1. Basic Information

1.1 CRIS Number (Year 1):

1.2 Title: Nevşehir Wastewater Treatment Plant Project

1.3 Sector:

1.4 Location: Turkey, Middle Anatolian Region, Nevşehir

1.5 Contracting of TA
   - April 2007
   - November 2007
   - December 2007/November 2009
   - November 2009/November 2010

Contracting of Works
   - Contracting of Works
   - Construction of WWTP
   - Defects liability period

2. Objectives

2.1 Overall Objective(s):

The overall aim of this project is to accelerate Turkey's accession by enabling Turkey to achieve a high level of environmental protection and compliance with the EU directives concerning water quality

2.2 Project purpose:

The purpose of this project is reduction of the pollution loads to the Kızılırmak River in order to improve water quality of the Kızılırmak River.

2.3 Accession Partnership (AP) and NPAA priority

Improvement of water quality has been assigned priority, since AP document states that, starting transposition and implementation of the acquis related to water quality is a short-term priority, and completing the transposition of the acquis and strengthening the institutional, administrative, and monitoring capacity, including data collection, to ensure environmental protection is a medium-term priority. Nevşehir wastewater treatment plant will serve to improve the water quality of Kızılırmak River.

The scope of this project involves “PRIORITY 22.1 Improvement of Water Quality” in the NPAA. It is stated in the NPAA that, “as the implementation of the legislation under this priority requires heavy investment for both the public and private sector, it is deemed necessary to make infrastructural investment and to strengthen technical capacity”. Studies on priority environmental projects for accession, and support to the development of an efficient financial mechanism to finance EU environmental heavy-cost directives is being carried out under the environmental heavy cost investment planning (EHCIP) project component of the
Capacity Development in the Field of Environment Project (TR-362.03), within the framework of the 2002 Pre-accession Financial Assistance Programme. The feasibility study for Nevşehir wastewater treatment project has been carried out as part of the EHCIP project and the preparation of tender documents is in the process under the same project.

2.4 Contribution to National Development Plan (and/or Structural Funds Development Plan/SDP)

Water quality issues are included in the preliminary National Development Plan (pNDP) under Development Axis 3: Improvement of Infrastructure Services and Environmental Protection. According to the pNDP the major areas of concern are weak institutions (insufficient technical staff, unclear task distribution and lack of infrastructure for information system) as well as an insufficient infrastructure for hygienic drinking water, treatment of wastewater and solid waste management. The main objectives in the environmental sector are described as “to reduce the pressure of economic and social development and human settlements on environment and preserve the natural resources by providing healthy living conditions and increasing the effectiveness of environmental management through disposal of domestic and industrial waste”. “Preservation of the water resources, increase in productivity of drinking water and sewerage services and of solid waste management” is one of the priorities in the pNDP.

The Nevşehir WWTP project will reduce the pressure on the environment, improve the water quality in Kızılirmak River and increase productivity in the sector through the provision of an efficient wastewater treatment plant.

2.5 Cross Border Impact

There is no significant cross border impact. Wind speed and wind directions indicate that it is unlikely that any non-negligible impact will be experienced. Similarly, any transmission of impact via water is not possible if the project measures are taken into account.

3. Description

3.1 Background and justification:

In the scope of the Environmental Heavy Cost Investment Planning Project, granted by EU in the framework of the Pre-accession Programme of Turkey, in accordance with its own ToR, the Consultant established a demand driven database of the required investments. The Consultant screened the projects and developed a "long list" of more than 260 investment project packages. Prioritisation and ranking was done using a multi-criteria ranking methodology which was discussed and agreed during a two day workshop with more than 20 stakeholders including all key stakeholders. The screening, ranking and prioritization are described in a set of working papers published by the EHCIP project and approved by MoEF. From more than 260 investment project packages, the Nevşehir WWTP project was ranked as number 3 (of all projects) and first in WWTP projects.

Prior to initiating the feasibility study, a team of experts have visited the site of a number of short listed projects in order to evaluate whether the proposed project meets pre-defined killer
criteria and to identify issues that may be critical to project feasibility and which could be identified at this stage. For the Nevşehir project the identification mission found that, the project has strong political support, the sewer network is ready to be connected to the WWTP, the site (for the WWTP) is owned by the Municipality and soil conditions were verified. The Consultant recommended the project for inclusion among the six investment packages.

Nevşehir is an Anatolian city with a population of 74,000 in 2004 and located in the Middle Anatolian Region. WWTP project will serve also three more adjacent municipalities (Nar, Göre and Uçhisar) and two villages (Çardak and Güvercinlik) and the total population of project area was about 88,250 in 2004. The sewerage system has been completed and approximately 95% of the residents in the area are connected to the sewerage network. By 2004, approximately 10,000 m³/day wastewater is discharged to the Kızılirmak River via Karaağaç Creek without any treatment.

A stakeholder meeting was held on 29 September 2004 with participation from key local stakeholders, local politicians, academia, representatives of industry and the general public. The stakeholder meeting was widely announced beforehand and received extensive coverage in local media. The project received favourable reactions during the meeting.

Justification

Kızılirmak River is used for irrigation, energy production, fishing and recreational activities and eventually flows into the Black Sea. The untreated wastewater from numerous municipalities and industries is the major pollution factor for the Kızılirmak River. This adversely affects the environmental state of the river.

The sewerage system of Nevşehir, made from concrete pipes, was completed in 1998 by İller Bank. All extensions from that date on are implemented by the municipality. Approximately 99% of the inhabitants are presently connected to the sewerage system. The collected wastewater is transmitted (and discharged) to the Karaağaç Creek adjacent to the site for the proposed wastewater treatment plant. The required land has been expropriated by the Municipality and is ready for use for the construction of WWTP.

