



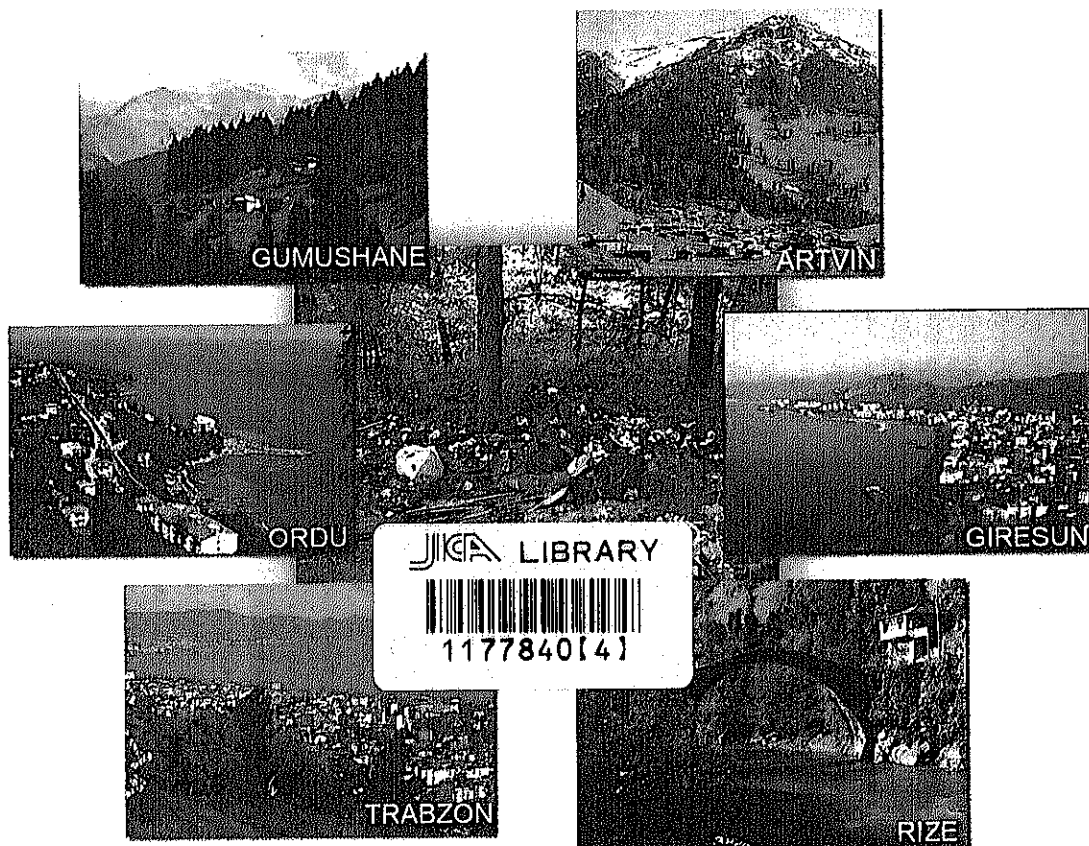
Republic of Turkey Prime Ministry
State Planning Organization



Japan International Cooperation Agency

DEVELOPMENT STUDY ON ENVIRONMENTAL AWARENESS ON SOLID WASTE MANAGEMENT IN EASTERN BLACK SEA REGION

FINAL REPORT



PAR CONSULTING
November 2004

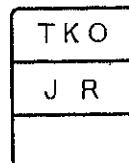


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ABBREVIATIONS

CEE	Chamber of Environmental Engineers
DM	Deutch Mark
DOKÇEP	Eastern Black Sea Environment Platform
ISWM	Integrated Solid Waste Management
JICA	Japan International Cooperation Agency
KTU	Black Sea Technical University
KÇKGD	Environment and Culture Initiatives Association
KTU	Karadeniz Technical University
Lt	Liter
NGO	Non-Governmental Organization
PPs	Pilot Projects
PPCAP	Public Private Community Partnerships Approach
SCU	Study Coordination Unit
SPO	State Planning Organization
SIS	State Institute of Statistics
SWM	Solid Waste Management
TEMA	Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
UCTEA	Union of Chambers of Turkish Engineers and Architects
USD	United State Dollars
TL	Turkish Lira
TR	Turkish Republic

