MINISTRY OF AGRICULTURE,
WATER MANAGEMENT AND FORESTRY

in cooperation with the

Programme Coordination Unit
UNDP/GEF Assistance
DANUBE POLLUTION REDUCTION PROGRAMME

NATIONAL REVIEWS 1998
BOSNIA AND HERZEGOVINA

PROJECT FILES

Ministry of Agriculture,
Water Management and Forestry

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Programme Coordination Unit
UNDP/GEF Assistance
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 Bosnian National Reviews were prepared under the supervision of the Country Programme Coordinator, Mr. Mehmed Saric. The authors of the respective parts of the report are:

- Part A: Social and Economic Analysis: Mr. Osman Slipicevic
- Part B: Financing Mechanisms: Mr. I. Sofovic
- Part C: Water Quality: Mr. M. Bezdrob
- Part D: Water Environmental Engineering: Mr. A. Novalija

The findings, interpretation and conclusions expressed in this publication are entirely those of the authors and should not be attributed in any manner to the UNDP/GEF and its affiliated organizations.

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Danube Programme Coordination Unit (DPCU)
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Tel: +43 1 26060 5610
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Vienna – Austria, November 1998
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Project 1 – Municipality

Construction of Regional Sewerage System Tuzla-Lukavac with Central Wastewater Treatment Plant for Cities and Industry
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<tr>
<th><strong>Date of first setting up:</strong></th>
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<td><strong>Date of latest upgrade:</strong></td>
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<tr>
<th><strong>Project Title</strong></th>
<th>Construction of regional sewerage system Tuzla-Lukavac with central wastewater treatment plant for cities and industry.</th>
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</table>

<table>
<thead>
<tr>
<th><strong>Responsible/Legal Body</strong></th>
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<tbody>
<tr>
<td><strong>Authority/Company</strong></td>
<td>Tuzla-Podrinje Canton</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Mr. Safet Husanovi</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>municipality Tuzla</td>
</tr>
<tr>
<td><strong>Telephone</strong></td>
<td>++387 75 241536</td>
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<td><strong>Fax</strong></td>
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<tr>
<td><strong>Investment Costs</strong></td>
<td>58.000.000 US$</td>
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<table>
<thead>
<tr>
<th><strong>Status of Project</strong></th>
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<tr>
<td><strong>Ongoing/Planned Project</strong></td>
<td>Planned project</td>
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<tr>
<td><strong>Emerging Concept</strong></td>
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</table>

| **Language of Project Documents** | Bosnian |
1. **Project Title**

Construction of regional sewerage system Tuzla-Lukavac with central wastewater treatment plant for cities and industry.

2. **Investor Details**

2.1. **Authority/Company**

Name: PU "Vodovod i kanalizacija" Tuzla
Address: Tuzla
 Telephone: ++387 75 252209
Fax: ++387 75 250402

2.2. **Contact Persons**

Mr. Petar Tomic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Public authority enterprise Waterworks and Sewerage Tuzla

2.5. **Authority/Company Profile**

Water supply, wastewater treatment, sewerage, water protection, water resource, water management.

Number of persons employed: 204
Annual budget: 11.600.000 KM (cca. 6.820.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Tuzla and Lukavac
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Central wastewater treatment plant near city Lukavac. Construction 16 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity of Central wastewater treatment plant is 1,000,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Jala and river Spreca tributary of river Bosnia.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering.

3.5. Ownership of Project Site
SODASO Holding d.d. Tuzla

3.6. Specific Project Items
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Tuzla.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality/Receptor
The recipient for the treated wastewater is river Jala, which flows from 90 l/sec. River Jala is now industry channel wastewater without life.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 58.000.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 205.000 US$
- for maintenance 380.000 US$
6.3. Estimate of Revenues
Through the payment from treated water (0.18 US $/m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.

6.5. Anticipated/Proposed Funding Scheme

<table>
<thead>
<tr>
<th>Sources of funding</th>
<th>Secured (Currency)</th>
<th>Requested (Currency)</th>
<th>Non - secured (Currency)</th>
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<td>(2) National Environmental Fund</td>
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<td>(3) Water Management Fund</td>
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<tr>
<td>Total funds/requirements</td>
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</table>
Project 2 – Municipality
Rehabilitation and Reconstruction of Sewerage and Industry Wastewater Treatment Plant of City Sarajevo
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<tr>
<th>Date of first setting up:</th>
<th>Date of latest upgrade:</th>
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</table>

**Project Title**  
Rehabilitation and reconstruction of sewerage and industry wastewater treatment plant of city Sarajevo

**Responsible/Legal Body**

**Authority/Company**  
Canton Sarajevo

**Name**  
Mr. Munib Buljina

**Address**  
Sarajevo

**Telephone**  
++387 71 668509

**Fax**  
++387 71 207171

**Project Target**  
Reduction pollution of river Bosna from sewerage and wastewater from municipal and industry sectors of Sarajevo

**Investment Costs**  
15,000,000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  
Ongoing project

**Language of Project Documents**  
Bosnian
1. **Project Title**
Rehabilitation and reconstruction of sewerage and industry waste water treatment plant of city Sarajevo.

2. **Investor Details**

2.1. **Authority/Company**
Name: Public Communal Utility “Vodovod i Kanalizacija” Sarajevo
Address: Sarajevo
Telephone: ++387 71 668260
Fax: ++387 71 668258
E-mail:

2.2. **Contact Persons**
Mr. Zulfikar Drace

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B.Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Public company with limited responsibilities

2.5. **Authority/Company Profile**
Water supply, wastewater disposal, water distribution; wastewater treatment
Number of persons employed: 1000
Annual budget 17.650.000 US $

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning (design) capacities, or implementing capacities.
2.7. **Institutions/Enterprises beside the Investor**

Public Water management Enterprise Bosnia and Herzegovina, Sarajevo
Municipality of Donji Vakuf, Bugojno, Gornji Vakuf
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. **Project Description**

3.1. **Project Outline**

Central wastewater treatment plant near city Sarajevo. Rehabilitation of central wastewater plant from war activity in Bosnia. Construction of new technological line in the plant with modern equipment. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity of Central wastewater treatment plant is 1.000.000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution in river Miljatska tributary of r. Bosna. Also protection of sources water for drinking and underground water near Sarajevo.

3.3. **Status of Project Preparation**

Finished study on expectation funding.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**

K.P.C.U. "Vodovod i kanalizacija” Sarajevo

3.6. **Specific Project Items**
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in the city of Sarajevo.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
Reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well. Protection of underground water and many sources of potable water.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 15.000.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel       65.000 US$
- for maintenance  100.000 US$
6.3. Estimate of Revenues
Through the payment from treated water (0.18 US $/m³ wastewater)

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.

6.5. Anticipated/Proposed Funding Scheme

<table>
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<tr>
<td>Total funds/requirements</td>
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</tbody>
</table>
Project 3 – Municipality

Construction of Sewerage System Banja Luka with Central Wastewater Treatment Plant for City and Industry
Date of first setting up: Date of latest upgrade:

**Project Title**
Construction of sewerage system Banja Luka with central wastewater treatment plant for city and industry

**Responsible/Legal Body**

**Authority/Company**
Republic Committee of Water Republic Srpska

**Name**
Dr. sci. Borislav Jaksic

**Address**
Banja Luka

**Telephone**
++387 58 42058

**Fax**
++387 58 42058

**e-mail**

**Project Target**
Reduction of pollution of river Vrbas from sewerage and wastewater for municipal and industrial sectors of Banja Luka

**Investment Costs**
50.000.000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**
Planned project

**Language of Project Documents**
Bosnian
1. **Project Title**  
Construction of sewerage system Banja Luka with central wastewater treatment plant for city and industry

2. **Investor Details**

2.1. **Authority/Company**  
Name: P.C.U. “Vodovod i Kanalizacija” Banja Luka  
Address: Banja Luka  
Telephone: ++387 58 12316  
Fax: ++387 58 12316  
E-mail:

2.2. **Contact Persons**  
Mr. Mile Predojevic

2.3. **Advisor/Consultant**  
Republic Committee of Water Republic Srpska

2.4. **Legal/Financial Status**  
Public authority enterprise Waterworks and Sewerage Banja Luka

2.5. **Authority/Company Profile**  
Water supply, wastewater treatment, sewerage, water protection, water resource, water management.  
Number of persons employed: no data  
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**  
No data.

