKP Vodovod i Kanalizacija – Novi Sad

Address: Masarikova 17

21 000 Novi Sad

FR of YUGOSLAVIA

Phone: +381 21 613 850

Fax: +381 21 423 396

2.2. Contact Person

Mr. Slavko Kulacin, MSc, Head of Developing Dept.

Phone: +381 21 613 850

Fax: +381 21 423 396

2.3. Advisor/Consultant

DD Urbisproject – Novi Sad

Mr. Djura Marovic, General manager

Phone: +381 21 450 422

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of Water Supply and Sewerage Network, Wastewater Collection, Transport, Treatment and Disposal
- Annual turnover: 10,000,000 US $ (100,000,000 Yu din.)
- Employees: 550

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 550 employees, 20 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- JP za gradjevinsko zemljiste i putnu privredu – Beo~in
- DD Vojvodina Pro-Ing, Novi Sad
- DP Vojvodinaprojekt, Novi Sad
- DD Urbisprojekt, Novi Sad
- JP Urbanizam, Novi Sad
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

1. The construction of Main Collector (large diameter, 3 pumping station)
2. Central Wastewater Treatment Plant (350,000 p.e.) at the Left Bank of Danube
   - High Load Biological Treatment with P removal
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry, Agriculture
- Stakeholders: Federal and Republic of Serbia Government, City of Novi Sad Government. Novi Sad Water Supply and Sewage Co., Industry
- Location of WWTP: 5 km downstream of City of Novi Sad (see map enclosed)
- Site location: Left Bank of Danube River (see map enclosed)
- Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Drinking Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of Danube River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Pollution Reduction on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study

Summary of the Project documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

- Special features: not analyzed

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Feasibility Study

Project design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Construction of the Main Collector

The Construction of the WWTP (Left Bank)

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through especial public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Large Industrial City as Novi Sad is, has an immediate adverse effect (water supply, recreation, etc.) but also a cumulative adverse effect on the aquatic ecosystems (Iron Gate Reservoir, Black Sea)
- In general, Locality is moderately sensitive but existence of Water Supply Impoundment (Bank Filtrate) immediately downstream of the City makes it very sensitive.
- Danube River is large recipient having high dilution and self-purification capacity. By the construction of WWTP water quality will be improved immediately downstream of Novi Sad. The influence of wastewater discharge will be localized on the short stretch downstream of City.

The main contribution will be done on the regional level (general reduction of pollution and nutrient load)

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of River water quality within wider Urban Area, Protection of Drinking Water Resource, Protection of Recreational Zone
- Region level: Reduction of Pollution and Nutrient Impute into Black Sea
- Transboundary level: No significant Immediate Effects but long-term effect.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 550 people will be employed during 3-year construction period
  - 45-50 people will be employed continuously in operating and maintenance of WWTP
- Protected Drinking Water Resource, improved aquatic environment, improved conditions for recreation and tourism, fishing, better water quality for any use.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 52,500,000 US $ (525,000,000 Yu din.)
  - Land 500,000 US $ (5,000,000 Yu din.)
  - Construction and machinery 47,700,000 US $ (457,000,000 Yu din)
  - Planning and supervision 2,800,000 US $ (28,000,000 Yu din)
  - Other costs 1,500,000 US $ (15,000,000 Yu din)
- Total cost 52,500,000 US $ (525,000,000 Yu din)
- on an annual basis (I year 17,000 000; II year 23,000000; III year 12,500,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 5,900,000 US $ (59,000,000 Yu din.)
- 900,000 US $ (9,000,000 Yu din.)
- 6,800,000 US $ (68,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3.5 din/m^3 of waste water, 0.35 US $/$m^3$ of waste water
- 1998
- Based on the Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	30,000,000	/
(11) International grant	/	4,000,000	/
(12) Commercial Bank loan	/	4,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	14,500,000*	38,000,000	38,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 4

City of Nis WWTP

PROJECT FILE:	Country	Project No:	Page: 1
NIS WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Nis WWTP

Responsible/Legal Body

Authority:	Government of Republic of Serbia, City of Nis Government, JKP "Naisus"- Nis
Authority Name:	Direkcija za izgradnju Grada Nisa
Address:	Oktobarske revolucije 1/I, 18 000 Nis, FR of Yugoslavia
Phone:	+381 18 51 885
Fax:	+381 18 52 999
Company Name:	Javno Komunalno Preduzece "Naissus"
Address:	7. jula 6, 18 000 Nis, FR of Yugoslavia
Phone:	+381 18 531 275
Fax:	+381 18 531 275

Project Target(s)

Nisava River, South Morava River, Grand Morava River Protection; Danube River and Black Sea Pollution Reduction.

Benefit:	Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection.
Beneficiaries:	Population, Aquatic Environment, Tourists, Fisheries, etc.
Stakeholders:	Federal and Republic of Serbia Government, City of Belgrade Government, NGO`s, Professional associations, etc.

Investment Cost

45,000,000 US $ (450,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available in French and English.

1. Project Title

City of Nis WWTP

2.1. Investor Details

- Company Name: Javno Komunalno Preduzece "Naissus" (JKP "Naissus")
- Address: 7. jula 6, 18 000 Nis, FR of Yugoslavia
- Phone: +381 18 531 275
- Fax: +381 18 531 275
- E mail:

2.2. Contact Person

- Mr. Goran Ignjatovic, general manager
- Phone: +381 18 531 275
- Fax: +381 18 531 275
- E mail:

2.3. Advisor/Consultant

Institute for Water Resources " Jaroslav Cerni"

Mr. Miljan Djukic, General director

Jaroslava Cernog Str. 80

BEOGRAD

FR of Yugoslavia

Phone: + 381 11 649 865

Fax:

E mail:

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 8,000,000 US $ (80,000,000 Yu din.)
- Employees: 650

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially internal, engagement of external (national and international) planning and implementing capacities is needed.

Out of 650 employees, 35 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Institute for Water Resources " Jaroslav Cerni" – Belgrade
- Foreign Consulting Company (to be chosen)
- Health Protection Service of City of Nis
- Institute for Health Protection of Serbia

3. Project Description

3.1. Project Outline

1. The construction of Main Collector (large diameter, 2 pumping stations)
2. The Construction of Central Wastewater Treatment Plant (300,000 p.e.)
   - High Load Biological Treatment with P removal
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Federal and Republic of Serbia Government, City of Nis Authority, JKP "Niassus" Co., Local Industry, Citizens
- Location of WWTP: 5 km downstream of City of Nis (see map enclosed)
- Site: Already Planned by City of Nis Physical Plan
- Existing Site Use: No any Use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of Water transferred epidemic
- Aquatic environment: Rehabilitation and great improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant, General Reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in preparation

Final Project Design will be made in 1999. Summary of the available documentation could be obtained in French and English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, low load activated sludge process (nitrification), secondary clarification, desinfection), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: nitrification, P-removal, desinfection

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Project design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Construction of the Main Collector

The Construction of the Central WWTP

Pretreatment of wastewater of some industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through especial public loan or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Large Industrial City is located on the banks of Nisava River. Direct discharge of wastewater has the detrimental effect on Nisava River and South Morava River water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. Nisava River is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. By the construction of WWTP water quality and aquatic environment of will be greatly improved downstream of the City.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvment of River Nisava and South Morava water quality and Environment, Protection of downstream Drinking Water Resources
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 500 people will be employed during 3-year construction period
  - 40-50 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 45,000,000 US $ (450,000,000 Yu din.)
  - Land 400,000 US $ (4,000,000 Yu din.)
  - Construction and machinery 42,100,000 US $ (421,000,000 Yu din)
  - Planning and supervision 1,900,000 US $ (19,000,000 Yu din)
  - Other costs 600,000 US $ (6,000,000 Yu din)
- Total cost 45,000,000 US $ (450,000,000 Yu din.)
- on an annual basis (I year 15,000 000; II year 23,000000; III year 7,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 5,400,000 US $ (54,000,000 Yu din.)
- 500,000 US $ (5,000,000 Yu din.)
- 5,900,000 US $ (59,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3 din/m^3 of treated water, 0.3 US $/$m^3$ of waste water
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	30,000,000	/
(11) International grant	/	3,000,000	/
(12) Commercial Bank loan	/	3,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	9,000,000*	36,000,000	36,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 5

City of Pristina WWTP

PROJECT FILE:	Country	Project No:	Page: 1
PRISTINA WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Pristina WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, Kosovo & Metohija Province Government, City of Pristina Authority

Company: JKP Regionalni Vodovod i Kanalizacija – Pristina

Address: Igumana Sime Andrejevica bb

38 000 Pristina

FR of YUGOSLAVIA

Phone: +381 38 543 785

Fax: +381 38 541 437

Project Target(s)

Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Federal Government, Republic of Serbia Government, Kosovo & Metohija Province Government, City of Pristina Authority, NGO`s, Professional associations, etc.

Investment Cost

39,500,000 US $ (395,000,000 Yu din.)

Status of the Project

Feasibility Study in Progress

Language of Project Documents

Project documents are available in Serbian, summaries available in English.

1. Project Title

City of Pristina WWTP

2.1. Investor Details

Company Name: JKP Regionalni Vodovod i Kanalizacija – Pristina

Address: Igumana Sime Andrejevica bb
38 000 Pristina
FR of YUGOSLAVIA

Phone: +381 38 543 785

Fax: +381 38 541 437

E-mail:

2.2. Contact Person

Mr. Cedomir Maksimovic, General Director

Phone: +381 38 543 785 or +381 38 540 748

Fax: +381 38 541 437

2.3. Advisor/Consultant

1. Energoprojekt - DD Hidroinzenjering - Belgrade
   Mr. Miomir Zikic, Project manager
   phone: + 381 11 131516 (ext. 2433)
2. Institute for Water Resources " Jaroslav Cerni" - Belgrade
   Mr. Miljan Djukic, General director
   phone: + 381 11 649 865

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of Water Supply and Sewerage Network, Wastewater Collection, Transport, Treatment and Disposal
- Annual turnover: 6,000,000 US $ (60,000,000 Yu din.)
- Employees: 750

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 750 employees, 10 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Federal Government
- Republic of Serbia Government
- Kosovo & Metohija Province Government
- City of Pristina Authority

3. Project Description

3.1. Project Outline

1. The construction of Main Collector (large diameter)
2. Central Wastewater Treatment Plant (250,000 p.e.)
   - High Load Biological Treatment with P removal
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry, Agriculture
- Stakeholders: Federal and Republic of Serbia Government, City of Pristina Authority, JKP Regionalni Vodovod i Kanalizacija – Pristina Co., Industry
- Location of WWTP: 8 km downstream of City (see map enclosed)
- Site location: Right Bank of Sitnica River
- Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Drinking Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, production of healthy food, etc.)
- Transboundary effects: Pollution Reduction on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Level

Summary of the Project documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). Nutrients (N/P) removal as well as the technology of removal ought to be studied. Cost-Benefit analysis is needed. As a minimum, P removal by precipitation is foreseen.

- Special features: not analyzed

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Feasibility Study

Project design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Construction of the Main Collector

The Construction of the WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest of citizens the environment to be improved
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Large Industrial City as Pristina is, has an immediate detrimental effect (water supply, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems (Ibar River, Morava River, Iron Gate Reservoir, Black Sea)
- Locality is highly sensitive as an agricultural area
- By the construction of WWTP water quality will be greatly. The influence of wastewater discharge will be localized on the shorter stretch downstream.

The main contribution will be done on the local but also on the regional level (general reduction of pollution and nutrient load) as the large pollution load will be removed

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of River water quality within wider densely populated Area, Protection of Drinking Water Resource, Protection of Crop
- Regional level: Reduction of Pollution and Nutrient Impute
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren`t elements to estimate saved investment cost in connection with possible environmental damage
- Employment / Income Effects :
  - 500 people will be employed during 3-year construction period
  - 40-45 people will be employed continuously in operating and maintenance of WWTP
- Protected Drinking Water Resource, improved aquatic environment, improved conditions for recreation and tourism, fishing, better water quality for any use.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 39,500,000 US $ (395,000,000 Yu din.)
  Land 400,000 US $ (4,000,000 Yu din.)
  Construction and machinery 36,600,000 US $ (396,000,000 Yu din)
  Planning and supervision 1,700,000 US $ (18,000,000 Yu din)
  Other costs 800,000 US $ (7,000,000 Yu din)
- Total cost 39,500,000 US $ (395,000,000 Yu din)
- on an annual basis (I year 15,000 000; II year 19,000,000; III year 6,500,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 5,100,000 US $ (51,000,000 Yu din.)
- 800,000 US $ (9,000,000 Yu din.)
- 5,900,000 US $ (59,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2.5 din/m^3 of waste water, 0.25 US $/$m^3$ of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	23,000,000	/
(11) International grant	/	8,500,000	/
(12) Commercial Bank loan	/	/	/
(13) Other Sources	/	/	/
Total Funds Requirement	8,500,000*	31,500,000	31,500,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 6

City of Zrenjanin WWTP

PROJECT FILE:	Country	Project No:	Page: 1
ZRENJANIN WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Zrenjanin WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, Vojvodina Province Government, City of Zrenjanin Authority

Name: JKP Vodovod i Kanalizacija – Zrenjanin

Address: Petefijeva str. 21

23 000 Zrenjanin

FR of YUGOSLAVIA

Phone: +381 23 562 535

Fax: +381 23 562 535

E mail:

Project Target(s)

Target: Begej (Bega) river, Tisa river, Dunav (Danube) and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Resources for Irrigation, Industries and Fish-ponds supply, Health Protection, Aquatic Environment Remediation, Rehabilitation and Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Republic of Serbia Government, Vojvodina Province Government, City of Zrenjanin Authority, Local Industry, Private companies, NGO`s

Investment Cost

31,500,000 US $ (315,000,000 Yu din.)