ANNEXES

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1 INTRODUCTION

1.1 Background

Growing negative impacts of solid wastes on public health and environment have become one of the major contemporary environmental problems. These negative impacts stem from population increase, rapid improvements of technology and life standards, and improper urbanization. Since the amount of solid waste produced in urban areas has been continuously increasing and its composition getting complicated, the management of solid waste in cities has become an interdisciplinary field that should not only be handled economically and technically, but also as a social and cultural issue.

In Turkey, total amount of solid waste collected annually was about 25, 1 million tons for the year 2001 according to Municipal Solid Waste Statistics of State Institute of Statistics (SIS). Average amount of solid waste per capita was 1,28 kg/day-person for summertime and 1,32 kg/day-person for wintertime. The recyclable materials including paper, plastic, metal and glass constitute averagely one third of total solid wastes collected. However, the recycling rates of these recyclables are too low and the recycling methods are generally primitive.

Development Study on Environmental Awareness on Solid Waste Management covers six provinces in East Black Sea Region, namely Artvin, Giresun, Gümüşhane, Ordu, Rize and Trabzon. The study area encompasses 35,436 in square kilometers totally. According to 2000 general census of SIS, total population living in the study area is approximately 2,961,157 and 535,569 of them live in the central districts of these provinces.

In the Black Sea Region, there are considerable problems regarding proper disposal of solid wastes. Especially in bigger cities, lack of suitable final disposal site and administrative insufficiencies cause haphazardly disposal of solid wastes into empty fields and/or seashores. For example, in Trabzon more than 200 tons of solid wastes are dumped into seashore daily. Therefore, there are considerable public health risks and environmental deteriorations due to improper disposal of solid waste in Black Sea Region.

According to the above mentioned survey of SIS, in 2001 the solid wastes collected from province centers in terms of provinces were as follows: 10.950 tons for Artvin, 33.785 tons for Giresun, 7.300 tons for Gümüşhane, 38.325 for Ordu, 26.500 tons for Rize, and 80.240 tons for Trabzon. As seen from these figures, Trabzon is the most solid waste producing province in the study region. Time series that indicate the amount of solid waste produced in six provinces in the study area is given in **ANNEX 1**.

In Turkey, in accordance with 1530 and 3030 numbered Laws, the public institutions that are obligated to responsibilities and authority on collection, transportation, and properly disposal of solid waste are province municipalities and metropolitan municipalities. Similarly, the Regulation on Control of Solid Waste prepared and published by Ministry of Environment on March 14, 1991, give important responsibilities of SWM to municipalities. In order to fulfill the requirements of this task, municipalities spend averagely 40 percent of their budgets for SWM services. While the municipalities are generally successful regarding collection and transportation duties, they have considerable problems in recycle, reuse and reduction measures and proper disposal activities because of a lack of technical and financial resources.

In the case of private sector involvement in the SWM systems, the works of ÇEVKO, which was established for a mission of setting up packaging waste recovery and recycling systems in Turkey, are relatively considerable. In the same manner, Waste Material Exchanges (Waste Exchange Market) of Bursa, Istanbul and Kocaeli chambers of industry should be mentioned as important improvements.

While new techniques of solid waste treatment and disposal are being developed, reduction, reuse and recycling facilities constitute as a fundamental principle of all kinds of SWM systems. An improvement that will be achieved in reducing the amount of solid wastes produced by consumers, collecting solid waste separately at its source and reusing and recycling of SW will contribute efforts directed towards both economic efficiency and also ecological conservations.

In this manner, awareness level and cooperation tendency of the people is the most important criteria to realize a successful SWM system. The lesser amount of solid waste produced at homes and work places means the lesser amount of investment and operation costs of SWM system and the lesser amount of natural resources consumed. In the same manner, the more attention and efforts to separate recyclable solid waste in its source without allowing them to mix with organic or wet wastes provides lesser amount of solid waste produced and more amount of wastes recycled. For this reason, campaigns aiming to raise the awareness of people on environment and SWM should be an indispensable part of every integrated SWM system.

