DANUBE POLLUTION REDUCTION PROGRAMME

NATIONAL REVIEWS 1998
BULGARIA

PROJECT FILES

MINISTRY OF ENVIRONMENT AND WATER

in cooperation with the

Programme Coordination Unit
UNDP/GEF Assistance

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Preface

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

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

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

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

At a Regional Workshop in Budapest from 27 to 29 January 1998, the national teams and the group of international consultants discussed in detail the methodological approach and the content of the National Reviews to assure coherence of results. Practical work at the national level started in March/April 1998 and results where 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 Review data which is 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 Review 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 **Bulgarian National Review** was prepared under the supervision of the Country Programme Coordinator, **Mr. Nikolai Kouyumdziev**. The authors of the respective parts of the report are:

- Part A : Social and Economic Analysis: **Ms. Ada Bainova**
- Part B : Financing Mechanisms: **Ms. Svoboda Tosheva**
- Part C : Water Quality: **Ms. Marieta Stoimenova**
- Part D : Water Environmental Engineering: **Mr. Ivo Popov**

The Ministry of Environment and Water

The UNDP/GEF Danube Pollution Reduction Programme,

Danube Programme Coordination Unit (DPCU)

P.O.Box 500, 1400 Vienna – Austria

Tel: +43 1 26060 5610

Fax: +43 1 26060 5837

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A. Explanatory Note to the Project Files

The total number of Project Files included in the set is 15. It includes 10 Project Files related to Municipal Hot Spots and 5 to Industrial Hot Spots. The main criterion in elaboration of the project file has been the availability of certain documentation already existing about the proposed projects.

In the updating process of the National Review as well as during the National Planning Workshop a number of ongoing and planned projects have been outlined, but due to fact that either there are no documents about them, i.e. it is still just an idea and the project shall start from zero, or the proposed topic is a matter of strategy; such projects are excluded from the set of Project Files. It does not mean that their realization is less important or not attractive for Bulgaria or for a potential donor.

Below are some comments relevant to different groups of problems but not only to those, which are included in the set of Project Files.

The aim has been to prepare in the first place Project Files for all of the Hot Spots. However it was not possible, because for some of them there were no existing documents. Other attempt for preparation was to include Project Files of each group - agriculture, industry and municipal Hot Spots. Unfortunately, given the stage of agrarian reform in the country and the overall level of information regarding this topic, it was not possible to clearly define Hot Spots for the agricultural sector. It means that this field should be consider as a virgin one and in the relatively close future one can expect a pretty good number of projects related to agriculture and environment. Of course initial study of the field is recommendable to start as soon as possible.

In this set of problems dealing with agriculture it is important also to mention the findings of the National Planning Workshop. The projects identified for the agricultural sector are:

- *Adaptation of the EU methods for assessment of the pollution load from non-point sources;*
- *Development of a hydrometric system for the Karaissen irrigation system;*
- *Restoration of the Belene Island wetland;*
- *Restoration of the Vardim wetland.*

As it can be observed these projects also have the same characteristics mentioned above. In other words there are no existing documents to organize them into a Project File. On the other hand these are obviously pressing problems that require solutions in a very short time, so funding at least for Feasibility studies in the beginning would be very necessary and very welcome. It could be outlined the first one - “Adaptation of EU methods….”, because it can identify a set of urgent problems that require immediate solutions.

The other field, which is close to agriculture, is the erosion that occurs especially on the Danube River itself. Problems are obvious, but to find the right solution a thorough study is necessary including scientific, technical and economic aspects.

The following areas of interest, defined as Hot Spots along the Danube River course were pointed out in our reports:

- *The Danube River bed from km 844 to km 347 is subject to intensive erosion processes, which necessitates regular bathymetric survey.*
- *The Danube River bank at Long Tzibritza Section (km 710) being subject to intensive erosion needs urgent fortification.*
- *The Danube River Bank at km 542 to km 536 – Yantra River estuary being subject to intensive erosion urgently requires fortification.*
- *Restoration of the water regime of the wetlands Persin and Vardin.*
- *Restoration of the biodiversity in the Belene Island.*

The existence of certain repetition of the problematic area only confirms their importance.

Speaking about the industrial sector there are some similarities but also some particular issues. All of the identified Hot Spots are included in a set of Project Files. On the other hand there are some general problems which were not possible to be evaluated. It is well known that in Bulgarian industry there are really good opportunities to obtain very encouraging results implementing new techniques and improvements within the production processes rather than to look for end of pipe solutions. In this context it could be very beneficial if Bulgaria can participate in the UNIDO programme on Transfer of Environmentally Sound Technology (TEST) in the Danube River basin. Implementation of Environmental Management System in the industries and certification for compliance of ISO 14 000 or other similar directives is also necessity.

Other pressing need that could not be organized in Project File is the problem with contaminated industrial sites as a result of activities undertaken in the past. That is problem that deals both with the environmental conditions in the country and also with the process of privatization.

If we consider the results of the National Planning Workshop relevant to the industrial sector the following projects have been considered as a priority:

- *Inventorying past pollution in an upgradeable database;*
- *Remediating past environmental damages in Kremikovtzi (metallurgical plant);*
- *Constructing a WWTP in the sugar factory-Gorna Oriahovitza on the Yantra River;*
- *Completing and putting into operation the WWTP in the pharmaceutical plant - Razgrad on the river Roussenski Lom;*
- *Training of managers on introducing environmental management system in enterprises.*

Again there is a certain overlapping with the Hot Spots defined in the reports, but also some concrete problems are addressed to be solved. The importance of the topic “past environmental damages’ is obvious, so further study, inventory and ranking is really necessary. Training programmes are also important but there was no basis to include the project to the Project Files.

Another very important problem is connected to so called ‘generic hazardous wastes”. Establishment of a system for tracking and monitoring of their generation and management would have a significant impact towards reduction of health and environmental risks.

The major part of the Defined Municipal Hot Spots have been included into the set of Project Files. The ones, which remain out, had nothing existing as a document. That was the only reason not to order them together with the others. It is an interesting fact that all the Hot Spots are WWTP. It reflects the current situation in the country when new waste legislation is under elaboration, so very soon the problems related to the solid waste management will occupy their corresponding place.

For the moment it is most important to look for an optimal solid waste management infrastructure. How to reduce the number of refuse sites and substitutes them by less number of well engineered landfills is a question that needs thorough study. Any assistance in this regard will be very helpful.

Another great problem is the state of the municipal sewerage systems. The level of performance is quite low, the joints are not water tight, so the sewers either drain the areas they cross (increase of the flow transported to WWTPs, weak sewage), or the sewers leak with all the adverse effects caused by this phenomena. This is also a potential field for future projects, which for the moment are in a latent state.

During the National Planning Workshop the following problems have been outlined as a priority:

- *Construction of a solid waste landfill in Pleven on the river Vit;*
- *Construction of MWWTP in Gorna Oriahovitza/Liaskovetz on river Yantra;*
- *Construction of WWTP in Popovo on river Roussenski Lom;*
- *Completion of the sewers in Sofia on river Iskar.*

As in all previous cases there is a repetition of some of the projects, but also certain differences are observed. In this case only structural projects have been suggested, but as in the other cases there is still no basis to include all of them to the Project Files.

Below we provide a list of the Hot Spots as defined in the report. With bold letters are outlined those included in a Project File.

Municipal hot spots

No	Name	River Basin	River	Priority
1	**MWWTP-Gorna Oriahovitza and Liaskovetz**	**Yantra River Basin**	**Yantra River**	**High**
2	**MWWTP-Troyan**	**Ossam River Basin**	**Ossam River**	**High**
3	**MWWTP-Lovetch**	**Ossam River Basin**	**Ossam River**	**High**
4	**MWWTP-Vratza**	**Ogosta River Basin**	**Debnika Leva River**	**High**
5	**MWWTP-Sofia**	**Iskar River Basin**	**Iskar River**	**High**
6	**MWWTP-Sevlievo**	**Yantra River Basin**	**Rossitza River**	**High**
7	**MWWTP-Montana**	**Ogosta River Basin**	**Ogosta River**	**Medium**
8	**MWWTP-Popovo**	**Rusenski Lom River Basin**	**Popovska River**	**Medium**
9	MWWTP-Slivnitza, Kostinbrod, Bojurishte	Iskar River Basin	Blato River	Medium
10	MWWTP-Russe		Danube River	Low
11	**MWWTP-Levski**	**Ossam River Basin**	**Ossam River**	**Low**
12	MWWTP-Svishtov		Danube River	Low
13	MWWTP-Vidin		Danube River	Low
14	MWWTP-Lom		Danube River	Low
15	**MWWTP-Silistra**		**Danube River**	**Low**

Industrial hot spots

No	Name	River Basin	River	Priority
1	**IWWTP-Gorna Oriahovitza**	**Yantra River Basin**	**Yantra River**	**High**
2	**IWWTP for Fertilizer plant "Chimko"-Vratza**	**Ogosta River Basin**	**Ogosta River**	**High**
3	**IWWTP for Pharmaceutical plant "Antibiotic" Razgrad**	**Rusenski Lom River Basin**	**Beli Lom River**	**High**
4	**IWWTP-for Metallurgical plant Kremikovtsi**	**Iskar River Basin**	**Lessnovska River**	**Medium**
5	**IWWTP- for Elatsite Mining**	**Iskar River Basin**	**Malak Iskar River**	**Low**

Concluding it is important to note that Project Files provide a good basis for an initial orientation about the part of the problems that need solution. At the same time it is important to underline that some very important and pressing problems could not be included into a Project File due to the reasons mentioned above. It means that every real case must be analyzed carefully independently of the fact whether the project is organized into a file or not. Bulgaria needs assistance on its way for accession to EC. The Danube River Pollution Reduction Programme as well as other similar programmes could be a real tool for that.