Status of the Project

Feasibility Study in Progress

Language of Project Documents:

Project documents are available in Serbian, summaries available in English.

1. Project Title

City of Zrenjanin WWTP

2.1. Investor Details

Company Name: JKP Vodovod i Kanalizacija – Zrenjanin

Address: Petefijeva str. 21
23 000 Zrenjanin
FR of YUGOSLAVIA

Phone: +381 23 562 535

Fax: +381 23 562 535

2.2. Contact Person

Mr. Milorad Bjelogrlic, General Manager

Phone: +381 23 562 535

Fax: +381 23 562 535

2.3. Advisor/Consultant

1. Civil Eng. Faculty – University of Belgrade
   Mr. Zivojin Prascevic, Dekan
   Phone: + 381 11 3370 100
2. Institute for Water Resources " Jaroslav Cerni" - Belgrade
   Mr. Miljan Djukic, General Director
   Phone: + 381 11 649 865

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of Water Supply and Sewerage Network, Wastewater Treatment and Disposal
- Annual turnover: 4,000,000 US $ (40,000,000 Yu din.)
- Employees: 330

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 330 employees, 16 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- JP za gradjevinsko zemljiste -Zrenjanin
- DD Vojvodina Pro-Ing, Novi Sad
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

1. The construction of Main Collector (3 km long, large diameter, 3 pumping station)
2. Central Wastewater Treatment Plant (200,000 p.e.)
   - Low Load Biological Treatment
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Agriculture and Fish-ponds, Industry, Aquatic Environment,
- Stakeholders: Republic of Serbia Government, City of Zrenjanin Authority, Zrenjanin Water Supply and Sewage Co., Industry, Private Companies, NGO`s
- Location of WWTP: 3 km downstream of City of Zrenjanin (see map enclosed)
- Site location: Left Bank of Bega River (see map enclosed)
- Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred diseases and epidemia
- Aquatic environment: Remediation and Rehabilitation of the Aquatic Environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Recovering and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Pollution Reduction on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study

Summary of the Project documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, low load activated sludge, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). Nutrients (N/P) removal ought to be studied. Cost-Benefit analysis is needed.

- Special features: nitrification

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Feasibility Study to be finished

Environmental Impact Assessment Study

Project design (Main Collector and WWTP)

The Construction of the Main Collector

The Construction of the WWTP

Pretreatment of wastewater of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest of citizens the environment to be improved, even with their participation through especial public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Large Industrial City with developed food processing Industry has an immediate detrimental effect on the Bega River (already heavily polluted in Romania) as well as adverse effect (water supply, recreation, etc.) on the Tisa River. Also a cumulative adverse effect on the aquatic ecosystems (Tisa, Iron Gate Reservoir, Black Sea)
- Locality is sensitive; low dilution ratio and low self-purification capacity of recipient.
- By the construction of WWTP water quality as well as aquatic environment of Bega River downstream of the City will be greatly improved. The influence of wastewater discharge will be localized on the short stretch downstream of City.

The main contribution will be done on the local but also on the regional (general reduction of pollution and nutrient load) level. *Activities on Bega River Protection has to be done in Cooperation (FR Yugoslavia and Romania)*

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of ambient water quality within Banat Region, Protection of Water Resource for: Irrigation, Fish-pons supply, Recreation
- Region level: Reduction of Pollution Impute into Tisa, Danube and Black Sea
- Transboundary level: no significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren`t exact elements to estimate saved investment cost in connection with possible environmental damage
- Employment / Income Effects :
  - 250 people will be employed during 3-years construction period
  - 35-40 people will be employed continuously in operating and maintenance of WWTP
- Decreasing of the cost of water for irrigation and Fich-ponds supply

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

Investment cost:	37,500,000 US $ (315,000,000 Yu din.)
Land	100,000 US $ (1,000,000 Yu din.)
Construction and machinery	34,800,000 US $ (348,000,000 Yu din)
Planning and supervision	1,700,000 US $ (17,000,000 Yu din)
Other costs	900,000 US $ (9,000,000 Yu din)
Total cost	31,500,000 US $ (315,000,000 Yu din)

- On an annual basis US $ (I year-13,500 000; II year-16,000000; III year-8,000,000)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 3,700,000 US $ (37,000,000 Yu din.)
- 600,000 US $ (6,000,000 Yu din.)
- 4,300,000 US $ (43,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3.8 din/m^3 of wastewater, 0.38 US $/$m^3$ of wastewater
- 1998
- Based on the Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	24,000,000	/
(11) International grant	/	2,000,000	/
(12) Commercial Bank loan	/	4,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	7,500,000*	30,000,000	30,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 7

Vrbas – Kula Regional WWTP

PROJECT FILE:	Country	Project No:	Page: 1
VRBAS-KULA WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: Vrbas – Kula Regional WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, Vojvodina Province Government, City of Vrbas Authority, City of Kula Authority

Company: Fond za gradjevinsko zemljiste i puteve Opstine Vrbas

Address: Trg Slobode 1

21 300 Vrbas

FR of YUGOSLAVIA

Phone: +381 21 705 990

Fax: +381 21 707 299

Project Target(s)

Target: Pollution reduction, Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Agriculture, Industry, Aquatic Environment, Fish-Ponds

Stakeholders: Republic of Serbia Government, City of Vrbas Authority, City of Kula Authority, Industry, Local Private Companies, NGO`s.

Investment Cost

34,000,000 US $ (340,000,000 Yu din.)

Status of the Project

Project design finished in 1989

Language of Project Documents

Project documents are available in Serbian, summaries available in English.

1. Project Title

Vrbas – Kula Regional WWTP

2.1. Investor Details

Company Name:	Fond za gradjevinsko zemljiste i puteve Opstine Vrbas
Address:	Trg Slobode 1
	21 300 Vrbas
	FR of YUGOSLAVIA
Phone:	+381 21 705 990
Fax:	+381 21 707 299

2.2. Contact Person

Mr. Ljubo Srdanovic, General Director

Phone:	+381 21 705 990
Fax:	+381 21 707 299

2.3. Advisor/Consultant

1. IGV – Subotica
   Rudolf Cinkler, Project Manager
2. DD Urbisproject – Novi Sad
   Mr. Djura Marovic, General manager
   Phone: +381 21 450 422

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Investment in Infrastructure
- Annual turnover: 10,000,000 US $ (100,000,000 Yu din.)
- Employees: 50

2.6. Planning/Implementing Extend/Capacity of the Investor

Not Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 50 employees, 5 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- JKP Vodovod i Kanalizacija – Vrbas
- JKP Vodovod i Kanalizacija – Kula
- DD Vojvodina Pro-Ing, Novi Sad
- DD Urbisprojekt, Novi Sad
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

1. The construction of Main Collector (12 km long, large diameter, 2 pumping station)
2. Central Wastewater Treatment Plant (180,000 p.e.)
   - Low Load Biological Treatment
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Fish-Ponds, Industry, Agriculture
- Stakeholders: Republic of Serbia Government, City of Vrbas and Kula Authority, JKP Vodovod i Kanalizacija – Vrbas, JKP Vodovod i Kanalizacija – Kula, Local Industry Co.
- Location of WWTP: 5 km downstream of City of Vrbas (see map enclosed)
- Site location: Left Bank of Danube River (see map enclosed)
- Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred deseases and hydric epidemia
- Aquatic environment: Remediation and Rehabilitation of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of DTD Canal Water and Banks
- Biodiversity: Recovering of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, agriculture, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: no significant immediate effect but significant long-term one.

3.3. Status of Project Preparation

Wastewater quality data, feasibility study, design project

Summary of the Project documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, low load activated sludge, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

- Special features: nitrification

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Renovation of Design project (Main Collector and WWTP)

The Construction of the Main Collector

The Construction of the WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be protected and improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of two Industrial Cities with developed Food processing Ind., has an immediate detrimental effect on the recipient but also a cumulative adverse effect on the aquatic ecosystems (Tisa river, Danube, Iron Gate Reservoir, Black Sea)
- Locality is very sensitive as the recipient has weak capacity.
- DTD Canal is artificial watercourse having low dilution and self-purification capacity. By the construction of WWTP water quality and biota in DTD Canal will be greatly improved. The influence of pollution on the Tisa river will be significantly reduced.

The main contribution will be done on the regional level (reduction of pollution load)

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Canal water quality and recovering of biota, Protection of Water Resource for Agriculture (particularly fish-ponds supply) and Industry, Protection of Recreational Zone
- Region level: Reduction of Pollution and Nutrient Impute into Black Sea
- Transboundary level: no significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment / Income Effects:
  - 250 people will be employed during 3-year construction period
  - 35-40 people will be employed continuously in operating and maintenance of WWTP
- Protected Water Resource, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 34,000,000 US $ (340,000,000 Yu din.)
  - Land 100,000 US $ (1,000,000 Yu din.)
  - Construction and machinery 31,500,000 US $ (315,000,000 Yu din)
  - Planning and supervision 1,500,000 US $ (15,000,000 Yu din)
  - Other costs 900,000 US $ (9,000,000 Yu din)
- Total cost 34,000,000 US $ (340,000,000 Yu din)
- on an annual basis (I year 10,000 000; II year 16,000000; III year 8,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 3,300,000 US $ (33,000,000 Yu din.)
- 600,000 US $ (6,000,000 Yu din.)
- 3,900,000 US $ (39,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3.5 din/m^3 of wastewater, 0.35 US $/$m^3$ of wastewater
- 1998
- Based on the Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	21,000,000	/
(11) International grant	/	2,000,000	/
(12) Commercial Bank loan	/	4,500,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	6,500,000*	27,500,000	27,500,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 8

City of Leskovac WWTP

PROJECT FILE:	Country	Project No:	Page: 1
LESKOVAC WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.17. Date of latest upgrade: 1998.12.01.

Project Title: City of Leskovac WWTP

Responsible/Legal Body:

Government of Republic of Serbia, City of Leskovac Authority, JKP Vodovod - Leskovac

Authority Name: Direkcija za izgradnju Leskovca

Address: Garadski trg 1

Phone: + 381 16 213 052

Fax: + 381 16 213 211

Company Name: JKP Vodovod - Leskovac

Address: Garadski trg 1
16 000 Leskovac,
FR of Yugoslavia

Phone: + 381 16 213 052

Fax: + 381 16 213 052

E-mail:

Project Target(s)

Target: Pollution Reduction of South Morava River, Velike Morava River; Danube River and Black Sea.

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Protection of Aquatic Environment.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries, etc.

Stakeholders: Federal and Republic of Serbia Government, City of Leskovac Government, Local Industry, Private Companies, NGO`s, Professional associations, etc.

Investment Cost

25,200,000 US $ (252,000,000 Yu din.)

Status of the Project

Feasibility study in progress.

Language of Project Documents

Project documents available in Serbian, summaries available in English.

1. Project Title

City of Leskovac WWTP

2.1. Investor Details

Company name: JKP Vodovod - Leskovac

Address: Gradski Trg 1

Phone: +381 16 213 052

Fax: +381 16 213 211

E-mail:

2.2. Contact Person

Name: Mr Zarko Krstic, general manager

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Tatjana Zaric, Project manager

Phone: + 381 11 131516 / ext. 2433

Fax:

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment & supply, wastewater treatment, maintenance of water supply and sewerage system, investment
- Annual turnover - 2,000,000 US $
- employees 150

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 150 employees, 20 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Energoprojekt - DD Hidroinzenjering
- Local Industry and Private Companies
- Foreign Consulting Companies (to be chosen)

3. Project Description

3.1. Project Outline

1. The reconstruction and enlarging of existing Sewage System
2. The Construction of Central Wastewater Treatment Plant (160,000 p.e.)
   - High Load Biological Treatment with P removal,
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists
- Stakeholders: Federal and Republic of Serbia Government, City of Leskovac Authority, Local Industries, Private Companies, NGO`s.
- Location of WWTP: 10 km downstream of City (see map enclosed)
- Site: Left Bank of South Morava River
- Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of Water transferred diseases and epidemia
- Aquatic environment: Rehabilitation and great improvement of the aquatic environment in South Morava river
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of river water and banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of industrial capacities (civil works capacities, mechanical industry, etc.), creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: not significant, general pollution reduction on the regional base

3.3. Status of Project Preparation

Feasibility study in progress

Project documents/ summary on English

Summary of the Project documentation could be obtained on English on request.

