Standard Summary Project Fiche

Project number: TR 05 03.11

1. Basic Information

1.1 CRIS Number (Year 1):

1.2 Title: Çanakkale Regional Solid Waste Management Project

1.3 Sector: To be inserted by the DG Enlargement Country Coordinator

1.4 Location:

Turkey, Marmara and Aegean Sea Region, Çanakkale province

1.5 Duration: (if multi-annual, specify phases for each programming year)

The following milestones:

- Submission of final Project Fiche and Project Application April 2005.
- Management Committee approval of Project Application June 2005.
- CFCU approval of draft final Tender Dossier (Services and Works) September 2005.
- Signing of Contract with Service Provider for TA/Supervision March 2006.
- Signing of Contract with Construction Contractor November 2006,
- Signing of Contract with Supply Contractor of collection equipment October 2007
- Signing of Contract with Contractor for Site Rehabilitation September 2007

The date for completion of execution of the Çanakkale Regional SWM project under the Pre-accession Financial Assistance 2005 National Programme for Turkey is planned for September 2009.

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 waste sector directives.
2.2 Project purpose:

The purpose of this project is to reduce the pollution of groundwater and environment in Çanakkale and nearby municipalities and increase reuse and recycling by establishing a solid waste management system for Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak municipalities in accordance with the Turkish Legislation and the EU Acquis.

2.3 Accession Partnership (AP) and NPAA priority (and implementing measures envisaged by the Action Plan for AP priorities related to strengthening administrative and judicial capacity)

Improvement of waste management has been defined as a priority, since, starting transposition and implementation of the acquis related to waste management 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 of the Accession Partnership document.

The scope of this project involves “PRIORITİY 22.2 Increase Effectiveness of Waste Management” in the NPAA. The NPAA states 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”.

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

Solid waste management issues are included in the pNDP under Development Axis 3: Improvement of Infrastructure Services and Environmental Protection. Major areas of concern in environment management are addressed as weak institutions (insufficient technical staff, unclear task distribution and lack of infrastructure for information system), insufficient infrastructure for hygienic and sufficient 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, increased productivity of drinking water and sewerage services and of solid waste management.” are among the priorities of the pNDP. In addition, one of the two measures is “to increase effectiveness of solid waste management services, informing the households with a view to decreasing the amount of waste and to have it segregated before collection, and increasing the institutional capacity of local authorities will be supported”.

The Çanakkale regional solid waste management project will reduce the pressure on the environment; will increase effectiveness of solid waste management services, by informing the households with a view to decreasing the amount of waste and to have it segregated before collection, and will ensure proper disposal of that waste which is collected.
Furthermore, the project has been designed to be in line with the outline national waste management plan and directive specific investment plan (DSIP) which is currently under preparation by a technical working group on solid waste management. The technical working group is chaired by the Ministry of Environment and Forest and the EHCIP project functions as Secretariat. During its fourth meeting in February 2005, the technical working group agreed in principle on the proposed outline national waste management plan and DSIP.

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:

**Background**

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 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 project packages, the Çanakkale Regional Solid Waste Management project package was ranked as number 6 among all projects and number 2 among SWM projects (after Kuşadası SWM).

Each project package is aimed at contributing to Turkey’s fulfilment of the EU environmental acquis. For each of the project packages the EHCIP project has prepared a feasibility analysis to evaluate the viability (technically, institutionally and financially) of the proposed project.

The Project Area including the Çanakkale and nearby municipalities (Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak and villages in the area) with a permanent population of 147,000 (based on the year 2000) is located at the west end of the Marmara Region.

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. One of the pre-conditions for selecting Çanakkale Regional SWM project was that a landfill site had been identified. As stated in the Inception Report dated July 2004, a site had been located near Umurbey Municipality. The site was owned by the Ministry of Forest and Environment and "an application was made to the MoEF on May 11, 2004 for its allocation". A public meeting was held in June and due to popular resistance to the proposed site, the application was withdrawn by the Municipality.

Following that Çanakkale Municipality has conducted site investigation activities on behalf of the seven municipalities and has notified the Consultant that the new solid waste landfill site
is within the administrative boundaries of Kemel village at Doğantepe. The nearest agglomeration is Musaköy village, a small village with approximately 50 households a couple of kilometres from the site. This site has been preliminarily assessed and will be thoroughly investigated as part of the project preparation and environmental impact assessment procedures.

The planned landfill area is an old trass quarry site that can be reached through the old Çanakkale-Ankara highway. The proximity of the site is 17 km to the city centre. It is the most appropriate site among other alternatives due to its geographical situation, damaged ecological status, prevailing wind direction, and its distance to settlements. The Local Environmental Board established under Çanakkale Governorate has found the site appropriate for further investigations and for execution of an EIA study.

The surveys relevant for the environmental impact assessment including, but not limited to the geotechnical and hydro-geological surveys are in the process of being carried out.

The allocation of the site for landfill purposes has been requested by the Çanakkale Municipality. The ownership of the planned landfill site has been transferred from MOEF to Çanakkale Municipality on 06 January 2005, as per letter No. 10.S3.29-852/227 from Regional Directorate of Forest. The transfer will become permanent on the condition that establishment of the landfill is started before 06 January 2007. A further request for additional land has been made in March and the regional directorate of the MoEF has provided a positive reply on March 31, 2005. This is subject to final confirmation the MoEF (Ankara) expected within April.

In response to stakeholder concerns, a stakeholder participation strategy has already been developed in the project area. Besides various bi-lateral meetings with institutions and individuals, two stakeholder meetings have been organized with the participation of all related institutions, bodies, environmental NGOs and interested individuals.

The first public meeting was held on October 25. A large number of key stakeholders and the local press participated in the meeting. The meeting was generally positive for the project and the new site. However, there was no representation from Musaköy village and a few villagers here later expressed strong dissatisfaction with the site selection. In response to these public sentiments, a new public meeting was held specifically for the villagers from Musaköy on December 13, 2004. This meeting had many participants from the village including the local Muhtar (administrative rep. of the village). The villagers freely and unlimited raised their concerns and were informed that a full scale environmental impact assessment will take place and adverse environmental impacts will be mitigated as part of the project.

In addition to that, the project was introduced in the agenda of the Çanakkale City Council (it is a civil platform for Agenda 21 which consists NGO members, academicians, chambers of engineers, political party members, individuals etc) by the mayor of Çanakkale Municipality.

Justification

In the project area, presently the mixed waste taken from the kerbside, collected by the trucks are dumped into the open dump sites. The generated waste in the region was approximately 50,000 tonnes per year in 2000. Number of collection trucks and bins are insufficient. Particularly in the villages and in the district municipalities, the collection vehicles are quite old and insufficient to fulfil the collection services. The recycling activities are being practiced by the informal workers (scavengers) both in the streets and the dump sites.

When implemented successfully, the project will solve several problems as indicated in the results.
A municipal union (for Çanakkale, Kumkale, Înçepe, Kepez, Umurbey, Lapseki and Çardak municipalities) has been formed with the objective to find and implement common solutions to the solid waste and wastewater problems of the participating municipalities. The municipalities have agreed to charge the Union, called Çanakkale Municipalities’ Union, with the operational responsibility for the solid waste management system proposed in this project.

If the current project is realized, the Union will be responsible for the maintenance and operation of the collection system, the sanitary land fill, the (pilot) composting plant, recycling system (including, but not limited to the new civic amenity centres) as well as for public awareness raising and training and all other municipal waste management issues in the project area.

With reference to the visits of the Consultant’s team to the site for searching current dump sites and interviews with mayors and staff of municipalities involved in the project, there are five dumpsites which need to be rehabilitated. At the project area i.e. Çanakkale, Kumkale, Înçepe, Kepez, Umurbey, Lapseki and Çardak, currently Înçepe and Kepez municipalities dump their wastes to Çanakkale dump site. Umurbey municipality uses Lapseki dump site. Kumkale municipality is dumping its wastes to Ezine dump site which is outside of the project area. Therefore the dumpsites to be rehabilitated are Çanakkale Kuruçeşme dumpsite, Lapseki Millet Çiftliği dumpsite and Çardak Kadıbayırı dumpsite which are currently in use and Lapseki Topraklı Mevkii and Çardak Göl Mevkii dump sites which were closed in 1997.