2.7. **Institutions/Enterprises beside the Investor**  
City Council of Banja Luka  
Republic Committee of Water Republic Srpska, Banja Luka
3. Project Description

3.1. Project Outline
Central wastewater treatment plant for city Banja Luka. Construction of about 50 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity of Central wastewater treatment plant is 300,000 p.e. In this case wastewater from pulp mill factory is not included.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Vrbas.

3.3. Status of Project Preparation
Prefeasibility study is in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. Ownership of Project Site
Council of city Banja Luka.

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region in Middle Bosnia.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality/Receptor
The recipient for the treated wastewater is river Vrbas.
4.4. **Primary Effects of Project**

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**

Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**

EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**

The investment costs are preliminary estimated at 50.000.000 US$.

6.2. **Estimated Operational Cost**

The operational costs are preliminary estimated as follows:
- for personnel 200.000 US$
- for maintenance 300.000 US$

6.3. **Estimate of Revenues**

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

<table>
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<tr>
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Project 4 – Municipality

Construction of Regional Sewerage System
Gornji Vakuf – Bugojno – Donji Vakuf with
Central Wastewater Treatment Plant for Cities
and Industry
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**Project Title**  

**Responsible/Legal Body**

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<table>
<thead>
<tr>
<th>Name</th>
<th>Mr. Mustafa Zeevi</th>
</tr>
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**Project Target**  
Reduction of pollution of river Vrbas from sewerage and wastewater for municipal and industrial sectors in the Middle Bosnia

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**Status of Project**

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</table>
1. **Project Title**

2. **Investor Details**

2.1. **Authority/Company**
Name: Municipality Donji Vakuf and P.C.U. "Gradina" D. Vakuf
Address: Donji Vakuf
Telephone: ++387 70 22991
Fax: ++387 70 22991

2.2. **Contact Persons**
Mr. Sead Omeragic, manager PCU "Gradina" D. Vakuf

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabela, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Public authority enterprise Waterworks and Sewerage Sarajevo

2.5. **Authority/Company Profile**
Water supply, wastewater treatment, sewerage, water protection, water resource, water management.
Number of persons employed: 30
Annual budget: 1.650.000 US$

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
Municipality of Donji Vakuf, Bugojno, Gornji Vakuf
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Central wastewater treatment plant near city Donji Vakuf. Construction of 30 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity Central wastewater treatment plant is 100,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Vrbas.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering.

3.5. Ownership of Project Site
City Council of D. Vakuf

3.6. Specific Project Items
4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region in the Middle Bosnia.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**
The recipient for the treated wastewater is river Vrbas.

4.4. **Primary Effects of Project**
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**
EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**
The investment costs are preliminary estimated at 18,500,000 US$.

6.2. **Estimated Operational Cost**
The operational costs are preliminary estimated as follows:
- for personnel 85,000 US$
- for maintenance 135,000 US$
6.3. Estimate of Revenues
Through the payment from treated water (0.18 US $/ m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.

6.5. Anticipated/Proposed Funding Scheme

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Project 5 – Municipality

Construction of Regional Sewerage System
Sarajevo – Visoko with Central Wastewater Treatment Plant near Visoko for Cities and Industry
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<td><strong>Project Title</strong></td>
<td>Construction of regional sewerage system Sarajevo – Visoko with central wastewater treatment plant near Visoko for cities and industry.</td>
</tr>
<tr>
<td><strong>Responsible/Legal Body</strong></td>
<td>Canton Sarajevo and Zenica-Doboj Canton</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Mr. Munib Buljina</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>Sarajevo</td>
</tr>
<tr>
<td><strong>Telephone</strong></td>
<td>++387 75 241536</td>
</tr>
<tr>
<td><strong>Fax</strong></td>
<td>++387 75 241536</td>
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<td><strong>Project Target</strong></td>
<td>Common communal and industry wastewater treatment plant. Reduction of high pollution r. Bosna</td>
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<td><strong>Language of Project Documents</strong></td>
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</table>
1. **Project Title**
Construction of regional sewerage system Sarajevo – Visoko with central wastewater treatment plant near Visoko for cities and industry.

2. **Investor Details**

2.1. **Authority/Company**
Name: PU "Vodovod i kanalizacija" Sarajevo
Address: Sarajevo
Telephone: ++387 71 668260
Fax: ++387 71 668258
E-mail:

2.2. **Contact Persons**
Mr. Zulfikar Drace higher advisor Public Utility Waterworks and Sewerage City of Sarajevo

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B.Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Public authority Enterprise Waterworks and Sewerage Sarajevo

2.5. **Authority/Company Profile**
Water supply, wastewater treatment, sewerage, water protection, water resource, water management.
Number of persons employed: 1000
Annual budget: 17.650.000 US$

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Sarajevo and Visoko
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline

Central wastewater treatment plant near city Visoko. Construction 17 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity Central wastewater treatment plant is 180,000 p.e.

3.2. Primary Needs for the Project

The main aim of the project is to reduce the pollution in river Bosna.

3.3. Status of Project Preparation

Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering.

3.5. Ownership of Project Site

P.W.U “Vodoprivreda BiH” Sarajevo

3.6. Specific Project Items
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Visoko.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality/Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 28,500,000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 114,000 US$
- for maintenance 171,000 US$
6.3. **Estimate of Revenues**

Through the payment from treated water (0.18 US $/ m³ wastewater).

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.

6.5. **Anticipated/Proposed Funding Scheme**

<table>
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Project 6 – Municipality

Construction of Regional Sewerage System Travnik – Vitez with Central Wastewater Treatment Plant near Vitez for Cities and Industry
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**Project Title**  
Construction of regional sewerage system Travnik – Vitez with central wastewater treatment plant near Vitez for cities and industry.

**Responsible/Legal Body**

**Authority/Company**  
Middle Bosnia Canton

**Name**  
Mr. Mustafa Zecevic

**Address**  
Travnik

**Telephone**  
++387 72 811338

**Fax**  
++387 72 811338

**Project Target**  
Common communal and industry wastewater treatment plant. Reduction of high pollution to r. Lasva tributary of r. Bosna

**Investment Costs**  
10.000.000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  
Planned project

**Language of Project Documents**  
Bosnian
1. **Project Title**

Construction of regional sewerage system Travnik – Vitez with central wastewater treatment plant near Vitez for cities and industry.

2. **Investor Details**

2.1. **Authority/Company**

Name: PU “Basbunar” Travnik  
Address: Travnik  
Telephone: ++387 72 811688  
Fax: ++387 72 811345  
E-mail:

2.2. **Contact Persons**

Mr. Muhedin Terzic, vice manager Public Utility “Basbunar”

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Public authority enterprise Waterworks and Sewerage Travnik

2.5. **Authority/Company Profile**

Water supply, wastewater treatment, sewerage, water protection, water resource, water management.  
Number of persons employed: 180  
Annual budget: 3.600.000 US$  

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. **Institutions/Enterprises beside the Investor**

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Travnik
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. **Project Description**

3.1. **Project Outline**

Central wastewater treatment plant near city Vitez. Construction 17 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity Central wastewater treatment plant is 70,000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution in river Lasva tributary of river Bosna.