3.4. Technology Proposed

Standard elements: central wastewater treatment plant comprising wastewater line with primary and secondary treatment (inert matters removal, primary clarification, bioaeration-activated sludge process, secondary clarification, P-removal as well as the sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

Special features: Pretreatment of industrial wastewater (industry specific)

3.5. Ownership of Project Site

Municipal Property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design (Main Collector and WWTP)

The Construction of the Main Collector (10 km long)

The Construction of the WWTP

Pretreatment of industrial wastewater

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through especial public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Project documentation for Environmental Impact assessment is in progress.

4.3. Sensitivity of Locality/Receptor

Dilution factor is low. Capacity of receiving water is weak. Large pollution load discharging into recipient has a detrimental effect on the river water quality and aquatic environment at the long distance downstream.

4.4. Primary Needs and Benefits of the Project

- There is no WWTP for a large City with developed chemical, textile and food processing industry located on the banks of South Morava River, tributary of Velika Morava River.
- Receiving water quality will be significantly improved with construction of WWTP, reaching II class of ambient water according to the Yugoslav regulations
- The most important effect will be done on the local and national level, (i.e. the improvement of water quality by two classes).
- Very important on regional level, i.e. the decreasing of pollution emission into Velika Morava River, Danube and Black Sea.

5. Economic Project Justification

5.1. Economic Project Benefits

- not justified
- 180 people will be employed during 3 years construction period
- 35 - 40 people will be employed in maintenance continuously
- savings for use of water in agriculture and industry because of a decreasing of the price of water treatment

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investement cost: 25,200,000 US $ (252,000,000 Yu din.)
- Alocation of capital cost :

Land	100,000 US $ (1,000,000 Yu din.)
Construction and machinery	23,500,000 US $ (235,000,000 Yu din)
Planning and supervision	1,100,000 US $ (11,000,000 Yu din)
Other costs	800,000 US $ (8,000 000 Yu din)

- Total cost 25,200,000 US $ (252,000,000 Yu din)
- On an annual basis US $ (I year 8,000,000, II year 11,000,000 , III year 6,200,0000)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 2,550,000 US $ (25,500,000 Yu din.)
- 700,000 US $ (7,000,000 Yu din.)
- 3,250,000 US $ (32,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2 din/m^3 of wastewater, 0.2 US $/$m^3$ of wastewater
- 1998
- Based on the Current average price of sewerage service

6.4. Financial Internal Rate of Return (FIRR)

FIRR is not estimated. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan – central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	13,000,000	/
(11) International grant	/	2,500,000	/
(12) Comercial Bank loan	/	4,200,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	5,500,000*	19,200,000	19,200,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 9

City of Krusevac WWTP

PROJECT FILE:	Country	Project No:	Page: 1
KRUSEVAC WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Krusevac WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Krusevac Authority, JKP Vodovod i kanalizacija – Krusevac

Name: JKP Vodovod i kanalizacija – Krusevac

Address: Cara Lazara str. 37

37 000 Krusevac

FR of Yugoslavia

Phone: +381 37 24 519

Fax: +381 37 24 519

Project Target(s)

Target: West Morava River, Grand Morava River Protection; Danube River and Black Sea Pollution Reduction.

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Krusevac Authority, JKP Vodovod i kanalizacija – Krusevac, Industry, Private Companies, NGO`s, etc.

Investment Cost

23,625,000 US $ 236,250,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available in French and English.

1. Project Title

City of Krusevac WWTP

2.1. Investor Details

Name: JKP Vodovod i kanalizacija – Krusevac
Address: Cara Lazara str. 37
37 000 Krusevac
FR of Yugoslavia
Phone: +381 37 24 519
Fax: +381 37 24 519
E-mail:

2.2. Contact Person

- Mr. Dragan Sibinovic, General manager
- Phone: +381 37 24 519
- Fax: +381 37 24 519

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Milan Ivetic, Project manager

Phone: +381 11 131516 / ext. 2433

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 2,500,000 US $ (25,000,000 Yu din.)
- Employees: 250

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 250 employees, 15 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Fond za izgradnju grada – Krusevac
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (150,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Krusevac Authority, JKP Vodovod i kanalizacija – Krusevac, Local Industry, Citizens
- Location of WWTP: 2 km downstream of City of Krusevac (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: Extensive Agriculture

3.2. Primary Needs for the Project

- Health benefit: reducing risks of water transferred diseases and hydric epidemia
- Aquatic environment: rehabilitation and improvement of the aquatic environment
- Recreation: improvement of conditions and possibilities for recreation
- Aesthetics: improvement of aesthetic value of river water and banks
- Biodiversity: rehabilitation and improvement of biodiversity
- Economic development: engagement of industrial capacities (civil works capacities, mechanical industry, etc.), creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: not significant, general reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Final Project Design will be finished in 1999.

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process (nitrification), secondary clarification, desinfection), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The upgrading of the Main Collector

The Construction of the Central WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Large Industrial City is located on the banks of West Morava River. Direct discharge of wastewater has the detrimental effect on West Morava River water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. West Morava River is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. By the construction of WWTP water quality and aquatic environment of will be greatly improved downstream of the City.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of West Morava River water quality and Environment, Protection of downstream Drinking Water Resources
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 200 people will be employed during 3-year construction period
  - 30-40 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 23,625,000 US $ (236,250,000 Yu din.)
  Land 100,000 US $ (1,000,000 Yu din.)
  Construction and machinery 21,825,000 US $ (218,250,000 Yu din)
  Planning and supervision 1,100,000 US $ (11,000,000 Yu din)
  Other costs 600,000 US $ (6,000,000 Yu din)
- Total cost 23,625,000 US $ (236,250,000 Yu din.)
- on an annual basis (I year 7,000 000; II year 11,000000; III year 5,625,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 2,600,000 US $ (26,000,000 Yu din.)
- 400,000 US $ (4,000,000 Yu din.)
- 3,000,000 US $ (30,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3 din/m^3 of treated water, 0.3 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	14,000,000	/
(11) International grant	/	2,000,000	/
(12) Commercial Bank loan	/	3,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	4,625,000*	19,000,000	19,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 10

City of Cacak WWTP

PROJECT FILE:	Country	Project No:	Page: 1
CACAK WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Cacak WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Cacak Authority,
JKP Vodovod – Cacak

Name: JKP Vodovod – Cacak

Address: Kralja Petra str. 8
32 000 Cacak
FR of Yugoslavia

Phone: +381 32 24 218

Fax: +381 32 24 218

Project Target(s)

Target: West Morava River, Grand Morava River Protection; Danube River and Black Sea Pollution Reduction.

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Cacak Authority, JKP Vodovod i kanalizacija – Cacak, Industry, Private Companies, NGO`s, etc.

Investment Cost

23,625,000 US $ (236,250,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project Title

City of Cacak WWTP

2.1. Investor Details

Name: JKP Vodovod – Cacak

Address: Kralja Petra str. 8

32 000 Cacak

FR of Yugoslavia

Phone: +381 32 24 218

Fax: +381 32 24 218

E-mail:

2.2. Contact Person

Mr. Petar Vlastelica, General manager

Phone: +381 32 24 218

Fax: +381 32 24 218

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Phone: +381 11 131516

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment

Annual turnover: 2,200,000 US $ (22,000,000 Yu din.)

Employees: 190

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed. Out of 190 employees, 11 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Fond za izgradnju grada – Cacak
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (150,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Cacak Authority, JKP Vodovod – Cacak, Local Industry, Citizens
- Location of WWTP: 3 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: reducing risks of water transferred diseases and hydric epidemia
- Aquatic environment: rehabilitation and improvement of the aquatic environment
- Recreation: improvement of conditions and possibilities for recreation
- Aesthetics: improvement of aesthetic value of River Water and Banks
- Biodiversity: rehabilitation and Improvement of biodiversity
- Economic development: engagement of industrial capacities (civil works capacities, mechanical industry, etc.), creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: not significant, general reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Final Project Design will be finished in 1999.

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification, desinfection), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The upgrading of the Main Collector

The Construction of the Central WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Large Industrial City is located on the banks of West Morava River. Direct discharge of wastewater has the detrimental effect on West Morava River water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. West Morava River is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. Bank filtrate uses as drinking water resource in several medium size settlements. By the construction of WWTP water quality and aquatic environment of will be greatly improved downstream of the City.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of West Morava river water quality and Environment, Protection of downstream Drinking Water Resources
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic project benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 200 people will be employed during 3-year construction period
  - 30-40 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

Investment cost:	23,625,000 US $ (236,250,000 Yu din.)
Land	100,000 US $ (1,000,000 Yu din.)
Construction and machinery	21,825,000 US $ (218,250,000 Yu din)
Planning and supervision	1,100,000 US $ (11,000,000 Yu din)
Other costs	600,000 US $ (6,000,000 Yu din)
Total cost	23,625,000 US $ (236,250,000 Yu din.)

- on an annual basis (I year 7,000 000; II year 11,000000; III year 5,625,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 2,600,000 US $ (26,000,000 Yu din.)
- 400,000 US $ (4,000,000 Yu din.)
- 3,000,000 US $ (30,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 3 din/m^3 of treated water, 0.3 US \$/m^3 of waste water
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	14,000,000	/
(11) International grant	/	2,000,000	/
(12) Commercial Bank loan	/	3,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	4,625,000*	19,000,000	19,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 11

City of Sabac WWTP

Project File :	Country	Project No:	Page : 1
SABAC WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project title: City of Sabac WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Sabac Authority

Company: JKP Vodovod Sabac - Sabac

Name: Dusan Djurdjevic

Address: Vite Vrastanovica 1, [abac

Telephone: + 381 15 321 363

Fax: + 381 15 321 363

Project Target(s)

Target: Sava River, Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources downstream of Sabac, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Federal Government, Republic of Serbia Government, City of Sabac Authority, Private Companies, Industry, NGO`s, Professional associations, etc.

Investment Cost

17,500,000 USD (175,000 000 Yu din.)

Status of the Project

Fusibility Study is finished, project design in progress.

Language of Project Documents

Project documents in Serbian, Summaries available in English.

1. Project title:

City of Sabac WWTP

2.1. Investor details

Company Name: Vodovod Sabac - Sabac
Address: Vite Vrastanovica str., 1,
15000 Sabac
FR of Yugoslavia
Phone: + 381 15 321 363
Fax: + 381 15 321 363
E-mail:

2.2. Contact Person

Dusan Djurdjevic, general manager
Phone: + 381 15 321 363
Fax: + 381 15 321 363

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering
Milan Ivetic, Project manager
Phone: +381 11 131516 / ext. 2433

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply (investment, operating, maintenance) Sewerage and Wastewater treatment (investment, operating, maintenance), irrigation & drainage
- Annual turnover: 3,700,000 US $
- Employees : 340

2.6. Planning/Implementing Extend/Capacity of the Investor

- Not internal, uses external planning capacities.
- Out of 340 employees, 30 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- City of Sabac Authority
- Energoprojekt - DD Hidroinzenjering
- Industry
- Private companies

3. Project Description

3.1. Project Outline

1. The upgrading and enlarging of sewerage of the Sabac City and suburban areas
2. The construction of Central WWTP (100,000 p.e)
   - High load biological treatment
   - Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry, Agriculture
- Stakeholders: Republic of Serbia Government, City of Sabac Authority, JKP Vodovod Sabac Co., Industry, NGO's
- Location of WWTP : 8 km downstream of City
- Site location: Right Bank of Sava River
- Existing Site Use : Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Drinking Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, production of healthy food, etc.)
- Transboundary effects: Pollution Reduction on the regional base

3.3. Status of Project Preparation

- Feasibility study is finished
- The Final Design Project is in progress

Summary of the Project documentation could be obtained in English on the request.

3.4. Technology Proposed

Central wastewater treatment plant comprises:

- Wastewater line with primary (i.e. inert matters removal, primary clarification) and secondary treatment (low load activated sludge, secondary clarification)
- Sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).
  - Special features : Not analyzes

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Final Design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Reconstruction and Upgrading of Sewage System

The Construction of the WWTP

Pretreatment of waste water of some Industry

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest by citizens to solve present problems, even with participation through public grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Project documentation for Environmental Impact assessment is in progress.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of large Industrial City, has an immediate adverse effect (water supply, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems (Sava River, Danube, Iron Gate Reservoir, Black Sea)
- Locality is sensitive as it is upstream of drinking water resources
- By the construction of WWTP water quality will be improved. The influence of wastewater discharge will be localized on the short river stretch downstream.