It is part of this project to close the above mentioned dumpsites, three of which are currently in use. The project proposal includes an estimate of the costs of closure for each of the five dumpsites as well as detailed terms of reference for the TA Consultant who will draw up the tender documents for closure of the dump sites. The tendering, contracting and implementation of this rehabilitation work is part of the project. As a result of the project, the old dumps will be closed and fenced, tipping will be terminated, the existing dumps will be covered with soil, passive gas collection and venting will be installed etc.

For closure and rehabilitation of Çanakkale dump site, a final design, prepared within the content of the recently approved “LIFE” project exists and includes all material needed to tender such a rehabilitation project. Çanakkale Municipality, as dumping progresses, partially applies the measures in the above mentioned design for the filled parts of the dumping site. Applied measures are:

- covering by soil,
- primitive gas collection pipes and
- some leachate collection

The Çanakkale Regional SWM Project complies with the Council Regulation 2500/2001/EC dated 17 December 2001 concerning pre-accession financial assistance for Turkey. The concerned project is a demonstration project with a high visibility and replicability. The project in Çanakkale will serve as a demonstrative implementation of environmental heavy cost investments regarding the regional waste management in different provinces in Turkey.

According to the Turkish regulation most of the responsibilities which follow from these EU directives have been transferred to the municipalities.

3.2 Sectoral rationale

Not applicable

3.3 Results

The results of the project will be as follows:

- Pollution of ground water, soil and air caused by current dumpsites will be reduced.
- Health risk and negative amenity effects such as bad odour, insects, rodents, fires, scattered wastes from current dump sites will be reduced.
- The volume of bio-degradable waste landfilled will be reduced from the current high level of approximately 115% of the bio-degradable waste landfilled in 1995 to the levels required by the EU directives as specified for Turkey in the DSIP referred to above.
- Recycling of packaging wastes will be increased from the very start of the project by means of bring banks for recyclables and CACs + project components. This increase will contribute to Turkey meet the objectives of the EU directives, in particularly the packaging waste directive.
- The municipal solid waste collection system will be renewed and modernized in a manner which ensures that it meets EU standards, such as those regulating spills and exhaust from engines. This will reduce negative effects such as spills, leakages caused by current non-standard collection vehicles and non-containerized waste.
- The unhealthy and unhygienic working conditions of the street-scavengers will be improved by incorporating them into the operation of a future system.

3.4 Activities (including Means)

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

A1) Works:

- Construction of a central sanitary landfill, including a pilot composting plant. The landfill shall respect the requirements of the landfill directive.

This activity includes the construction of the solid waste landfill with all necessary installations such as civil works, drainage, gas collection and treatment, leachate collection and treatment service, buildings, etc. The landfill shall be built with a storage capacity of approximately 1.3 million m\(^3\). The pilot composting plant with the capacity of 5,000 tonnes per year is designed to receive biodegradable waste from the project area, initially biodegradable waste from bulk producers such as markets etc.

- Construction of four civic amenity centres, which is a recycling unit where people can bring their recyclable waste as well as hazardous waste for safe disposal. These are located one in Çanakkale (serving also to Kepez), Lapseki (serving also to Çardak),
Umurbey and Kumkale (serving also to İntepe). They also include a small building serving as office and welfare measures for the operating staff.

A2) Works

- Rehabilitation of five dumps. The rehabilitation will consist of fencing, cover with gas drainage layer and top soil + vegetative soil + planting, gas collection and flaring / energy generation, monitoring wells wherever feasible.

The tender documents for the facilities other than the rehabilitation works are currently under preparation within the scope of work for the EHCIP Consultants. The contract is expected to be a FIDIC Red Book Contract based on unit prices. Where the risk may be carried easier by the contractor, some items, such as leachate treatment plant and gas utilization unit, will be inserted into the contract as a package with a lump sum price. The contract will be based on the design prepared by the EHCIP Consultants and included in the tender documents. The procurement procedure will be in accordance with the PRAG procedures.

For the rehabilitation contracts the tender documents will be prepared by the TA consultant (see below). The contract is expected to be a FIDIC Red Book Contract based on unit prices. The procurement procedure will be in accordance with the PRAG procedures.

B1) Supply

- Procurement of collection equipment and vehicles.

Investment in containers and new vehicles will be necessary to meet the requirements related to leachate spill from vehicles etc. It is proposed to include such equipment in the project. Investments in vehicles will meet EU standards (for example the EURO 3 standard for efficiency and emission). For the project area procurement of totally approximately 1,100 nos. of 800 l containers and approximately 200 nos. of 400 l containers as well as 3 nos. of 7 m³, 11 nos. of 13 m³ and 9 nos. of 20 m³ collection vehicles have been foreseen.

The procurement and positioning of bring banks to be located at central locations (such as outside major supermarkets etc.). Totally to nos. 138 bring banks are foreseen for the seven towns. The procurement hereof will be done under one separate supply contract in accordance with PRAG procedures.

B2) Supply

- Procurement of supplies for the landfill etc.

Equipment will be needed to operate the landfill, CAC etc. This includes, but is not limited to steel wheel compactors, bulldozers, wheel loaders and other vehicles.

The procurement hereof will be done under one separate supply contract in accordance with PRAG procedures.
c) Technical Assistance

The project will include one technical assistance service contract. There are significant economies of scale to have one contract, in terms of management use of the same experts etc. Furthermore there are a number of links between the capacity building programme and the physical implementation and also for reasons of co-ordination and quality improvement it is suggested to have one TA contract.

Provision of technical assistance will have four main components. These are:

1) Construction supervision with the following sub-components
   - Pre- and post tendering procedures according to PRAG
   - Design review
   - Construction supervision of landfill construction, including leachate treatment plant, gas utilization unit and compost plant.
   - Construction supervision of civic amenity centres

2) Technical assistance for the implementation of rehabilitation of the dumpsites
   - Detailed design and preparation of tender documents for the closure and rehabilitation of existing dumps
   - Tendering of closure and rehabilitation works and construction supervision hereof

3) Capacity building programme to the Union with following subcomponents:
   - Set-up administrative and financial management system
   - Tariff system including collection
   - Set up structures aiming at integration of scavengers into the formal system
   - TA – management of project / investment project
   - Public awareness raising
   - Training of staff
     - Financial management
     - Administration
     - Management
     - Waste management
     - Landfill operation
     - Waste facilities operation
     - Tendering procedure
     - Contracting management

4) Service Contract tendering
   - ToR for service contracts including landfill operation contract, compost facility, CACs, collection of recyclables, collection of MSW, incorporation of scavengers into the formal system, public awareness
   - Tendering procedure / tender docs
   - Selection of contractor
   - Contracting
   - Performance evaluation after one year
3.5 Linked Activities:

Studies on priority environmental projects for accession, and supporting the development of an efficient financial mechanism for financing EU environmental heavy-cost directives is being carried out under 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. One of the outputs of the project is to prepare tender dossiers for six investment packages, Çanakkale Regional SWM Project being one of them. Therefore, this project will be the implementation of this specific investment package.

The agenda 21 council has expressed strong interest in the project and is planning a public information campaign and other auxiliary activities in support of the aim of this project.

The city of Çanakkale has applied September 20, 2004 to Iller Bank for loan for the construction of a wastewater treatment plant. The project will be prepared by Iller Bank. This will enable the Union to transport pre-treated leachate from the landfill to the WWTP.


3.6 Lessons learned:

The European Union waste legislation is currently being reflect in Turkish regulations for example in the recent circular on packaging waste and in the changes to the environmental law, which will allow municipalities to collect user charges for solid waste management services. In view of this ongoing approximation process, the Ministry of Environment was keen that the project should incorporate the requirements of the EU waste directives and the lessons learned in Europe in their implementation. The Çanakkale Municipalities’ Union was keen to be an early implementer of these forward looking requirements.