B. Project Files of the Municipal Hot Spots

B.1. Municipal Wastewater Treatment Plant -Lovetch

Date of first setting up: 15.07.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant -Lovetch
Responsible/Legal Body	
Authority/Company	Municipality of Lovetch
Name	Svetoslav Ivanov - General manager of Water Company
Address	Lovetch
Telephone	359-68-24160
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 60 000 inhabitants living in the area. This includes the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=347t/a; COD=798 t/a; TN=277 t/a; TP=28 t/a;
Investment Costs	Capital Investments - 17,826,600 USD O & M costs - 1,145,224 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	feasibility study, planned, High priority project
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant - Lovetch

2. Investor Details

2.1. Authority/Company

Municipality of Lovetch -Public authority
Name: Svetoslav Ivanov
Address: Lovetch
Telephone: 359-68-24160
Fax:
e-mail:

2.2. Contact Persons

Svetoslav Ivanov

2.3. Advisor/Consultant

Municipality of Lovetch, "Vodokanalingenering"

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Total population 47 477; Lovetch-55% sewered; Qav=29 600 m3/day; raw water load - 79 TEGW; BOD5=160 mg/l;

COD=4020 t/a; TN=454 t/a; TP=30 t/a;

This is a structural type of project including construction of the delivery sewers, MWTP (mechanical and biological treatment stabilization of sludges). Construction is not started. It is located in Osam river basin. The terrain is owned by the Municipally of Lovetch.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 60 000 inhabitants living in the area. This includes the combination of emissions reduction and protection of potable ground water sources. It addresses to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD_5=1,382 t/a;

TN=177 t/a;

TP=2 t/a;

3.3. Status of Project Preparation

The design has been elaborated for the WWTP in Lovetch in 1973. In 1994 it has been worked out pre-investigation design for WWTP has been worked out in Lovetch in accordance with the environmental programme for protection of the waters of the Danube River valley.

3.4. Technology Proposed

- Standard elements
  - screens;
  - grid chamber;
  - primary radial settling tanks;
  - aeration tank;
  - secondary radial setting tank;
  - chlorination;
  - contact tank;
  - sludge thickener;
  - mechanical dewatering of sludges by means of filter-press;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Lovetech

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in municipality has been held.

4.2. Environmental Impact Assessment

There is an accepted EIA for the project.

4.3. Sensitivity of Locality/Receptor

The discharge point of the wastewater has a weak H2S odor at low water levels.

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Osam River downstream the towns of Lovetch. Realization of the project will reduce risk for about 60 000 inhabitants specially for those who takes potable water from the river terrace downstream and will permit irrigation, recreational activities and creation of watering places for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 300 people on average will be employed. In the normal operation about 40 people will be employed on full time basis.

5.2 Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

➢ Estimated investment costs:	-	17,826,600 USD
➢ Allocation of capital costs:		
➢ construction and machinery	-	16,043,940 USD
➢ planning and supervision	-	1,782,660 USD
➢ total costs	-	17,826,600 USD
➢ Year of cost estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 916,179 USD
- Repair and replacement costs - 229,045 USD
- Total operational costs - 1,145,224 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 4.80 BLV (about 0.13 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

B.2. Municipal Wastewater Treatment Plant - Vratza

Date of first setting up: 09.09.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant - Vratza
Responsible/Legal Body	
Authority/Company	Municipality of Vratza
Name	Rosen Dudushki - General manager of Water Company
Address	Vratza
Telephone	359-92-61388
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 80 000 inhabitants living in the area. This includes the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=237 t/a; COD=474 t/a; TN=221 t/a; TP=24 t/a;
Investment Costs	Capital Investments - 7,588,350 USD O & M costs - 1,145,224 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	ongoing, high priority project
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Vratza

2. Investor Details

2.1. Authority/Company

Public authority or private company
Name: Rosen Dudushki
Address: Vratza
Telephone: 359-92-61388
Fax:
e-mail:

2.2. Contact Persons

Rosen Dudushki

2.3. Advisor/Consultant

Municipality of Vratza, "Vodokanalingenering", Sofia, Bulgaria

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Total population 76 576; Vratza-80% sewered; Qav=37 400 m3/day; raw water load - 112 TEGW; WWTP under operation; BOD5=20 mg/l;

TN=15 mg/l; TP=3.4 mg/l;

This is a structural type of project including construction of the delivery sewers, MWTP (mechanical, biological and sludge treatment). It is located in Ogosta river basin, Leva river Sub-basin and Botunya river basin.

The terrain is owned by the Municipality of Vratza.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 80 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD5=782 t/a;

TN=131 t/a;

TP=22 t/a;

3.3. Status of Project Preparation

Description of the actual status of project studies and reports

The MWTP is in operation

3.4. Technology Proposed

- Standard elements
  - rough screens;
  - fine screens;
  - horizontal grid chamber;
  - primary radial settling tanks;
  - aeration tank with surface aeration system;
  - secondary radial setting tanks;
  - mixing tank for chlorinating;
  - contact tank;
  - sludge thickener;
  - methane-tanks;
  - drying beds;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Vratza

3.6. Specific Project Items

Forthcoming completion of sewerage collector discharging waters from “Himco” Vratza to the main town sewerage collector.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of EIA procedure a public hearing in municipality was held.

4.2. Environmental Impact Assessment

ongoing EIA

4.3. Sensitivity of Locality/Receptor

The Ogosta has been classified as Third category water body in this region, but the water is unsuitable for irrigation purposes because of its high organic load. If this project is implemented, it will reduce organic pollution sufficiently that the water may be used for irrigation downstream

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Ogosta River downstream the town of Vratza.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 50 people on average will be employed. In the normal operation about 25 people will be employed on a full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 7,588,350 USD
- Allocation of capital costs:
  - construction and machinery - 6,829,515 USD
  - planning and supervision - 758,835 USD
  - total costs - 7,588,350 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 916,179 USD
- Repair and replacement costs - 229,045 USD
- Total operational costs - 1,145,224 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m3 treated water is 164 BLV (about 0.10 USD).

- Year of estimate - 1998
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

B.3. Municipal Wastewater Treatment Plant - Sofia

Date of first setting up: 01.10.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant -Sofia
Responsible/Legal Body	Municipality of Sofia -Public authority
Authority/Company	Municipality of Sofia
Name	Ivan Gechev- Deputy Mayor
Address	1000 Sofia; 33 Moskovska Str.
Telephone	+359 1 987 95 23 or 981 45 16
Fax	
e-mail	
Project Target	This refers to the combination of circumstances that together create the problem, which defines the hot spot. This include the combination of emissions discharge and a protection of surface water. Remaining Pollution: : BOD_5=4106 t/a; COD=8499 t/a; TN=3011 t/a; TP=205 t/a;
Investment Costs	Capital Investments - 105,816,150 USD O & M costs - 6,797,886 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	ongoing, High priority project
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Sofia

2. Investor Details

2.1. Authority/Company

Municipality of Sofia - Public authority
Name: Name: Ivan Gechev- Deputy Mayor
Address: 1000 Sofia; 33 Moskovska Str.
Telephone: +359 1 987 95 23 or 981 45 16
Fax: +359 1 981 02 71
e-mail:

Water Supply & Sewerage Co.
Name: Nikolay Berov
Address: 1000 Sofia; 48 Alabin St.;
Telephone: +359-2-884 334
Fax: +359 2 873 613
e-mail: VIKBOSS@mb.bia-bg.com

2.2. Contact Persons

2.3. Advisor/Consultant

Municipality of Sofia, “Vodokanalingenering” and “Bora” company

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Total population 1 116 823; Sofia-87% sewered; Qav=642 200 m3/day; raw water load - 1 137 TEGW; BOD5=15 mg/l; TN=1 873 t/a; TP= 834 t/a;

This is a structural type of project including construction of the delivery sewers, MWTP (mechanical, biological and sludge treatment). It is located in Iskar river basin. The terrain is owned by the Municipality of Sofia.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 1 110 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section.

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD5=5 823 t/a;

TN=145 t/a;

TP=629 t/a;

3.3. Status of Project Preparation

Description of the actual status of project studies and reports

The MWTP is in operation

3.4. Technology Proposed

- Standard elements
  - I. Mechanical treatment
    - fine screens;
    - horizontal settling tanks with aeration;
    - primary radial settling tanks;
  - II. Biological treatment
    - aeration tank;
    - secondary radial settling tanks;
    - contact tanks with chlorine station;
  - III. Anaerobic stabilization of sludges
    - sludge thickener;
    - pumping station;
    - methane-tanks;
  - IV. Mechanical dewatering of sludges
    - sludge thickener for stabilized sludges;
    - vacuum-filter installation;
  - V. Natural dewatering of sludges
    - drying beds;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Vratza

3.6. Specific Project Items

MWTP is constructed 100%.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in municipality was held.