The main contribution will be done on the local but also on the regional level (general reduction of pollution and nutrient load) as the large pollution load will be removed

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of river water quality, Protection of Drinking Water Resource, Protection of recreational zones
- Regional level: Reduction of Pollution and Nutrient Impute
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- Decreased investment costs in connection with possible environmental damage
  - 200 people will be employed during 3-year construction period
  - 25 - 30 people will be employed in maintenance continuously
- Improved water quality, improved recreational possibilities, tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 17,500,000 US $ (175,000,000 Yu din.)
  Land 110,000 US $ (1,100,000 Yu din.)
  Construction and machinery 16,600,000 US $ (166,000,000 Yu din)
  Planning and supervision 790,000 USD (7,900,000 Yu din)
  Total cost 17,500,000 US $ (175,000,000 Yu din.)
- On an annual basis (I year 6,000,000 US $, II year 8,000,000 US $, III year 3,500,000 US $)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 1,800,000 US $ (18,000,000 Yu din.)
- 200,000 US $ (2,000,000 Yu din.)
- 2,000,000 US $ (20,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2 din/m^3 of wastewater, 0.2 US $/$m^3$ of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

No. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	11,500,000	/
(11) International Grant	/	1,500 000	/
(12) Commercial Bank Loan	/	1,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	3,500,000*	14,000,000	14,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 12

City of Vranje WWTP

Project File :	Country	Project No:	Page : 1
VRANJE WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Vranje WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Vranje Authority

Company: JKP Vodovod Vranje - Vranje

Name: Mr. Stole Novakovic

Address: Bore Stankovica 11, Vranje

Telephone: + 381 17 85 866

Fax: + 381 17 85 866

E-mail:

Project Target(s)

Target: South Morava River, Velika Morava, Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources downstream of Vranje, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Federal Government, Republic of Serbia Government, City of Vranje Authority, Private Companies, Industry, NGO`s, Professional associations, etc.

Investment Cost

17,500,000 USD (175,000 000 Yu din.)

Status of the Project

Fusibility Study in progress.

Language of Project Documents:

Project documents on Serbian, Summaries available on English.

1. Project Title

City of Vranje WWTP

2.1. Investor Details

Company: JKP Vodovod Vranje - Vranje

Address: Bore Stankovica 11, Vranje

Phone: + 381 17 85 866

Fax: + 381 17 85 866

E-mail:

2.2. Contact Person

Mr. Stojan Novakovic, General manager

Phone: + 381 17 85 866

Fax: + 381 17 85 866

E-mail:

2.3. Advisor/Consultant

Institute for Water Resources " Jaroslav Cerni"

Mr. Miljan Djukic, General director

Jaroslava Cernog Str. 80

BEOGRAD

FR of Yugoslavia

Phone: + 381 11 649 865

Fax:

E-mail:

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply (investment, operating, maintenance) Sewerage and Waste water treatment (investment, operating, maintenance), irrigation & drainage
- Annual turnover: 1,700,000 US $
- Employees: 180

2.6. Planning/Implementing Extend/Capacity of the Investor

- Not internal, uses external planning capacities.
- Out of 180 employees, 9 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- City of Vranje Authority
- Industry
- Private companies

3. Project Description

3.1. Project Outline

1. The upgrading and enlarging of municipal sewage system
2. The construction of Central WWTP (100,000 p.e)
   - High load biological treatment
   - Sludge stabilization and disposal

Project is structural

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry, Agriculture

Stakeholders: Republic of Serbia Government, City of Vranje Authority, JKP Vodovod Vranje Co., Industry, NGO's

Location of WWTP: 5 km far from the City (see map enclosed)

Site location: Left Bank of South Morava River

Existing Site Use: Extensive agriculture

3.2. Primary Needs for the Project

- Health benefit: Drinking Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, production of healthy food, etc.)
- Transboundary effects: Not significant. Pollution Reduction on the regional base

3.3. Status of Project Preparation

Feasibility study in progress

Summary of the Project documentation could be obtained in English on the request.

3.4. Technology Proposed

Central wastewater treatment plant comprises:

1. Wastewater line with primary (i.e. inert matters removal, primary clarification) and secondary treatment (low load activated sludge, secondary clarification)
2. Sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

- Special features: Not analyzes

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Final Design (Main Collector and WWTP)

Environmental Impact Assessment Study

The Upgrading and Extending of Sewage System

The Construction of the WWTP

Pretreatment of wastewater of some Industry

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest by citizens to solve present problems, even with participation through public grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

The Environmental Impact Assessment is not done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Industrial City with developed textile industry, has an immediate adverse effect (water supply, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems (South Morava river, Velika Morava river, Danube, Iron Gate Reservoir, Black Sea)
- Locality is sensitive as it is upstream of drinking water resources

- By the construction of WWTP water quality will be greatly improved. The influence of wastewater discharge will be localized on the short river stretch downstream.

The main contribution will be done on the local but also on the regional level (general reduction of pollution and nutrient load) as the large pollution load will be removed

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of river water quality, Protection of Drinking Water Resource, Remediation of aquatic ecosystem, Protection of recreational zones
- Regional level: Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- Decreased investment costs in connection with possible environmental damage
  - 200 people will be employed during 3-year construction period
  - 25 - 30 people will be employed in maintenance continuously
- Improved water quality, improved recreational possibilities, tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 17,500,000 US $ (175,000,000 Yu din.)
  Land 110,000 US $ (1,100,000 Yu din.)
  Construction and machinery 16,600,000 US $ (166,000,000 Yu din)
  Planning and supervision 790,000 USD (7,900,000 Yu din)
  Total cost 17,500,000 US $ (175,000,000 Yu din.)
- On an annual basis (I year 6,000,000 US $, II year 8,000,000 US $, III year 3,500,000 US $)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 1,800,000 US $ (18,000,000 Yu din.)
- 300,000 US $ (3,000,000 Yu din.)
- 2,100,000 US $ (21,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1 din/m^3 of wastewater, 0.1 US \$/m^3 of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

No. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	11,500,000	/
(11) International Grant	/	1,500 000	/
(12) Commercial Bank Loan	/	1,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	3,500,000*	14,000,000	14,000,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 13

City of Valjevo WWTP

Project File :	Country	Project No:	Page : 1
VALJEVO WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project title: City of Valjevo WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Valjevo Authority

Company: JKP Vodovod - Valjevo

Address: Trg Filipa Filipovica 2
17 000 Valjevo
FR of Yugoslavia

Phone: + 381 17 85 866

Fax: + 381 17 85 866

E-mail:

Project Target(s)

Target: Kolubara River, Sava River, Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources downstream of Valjevo, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Republic of Serbia Government, City of Valjevo Authority, Private Companies, Industry, NGO`s, Professional associations, etc.

Investment Cost

9,500,000 USD (95,000 000 Yu din.)

Status of the Project

The Construction of WWTP in progress.

Language of Project Documents

Project documents on Serbian, Summaries available on English.

1. Project Title

City of Valjevo WWTP

2.1. Investor Details

Company: JKP Vodovod - Valjevo

Address: Trg Filipa Filipovica 2

17 000 Valjevo

Phone: + 381 17 85 866

Fax: + 381 17 85 866

2.2. Contact Person

Mr. Milos Filipovic, General manager

Phone: + 381 14 222 147

Fax: + 381 14 222 512

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

Phone: +381 11 131516

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply (investment, operating, maintenance) Sewerage and Wastewater treatment (investment, operating, maintenance)
- Annual turnover: 2,200,000 US $
- Employees: 230

2.6. Planning/Implementing Extend/Capacity of the Investor

- Not internal, uses external planning capacities.
- Out of 230 employees, 23 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- City of Valjevo Authority
- Industry
- Private companies

3. Project Description

3.1. Project Outline

The construction of Central WWTP (100,000 p.e) ought to to be finished. About 80% of civil works are finished.

- High load biological treatment
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries
- Stakeholders: Republic of Serbia Government, City of Valejvo Authority, JKP Vodovod Valjevo Co., Local Industry, NGO's
- Location of WWTP: 3 km far from the City (see map enclosed)
- Site location: Left Bank of Kolubara River
- Existing Site Use: WWTP under construction

3.2. Primary Needs for the Project

- Health benefit: Drinking Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, production of healthy food, etc.)
- Transboundary effects: not significant. Pollution reduction on the regional base

3.3. Status of Project Preparation

The construction of WWTP in progress

Summary of the Project documentation could be obtained on English on the request.

3.4. Technology Proposed

Central wastewater treatment plant comprises:

1. Wastewater line with primary (i.e. inert matters removal, primary clarification) and secondary treatment (low load activated sludge, secondary clarification)
2. Sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering)

- Special features: No analysis

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

The Finishing of the Construction of the WWTP. Pretreatment of waste water of some Industry

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest by citizens to solve present problems, even with participation through public grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

The Environmental Impact Assessment is not done yet.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Industrial City, has an immediate adverse effect (water supply, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems (Kolubara river, Sava river, Danube, Iron Gate Reservoir, Black Sea)
- Locality is sensitive as it is upstream of drinking water resources
- By the construction of WWTP water quality will be greatly improved. The influence of wastewater discharge will be localized on the short river stretch downstream.

The main contribution will be done on the local but also on the regional level (general reduction of pollution and nutrient load) as the large pollution load will be removed

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of river water quality, Protection of Drinking Water Resource, Remediation of aquatic ecosystem, Protection of recreational zones
- Regional level: Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- Decreased investment costs in connection with possible environmental damage
  - 200 people will be employed during 1-year construction period
  - 25 - 30 people will be employed in maintenance continuously
- Improved water quality, improved recreational possibilities, tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 9,500,000 US $ (95,000,000 Yu din.)
  Land 0
  Construction and machinery 9,250,000 US $ (92,500,000 Yu din)
  Planning and supervision 250,000 US $ (2,500,000 Yu din)
  Total cost 9,500,000 US $ (95,000,000 Yu din.)
- On an annual basis (I year 7,500,000 US $, II year 2,000,000 US)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 1,150,000 US $ (11,500,000 Yu din.)
- 200,000 US $ (2,000,000 Yu din.)
- 1,350,000 US $ (13,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1 din/m^3 of wastewater, 0.1 US $/$m^3$ of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

No. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	6,500,000	/
(11) International Grant	/	1,500 000	/
(12) Commercial Bank Loan	/	1,500,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	8,000,000*	9,500,000	9,500,000

**Note: In this moment around 45% of investment cost is secured from national sources and spent in construction of WWTP. It is expected the rest of investment (9,500,000 US $) to be provided from external sources.*

Project No. 14

City of Subotica WWTP (Upgrading)

Project File :	Country	Project No:	Page : 1
SUBOTICA WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Subotica WWTP (Upgrading)

Responsible/Legal Body

Authority: Government of Republic of Serbia, Vojvodina Province Government, City of Subotica Authority

Company: JKP Vodovod - Subotica

Address: Trg Lazara Nesica 9a

24 000 Subotica

FR of Yugoslavia

Phone: + 381 24 22 429

Fax: + 381 24 22 429

E-mail:

Project Target(s)

Target: Palic and Ludos Lake (Ramsar Point) protection

Benefit: The Ludos Lake is Ramsar Point (Bird reserve) so the benefit is much more wider than Regional, Aquatic Environment and Biodiversity Protection, Protection of Large Recreation Area, Health Protection

Beneficiaries: World Heritage, Population, Aquatic Environment, Tourism and Fisheries

Stakeholders: Republic of Serbia Government, Vojvodina Province Government, City of Subotica Authority, Private Companies, Industry, NGO`s, etc.

Investment Cost

32,750,000 USD (327,500 000 Yu din.)

Status of the Project

Feasibility Study in progress.

Language of Project Documents

Project documents on Serbian, Summaries available on English.

1. Project Title

City of Subotnica WWTP (Upgrading)

2.1. Investor Details

Company: JKP Vodovod - Subotica

Address: Trg Lazara Nesica 9a

24 000 Subotica

FR of Yugoslavia

Phone: + 381 24 22 429

Fax: + 381 24 22 429

2.2. Contact Person

Mr. Stevan Plestovic, General manager

Phone: + 381 24 22 439

Fax: + 381 24 22 439

2.3. Advisor/Consultant

IGV Subotica

Trg Jovana Nenada 7

24 000 Subotica

FR of Yugoslavia

Phone: + 381 24 25 536

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply (investment, operating, maintenance) Sewerage and Wastewater treatment (investment, operating, maintenance)
- Annual turnover: 3,700,000 US $
- Employees : 295

2.6. Planning/Implementing Extend/Capacity of the Investor

- Partly internal, engagement of external planning capacities is needed
- Out of 295 employees, 30 are to be involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- Vojvodina Province Government
- City of Subotica Authority
- Industry
- Private companies

3. Project Description

3.1. Project Outline

The enlarging (additional capacity of 90,000 p.e) and upgrading (nutrient removal for 200,000 p.e.) of existing Municipal WWTP (110,000 p.e.).

Project is structural

- Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourism.
- Stakeholders: Republic of Serbia Government, City of Subotica Authority, JKP Vodovod - Subotica Co., Industry, NGO's
- Location of WWTP: Existing location 1 km far from the City
- Site location: Southern bank of Palic Lake
- Existing Site Use: Wastewater Treatment Plant

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of hydric epidemia trough contact recreation.
- Aquatic environment: Rehabilitation and Improvement of the aquatic environment
- Recreation: Improvement of conditions and safety of recreation
- Aesthetics: Improvement of aesthetic value of the Lakes and Recreation Area
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fisheries)
- Transboundary effects: Not significant. Pollution Reduction on the regional level

3.3. Status of Project Preparation

Feasibility study in progress

Summary of the Project documentation could be obtained on English on the request.

3.4. Technology Proposed

Technology proposed will comprise biological nutrient removal.