In the design of the project lessons learned in Europe with respect to the need for changed in attitudes to precede advanced collection systems (such as dual collection) has led to a two-pronged approach with ordinary collection initially, dual collection on a pilot basis and a composting plant on a pilot basis. Based on the gained experience the project foresees a move to universal dual collection, material recovery facility and a large-scale composting plant by the year 2015. The project has also included in the TA an emphasis on public awareness raising and on the involvement of street scavengers into the formal system. Finally, the project foresees that the TA consultant will draft the operational contract for the landfill operator, thus ensuring that good practices are reflected in the contract.

In the previous solid waste projects in Turkey (as elsewhere in Europe), at the stage of site selection, the public authorities faced with intensive public reaction in some of the regions. It sometimes results from lack of communication between the public and the project owners. Taking this into consideration, in Çanakkale, a transparent, accountable project was aimed in every stage of the project. Two stakeholder meetings were held; first on October 25th 2004 and the second on December 13th 2004 with the participants of NGOs related institutions, representatives of the Local Agenda 21 and individuals. In the meeting, technical, social, and some financial information were given about the project.
Public hearing meeting in compliance with the EIA Regulation was held on March 8th 2005 in Çanakkale.

4 Institutional Framework

The main beneficiary of the project is the existing Çanakkale Municipalities’ Union. It has been legally established on 13 December, 2004. The purpose of the Union is to operate the Solid Waste Management system for the municipalities of Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak. The detail of the institutional framework of the Regional Union is in the content of the feasibility study.

The municipalities are in charge of collecting, handling and disposing solid wastes according to the Municipal Law No. 5272 put into effect on 23 December 2004. Municipalities have right to transfer their responsibilities and their authorities to the unions they will establish for collective action.

Çanakkale Municipalities’ Union will be responsible for the provision of national finance for the investment and for financing the operational costs of the Solid Waste Management. The investment finance will come from Ille r Bank and from the budget of the member municipalities. The ownership of the facilities after the commissioning will belong to the Union as a public entity. The outsourcing of the operation of the solid waste services is being considered by the Union. There is a long tradition in Turkey for outsourcing of operational services on the landfills.

As the main beneficiary of the project, the Çanakkale Municipalities’ Union will be represented in the Project Implementation Unit (PIU) which will be established for the implementation of the 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 is responsible for the monitoring of the proper operation of landfills according to landfill regulation. The General Directorate of Environmental Impact Assessment and Planning oversees the EIA procedures and issues the necessary authorizations. MoEF shall be a member of PIU).

The Bank of Provinces (İller Bank) is the national financing agency for the municipalities. İller Bank has shown its interests for co-financing of the project. Municipalities are shareholders in the capital of the Bank which can act as a loan guarantor. İller Bank is expected to co-finance the project. İller Bank shall be a member of the PIU which will be established for the implementation of the project.

The State Planning Organization (DPT) is responsible at national level of the public investment project and thus the intra-sectoral allocation of resources. DPT includes the project into the yearly investment programme and monitors the realization of the project.

The National Fund will be responsible for management of the funds for EC and 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 **Consultant** shall be selected in accordance with the PRAG guidelines and procedures and will be contracted in the framework of an EU services contract. The shortlisting/selection of the Consultant will have the precondition to be independent from the Contractors, Suppliers and other parties benefiting from the project not to have any conflict of interest.

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 technical assistance on financial and institutional management of the operation, ensuring that a sound revenue system is set up.

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

Monthly monitoring and consultative meetings shall be held among the major stakeholders, including the representatives of the Contractor, the Consultant, the Çanakkale Municipalities’ Union, the MoEF, the Iller Bank and the CFCU. The meetings will be chaired by the Çanakkale Municipalities’ Union 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</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>1.8</td>
<td>0.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Supply of collection equipment</td>
<td>1.0</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Supply of equipment for landfill, CAC etc.</td>
<td>1.2</td>
<td>0.5</td>
<td>0.0</td>
</tr>
<tr>
<td>Works: Landfill, CAC and compost</td>
<td>5.4</td>
<td>2.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Works (landfill closure)</td>
<td>2.5</td>
<td>1.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>11.9</td>
<td>4.7</td>
<td>0</td>
</tr>
<tr>
<td>% of total public funds</td>
<td>71.5%</td>
<td>28.5%</td>
<td>0</td>
</tr>
</tbody>
</table>

### 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). Pre-tendering procedures will be carried out by the CFCU such as contract forecast announcement and procurement notice call for tenders, management of the short-listing and tendering phases to be followed by pre-contract services, tender opening and evaluation, facilitation and managing contract negotiations and all other PRAG administrative procedures. The CFCU will also be responsible for the post-tendering services including but not limited to the financial management, contract management including the authorisation and payment of invoices.

Contact details of the CFCU are as follows:

Central Finance and Contracting Unit
Ehlibeyt Mahallesi 6. Sokak No 18/8
Ekşioglu İş Merkezi Kat: 4 06520 Balgat-Ankara
Mr. Ercan Tortop - PAO
Telephone:  +90 312 4723700
Telex/Fax:  +90 312 4723744
E-mail:  ercan.tortop@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, Iller Bank, Ministry of Environment and Forest, Çanakkale Municipalities’ Union 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 be the operational and daily “sparring partner” to the TA/Supervisor and the CFCU. The establishment of the PIU will be approved by the CFCU and the PIU will report to the CFCU and act as the “extended arm” of the CFCU. 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.

The CFCU will assign a number of operational tasks and responsibilities to the PIU such as:
• Daily liaison with the TA/Supervising FIDIC engineer
• 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 Bakanlıklar – Ankara
Contact: Prof. Dr. Mustafa Öztürk, Dep. Undersecretary
Telephone: +90 312 4254389
Telex/Fax: +90 312 4170237

The main beneficiary and end-user of the project is the Çanakkale Municipalities’ Union comprising the municipalities of Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak. The union will be the owner of the sanitary landfill and composting plant, and systems for collection of recyclables once they have been erected. It will be responsible for the provision of national finance for the investment and for financing the operational costs of the landfill.

To do so Çanakkale Municipalities' Union will establish a full cost recovery tariff mechanism, and a budgetary and operational structure within the municipalities so as to provide sufficient guarantees for reliable operation.

The future staff of the Union responsible for management and technical daily operation of the management system will be assigned by the Union during the construction period. They will take part in the testing, commissioning and hand-over of the landfill and other related facilities together with the contractor and the supervising engineer.

The Union will be the natural partner of a PIU structure to appreciate its future responsibilities in an EU Grant financed project. Contact details of the main beneficiary are as follows:

**Çanakkale Municipalities’ Union**
(Established by Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak Municipalities)
Çanakkale Municipality - Çanakkale
Contact: Mr. Bülent Yufka – Secretary of the Union
Telephone: +90 286 217 10 79 ext. 106
Telex/Fax: +90 286 213 62 13
The Contractor will operate the plant for one year and during that period the Union 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 Union will be fully responsible for the successful operation of the solid waste management as a model project.

The **İller 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 Çanakkale Municipalities’ Union by following-up and monitoring the target management of the project. The İller Bank will be a member of the proposed PIU structure.

The contact details of the İller Bank are presented below:

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

Project Implementation Chart for Çanakkale Regional SWM Project is given below.
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

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 The Union, 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

Management Committee

EU grants €
6.2 Twinning

Not applicable

6.3 Non-standard aspects

There are no non-standard contract/tender procedures”. The procedures of the PRAG\(^1\) will be strictly followed.

6.4 Contracts

The works contracts will be based on the FIDIC Contract Forms, the services contract will be based on EU services contract and the PRAG procedures shall apply.

Five contracts are expected, viz.

1. Service contract including review and supervision of construction works, TA for closure and rehabilitation of old dumps, capacity building and training programme and outsourcing of operation contracts for landfill and other waste management facilities.

2. Supply contract for supply of the collection vehicles and containers

3. Supply contract for supply of equipment for landfill site and civic amenity centres

4. Works contract with the Contractor for construction of pilot composting plant, civic amenity centre(s), and the landfill

5. Works contract with the Contractor for rehabilitation of five old dumpsites including soil cover, gas collection, etc.