3.3. **Status of Project Preparation**

Pre-feasibility study in progress.

All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**

Municipalities Travnik and Vitez

3.6. **Specific Project Items**
4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region Travnik-Vitez

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality/Receptor**
The recipient for the treated wastewater is river Lasva.

4.4. **Primary Effects of Project**
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**
Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**
EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**
The investment costs are preliminary estimated at 10.000.000 US$.

6.2. **Estimated Operational Cost**
The operational costs are preliminary estimated as follows:
- for personnel 60.000 US$
- for maintenance 90.000 US$
6.3. Estimate of Revenues

Through the payment from treated water (0.18 US $/ m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated.

6.5. Anticipated/Proposed Funding Scheme

<table>
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Project 7 – Municipality

Construction of Collecting System Pliva – Jajce with Central Wastewater Treatment Plant
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| **Project Title** | Construction of collecting system Pliva – Jajce with central wastewater treatment plant. |
| **Responsible/Legal Body** | |
| **Authority/Company** | Middle Bosnia Canton |
| **Name** | Mr. Mustafa Zecevic |
| **Address** | Travnik |
| **Telephone** | ++387 72 811338 |
| **Fax** | ++387 72 811338 |
| **e-mail** | |

| **Project Target** | Common communal and industry wastewater treatment plant. Reduction pollution and protection lake Pliva, tributary of r. Vrbas |
| **Investment Costs** | 6,050,000 US$ |

| **Status of Project** | |
| **Ongoing/Planned Project, Emerging Concept** | Planned project |
| **Language of Project Documents** | Bosnian |
1. **Project Title**

Construction of collecting system Pliva – Jajce with central wastewater treatment plant.

2. **Investor Details**

2.1. **Authority/Company**

Name: Municipality Jajce and PU ”Komunalac” Jajce  
Address: Jajce  
Telephone: ++387 80 658033  
Fax: ++387 80 659350

2.2. **Contact Persons**

Mr. Ljubo Lovric

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71  651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71  213858

2.4. **Legal/Financial Status**

Public authority enterprise Waterworks and Sewerage Jajce

2.5. **Authority/Company Profile**

Water supply, wastewater treatment, sewerage, water protection, water resource, water management.

Number of persons employed: 50  
Annual budget: 1.600.000 US$

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Jajce
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Central wastewater treatment plant near city Jajce. Construction of 25 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity Central wastewater treatment plant is 60,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Vrbas.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. Ownership of Project Site
City council of Jajce

3.6. Specific Project Items
4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in area of Jajce.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**
The recipient for the treated wastewater is river Vrbas.

4.4. **Primary Effects of Project**
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well. Protection of lake Pliva.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**
EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**
The investment costs are preliminary estimated at 6,050,000 US$.

6.2. **Estimated Operational Cost**
The operational costs are preliminary estimated as follows:
- for personnel 40,200 US$
- for maintenance 56,600 US$
6.3. Estimate of Revenues
Through the payment from treated water (0.18 US $/m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.

6.5. Anticipated/Proposed Funding Scheme

<table>
<thead>
<tr>
<th>Sources of funding</th>
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Project 8 – Municipality

Construction of Sewerage System Zenica with Central Wastewater Treatment Plant for City and Industry
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<th><strong>Date of first setting up:</strong></th>
<th><strong>Date of latest upgrade:</strong></th>
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</table>

**Project Title**  
Construction of sewerage system Zenica with central wastewater treatment plant for city and industry.

**Responsible/Legal Body**

**Authority/Company**  
Zenica - Doboj Canton

**Name**  
Mr. Muhamed Begagic

**Address**  
Zenica

**Telephone**  
++387 72 21732

**Fax**  
++387 72 416771

**e-mail**  

**Project Target**  
Common communal and industry wastewater treatment plant.  
Reduction of high pollution of r. Bosna

**Investment Costs**  
24,000,000 US$

**Status of Project**

**Ongoing/Planned Project**  
Planned project

**Emerging Concept**

**Language of Project Documents**  
Bosnian
1. **Project Title**

Construction of sewerage system Zenica with central wastewater treatment plant for city and industry.

2. **Investor Details**

2.1. **Authority/Company**

Name: PU "Vodovod i kanalizacija" Zenica  
Address: Zenica  
Telephone: ++387 72 22481  
Fax: ++387 72 22481  
E-mail:

2.2. **Contact Persons**

Mr. Ismet Jasic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Public authority enterprise Waterworks and Sewerage Zenica

2.5. **Authority/Company Profile**

Water supply, wastewater treatment, sewerage, water protection, water resource, water management.

Number of persons employed: 170  
Annual budget: 9.500.000 KM (cca. 5.650.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. **Institutions/Enterprises beside the Investor**

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Zenica
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo.

3. **Project Description**

3.1. **Project Outline**

Central wastewater treatment plant near city Zenica. Construction of 100 Km collecting systems. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity of Central wastewater treatment plant is 250,000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution in river Bosna.

3.3. **Status of Project Preparation**

Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**

Municipality council of Zenica

3.6. **Specific Project Items**
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Zenica.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality/Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 24.000.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 110.000 US$
- for maintenance 154.000 US$
6.3. **Estimate of Revenues**

Through the payment from treated water (0.18 US $/m$^3$ wastewater).

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.

6.5. **Anticipated/Proposed Funding Scheme**

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Project 9 – Municipality

Construction of Sewerage System Bijeljina with Central Wastewater Treatment Plant for City and Industry
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<tr>
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**Project Title**

Construction of sewerage system Bijeljina with central wastewater treatment plant for city and industry.

**Responsible/Legal Body**

**Authority/Company**

Republic Committee for Water of Republic Srpska

**Name**

Dr. sci. Borislav Jaksic

**Address**

Banja Luka

**Telephone**

++387 58 42058

**Fax**

++387 58 42058

**e-mail**

**Project Target**

Construction of sewerage system in the city Bijeljina and wastewater treatment plant.

**Investment Costs**

12,000,000 US$

**Status of Project**

Planned project

Ongoing/Planned Project, Emerging Concept

Planned project

**Language of Project Documents**

Bosnian
1. **Project Title**
Construction of sewerage system Bijeljina with central wastewater treatment plant for city and industry.

2. **Investor Details**

2.1. **Authority/Company**
Name: PU "Vodovod i kanalizacija" Bijeljina
Address: Bijeljina
Telephone:
Fax:
E-mail:

2.2. **Contact Persons**
Dr. Borislav Jaksic

2.3. **Advisor/Consultant**
Republic Committee for Water RS

2.4. **Legal/Financial Status**
No data.

2.5. **Authority/Company Profile**
Water supply, wastewater treatment, sewerage, water protection, water resource, water management.

2.6. **Planning/Implementing Extent/Capacity of the Investor**
No data.

2.7. **Institutions/Enterprises beside the Investor**
Republic Committee for Water of Republic Srpska, Banja Luka
3. **Project Description**

3.1. **Project Outline**

Central wastewater treatment plant near city Bijeljina. Construction of 70 Km collecting systems of city Bijeljina. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. Capacity Central wastewater treatment plant is 60,000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution of underground water and river Sava.

3.3. **Status of Project Preparation**

Prefeasibility study in progress.

All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering.

3.5. **Ownership of Project Site**

Republic Committee for Water RS

3.6. **Specific Project Items**

4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**

The public opinion of the project is very positive from people, who live in region of Bijeljina.

4.2. **Environmental Impact Assessment**

The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**

The recipient for the treated wastewater is channel Dasnica, which is tributary r. Sava
4.4. Primary Effects of Project

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits

Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

The investment costs are preliminary estimated at 12.000.000 US$.

