Sub-programme: Environment

1. Project Title:

Tomaszow waste water treatment plant

2. Recipient & Location of Project:
Location: Poland, Lodz Voivodship, Municipality of Tomaszów Mazowiecki, Town of Tomaszów Mazowiecki

3. Objectives of the Project

The wider objective of the undertaking is to achieve the standards determined in respect of EU directives (in particular in Directive 75/440/EEC concerning the quality required of surface water intended for the abstraction of drinking water in the Member States and in Directive 91/271/EEC concerning urban wastewater treatment.)

The immediate objective of the project is to comply with EU standards in the quality of discharged wastewater and surface water, to increase the throughput capacity of the existing wastewater treatment plant in the basin of the Pilica River, a main tributary of the Vistula River flowing into the Baltic Sea, and the elimination of pollutant load into the Zalew Sulejowski (Sulejów Reservoir) which is the ultimate drinking water source for the Lodz conurbation, a big industrial centre in central Poland with some 1 million inhabitants).

4. Description of the Project

The “Pilica” Programme covers central Poland, an area of 5215 km², including the Zalew Sulejowski (Sulejów Reservoir) and the drainage basin of upper course of the Pilica River – a main tributary of the Vistula River.

The modernisation of the wastewater treatment plant includes the wastewater treatment process and sludge management. The modernised wastewater plant will collect municipal wastewater from Tomaszów Mazowiecki, effluents from the Poultry Plant and from Zaklady Włókien Chemicznych “WISTOM” (Synthetic Fibres Plant) and urban wastewater and domestic sewage from the Zalew Sulejowski (Sulejów Reservoir) area.

The final treated effluents will be discharged into the Pilica River below the Zalew Sulejowski (Sulejów Reservoir) and drinking water intake for Tomaszów Mazowiecki and the city of Lodz. agglomeration.

The impact of the project is of significant importance for the region, within an intensively industrial area of central Poland. Successful completion of the project will result in improved water quality of the Vistula River, and thus the positive effect of this investment will be visible in the whole country.

The modernisation of the wastewater treatment plant will provide an increase in its throughput capacity from 15,000 m³/d to 51,000 m³/d and will serve the population equivalent of under 250,000.

The project is based upon the relevant Polish provisions adapted to the European Union standards. In order to eliminate nutrients the chemical precipitation of phosphorus compounds and biological elimination of nitrogen compounds, nitrification and denitrification processes

10/12/01
will be applied. The sludge thus generated will be thickened (the preliminary sludge by gravitation and the excess sludge – mechanically) and, after stirring, put to digesting and dewatering processes on the existing chamber presses.

It is assumed that funding under PHARE programme will be allocated to the following tasks:
✓ Modernisation of the throughput section of the wastewater treatment plant which covers:
  • Modernisation of the inlet chamber (purchases)
  • Construction of pumping station (purchases)
  • Construction of griter (purchases)
  • Construction of primary sedimentation tanks (purchases)
  • Modernisation of four activated sludge chambers (purchases)
  • Modernisation of the existing secondary sedimentation tanks (purchases)
  • Construction of the PIX tank
  • Construction of the main pumping station on the sewage system (purchases)
  • Construction of two preliminary sedimentation tanks
✓ Extension and modernisation of the sludge section which covers:
  • Construction of the sludge stirring tank
  • Construction of the digesters
  • Construction of the tank for fermented sludge (purchases)
  • Construction of the thermal power station
  • Construction of biogas tanks
  • Torch (purchases)
  • Modernisation of the technological building (purchases)
  • Construction of biological sludge storage
  • Construction of supervision and control systems (purchases)

**Expected Outputs & Results**
The overall expected output is an extended and enhanced WWTP at Tomaszów Mazowiecki, bringing it into line with the requirements of the EU Directives – thereby achieving both the strategic objective (compliance with Accession Partnership and National Programme of Preparation for Membership) and immediate objectives for improving WWT in the town.