4.2. Environmental Impact Assessment

ongoing EIA - EIA report for the rehabilitation of the sludge treatment facilities is already approved

4.3. Sensitivity of Locality/Receptor

Periodically higher values of the indicators N-NH4, N-NO2 and petroleum products have been registered

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Iskar River downstream the Sofia.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 400 people on average will be employed. In the normal operation about 45 people will be employed on full time basis..

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 105,816,150 USD
- Allocation of capital costs:
- construction and machinery - 95,234,535 USD
- planning and supervision - 10,581,615 USD
- total costs - 105,816,150 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 5,438,309 USD
- Repair and replacement costs - 1,359,577 USD
- Total operational costs - 6,797,886 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m3 treated water is 2 BLV (about 0.07 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

EU PHARE and EBRD will fund the rehabilitation and upgrading of the SWWTP (Wastewater line), based on the request of the Sofia Municipality. Project for the preparation of Design & Preparation of Tender Documents for Sofia WWTP is on-going and funded by EU PHARE.

B.4. Municipal Wastewater Treatment Plant - Sevlievo

Date of first setting up: 10.10.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant -Sevlievo
Responsible/Legal Body	
Authority/Company	Municipality of Sevlievo
Name	Yovko Yovkov – Mayor
Address	5400 Sevlievo, 17 Svoboda Sq.
Telephone	+359 675 4220
Fax	+359 675 5538
e-mail	
Project Target	To reduce the health and environmental risk for about 25 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=110 t/a; COD=218 t/a; TN=102 t/a; TP=11 t/a;
Investment Costs	Capital Investments - 8,913,300 USD O & M costs - 572,612 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	feasibility and Feasibility study already done, detailed design. It is a high priority project - planned
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant-Sevlievo

2. Investor Details

2.1. Authority/Company

Municipality of Sevlievo
Name: Yovko Yovkov – Mayor
Address: 5400 Sevlievo, 17 Svoboda Sq.
Telephone: +359 675 4220
Fax: +359 675 5538
e-mail:

2.2. Contact Persons

Stefan Stefanov - Environmental expert

phone:

2.3. Advisor/Consultant

Municipality of Sevlievo, "Vodokanalingenering", Sofia, Bulgaria

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater.

Total pollution 25435; 80% sewered; Qav=14800 m3/day; raw water load - 54 TEGW; BOD5=1188 t/a; COD=2280 t/a; TN=184 t/a; TP=26 t/a;

This is a structural type of project (construction of treatment plant) including construction of the delivery sewers, MWTP (mechanical, biological treatment, sludge treatment and disinfection). It is located in Yantra river basin and Rossitza river Sub-basin.

The terrain is owned by the Municipality of Sevlievo.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD5=1,078 t/a;

TN=82 t/a;

TP=15 t/a;

3.3. Status of Project Preparation

Description of the actual status of project studies and reports

- feasibility level and detailed design

3.4. Technology Proposed

- Standard elements
  - I. Mechanical treatment
    - screens;
    - settling tanks;
    - primary horizontal settling tanks;
  - II. Biological treatment
    - aeration tanks with intensive aeration;
    - secondary radial settling tanks;
  - III. Disinfection
    - mixing tank;
    - contact tanks;
  - IV. Sludge treatment
    - sludge thickener;
    - coal open digester;
    - drying beds;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Sevlievo

3.6. Specific Project Items

The MWTP is not constructed

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in the municipality was held.

4.2. Environmental Impact Assessment

There is an accepted report for EIA for the project.

4.3. Sensitivity of Locality /Receptor

The Rossitza has been classified as Third category water body in this region, but the water is unsuitable for irrigation purposes because of its high organic load. If this project is implemented, it will reduce organic pollution sufficiently that the water may be used for irrigation downstream.

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Yantra River downstream the town of Sevlievo. Realization of the project will reduce risk for about 25 000 inhabitants specially for those who takes potable water from the river terrace downstream and will permit irrigation, recreational activities and creation of watering places for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 250 people on average will be employed. In the normal operation about 30 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

➢ Estimated investment costs:	-	8,913,300 USD
➢ Allocation of capital costs:		
➢ construction and machinery	-	8,021,970 USD
➢ planning and supervision	-	891,330 USD
➢ total costs	-	8,913,300 USD
➢ Year of cost estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 458,090 USD
- Repair and replacement costs - 114,522 USD
- Total operational costs - 572,612 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 4.30 BLV (about 0.15 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

B.5. Municipal Wastewater Treatment Plant - Montana

Date of first setting up: Date of latest upgrade:

Project Title	MWTP-Montana
Responsible/Legal Body	
Authority/Company	Municipality of Montana
Name	
Address	
Telephone	
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=246 t/a; COD=543 t/a; TN=246 t/a; TP=43 t/a;
Investment Costs	Capital investments - 7,947,050 USD O& M costs - 1,970,116 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Feasibility study already done. It is medium priority project - planned
Language of Project Documents	feasibility study in Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Montana

2. Investor Details

2.1. Authority/Company

Municipality of Montana - Public authority
Name:
Address:
Telephone:
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

.Municipality of Montana, "Bora", Ltd.

2.3. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

- Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Population 52 670 cap; 90% sewered; Qav = 29 800m3/day; raw water load 124 TEGW; BOD = 250 mg/l, 2 719 t/a; SS = 260 mg/l, 2 828 t/a; TN = 41 mg/l, 446 t/a; TP = 6 mg/l, 65t/a.

Project consists of elaboration of final design and construction of MWTP for Montana. This is a structural type of project including construction of the delivery sewers, MWTP (mechanical treatment, biological treatment and sludge treatment). It is located in Ogosta river basin. The beneficiary is the Municipality of Montana as well as the industries, especially the plants foodstuffs sector (milk and meat processing industry and poltry slaughterhouses). Currently a procedure for changing of the land use from agricultural to industrial is ongoing. The terrain is owned by the Municipality of Montana.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD5= 2.473 t/a

TN=200 t/a

TP=22 t/a

3.3. Status of Project Preparation

Feasibility study has been performed in 1992.

3.4. Technology Proposed

I. Mechanical stadge
   - Screens;
   - Grit Chamber
   - Primary radial settling tanks;

II. Biological treatment
   - Aeration Tanks;
   - Secondary radial settling tanks

III. Sludge treatment
   - Heated digesters (methane-tanks);
   - Mechanical dewatering with filter-press

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Montana

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in the municipalities was held.

4.2. Environmental Impact Assessment

There is an accepted report for EIA for the project.

4.3. Sensitivity of Locality/Receptor

Ogosta River is classified as Third category receiving body in this region, but the water is unsuitable for irrigation purposes because of its high organic load.

4.4. Primary Effects of Project

This is a medium priority project of local importance given the fact it solves environmental problems of a high populated region and will reduce the adverse impact for the town of Montana situated on the Ogosta River upstream. Realization of the project will reduce risk for about 70 000 inhabitants especially for those using the river for potable water and will permit irrigation , recreational activities and watering place for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 280 people in average will be employed. In the normal operation about 35 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

➢ Estimated investment costs:	-	17,.947,050 USD
➢ Allocation of capital cost:	-	1,794,705 USD
➢ construction and machinery	-	16,152,345 USD
➢ planning and supervision	-	3,066,690 USD
➢ total costs	-	17,.947,050 USD
➢ Year of cost estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 916,179 USD
- Repair and replacement costs - 229,045 USD
- Total operational costs - 1,145,224 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m3 treated water is 6.5 BLV (about 0.18 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation

B.6. Municipal Wastewater Treatment Plant - Popovo

Date of first setting up: Date of latest upgrade:

Project Title	MWTP-Popovo
Responsible/Legal Body	
Authority/Company	Municipality of Popovo
Name	
Address	
Telephone	
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 26000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=465 t/a; COD=1060 t/a; TN=372 t/a; TP=37 t/a;
Investment Costs	Capital Investments - 8,733,450 USD O & M costs - 561,058 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Pre-feasibility and Feasibility study already done. It is medium priority project
Language of Project Documents	feasibility study in Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Popovo

2. Investor Details

2.1. Authority/Company

Municipality of Popovo - Public authority
Name:
Address:
Telephone:
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

Municipality of Popovo, "Vodokanalingenering"

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

- Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Total pollution 19873; 95% sewered; Qav=14500 m3/day; raw water load - 60 TEGW; BOD5=1323 t/a; COD=2779 t/a; TN=138 t/a; TP=31 t/a;

Project consists of elaboration of final design and construction of MWTP for Popovo. This is a structural type of project including construction of the delivery sewers, MWTP (mechanical treatment, biological treatment, stabilization of sludges). It is located in Russenski Lom River basin, Cherni Lom Sub-basin, Popovska. The beneficiaries are the Municipally of Popovo as well as the

industries, especially the plants foodstuffs sector (canning factory, milk and meat processing, production of vegetable oils). Currently a procedure for changing of the land use from agricultural to industrial is ongoing. The terrain is owned by the Municipality of Popovo.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 26000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced pollution:

BOD5= 1.235 t/a

TN=50 t/a

TP=25 t/a

3.3. Status of Project Preparation

There is partially completed detailed design for mechanical stage excluding sludge treatment. Dedicated and expropriated area for WWTP site exists.

3.4. Technology Proposed

- Standard elements
  - Entrance pit;
  - Rough and fine screens;
  - Horizontal grit chamber with aeration;
  - Primary radial settling tanks;
  - Aeration tanks for biological treatment;
  - Secondary radial settling tanks;
  - Contact tanks;
  - Anaerobic stabilizing station of the sludges in open digesters;
  - Drying beds;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Popovo

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in the municipality was held.