6.2. Estimated Operational Cost

The operational costs are preliminary estimated as follows:
- for personnel 56.000 US$
- for maintenance 100.000 US$

6.3. Estimate of Revenues

Through the payment from treated water.

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated.
6.5. Anticipated/Proposed Funding Scheme

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Project 1 – Industry

Reconstruction of Wastewater Pre-treatment Plant in Chlorine Alkaline Complex in Tuzla
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<tr>
<th><strong>Date of first setting up:</strong></th>
<th><strong>Date of latest upgrade:</strong></th>
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</table>

**Project Title**  
Reconstruction of wastewater pre-treatment plant in Chlorine Alkaline Complex in Tuzla

**Responsible/Legal Body**  
**Authority/Company**: SODASO Holding DD

**Name**: Dr. sci. Esad Zunic

**Address**: Tuzla, Slatina 2

**Telephone**: ++387 75 280372

**Fax**: ++387 75 281398

**Project Target**  
Reduction of toxic compounds in the industry wastewater and reduction of load pollution before the connection into sewer

**Investment Costs**: 2,200,000 US$

**Status of Project**  
**Ongoing/Planned Project, Emerging Concept**: Planned project

**Language of Project Documents**: Bosnian
1. **Project Title**

Reconstruction of wastewater pre-treatment plant in “Chlorine Alkaline Complex“ Tuzla

2. **Investor Details**

2.1. **Authority/Company**

Name: DD “Polihem” Tuzla  
Address: Tuzla  
Telephone: ++387 75 280139  
Fax: ++387 75 280139  
E-mail:

2.2. **Contact Persons**

Mr. Nazif Imamovic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71  651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858  
Institute of Chemistry Engineering Tuzla  
Dr. sci. Mevlida Kunosic-Vlajic, manager, phone ++387 75 280450

2.4. **Legal/Financial Status**

Stock Company in SODASO holding

2.5. **Authority/Company Profile**

Chemistry industry on the basis salt. Production chlorine and derivative from chlorine.  
Number of persons employed: 1300  
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Tuzla
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Improvement of systems of pre-treatment plant in the factories “Polihem”, “Izohem” and “Dita”.

3.2. Primary Needs for the Project
The main aim of the project is reduction of the pollution in river Jala and river Spreca tributary of river Bosnia.

3.3. Status of Project Preparation
Feasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-chemical treatment of wastewater.

3.5. Ownership of Project Site
SODASO Holding d.d. Tuzla

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Tuzla.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.
4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Jala, which flows from 90 l/sec. River Jala is now industry channel wastewater without life.

4.4. Primary Effects of Project
The project could be characterized as a project of municipality level of importance.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 2.200.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 16.000 US$
- for maintenance 24 000. US$

6.3. Estimate of Revenues

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.
## 6.5. Anticipated/Proposed Funding Scheme

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Project 2 – Industry

Reconstruction of Wastewater Pre-treatment Plant in Coke Chemical Combine Lukavac
Date of first setting up: Date of latest upgrade:

**Project Title**  Reconstruction of wastewater pre-treatment plant in Coke Chemical Combine Lukavac

**Responsible/Legal Body**

**Authority/Company**  KHK (Koksno Hemijski Kombinat) Lukavac

**Name**  Mr. Faik Buevac

**Address**  Lukavac

**Telephone**  ++387 75 283048

**Fax**  ++387 75 281390

**e-mail**

**Project Target**  Reduction of toxic compounds in the industry wastewater and reduction of load pollution before connection into the river Spreca.

**Investment Costs**  2.800.000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  Planned project

**Language of Project Documents**  Bosnian
1. **Project Title**
Reconstruction of wastewater pre-treatment plant in Coke Chemical Combine Lukavac

2. **Investor Details**

2.1. **Authority/Company**
Name: KHK (Koksno Hemijski Kombinat) Lukavac
Address: Lukavac
Telephone: ++387 75 283048
Fax: ++387 75 281390
E-mail:

2.2. **Contact Persons**
Mr. Faik Buevac

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Chemical company with limited responsibilities.

2.5. **Authority/Company Profile**
Chemical factory, production of coke and another chemical compounds.
Number of persons employed: 1800
Annual budget: 200,000,000 US$ (before War 1992)

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Lukavac
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline

Industrial wastewater treatment plant in the Combine KHK Lukavac. Treatment plant has primary and secondary treatment with sludge treatment.

3.2. Primary Needs for the Project

The main aim of the project is to reduce the pollution in river Spreca tributary of river Bosnia.

3.3. Status of Project Preparation

Feasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed

The mechanical-chemical treatment with stabilization of the sludge. Separated gases out of water are burned up.

3.5. Ownership of Project Site

KHK Lukavac

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest

The public opinion of the project is very positive from people, who live in region of Lukavac.

4.2. Environmental Impact Assessment

The environmental impact assessment is finished.
4.3. **Sensitivity of Locality /Receptor**  
The recipient for the treated wastewater is river Spreca.

4.4. **Primary Effects of Project**  
The project could be characterized as a project of regional level of importance. Pre-treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**
EIRR has not been calculated.

6. **Financial Viability**

6.1 **Estimated Investment Cost**
The investment costs are preliminary estimated at 2,800,000 US$.

6.2. **Estimated Operational Cost**
The operational costs are preliminary estimated as follows:
- for personnel 20,000 US$
- for maintenance 30,000 US$

6.3. **Estimate of Revenues**
Through the payment from treated water (0,18 US $/m³ wastewater).

6.4. **Financial Internal Rate of Return (FIRR)**
FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

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Project 3 – Industry

Reconstruction and Improvement of Wastewater Treatment Plant of “Incel” Banja Luka
Date of first setting up: Date of latest upgrade:

Project Title
Reconstruction and improvement of wastewater treatment plant of “Incel” Banja Luka

Responsible/Legal Body

Authority/Company
Republic Committee for Water Republic Srpska

Name
Dr. Sci. Borislav Jaksic

Address
Banja Luka

Telephone
++387 58 42058

Fax
++387 58 42058

e-mail

Project Target
Reduction of high pollution of r. Vrbas from industry wastewater. Improvement of water quality of river Vrbas.

Investment Costs
3.500.000 US$

Status of Project

Ongoing/Planned Project, Emerging Concept
Planned project

Language of Project Documents
Bosnian
1. **Project Title**
Reconstruction and improvement of wastewater treatment plant of “Incel” Banja Luka

2. **Investor Details**

2.1. **Authority/Company**
Name: “INCEL” DD Banja Luka
Address: Banja Luka
Telephone: ++387 58 35544
Fax: ++387 58 35545

2.2. **Contact Persons**
Mr. Nenad Tomanic

2.3. **Advisor/Consultant**
Republic Committee for Water Republic Srpska, Banja Luka

2.4. **Legal/Financial Status**
Chemical company/Stock company

2.5. **Authority/Company Profile**
Pulp mill, tissue paper mill, viscose mill, polyester mill, gas-concrete element factory.
Number of persons employed: 5600 (before the war 1992)
Annual budget: now no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**
No data.

2.7. **Institutions/Enterprises beside the Investor**
Republic Committee for Water Republic Srpska, Banja Luka
3. **Project Description**

3.1. **Project Outline**
Rehabilitation and reconstruction of wastewater treatment in the Incel company. Treatment plant has primary and secondary treatment and sludge treatment.

3.2. **Primary Needs for the Project**
The main aim of the project is to reduce the pollution in river Vrbas.

3.3. **Status of Project Preparation**
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**
The mechanical-chemical treatment. Construction of biological part will improve system clearing. The treatment of sludge with stabilization and finally sludge dewatering and disposal.