**5. Institutional framework:**
- The Ministry of Environmental Protection, Natural Resources and Forestry Is responsible for the environmental sector in Poland.
- National Fund for Environmental Protection and Water Management – is a body responsible for the implementation of PHARE programmes in the environment protection sector.
- The Municipality of Tomaszów Mazowiecki is the beneficiary of the project.
6. **Budget (MEUR):**

<table>
<thead>
<tr>
<th>Item</th>
<th>Investment (I)</th>
<th>Institution Building (IB)</th>
<th>Total PHARE (I + IB)</th>
<th>Beneficiary + co-funding</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modernisation of the wastewater treatment plant in Tomaszów Mazowiecki</td>
<td>8.1</td>
<td>0</td>
<td>8.1</td>
<td>Municipal budget</td>
<td>4.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>National Fund</td>
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<tr>
<td>TOTAL</td>
<td>8.1</td>
<td>8.1</td>
<td></td>
<td>7.1</td>
<td>15.2</td>
</tr>
</tbody>
</table>

7. **Implementation arrangements:**

*Implementing Agency:* National Fund for Environmental Protection and Water Management (NFEP)

**Implementation Modalities**
Open tender through Official Journal/ Supply and Works Contracts

8. **Implementation schedule:**

- Technical Specifications / Bill of Quantities: May 1999
- Announcement in OJ: September 1999
- Tender Evaluation: December 1999
- Contract signature (incl. BXL-Commission endorsement): January 2000
- Start of project activity: January 2000
- Completion: March 2002

**State of Readiness:** Phare funding is additional to the municipality’s own resources, as well as loans from the NF. It will not replace other funding.

The beneficiary is in the possession of following documents:
- Water Protection Programme for the Zalew Sulejowski (Sulejów Reservoir) and its direct drainage basin delivered in five technological scenarios (April 1997);
- Decision of the Voivodship Office in Piotrków Trybunalski approving simplified documentation for geological, engineering and hydro-geological conditions;
- Water Protection Programme for the natural drainage basin of the Pilica River upstream (June 1997);
- Technical, Economical and Land Development Assumptions for the Direct Drainage Basin of the Zalew Sulejowski (Sulejów Reservoir) (July 1997);
- Pre-Feasibility Study with the Programme for the implementation of the entire “Pilica” Regional Programme (August 1997);
- Decision concerning conditions required to obtain construction permit for site concerned (certificate of development)

The beneficiary holds the following documents with regard to the project for the power supply
line of 15kV intended for the wastewater treatment plant in Tomaszów Mazowiecki:
- Technical Conditions of electricity supply from power grid issued by ZE Lodz Teren S.A. (Power Distribution Company of Lodz Region) (TU/PT/W - 1129/5414/98);
- Decision concerning the land built-up and development for the construction of two cable lines of 15kV for the wastewater plant and switching station of 15 kV, issued by the Architecture and Town Planning Department.
It is assumed that the project will be completed by March 2002.

9. **Equal opportunities**
Contractors and sub-contractors will be contractually liable to promote equality, guarantee fundamental rights and fight against discrimination on the grounds of sex. The National Fund and the Beneficiary will monitor project employment to ensure that this condition is being fully implemented.

10. **Environment Impact:**
The objective of the elimination of the wastewater discharge into the Sulejów Reservoir, the main source of drinking water for the city of Lodz, is to improve the quality of drinking water and the water quality of the reservoir - a renowned recreation centre. Such elimination will in turn result in the improvement of health of humans and animals. Better quality of water of the Pilica River and Sulejów Reservoir will contribute to the fishing economy and tourism development.
The modernisation of the wastewater treatment plant in Tomaszów Mazowiecki will facilitate fulfilment of the objectives of the “Pilica” programme, which is a broadly defined programme for the protection of water of the Sulejów Reservoir, as well as of the Pilica River itself, which is one of the main rivers in Poland. The modernisation of the wastewater plant will also decrease the amount of nutrients in the water environment and the elimination of dewatered sewage sludge in lagoons (so far approximately 14 ha of such sludge have been deposited).
The applied technology allows for maintaining the parameters of the discharged wastewater within the range determined in EU standards through the elimination of suspensions, chemical precipitation of phosphates and biological elimination of nitrogen compounds.
The modernisation of the wastewater plant, and the construction of wastewater sludge treatment facilities will allow anaerobically fermented and dewatered sludge (up to approx. 35–40% of dry mass) to be obtained. It will be possible to use the sludge in this form for land reclamation of extensive areas around the wastewater plant – 14 ha of deposit lagoons. It will be also possible to obtain energy from biogas. This energy will be used to meet the energy demand of the wastewater treatment plant (start-up machinery, supporting technological processes). The project includes the installation of biogas tanks and gas engines which will generate electrical energy by burning the gas.