The expected contract values are as follows:

<table>
<thead>
<tr>
<th>CONTRACT</th>
<th>TOTAL COST ´000 EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA Services</td>
<td>2,519</td>
</tr>
<tr>
<td>Supply of collection equipment</td>
<td>1,343</td>
</tr>
<tr>
<td>Supply of equipment for landfill, CAC etc</td>
<td>1,665</td>
</tr>
<tr>
<td>Works: Landfill, CAC and compost</td>
<td>7,557</td>
</tr>
<tr>
<td>Works (landfill closure)</td>
<td>3,510</td>
</tr>
<tr>
<td>Total</td>
<td>16,595</td>
</tr>
</tbody>
</table>

---

An indicative list of equipment to be procured within the supply tender is given Annex 7.

7 Implementation Schedule

This investment project will require a 42 months period from the payment of advance to the TA upon commencement of services contract in April 2006 to the period provisional acceptance of the last contract in September 2009.

- The TA/Supervision contract is planned to be awarded in March 2006 to assist the CFCU, the establishment of a PIU and the Municipality with the preparation of tender launching for the Works contract and Services as specified in their TOR for the duration of the project.

- The procurement process for the TA contract will be initiated with a suspension clause specifying that validity is contingent upon signature of financing memorandum.

- It must be kept in mind that by the project completion and the training completion, the beneficiary (Çanakkale Municipalities’ Union) will become fully responsible for the planned investment and the future management, services and maintenance. This will require a main contractor responsibility for construction (civil, mechanical-electrical works and training in operations), training during construction and during the defects liability period.

7.1. Start of tendering/call for proposals

The draft final tender dossiers will be provided to the CFCU, MoEF and EC Delegation (the parties) in August 2005 in accordance with the work schedule of the EHCIP project. Approval of the tender dossier by the parties is expected by September 2005.

For the TA contract however, it will be possible to finalise the tender dossiers earlier. This will allow the CFCU to award the contract for the TA Consultant in March 2006 and enable a commencement date for the TA Consultant by April 2006 in time to review the design.

The CFCU may call for Expressions of Interest for the landfill contractors in April 2006, prepare a shortlist in May 2006, call for tenders in June 2006 and award the contract to the Contractor in November 2006.

The CFCU provide a contract forecast for the rehabilitation Contractor during the first quarter of 2007 in order to have a contract signed before November 2007. The Contractor will then start to close and rehabilitate the non-operative landfills in Lapseki and Çardak first and then work on the other landfills, when the new landfill has been inaugurated and its use commenced.

7.2. Start of project activity

The first contract (TA) is scheduled to commence in April 2006.
7.3. Project completion

The construction and commissioning of the landfill is scheduled to complete by the end of June 2008.

The rehabilitation and closure contracted is scheduled to complete by the end of July 2009.

The technical assistance team will complete its work with the final report which shall include the completion of rehabilitation work.

8 Equal Opportunity

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

9 Environment

The EIA process will meet the requirements of both the Turkish EIA Regulation and the EIA Directive 85/337/EEC as amended by 97/11/EC, using the more stringent requirements whenever there is not a complete overlap.

The Project Introduction File has been prepared and submitted to the MoEF, which is the competent authority, on February 3, 2005 for initiating the EIA process. Public hearing meeting in compliance with the Turkish EIA Regulation was held on March 8, 2005 in Çanakkale. The Ministry of Environment and Forest has established a Committee as well, comprising of members of the relevant authorities. The Committee, taking into consideration of the minutes of meeting taken on the public hearing, has decided about the scope of the EIA study to be carried out in the meeting held on March 11, 2005. The EIA Study will be carried out in compliance with this scope and the requirements of the EIA directive.

The project is not likely to affect potential Natura 2000 sites. A declaration to this effect from General Directorate of Nature Protection and National Parks of MoEF is given in Annex 1 of the application form.

The EIA process is estimated to be finalized by end of June 2005.

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.

The feasibility study assumes a user charge which meets the criteria of full cost recovery and the polluter pays principle. Based on the revenue cash flow calculated based on this user charge and on conservative assumptions about the revenues from recyclables and on the expenditure cash flow (investments plus O&M), the resulting cash flow is calculated year by year.

The financing profile is such that cumulated cash flow is positive in all year.
For the NPV calculation, the discount rate used is 8% in real terms (as justified in the feasibility report). The detailed figures for NPV, IRR etc. are presented as part of the feasibility study.

**Key Financial Indicators**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total eligible costs in '000 EUR</td>
<td>16,595</td>
</tr>
<tr>
<td>Grant rate in %</td>
<td>71.5%</td>
</tr>
<tr>
<td>Grant in '000 EUR</td>
<td>11,868</td>
</tr>
<tr>
<td>FNPV/C in 2004 EUR</td>
<td>-7,948</td>
</tr>
<tr>
<td>FRR/C in %</td>
<td>-0.2%</td>
</tr>
<tr>
<td>FNPV/K in 2004 EUR</td>
<td>247</td>
</tr>
<tr>
<td>FRR/K in %</td>
<td>8.4%</td>
</tr>
</tbody>
</table>

The table demonstrates that the project is not viable without EU support since the internal rate of return is lower than the discount rate. The grant rate is calculated at 71.5% using the methodology of the EU guidelines. With the EU grant the return to national investment financing is 8%.

The calculations are based on a high level of user charges, which is increased over a few years to the full cost recovery rate (including a fund for closure and aftercare). This rate corresponds to 1.0% of disposable income for an average household.

An economic analysis has also been performed and presented in the feasibility study. The main difference between the financial and the economic analysis is the effect of non-marketed benefits such as health effects, reduced negative amenity effects, reduced ground water pollution etc. The value of these non-marketed benefits has been assessed using the report prepared for the European Commission on the benefits of approximation. However this report provides a wide range of benefit values from 1.2 to 29 EUR per capita per day. Using a low figure of 2.1 EUR per capita per day give the key ratios from the economic analysis shown below:

- Economic internal rate of return (ERR) in %: 8.3%
- Economic net present value (ENPV) in '000 EUR: 169
- Social discount rate: 8%
- B/C ratio: 1.01

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 and higher than the social discount rate, even at the lowest estimate of non-marketed benefits. This reflects the value of non-marketed benefits such as improvements in health and ground water quality.
11 Investment criteria (applicable to all investments)

11.1 Catalytic effect

As argued above, without EU grant the project will not take place due to lack of necessary funding.

The project will be a model for the similar solid waste projects in Turkey. There are only few landfills in Turkey in compliance with the EU standards and directives. This project shall demonstrate the cooperation of the municipalities in unions for regional solid waste management. In order to enhance the catalytic effect, seminars on public awareness of recycling and on financial and administration of municipality Unions have been included. These shall be organised to involve other municipalities by the TA services contractor. It is expected that this demonstrative project shall trigger other projects in Turkey on different regions.

11.2 Co-financing

The project will be co financed by national funds. It is envisaged that the Union of municipalities will finance based on financing from municipalities own budgets, the rest being a loan by the municipalities in Iller Bank. The share of national funds will be approximately 30% of the total eligible cost plus the land plus other non-eligible costs.