For the time being there is not any industry which has toxic loads to the WWTP. The main industries in the project area are; beverage, wine, flour, small industrial activities, and municipal slaughter house. All the industrial wastewaters will be accepted to the WWTP with the precondition that their discharge satisfies the Water Pollution Control Regulation or they have constructed their pre-treatment units to comply with the required standards. The Nevşehir Municipality and Provincial Directorate of MoEF has the legal right to enforce the industrial pre-treatment by not only by fines as well as by the closure of the enterprises.


Since the project has been designed in compliance with the EU discharge requirements and international construction standards it will serve as a demonstration model for implementation of similar WWTP projects in Turkey in the future.

The implementation of Nevşehir WWTP project is completely in accordance with the objectives laid down in the Accession Partnership of Turkey and to corresponding national
programmes for the improvement of the environment. Also, this project is a stage in the direction of Turkish implementation of the EU environmental legislation and compliance with the environmental standards of the EU Acquis. The discharge criteria for the WWTP are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Oxygen Demand (COD)</td>
<td>100 mg/l</td>
</tr>
<tr>
<td>Biochemical Oxygen Demand (BOD$_5$)</td>
<td>25 mg/l</td>
</tr>
<tr>
<td>Suspended solids</td>
<td>30 mg/l</td>
</tr>
</tbody>
</table>

The waste water treatment plant will produce sewage sludge. A marketing plan for the sewage sludge will be developed and specify which quantities will be used in the reforestation areas around Nevşehir and which quantities will be used on agricultural land in need of organic material in compliance with the sewage sludge directive. The monitoring programme to be applied to the discharges of the industries to the sewerage will ensure the quality of the sludge, (in terms of heavy metal concentrations being below the limit values of the sludge directive). This will be verified by monitoring the quality of the sludge produced in the WWTP. Monitoring will be done by the competent authority.

According to the national policies, Nevşehir is within the priority development areas, listed as an annex to the Circular for the Guidelines for the Preparation of Annual Investment Programme. The project is also in compliance with the Black Sea National Nutrient Reduction Action Plan (2000) of Turkey.

3.2 Sectoral rationale

Not applicable

3.3 Results

The following results are expected from the project:

- The project will lead to increasing the overall effectiveness and efficiency of water management in the said region.
- The health standards of the public on the downstream are improved.
- A sound financial management is introduced and implemented in the Nevşehir Municipality ensuring of the sustainable operation
- Operational staff able to operate WWTP plant

3.4 Activities (including Means)

The main activities within the scope of the project will be as follows:

a) Works:

Construction of a treatment plant:

The treatment plant will be an extended aeration activated sludge plant (with nitrification and some denitrification based on operational conditions) with physical and biological stages servicing a population of 125,000 persons and 9,000 industrial p.e. (stage one). The plant is planned to allow easy extension to cover 170,000 persons and 11,000 industrial p.e. (stage two) and upgrading for tertiary treatment in the future if necessary. This project covers the first stage. The capacity of the plant including industrial contribution will be 650 m$^3$/hr
(average flowrate). The discharge will meet the effluent requirements of the EU UWWT directive as well as Turkish effluent requirements.

Nevşehir Wastewater Treatment Plant will consist of the following units. Details are presented in the Application Form and Feasibility Study.

- Coarse screens
- Inlet pumping station
- Fine screens
- Grit and grease chamber
- Aeration tanks
- Final sedimentation tanks
- Disinfection unit
- Excess and return sludge pumping station
- Mechanical sludge thickener
- Sludge dewatering unit

The project completion (including satisfactory completion of the defects liability period) will be verified by reports from the technical assistance (including construction supervision) consultant to be hired in the scope of the project. The proper operation of the WWTP and later impact on Kızılarımak River will be monitored as part of the regular monitoring of rivers carried out by DSI and may additionally be monitored by an ad hoc team hired by the EC.

The dewatered and stabilized sludge will fulfil the requirements of the EU sludge directive and will be deposited and used within reforestation (for the reforestation areas of the Forests Administration in Nevşehir) and within agriculture in accordance with the directive. Nevşehir WWTP will produce 12-18 m$^3$/day stabilised sludge from 2009 to 2020. The technical assistance will support the municipality in preparing a marketing strategy to promote the farmers' use of biological sludge and necessary measures will be taken for the storage of sludge which will be used as fertilizer.

The works contractor will be responsible for the training of operational staff related to the treatment plant. This staff will be trained by the contractor's personnel during the defects liability period.

b) Services

The technical assistance (TA) including training and institutional strengthening to the municipality and the supervision by the consultant of the actual WWTP construction is planned to be combined in one contract for two reasons: One contract will reduce the overall TA costs and will reduce / eliminate co-ordination problems between the two teams. There will be overlapping issues in particular in relation to financial management of the investment project and the setting up of an efficient financial management for the water and wastewater services in the municipality.

The TA will include the following main tasks:

- Pre- and post tendering procedures according to PRAG
- Design review
- Support to the CFCU in tendering of the WWTP
- Project supervision according to PRAG
- Support to the Municipality, TA and specific training of the Municipality staff in administrative and financial management of the investment project,
• Support to the Municipality in setting up a ring-fenced accounting system (based on IAS), efficient financial management and cost based tariff calculations for the water and wastewater accounts.
• Support and close co-operation to/with the CFCU and the PIU (Municipality, MoEF, Iller Bank)
• Training of the Nevsehir and other municipalities in efficient financial management and cost based tariff calculations for the water and wastewater accounts

3.5 Linked Activities:

The "Integrated Environmental Strategy for the Turkish Republic" (April 2004) forms a framework for the environmental technical assistance and infrastructure investments in support of the adoption of the acquis.