4.2. Environmental Impact Assessment

There is an EIA report, which proposes change of the site, in order to reduce the construction and operation costs of the collector and the Sewerage Pumping Station for transfer of water through Cherni Lom River

4.3. Sensitivity of Locality/Receptor

The industrial plants from the food industry (caning factory, milk and meat processing, production of vegetable oils) have a higher emission loads of organic pollutants ($N\text{-}NH_4$, $N\text{-}NO_2$, $P\text{-}PO_4$).

4.4. Primary Effects of Project

This is a medium priority project of local importance given the fact it solves environmental problems of a high populated region and will reduce the adverse impact for the town of Popovo situated on the Russenski Lom River basin, Cherni Lom Sub-basin. Realization of the project will reduce risk for about 26 000 inhabitants especially for those using the river for potable water and will permit irrigation , recreational activities and watering place for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 200 people on average will be employed. In the normal operation about 30 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated

6. Financial Viability

6.1. Estimated Investment Cost

➢ Estimated investment costs:	-	8,733,450 USD
➢ Allocation of capital cost:		
➢ construction and machinery	-	7,860,105 USD
➢ planning and supervision	-	873,345 USD
➢ total costs	-	8,733,450 USD
➢ Year of cost estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 448,846 USD
- Repair and replacement cost - 112,212 USD
- Total operational cost - 561,058 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 6.86 BLV (about 0.19 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

B.7. Municipal Wastewater Treatment Plant - Troyan

Date of first setting up: 20.08.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant -Troyan
Responsible/Legal Body	
Authority/Company	Municipality of Troyan
Name	Ivan Dudev - General manager of Water Company
Address	Troyan -
Telephone	359-670-22164
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for potable water supply and irrigation of the area between the towns of Troyan and Lovetch. Addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=219 t/a; COD=464 t/a; TN=219 t/a; TP=22 t/a;
Investment Costs	Capital Investments - 16,983,450 USD O & M costs - 1,091,058 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	feasibility study and partially completed and final design , ongoing partially constructed, High priority project
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Troyan

2. Investor Details

2.1. Authority/Company

Public authority or private company
Name: Ivan Dudev
Address: Troyan
Telephone: 359-670-22164
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

Municipality of Troyan, "Vodokanalingenering", Sofia

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Total population 24 721; Troyan-80% sewered; Qav=28 200 m3/day; raw water load - 94 TEGW; BOD5=200 mg/l; SS=220 mg/l; COD=4 460 t/a; TN=298 t/a; TP=35 t/a;

Project consists of elaboration of final design and construction of MWTP for Troyan. This is a structural type of project including construction of treatment plant. In the project are included three stages of treatment - mechanical treatment and two stages biological. It is located in Osam river basin and Beli Osam Sub-basin. The terrain is owned by the Municipality of Troyan.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for potable water supply and irrigation of the area between the towns of Troyan and Lovetch. Addressed to a Hot Spot and solves a problem in a contaminated river section.

Reduced pollution:

BOD5=1,840 t/a;

TN=80 t/a;

TP=13 t/a;

3.3. Status of Project Preparation

Description of the actual status of project studies and reports

final design and part of construction is already carried out

3.4. Technology Proposed

I. Stage “A”
- overfall and entrance pit;
- screen;
- grid chamber;;
- primary radial settling tanks;
- coal open digester;
- homogenizer for digested sludges;
- facility mechanical dewatering of sludges;
- drying beds;

II. Stage “B”
- aeration tank
- secondary radial settling tanks;
- contact tank;
- sludge thickener;
- coal open digester;
- mechanical dewatering of sludges;

III. Stage “C”
- aeration tank with nitrification and denitrification;
- secondary radial settling tanks;
- administration building;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Troyan

3.6. Specific Project Items

Completion of main sewerage collector.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in municipality was held.

4.2. Environmental Impact Assessment

There is an accepted EIA for the project.

4.3. Sensitivity of Locality/Receptor

Periodically coloration of the waters is observed after the inflow of wastewater from the town of Troyan, as well as H_2S odor.

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Osam River downstream the town of Troyan. Realization of the project will reduce risk for about 30 000 inhabitants specially for those who takes potable water from the river terrace downstream and will permit irrigation, recreational activities and creation of watering places for animals..

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 250 people on average will be employed. In the normal operation about 40 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 16,983,450 USD
- Allocation of capital costs:
- construction and machinery - 15,285,105 USD
- planning and supervision - 1,698,345 USD
- total costs - 16,983,450 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 872,846 USD
- Repair and replacement costs - 218,212 USD
- Total operational costs - 1,091,058 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m3 treated water is 2.30 BLV (about 0.08 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for the project implementation.

B.8. Municipal Wastewater Treatment Plant - Silistra

Date of first setting up: 01.09.1998 Date of latest upgrade:

Project Title	Municipal Wastewater Treatment Plant –Silistra
Responsible/Legal Body	
Authority/Company	Municipality of Silistra
Name	
Address	
Telephone	
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 48 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section preventing direct contamination of Danube river: BOD_5=422 t/a; COD=971 t/a; TN=63 t/a; TP=4 t/a;
Investment Costs	Capital Investments - 4,596,200 USD O & M costs - 483,070 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Feasibility study and final design , planned, Low priority project
Language of Project Documents	Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant - Silistra

2. Investor Details

2.1. Authority/Company

Municipality of Silistra -Public authority
Name:
Address:
Telephone:
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

Municipality of Silistra and "Vodokanalingenering", Sofia, Bulgaria

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater.

Total pollution 47530; 70% sewered; Qav=12850 m3/day; raw water load - 43 TEGW; BOD5=938 t/a; COD=2157 t/a; TN=84 t/a; TP=16t/a;

This is a structural type of project including construction of the delivery sewers, MWTP (mechanical, biological, sludge treatment and disinfection). It is located in Danube river basin. The terrain is owned by the Municipality of Silistra.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 48 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section.

Considerable improvement of the aquatic environment is also expected.

Reduced Pollution:

BOD5=516 t/a;

TN=22 t/a;

TP=12 t/a;

3.3. Status of Project Preparation

Description of the actual status of project studies and reports

Feasibility study and detailed design.

Feasibility study has been performed by Vodokanalengineering in Bulgarian

3.4. Technology Proposed

I. Mechanical treatment
- Screens;
- Grit Chamber;

II. Biological treatment
- Aeration tanks with intensive aeration;
- Secondary radial settling tanks;

III. Disinfection
- Contact tanks;

IV. Sludge treatment
- Sludge silo;
- Filter-press;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Silistra

3.6. Specific Project Items

The construction of MWTP has not started.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in municipality was held.

4.2. Environmental Impact Assessment

There is an accepted report for EIA for the project

4.3. Sensitivity of Locality /Receptor

The Danube River has been classified as Third category water body in this region.

4.4. Primary Effects of Project

This a low priority project. This refers to the combination of circumstances that together create the problem, which defines the hot spot. Construction of a WWTP will improve sanitary conditions for local people, as well as for the Danube River itself.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 200 people on average will be employed. In the normal operation about 30 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 4,596,200 USD
- Allocation of capital costs:
- construction and machinery - 4,136,580 USD
- planning and supervision - 459,620 USD
- total costs - 4,596,200 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 386,456 USD
- Repair and replacement costs - 96,614 USD
- Total operational costs - 483,070 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 7.50 BLV (about 0.26 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

B.9. Municipal Wastewater Treatment Plant - Levski

Date of first setting up:26.09.1998 Date of latest upgrade:

Project Title	MWTP-Levski
Responsible/Legal Body	
Authority/Company	Municipality of Levski
Name	
Address	
Telephone	
Fax	
e-mail	
Project Target	To reduce the health and environmental risk for about 13 067 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution BOD_5=59.3 t/a TN = 8 t/a P = 18.2 t/a
Investment Costs	Capital investments - 10,260,630 USD O&M Costs - 978,615 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Feasibility study already done. It is low priority project – planned
Language of Project Documents	Feasibility study in Bulgarian

1. Project Title

Municipal Wastewater Treatment Plant for Levski

2. Investor Details

2.1. Authority/Company

Municipality of Levski - Public authority
Name:
Address:
Telephone:
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

"Vodokanalingenering"

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

- Municipal Administration

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Municipality are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is combination of domestic and industrial wastewater. Population 13 067cap. 80% sewered; 90% of the population is connected to sewerage; Qav = 16 250 m3/day; 5 931x 103 m3/year; BOD5 = 200 mg/l; BOD5 row water - 1186 t/year, 60.20 TEGW; SSM = 200 mg/l, 1186 t/year; TN = 27 mg/l, 160 t/year; NH4-N = 160 t/year; TP = 4.8 mg/l, 28 t/year.

Project consists of elaboration of final design and construction of MWTP for Levski. This is a structural type of project including construction of the delivery sewers, MWTP (mechanical treatment, biological treatment, disinfection and sludge treatment). It is located in Osam river basin. The beneficiary is the

Municipality of Levski as well as the industries, especially the food industrial plants(dairy, meat processing and poultry slaughterhouse). Currently a procedure for changing of the land use from agricultural to industrial is ongoing. The terrain is owned by the Municipality of Levski.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Reduced Pollution;

BOD5= 1,128 t/a

TN= 152 t/a

TP= 9.8 t/a

3.3. Status of Project Preparation

Final design is not completed due to lack of funding.