As a result of biological treatment process the following improvement of the wastewater quality indicators are expected:

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Current value</th>
<th>Expected value</th>
<th>Reduction ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD5</td>
<td>285</td>
<td>14</td>
<td>95%</td>
</tr>
<tr>
<td>Suspended solid</td>
<td>271</td>
<td>15</td>
<td>93%-96%</td>
</tr>
<tr>
<td>Total nitrogen</td>
<td>49</td>
<td>15</td>
<td>70%</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>10.4</td>
<td>1.0</td>
<td>Up to 90%</td>
</tr>
</tbody>
</table>

11. **Rates of return:**
The financial analysis has been done for the period of ten years from 1999 to 2008.
NPV (for the investor) = 3.5 MILLION EUR  
IRR with PHARE grant (for 20 years of operation) = 15%  
IRR without PHARE grant (for 10 years of operation) = - 9%

12. Investment criteria:

**Catalytic Effect:** PHARE support will ensure upgrading of waters in the Sulejów area to comply with EU standards, and improve the environment for the Lodz agglomeration. PHARE support for this project will help to achieve the envisaged environmental advantages in the area of wastewater treatment and will ensure the completion of the project within the determined period of time.

**Additionality:** Co-financing is assured from local sources – both the National Fund and municipal budget; Phare support will not replace other financing sources.

**Sustainability:** “Oczyszczalnia Ocieków” – Spółka z o.o. in Tomaszów Mazowiecki who is the municipal enterprise owner of the premises, will be the beneficiary of the project. The wastewater treatment plant ensures financial stability in the long term perspective. The operation of the plant will be financed from the payments for wastewater treatment.

**Competition:** For the tendering, all PHARE funded supplies will be processed in accordance with competition provisions of the European Agreement and PHARE rules for tendering and contracting.

13. Conditionality

- Co-financing from the Municipal budget (The Municipality of Tomaszów Mazowiecki, Sulejów, other Municipalities) and other sources as in the project assumptions, and the completion of the project according to the schedule (before the end of 2001).
- Proper price policy towards the town inhabitants who generate wastewater, established in the Municipality of Tomaszów Mazowiecki, ensuring the sustainability and renewability of the investment within the long-term perspective.
- Further development of the strategy for the approximation of the provisions and their implementation in the water management sector.
### LOGFRAME PLANNING MATRIX FOR PROJECT: ENV 3

<table>
<thead>
<tr>
<th>Immediate Objectives</th>
<th>Indicators of Achievement</th>
<th>Project Title: Tomaszow waste water treatment plant</th>
<th>Source of Information</th>
<th>Date of drafting</th>
<th>Total Budget (PHARE)</th>
<th>Planning period</th>
<th>Assumption and Risks</th>
</tr>
</thead>
</table>
| • Meeting the requirements of the EU standards with regard to the quality of water;  
• Improvement of the quality of the environment through the pollutant load reduction;  
• Lowering the costs of drinking water treatment intended for the city of Lodz agglomeration. | • Fulfilment of the EU accession requirements in scope of EU Directives 91/271 and 75/440 for this WWTP facility  
• Improvement of surface water quality | • National Statistic  
• Local government reports  
• Company Reports | January 1999 | 8,1 MILLION EURO | 09/99-June 2002 | • Accession to the European Union  
• National Environmental policy stable  
• Public Ecological awareness increased |

<table>
<thead>
<tr>
<th>Results of Projects</th>
<th>Indicators of Achievement</th>
<th>Source of Information</th>
<th>Assumption and Risks</th>
</tr>
</thead>
</table>
| • Reduction of pollution load to the Pilica River;  
• Reduction of pollution load to the Sulejów Reservoir  
• Improvement of the drinking water quality;  
• Enlargement of the biological diversity, fishing economy development;  
• Establishing the conditions for tourism and sports development by the Sulejów Reservoir. | • Increase of WWTP daily capacity from 15,000 m$^3$ to 51 000 m$^3$.  
• Reduction of pollutants around the Sulejów Reservoir and the town of Tomaszów Mazowiecki by 90% on average.  
• Obtaining a higher class of water quality in the Sulejów Reservoir and simultaneously in the Pilica River which flows into the Sulejów Lake and is the main tributary of the Vistula River.  
• Improvement of health conditions of the inhabitants living within the Sulejów Reservoir area and the agglomeration of Tomaszów Mazowiecki and the city of Lodz. | • Local authorities Reports  
• Local statistics  
• Company Reports | • Continued financing of the investment  
• Adequate technology economically available |