3.5. **Ownership of Project Site**
INCEL DD Banja Luka

3.6. **Specific Project Items**

4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region of Banja Luka.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**
The recipient for the treated wastewater is river Vrbas.

4.4. **Primary Effects of Project**
The project could be characterized as a project of municipality level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well.
5. **Economic Project Justification**

5.1. **Economic Project Benefits**
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**
EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**
The investment costs are preliminary estimated at 3.500.000 US$.

6.2. **Estimated Operational Cost**
The operational costs are preliminary estimated as follows:
- for personnel 25.000 US$
- for maintenance 35.000 US$

6.3. **Estimate of Revenues**
Through the payment from treated water.

6.4. **Financial Internal Rate of Return (FIRR)**
FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

<table>
<thead>
<tr>
<th>Sources of funding</th>
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Project 4 – Industry

Rehabilitation and Reconstruction of Wastewater Treatment Plant in “Natron” Maglaj
## Project Files

Date of first setting up:  Date of latest upgrade:

**Project Title**  Rehabilitation and reconstruction of wastewater treatment plant in “Natron” Maglaj

**Responsible/Legal Body**

**Authority/Company**  Public Watermanagement Enterprise “Vodoprivreda BiH” Sarajevo

**Name**  Mr. Faruk Sabela, B. Sc. Manager

**Address**  Sarajevo

**Telephone**  ++387 71 651646

**Fax**  ++387 71 651646

**e-mail**  

**Project Target**  Rehabilitation and reconstruction of ongoing industry wastewater treatment plant. Reduction of high pollution in r. Bosna

**Investment Costs**  3,000,000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  Planned project

**Language of Project Documents**  Bosnian
1. **Project Title**

Rehabilitation and reconstruction of wastewater treatment plant in “Natron” Maglaj

2. **Investor Details**

2.1. **Authority/Company**

Name: DD “Natron” Maglaj  
Address: Maglaj  
Telephone: ++387 74 813 592  
Fax: ++387 74 813 592  
E-mail:

2.2. **Contact Persons**

Mr. Ibrahim Sehic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Stock company

2.5. **Authority/Company Profile**

Pulp mill, paper mill, wrapping factory, trade and sales  
Number of persons employed: 1700  
Annual budget: 55.600.000 KM (cca. 32.700.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. Institutions / Enterprises beside the Investor
Public Water management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Maglaj
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Central wastewater treatment plant for Natron Maglaj. Rehabilitation of wastewater treatment plant from war destruction. Treatment plant has primary and secondary treatment with biological part and sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into the river Bosna. Capacity of Central wastewater treatment plant is 400,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Bosna.

3.3. Status of Project Preparation
Feasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with finally sludge dewatering and disposal.

3.5. Ownership of Project Site
DD “Natron” Maglaj

3.6. Specific Project Items
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Maglaj.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 3.000.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 22.000 US$
- for maintenance 32.000 US$
6.3  **Estimate of Revenues**
Through the payment from treated water (0.18 US $/m³ wastewater).

6.4.  **Financial Internal Rate of Return (FIRR)**
FIRR has not been calculated.

6.5.  **Anticipated/Proposed Funding Scheme**

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Project 5 – Industry

Construction of Wastewater Treatment Plant for “Celpak” Prijedor
Date of first setting up: Date of latest upgrade:

**Project Title**  
Construction of wastewater treatment plant for “Celpak” Prijedor

**Responsible/Legal Body**

**Authority/Company**  
Republic Committee for Water Republic Srpska

**Name**  
Dr. Sci. Borislav Jaksic

**Address**  
Banja Luka

**Telephone**  
++387 58 42058

**Fax**  
++387 58 42058

**e-mail**

**Project Target**  
Common industry wastewater treatment plant of pulp and paper mill. Reduction of high pollution in r. Sana and Una, tributary of r. Sava

**Investment Costs**  
14.000.000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  
Planned project

**Language of Project Documents**  
Bosnian
1. **Project Title**
Construction of wastewater treatment plant for “Celpak” Prijedor

2. **Investor Details**

2.1. **Authority/Company**
Name: “Celpak” DD Prijedor
Address: Prijedor
Telephone: ++387 79 24 999
Fax: ++387 79 12 600
E-mail:

2.2. **Contact Persons**
Mr. Dusko Banovic

2.3. **Advisor/Consultant**
Republic Committee for Water Republic Srpska
Dr. Borislav Jaksic, manager phone ++387 58 42058

2.4. **Legal/Financial Status**
Pulp and paper mill company/stock company.

2.5. **Authority/Company Profile**
Number of persons employed: no data
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.

2.7. **Institutions/Enterprises beside the Investor**
Republic Committee for Water Republic Srpska, Banja Luka
3. Project Description

3.1. Project Outline
Central wastewater treatment plant for pulp and paper industry in the “Celpak” Prijedor. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Sana and river Una, tributary of river Sava.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge.

3.5. Ownership of Project Site
DOO “Celpak” Prijedor

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in the city of Prijedor.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient of the treated wastewater is river Sana.
4.4. Primary Effects of Project

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. Economic Project Justification

5.1. Economic Project Benefits

Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

The investment costs are preliminary estimated at 14.000.000 US$.

6.2. Estimated Operational Cost

The operational costs are preliminary estimated as follows:

- for personnel  81.000 US$
- for maintenance  115.000 US$

6.3. Estimate of Revenues

Through the payment from treated water

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

<table>
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Project 6 – Industry

Reconstruction of Industry Wastewater Treatment Plant for DD “Zeljezara” Zenica
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<td><strong>Responsible/Legal Body</strong></td>
<td><strong>Authority/Company</strong> Public Watermanagement Enterprise “Vodoprivreda BiH” Sarajevo</td>
</tr>
<tr>
<td><strong>Name</strong></td>
<td>Mr. Faruk Sabela, B. Sc. Manager</td>
</tr>
<tr>
<td><strong>Address</strong></td>
<td>Sarajevo</td>
</tr>
<tr>
<td><strong>Telephone</strong></td>
<td>++387 71 651646</td>
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<td><strong>Fax</strong></td>
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<tr>
<td><strong>Project Target</strong></td>
<td>Reconstruction and improvement of industry wastewater treatment plant from iron foundry. Reduction of high pollution in r. Bosna</td>
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<td><strong>Investment Costs</strong></td>
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1. **Project Title**
Reconstruction of industry wastewater treatment plant for DD “Zeljezara” Zenica

2. **Investor Details**

2.1. **Authority/Company**
Name: DD “Zeljezara” Zenica
Address: Zenica
Telephone: ++387 72 26 263
Fax: ++387 72 26 263
E-mail:

2.2. **Contact Persons**
Mr. Sulejman Muhamedagic

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Public authority enterprise Waterworks and Sewerage Tuzla

2.5. **Authority/Company Profile**
Production of iron, ironware, ironwork etc.
Number of persons employed: 4150 (9560)
Annual budget: 11.600.000 KM (cca. 6.820.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Zenica
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Reconstruction of industrial wastewater treatment plant in the DD “Zeljezara” Zenica. Increasing capacity of wastewater treatment and improvement of treated water quality. Treatment plant has primary and secondary treatment with sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into the river Bosna. Capacity of industrial wastewater treatment plant is 200,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Bosna tributary of river Sava.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-chemical treatment with stabilization of the sludge. The treatment of sludge and finally sludge dewatering and disposal.