3.4. Technology Proposed

- Standard elements
  - I. Mechanical treatment
    - Screens;
    - Grit chambers
    - Primary horizontal settling tanks;
  - II. Biological treatment
    - Aeration tanks;
    - Secondary radial settling tanks;
  - III. Disinfection
    - Mixing tank;
    - Contact tanks;
  - IV. Sludge treatment
    - Sludge thickener;
    - Cool open digester;
    - Drying beds;

3.5. Ownership of Project Site

The terrain is owned by the Municipality of Levski

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in the municipality of Levski was held.

4.2. Environmental Impact Assessment

There is an accepted EIA for the project

4.3. Sensitivity of Locality/Receptor

The Osam has been classified as Third category receiving body in this region, but the water is unsuitable for irrigation purposes because of its high organic load. If this project is implemented, it will reduce organic pollution sufficiently that the water may be used for irrigation downstream.

4.4. Primary Effects of Project

This is a low priority project of local importance given the fact that it solves environmental problems of that region and will reduce the adverse impact for a large section of Osam river basin the towns of Levski. Realization of the project will reduce risk for about 13 000 inhabitants specially for those who takes potable water from the river terrace downstream and will permit irrigation, recreational activities and creation of watering places for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 180 people in average will be employed. In the normal operation about 25 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 10,260,630 USD
- Allocation of capital costs:
- construction and machinery - 9,234,567 USD
- planning and supervision - 1,026,063 USD
- total costs - 10,260,630 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 782,892 USD
- Repair and replacement costs - 195,723 USD
- Total operational costs - 978,615 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is360 BLV (about 0.22 USD).

- Year of estimate - 1998
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation

C. Project Files of the Industrial Hot Spots

C.1. Industrial Wastewater Treatment Plant - Sugar Factory Gorna Oriahovitza

Date of first setting up:30.09.1998 Date of latest upgrade:

Project Title	IWWTP Sugar Factory Gorna Oriahovitza
Responsible/Legal Body	
Authority/Company	Gorna Oriahovitza-"Sugar and Alcohol Factory" (SAF)
Name	Rumen Ivanov - Technical Managing Director:
Address	29 Sv. kn. Boris I str. 5100 Gorna Oryahovitza
Telephone	+359 (0)618 416 10
Fax	+359 (0)618 417 00
e-mail	
Project Target	To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section Remaining Pollution: BOD_5=340 t/a; TN=120 t/a; TP=0.03 t/a; SS=205 t/a;
Investment Costs	Capital Investment - 3,233,617 USD O& M costs - 306,504 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	High priority project, planned
Language of Project Documents	Pre-Feasibility study performed by CDM in English. The rest of the documents are in Bulgarian

1. Project Title

Industrial Wastewater Treatment Plant for Sugar and Alcohol Factory -Gorna Oriahovitza

2. Investor Details

2.1. Authority/Company

State owned company.
Name: Rumen Ivanov - Technical Managing Director
Address: 29 Sv.kn. Boris I str. 5100 Gorna Oryahovitza
Telephone: +359 (0)618 416 10
Fax: +359 (0)618 417 00
e-mail:

2.2. Contact Persons

Rumen Ivanov

2.3. Advisor/Consultant

"Vodokanalingenering" , Sofia, Bulgaria
Camp Dresser & McKee International, INC. Boston, USA within the frame of Environmental Health Project (EHP) financed by USAID.

2.4. Legal/Financial Status

Joint Stock company, owned by the State.

2.5. Authority/Company Profile

The company is a large industrial company producing sugar based on sugar beet and includes also Alcohol Production Plant.

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the company are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The sugar and alcohol industrial wastewater is highly polluted by organics. The variations are in a wide range during the day and during the year, depending of the type and the quantity of the production and the used raw material. Currently the plant is working with the half of its nominal capacity.
Qav=10,000 - 34,000 m3/d; BOD5= 6,800 t/a; TN = 300 t/a; TP = 0.55 t/a

The project consists of elaboration of final design and construction of IWWTP. It is located in Yantra River basin. Beneficiary is the company but also the Municipalities of Gorna Oryahovitza and Lyaskovetz. There is a site for the plant owned by the company.

3.2. Primary Needs for the Project

To reduce the health and environmental risk for about 70 000 inhabitants living in the area. This include the combination of emissions reduction and protection of potable ground water sources. It is addressed to a Hot Spot and solves a problem in a contaminated river section

Considerable improvement of the aquatic environment is also expected

Reduced Pollution:

BOD5=6,460 t/a

TN = 180 t/a

P = 0.5 t/a

3.3. Status of Project Preparation

Pre-feasibility Study has been performed by CDM International within EHP project. It is available also in English. Feasibility study has been performed too by Vodokanalengineering, but only in Bulgarian.

3.4. Technology Proposed

There are two different wastewater streams - so called “Shlempa”, i.e. residues of the materials after distillation and the rest of the wastewater.

The first wastewater stream will be treated by means of thickening and evaporation, which is expected to reduce the emissions about 10 times. The rest of the water will pass trough equalizing and sedimentation.

3.5. Ownership of Project Site

The proposed IWWTP will be installed at a site, which is owned by the company.

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public’s Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in both municipalities was held.

4.2. Environmental Impact Assessment

There is an accepted EIA for the project.

4.3. Sensitivity of Locality/Receptor

Yantra River is classified as Third category receiving body in this section but the water is not suitable for irrigation due to the high organic load. At the discharging point the river water is colored in dark brown and smell very characteristically including of H_2S.

4.4. Primary Effects of Project

This is a high priority project of regional importance given the fact that it solves environmental problems of a high populated region of the country and will reduce the adverse impact for a large section of Yantra River downstream the towns of Gorna Oryahovitza and Lyaskovetz. Realization of the project will reduce risk for about 70 000 inhabitants specially for those who takes potable water from the river terrace downstream and will permit irrigation, recreational activities and creation of watering places for animals.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 300 people on average will be employed. In the normal operation about 45 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 3,233,617 USD
- Allocation of capital costs:
- construction and machinery - 2,909,889 USD
- planning and supervision - 323,321 USD
- total costs - 3,233,210 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 245,204 USD
- Repair and replacement costs - 61,300 USD
- Total operational costs - 306,504 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 82 BLV (about 0.05 USD).

- Year of estimate - 1998
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

C.2. Industrial Wastewater Treatment Plant - Fertilizer plant "CHIMKO" Vratza

Date of first setting up:28.09.1998 Date of latest upgrade:

Project Title	Industrial Wastewater Treatment Plant for Fertilizer plant "CHIMKO" Vratza
Responsible/Legal Body	
Authority/Company	Vratza "CHIMKO"
Name	
Address	
Telephone	
Fax	
e-mail	
Project Target	To reduce inorganic chemical pollution, especially nitrogen compounds and to limit the risk for the water use downstream of the discharge point. Remaining Pollution: BOD_5=3 t/a; TN=157.5 t/a; TP=0.6 t/a;
Investment Costs	Capital investment - 7,149,912 USD O& M costs - 663,920 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	High priority project, emerging concept; only very preliminary studies have been carried out
Language of Project Documents	No documents in English available

1. Project Title

Industrial Wastewater Treatment Plant “CHIMKO” Vratza

2. Investor Details

2.1. Authority/Company

State owned company in process of privatization
Name: Ivan Isaev - Senior Environmental Expert
Address: Vratza, CHIMKO
Telephone: +359 (0)92 222 71/ext.2561/
Fax:
e-mail:

2.2. Contact Persons

2.3. Advisor/Consultant

Vodokanalengineering, DEKO Co.

2.4. Legal/Financial Status

Joint Stock company state owned in process of privatization

2.5. Authority/Company Profile

Chemical plant, producing ammonia, carbamide, fertilizers.

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of CHIMKO are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is of industrial nature. Qav=15,000-24,000 m3/d;
BOD5=5-20 mg/l, 25 t/a; SS=119.6 t/a; TN=20-270 mg/l, 242 t/a;
P=3.6 t/a
Project consists of study, designing and construction of IWWTP for CHIMKO Vratza. This is a structural type of project. It is located at Lewa River, Dubnica River sub-basin, Ogosta river basin. There is no site allocated for the purpose of construction of IWWTP.

3.2. Primary Needs for the Project

To reduce the presence of ammonia in the river water as well as SS and petroleum products. Limitation of adverse effects for downstream users of water.

Reduced Pollution:

BOD5=22 t/a;

TN=85 t/a;

TP=3 t/a;

3.3. Status of Project Preparation

Pre-feasibility study

All documents in Bulgarian

3.4. Technology Proposed

The main processes are as follows:

- equalizing
- neutralization
- reversed osmosis
- local settling tanks
- local yon exchange columns

It is considered that there are considerable potential in reducing of emissions within the production

3.5. Ownership of Project Site

There is still no site allocated for the IWWTP.

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project, given the fact that in the frame of the EIA procedure a public hearing in the municipality of Vratza was held.

4.2. Environmental Impact Assessment

There is an accepted EIA for CHIMKO Vratza.

4.3. Sensitivity of Locality /Receptor

Ogosta River has been classified as Category III water receiving body, but it is unsuitable for irrigation due to high nitrogen content. Strong odor of ammonia is observed in the summer months.