The Environmental Heavy Cost Investments Planning component of the Capacity Development in the Field of Environment Project (TR-362.03), within the framework of the 2002 Pre-accession Financial Assistance Programme has prepared tender dossiers for six investment packages, Nevsehir WWTP Project being one of them.

There is no other major infrastructural investment by the Municipality ongoing at present.

Nevsehir region may soon face with water shortage problem. This is based on reports that the water level in many of the existing wells have dropped considerably and thus the existing wells are not likely to meet the demands in the near future.

The State Hydraulic Works has undertaken to evaluate the future water supply to Nevsehir. The agency has assessed six resource alternatives, five being surface water resources, for the service area of the ‘Nevsehir Municipalities Water and Service Association, and has already started the feasibility studies. It is reported that the construction will be executed by either Iller Bank or the association, depending on the results of their feasibility study. This project aims to find a long-term solution for water shortage in 10 municipalities, and involves the diversion of the melting snow waters from the Niğde Demirkazık Mountains to the Ecemiş Creek as an alternative water resource.

The municipality intends to start a new project on solid waste management as soon as possible. The aim of this project is mainly to construct a new modern landfill together with neighbouring municipalities.

A marketing plan for the use of the sewage sludge from the WWTP will be prepared by the TA consultant and implemented by the Nevsehir Municipality.

The Environmental Heavy Cost Investments Planning component of the Capacity Development in the Field of Environment Project (TR-362.03), within the framework of the 2002 Pre-accession Financial Assistance Programme has also prepared tender dossiers for Tokat WWTP Project, which is also included in the submitted Pre-accession Financial Assistance 2006 programme.

3.6 Lessons learned:

This project is among the first EU funded environmental infrastructure projects in Turkey. Thus there are little of relevance in terms of previous interim evaluations, monitoring and assessment reports etc. The main sources for lessons learned are general lessons learned from
ISPA assistance to central and Eastern Europe and lessons learned from previously nationally funded projects mainly those of Iller Bank

Except for the ISPA annual reports very limited material on the lessons learned from ISPA has been published. The 2002 Annual report underlines the importance of preparing secondary treatment plants for upgrading to tertiary where this may become necessary. As mentioned above, this has been considered in the Nevşehir WWTP project.

With regard to lessons learned from e.g. Iller Bank supported projects and this project up to now the two main lessons seem to be:

1) It is important to put in place measures to ensure financial and operational sustainability. The feasibility study has analysed affordability and found that Nevşehir WWTP project is financially viable with the EU grant proposed. The cumulative cash flow is positive in all years and consumers can afford to pay a tariff which eventually will cover the full cost of the entire water and wastewater system. To enhance operational sustainability the Contractor will have responsibility to train municipal staff in operations during the defects liability period and the technical assistance consultant will monitor that this is done properly.

2) It has been experienced noticed that some of the stakeholders are very sensitive if their views are not heard as part of the investment preparation process. To overcome this problem stakeholder meetings have been organized from a very early stage of project preparation to achieve stakeholder participation and transparency.

4. Institutional Framework

The main beneficiary of the project is Nevşehir Municipality, which will be the owner and operator of the wastewater treatment plant once it has been constructed. The municipality has enough engineers and technicians and will allocate or hire the staff required to operate the plant during the construction period to be trained by the contractor.

Nevşehir Municipality will be responsible for the provision of national finance for the investment and for financing the operational costs of the WWTP. The investment finance will come from Iller Bank and from the budget of Nevşehir municipality. Furthermore, Nevşehir Municipality is committed to establish ring-fenced water and wastewater account (based on IAS principles) and a budgetary and operational structure within the Municipality which provides the necessary ground for a sustainable operation. The Municipality is also committed to increase tariffs to a cost recovery level which ensures not only a sufficient cash flow, but also a build up of funds for the future replacement investments. The outsourcing of the operation of the WWTP shall be evaluated by the TA and will be considered as a strong alternative.

As the main beneficiary of the project, Nevşehir Municipality will be represented in the PIU.

A total of 15 staff members in the municipality have higher education in various fields (5 civil engineers, 1 architect, 1 mechanical engineer, 3 cartography engineers, 1 agricultural engineer, 2 environmental engineers, 1 geology engineer, 1 electric-electronics engineer) and 3 technicians (2 construction technicians and 1 cartography technician). All staff is currently employed in Nevşehir Municipality.

Out of 15 engineers, one mechanical, one civil, one geologist, one electric-electronics, one geodesy and two environmental engineers are employed in the Research, Planning and Coordination Division (RPCD), which is the division of Nevşehir Municipality that is involved in the framework of this WWTP project.
The Ministry of Environment and Forest (MoEF), being the key institution on the national level, was established by Government Decree no. 443 in 1991, which empowers it to conduct activities to protect and improve the environment. These activities involve ensuring appropriate land use, protecting natural resources, plants and animal species, and preventing pollution. The MoEF has important duties concerning permitting of installations and enforcement of environmental legislation such as authorization of discharges from urban wastewater treatment plants. The General Directorate of Environmental Impact Assessment and Planning oversees the EIA procedures and issues the necessary authorizations. MoEF shall be a member of the Project Implementation Unit (PIU) which will be established for the implementation of the project.