3.5. Ownership of Project Site
DD “Zeljezara” Zenica

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in city of Zenica.
4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 1.600.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 12.000 US$
- for maintenance 18.000 US$

6.3. Estimate of Revenues
Through the payment from treated water (0,18 US $/m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

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<td><strong>Total funds/requirements</strong></td>
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</table>
Project 7 – Industry

Construction of Industrial Wastewater Treatment in the Sodium Factory Lukavac
<table>
<thead>
<tr>
<th>Date of first setting up:</th>
<th>Date of latest upgrade:</th>
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</thead>
</table>

**Project Title**  
Construction of industrial wastewater treatment in the Sodium Factory Lukavac

**Responsible/Legal Body**

**Authority/Company**  
Public Water Management Enterprise  “Vodoprivreda BiH” Sarajevo

**Name**  
Mr. Faruk Sabeta, B. Sc. Manager

**Address**  
Sarajevo

**Telephone**  
++387 71 651646

**Fax**  
++387 71 651646

**Project Target**  
Construction of industry wastewater treatment plant. Reduction of high pollution in r. Spreca, tributary of r. Bosna

**Investment Costs**  
6,000,000 US$

**Language of Project Documents**  
Bosnian
1. **Project Title**

Construction of industrial wastewater treatment in the Sodium Factory Lukavac

2. **Investor Details**

2.1. **Authority/Company**

Name: DD Fabrika Sodium Lukavac  
Address: Lukavac 
Telephone: ++387 75 527 537  
Fax: ++387 75 282 004

2.2. **Contact Persons**

Mr. Zaim Bektic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo  
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646  
Institute for Water Resource Development Sarajevo  
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Stock company, chemical production

2.5. **Authority/Company Profile**

Chemical company with production of sodium, sodium bicarbonate, sodium carbonate trade and sale activity.  
Number of persons employed: 1250  
Annual budget: 30,000,000 US$

2.6. **Planning/Implementing Extent Capacity of the Investor**

The company does not have planning capacities.
2.7. Institutions/Enterprises beside the Investor
Public Water Management Enterprise Bosnia and Herzegovina,
Sarajevo Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. Project Description

3.1. Project Outline
Construction of industrial wastewater treatment plant for sodium factory Lukavac. Reduction of toxic water and high alkaline of water Treatment plant has primary and secondary treatment with complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into the river Spreca. Capacity of Central wastewater treatment plant is planned from 80,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Spreca, tributary of river Bosnia.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-chemical treatment with stabilization of the sludge. Neutralization processes. The treatment of sludge with dewatering and disposal.

3.5. Ownership of Project Site
DD Fabrika Sodium Lukavac

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Lukavac.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.
4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Spreca.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. Pollution could be reduced up to 70-80%.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 6.000.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 35.000 US$
- for maintenance 55.000 US$

6.3. Estimate of Revenues
Through the payment from treated water (0.18 US$/m³ wastewater).

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

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Project 8 – Industry

Construction of Industrial Wastewater Treatment Plant for “Destilacija drveta” Teslic
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<thead>
<tr>
<th>Date of first setting up:</th>
<th>Date of latest upgrade:</th>
</tr>
</thead>
</table>

**Project Title**: Construction of industrial wastewater treatment plant for “Destilacija drveta” Teslic

**Responsible/Legal Body**

**Authority/Company**: Republic Committee for Water Republic Srpska

**Name**: Dr. Sci. Borislav Jaksic

**Address**: Banja Luka

**Telephone**: ++387 58 42058

**Fax**: ++387 58 42058

**e-mail**

**Project Target**: Construction of industrial wastewater treatment plant in the factory for dry wood distillation. Reduction of high pollution in r. Usora, tributary of r. Bosna

**Investment Costs**: 5.300.000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**: Planned project

**Language of Project Documents**: Bosnian
1. Project Title
Construction of industrial wastewater treatment plant for “Destilacija drveta” Teslic

2. Investor Details

2.1. Authority/Company
Name: DD “Destilacija drveta” Teslic
Address: Teslic
Telephone: ++387 54 731 799
Fax: ++387 54 731 799
E-mail:

2.2. Contact Persons
No data

2.3. Advisor/Consultant
Republic Committee for Water Republic Srpska, Banja Luka
Dr. Sci. Borislav Jaksic, manager phone ++387 58 42058

2.4. Legal/Financial Status
Stock company

2.5. Authority/Company Profile
Chemical factory, production of acetic acid and derivative from dry distillation of wood.
Number of persons employed: no data
Annual budget: no data

2.6. Planning/Implementing Extent/Capacity of the Investor
No data.

2.7. Institutions/Enterprises beside the Investor
Republic Committee for Water Republic Srpska, Banja Luka
City Council of Teslic
3. Project Description

3.1. Project Outline
Industrial wastewater treatment plant in the factory “Destilacija drveta” Teslic. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity of industrial wastewater treatment plant is 60,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in the river Usora, tributary of river Bosnia.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. The treatment of sludge and final sludge dewatering.

3.5. Ownership of Project Site
DD “Destilacija drveta” Teslic

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Teslic.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Usora.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well.
5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 5.300.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel    45.000 US$
- for maintenance 65.000 US$

6.3. Estimate of Revenues
Through the payment from treated water.

6.4. Financial Internal Rate of Return (FIRR)
FIRR has not been calculated.
## 6.5. Anticipated/Proposed Funding Scheme

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</table>
Project 9 – Industry

Construction of Industrial Wastewater Treatment Plant for DD “Maglic” Foca
Date of first setting up: Date of latest upgrade:

**Project Title**  Construction of industrial wastewater treatment plant for DD “Maglic” Foca

**Responsible/Legal Body**

**Authority/Company** Republic Committee for Water Republic Srpska

**Name** Dr. Sci. Borislav Jaksic

**Address** Banja Luka

**Telephone** ++387 58 42058

**Fax** ++387 58 42058

**Project Target**  Construction of industry wastewater pre-treatment plant. Reduction of high pollution r. Drina, tributary of r. Sava.

**Investment Costs**  9,200,000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**  Planned project

**Language of Project Documents**  Bosnian
1. **Project Title**
Construction of industrial wastewater treatment plant for DD “Maglic» Foca

2. **Investor Details**

2.1. **Authority/Company**
Name: DD “Maglic” Foca  
Address: Foca  
Telephone: ++387 52 572 162  
Fax: ++387 52 572 163  
E-mail:

2.2. **Contact Persons**
Mr. Radovan Miletic

2.3. **Advisor/Consultant**
Republic Committee for Water Republic Srpska Banja Luka

2.4. **Legal/Financial Status**
Stock company “Maglic” Foca

2.5. **Authority/Company Profile**
Production of plywood sheet  
Number of persons employed: no data  
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**
No data.

2.7. **Institutions/Enterprises beside the Investor**
Republic Committee for Water Republic Srpska Banja Luka  
City Council of Foca
3. **Project Description**

3.1. **Project Outline**
Industrial wastewater pre-treatment plant plywood sheet factory. Treatment plant has primary and secondary treatment with complete sludge treatment. Pre-treated industrial wastewater shall be treated up to the necessary level for discharge into sewer. High organic load wastewater is 200,000 p.e.

3.2. **Primary Needs for the Project**
The main aim of the project is to reduce the pollution in river Drina, tributary of river Sava.

3.3. **Status of Project Preparation**
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**
The mechanical-chemical treatment with stabilization of the sludge. The treatment of sludge dewatering and finally sludge disposal.

3.5. **Ownership of Project Site**
DD “Maglic” Foca

3.6. **Specific Project Items**

4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region of r. Drina.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**
The recipient for the treated wastewater is river Drina.
4.4. **Primary Effects of Project**

The project could be characterized as a project of regional level of importance. Pre-treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**

Higher employment during the construction period as well as during the operation period.

Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**

EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**

The investment costs are preliminary estimated at 9.200.000 US$.