- Special features : no analysis

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Existing Central WWTP (capacity 110,000 p.e.) comprises ; mechanical treatment, high load activated sludge, secondary clarification, facultative lagoons, and sludge stabilization. Effluent from facultative lagoons discharges in Palic Lake. The technology does not comprise nutrient removal. Due to lack of the capacity of existing WWTP, 35% of raw wastewater is directed to canal which empties into northern part of Ludos Lake (Ramsar Area). The project proposed comprises:

- The upgrading of existing capacity (110,000 p.e.) for the nutrient removal
- The construction of new treatment capacity (90,000 p.e.) including nutrient removal

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest by citizens to solve present problems, even with participation through public grant or loam
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

The Environmental Impact Assessment is not done yet.

4.3. Sensitivity of Locality/Receptor

- Discharge of partially treated and raw wastewater of large industrial city, has an immediate adverse effect (aquatic environment, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems
- Locality is sensitive as the recipients are two Lakes, one of its is Ramsar Area
- By the proposed upgrading of WWTP water quality will be greatly improved, ecosystem will be rehabilitated, Bird reserve will be saved for future generation

The main contribution will be done on the local level but also on the regional and world level

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of water quality, protection of recreational area, remediation of aquatic ecosystem
- Regional level: Reduction of pollution
- Transboundary level: No significant immediate effects but long-term ones
- International: Protection of Ramsar Area (Bird reserve)

5. Economic Project Justification

5.1. Economic Project Benefits

- Decreased investment costs in connection with possible environmental damage
  - 200 people will be employed during 3-year construction period
  - 25 - 30 people will be employed in maintenance continuously
- Improved water quality, improved recreational possibilities, tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 32,750,000 US $ (207,500,000 Yu din.)
  Land 0
  Construction and machinery 31,000,000 US $ (315,000,000 Yu din)
  Planning and supervision 1,750,000 US $ (17,500,000 Yu din)
  Total cost 32,750,000 US $ (327,500,000 Yu din.)
- On an annual basis (I year 10,500,000; II year 15,500,000 ; III year 6,750,000 US $)
- Year of cost estimate: 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 3,300,000 US $ (33,000,000 Yu din.)
- 500,000 US $ (5,000,000 Yu din.)
- 3,800,000 US $ (38,000,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 2 din/m^3 of wastewater, 0.2 US $/$m^3$ of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

No. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	18,000,000	/
(11) International Grant	/	4,500 000	/
(12) Commercial Bank Loan	/	3,750,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	6,500,000*	26,250,000	26,250,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 15

City of Uzice WWTP

PROJECT FILE:	Country	Project No:	Page: 1
UZICE WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Uzice WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Uzice Authority,
JKP Vodovod – Uzice

Name: JKP Vodovod – Uzice

Address: Heroja Luna str. 2
31 000 Uzice
FR of Yugoslavia

Phone: +381 31 21 969

Fax: +381 31 28 447

Project Target (s):

Target: Djetinja River, West Morava River, Velika Morava River Protection. Danube River and Black Sea Pollution Reduction.

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Uzice Authority, Eco-Fund Uzice, JKP Vodovod – Uzice, Industry, Private Companies, NGO`s, etc.

Investment Cost

14,000,000 US $ (140,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project title

City of Uzice WWTP

2.1. Investor details

Name: JKP Vodovod – Uzice

Address: Heroja Luna str. 2

31 000 Uzice

FR of Yugoslavia

Phone: +381 31 21 969

Fax: +381 31 28 447

2.2. Contact Person

Mr. Slavoljub Cicvaric, General manager

Phone: +381 31 21 969

Fax: +381 31 28 447

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Phone: +381 11 131516

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 2,000,000 US $ (20,000,000 Yu din.)
- Employees: 180

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of external (national and international) planning and implementing capacities is needed.

Out of 180 employees, 12 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- Eco-Fund, Uzice
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (75,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Uzice Authority, JKP Vodovod – Uzice, Local Industry, Private Companies, Citizens
- Location of WWTP: 3 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of Water transferred diseases and hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant, General Reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

Large Industrial City is located on the banks of Djetinja River. Direct discharge of wastewater has the detrimental effect on recipient water quality and Aquatic Environment at the long distance downstream the City.

Locality is sensitive. Djetinja River (tributary of West Morava River) is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. Bank filtrate uses as drinking water resource in several medium size settlements located downstream. By the construction of WWTP ambient water quality and aquatic environment of Djetinja River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Djetinja and West Morava river water quality and Environment, Protection of downstream Drinking Water Resources
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 150 people will be employed during 3-year construction period
  - 20-30 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 14,000,000 US $ (140,000,000 Yu din.)
  Land 100,000 US $ (1,000,000 Yu din.)
  Construction and machinery 12,700,000 US $ (127,000,000 Yu din)
  Planning and supervision 700,000 US $ (7,000,000 Yu din)
  Other costs 500,000 US $ (5,000,000 Yu din)
- Total cost 14,000,000 US $ (140,000,000 Yu din.)
- on an annual basis (I year 5,000 000; II year 7,000000; III year 2,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 1,350,000 US $ (13,500,000 Yu din.)
- 300,000 US $ (3,000,000 Yu din.)
- 1,650,000 US $ (16,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1 din/m^3 of treated water, 0.1 US \$/m^3 of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	8,000,000	/
(11) International grant	/	1,200,000	/
(12) Commercial Bank loan	/	2,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	2,800,000*	11,200,000	11,200,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 16

City of Zajecar WWTP

PROJECT FILE:	Country	Project No:	Page: 1
ZAJECAR WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Zajecar WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Zajecar Authority,
JKP Vodovod – Zajecar

Name: JKP Vodovod – Zajecar

Address: Moravska str. 2
19 000 Zajecar
FR of Yugoslavia

Phone: +381 19 422 859

Fax: +381 19 422 859

Project Target(s)

Target: Timok River, Danube River and Black Sea Pollution Reduction.

Benefit: Protection of Aquatic Environment, Water for Agriculture

Beneficiaries: Population, Agriculture, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Zajecar Authority, JKP Vodovod–Zajecar, Industry, Private Companies, NGO`s, etc.

Investment Cost

14,000,000 US $ (140,000,000 Yu din.)

Status of the Project

Feasibility study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project Title

City of Zajecar WWTP

2.1. Investor Details

Name: JKP Vodovod – Zajecar

Address: Moravska str. 5
19 000 Zajecar
FR of Yugoslavia

Phone: +381 19 422 859

Fax: +381 19 422 859

2.2. Contact Person

Mr. Radisa Nikolic, General manager

Phone: +381 19 422 859

Fax: +381 19 422 859

2.3. Advisor/Consultant

To be chosen

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply, maintenance of water supply and sewerage network, wastewater treatment
- Annual turnover: 1,700,000 US $ (17,000,000 Yu din.)
- Employees: 160

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 160 employees, 11 will be involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (75,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Zajecar Authority, JKP Vodovod – Zajecar, Local Industry, Private Companies, Citizens
- Location of WWTP: 3 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of Water transferred diseases and hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Significant as Timok River (the lowest part) makes the State border with Bulgaria

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of wastewater of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Industrial site is located on the banks of Timok River. Direct discharge of wastewater has the detrimental effect on recipient water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. Timok River (direct tributary of Danube) is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. River water downstream of the City uses for Agriculture. By the construction of WWTP ambient water quality and aquatic environment of Timok River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Timok River water quality and Environment
- Region level: General Reduction of Pollution
- Transboundary level: Significant Immediate Effects.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 150 people will be employed during 3-year construction period
  - 20-30 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 14,000,000 US $ (140,000,000 Yu din.)
  Land 100,000 US $ (1,000,000 Yu din.)
  Construction and machinery 12,700,000 US $ (127,000,000 Yu din)
  Planning and supervision 700,000 US $ (7,000,000 Yu din)
  Other costs 500,000 US $ (5,000,000 Yu din)
- Total cost 14,000,000 US $ (140,000,000 Yu din.)
- on an annual basis (I year 5,000 000; II year 7,000000; III year 2,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 1,350,000 US $ (13,500,000 Yu din.)
- 300,000 US $ (3,000,000 Yu din.)
- 1,650,000 US $ (16,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1 din/m^3 of treated water, 0.1 US \$/m^3 of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan – municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant – regional budget	/	/	/
(9) Public grant – municipal budget	/	/	/
(10) International loan	/	8,000,000	/
(11) International grant	/	1,200,000	/
(12) Commercial Bank loan	/	2,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	2,800,000*	11,200,000	11,200,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 17

City of Senta WWTP

Project File :	Country	Project No:	Page : 1
SENTA WWTP	FR of Yugoslavia		Date: 17.06.1998

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Senta WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, Vojvodina Province Government, City of Senta Authority

Company: JKP Vodovod i Kanalizacija - Senta

Address: Trg Bratstva i jedinstva 2

24 300 Senta

FR of Yugoslavia

Phone: + 381 24 812 242

Fax: + 381 24 812 242

E-mail:

Project Target(s)

Target: Tisa River, Danube and Black Sea Pollution Reduction.

Benefit: Regional Benefit, Protection of Water Supply Resources downstream of Senta, Health Protection, Aquatic Environment Protection.

Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries

Stakeholders: Republic of Serbia Government, Vojvodina Province Government, City of Senta Authority, Private Companies, Industry, NGO`s

Investment Cost

7,500,000 USD (75,000 000 Yu din.)

Status of the Project

The Construction of WWTP in progress

Language of Project Documents

Project documents on Serbian and Hungarian, Summaries available on English

1. Project Title

City of Senta WWTP

2.1. Investor Details

Company: JKP Vodovod i Kanalizacija - Senta

Address: Trg Bratstva i jedinstva 2

24 300 Senta

FR of Yugoslavia

Phone: + 381 24 812 242

Fax: + 381 24 812 242

2.2. Contact Person

Mr. Lajos Cegledy, General manager

Phone: + 381 14 222 147

Fax: + 381 14 222 512

2.3. Advisor/Consultant

IGV Subotica

Trg Jovana Nenada 7

24 000 Subotica

FR of Yugoslavia

Phone: + 381 24 25 536

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water treatment and supply (investment, operating, maintenance) Sewerage and Waste water treatment (investment, operating, maintenance)
- Annual turnover: 1,500,000 US $
- Employees: 130

2.6. Planning/Implementing Extend/Capacity of the Investor

- Not internal, uses external planning capacities.
- Out of 130 employees, 11 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

Republic of Serbia Government, Vojvodina Province Government, City of Senta Authority, Local Industry, Private companies

3. Project Description

3.1. Project Outline

The construction of Central WWTP (75,000 p.e) ought to to be finished. About 80% of civil works are finished.

- High load biological treatment
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Industry, Agriculture, Tourists, Fisheries
- Stakeholders: Republic of Serbia Government, Vojvodina Province Government, City of Senta Authority, JKP Vodovod i Kanalizacija-Senta Co., Local Industry, NGO's
- Location of WWTP: 2 km far from the City
- Site location: Right Bank of Tisa River
- Existing Site Use: WWTP

3.2. Primary Needs for the Project

- Health benefit: Water Resource Protection, Reducing risks of hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) and Labor. Creating of new jobs and working places (operation and maintenance of WWTP, tourism, production of healthy food, etc.)
- Transboundary effects: Not significant. Pollution Reduction on the regional base

3.3. Status of Project Preparation

The construction of WWTP in progress

Summary of the project documentation could be obtained on English on the request.

3.4. Technology Proposed

Central wastewater treatment plant comprises:

1. Wastewater line with primary (i.e. inert matters removal, primary clarification) and secondary treatment (low load activated sludge, secondary clarification)
2. Sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering)

- Special features : no analysis

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

The Finishing of the Construction of the WWTP. Pretreatment of waste water of some Industry

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- There is a great interest by citizens to solve present problems, even with participation through public grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

The Environmental Impact Assessment is not done.

4.3. Sensitivity of Locality/Receptor

- Direct discharge of wastewater of Industrial City, has an immediate adverse effect (water supply, biota, recreation, etc.) on the recipient but also a cumulative adverse effect on the aquatic ecosystems (Tisa river, Danube, Iron Gate Reservoir, Black Sea)
- Locality is sensitive as it is under backwater effect of Becej Gate
- By the construction of WWTP water quality will be improved. The influence of wastewater discharge will be localized on the short river stretch downstream.

The main contribution will be done on the local but also on the regional level (general reduction of pollution and nutrient load) as the largest part of pollution load will be removed

4.4. Primary Needs and Benefits of the Project

- Local level: Improvement of river water quality, Protection of Water Resource, Rehabilitation of aquatic ecosystem, Protection of recreational zones
- Regional level: Reduction of Pollution
- Transboundary level: No significant Immediate Effects but long-term one.