The funding is illustrated on the following page. The table illustrates non-eligible costs which are basically related to opening up of the opening of the third cell in the landfill and landfill closure. These are investment costs which follow by necessity from the project but they are not eligible for EU grant financing.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total Costs</th>
<th>Non Eligible Cost</th>
<th>Total</th>
<th>FL for Turkey</th>
<th>National authorities</th>
<th>Regional Author</th>
<th>Local Authority</th>
<th>Iller Bank</th>
<th>Loan from IFI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2005</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>3,925</td>
<td>0</td>
<td>3,925</td>
<td>0</td>
<td>3,925</td>
<td>2,807</td>
<td>2,807</td>
<td>72%</td>
<td>393</td>
</tr>
<tr>
<td>2007</td>
<td>5,234</td>
<td>0</td>
<td>5,234</td>
<td>0</td>
<td>5,234</td>
<td>3,743</td>
<td>3,743</td>
<td>72%</td>
<td>523</td>
</tr>
<tr>
<td>2008</td>
<td>3,494</td>
<td>0</td>
<td>3,494</td>
<td>0</td>
<td>3,494</td>
<td>2,499</td>
<td>2,499</td>
<td>72%</td>
<td>349</td>
</tr>
<tr>
<td>2009</td>
<td>3,941</td>
<td>0</td>
<td>3,941</td>
<td>0</td>
<td>3,941</td>
<td>2,818</td>
<td>2,818</td>
<td>72%</td>
<td>394</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>0</td>
<td>0</td>
<td>0</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>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2015</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>878</td>
<td>0</td>
<td>878</td>
<td>0</td>
<td>878</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2017</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2018</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2020</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2021</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2022</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2023</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2024</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2025</td>
<td>219</td>
<td>0</td>
<td>219</td>
<td>0</td>
<td>219</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>17,692</td>
<td>1,097</td>
<td>16,595</td>
<td>11,868</td>
<td>72%</td>
<td>1,659</td>
<td>1,659</td>
<td>3,067</td>
<td></td>
</tr>
</tbody>
</table>

*Table 1* Financing plan for the Çanakkale Regional Solid Waste Management Project (*000 EUR*)
11.3 Additionality

No other financing sources from the private sector or from IFIs will be used for financing the project.

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. At the moment there is no international loan financing available for these types of projects. If KfW resumes their lending to solid waste projects in the future, KfW - financing could in theory be an alternative. However, currently KfW terms of financing available for Turkey are close to commercial terms and this solid waste management project is not financially viable if financed on commercial terms.

11.4 Project readiness and size

The draft intermediary feasibility study of Çanakkale Regional SWM project 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 tender documents for the works and the TA are under preparation by the EHCIP Consultant. The project will be ready for tendering as described under Section 7 "Implementation Schedule".

The allocation of the site for landfill purposes has been requested by the Çanakkale Municipality. The ownership of the planned landfill site has been transferred from MOEF to Çanakkale Municipality. The transfer will become permanent on the condition that establishment of the landfill is started before 06 January 2007.

In response to a comment by the EC, which request for a confirmation of land availability, we have passed this request for confirmation to the Union. The Head of Çanakkale Union has informed us as follows:

"Regarding to the land guarantee you have mentioned as important in your letter; 113,349 m² forest area in the project area had been handed over to us with the permission of MoEF of date 21.12.2004 and no. 873, and with the letter of Çanakkale Regional Forest Directorate, Forest Administration Chief of date 18.01.2005 and no. 46.

Again in the project area, ownership for 12,750 m² area was purchased by us as our own possession.

Moreover, for the 222,630 m² forest area of the project area with the positive report of Çanakkale Regional Forest Directorate for Pre-Permission, the letter of date 31.03.2005 and no. 2618 was sent to MoEF, Forest General Directorate, Ankara for approval and max in 3 weeks the area will be handed over to us."

In response to stakeholder concerns, a stakeholder participation strategy has already been developed in the project area. Besides various bi-lateral meetings with institutions and individuals, two stakeholder meetings have been organized with the participation of all related institutions, bodies, environmental NGOs and interested individuals.

The first public meeting was held on October 25, 2004. A large number of key stakeholders and the local press participated in the meeting. The meeting was
generally positive for the project and the new site. Due to some hitch in the communication there was no representation from Musaköy village and a few villagers here later expressed strong dissatisfaction with the site selection. In response to these public sentiments, a new public meeting was held specifically for the villagers from Musaköy on December 13, 2004. This meeting had many participants from the village including the local Muhtar (administrative rep. of the village). The villagers had the chance for raising their concerns unlimited and freely and were informed that a full scale environmental impact assessment will take place and adverse environmental impacts will be mitigated as part of the project.

In addition to that, the project was introduced at the Çanakkale City Council (it is a civil platform which consists NGO members, academicians, chambers of engineers, political party members, individuals etc) by the mayor of Çanakkale Municipality.

The EIA is in the process of preparation based on the Turkish EIA regulations with a similar procedure as the one described in the EC Directive 85/337/EEC as amended by 97/11/EC.

No problem exists for the present access to the potential landfill site. The access road is already available.

The total eligible cost of the project including technical assistance is 15.137 million Euros. For the national finance the Municipalities have a pre-agreement with the Iller Bank. The national Co-financing will be provided by the Union of Municipalities under some guarantee which is acceptable by the National Fund.

11.5 Sustainability

The EIA process will meet the requirements of the Turkish EIA regulations and the EC 84/337 as amended by Directive 97/11/EC, using whichever procedure is more stringent. Environmental impacts in the construction and the operation stage will be analysed in the EIA report, mitigation measures will be proposed and they will be incorporated in the design.

The Law on the Revenues of Municipalities limits the user charges for collection and disposal of municipal solid waste as cleansing taxes. At the moment the maximum allowed "cleansing tax" is less than the full cost recovery tariff of the proposed project. Many municipalities, including Çanakkale, Kumkale, İnpe, Kepez, Umurbey, Lapseki and Çardak currently meet the shortfall by municipal operational subsidies. The per capita cost of the proposed project is in the order of 15 EUR per capita per year. This is affordable for the population.

Currently, revisions to the Environmental Protection Act and the Municipal Finance Act are being discussed in Parliament. The current (April 1st, 2005) drafts will replace the cleansing tax with a right for municipalities to charge users the full cost of solid waste management. The draft law further includes a provision, which encourages municipalities to ear-mark charges from environmental services for environmental services expenditure.

11.6 Compliance with state aids provisions

The project complies with the state aids provisions.
12 **Conditionality and sequencing**

- The national co-finance shall be provided in a manner which is acceptable to the National Fund.

- The EIA has to be finalized in compliance with the EC EIA Directive 85/337 as amended.

- The design shall comply with the relevant EC directives including but not limited to the Landfill Directive.

- The project is implemented in its entirety including, but not limited to, the closure and rehabilitation of the old dumps.

- The regulation on municipal finance is changed in a manner which enables the municipalities (or their representatives) to charge the users of solid waste management services according to the polluter pays principle in conformity with the landfill directive (EC 1999/31 in particular pre-amble and article 10).

- A memorandum of understanding shall be signed between the beneficiary and the Contracting authority before the implementation of the project regarding the new user charges 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)

7. Project Components
### 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>Sources of Verification</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çanakkale Regional Solid Waste Management Project</td>
<td>Contracting period expires December 2007</td>
<td>EU budget : €11.868 million</td>
<td>The project is perceived as a model project and replicated in other parts of Turkey</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 EU waste sector directives.

- The Environmental Chapter is closed
- Number of municipalities with sound waste management systems

**Project purpose**

The purpose of this project is to reduce the pollution of groundwater and environment in Çanakkale and nearby municipalities and increase reuse and recycling by establishing a solid waste management system for Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak municipalities in accordance with the Turkish Legislation and the EU Acquis.

- A sanitary landfill has been established to replace old dumps by the end of 2008.
- Existing dump sites have been closed by the end of 2008 and remediated by end of 2009.
- A pilot composting plant, civic amenity centres and bring banks have been constructed and under operation by the end of 2008.