Bank of Provinces (Iller Bank) being the national financing Agency for the municipalities, shall have a function to assist to the Municipality by following-up and monitoring the target management of the project. Iller Bank has extensive experience on the finance, implementation and supervision of the water and wastewater infrastructure. Municipalities are shareholders in the capital of the Bank which can act as a loan guarantor. Iller Bank is expected to co-finance the project. Iller Bank shall be a member of the Project Implementation Unit (PIU) which will be established for the implementation of the project.

National Fund will be responsible for management of the funds for EC, to ensure the flow of national resources.

The role of EC Delegation will be to carry out the ex-ante control/approval during the contract implementation. The EU grant programme will be under full control of EC Delegation and information for the co-finance will be kept transparent to the EC delegation.

The TA Consultant shall be selected in accordance with the PRAG guidelines and procedures and will be contracted in the framework of the FIDIC White Book. The Consultant will have to be independent from the Contractors, Suppliers and other parties benefiting from the project not to have any conflict of interest. Thus no contractor can be short listed if there are any links to the chosen Consultant.

The Consultant will be responsible for supervision and provide assistance for PIU and CFCU in accordance with TOR including the approvals of the design, acceptance of the works, implementation of the performance tests, commissioning, issuing interim and final payment certificates.

The Consultant will also provide training and technical assistance to the municipality for the establishment of a ring-fenced accounting system (based on IAS), efficient financial management and cost based tariff calculations for the water and wastewater accounts. In addition the Consultant will perform other institutional strengthening tasks and support the municipality inter alia in drawing up a marketing plan for sewage sludge.

The Consultant will provide support to the PIU in administrative and financial management of the project implementation.

The consultant will be instructed by the CFCU and PIU and report these organizations.

Monthly monitoring and consultative meetings shall be held among the major stakeholders, including the representatives of the Contractor, the Consultant, Nevşehir Municipality, the MoEF, the Iller Bank and the CFCU. The meetings will be chaired by the Municipality and the Consultant will provide the secretariat.

Organisation of the institutions involved in the implementation of the project is described under Section 6 "Implementation Arrangements".
5. **Detailed Budget**

<table>
<thead>
<tr>
<th></th>
<th>Phare/Pre-accession Instrument support</th>
<th>Co-financing</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>€M</td>
<td>National Public Funds (*)</td>
<td>Other Sources (**)</td>
</tr>
<tr>
<td>TA services</td>
<td>1.0</td>
<td>0.3</td>
<td>0.0</td>
</tr>
<tr>
<td>Works</td>
<td>5.6</td>
<td>1.9</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>6.6</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>% of total public funds</td>
<td>75%</td>
<td>25%</td>
<td>0%</td>
</tr>
</tbody>
</table>

1. All investment sub-projects supported by the pre-accession fund must receive co-financing from national public funds. Minimum requirement for co-financing from national public funds is 25% of the combined PHARE and national contributions to the overall investment support.

2. Many Institution building projects will also have a degree of co-financing – this should be quantified and included wherever possible.

3. Expenditure related to equipment (regulatory infrastructure or ESC-related) and to Technical Assistance supporting investment (e.g. pre feasibility study / supervision of works / technical specifications) should be considered as Investment support in the project fiche.

4. All co-financing must be provided on a joint basis. Parallel co-financing will, in principle, not be accepted. Exceptions to this rule have to be agreed with the Commission in advance.

5. All co-financing should be clearly quantified, also the degree of certainty of such co-financing (i.e. for National Public Funds: is it already earmarked in local or national budget, for FIs Loans, private funds: are they already approved/under appraisal, etc.).

6. *Where parallel co financing is accepted and justified per exception to the normal rule it should be provided in monetary form. If this is not possible there should be clear criteria set out for the valuation of any non-monetary contributions (that should be quantified in the table)*

7. *If twinning is involved, clearly state the expected budget of the twinning covenant*

8. *The financial engineering of the project should be closely monitored against actual delivery during implementation and against the objectives that were set in the project fiche so that corrective actions may be taken where required.*

6. **Implementation Arrangements**

6.1 **Implementing Agency**

The **Central Finance and Contracts Unit** under the Ministry of Foreign Affairs Secretariat General for the EU Affairs is the Contracting Authority and the Implementing Agency for the project.

The CFCU responsibility will cover the following main tasks:
• Procurement matters according to PRAG, the appointment of the evaluation committee including establishing and signing all contracts (Work, Supply and Services)
• Administrative, financial, technical management and monitoring of the project(s)
• Verification of invoices, maintenance of technical, financial reporting and accounting systems
• Regular monitoring and follow-up on project progress and information to the ECD and the National Fund on financial and physical progress

The CFCU will perform the contract management according to PRAG/FIDIC procedures possibly supported by a PIU on agreed specific project operational aspects of project implementation (including dispute management).

The contact details of the CFCU are presented below:

Central Finance and Contracting Unit
Ehlibeýt Mahallesi 6. Sokak No 18/8
Eksioglu İş Merkezi Kat: 4 06520 Balgat-Ankara
Mr. Muhsin Altun - PAO
Telephone: +90 312 4723700
Telex/Fax: +90 312 4723744
E-mail: muhsin.altun@cfcu.gov.tr

The establishment of a local PIU to support the CFCU with practical matters is considered highly beneficial for a cost efficient and timely project implementation.

The PIU is proposed to consist of as a minimum a three-member board, appointed by three institutions, İller Bank, Ministry of Environment and Forest, Nevşehir Municipality and headed by a PIU Manager. Although of an ad hoc nature, the sustainability and know-how accumulation in such an organization are considered highly important for the participating organizations.