4.4. Primary Effects of Project

This is a high priority project of regional importance taking into consideration the risk posed by the high concentrations of nitrogen (ammonia, NO2, NO3)

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 200 people on average will be employed. In the normal operation about 25 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

➢ Estimated investment costs:	-	7,149,912 USD
➢ Allocation of capital costs:		
➢ construction and machinery	-	6,434,921 USD
➢ planning and supervision	-	714,991 USD
➢ total costs	-	7,149,912 USD
➢ Year of cost estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.2. Estimated Operational Cost

➢ Expected annual (operational) recurrent cost	-	531,136 USD
➢ Repair and replacement costs	-	132,784 USD
➢ Total operational costs	-	663,920 USD
➢ Year of cost estimate:	-	1998
➢ Nature of cost estimate	-	preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 164 BLV (about 0.1 USD).

➢ Year of estimate	-	1998
➢ Nature of cost estimate	-	preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated / Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

C.3. Industrial Wastewater Treatment Plant - Pharmaceutical plant "ANTIBIOTIC" Razgrad

Date of first setting up:06.09.1998 Date of latest upgrade:

Project Title	Industrial Wastewater Treatment Plant for Pharmaceutical plant "ANTIBIOTIC" Razgrad
Responsible/Legal Body	
Authority/Company	"ANTIBIOTIC" Razgrad
Name	Vasil Valov - General Manager
Address	68 Aprilsko Vastanie Str. , Razgrad, Bulgaria
Telephone	+ 359 (0)84 294 40
Fax	
e-mail	
Project Target	To reduce the organic load in the respective section of Russenski Lom River and to eliminate the risk of contamination of water wells downstream the plant. Remaining pollution: BOD_5=7.83 t/a; TN=2.85 t/a; TP=0.09 t/a;
Investment Costs	Capital Investment - 4,484,514 USD O& M costs - 397,362 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	It is a high priority project, ongoing with completed final design.
Language of Project Documents	Designing documentation is in Bulgarian. HIID study is in English.

1. Project Title

Industrial Wastewater Treatment Plant for Pharmaceutical plant "Antibiotic" Razgrad

2. Investor Details

2.1. Authority/Company

ANTIBIOTIC , Razgrad - State owned company in process of privatization
Name: Vasil Valov - General Manager
Address: 68 Aprilsko Vastanie Str. , Razgrad, Bulgaria
Telephone: + 359 (0)84 294 40
Fax:
e-mail:

2.2. Contact Persons

Georgi Atanasov - Head of Dept. "Environmental Protection"
phone: +359 (0)84 234 61 /ext. 290/

2.3. Advisor/Consultant

"Vodokanalingenering" , Sofia, Bulgaria
MsC. Brachkov
Harvard Institute for International Development

2.4. Legal/Financial Status

Joint-Stock Company, state owned in process of privatization

2.5. Authority/Company Profile

The company operates in the pharmaceutical sector. It is specialized in antibiotic production. Historically it has been one of the greatest suppliers of antibiotic products for the former socialist countries.

The turnover in the last five years varies among 35 to 50 MUSD, but the plans operates with about 20% of the nominal production capacity.

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of Antibiotic are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The characteristics of the influent from Antibiotic are as follows:

Qav=5,200 - 6,500 m3/d; BOD5=250 mg/l; SS = 200 mg/l;

N-NH4 = 60-150 mg/l; Norg = 10-30 mg/l; P = 5 - 15 mg/l

Currently the wastewater is treated biologically together with the domestic wastewater from the town of Razgrad. The plant, which is under construction, will undertake the treatment of Antibiotic's wastewater entirely.

Project consists of completion the industrial WWTP of Antibiotic. The project is of structural type and includes all stages of treatment(mechanical, two stages biological, nitrification and de-nitrification, phosphorus removal. It is located in Russenski Lom River Basin. The beneficiary is the pharmaceutical plant ANTIBIOTIC. The site of the IWWTP is owned by ANTIBIOTIC.

3.2. Primary Needs for the Project

To reduce the health and environmental risk given the fact that the river terrace is used for water supply of the villages Drianovetz and Getzovo and partly the town of Razgrad. Downstream the discharge there are 19 shallow wells and the nearest is located at 8 km distance from the discharging point.

Reduced pollution:

BOD5 = 253 t/a

TN = 16 t/a

P = 2 t/a

3.3. Status of Project Preparation

Final design has been performed by Vodokanalengineering. It has been realized partially and is not completed due to lack of funding. All designing documentation is in Bulgarian. The status of the plant has been studied also by HIID. This study is in English.

3.4. Technology Proposed

1. Along the water's way:
   - Inlet shaft
   - Mechanical screen
   - Grit chamber
   - Primary Settling tank
   - Screw pumping station
   - Equalizing tank
   - Anaerobic tank I
   - Aeration tank I stage
   - Secondary Settling tank
   - Anaerobic tank II
   - Aeration tank II stage
   - Tertiary settling tanks
   - Mixing chamber

- Reaction tank
- Settling tank

2. Along the sludge way:
   - Sand silo
   - Sludge thickener
   - Mechanical sludge dewatering
   - Sludge pumping stations

3.5. Ownership of Project Site

The land of the site is owned by ANTIBIOTIC.

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing in the municipality of Razgrad was held.

4.2. Environmental Impact Assessment

There is an accepted EIA for ANTIBIOTIC.

4.3. Sensitivity of Locality/Receptor

Russenski Lom River is classified as Category II water receiving body in this region but water is unsuitable for irrigation purposes due to its high organic content. If the project is fully implemented, water will be appropriate for irrigation and the risk of contamination of water intakes downstream will be significantly reduced.

4.4. Primary Effects of Project

This is a *high* priority project of regional importance. The project contributes to an improvement of a large section of Russenski Lom River downstream of Razgrad.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 50 to 200 people will be employed. In the normal operation about 35 people will be employed on full time basis.

5.2 Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 4,484,514 USD
- Allocation of capital costs:
- construction and machinery - 4,036,063 USD

- planning and supervision - 448,451 USD
- total costs - 4,484, 514 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 317,890 USD
- Repair and replacement costs - 79,472 USD
- Total operational costs - 397,362 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 410 BLV (about 0.25 USD).

- Year of estimate - 1998
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

C.4. Industrial Wastewater Treatment Plant - Metallurgical plant "KREMIKOVTSI"

Date of first setting up:17.08.1998 Date of latest upgrade:

Project Title	IWWTP for Metallurgical plant "KREMIKOVTSI"
Responsible/Legal Body	
Authority/Company	"KREMIKOVTSI" Sofia
Name	Svetoslav Todorov - Managing director
Address	Sofia, KREMIKOVTZI
Telephone	+359 (0)2 454 2820
Fax	
e-mail	
Project Target	Reduction of risk for the Iskar river basin Remaining Pollution: BOD_5=12.6 t/a; SS=26 t/a;
Investment Costs	Capital investment - 72,848,160 USD O& M costs - 6,764,472 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Ongoing, Medium priority project
Language of Project Documents	No studies in English available.

1. Project Title

Industrial Wastewater Treatment Plant for Metallurgical plant “Kremikovtzi Sofia

2. Investor Details

2.1. Authority/Company

State owned company declared for privatization
Name: Svetoslav Todorov - Managing director
Address: Sofia, KREMIKOVTZI
Telephone: +359 (0)2 454 2820
Fax:
e-mail:

2.2. Contact Persons

Zhivka Nikolova - Senior Environmental Expert
phone: +359 (0)2 454 5235

2.3. Advisor/Consultant

VODOKANALENGINEERING,

2.4. Legal/Financial Status

Joint Stock Company, owned by the state, declared for privatization

2.5. Authority/Company Profile

This is the biggest ferrous metallurgical complex in the country.

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of Kremikovtzi are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

Project consists in upgrade of the existing IWWTP. It is a structural project and is located at Lesnovska river tributary to Iskar River basin. The company owns the terrain of the WWTP site. Qav= 47,304,000 m3/a; BOD5=126 t/a; SS=260 t/a

3.2. Primary Needs for the Project

Realization of the project will reduce risk for a great number of people given the vicinity of the city of Sofia.

Reduced pollution:

BOD5=113 t/a

3.3. Status of Project Preparation

There are feasibility studies already prepared.

No documents in English available

3.4. Technology Proposed

The plant consists of a conventional mechanical treatment and also flotation and petrol retaining tanks.

3.5. Ownership of Project Site

The site of the IWWTP is owned by the company.

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned project and the proposed site, given the fact that in the frame of the EIA procedure a public hearing was held.

4.2. Environmental Impact Assessment

There is an EIA in progress.

4.3. Sensitivity of Locality/Receptor

Lesnovska river is a II category water receiving body.

4.4. Primary Effects of Project

The project is a structural type, medium priority, due to the fact that it deals with upgrading of the existing IWWTP. The effects of the project will be regional.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 100 people on average will be employed. In the normal operation about 30 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 72,848,160 USD
- Allocation of capital costs:
- construction and machinery - 65,563,344 USD
- planning and supervision - 7,284,816 USD
- total costs - 72,848,160 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 531,136 USD
- Repair and replacement cost - 132, 784 USD
- Total operational cost - 663,920 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 115 BLV (about 0.07 USD).