- Ministry of Environment and Forest
- EU Commission

**Sources of Verification**

- SIS household waste statistics
- The records from the Union.
- Reports on solid waste composition and disposal from independent institutes
### Results

- Pollution of ground water, soil and air caused by current dumpsites will be reduced
- Health risk and negative amenity effects such as bad odour, insects, rodents, fires, scattered wastes from current dump sites will be reduced;
- The volume of bio-degradable waste landfilled will be reduced from the current high level (of approximately 115% of 1995 level) to the levels required by the EU directives as specified for Turkey in the DSIP referred to above

### Objectively Verifiable Indicators

- Concentration of Cl- in the groundwater leading from the sites
- Concentration of CH4 in the air at a distance of 100 metres from the sites
- 7 public complaints for the effects of the landfill since 2003 from the population in the villages close to the sites were recorded by Çanakkale municipality which will be addressed by 2009
- The percent of bio-degradable waste landfilled will be 75 % of year 1995 in 2015 when a composting plant in full scale has been introduced to and will decrease to 35 % in 2025.
- The recycling rate in packaging waste amount will increase from 25.5 % in 2005 to 33.5 % in 2009. (And to 66 % in 2015 when a dual collection in full scale and MRF have been introduced.)
- 15 public complaints related to the solid waste collection since 2003 from the population in the cities served were recorded by Çanakkale municipality which will decrease

### Sources of Verification

- Final report from the TA consultant / the PIU
- The TA consultant will establish a monitoring programme for Cl-concentration in the groundwater for the old dumpsites and the new sanitary landfill.
- The TA consultant will establish a monitoring programme for CH4 concentration in the air for the old dump sites and the new sanitary landfill.
- Annual reports from the Union
- State of environment reports of Provincial Directorate of MoEF
- Reports from State Hydraulic Works
- Public complaint

### Assumptions

- Public awareness campaign at local level is supported at national level
- Scavengers accept the proposals to integrate them into the formal SWM system
- The unhealthy and unhygienic working conditions of the street-scavengers will be improved by incorporating them into the operation of a future system.

<p>| by 2009 | Independent assessment of the working conditions of scavengers. A baseline will be prepared by the TA consultant | reports from the municipalities |</p>
<table>
<thead>
<tr>
<th>Activities</th>
<th>Means</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| • Construction of a central sanitary landfill, including a pilot composting plant.  
• Construction of four civic amenity centres,  
• Rehabilitation of five dumps.  
• Procurement of collection equipment and vehicles.  
• Procurement of equipment for landfill, CACs etc  
• Construction supervision  
• Technical assistance for the implementation of rehabilitation of the dumpsites  
• Capacity building programme to the Union  
• Awareness raising campaign  
• Training of staff and dissemination to other municipalities | • Construction Contract for the landfill and pilot composting plant, civic amenity centres  
• Construction Contract for rehabilitation of five dumpsites  
• Supply Contract for vehicles and equipment  
• Supply Contract for equipment for landfill and CACs  
• TA contract for consultants | |
### Detailed Implementation Chart

<table>
<thead>
<tr>
<th>Annex II Implementation Chart</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>Feb</td>
<td>Mar</td>
</tr>
<tr>
<td>Tech Assistance</td>
<td>P</td>
<td>P</td>
<td>P</td>
</tr>
</tbody>
</table>

P = Planning
C = Contracting
I = Implementation
## ANNEX 3

### Contracting and Disbursement Schedule (Quarterly – in MEURO)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-TA Services for all</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
<td>2.519</td>
</tr>
<tr>
<td>4-Supply collection</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
<td>1.343</td>
</tr>
<tr>
<td>5-Supply landfill etc.</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
<td>1.666</td>
</tr>
<tr>
<td>1-TA Services for supervision</td>
<td>0.61</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>0.32</td>
<td>2.519</td>
</tr>
<tr>
<td>2-Works SWM</td>
<td>2.27</td>
<td>0.76</td>
<td>0.76</td>
<td>0.76</td>
<td>0.76</td>
<td>0.38</td>
<td>0.76</td>
<td>0.727</td>
<td>0.727</td>
<td>7.557</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-Works closure</td>
<td>0.60</td>
<td>0.365</td>
<td>0.365</td>
<td>0.365</td>
<td>0.365</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>0.35</td>
<td>3.510</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-Supply collection</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>0.3358</td>
<td>1.343</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-Supply landfill etc.</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>0.4165</td>
<td>1.666</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cumulated</strong></td>
<td><strong>0.610</strong></td>
<td><strong>0.610</strong></td>
<td><strong>2.880</strong></td>
<td><strong>4.040</strong></td>
<td><strong>5.217</strong></td>
<td><strong>6.793</strong></td>
<td><strong>8.905</strong></td>
<td><strong>10.803</strong></td>
<td><strong>11.883</strong></td>
<td><strong>13.284</strong></td>
<td><strong>14.029</strong></td>
<td><strong>15.109</strong></td>
<td><strong>16.239</strong></td>
<td><strong>16.589</strong></td>
<td><strong>16.589</strong></td>
<td><strong>16.589</strong></td>
<td><strong>16.589</strong></td>
<td><strong>16.589</strong></td>
</tr>
</tbody>
</table>
ANNEX 4

Reference List of Previous Works

1. ENVEST Planners, Final Inception Report of the EHCIP Project, January 2004
5. ENVEST Planners, Working Paper on Project Scoring Methodology, July 2004
6. ENVEST Planners, Inception Report for the Investment Packages, July 2004
8. ENVEST Planners, Design Criteria Report for the Çanakkale Solid Waste Management Project, December 2004
10. ENVEST Planners, Çanakkale EIA Report, Expected June 2005
11. ENVEST Planners, Çanakkale Project Application Form, April 2005
12. Twinning Project on Waste TR03-EN-01 with the German Government
ANNEX 5

Reference of Relevant Laws and Regulations

5.1 LAWS

1. Act of Environment No: 2872
2. Act on the Establishment and Duties of Ministry of Environment and Forestry No: 4856
3. Act on General Hygiene No: 1593
4. Municipality Law No: 5
5. Act on Municipality Revenues (Environmental Cleaning Tax) No: 2464
6. Turkish Penal Code No: 5237
7. Ilker Bank, Act No: 4759
8. State Hydraulic Works, Act No: 6200

5.2 REGULATIONS

1. Regulation on Control of Solid Waste (OJ: 14.03.1991 and 20814)
2. Regulation on Control of Medical Waste (OJ: 20.05.1993 and 21586)
3. Regulation on Control of Hazardous Waste (OJ: 27.08.1995 - 22387)
4. Regulation on Control of Construction and Demolition Waste (OJ: 18.3.2004 25406)
5. Regulation on Control of Packaging and Packaging Waste (OJ: 30.04.2004 25538)
6. Regulation on Control of Soil Pollution (OJ: 10.12.2001 and 24609)
7. Regulation on Water Pollution Control (OJ 4.9.1988 –19919)
8. Regulation on Environmental Inspection (OJ: 05.01.2001 – 24631)

5.3. EC DIRECTIVES

ANNEX 6

Reference List of Relevant Strategic Plans and Studies

1. VIIIth Five-year Development Plan, DPT, Ankara, 2000
4. The National Program of Turkey for Accession to the EU, Secretariat General for EU Affairs, Ankara 2003
7. “Analysis of environmental legislation for Turkey” 2002, financed under the MEDA Programme of the Commission
8. “Sector Approximation Strategy in the waste sector” 2003 – 2004, Financed under the MEDA Programme of the Commission
11. ENVEST Planners, Report on Strategic Investment Planning for the Solid Waste Sector, February 2005
ANNEX 7 PROJECT COMPONENTS

The project area covers Çanakkale, Kumkale, İntepe, Kepez, Umurbey, Lapseki and Çardak municipalities in Turkey. The projected population in 2025 will be approximately 170,000 persons and the amount of municipal solid waste generated from the area is expected to reach 115,000 tonnes per year.

The site selected for the sanitary landfill is a 12 ha area of land previously used as an old trass quarry. It can be reached through the old Çanakkale- Ankara highway. The plant site is within the territory of Kemal village of Çanakkale. 7 ha of the land will be allocated for the landfill, and the rest will be used for various other facilities. The site will be designed to serve only for municipal waste disposal in accordance with EU norms and regulations. The pilot composting plant with a capacity of 5,000 tonnes per year will be designed to receive the biodegradable waste from the project area. The civic amenity centre and bring banks are for utilisation of recyclables in the project area.

Five existing dump sites in the project area will be closed and rehabilitated. The dumpsites to be rehabilitated are; Millet Çiftliği and Topraklı Mevkii dump sites in Lapseki, Kuruçeşme dump site in Çanakkale, Göl Mevkii and Kadıbayırı dumpsites in Çardak.