5. Economic Project Justification

5.1. Economic Project Benefits

- Decreased investment costs in connection with possible environmental damage
  - 150 people will be employed during 1-year construction period
  - 25 - 30 people will be employed in maintenance continuously
- Improved water quality, improved recreational possibilities, tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

No. Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 7,500,000 US $ (75,000,000 Yu din.)
  Land 0
  Construction and machinery 7,300,000 US $ (73,000,000 Yu din)
  Planning and supervision 200,000 US $ (2,000,000 Yu din)
- Total cost 7,500,000 US $ (75,000,000 Yu din.)
- On an annual basis (I year 6,000,000, II year 1,500,000 US $)
- Year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Operational Cost

- 950,000 US $ (9,500,000 Yu din.)
- 200,000 US $ (2,000,000 Yu din.)
- 1,150,000 US $ (1,150,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1.5 din/m^3 of wastewater, 0.15 US $/$m^3$ of wastewater
- 1998
- Based on the current average price of sewerage service

6.4. Financial Internal Rate of Return

No. Methodology not yet established.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	5,000,000	/
(11) International Grant	/	1,500 000	/
(12) Commercial Bank Loan	/	1,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	6,000,000*	7,500,000	7,500,000

**Note: In this moment around 45% of at whole investment cost is secured from national sources and spent in construction of WWTP. It is expected the rest of investment (7,500,000 US $) to be provided from external sources.*

Project No. 18

City of Bor WWTP

PROJECT FILE:	Country	Project No:	Page: 1
BOR WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Bor WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Bor Authority,
JKP Vodovod – Bor

Name: JKP Vodovod – Bor

Address: Hajduk Veljkova Str. 21
30 000 Bor
FR of Yugoslavia

Phone: +381 30 21 940

Fax: +381 30 21 940

Project Target(s)

Target: Timok River, Danube River and Black Sea Pollution Reduction.

Benefit: Protection of Aquatic Environment, Water for Agriculture

Beneficiaries: Population, Agriculture, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Bor Authority, JKP Vodovod – Bor, Industry, Private Companies, NGO`s, etc.

Investment Cost

14,000,000 US $ (140,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project Title

City of Bor WWTP

2.1. Investor Details

Name: JKP Vodovod – Bor

Address: Hajduk Veljkova Str. 21

30 000 Bor

FR of Yugoslavia

Phone: +381 30 21 940

Fax: +381 30 21 940

2.2. Contact Person

Mr. Miodrag Popovic, General manager

Phone: +381 30 21 940

Fax: +381 30 21 940

2.3. Advisor/Consultant

To be chosen

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 1,900,000 US $ (17,000,000 Yu din.)
- Employees: 145

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities are needed.

Out of 145 employees, 10 will be involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- City Authority
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (75,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Bor Authority, JKP Vodovod – Bor, Local Industry, Private Companies, Citizens
- Location of WWTP: 3 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: Extensive Agriculture

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred diseases and hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of river water and banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Significant as Timok River (the lowest part) makes the State border with Bulgaria

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Industrial City is located on the banks of Timok River. Direct discharge of wastewater has the detrimental effect on recipient water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. Timok River (direct tributary of Danube) is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. River water downstream of the City uses for Agriculture. By the construction of WWTP ambient water quality and aquatic environment of Timok River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Timok River water quality and Environment
- Region level: General Reduction of Pollution
- Transboundary level: Significant Immediate Effects.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 150 people will be employed during 3-year construction period
  - 20-30 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 14,000,000 US $ (140,000,000 Yu din.)
  Land 100,000 US $ (1,000,000 Yu din.)
  Construction and machinery 12,700,000 US $ (127,000,000 Yu din)
  Planning and supervision 700,000 US $ (7,000,000 Yu din)
  Other costs 500,000 US $ (5,000,000 Yu din)
- Total cost 14,000,000 US $ (140,000,000 Yu din.)
- on an annual basis (I year 5,000 000; II year 7,000000; III year 2,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 1,350,000 US $ (13,500,000 Yu din.)
- 300,000 US $ (3,000,000 Yu din.)
- 1,650,000 US $ (16,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1.2 din/m^3 of treated water, 0.12 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	8,000,000	/
(11) International grant	/	1,200,000	/
(12) Commercial Bank loan	/	2,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	2,800,000*	11,200,000	11,200,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 19

City of Pirot WWTP

PROJECT FILE:	Country	Project No:	Page: 1
PIROT WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: City of Pirot WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, City of Pirot Authority, JKP Vodovod i Kanalizacija – Pirot

Name: JKP Vodovod i Kanalizacija – Pirot

Address: Vojvode Misica str. bb
10 000 Pirot
FR of Yugoslavia

Phone: +381 10 333 387

Fax: +381 10 333 388

Project target(s)

Target: Nisava River, Velika Morava River Protection. Danube River and Black Sea Pollution Reduction.

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, City of Pirot Authority, JKP Vodovod i Kanalizacija Pirot, Industry, Private Companies, NGO`s, etc.

Investment Cost

14,000,000 US $ (140,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project Title

City of Pirot WWTP

2.1. Investor Details

Name: JKP Vodovod i Kanalizacija – Pirot

Address: Vojvode Misica str. bb

10 000 Pirot

FR of Yugoslavia

Phone: +381 10 333 387

Fax: +381 10 333 388

2.2. Contact Person

Mr. Ljubisa Jonic, General manager

Phone: +381 10 333 387

Fax: +381 10 333 388

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Phone: +381 11 131516

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 1,200,000 US $ (20,000,000 Yu din.)
- Employees: 140

2.6. Planning/ Implementing Extend/ Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 140 employees, 8 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- City Authority
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Central Wastewater Treatment Plant (75,000 p.e.)

- High Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, City of Pirot Authority, JKP Vodovod i kaalizacija – Pirot, Local Industry, Private Companies, Citizens
- Location of WWTP: 2 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred diseases and hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant, General Reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of waste water of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Large Industrial City is located on the banks of Djetinja River. Direct discharge of wastewater has the detrimental effect on recipient water quality and Aquatic Environment at the long distance downstream the City.
- Locality is sensitive. Nisava River (tributary of Velika Morava River) is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. Bank filtrate uses as drinking water resource in several medium size settlements located downstream as well as in Nis Town. By the construction of WWTP ambient water quality and aquatic environment of Nisava River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Nisava and Velika Morava River water quality and Environment, Protection of downstream Drinking Water Resources
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 150 people will be employed during 3-year construction period
  - 20-30 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost 14,000,000 US $ (140,000,000 Yu din.)
  Land 100,000 US $ (1,000,000 Yu din.)
  Construction and machinery 12,700,000 US $ (127,000,000 Yu din)
  Planning and supervision 700,000 US $ (7,000,000 Yu din)
  Other costs 500,000 US $ (5,000,000 Yu din)
- Total cost 14,000,000 US $ (140,000,000 Yu din.)
- on an annual basis (I year 5,000 000; II year 7,000000; III year 2,000,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 1,350,000 US $ (13,500,000 Yu din.)
- 300,000 US $ (3,000,000 Yu din.)
- 1,650,000 US $ (16,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 0.6 din/m^3 of treated water, 0.06 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	8,000,000	/
(11) International grant	/	1,200,000	/
(12) Commercial Bank loan	/	2,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	2,800,000*	11,200,000	11,200,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 20

Blace Town WWTP

PROJECT FILE:	Country	Project No:	Page: 1
BLACE WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project Title: Blace Town WWTP

Responsible/Legal Body

Authority: Government of Republic of Serbia, Blace Town Authority, JKP "Blace"

Name: JKP "Blace"- Blace

Address: Radomira Putnika bb
27 000 Blace
FR of Yugoslavia

Phone: +381 27 71 236

Fax: +381 27 71 580

Project Target(s)

Target: Protection of Rasina River and Water Supply Reservoir "Celije"

Benefit: Local and Regional Benefit, Protection of Water Supply Resources, Aquatic Environment Protection

Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Government of Republic of Serbia, Blace Town Authority, Local Industry, Private Companies, NGO`s

Investment Cost

7,500,000 US $ (75,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project title

Blace Town WWTP

2.1. Investor Details

Name: JKP "Blace"- Blace

Address: Radomira Putnika bb

27 000 Blace

FR of Yugoslavia

Phone: +381 27 71 236

Fax: +381 27 71 580

2.2. Contact Person

Mr. Nikicije Stevanovic, General manager

Phone: +381 27 71 236

Fax: +381 27 71 580

2.3. Advisor/Consultant

Energoprojekt - DD Hidroinzenjering

Phone: +381 11 131516

Pariske Komune 2

11 070 BEOGRAD

FR of Yugoslavia

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 300,000 US $ (3,000,000 Yu din.)
- Employees: 35

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 35 employees, 4 are involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Republic of Serbia Government
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Wastewater Treatment Plant (20,000 p.e.)

- Biological Treatment with N and P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: Population, Aquatic Environment, Tourists, Fisheries, Industry
- Stakeholders: Republic of Serbia Government, Blace Town Authority, JKP "Blace", Local Industry, Private Companies, Citizens
- Location of WWTP: 1 km downstream of City
- Site: Already Planned
- Existing Site Use: Old WWTP

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of Water transferred diseases and hydric epidemia
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant, General Reduction pollution on the regional base

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, biological treatment for nutrients removal, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering).

- Special features: N and P removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the WWTP

Pretreatment of wastewater of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of various troubles these days, there is a great interest of citizens the environment to be improved, even with their participation through public loam or grant
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- Industrial town is located on the banks of a small river the tributary of Rasina River. Direct discharge of wastewater has the detrimental effect on recipient water quality and Aquatic Environment at the long distance downstream the Town.
- Locality is sensitive as the Water supply reservior “Celije” is constructed on the Rasina River. Also, Rasina River (tributary of West Morava River) is a small recipient (particularly during low flow conditions) having low dilution and self-purification capacity. Reservoar “Celije” uses as the drinking water resource for regional water supply. By the construction of WWTP ambient water quality and aquatic environment of Rasina River will be greatly improved as well as the nutrient impute in the reservoir will be significantly decreased.

4.4. Primary Needs and Benefits of the Project

- Local level: great Improvement of recipient water quality and environment, protection of downstream drinking water resources
- Region level: general reduction of pollution
- Transboundary level: no significant immediate effects.

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 100 people will be employed during 2-year construction period
  - 10-15 people will be employed continuously in operating and maintenance of WWTP
- better water quality for any use, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 7,500,000 US $ (75,000,000 Yu din.)
  Land 50,000 US $ (500,000 Yu din.)
  Construction and machinery 6,900,000 US $ (69,000,000 Yu din)
  Planning and supervision 350,000 US $ (3,500,000 Yu din)
  Other costs 200,000 US $ (2,000,000 Yu din)
- Total cost 7,500,000 US $ (75,000,000 Yu din.)
- on an annual basis (I year 5,500 000; II year 2,000000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 730,000 US $ (7,300,000 Yu din.)
- 120,000 US $ (1,200,000 Yu din.)
- 850,000 US $ (8,500,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1.55 din/m^3 of treated water, 0.155 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	3,000,000	/
(11) International grant	/	1,500,000	/
(12) Commercial Bank loan	/	1,000,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	1,500,000*	5,500,000	5,500,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 21

Kola[in Town WWTP

PROJECT FILE:	Country	Project No:	Page: 1
KOLASIN WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project title: Kolasin Town WWTP

Responsible/Legal Body

Authority: Federal Government, Republic of Montenagro Government, City of Kolasin Authority, Stambeno-komunalno preduzece – Kolasin

Name: Stambeno-komunalno preduzece – Kolasin

Address: Mirka Vesovica str. 2a

81 000 Kolasin

FR of Yugoslavia

Phone: +381 81 865 455

Fax: +381 81 865 467

Project Target(s)

Target: Tara River (River Canyon is UNESCO Heritage) Pollution Reduction

Benefit: Local and International Benefit, Aquatic Environment and Biodiversity Protection

Beneficiaries: World Heritage, Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Federal and Government of Republic of Montengro, City of Kolasin Authority, Stambeno-komunalno preduzece – Kolasin, Industry, Private Companies, NGO`s, etc.

Investment Cost

2,800,000 US $ (28,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available on English.

1. Project Title

Kolasin Town WWTP

2.1. Investor Details

Name: Stambeno-komunalno preduzece – Kolasin

Address: Mirka Vesovica str. 2a
81 000 Kolasin
FR of Yugoslavia

Phone: +381 81 865 455

Fax: +381 81 865 467

2.2. Contact Person

Mr. Svetislav Vukicevic, General manager

Phone: +381 81 865 455

Fax: +381 81 865 467

2.3. Advisor/Consultant

To be chosen

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 300,000 US $ (3,000,000 Yu din.)
- Employees: 40

2.6. Planning/Implementing Extend/Capacity of the Investor

Partially Internal, Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 40 employees, 4 will be involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Federal Government
- Republic of Montenegro Government
- City Authority
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Wastewater Treatment Plant (10,000 p.e.)