6.2. **Estimated Operational Cost**

The operational costs are preliminary estimated as follows:

- for personnel 58.000 US$
- for maintenance 80.000 US$

6.3. **Estimate of Revenues**

Through the payment from treated water.

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.
6.5. **Anticipated/Proposed Funding Scheme**

<table>
<thead>
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</table>
Project 1 – Agriculture

Construction of Wastewater Treatment Plant for Dairy and Pigs Breeding Farm in Nova Topola
Date of first setting up: Date of latest upgrade:

**Project Title**  Construction of wastewater treatment plant for dairy and pigs breeding farm in Nova Topola.

**Responsible/Legal Body**

**Authority/Company** Republic Committee for Water Republic Srpska, Banja Luka

**Name** Dr. Sci. Borislav Jaksic

**Address** Banja Luka

**Telephone** ++387 58 42058

**Fax** ++387 58 42058

**Project Target** Construction of wastewater treatment plant for dairy and pigs breeding farm. Reduction of high pollution from agriculture. Protection of underground water from pollution.

**Investment Costs** 6,500,000 US$

**Status of Project** Planned project

**Language of Project Documents** Bosnian
1. **Project Title**

Construction of wastewater treatment plant for dairy and pigs breeding farm in Nova Topola.

2. **Investor Details**

2.1. **Authority/Company**

Name: DD “Svinjugojska Farma” Nova Topola  
Address: Nova Topola  
Telephone: ++387 58 792 038  
Fax: ++387 58 792 038  
E-mail:

2.2. **Contact Persons**

Mr. Zivko Pavlovski

2.3. **Advisor/Consultant**

Republic Committee for Water Republic Srpska, Banja Luka

2.4. **Legal/Financial Status**

Stock company

2.5. **Authority/Company Profile**

Pigs breeding, dairy and production of fodder.  
Number of persons employed: no data  
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**

No data.

2.7. **Institutions/Enterprises beside the Investor**

Republic Committee for Water Republic Srpska, Banja Luka  
City Council of Banja Luka and Bosanska Gradiska
3. **Project Description**

3.1. **Project Outline**
Construction of wastewater treatment plant in common wastewater from dairy and pigs breeding farm. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity of farm wastewater treatment plant is 80,000 p.e.

3.2. **Primary Needs for the Project**
The main aim of the project is to reduce the pollution in the river Sava. Protection of underground water.

3.3. **Status of Project Preparation**
Feasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering and disposal.

3.5. **Ownership of Project Site**
DD “Svinjogojska Farma” Nova Topola

3.6. **Specific Project Items**

4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region of Lijevce field.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality/Receptor**
The recipient for the treated wastewater is indirect in river Sava.
4.4. **Primary Effects of Project**

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1. **Economic Project Benefits**

Higher employment during the construction period as well as during the operation period.

Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**

EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**

The investment costs are preliminary estimated at 6,500,000 US$.

6.2. **Estimated Operational Cost**

The operational costs are preliminary estimated as follows:

- for personnel 45,000 US$
- for maintenance 75,000 US$

6.3. **Estimate of Revenues**

Through the payment from treated water.

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

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Project 2 – Agriculture

Construction of Wastewater Treatment Plant for Pigs Breeding Farm in Brcko
Date of first setting up: Date of latest upgrade:

**Project Title**
Construction of wastewater treatment plant for pigs breeding farm in Brcko

**Responsible/Legal Body**

**Authority/Company**
Republic Committee for Water Republic Srpska, Banja Luka

**Name**
Dr. Sci. Borislav Jaksic

**Address**
Banja Luka

**Telephone**
++387 58 42058

**Fax**
++387 58 42058

**e-mail**

**Project Target**
Construction of wastewater treatment plant for pigs breeding farm. Reduction of high pollution from agriculture. Protection of underground water from pollution.

**Investment Costs**
2,300,000 US$

**Status of Project**

**Ongoing/Planned Project, Emerging Concept**
Planned project

**Language of Project Documents**
Bosnian
1. **Project Title**

Construction of wastewater treatment plant for pigs breeding farm in Brcko

2. **Investor Details**

2.1. **Authority/Company**

Name: DD Bimex “Svinjogojska farma” Brcko
Address: Brcko
Telephone: ++387 57 204 178
Fax: ++387 57 204 178

2.2. **Contact Persons**

No data

2.3. **Advisor/Consultant**

Republic Committee for Water Republic Srpska, Banja Luka

2.4. **Legal/Financial Status**

Stock company

2.5. **Authority/Company Profile**

Pigs breeding, livestock, fodder
Number of persons employed: no data
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**

No data.

2.7. **Institutions/Enterprises beside the Investor**

Republic Committee for Water Republic Srpska, Banja Luka
City Council of Brcko
3. Project Description

3.1. Project Outline
Construction of wastewater treatment plant in common wastewater from dairy and pigs breeding farm. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity of farm wastewater treatment plant is 30,000 p.e.

3.2. Primary Needs for the Project
The main aim of the project is to reduce the pollution in river Sava.

3.3. Status of Project Preparation
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. Technology Proposed
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and finally sludge dewatering and disposal.

3.5. Ownership of Project Site
Bimex “Svinjogojska farma” Brcko

3.6. Specific Project Items

4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Brcko.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is indirect river Sava.
4.4. **Primary Effects of Project**

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90% and the load of COD up to 70 percent will be reduced as well.

5. **Economic Project Justification**

5.1 **Economic Project Benefits**

Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. **Economic Internal Rate of Return (EIRR)**

EIRR has not been calculated.

6. **Financial Viability**

6.1. **Estimated Investment Cost**

The investment costs are preliminary estimated at 2.300.000 US$.

6.2. **Estimated Operational Cost**

The operational costs are preliminary estimated as follows:

- for personnel 18.000 US$
- for maintenance 26.000 US$

6.3. **Estimate of Revenues**

Through the payment from treated water.

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

<table>
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<th>Sources of funding</th>
<th>Secured (Currency)</th>
<th>Requested (Currency)</th>
<th>Non-secured (Currency)</th>
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Project 3 – Agriculture

Construction of Wastewater Treatment Plant for Dairy Farm “Spreca” Kalesija
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<tr>
<th><strong>Authority/Company</strong></th>
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<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Mr. Faruk Sabeta</th>
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<th><strong>Address</strong></th>
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<th>Planned project</th>
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<tr>
<th><strong>Language of Project Documents</strong></th>
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</table>
1. **Project Title**

Construction of wastewater treatment plant for dairy farm “Spreca” Kalesija

2. **Investor Details**

2.1. **Authority/Company**

Name: Farma “Spreca” Kalesija
Address: Tuzla
Telephone: ++387 75 631 293
Fax: ++387 75 635 043

2.2. **Contact Persons**

Mr. Fahrudin Delic

2.3. **Advisor/Consultant**

Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**

Agriculture company with limited responsibilities

2.5. **Authority/Company Profile**

Dairy farm, milk production, fodders.
Number of persons employed: 250
Annual budget: 6.950.000 KM (cca. 4.090.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**

The company does not have planning capacities.
2.7. **Institutions/Enterprises beside the Investor**

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Tuzla
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. **Project Description**

3.1. **Project Outline**

Construction of wastewater treatment plant for dairy farm. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity of farm wastewater treatment plant is 20,000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution in river Spreca, tributary of river Bosna.

3.3. **Status of Project Preparation**

Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**

DOO “Spreca” Kalesija

3.6. **Specific Project Items**
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Tuzla.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Spreca, tributary lake Modrac.

4.4. Primary Effects of Project
The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well. Protection of lake Modrac from pollution.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 2,200,000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 18,000 US$
- for maintenance 26,000 US$
6.3. **Estimate of Revenues**

Through the payment from treated water (0.18 US $/m³ wastewater).