- Year of estimate - 1994
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5 Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

C.5. Industrial Wastewater Treatment Plant - mining complex "Elatzite"

Date of first setting up:16.09.1998 Date of latest upgrade:

Project Title	Industrial Wastewater Treatment Plant for mining complex "Elatzite"
Responsible/Legal Body	
Authority/Company	Mining complex "Elazite- Med"
Name	Gosho Kostov - Managing Director
Address	Address: "Elatzite - Med" , Mirkovo village, Sofia District
Telephone	+359 (0)728 20 34
Fax	
e-mail	
Project Target	The objective of the project is to reduce the risk decreasing the emission discharge and providing protection the river water quality considering that river water is used for irrigation and for supply with water animal breeding farms. It is addressed to a Hot Spot. Remaining Pollution: SO_4 = 2,045 t/a Mn = 2 t/a Fe = 10 t/a Cu = 0.68 t/a
Investment Costs	Capital Investments - 8,181,840 USD O&M Costs - 831,820 USD
Status of Project	
Ongoing/Planned Project, Emerging Concept	Low priority project
Language of Project Documents	No documents in English are available

1. Project Title

Industrial Wastewater Treatment Plant for mining complex “Elatzite-Med”

2. Investor Details

2.1. Authority/Company

State owned company
Name: Gosho Kostov - Managing Director
Address: “Elatzite - Med” , Mirkovo village, Sofia District
Telephone: +359 (0)728 20 34
Fax:
e-mail:

2.2. Contact Persons

Angel Tronkov - Senior Expert “Environment”
phone: +359 (0)728 31 11

2.3. Advisor/Consultant

EIA studies on different units are performed by ECOFORUM, Ltd., Pre-feasibility studies performed by Institute on water issues within Bulgarian Academy of Sciences; GEOTEHMIN - SBS - Consult & Engineering, Ltd.;
NIPRORUDA Ltd,

2.4. Legal/Financial Status

Joint Stock Company, owned by the state

2.5. Authority/Company Profile

Copper ore extraction, and copper concentrate production.

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the company are very restricted.

2.7. Institutions/Enterprises beside the Investor

n.a.

3. Project Description

3.1. Project Outline

The wastewater is industrial from mining and flotation plant. The mean annual outflow from the territory of the mining complex "Elatzite" is about 18,680 m3/d. The contamination of the water in Negarshtitza catchment area is characterized with a wide variety of pH and high content of dissolved solids; SS; SO4>8 g/l; N-NH4, N-NO2; Cu; Mn; Fe.

PH = 2.5-4

SO4 = 300-950mg/l

Mn = 50 - 135mg/l

Fe = 40 - 95 mg/l

Cu = 70 - 130 mg/l

Project consists of elaboration of final design and construction of IWWTP for the mining complex "Elatzite". This is a structural type of project and is located in the area of Negrashtitza River, Malak Iskar sub-basin, Iskar River basin. Beneficiary is the mining complex "Elatzite - Med". The company disposes of own terrain for building of IWWTP.

3.2. Primary Needs for the Project

The objective of the project is to reduce the risk by decreasing the emission discharge and providing protection the river water quality considering that river water is used for irrigation and for supply with water animal breeding farms. It is addressed to a Hot Spot.

Reduced Pollution:

SO4 = 4,432 t/a

Mn = 918 t/a

Fe = 638 t/a

Cu = 885 t/a

3.3. Status of Project Preparation

Considerable effort was made to study the environmental problems since 1995. As a result of several pre-feasibility studies there are is a concept for the need of pH correction and the reduction of heavy metal emissions. Final designs and construction of IWWTP for equalization, neutralization, oxidation, heavy metals precipitation and accumulation of the peak rainflows.

No documents in English available.

3.4. Technology Proposed

The treatment uses physical/chemical processes as mentioned below:

- equalizing
- neutralization
- heavy metals precipitation
- accumulation of peak rainflows

3.5. Ownership of Project Site

The site where treatment facilities are located is owned by the company.

3.6. Specific Project Items

n.a.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware of the planned projects and the proposed sites, given the fact that in the frame of the EIA procedure a public hearings for several production units of the complex was held.

4.2. Environmental Impact Assessment

There are accepted EIA reports for some of the production units of the complex.

4.3. Sensitivity of Locality/Receptor

REWI Sofia obtained the following results in 1995 for Negarshtitza river before the discharge to the Malak Iskar River. The category of the water receiving body is II:

pH = 4.49-6.4

SS = 62-1,868 mg/l

N-NH4 = 2.73-4.68 mg/l

N-NO2 = 0.96-4.27 mg/l

Fe = 1.7-5.5 mg/l

Mn = 1.8 - 11.6 mg/l

Cu = 1.5 - 10.5 mg/l

4.4. Primary Effects of Project

This is a low priority project with a local importance and aims to ensure protection of Malak Iskar River water quality.

5. Economic Project Justification

5.1. Economic Project Benefits

During the construction period about 150 people in average will be employed. In the normal operation about 15 people will be employed on full time basis.

5.2. Economic Internal Rate of Return (EIRR)

EIRR has not been calculated.

6. Financial Viability

6.1. Estimated Investment Cost

- Estimated investment costs: - 8,181,840 USD
- Allocation of capital costs:
- construction and machinery - 7,363,656 USD
- planning and supervision - 818,184 USD
- total costs - 8,181,840 USD
- Year of cost estimate - 1998
- Nature of cost estimate - preliminary

6.2. Estimated Operational Cost

- Expected annual (operational) recurrent cost - 665,456 USD
- Repair and replacement costs - 166,364 USD
- Total operational costs - 831,820 USD
- Year of cost estimate: - 1998
- Nature of cost estimate - preliminary

6.3. Estimate of Revenues

Revenues have not been calculated. The expected value of 1 m^3 treated water is 271 BLV (about 0.16 USD).

- Year of estimate - 1998
- Nature of cost estimate - preliminary

6.4. Financial Internal Rate of Return (FIRR)

FIRR has not been calculated

6.5. Anticipated/Proposed Funding Scheme

There is no fixed funding scheme proposed for project implementation.

C.6. Feasibility Study for Inventorying Past Pollution and Elaboration of Upgradable Database

Date of first setting up: 22.01.1999 Date of latest upgrade:

Project Title	Feasibility Study for Inventorying Past Pollution and Elaboration of Upgradable Database
Responsible/Legal Body	
Authority/Company	Ministry of Environment and Water
Name	Mr. Nikolay Kuyumdjiev
Address	Bulgaria, Sofia 1000, 22 Maria Luisa blvd. Third Floor, Room 17
Telephone	+ 359 2 981 43 93
Fax	
e-mail	
Project Target	To reduce the health and environmental risk posed by industrial sites contaminated with wastes or other toxic materials, illegal or improperly closed up landfills and other contaminations caused by inadequate and unsound practices in the past.
Investment Costs	According to preliminary estimates an amount of USD 500,000 will be necessary for the project realization in Bulgarian conditions
Status of Project	
Ongoing/Planned Project, Emerging Concept	Emerging Concept; Currently exists Guidance for scope and content of the past contamination damage reports in process of Privatization approved by the Minister of Environment and Water; High priority project
Language of Project Documents	Bulgarian, English

1. Project Title

Feasibility Study for Inventorying Past Pollution and Elaboration of Upgradable Database

2. Investor Details

2.1. Authority/Company

Name: Ministry of Environment and Water
Address: Bulgaria, Sofia 1000, 22 Maria Luisa blvd.
Telephone: + 359 2 981 4393
Fax:
e-mail:

2.2. Contact Persons

Mr. Nikolay Kuyumdjiev - Country Programme Coordinator

2.3. Advisor/Consultant

"POVVIK-EP", Ltd.
Bulgaria, Sofia 1131
30 Boris Rangelov St.
Telefone: + 359 2 974 49 35,
+ 359 2 974 49 76,
+ 359 2 781 322
Fax: + 359 2 974 37 56
E-mail: povvik@ttm.bg

Contact Person: Mr. Ivo Popov - General Manager

2.4. Legal/Financial Status

Public authority

2.5. Authority/Company Profile

State Institution

2.6. Planning/Implementing Extent/Capacity of the Investor

The planning and implementing resources of the Ministry are quite restricted.

3. Project Description

3.1. Project Background

There exists an opinion that reducing of pollution from current productions is more important in most of the cases then searching for past environmental problems which in most of the cases are localized and may not represent a considerable risk for the environment and human health. Without programs for evaluation and identification of past contaminations many environmental problems remain in latency and can manifest in unexpected moment with all the following consequences.

A special interest for this project represent the “past environmental damages”, that most often are:

- contamination on the plant territory
- contamination of sites, which are out of the plant territory - e.g. landfills, soils contaminated by air emissions, etc.
- health problems of the workers related to past activities of the plant
- health or property damages of third sides - e.g. population living in vicinity

The meaning of the term past activities impact (past environmental damages) is very wide. The project regards to the hazardous substances impact, and not of damages in general.

Past contaminations represent a serious risk for the environment and human health, regardless of their origin abandoned wastes, neglected industrial sites, incorrectly stored wastes or impacts caused by past emergencies.

The decrease of risks can be achieved only by means of their thorough study and a competent planning and implementation of remediation activities.

Given the great importance of the problem it has been reflected in the legislation of the country (Privatization Law, Law for limitation of the negative environmental impact of wastes), as well as in some projects such as for municipal solid wastes and hazardous wastes management, developed in the Ministry of Environment and Water (MoEW).

The issue of the past environmental damages is defined and included as one of the priorities in the National Waste Management Programme and the Action Plan attached to the same programme.

3.2. Project Outline

The project consists of Feasibility Study, development and keeping of inventory and cadaster , evaluation and priority setting of historically contaminated sites, determination of the landfills which can be adapted and development of a data managing and reporting system.