<table>
<thead>
<tr>
<th>Outputs of Sub-projects</th>
<th>Indicators of Achievement</th>
<th>Source of Information</th>
<th>Assumption and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Expansion and modernisation of the</td>
<td>• Completion of the construction of two</td>
<td>• Project Engineer</td>
<td>• Adequate technical/management</td>
</tr>
</tbody>
</table>
- Chemical and biological section of the existing wastewater treatment plant;
- Expansion and modernisation of the sludge section of the existing wastewater plant;
- Reconstruction of the power supply line for the modernised wastewater plant.

- Rotary sand catchers, the phosphate chemical precipitation system, two preliminary sedimentation tanks and other devices within the scope of the modernisation of the throughput section.
- Installation of the surplus sludge mechanical thickener, the completion of the digestion chambers, modernisation of the sludge dehydration station.
- Completion of construction of two power supply lines of overall length of 3 km, construction of switching station of 15 KV.

<table>
<thead>
<tr>
<th>Progress Reports</th>
<th>• Company Reports</th>
<th>Financial resources available for operations and assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Local authority co-operation</td>
<td>• Successfully conducted tender, issues and permits - construction permits e.t.c.</td>
<td>• On time delivery</td>
</tr>
</tbody>
</table>

• Financial resources available
### Annex 2 - Detailed cost breakdown of the whole project (MEUR)

<table>
<thead>
<tr>
<th>Task</th>
<th>Scope of work</th>
<th>Budget Phare contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extension and modernisation of the throughput section of the wastewater treatment plant:</strong></td>
<td>- Modernisation of the inlet chamber (purchases)</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>- Construction of the pumping station (purchases)</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>- Construction of griters (purchases)</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>- Construction of primary sedimentation tanks (purchases)</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>- Modernisation of four activated sludge chambers (purchases)</td>
<td>1.04</td>
</tr>
<tr>
<td></td>
<td>- Modernisation of the existing secondary sedimentation tanks (purchases)</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>- Construction of the PIX tank</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>- Construction of the main pumping station on the sewage system (purchases)</td>
<td>0.22</td>
</tr>
<tr>
<td><strong>Extension and modernisation of the sludge section:</strong></td>
<td>- Construction of the sludge stirring tank</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>- Construction of the digesters</td>
<td>1.24</td>
</tr>
<tr>
<td></td>
<td>- Construction of the tank for fermented sludge (purchases)</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>- Construction of the thermal power station</td>
<td>1.49</td>
</tr>
<tr>
<td></td>
<td>- Construction of biogas tanks</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>- Construction of the torch (purchases)</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>- Modernisation of the technological building (purchases)</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>- Construction of the biological sludge storage</td>
<td>1.37</td>
</tr>
<tr>
<td></td>
<td>- Construction of supervision and control systems (purchases)</td>
<td>0.68</td>
</tr>
<tr>
<td><strong>Total Phare contribution</strong></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Task</th>
<th>Scope of the work</th>
<th>Budget Beneficiary + co-financing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Extension and modernisation of the throughput section of the wastewater treatment plant:</strong></td>
<td>- Modernisation of the inlet chamber (works)</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>- Construction of the pumping station (works)</td>
<td>0.19</td>
</tr>
<tr>
<td></td>
<td>- Construction of the pumping station for drainage water</td>
<td>0.04</td>
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<tr>
<td></td>
<td>- Installation of the mixing chamber</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>- Construction of griters (works)</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>- Construction of the PIX dosage tanks</td>
<td>0.29</td>
</tr>
<tr>
<td></td>
<td>- Construction of primary sedimentation tanks (works)</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>- The distribution channel for activated sludge chambers</td>
<td>0.44</td>
</tr>
<tr>
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<td>- Modernisation of four activated sludge chambers (works)</td>
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<tr>
<td></td>
<td>- Modernisation of the existing secondary sedimentation tanks (works)</td>
<td>0.04</td>
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<tr>
<td></td>
<td>- Modernisation of the existing secondary sedimentation tanks (works)</td>
<td>0.21</td>
</tr>
<tr>
<td>Project Category</td>
<td>Description</td>
<td>Amount</td>
</tr>
<tr>
<td>------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Modernisation of the treated wastewater channel</td>
<td>- Modernisation of the treated wastewater channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Modernisation of the multifunctional channel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Construction of the main pumping station on the sewage system (works)</td>
<td></td>
</tr>
<tr>
<td>Extension and modernisation of the sludge section:</td>
<td>- The gravitational thickener</td>
<td>0,02</td>
</tr>
<tr>
<td></td>
<td>- Construction of the tank for fermented sludge (works)</td>
<td>0,05</td>
</tr>
<tr>
<td></td>
<td>- Construction of the torch (works)</td>
<td>0,01</td>
</tr>
<tr>
<td></td>
<td>- Modernisation of the technological building (works)</td>
<td>0,18</td>
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<tr>
<td></td>
<td>- Construction of the sludge storage</td>
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</tr>
<tr>
<td>Creation of infrastructure:</td>
<td>- Construction of the warehouse</td>
<td>0,1</td>
</tr>
<tr>
<td></td>
<td>- Construction of the gate-house with truck scales</td>
<td>1,47</td>
</tr>
<tr>
<td></td>
<td>- Construction of roads and landscaping</td>
<td>0,13</td>
</tr>
<tr>
<td></td>
<td>- Creation of greenery and terrain fencing construction</td>
<td>0,89</td>
</tr>
<tr>
<td></td>
<td>- Construction of land facilities</td>
<td>0,08</td>
</tr>
<tr>
<td></td>
<td>- Construction of supervision and control systems (works)</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of the wastewater plant power supply line:</td>
<td>- Construction of two cable lines for the wastewater plant of 15kV and the overall length of 3 km</td>
<td>0,17</td>
</tr>
<tr>
<td>Documentation and other works</td>
<td>- Starting material for the technical project and tenders, technical documentation, preparatory works for the construction, ground dewatering</td>
<td>1,22</td>
</tr>
<tr>
<td></td>
<td>- Investor service, training, start-up</td>
<td>0,52</td>
</tr>
<tr>
<td>Total (beneficiary + co-financing)</td>
<td></td>
<td>7,1</td>
</tr>
<tr>
<td>TOTAL (PHARE contribution + beneficiary + co-financing)</td>
<td></td>
<td>15,2</td>
</tr>
<tr>
<td>Title:</td>
<td>Tomaszow waste water treatment plant</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