- Low Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: World Heritage, Population, Aquatic Environment, Tourists, Fisheries
- Stakeholders: Federal and Republic of Montenegro Governments, Kola{in Town Authority, Stambeno-komunalno preduzece – Kolasin, Local Industry, Private Companies, Citizens
- Location of WWTP: 1 km downstream of City (see map enclosed)
- Site : Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred diseases
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of wastewater of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of troubles these days, there is a great interest of citizens the environment to be improved
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- City is located on the banks of Tara River. Direct discharge of wastewater has an adverse effect on recipient water quality and Aquatic Environment downstream of the City.
- Locality is sensitive as Tara River Canyon is UNESCO Heritage. Tara River (tributary of Drina River) is not large recipient (particularly during low flow conditions) having low dilution capacity. By the construction of WWTP ambient water quality and aquatic environment of Tara River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Tara river water quality and Environment, Protection of biodiversity
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects
- International level: Protection of UNECSO Heritage

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 50 people will be employed during 2-year construction period
  - 10-15 people will be employed continuously in operating and maintenance of WWTP
- Protection of World Heritage, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

➢	Investment cost	2,800,000 US $ (28,000,000 Yu din.)
	Land	50,000 US $ (500,000 Yu din.)
	Construction and machinery	2,500,000 US $ (27,000,000 Yu din)
	Planning and supervision	150,000 US $ (1,500,000 Yu din)
	Other costs	100,000 US $ (1,000,000 Yu din)
➢	Total cost	2,800,000 US $ (28,000,000 Yu din.)

- on an annual basis (I year 1,100 000; II year 1,700,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 200,000 US $ (2,000,000 Yu din.)
- 80,000 US $ (800,000 Yu din.)
- 280,000 US $ (2,800,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1.6 din/m^3 of treated water, 0.16 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owneer	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	1,200,000	/
(11) International grant	/	1,000,000	/
(12) Commercial Bank loan	/	200,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	400,000*	2,400,000	2,400,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 22

Mojkovac Town WWTP

PROJECT FILE:	Country	Project No:	Page: 1
MOJKOVAC WWTP	**FR of Yugoslavia**		Date: 1998.12.01.

Date of first setting up: 1998.06.01. Date of latest upgrade: 1998.12.01.

Project title: Mojkovac Town WWTP

Responsible/Legal Body

Authority: Federal Government, Republic of Montenagro Government, Mojkovac Town Authority, Javno komunalno-stambeno preduzece "Gradac" – Mojkovac

Name: Javno komunalno-stambeno preduzece "Gradac" – Mojkovac

Address: Trg Ljubomira Bakoca bb

84 205 Mojkovac

FR of Yugoslavia

Phone: +381 84 72 901

Fax: +381 84 72 520

Project Target(s)

Target: Tara River (River Canyon is UNESCO Heritage) Pollution Reduction

Benefit: Local and International Benefit, Aquatic Environment and Biodiversity Protection

Beneficiaries: World Heritage, Population, Aquatic Environment, Tourists, Fisheries, etc.

Stakeholders: Federal and Government of Republic of Montengro, City of Mojkovac Authority, Javno komunalno-stambeno preduzece "Gradac" – Mojkovac, Industry, Private Companies, NGO`s, etc.

Investment Cost

2,800,000 US $ (28,000,000 Yu din.)

Status of the Project

Feasibility Study in preparation

Language of Project Documents

Documentation is available in Serbian, summaries available in English.

1. Project Title

Mojkovac Town WWTP

2.1. Investor Details

Name: Javno komunalno-stambeno preduzece "Gradac" – Mojkovac

Address: Trg Ljubomira Bakoca bb

84 205 Mojkovac

FR of Yugoslavia

Phone: +381 84 72 901

Fax: +381 84 72 520

2.2. Contact Person

Mr. Milo Rabrenovic, General manager

Phone: +381 84 72 901

Fax: +381 84 72 520

2.3. Advisor/Consultant

To be chosen

2.4. Legal/Financial Status of the Investor

Public Enterprise

2.5. Authority/Company Profile

- Water Treatment and Supply, Maintenance of water supply and sewerage network, Wastewater Treatment
- Annual turnover: 280,000 US $ (2,800,000 Yu din.)
- Employees: 32

2.6. Planning/Implementing Extend/Capacity of the Investor

Engagement of External (National and International) Planning and Implementing Capacities is needed.

Out of 32 employees, 3 will be involved in implementation phase.

2.7. Institutions/Enterprises beside the Investor

- Federal Government
- Republic of Montenegro Government
- City Authority
- Foreign Consulting Company (to be chosen)

3. Project Description

3.1. Project Outline

The Construction of Wastewater Treatment Plant (10,000 p.e.)

- Low Load Biological Treatment with P removal
- Sludge stabilization and disposal

Project is structural

- Beneficiaries: World Heritage, Population, Aquatic Environment, Tourists, Fisheries
- Stakeholders: Federal and Republic of Montenegro Governments, Mojkovac Town Authority, Javno komunalno-stambeno preduzece "Gradac" – Mojkovac, Local Industry, Private Companies, Citizens
- Location of WWTP: 0.8 km downstream of City (see map enclosed)
- Site: Already Planned by City Physical Plan
- Existing Site Use: No any use

3.2. Primary Needs for the Project

- Health benefit: Reducing risks of water transferred diseases
- Aquatic environment: Rehabilitation and improvement of the aquatic environment
- Recreation: Improvement of conditions and possibilities for recreation
- Aesthetics: Improvement of aesthetic value of River Water and Banks
- Biodiversity: Rehabilitation and Improvement of biodiversity
- Economic development: Engagement of Industrial Capacities (civil works capacities, mechanical industry, etc.) Creating of new jobs and working places (operation and maintenance of WWTP, tourism, fishing, production of healthy food, etc.)
- Transboundary effects: Not Significant

3.3. Status of Project Preparation

Wastewater quality data, Feasibility Study in progress

Summary of the available documentation could be obtained in English on request.

3.4. Technology Proposed

The choice of technology ought to be studied. In general WWTP will comprise water line (inert matter removal, primary clarification, high load activated sludge process, secondary clarification), sludge line (primary thickening, anaerobic digestion, secondary thickening, sludge dewatering). As a minimum, P removal by precipitation is foreseen.

- Special features: P-removal

3.5. Ownership of Project Site

Municipal property

3.6. Specific Project Items

Environmental Impact Assessment Study

Project design of WWTP

The extending of the Main Collector

The Construction of the Central WWTP

Pretreatment of wastewater of some Industries

4. Project Effect and Interactions

4.1. Public's Expression of Interest

- In spite of troubles these days, there is a great interest of citizens the environment to be improved
- Attitude of concerned people to the project is medium to high
- There is a great interest of all parties to participate in realization of the Project

4.2. Environmental Impact Assessment

Environmental Impact Assessment has not been done yet.

4.3. Sensitivity of Locality/Receptor

- City is located on the banks of Tara River. Direct discharge of wastewater has an adverse effect on recipient water quality and Aquatic Environment downstream of the City.
- Locality is sensitive as Tara River Canyon is UNESCO Heritage. Tara River (tributary of Drina River) is not large recipient (particularly during low flow conditions) having low dilution capacity. By the construction of WWTP ambient water quality and aquatic environment of Tara River will be greatly improved.

4.4. Primary Needs and Benefits of the Project

- Local level: Great Improvement of Tara river water quality and Environment, Protection of biodiversity
- Region level: General Reduction of Pollution
- Transboundary level: No significant Immediate Effects
- International level: Protection of UNECSO Heritage

5. Economic Project Justification

5.1. Economic Project Benefits

- There aren't elements to estimate saved investment cost in connection with possible environmental damage
- Employment/Income Effects:
  - 50 people will be employed during 2-year construction period
  - 10-15 people will be employed continuously in operating and maintenance of WWTP
- Protection of World Heritage, protection of drinking water resources, improved aquatic environment, improved conditions for recreation and tourism, fishing, etc.

5.2. Economic Internal Rate of Return (EIRR)

Not estimated. Methodology is not established yet.

6. Financial Viability

6.1. Estimated Investment Cost

➢	Investment cost	2,800,000 US $ (28,000,000 Yu din.)
	Land	50,000 US $ (500,000 Yu din.)
	Construction and machinery	2,500,000 US $ (27,000,000 Yu din)
	Planning and supervision	150,000 US $ (1,500,000 Yu din)
	Other costs	100,000 US $ (1,000,000 Yu din)
➢	Total cost	2,800,000 US $ (28,000,000 Yu din.)

- on an annual basis (I year 1,100 000; II year 1,700,000 US $)
- year of cost estimate 1998
- Preliminary cost estimate

6.2. Estimated Annual Operational Cost

- 200,000 US $ (2,000,000 Yu din.)
- 80,000 US $ (800,000 Yu din.)
- 280,000 US $ (2,800,000 Yu din.)
- 1998
- Preliminary cost estimate

6.3. Estimate of Revenues

- 1.6 din/m^3 of treated water, 0.16 US $/$m^3$ of wastewater
- 1998
- Current average price of sewerage service

6.4. Financial Internal Rate of Return

FIRR is not estimated. Methodology is not established yet.

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	US $	US $	US $
(1) Equity of project owner	/	/	/
(2) National Environmental Fund	/	/	/
(3) Water Management Fund	/	/	/
(4) Public Loan - central budget	/	/	/
(5) Public loan - regional budget	/	/	/
(6) Public loan - municipal budget	/	/	/
(7) Public grant - central budget	/	/	/
(8) Public grant - regional budget	/	/	/
(9) Public grant - municipal budget	/	/	/
(10) International loan	/	1,200,000	/
(11) International grant	/	1,000,000	/
(12) Commercial Bank loan	/	200,000	/
(13) Other Sources	/	/	/
Total Funds Requirement	400,000*	2,400,000	2,400,000

**Note: In this moment the structure of sources of secured investment cost is not known but 20% of total investment is supposed to be secured from national sources*

Project No. 23

ECO Filling Station®

PROJECT FILE:	Country	Project No:	Page: 1
ECO FILLING STATION	FR of Yugoslavia		Date: 1998.12.1.

Date of first setting up: 1998.12.01 Date of latest upgrade:

Project Title: ECO Filling Station®

Responsible/Legal Body

Authority/Company: NIS Rafinerija nafte Novi Sad (NIS RNS)
NIS Naftagaspromet Novi Sad (NIS NAP)

Name: NIS RNS Gen. manager: Djordje Mihajlovic
NIS NAP Gen. manager: Nikola Martinovic

Address: NIS Rafinerija nafte Novi Sad
Put Sajkaikog odreda 4
21 000 Novi Sad
FR of YUGOSLAVIA
NIS Naftagaspromet
Bulevar Oslobodjenja 23
21 000 Novi Sad
FR of YUGOSLAVIA

Phone: NIS RNS: +381 21 420 011
AOI: + 381 21 350 343

Fax: AOI: + 381 21 350 343

E-mail: djordje@rns.rns-nis.co.yu

Project Target

Protection of Danube main watercourse. Pollution reduction particularly bilge oil from shipping by construction of stationery harbor facilities.

Investment Cost

3,122,000 US $ (calculated)

Status of the Project

Planned

Language of Project Documents

Design project documentation in Serbian (summaries available in English)

1. Project Title

ECO Filling Station® (at Novi Sad Harbor)

2.1. Investor Details

Authority/Company:	1. NIS Rafinerija nafte Novi Sad (NIS RNS)
	2. AOI Consulting and Engineering Co.
	3. NIS Naftagaspromet Novi Sad (NIS NAP)
Name:	NIS RNS Gen. manager: Djordje Mihajlovic
	AOI Gen. manager: Stevan Vrebalov
	NIS NAP Gen. manager: Nikola Martinovic
Address:	NIS RNS: Put Sajkaikog odreda 4, 21 000 Novi Sad, FR of YUGOSLAVIA
	AOI: Trg Dositeja Obradovica 7, 21 000 Novi Sad, FR of YUGOSLAVIA
	NIS NAP: Bul. Oslobodjenja 23, 21 000 Novi Sad, FR of YUGOSLAVIA
Phone:	NIS RNS: +381 21 420 011
	AOI: + 381 21 350 343
Fax:	AOI: + 381 21 350 343
E-mail:	djordje@rns.rns-nis.co.yu

2.2. Contact Person

Prof. Slobodan Sokoliovic

Phone: + 381 21 450 288

E-mail: BSS@Eunet.yu

2.3. Advisor/Consultant

AOI Consulting company, Trg Dositeja Obradovica 7

21 000 Novi Sad, FR of YUGOSLAVIA

Phone: + 381 21 350 343

Fax: + 381 21 350 343

2.4. Legal/Financial Status of the Investor

Government and private company (shared)

2.5. Authority/Company Profile

- Oil Refining, Consulting and Engineering
- Turnover: 160,000,000 US $ / year
- Employees 1500

2.6. Planning/Implementing Extend/Capacity of the Investor

- Full internal planning capacities
- Out of 1500 employees 15 are involved in Project realization

2.7. Institutions/Enterprises beside the Investor

- Planning/Consulting AOI Cosult. Co.
- Construction Local companies
- Licensing/Monitoring University Novi Sad-Faculty of Technology

3. Project Description

3.1. Project Outline

Eco Filling Station® will be an integrated system of terminals equipped for rendering services to vessels on the Danube – Rhine – Main Waterway. It provides:

- Supplying of vessels with fuel and lubricants
- Receiving and processing of all types of liquid and solid waste from vessels
- Washing of ship tanks and tankers and processing of produced oily wastewater
- Lube oil exchange
- Supplying the crew with food, drinks, stuff, etc.
- Filling vessel tanks with sanitary and drinking water
- Minor repairing of vessels

Basic terminals (components) of Eco Filling Station® are as follows:

- Terminal for washing of vessels
- Terminal for processing of wastewater produced on the shops washing terminal as well as for processing of waste water and bilge oil received from vessels
- Terminal for solid waste processing
- Terminal for hazardous waste processing
- Service station
- Head office and a restaurant
- Terminal for fuel and lubes

Project is structural one

- Beneficiaries: Population, Environment, Shipping companies
- Stakeholders: Environmental and Water Authorities, Municipality, Industry
- Location: Novi Sad Harbor
- Site: Already planned
- Existing use of site: Municipal property, Open Storage

3.2. Primary Needs for the Project

As known, along the 588 km long Danube waterway through FR Yugoslavia, there is no any harbor having facilities for receiving and processing of various types of liquid and solid waste originating from vessels or producing by the washing of ship tanks and tankers. A significant quantity of liquid and solid wastes from ships dumps in Danube. One of the reasons for such a situation is the lack of appropriate harbor facilities.