6.4. **Financial Internal Rate of Return (FIRR)**

FIRR has not been calculated.

6.5. **Anticipated/Proposed Funding Scheme**

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Project 4 – Agriculture

Construction of Wastewater Treatment Plant for Dairy Farm “Butmir” Sarajevo
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<th>Date of first setting up:</th>
<th>Date of latest upgrade:</th>
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**Project Title**  
Construction of wastewater treatment plant for dairy farm “Butmir” Sarajevo

**Responsible/Legal Body**

**Authority/Company**  
JVP “Vodoprivreda BiH” Sarajevo

**Name**  
Mr. Faruk Sabeta

**Address**  
Sarajevo

**Telephone**  
++387 71 651 646

**Fax**  
++387 71 664 861

**Project Target**  
Construction of wastewater treatment plant for dairy farm. Reduction of high pollution from agriculture. Protection of underground water from pollution.

**Investment Costs**  
1,900,000 US$

**Status of Project**

**Ongoing/Planned Project,**  
Planned project

**Emerging Concept**

**Language of Project Documents**  
Bosnian
1. **Project Title**
Construction of wastewater treatment plant for dairy farm “Butmir” Sarajevo

2. **Investor Details**

2.1. **Authority/Company**
Name: UPI DD Agriculture property “Butmir” Sarajevo
Address: Sarajevo, Bare 19A
Telephone: ++387 71 454 191
Fax: ++387 71 621 160

2.2. **Contact Persons**
Mr. Lutvo Memic

2.3. **Advisor/Consultant**
Public Water Management Enterprise Vodoprivreda Bosnia and Herzegovina, Sarajevo
Mr. Faruk Sabeta, B. Sc. general manager, phone ++387 71 651646
Institute for Water Resource Development Sarajevo
Mr. Mirza Selimovic B. Sc. manager, phone ++387 71 213858

2.4. **Legal/Financial Status**
Stock company, agriculture property

2.5. **Authority/Company Profile**
Dairy farm, milk production, fodders.
Number of persons employed: 75
Annual budget: 3.000.000 KM (cca. 1.750.000 US$)

2.6. **Planning/Implementing Extent/Capacity of the Investor**
The company does not have planning capacities.
2.7. **Institutions/Enterprises beside the Investor**

Public Water Management Enterprise Bosnia and Herzegovina, Sarajevo
City Council of Sarajevo
Institute for Hydrotechnics of Faculty Civil Engineering in Sarajevo
Institute for Water Resource Development Sarajevo

3. **Project Description**

3.1. **Project Outline**

Construction of wastewater treatment plant for dairy farm. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity of farm wastewater treatment plant is 17,000 p.e.

3.2. **Primary Needs for the Project**

The main aim of the project is to reduce the pollution in river Bosna.

3.3. **Status of Project Preparation**

Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**

The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**

UPI DD Agriculture property “Butmir” Sarajevo

3.6. **Specific Project Items**
4. Project Effects and Interactions

4.1. Public's Expression of Interest
The public opinion of the project is very positive from people, who live in region of Sarajevo.

4.2. Environmental Impact Assessment
The environmental impact assessment is finished.

4.3. Sensitivity of Locality /Receptor
The recipient for the treated wastewater is river Bosna.

4.4. Primary Effects of Project
The project could be characterized as a project of cantonal level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well. Protection of underground water from pollution.

5. Economic Project Justification

5.1. Economic Project Benefits
Higher employment during the construction period as well as during the operation period.
Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)
EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost
The investment costs are preliminary estimated at 1.900.000 US$.

6.2. Estimated Operational Cost
The operational costs are preliminary estimated as follows:
- for personnel 15.000 US$
- for maintenance 23.000 US$
6.3. **Estimate of Revenues**
Through the payment from treated water (0.18 US $/m³ wastewater).

6.4. **Financial Internal Rate of Return (FIRR)**
FIRR has not been calculated.

6.5. **Anticipated/Proposed Funding Scheme**

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Project 5 – Agriculture

Construction of Wastewater Treatment Plant for Dairy and Pigs Breeding Farm Bijeljina
**Project Files**

**Date of first setting up:**

Date of latest upgrade:

**Project Title**

Construction of wastewater treatment plant for dairy and pigs breeding farm Bijeljina.

**Responsible/Legal Body**

**Authority/Company**

Republic Committee for Water Republic Srpska, Banja Luka

**Name**

Dr. Sci. Borislav Jaksic

**Address**

Banja Luka

**Telephone**

++387 58 42058

**Fax**

++387 58 42058

**e-mail**

**Project Target**

Construction of wastewater treatment plant for dairy and pigs breeding farm. Reduction of high pollution from agriculture. Protection of underground water from pollution.

**Investment Costs**

2.000.000 US$

**Status of Project**

Ongoing/Planned Project, Emerging Concept

Planned project

**Language of Project Documents**

Bosnian
1. **Project Title**
Construction of wastewater treatment plant for dairy and pigs breeding farm Bijeljina.

2. **Investor Details**

2.1. **Authority/Company**
Name: DD “Svinjogojska farma” Bijeljina
Address: Bijeljina
Telephone: ++387 57 472 377
Fax: ++387 57 472 377
E-mail:

2.2. **Contact Persons**
No data

2.3. **Advisor/Consultant**
Republic Committee for Water Republic Srpska, Banja Luka
Dr. Sci. Borislav Jaksic, manager, phone ++387 58 42 058

2.4. **Legal/Financial Status**
Stock company

2.5. **Authority/Company Profile**
Livestock farm, dairy, pigs breeding, fodder
Number of persons employed: no data
Annual budget: no data

2.6. **Planning/Implementing Extent/Capacity of the Investor**
No data.

2.7. **Institutions/Enterprises beside the Investor**
Republic Committee for Water Republic Srpska, Banja Luka
City Council of Bijeljina
3. **Project Description**

3.1. **Project Outline**
Construction of wastewater treatment plant for common wastewater from dairy and pigs breeding farm. Treatment plant has primary and secondary treatment with biological part and complete sludge treatment. Capacity farms wastewater treatment plant is 20,000 p.e.

3.2. **Primary Needs for the Project**
The main aim of the project is to reduce the pollution in river Sava and protection underground water.

3.3. **Status of Project Preparation**
Prefeasibility study in progress.
All finished documents are in Bosnian language.

3.4. **Technology Proposed**
The mechanical-biological treatment with anaerobic stabilization of the sludge. Separated nitrification and denitrification processes. The treatment of sludge with the use of biogas and final sludge dewatering.

3.5. **Ownership of Project Site**
DD Farm Bijeljina

3.6. **Specific Project Items**

4. **Project Effects and Interactions**

4.1. **Public's Expression of Interest**
The public opinion of the project is very positive from people, who live in region of Semberija field.

4.2. **Environmental Impact Assessment**
The environmental impact assessment is finished.

4.3. **Sensitivity of Locality /Receptor**
The recipient for the treated wastewater is indirect in river Sava and underground water.
4.4. Primary Effects of Project

The project could be characterized as a project of regional level of importance. The building of the biological part of the treatment plant will further reduce the load of BOD up to 80-90 % and the load of COD up to 70 percent will be reduced as well. Protection of underground water.

5. Economic Project Justification

5.1. Economic Project Benefits

Higher employment during the construction period as well as during the operation period. Improved water quality for agriculture utility and other possibilities (tourism, fishing, recreation etc.).

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

The investment costs are preliminary estimated at 2,000,000 US$.

6.2. Estimated Operational Cost

The operational costs are preliminary estimated as follows:
- for personnel 15,000 US$
- for maintenance 25,000 US$

6.3. Estimate of Revenues

Through the payment from treated water.

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated.
### 6.5. Anticipated/Proposed Funding Scheme

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