### Implementation Schedule of the Project

<table>
<thead>
<tr>
<th>Projects</th>
<th>Implementation Schedule (Quarters)</th>
<th>Budget Allocation (MILLION EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modernisation of the Wastewater Treatment Plant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>XI</th>
<th>XII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 99 – Jun 99</td>
<td>Jul 99 – Sep 99</td>
<td>Oct 99 – Dec 99</td>
<td>Jan 00 – Mar 00</td>
<td>Apr 00 – Jun 00</td>
<td>Jul 00 – Sep 00</td>
<td>Oct 00 – Dec 00</td>
<td>Jan 01 – Mar 01</td>
<td>Apr 01 – Jun 01</td>
<td>Jul 01 – Sept 01</td>
<td>Oct 01 – Dec 01</td>
<td>Jan 02 – Mar 02</td>
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<tr>
<td>D C</td>
<td>III</td>
<td>111</td>
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<td>111</td>
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<td>111</td>
<td>111</td>
<td>111</td>
<td>111</td>
<td>8,1</td>
<td></td>
</tr>
</tbody>
</table>

| Total Programme | | |
|-----------------|---|
| | 8,1 |

**Legend:**
- **D** = design of sub-projects.
- **C** = tendering and contracting.
- **I** = contract implementation and payment.
## Annex 4 - Contracting and disbursement schedules

### COMMITMENT (CONTRACTS) SCHEDULE

<table>
<thead>
<tr>
<th>Programme: PL 99</th>
<th>Title:</th>
<th>TOMASZOW waste water treatment plant</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Projects</th>
<th>Expected Cumulative Contractual Commitments (Quarters) MILLION EURO</th>
<th>Budget Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modernisation of the Wastewater Treatment Plant</td>
<td>8,1</td>
<td>8,1</td>
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<tr>
<td>Total</td>
<td>8,1</td>
<td>8,1</td>
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<table>
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</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>II</td>
<td>III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td>VII</td>
<td>VIII</td>
<td>IX</td>
<td>X</td>
<td>XI</td>
</tr>
<tr>
<td>Apr 99 – Jun 99</td>
<td>Jul 99 – Sep 99</td>
<td>Oct 99 – Dec 99</td>
<td>Jan 00 – Mar 00</td>
<td>Apr 00 – Jun 00</td>
<td>Jul 00 – Sep 00</td>
<td>Oct 00 – Dec 00</td>
<td>Jan 01 – Mar 01</td>
<td>Apr 01 – Jun 01</td>
<td>Jul 01 – Sep 01</td>
<td>Oct 01 – Dec 01</td>
</tr>
</tbody>
</table>
Annex 4i - Contracting and disbursement schedules