The PIU will provide support to the CFCU on agreed specific project operational aspects of project implementation (ref. above CFCU), advise and prepare project documentation for the CFCU according to PRAG and FIDIC and do administrative work.

It has to be noted that the contractual responsibilities of the CFCU will not be delegated to PIU (such as approval of payments, commissioning and final approval at taking over, etc.). But the PIU will support the CFCU during the implementation of the projects. In any case the final responsibility will remain with the CFCU.

If established, the CFCU will assign a number of operational tasks and responsibilities to the PIU such as:

• Daily liaison with the TA/Supervising the consultant
• Administrative, financial, technical progress reporting and monitoring of the project(s) for Works and Services
• Participation in the tender evaluation and reporting
• Co-ordination between the stakeholders
• Verification of invoices and support to technical, financial reporting and accounting systems; pre-approval of invoices and payments
• Regular monitoring and follow-up on project progress and information to the National Fund on financial and physical progress
• Participation in approval of works, performance tests of the completed works, commissioning and final approval of taking-over certificates
• Monitoring of the contractor’s training activities of future operational staff of the wastewater treatment plant project during and after project implementation
• All other tasks as assigned to it by the CFCU

The key institution at the national level is the **Ministry of Environment and Forest**. The MoEF shall be responsible for the co-ordination of the project with other national institutions whenever necessary, follow-up and initiating the dissemination of the model projects, the results and experience nationwide to other related projects. The MoEF will be a member of the proposed PIU structure.

The contact details of the MoEF are presented below:

**Ministry of Environment and Forest**
Atatürk Bulvari No: 153,
06100 Bakanliklar – Ankara
Contact: Prof. Dr. Mustafa Öztürk, Dep. Undersecretary
Telephone: +90 312 4254389
Telex/Fax: +90 312 4170237

The final beneficiary and end-user of the wastewater treatment plant project is **Nevşehir Municipality**. The Municipality will be the owner of the wastewater treatment plant once it has been constructed. It will be responsible for the provision of national co-financing for the investment and for financing the operational costs of the wastewater treatment plant.

The future staff of the Municipality responsible for management and operation of the wastewater treatment plant will be assigned by the Municipality (during the construction period); they will take part in the testing, commissioning and hand-over of the wastewater treatment plant together with the contractor and the supervising engineer. The Municipality will be a member of the proposed PIU structure.

The contact details of the Nevşehir Municipality are presented below:

**Nevşehir Municipality**
Nevşehir Belediye Baskanligi/Nevşehir
Contact: Mr. Ayhan Apaydin, Head of Research Planning and Coordination Department
Telephone: +90 384 2127655
Telex/Fax: +90 384 2131991

The Contractor will operate the plant for one year and during that period; the Municipality will gear up its own organization and receive training in all operational aspects of the plant operation. At the end of the one-year training, the Municipality will be fully responsible for the successful operation of the wastewater treatment plant as a model project.

The **Iller Bank** being the national financing agency for the Municipalities is expected to provide part of the national financing contribution. Furthermore, it will have the function of
assisting the Municipality by following-up and monitoring the target management of the project. The Iller Bank will be a member of the proposed PIU structure.

The contact details of the Iller Bank are presented below:

**Iller Bank**  
Iller Bankası Genel Mudurluğu  
Yeni Ziraat Mahallesi 14. Sokak no 14  
Diskapi - Ankara  
Contact: Bahattin Kaptan, Deputy General Director  
Telephone: +90 312 3412293  
Telex/Fax: +90 312 3412068

The Project Implementation Chart for Nevşehir WWTP project is given below.

6.2 Twinning

Not applicable

6.3 Non-standard aspects

Not applicable, as the EC practical guide (PRAG) will be strictly followed.

6.4 Contracts

Two contracts will be realized:

- Service Contract for review of design and construction supervision, TA on financial and institutional management for the municipality. Estimated value of contract is **1.3 million EUR**
- Works contract for the construction of the WWTP including all civil and electro-mechanical components. One year operation and maintenance of the WWTP during the defect liability period is included in the works contract. Estimated value of contract is **7.5 million EUR**
Project Implementation Chart

**National Fund**
- Chaired by NAO
- Request and manage fund for EC
- Ensure the flow of national and other co-financing resources: Budget, EIB, IFI, Iller Bank
- Transfer and recover non-used funds from/to the IAs or CFCU
- Collect reports from CFCU

**Consultant/Engineer**
- Responsible for supervision (engineer in FIDIC)
- Provide TA both for PIU and CFCU in accordance with TOR
- Report to CFCU and PIU
- Issue interim payment certificate
- Take instruction from PIU/CFCU

**Management Committee**

**CFCU (Central Financing and Contracting Unit)**
- Tendering
- Contracting
- Monitoring/supervision (through consultant)
- Reporting to EC via National Fund
- Paying implementing agents

**Project Implementing Unit (PIU)**
- Established by Municipality, MoEF, and Iller Bank
- Act on behalf of CFCU on the day to day technical implementation
- Certify/endorse Interim Payment Certificates
- Maintain own control system

**Local Finance**
- Reports and requests for funds

**Municipality**
- Contracts
- Participation
- Ex-ante approval

**Iller Bank**
- Reports and requests for funds

**Contractor**
- Execute works
- Request payment

**Ministry of Environment**

**National IPA Coordinator NIC**
- IPA Monitoring Committee chaired by NIC

**Submission of project**

**Financing Memorandum**

**Reports**

**Memorandum of Understanding**

**EU grants**

**Ex-ante approval**

**Financing agreement**

**National Fund**
- Chaired by NAO
- Request and manage fund for EC
- Ensure the flow of national and other co-financing resources: Budget, EIB, IFI, Iller Bank
- Transfer and recover non-used funds from/to the IAs or CFCU
- Collect reports from CFCU
7. **Implementation Schedule**