The project also includes renewal of the collection equipment and vehicles within the project boundaries.

The components of the project are described below.

1. Establishment of a sanitary landfill

A sanitary landfill is an indispensable element of a municipal solid waste management scheme.

The proposed scheme for the disposal of non-recoverable waste includes the establishment of one regional sanitary landfill for the seven municipalities of the project area. This landfill site will be built and operated in compliance with the National Waste Management Strategy (Solid Waste Control Regulation effective since 1991) and the European Union Landfill Directive. (EC Directive 99/31)

The sanitary landfill will be built with a capacity to accommodate the waste generated from 2008 to, at least, 2027 in the project area.

The waste tonnages and necessary landfill volumes are shown in the table below.

<table>
<thead>
<tr>
<th>Total waste tonnage and necessary landfill volumes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity of waste to be landfilled, in tonnes</td>
</tr>
<tr>
<td>Compacting density in the landfill, (tonne/m³)</td>
</tr>
<tr>
<td>Necessary landfill volume, in m³</td>
</tr>
</tbody>
</table>
The sanitary landfill will be built with a storage volume of 1,240,600 m³. It will, however, be divided into cells and built in stages. Details hereof are provided in the feasibility study.

2. Establishment of a leachate treatment plant
A leachate treatment plant will be established to pretreat leachate to meet the requirements for discharge into the sewer system. A domestic wastewater treatment plant (WWTP) for Çanakkale is currently in the design stage. If the Çanakkale WWTP ends up being completed later than the sanitary landfill, the amounts of leachate will be reduced to approximately 50% by means of reducing the active areas of the cells and options for transport of the leachate to alternative treatment will be sought. Upon completion, the Çanakkale WWTP will be used for further treatment of the pre-treated leachate. Alternatives modes of transport are by tanker trucks or via a pipeline to the Çanakkale WWTP.

The main treatment processes to be used at the treatment plant are:

- Removal of approx. 80% of the organic matter in an upflow anaerobic sludge blanket (UASB) reactor. The minimum reactor temperature will be 15 °C.
- Removal of the remaining organic matter in an activated sludge tank operated with intermittent aeration
- Gravity separation of sludge and treated leachate in a settling tank
- Dewatering of sludge on sludge drying beds

3. Establishment of a gas utilisation unit
Anaerobic decomposition of waste at the landfill will produce landfill gas consisting of methane, carbon dioxide, nitrogen, and some trace compounds which impart a characteristic odour to the gas. The Çanakkale sanitary landfill will produce landfill gas during its active operation cycle and also for a long time after its closure.

The general objectives of gas collection are:

To reduce the general emission of greenhouse gasses to the atmosphere.
To secure the landfill area and the surroundings against dangerous fire and explosions during the operation and after closure.
To utilise the energy from the landfill gas (methane CH4)
To follow up on the regulations of the EU Directive on Landfills that requires collection and flaring of landfill gas, as a minimum from all landfills containing organic waste.

By means of the utilisation system, the landfill gas will be converted into electricity.

The utilisation system includes a gas engine, a generator, a gas injection system and a central regulation system for the gas collection pipes.

As a supplement, the system will be supplied with a flare stake to be used in case of break down in the utility system and to flare of excess gas.
4. Establishment of a pilot composting plant

Composting offers a viable method to reduce the volume of municipal solid waste to be disposed of in sanitary landfills or other disposal facilities, by biologically converting the biodegradable fraction of the waste to compost, which has several applications. The process produces heat to destroy pathogens as well as a stabilised end-product which may be used as a soil conditioner, mulch or top-soil additive.

Despite Turkey’s ambition to become a full member of the European Union, diversion of considerable amounts of biodegradable waste from landfills to biological treatment is not likely to be consummated in the short-run. This calls for a soft start in order to introduce the compost technology to the project area, whereby a pilot-scale test plant might be built in 2007 to accumulate experience, optimise compost quality and introduce the product to the market. Such an approach would present opportunities to gain valuable insight into the technical and commercial aspects of composting the biodegradable fraction of municipal solid waste in the project area and its subsequent application (including sales and marketing of the compost product) before a full-scale plant can actually be erected. Therefore, it is suggested to erect the pilot plant with a capacity of 5,000 tonne/year.

A full-scale compost plant, complying with the relevant Turkish legislation/EU Directives is planned to be built in 2015.

It is recommended that a composting plant of the natural aerated windrow type be selected for Çanakkale for the following reasons:

- Obtaining the needed area for the plant is not a problem. The land has already been reserved in the sanitary landfill site layout plans
- Both investments and the cost of operation and maintenance are low
- The requirement for skilled labour is low

The leachate from the compost plant will be piped to the leachate treatment plant.

5. Establishment of civic amenity centres

A recycling station or a civic amenity centre is, in this context, defined as an attended facility to which citizens and small-scale business can bring various types of household waste. The purpose is to establish a service facility to optimise the collection of certain types of waste and recover secondary materials. Most recycling stations are designed for users to haul waste by means of automobiles pulling trailers and small pickup trucks. However, access by foot or bicycle is also possible.

The facility will be organised in such a way that it will be possible for the user to perform a "perfect" source sorting, placing the recyclables in the right container guided by signs and the operators' staff.

It is common practice to design and arrange the centres with at least 6 - 10 different maxi-containers for recyclable materials, a suitable number of maxi-containers for mixed bulky waste, and various containers for other waste categories.

The most common types of waste which are sorted out for recycling or material recovery are:
Paper (up to three types: newspapers, advertising matters and other types of paper)
Cardboard
Plastics (up to three types: PET, PVC and perhaps PE, PP, PS/EPS)
Glass (two or three types: coloured and white packaging glass and pane glass)
Ferrous and other metals
Waste electrical and electronic equipment (WEEE)
Refrigerators, freezers and other white goods (in fact, also WEEE)
Construction and demolition waste (concrete, bricks and tile etc.),
Garden waste for composting

Waste which cannot be recycled or used in material recovery can be collected as a fraction for:

Other waste for disposal
Bulky waste for disposal (furniture, carpets and other effects)

A small but a very important waste fraction is hazardous waste. The most common types of hazardous waste from the households are solvents, paint remains, batteries, spray cans, waste oils, items which contain heavy metals including lamps and tubes containing mercury, cleaning agents, acid and base liquids.

For the entire project period, collection of household hazardous waste will take place at the established civic amenity centres.

In order to be able to receive hazardous waste, the amenity centres must be provided with special closed containers and continuous attendance of expert personnel.

Four civic amenity centres will be established within the scope of the project. They will be located in Çanakkale (also serving Kepez), Lapseki (also serving Çardak), Umurbey and Kumkale (also serving İntepe). They will also include a small building serving as office and welfare measures for the operating staff.

6. Placing bring banks
The success of bring banks depends entirely on the extent to which public consciousness is developed urging citizens to take their recyclable waste to the bring banks. Public awareness campaign is an important part of the technical assistance component of the project. Among the facilitating factors, are the instalment density, site location, ease of access and cleanliness of the sites.

One 2-2.5 m³ igloo-type container per 1,000 capita will be placed in the towns of the project area in 2007. The containers will be placed in clusters of four at each bring site. The containers will be colour-coded according to the type of recyclable waste to be put in:

Paper,
Glass,
Plastics,
Metals and cans.