The basic purpose of the construction of Eco Filling Station® would be the providing of facilities for reducing of pollution of the Danube by liquid and solid wastes originate from shipping.

The existence and operation of Eco Filling Station® will improve water quality as well as the aquatic environment. The reduction of pollution originates from shipping of 95% is expected at optimal operation of Eco Filling Station®.

The construction Eco Filling Station® would have the socio-economic impact i.e. opening of new working places (operating of facilities, maintenance, tourism, etc.)

3.3. Status of Project Preparation

- Project design is done, Feasibility and Profitability Study is in the course
- The final project design is in the course of elaboration

Project documentation is done in Serbian (Summary in English on request)

3.4. Technology Proposed

Separate treatment for wastewater, oily wastewater, sludge and solid waste is designed.

3.5. Ownership of Project Site

Private Ownership

3.6. Specific Project Items

No

4. Project Effect and Interactions

4.1. Public's Expression of Interest

There is the public (particularly on local scale) interest for the construction of Eco Filling Station so to protect the downstream area (zone of withdrawal of Danube bank filtrate using for preparation of drinking water).

4.2. Environmental Impact Assessment

Environmental impact assessment study is in progress.

4.3. Sensitivity of Locality/Receptor

Harbor is located upstream of the zone of withdrawal of Danube bank filtrate using for preparation of drinking water.

4.4. Primary Needs and Benefits of the Project

Local (protection of water resource)

National (protecting of landscape, recreational and tourist values of Danube watercourse trough FR Yu)

Transboundary (dumping of waste from the foreign sailing vessels is an direct transboundary effect)

5. Economic Project Justification

5.1. Economic Project Benefits

- Employment effect
  - 75 people will be employed during 2-year construction period
  - 25 people will be employed to facilitate Eco Filling Station
- Eco Filling Station is planned to operate on profitable base
- Improving of environmentally sound shipping recreational possibilities, tourism, etc.

5.2. Economic Internal Rate of Return (EIRR)

Methodology not yet established.

6. Financial Viability

6.1. Estimated Investment Cost

- Investment cost: 3,122,000 US $ (31,220,000 Yu din.)
  Alocation of Investment cost :
  Land 400,000 US $ (4,000,000 Yu din.)
  Construction and machinery 2,600,000 US $ (26,000,000 Yu din)
  Planning and supervision 122, 000 US $ (1,220,000 Yu din)
- Total cost 3,122,000 US $ (31,220,000 Yu din.)
- on an annual basis (I year 2,322,000 US $, II year 800,000 US $)
- Year of cost estimate 1998
- Nature of Cost Estimate Preliminary

6.2. Estimated Operational Cost

- Repair and replacement cost 100,000 US $
- Total operational cost 400,000 US $
- Total of cost estimate 500,000 US $
- Nature of cost estimate preliminary

6.3. Estimate of Revenues

- Expected annual revenues 1 000,000 US $
- Year of estimate 1998
- Nature of cost estimate Preliminary

6.4. Financial Internal Rate of Return

Has a FIRR been estimated: Yes

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured	Requested	Non-secured
	USD	USD	USD
(1) Equity of project Owner	200,000	/	/
(2) National Environmental Fund	/	22,000	22,000
(3) Water Management Fund	/	50,000	50,000
(4) Public Loan - Central budget	/	/	/
(5) Public Loan - Regional budget	/	/	/
(6) Public Loan - Municipal budget	/	/	/
(7) Public Grant - Central budget	/	/	/
(8) Public Grant - Regional budget	/	/	/
(9) Public Grant - Municipal budget	/	/	/
(10) International Loan	/	2,000,000	2,000,000
(11) International Grant	/	250,000	250,000
(12) Commercial Bank Loan	/	600,000	600,000
(13) Other Sources	/	/	/
Total Funds Requirement	200,000	2,922,000	2,922,000

Project No. 24

Wetland Rehabilitation in Catchment Area of the Danube, Sava and Tisza Rivers

Date of first setting up: Date of latest upgrade:

Project Title — Wetland Rehabilitation in Catchment Area of the Danube, Sava and Tisza Rivers

Responsible/Legal Body

Authority/Company	Governmental organisation
Name	Institute for Protection of Nature of Serbia
Address	YU-11070 Novi Beograd
	III bulevar 106
Telephone	++ 381 11 14 22 81; 14 21 65; 13 80 62
Fax	++ 381 11 14 22 81; 14 21 65; 13 80 62
e-mail	nature@net.yu

Project Target

Rehabilitation, conservation and monitoring of wetland areas in catchment area of the Danube, Sava and Tisza Rivers

The objective of this Project is the conservation and sustainable use of resources in wetland and aquatic ecosystems.

1. Conservation or in-situ protection will be sought through protection of system of conservation areas and direction of technical measures, focusing especially on Ramsar sites and large wetland areas.
2. Sustainable use management will be sought by wise use of wetland and aquatic ecosystems combining productive, socio-economic, and conservation goals - from strict protection through various forms of multiple use with conservation easements to full scale use.

Investment Costs

17,500,000 Yu-din (1,750,000 US$)

Status of Project

Ongoing / Planned Project, Emerging Concept	Conservation aspect - Ongoing Project Rehabilitation and monitoring - Planned Project

Language of Project Documents

Project documentation in Serbian, summaries in English

1. Project Title

Wetland Rehabilitation in Catchment Area of the Danube, Sava and Tisza Rivers

2.1. Authority/Company

Public authority

Name: Institute for Protection of Nature of Serbia
Address: YU-11070 Novi Beograd
III bulevar 106
Telephone: ++ 381 11 14 22 81; 14 21 65; 13 80 62
Fax: ++ 381 11 14 22 81; 14 21 65; 13 80 62
e-mail: nature@net.yu

2.2. Contact Persons

Radomir Mandic, M. S.

2.3. Advisor/Consultant

Belgrade University, Faculty of Biology

Prof. Dr. Ivica Radovic, Ph. D.

++ 381 11 18 66 35

2.4. Legal/Financial Status

Governmental organisation, Budget

2.5. Authority/Company Profile

- research, conservation, monitoring, management planning, education
- annual budget of about. – 5,900,000 Yu-din (590,000 US$)
- number of persons employed 78

2.6. Planning/Implementing Extent/Capacity of the Investor

21 biologist, 7 forestry engineers, 3 geographers, 3 geology engineers

1 physical planners, 2 architect engineers, 5 technology engineers

2 lawyers, 1 economist, 1 art historian, 1 adult education

1 agronomy engineer

2.7. Institutions/Enterprises beside the Investor

Public Enterprise «Srbijasume»

DD «Ecka«

Private Enterprise «Hidrobiro Inzenjering»

3. Project Description

3.1. Project Outline

In situ conservation is important because wetland and aquatic ecosystems are a storehouse of diverse, endemic and endangered biological diversity of global significance. Activities should comprise:

- demarcating, gazetting, strengthening, expanding and consolidating protected areas in the catchment area and their buffer zone; creating and strengthening participatory and co-management schemes to build local support; promoting transborder protected areas and their cooperative management;
- developing socio-economic activities to reconcile biodiversity conservation with human needs;
- assessing the impact of natural disturbances and the compound effect of antropogenic stress;
- linking in situ conservation of wild species and genetic material with commercial fishery;
- control of allochthonous invasive species.
- construction of dams for regulation of optimal water level regime;
- construction of supply canals and basins for regulation of water level and salinity;
- removing of vegetation from original wet meadows and aquatic overgrown vegetation;
- removing of organic deposition from lakes;
- removing of allochthonous plantations and planting the autochthonous forests;
  - location
    Province of Voivodina
  - site
    Special Nature Reserve «Obedska bara» (Ramsar Site)
    Special Nature Reserve «Carska bara» (Ramsar Site)
    Park of Nature «Gornje Podunavlje»
    Slano Kopovo (proposed for Special Nature Reserve)
  - existing use of site
    biodiversity conservation, education, research, recreation, agriculture, fishery, forestry, hunting

3.2. Primary Needs for the Project

- Sediment and erosion control;
- Flood control; - maintenance of water quality and abatement of pollution;
- Maintenance of surface and ground water supply;
- Support for fisheries, spawning, grazing and agriculture;

- Outdoor recreation and education;
- Provision of habitat for wildlife;
- Contribution to climatic stability;
- Establishing of optimal water regime;
- Decrease of organic production and natural succession;
- Implementation of management plans for wetlands and flood plains;
- Establishing the balance between ecosystem types (wetlands, meadows, forests);
- Preservation of species diversity and reintroduction of autochthonous species;
- Creating conditions for economic development (forestry, water management, fishery, agriculture, tourism, recreation);
- Reconciliation of conservation activities with economic development («wise use»);
- Involvement and participation of local communities.

Assumed/calculated deterioration without project measures

- Permanent loss of natural values leading to degradation of the area, decrease of economic value of the area, decrease of orientation of local people towards protected area, casement of legal protection.

3.3. Status of Project Preparation

Description of the actual status of project studies and reports.

The scope of the Working Plans (short-term and mid-term) of the Institute for Protection of Nature of Serbia, includes legal protection of wetlands generally, and specific areas mentioned above. The outcome of project for protection of each site is elaboration of protection and technical measures necessary to provide functioning of ecosystems included.

Feasibility study is under preparation.

Project documents/summary in English (no, will be provided upon request)

3.4. Technology Proposed

- Aerial or satellite survey of the area
- GIS technology
- Conventional Methodology according to IUCN and Ramsar criteria

3.5. Ownership of Project Site

Status of proprietary rights - Public land

3.6. Specific Project Items

- Overview of the present status of the area
- Field researches
- Technical measurements
- Management guidance

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Nature protection, education, tourism and recreation, agriculture, fishery, forestry, water management

4.2. Environmental Impact Assessment

Planned

4.3. Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project

4.4. Primary Effects of Project

Description of the effects of the project on different geographical levels

- The preservation and improvement of natural resources, elimination of natural and anthropogenic negative impacts, improvement of local and regional economy, improvement of general environmental conditions, support of the national network of protected wetlands;
- International /Transboundary - enables the maintenance of international status of Ramsar sites; supports the Feasibility study of including the Park of Nature Gornje Podunavlje into the Biosphere reserve «Drava-Mura» (WCPA/IUCN; EURONATURE) which includes cooperation with NP Dunau-Drava (Hungary) and Park of Nature Kopacki rit (Croatia).

5. Economic Project Justification

5.1. Economic Project Benefits

The early realisation of project reduces cost, for each delay increases the extent of activities. The rate of annual increase has not been calculated.

Direct benefits - improved water quality, conditions for recreation and tourism, fishery, forestry, etc.

Indirect benefits - aesthetic values, preserved biodiversity.

5.2. Economic Internal Rate of Return (EIRR)

Has an EIRR been calculated? No

6. Financial Viability

6.1. Estimated Investment Cost

	Yu-din	US$
Study (present status, management guidance, maps)	2,500,000	250,000
Field researches	750,000	75,000
Technical measurements	12,500,000	1,250,000
Monitoring	1,750,000	175,000
Total	17,500,000	1,750,000

On annual basis

	Yu-din	US$
1st year	5,000,000	500,000
2nd year	10,000,000	1,000,000
3rd year	2,500,000	250,000
Total	17,500,000	1,750,000

6.2 Estimated Operational Cost

6.3 Estimate of Revenues

Not estimated

6.4 Financial Internal Rate of Return (FIRR)

6.5. Anticipated/Proposed Funding Scheme

Sources of funding	Secured (Currency)	Requested (Currency)	Non - secured (Currency)
(1) Equity of project owner			--
(2) National Environmental Fund	250,000		
(3) Water Management Fund			
(4) Public loan - central budget			
(5) Public loan - regional budget			
(6) Public loan - municipal budget			
(7) Public grant - central budget			
(8) Public grant - regional budget			
(9) Public grant - municipal budget			
(10) International loan			
(11) International grant		1,000,000	1,000,000
(12) Commercial bank loan			
(13) Other sources	500,000		
Total funds/requirements	750,000	1,000,000	1,000,000