The implementation of the investment project will require a 42 months period (from the advance to the TA in April 2007 to the final payment of works contractor at the end of September 2010) as follows:

- 24 months for the works + 12 months for operation
- 44 months for the TA contract

The execution of the project shall end not later than **November 2010**

7.1 Start of tendering for works

- May 2007 Contracting of Works
- December 2007/November 2009 Construction of WWTP
- November 2009/November 2010 Defects liability period

7.2 Start of project activity

- December 2007

7.3 Project completion

- November 2009 Construction of WWTP
- November 2010 Defects liability period

8. **Equal Opportunity**

Equal opportunity for men and women to participate in all components of the project will be assured.

9. **Environment**

The EIA process has met both the requirements of the 85/337/EEC as amended and those of the Turkish EIA Regulation of 16 December 2003 using the more stringent requirements of each whenever there is not a complete overlap.

The Environmental Screening Report has been prepared by the Consultant as a desktop study and submitted to the MoEF for review on March 7, 2005. The Ministry has sent its comments about the Screening Report and requested additional information about the project on March 16, 2005. After submission of the revised Report the MoEF has made a decision that on June 2, 2005 that a full EIA was not required. This decision was based on an assessment of the non-appearance of the potential significant effects of the project in relation to the characteristics of the project and location of it and having regard in particular to:
• the extent of the impact (geographical area and size of the affected population),
• the trans-frontier nature of the impact,
• the magnitude and complexity of the impact,
• the probability of the impact,
• the duration, frequency and reversibility of the impact.

It should be noted that according to the EU EIA directive, Nevsehir WWTP project is an Annex 2 project and based on a case by case examination of the effects as explained above, the competent authority has determined that a full EIA would not be carried out.

10. Rates of return

The financial rate of return and the economic rate of return are analysed according to the EC Cost - Benefit analysis Guidelines. For the NPV calculation, the discount rate used is 10% in nominal terms equivalent to 8% in real terms (as justified in the feasibility report). The key financial rates are shown below.

<table>
<thead>
<tr>
<th>Key results</th>
<th>Grant percentage</th>
<th>NPV of grant</th>
<th>FRR/C</th>
<th>FNPV/C</th>
<th>FRR/K</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Modified formula&quot;</td>
<td>75.00%</td>
<td>4,858,435</td>
<td>-2.99%</td>
<td>-5,107,918</td>
<td>6.35%</td>
</tr>
</tbody>
</table>

The feasibility study assumes a user charge which meets the criteria of the polluter pays principle and is limited by the affordability of households. It can be seen that the project is not viable without a grant. However with a 75% grant, the project becomes viable providing an internal rate of return on the national budget contribution which is slightly higher than the discount rate.

The resulting cash flow is calculated year by year. The financing profile is such that cumulated cash flow is positive in all year. The debt cover ratio is 1.60, which is sufficient without being excessive.

The calculations for NPV, IRR etc. are presented as part of the feasibility study.

The key ratios from the economic analysis are shown below:

- Economic internal rate of return (ERR) 16.7%
- Economic net present value (ENPV) 4,124,478
- Social discount rate (nominal) 10%
- B/C ratio 1.37

The calculations illustrate that the project is viable seen from the point of view of the country and the economic internal rate of return is higher than the financial internal rate of return. This reflects the value of non-marketed benefits such as improvements in health and river water quality. The value of these non-marketed benefits has been assessed using the report prepared for the European Commission on the benefits of approximation.

11. Investment criteria (applicable to all investments)
11.1 Catalytic effect

As illustrated above, without the EU grant support the project is not viable. However, with the grant the project becomes viable. The tariff is assumed to increase to a level which ensures not only a positive cumulative cash flow, but also that the ring-fenced water account in the municipality can build up sufficient funds to cover reinvestments and rehabilitation when needed.

The first tariff increase due to the project is assumed to take place in 2006 followed by subsequent tariff increases (in addition to inflation) in 2007, 2008 and 2009. By the time the project is handed over the full tariff increase of 0.17 EUR/m³ is implemented and the new average tariff will be 1.05 EUR/m³ (incl. VAT).

11.2 Co-financing

The project will be co-financed by national funds. It is envisaged that the municipality will finance directly from their own budget, the rest being a loan by the municipality in Iller Bank. The share of national funds will be minimum 25% of the total eligible cost plus the land and other non-eligible costs.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Costs</th>
<th>Non Eligible Cost</th>
<th>Total</th>
<th>FI for Turkey</th>
<th>National authorities</th>
<th>Loan from IFI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Central Government</td>
<td>Regional Authority</td>
<td>Local Authority</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>=2+3</td>
<td>5+7+8+9+10</td>
<td>=3/1</td>
<td>=5/3</td>
<td>(%)(%)</td>
<td>(%)</td>
</tr>
<tr>
<td>2006</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>2,398</td>
<td>0</td>
<td>2,398</td>
<td>1,799</td>
<td>75,0%</td>
<td>264</td>
</tr>
<tr>
<td>2008</td>
<td>3,104</td>
<td>0</td>
<td>3,104</td>
<td>2,326</td>
<td>75,0%</td>
<td>341</td>
</tr>
<tr>
<td>2009</td>
<td>2,366</td>
<td>0</td>
<td>2,366</td>
<td>1,774</td>
<td>75,0%</td>
<td>260</td>
</tr>
<tr>
<td>2010</td>
<td>883</td>
<td>0</td>
<td>883</td>
<td>662</td>
<td>75,0%</td>
<td>97</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>current prices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8,751</td>
<td>8,751</td>
<td>6,563</td>
<td>963</td>
<td>1,229</td>
<td></td>
</tr>
</tbody>
</table>
11.3 Additionality