<table>
<thead>
<tr>
<th>DISBURSEMENT(PAYMENTS) SCHEDULE</th>
<th>Date of Drafting Planning Period</th>
<th>January 1999 – 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Tomaszow waste water treatment plant</td>
<td>Budget Allocation</td>
</tr>
<tr>
<td>Projects</td>
<td>Cumulative Disbursement (Payment) Schedule (Quarters)</td>
<td>Cost Estimate MILLION EURO</td>
</tr>
<tr>
<td>PLANNED</td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>Modernisation of the Sewage Treatment Plant</td>
<td>Apr 99 - Jun 99</td>
<td>Jul 99 - Sep 99</td>
</tr>
<tr>
<td>Total</td>
<td>0,3</td>
<td>0,7</td>
</tr>
</tbody>
</table>
Annex 5 - Relation of project with previous PHARE activities and with ongoing projects financed from other sources

The process of implementing the priorities of Accession Partnership and NPPM in the water management sector is based on global investment programmes. These programmes involve providing sewerage systems and wastewater treatment plants to all the towns with over 2,000 inhabitants as well as modernisation of wastewater treatments plants. The project for the modernisation of the wastewater treatment plant in Tomaszów Mazowiecki is a part of those programmes and its implementation will contribute to Poland’s approaching the requirements set out in EU directives.

Since 1990 the PHARE programme has supported the investments in the area of water protection. Up to 1998 the modernisation of sewage treatment plants has been financed under the following programmes:

- PL9002-02 : Water Protection
- PL9102-02-03: Optimisation of Wastewater and Water Management
- PL9102-04 : Protection of the Vistula River Basin Environment
- PL9507-04 : Wastewater and Water Management.

The project for the modernisation of the sewage treatment plant in Tomaszów Mazowiecki so far has not been financed from PHARE fund.
Annex 6 - Financial Analysis of the investment

Financial and economic analysis of the wastewater treatment plant and sewer project in Tomaszów Mazowiecki

The beneficiary is in the possession of following documents, which can also be obtained from the NFEP:

- Water Protection Programme for the Zalew Sulejowski (Sulejów Reservoir) and its direct drainage basin delivered in five technological scenarios (April 1997);
- Decision of the Voivodship Office in Piotrków Trybunalski approving simplified documentation for geological, engineering and hydro-geological conditions;
- Water Protection Programme for the natural drainage basin of the Pilica River upstream (June 1997);
- Pre-Feasibility Study with the Programme for the implementation of the entire “Pilica” Regional Programme (August 1997);
- The beneficiary also holds the documents with regard to the project for the power supply line of 15kV intended for the wastewater treatment plant.

The project can be financially self sustainable only if Tomaszów municipality applies charges on the users of the treatment plant that will cover the full financial costs, including capital costs as well as operation and maintenance costs. The full financial cost of treatment of 1 m$^3$ of the wastewater in the new Tomaszów wastewater treatment plant (WWTP) is calculated by dividing the project’s annualised incremental costs by the cubic meters of wastewater treated annually by the plant. From the data provided by the municipality this cost is calculated to be 0.21 EURO/m$^3$ for the expected rate of return of 8%, and 0.26 EURO per cubic meter for the expected rate of return of 15%. It is the minimum average price loco WWTP, which would cover full costs of operation, maintenance and restitution of fixed assets. Because of the fact that these values are below the prices actually paid by the Polish households we can state that full cost recovery pricing will be affordable for users and feasible for the municipality of Tomaszów Mazowiecki.