The table below shows the number of containers required.
### Number of bring banks and sites to be placed in the towns of the project area

<table>
<thead>
<tr>
<th>Town</th>
<th>2007 population</th>
<th>No. of bring banks</th>
<th>No. of bring sites</th>
<th>Population per bring bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çanakkale</td>
<td>104,363</td>
<td>100</td>
<td>25</td>
<td>1,044</td>
</tr>
<tr>
<td>Lapseki</td>
<td>20,955</td>
<td>20</td>
<td>5</td>
<td>1,048</td>
</tr>
<tr>
<td>Çardak</td>
<td>3,224</td>
<td>3</td>
<td>1</td>
<td>1,075</td>
</tr>
<tr>
<td>Umurbey</td>
<td>3,050</td>
<td>3</td>
<td>1</td>
<td>1,017</td>
</tr>
<tr>
<td>Kepez</td>
<td>7,846</td>
<td>8</td>
<td>2</td>
<td>981</td>
</tr>
<tr>
<td>Kumkale</td>
<td>2,142</td>
<td>2</td>
<td>2</td>
<td>1,071</td>
</tr>
<tr>
<td>İntepe</td>
<td>1,682</td>
<td>2</td>
<td>2</td>
<td>841</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>143,262</strong></td>
<td><strong>138</strong></td>
<td><strong>38</strong></td>
<td><strong>1,038</strong></td>
</tr>
</tbody>
</table>

### 7. Procurement of containers and collection vehicles

All municipalities within the project area will start using standard containers by 2007 as a result of project investments.

Non-standard containers will no longer be used after the commencement of the project in 2007. Non-standard containers will be scrapped, and new standard containers will be supplied to those parts of the project area with a need. The standard container sizes will be 800 litres in Çanakkale and Lapseki, and 400 litres in all other municipalities, viz. the same sizes as those currently in use.

Assuming a depreciation period of 10 years for the waste collection vehicles and a project start in 2007, vehicles from 1997 or before will have to be replaced.

This implies a complete renewal in 2007 of the collection vehicle fleets in the project area. Only retaining two vehicles, which will be 7 years old by then, will be kept in reserve. Calculations have been made to estimate the procurement requirements of the municipalities in the project area in terms of number and capacities of collection vehicles. The table below shows the estimated quantities and capacities of the required containers as well as the estimated number of rear-end loaded waste collection vehicles in the project area.

### Estimated quantities and capacities of required containers

<table>
<thead>
<tr>
<th>Year</th>
<th>Container size (l)</th>
<th>2007</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çanakkale</td>
<td>800</td>
<td>1,046</td>
<td>1,141</td>
<td>1,313</td>
<td>1,542</td>
<td>1,788</td>
</tr>
<tr>
<td>Lapseki</td>
<td>800</td>
<td>88</td>
<td>98</td>
<td>123</td>
<td>153</td>
<td>187</td>
</tr>
<tr>
<td>Umurbey</td>
<td>400</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>Çardak</td>
<td>400</td>
<td>73</td>
<td>77</td>
<td>83</td>
<td>94</td>
<td>101</td>
</tr>
<tr>
<td>Kepez</td>
<td>400</td>
<td>73</td>
<td>77</td>
<td>83</td>
<td>94</td>
<td>101</td>
</tr>
</tbody>
</table>
### Estimated need for compacting, rear-end loaded waste collection vehicles in the project area in 2007-2025

<table>
<thead>
<tr>
<th>Year</th>
<th>2007</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çanakkale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Lapseki</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Umurbey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Çardak</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kepez</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kumkale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20 m³ vehicle</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>İntepe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 m³ vehicle</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
### Five spare trucks with a capacity of 13 m³ will be purchased for the union as a whole.

### An Indicative list of equipment to be procured within the supply tender

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Indicative budget in Euros</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel wheel compactor</td>
<td>241,343</td>
</tr>
<tr>
<td>Bulldozer</td>
<td>159,000</td>
</tr>
<tr>
<td>Wheel loader</td>
<td>197,879</td>
</tr>
<tr>
<td>Truck</td>
<td>61,798</td>
</tr>
<tr>
<td>Pickup (4x4)</td>
<td>26,966</td>
</tr>
<tr>
<td>Tractor and trailer</td>
<td>26,292</td>
</tr>
<tr>
<td>Sweeping vehicle</td>
<td>78,652</td>
</tr>
<tr>
<td>Fire-fighter vehicle</td>
<td>50,562</td>
</tr>
<tr>
<td>Containers, (800 l)</td>
<td>105,792</td>
</tr>
<tr>
<td>Containers, (400 l)</td>
<td>18,357</td>
</tr>
<tr>
<td>Waste collection vehicles, (7 m³)</td>
<td>109,467</td>
</tr>
<tr>
<td>Waste collection vehicles, (13 m³)</td>
<td>477,697</td>
</tr>
<tr>
<td>Waste collection vehicles, (20 m³)</td>
<td>460,197</td>
</tr>
<tr>
<td>Depot container, (2 m³)</td>
<td>93,012</td>
</tr>
<tr>
<td>Vehicle with winch, without compactor (20 m³)</td>
<td>78,652</td>
</tr>
<tr>
<td>Containers, open top</td>
<td>112,000</td>
</tr>
<tr>
<td>Containers, with hatches</td>
<td>189,000</td>
</tr>
<tr>
<td>Truck, with hoist system</td>
<td>336,000</td>
</tr>
<tr>
<td>Sweeper</td>
<td>56,000</td>
</tr>
<tr>
<td>Wheel loader</td>
<td>130,000</td>
</tr>
</tbody>
</table>

### 8. Consequences for recycling of packaging waste

As a consequence of the recycling infrastructure proposed above combined with a prolonged period of public awareness activities initiated by the technical assistance consultant of the project, recycling of packaging waste is expected to increase as illustrated in the table below.
### Cost Effective Scenario

<table>
<thead>
<tr>
<th></th>
<th>Packaging Waste</th>
<th>Scavengers &amp; Pilot Composting</th>
<th>Dual Collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>PW (ton/yr)</td>
<td>5,445</td>
<td>5,691</td>
<td>5,907</td>
</tr>
<tr>
<td>Without considering composting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recycled PW (ton/yr)</td>
<td>1,386</td>
<td>1,458</td>
<td>1,528</td>
</tr>
<tr>
<td>Recycling ratio</td>
<td>25.5%</td>
<td>25.6%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Considering composting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total recycled PW (ton/yr)</td>
<td>1,386</td>
<td>1,458</td>
<td>1,956</td>
</tr>
<tr>
<td>Total recycling ratio</td>
<td>25.5%</td>
<td>25.6%</td>
<td>33.1%</td>
</tr>
</tbody>
</table>

Note: Composting only includes composting of packaging waste (paper and cardboard)

Experience from Germany and other countries show that only after a prolonged period of public awareness and changes in attitudes through information, campaigns, pilot projects etc it is possible to successfully introduce dual collection. The waste management plan of which this project is a part foresees that dual collection is introduced in 2015 and as a result of the efforts in the preceding years, effects are substantial and positive. Thus, Çanakkale region is able to meet the EU requirements for packaging waste by 2015 (while the national plan assumes that for Turkey as a whole the target will be met by 2020).

### 9. Rehabilitation of existing dump sites

Within the context of Çanakkale Regional SWM project, five existing dump sites in the project area will be closed and rehabilitated. The dumpsites to be rehabilitated are; Millet Çiftliği and Topraklı Mevkii dump sites in Lapseki, Kuruçeşme dump site in Çanakkale, Göl Mevkii and Kadıbayırı dumpsites in Çardak. Except from Göl Mevkii in Çardak and Topraklı Mevkii in Lapseki, remaining dump sites are in operation.

As a result of the project, the old dumps will be closed and fenced, tipping will be terminated, the existing dumps will be brought to an acceptable slope wherever necessary, will be covered with gravel and top soil, a gas collection will be installed. The mitigation measures will include gas drainage layer, top soil and vegetative layer. Collection of leachate is not recommended. In the scope of the TA consultant, following tasks related to the closure and rehabilitation of the existing dump sites are anticipated:

- Evaluation of the existing situation and assessment of needs for rehabilitation,
- Design of rehabilitation measures,
- Preparation of tender documents for rehabilitation works,
- Assistance to the CFCU/Union for tender of rehabilitation works,
- Supervision of rehabilitation works.

Çanakkale Regional SWM project cost includes the cost of the works contract for rehabilitation works. The procurement procedure will be in accordance with the PRAG procedures. There will be an open or restricted tender (to be determined by the CFCU) according to FIDIC Red Book and PRAG procedures.

### 10. Technical assistance

The technical assistance component is described elsewhere in the project fiche and in detail in the feasibility study report.