The market for long term commercial loans for infrastructure in Turkey is virtually non-existing. Therefore financing for infrastructure has to rely on public funding sources (such as İller Bank loans) and EU grants or IFI loans. The World Bank provided a loan to İller Bank (approved by the Board of the World Bank in June 2005). However, the financial analysis illustrates that the project is not viable without the EU grant, thus a World Bank loan is not an alternative for this part of the financing. İller Bank has indicated that his own funds may be available to Nevşehir Municipality.

11.4 Project readiness and size

The feasibility report is ready and annexed to the Application for Investment Assistance under the Financial Instrument for Turkey (Council Regulation (EC No: 2050/2001 of 17 December 2001). The feasibility study, the Environmental Impact Assessment report and the tender documents for the works and the TA have been prepared by the EHCIP Consultant. All of these reports and tender documents have been approved by the CFCU in November 2005.

The project is ready for tendering. The total eligible cost of the project including technical assistance is around 8.750 million Euros.

The required land for the construction of a WWTP has been expropriated by the Municipality and ready to use. The access road is available to the site and there is a power connection for site works. Topographical and geotechnical surveys are completed and there is not any major constraint for the construction of a WWTP. The Karaağaç creek is very close to site; hence discharge of treated water to the creek doesn’t require any expropriation for the construction of discharge pipe. The Municipality is committed fully for the implementation of the project.

11.5 Sustainability

The Nevşehir Municipality will be responsible for the sustainability of the project after the implementation. According to the legislation the Municipality may set the user charges for water and wastewater services and collect these user charges from their customers. The feasibility study has assumed that the municipality increases the revenues from the tariff by approximately 10% in 2005 (effectively not passing the reduction in VAT rate from 18% to 8% on to consumers) and then increases the tariff additionally 0.17 EUR/m3 by 2009 as described above. In this way the resulting tariff of 1.05 EUR/m3 will provide not only sufficient cash flow, but also build up a fund for re-investments.

For a sustainable and reliable operation of the WWTP, the industries will be enforced to fulfil the pre-treatment requirements when applicable. Effluent discharge parameters of such enterprises will regularly be monitored by the Municipality and Provincial Directorate of MoEF.

Sludge disposal will be carried out by the Nevşehir Municipality based on the marketing plan prepared with the support of the TA consultant.
11.6 Compliance with state aids provisions

The project complies with the state aid provisions.

12. Conditionality and sequencing

- The national Co-financing will be provided by the Nevşehir Municipality under some guarantee which is acceptable by the National Fund.
- The design shall comply with the relevant EC directives.
- The municipality of Nevşehir will increase the water and wastewater tariff from the current average level of 0.88 EUR/m³ (2004 prices incl. VAT) to 1.05 EUR/m³ (2004 prices incl. VAT) in 2009. There shall be an increase of roughly equal increments each year.
- A memorandum of understanding shall be signed with the beneficiaries and Contracting Authority before the implementation of the projects regarding the new tariffs rates and their management plan to secure the sustainability of the projects.

ANNEXES TO PROJECT FICHE

1. Logframe in standard format (compulsory) for each project - see Annex 6 of this Guide for guidance – plus (optional) sector monitoring sheet for sector programmes

2. Detailed implementation chart (compulsory for year 1, optional for future years)

3. Contracting and disbursement schedule, by quarter, for full duration of project (including disbursement period) (compulsory for year 1)

4. For all projects: reference list of feasibility/pre-feasibility studies, in depth ex ante evaluations or other forms of preparatory work. For all investment projects, the executive summaries of economic and financial appraisals, environmental impact assessments, etc, should be attached (compulsory)

5. Reference list of relevant laws and regulations (compulsory)

6. Reference list of relevant strategic plans and studies (may include institution sector strategies, development plans, business development plans, etc) (compulsory)
## ANNEX 1  Logframe for Turkey pre-accession scheme projects

<table>
<thead>
<tr>
<th>LOGFRAME PLANNING MATRIX FOR Project</th>
<th>Programme name and number</th>
<th>Contracting period expires December 2008</th>
<th>Disbursement period expires December 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevşehir Wastewater Treatment Plant</td>
<td>Total budget : €8.750 million</td>
<td>EU budget : €6.563 million</td>
<td></td>
</tr>
</tbody>
</table>

### Overall objective
The overall aim of this project is to accelerate Turkey's accession by enabling Turkey to achieve a high level of environmental protection and compliance with the EC directives in the water sector.

- The Environmental Chapter is closed
- The number and type of wastewater treatment plants implemented in Turkey comply with the EC directives and Turkish legislation

### Objectively Verifiable Indicators
- Prime Minister's Office
- State Institute of Statistics
- Ministry of Environment and Forest
- State Hydraulic Works

### Project purpose
The specific purpose of this project is to reduce the pollution loads to Kızılırmak River in order to improve water quality of the Kızılırmak River.

- The treatment plant is operational at EU standard by October 2010 (or before)
- The pollution loads to the Kızılırmak River at the discharge point will decrease by 90% by October 2010 (or before).