3.3. Primary Needs for the Project

To reduce the health and environmental risk posed by industrial sites contaminated with wastes, illegal or improperly closed up landfills and other contaminations caused by inadequate and unsound practices in the past. The following steps will be required in this direction:

1. Establishment of an inventory of the sites contaminated due to past pollution using a system of setting priorities and database supporting remediation activities
2. Closure of illegal and uncontrolled landfills which cannot be adapted up to the modern environmental requirements and standards
3. Elimination of the contamination caused by operating or non-operating and closed in the past landfills and sites and clean up of priority

3.4. Status of Project Preparation

In connection with Article 9 of the transitional and concluding instructions of the Environmental Protection Act, all industries (including industrial sites polluted with wastes at their territory) which are subject of privatization are obliged to elaborate not only Environmental Impact Assessment (EIA), but also a study which includes cost evaluation of the past environmental damages till the moment of privatization according to Guidance for scope and content of the past contamination damage reports in process of Privatization approved by the Minister of Environment and Water. MoEW respectively Regional Environmental and Water Inspectorate (REWI) approves or disapproves the Report on Past Environmental Damages by a statement of the Supreme Environmental Expert Council or of the Environmental Expert Council of the REWI which is subject of further confirmation by the Minister or the Director of the relevant REWI. The costs necessary for realization of the remediation programmes are consequently ensured in accordance with a procedure established by the Council of Ministers.

This procedure has been assigned for the needs of the privatization, but the developed instructions could be also used for the clarification of other activities related to environmental liabilities as well as prioritization of past environmental damages problems.

3.5. Technology Proposed

Not applicable.

3.6. Ownership of Project Site

Not applicable.

3.7. Specific Project Items

The implementation of this project will lead to development of further projects such as:

1. Performance of national project for reduction of the overall number and of the hazard posed by the landfills and the past contaminations as follows:
   - Set up the requirements for clean up activities for site contaminated by wastes
   - Establishment of a national register of the landfills
   - Priority setting according to the results of a risk assessment
   - Cost estimation of the resources needed for the purpose and identification of potential financial sources
2. Conservation and rehabilitation of closed-down tailing ponds for non-ferrous metal ores processing such as “Elshitsa, Lyutadjik, Gyueshevo 2 and 3, Ustrem 4, Rosen 2.

C.7. Top management training for Environmental Management Systems (EMS) implementation in Bulgarian industry

Date of first setting up: 22.01.1999 Date of latest upgrade:02.02.1999

Project Title	Top management training for Environmental Management Systems (EMS) implementation in Bulgarian industry
Responsible/Legal Body	
Authority/Company	Ministry of Environment and Water
Name	Mr. Nikolay Kuyumdjiev
Address	Bulgaria, Sofia 1000, 22 Maria Luisa blvd. Third Floor, Room 17
Telephone	+ 359 2 981 43 93
Fax	+ 359 2 981 96 41
e-mail	
Project Target	Implementation of an effective Environmental Management in Bulgarian enterprises situated in the Danube river basin, with the commitment of the top management, following the EMAS and ISO 14001 requirements. Further reduction of environmental risks in the Danube river and the Black Sea and rising the production efficiency within the industry during the EU accession period. To set up capacity for successful implementation of investment projects within the framework of the companies' EMS.
Investment Costs	According to preliminary estimates an amount of USD 500,000 will be necessary for the project realization in Bulgarian conditions
Status of Project	
Ongoing/Planned Project, Emerging Concept	Emerging Concept; approved by the Minister of Environment and Water; High priority project
Language of Project Documents	Bulgarian, English

2. Investor Details

2.1. Authority/Company

Name: Ministry of Environment and Water
Address: Bulgaria, Sofia 1000, 22 Maria Luisa blvd.
Telephone: + 359 2 981 4393
Fax: + 359 2 981 96 41
e-mail:

2.2. Contact Persons

Mr. Nikolay Kuyumdjiev - Country Programme Coordinator

2.3. Advisor/Consultant

Clean Industry Center at the
Bulgarian Industrial Association (BIA)
Name of the President:Bojidar Danev
Address: Alabin St. 16-20, 1000 Sofia, Bulgaria
Telephone: + (3592) 980 0303
Fax: + (3592) 987 2604
e-mail: office@bia-bg.com

Contact Person
Dimiter Brankov - Director of the Clean Industry Center
Telephone: + (3592) 980 3055
Fax: + (3592) 980 3055
e-mail: brankov@bia-bg.com

2.4. Legal/Financial Status

NGO

2.5. Authority/Company Profile

- national Association of Employers and Entrepreneurs protecting their interests;
- coordinating the Branch and Regional Industrial Associations policy;
- providing specific services to the Company members and sector associations.

2.6. Capacity of the Implementation Agency

Possessing the training skills and large experience in conducting training courses the Clean Industry Center at BIA provides the training for experts and mid-level management on EMAS and ISO 14000 standards implementation

2.7. Institutions beside the Implementing Agency

The Ministry of Environment and the Ministry of Industry officially endorse this kind of activity of the Center with letters of support.

3. Project Description

3.1. Project Outline

The main purpose of the project is to disseminate information and raise the awareness on modern Environmental Management Systems such as EMAS and ISO 14001, among Chief Executives and other top managers with responsibilities for the major industrial polluting companies in the Bulgarian Part of the Danube River Basin.

As far as this goal would be achieved, it is assumed that the overall process of implementation and further certification of the companies involved will be speeded up and facilitated. The lack of top management commitment in the initial stage hampers the whole process of EMS implementation. This commitment will support the elaboration of EMS Implementation Programmes, Environmental Policies and Plans in the enterprises in accordance with EMAS and the ISO 14001 standard. It will effectively solve the major environmental problems with impact on the Danube river and the Black sea water quality, on which the public opinion is very sensitive.

3.2. Primary Needs for the Project

The environmental management in industry became one of the main priorities in the EU policy, outlined at the Aarhus ministerial conference last year. The potential benefits of this policy seemed particularly large in Central and Eastern European accession countries where pollution and resource intensities of the economies are very high. Implementation of Environmental Management System in the industries and certification for compliance with ISO 14001 or similar EU regulations is also a necessity for the development of these countries.

The poor water quality of the Danube river is a priority environmental problem with substantial impact on the human health, the biodiversity, the recreational capacity in the whole lower stretch of the Danube and is related with the decline of the Black Sea ecosystem. The impact of industry, largely accountable for the pollution of the Danube basin, is related to the identified sources of pollution, mainly industrial enterprises with improper environmental management.

3.3. Status of Project Preparation

The project will be implemented because the Regional Industrial Associations will provide the organization, part of the logistic support and publicity of the working meetings envisaged. The content of the presentations and materials could be prepared within several workdays by the experts of the Clean Industry Center.

3.4. Technology Proposed

The project consists of a 2-3 hours working meeting organized for the top managers of 15-20 main enterprises in the selected regions. It is envisaged to divide the Danube river basin in 12 regions covering the major industrialized areas. In each of these administrative centers covered by the associations - member of the BIA, a preliminary publicity of the working meetings will be launched, an attractive location for the meetings will be found and the time will be selected for ensuring maximum number of participants. The meetings will be restricted only to the Chief Executive/First Deputy managers. Lower level managers will not be admitted.

4. Project Effects and Interactions

4.1. Public's Expression of Interest

Public is aware with the impact on the environment by the enterprises' activities. After the Project implementation and achievement of top management commitment, the public will monitor and "control" the improvements of their environmental performance and EMS implementation.

4.2. Environmental Impact Assessment

Following the requirements of EMAS or ISO 14001 an initial environmental review and continuous improvement of the environmental performance is mandatory when applying for certification/registration.

4.3. Sensitivity of the Receptor

Investigations in the past years demonstrated clearly, that the key issues which cause the environmental impact on the Danube river and the Black sea ecosystems could be summarized as follows: insufficient or inefficient performance of the industrial waste water treatment facilities; improper storage and inadequate use of the sludge emitted; accidental discharge of pollutants in the river; industrial waste deposited at inadequately equipped dumps; insufficient monitoring of the emissions from industries, poor and old environmental practices and lack of modern EMS implementation.

The reduction of pollutants discharged in the Danube River could be reached mainly by the implementation of an Effective Environmental Management in the major industries on both river banks. Thus, raising awareness and commitment on the EMS implementation, including ISO 14001 and Cleaner Production among Chief Executives is an unavoidable step towards solving the problem, which is the main objective of the proposed project.

4.4. Primary Effects of the Project

This is a high priority project of regional importance that solves the environmental problems in a high populated region of the country and will reduce the adverse impact on human health, biodiversity and the quality of the environment.

5. Economic Project Justification

The EMS implementation will lead to an improvement of the companies' economic performances.

6. Financial Details

6.1. Estimated Project Cost

- Allocation of the Project costs:
  - working meetings in 12 industrial centers - USD 12,000
  - DSA and travel - 3 lecturers for 12 missions - USD 3,000
  - lectures preparation - USD 500
- Estimated Project costs - total: - USD 15 500
- Year of cost estimation - 1999

6.2. Estimate of Revenues

Non applicable

6.3. Proposed Funding Scheme

The donor could follow the following funding scheme:

- the first 40% of the total sum - upon confirmation of the Project;

- the next 50% of the total sum-upon submitting an Interim Report for 4 missions;

- the last 10% of the total sum - upon submitting the Final Report.