**Capital structure and sources of funding:**

<table>
<thead>
<tr>
<th>Source of Funding</th>
<th>MILLION EUR</th>
<th>%</th>
<th>interest rate</th>
<th>Maturity (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU Phare</td>
<td>8.1</td>
<td>53%</td>
<td>grant</td>
<td></td>
</tr>
<tr>
<td>National Fund for Environmental Protection</td>
<td>3.0</td>
<td>20%</td>
<td>1.5%</td>
<td>4</td>
</tr>
<tr>
<td>Municipality of Tomaszów Mazowiecki</td>
<td>4.1</td>
<td>27%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total investment</strong></td>
<td><strong>15.2</strong></td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For the loan from the National Fund for Environmental Protection and water Management, 4-year maturity with the interest rate of 1.5% p.a., if denomination in EUR was assumed.

**Revenue projection** is based on the assumption that Tomaszów municipality applies charges on the users of the treatment plant that cover the full financial costs. With the user fees amounting to EUR 0.21 per one cubic meter charged by the operator of the wastewater treatment plant, the annual stream of revenue would amount to approximately 3.8 MILLION EUR.
Annual O&M costs are estimated for the following resources needed for plant operation: fuel and electricity costs, intake water costs, personnel costs, and environmental management costs. Electricity costs are fixed under a contract with the local power utility at 0.24 PLZ (0.06 EUR) per kWh. With annual electricity consumption at 21,250 MWh, total electricity costs are approximately 1.3 Million EUR. However, due to the fact that part of the electricity and heat demand will be covered from the own engines fuelled by bio-gas recovered from sludge, the annual energy cost savings of 0.3 Million EUR will be achieved. O&M costs cover salaries for a staff of a total 50 people with average gross salary of 558 EUR per month. Total annual cost of operation (without depreciation) will amount to 2.3 Million EUR.
### Item of annual cost

<table>
<thead>
<tr>
<th>Item of annual cost</th>
<th>Annual amount (in thousand EUR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuels</td>
<td>2</td>
</tr>
<tr>
<td>Water</td>
<td>25</td>
</tr>
<tr>
<td>Electricity (minus savings)</td>
<td>1045</td>
</tr>
<tr>
<td>Gross salaries</td>
<td>335</td>
</tr>
<tr>
<td>Chemicals (PIX)</td>
<td>175</td>
</tr>
<tr>
<td>Maintenance, administration</td>
<td>309</td>
</tr>
<tr>
<td>Environmental fees</td>
<td>438</td>
</tr>
<tr>
<td>Depreciation</td>
<td>507</td>
</tr>
<tr>
<td>Total annual costs</td>
<td>2,835</td>
</tr>
<tr>
<td>Annual O&amp;M expenditures (w/o depreciation)</td>
<td>2,328</td>
</tr>
</tbody>
</table>

The **Net Present Value (NPV)** and **Internal Rate of Return (IRR)** of the project are then calculated against net cash flow resulting from the implementation of the project.

**Sensitivity analysis** was conducted with respect to the following parameters:
- Structure of funding, notably with and without grant from Phare
- Lifetime of the facility
- Expected rate of return (discount rate)
- Level of user charges

**Net Present Value (NPV)** from the municipality point of view (taking into account grants and soft loans) will be positive for up to 15% discount rate and with the assumption of 2-year cycle of the investment implementation.

**Internal Rate of Return (IRR)** calculated against 10 years cash flow is only marginally positive and without Phare grant it will decrease to negative values. However, if calculated for the 20 years lifetime, IRR is 15% with the Phare grant, and 3.9% without it. It should be stressed that as always in the case of the public infrastructure the stream of revenue and the values of NPV and IRR depends on the commitment of the municipal authorities to set user fees on the full cost recovery level. The financial viability of the project is very sensitive to the wastewater treatment charges.

**Annex 7 - List of relevant Laws and Regulations:**

**European Union Laws and Regulations**

- 91/271/EEC on urban wastewater treatment
- 75/440/EEC on quality required of surface water intended for abstraction of drinking water in the Member States
- 76/464/EEC on pollution caused by certain hazardous substances discharged into the aquatic environment

**Polish Laws and Regulations**
Annex 8 - Reference to relevant Government Strategic plans and studies

National Programme of Preparation for Membership
• short-term priority no 2 - water quality programmes and implementation of EU water law
• medium-term priority no 1 - water quality programmes and implementation of EU water law

State of Environment in Poland

Draft national report - Poland on the implementation of decision resulting from the conference on the “Environment and Development”

National Environmental Policy of Poland

Executive Programme to the National Environmental Policy of Poland (by the year 2000)

Regional Programme “Pilica”