### Objectively Verifiable Indicators
- Hand over certificate and TA final report
- State of environment reports from Provincial Directorate of Ministry Environment and Forest
- Reports from the Turkish Scientific and Technical Research Institute
- DSI regular monitoring

### Assumptions
- Enforcements are in force to the industries connected to the system
- There is no other new significant pollution sources upstream which negate the effects on water quality in Kızılırmak
<table>
<thead>
<tr>
<th>Results</th>
<th>Objectively Verifiable Indicators</th>
<th>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• The project will lead to increasing the overall effectiveness and efficiency of water management in the said region.</td>
<td>• The treatment plant has been implemented and commissioned on the schedule and standards specified in the tender dossiers.</td>
<td>• Final report from TA consultant and monitoring by EC Delegation</td>
<td>• Competent contractor selected for the establishing of the plant</td>
</tr>
<tr>
<td>• The health standards of the public on the downstream are improved.</td>
<td>• Negative change in the number of E-Coli in Kızılırmak River downstream of Nevşehir before and after project implementation. The number of the E-Coli encountered at the point of discharge is acceptable to the EU standards</td>
<td>• State of environment reports from Provincial Directorate of Ministry Environment and Forest</td>
<td>• Properly skilled staff allocated for the operation of the plant</td>
</tr>
<tr>
<td>• A sound financial management is introduced and implemented in the Nevşehir Municipality ensuring of the sustainable operation</td>
<td>• Profit shown in the water and wastewater accounts of the Nevşehir Municipality (accounts to be according to IAS (International Accounting System) principles)</td>
<td>• Reports from State Hydraulic Works</td>
<td></td>
</tr>
<tr>
<td>• Operational staff able to operate WWTP plant</td>
<td>• Operational staff are trained in accordance with the proposed programme</td>
<td>• Annual financial statements of the Municipality and statement of the water account</td>
<td></td>
</tr>
<tr>
<td>Activities</td>
<td>Means</td>
<td>Assumptions</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------</td>
<td>-------------</td>
<td></td>
</tr>
</tbody>
</table>
| 1. Construction of the WWTP  
  • Coarse screens  
  • Inlet pumping station  
  • Fine screens  
  • Grit and grease chamber  
  • Aeration tanks  
  • Final sedimentation tanks  
  • Disinfection unit  
  • Excess and return sludge pumping station  
  • Mechanical sludge thickener  
  • Sludge dewatering unit | • Engagement of a qualified contractor for performance of the Design-Build Contract  
  • Engagement of TA consultants and supervisors  
  • Commissioning under the supervision of the engineer  
  • Operational staff trained by the Contractor Establishment of a ring-fenced water services account and a semi-autonomous department | |
Municipality, TA and specific training of the Municipality staff in administrative and financial management of the investment project,

- Support to the Municipality in setting up a ring-fenced accounting system (based on IAS), efficient financial management and cost based tariff calculations for the water and wastewater accounts.
- Support and close co-operation to/with the CFCU and the PIU (Municipality, MoEF, Iller Bank)
ANNEX 2  
Detailed Implementation Chart

<table>
<thead>
<tr>
<th>Annex II Implementation Chart</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech Assistance Works</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annex II Implementation Chart</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tech Assistance Works</td>
<td>I</td>
<td>I</td>
</tr>
</tbody>
</table>
## ANNEX 3 Contracting and Disbursement Schedules (in MEUR)

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-TA Services for supervision</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2-Construction of the treatment plant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>Cumulated</td>
<td>1</td>
<td>1</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
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<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Disbursed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-TA Services for supervision</td>
<td>0.2</td>
<td>0.095</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.075</td>
<td>0.025</td>
<td>0.025</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2-Construction of the treatment plant</td>
<td>1.9</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.375</td>
<td>0.5</td>
<td></td>
<td></td>
<td>5.6</td>
</tr>
<tr>
<td>Cumulated</td>
<td>0.2</td>
<td>0.2</td>
<td>2.175</td>
<td>2.625</td>
<td>3.075</td>
<td>3.525</td>
<td>3.975</td>
<td>4.425</td>
<td>4.875</td>
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<td>5.775</td>
<td>5.95</td>
<td>6.075</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td>6.6</td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 4 Reference List of Previous Works

1. ENVEST Planners, Final Report of the EHCIP Project, November 2005
5. ENVEST Planners, Working Paper on Project Scoring Methodology, July 2004
6. ENVEST Planners, Inception Report for the Investment Packages, July 2004
7. ENVEST Planners, Final Detailed Feasibility Report, Nevşehir Wastewater Treatment Plant Project, August 2005
8. ENVEST Planners, Project Introduction File, Final version May 2005
11. TÜBİTAK Marmara Research Centre (2002). Nevşehir raw wastewater sampling. Sample registration no: 3170, Report No: B.02.1.BAK 5.01.52.00/5001
ANNEX 5

Reference List of Relevant Laws and Regulations

LAWS

1. Act of Environment No: 2872
2. Act on the Establishment and Duties of Ministry of Environment and Forestry No: 4856
3. Act of Municipalities, No: 5272
4. Iller Bank, Act No: 4759
5. State Hydraulic Works, Act No: 6200

REGULATIONS

1. Regulation on Control of Soil Pollution (OJ: 10.12.2001 and 24609)
3. Regulation on Environmental Inspection (OJ: 05.01.2001 – 24631)
ANNEX 6 Reference Lists of Relevant Strategic Plans and Studies

1. VIIIth Five-year Development Plan, DPT, Ankara, 2000


3. The National Program of Turkey for Accession to the EU, Secretariat General for EU Affairs, Ankara 2003