1.2 Scope of the Study

The coordination of the Development Study on Environmental Awareness on Solid Waste Management in Eastern Black Sea Region is executed with respect to the protocol signed between the State Planning Organization and JICA. The Study covers the center districts of six provinces from the region namely; Artvin, Rize, Trabzon, Gümüşhane, Giresun and Ordu. The Study includes the execution of various activities for raising environmental awareness on solid waste management and the promotion of 3R's (reduce, reuse and recycle) in Eastern Black Sea Region where solid waste disposal has become a significant problem.

With respect to its scope the objectives of the Study are to:

- Formulate an action plan for raising environmental awareness on SWM
- Conduct pilot projects that raises environmental awareness on SWM and carry out capacity building of stakeholders for it
- Formulate JICA's possible future cooperation project(s) on SWM.

1.3 Basic Approach of the Study

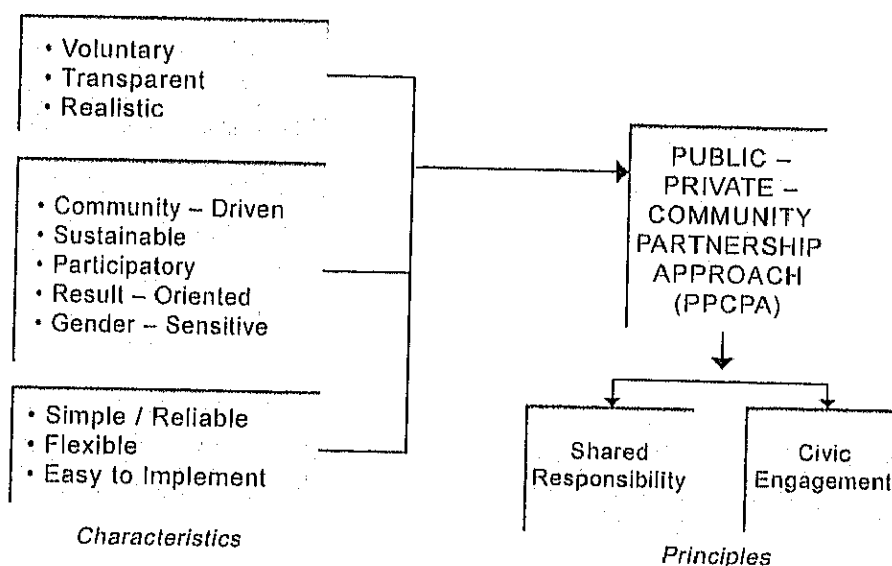
As a necessity of the sustainable development policies, SWM nowadays requires an integrated management understanding. In addition to being a daily problem for individuals, SWM has also economic and technologic dimensions which involve the current urban policies (i.e. land use, transportation). Since, as a concept, SWM has a complex structure, an integrated and comprehensive approach should be considered for the preparation of an action oriented SWM Plan.

For the success of the Action Plan, environmental public awareness is one of the main instruments that will be used during the preparation and implementation phases of the Integrated Solid Waste Management (ISWM). ISWM, by its nature, requires "active participation in action" of the local people. This necessitates a new cultural commitment for lifestyles and consumption patterns. For this reason, environmental public awareness Action Plan was prepared in line with the social, economic and cultural characteristics of the local communities. Within this framework, for the preparation of environmental public awareness Action Plan, a deep knowledge of the structural characteristics and social tendencies of the study region were taken into consideration.

Based on this knowledge, the Action Plan, custom tailored for the regional needs with the civic engagement, was developed successfully. This perspective can be considered as a public achievement since; community participation from the start also ensures the community commitment to the implementation of the Action Plan.

In other words, raising the public awareness via civic engagement requires the utilization of a "Public-Private-Community Partnerships Approach" (PPCPA). The soul and/or feature of the basic principle of PPCPA is "shared responsibility". The basic characteristics of PPCPA are illustrated in Graphic 1 below.

The above-stated characteristics are *sine qua non* for a successful approach, in line with current international best practices in the field of environment.

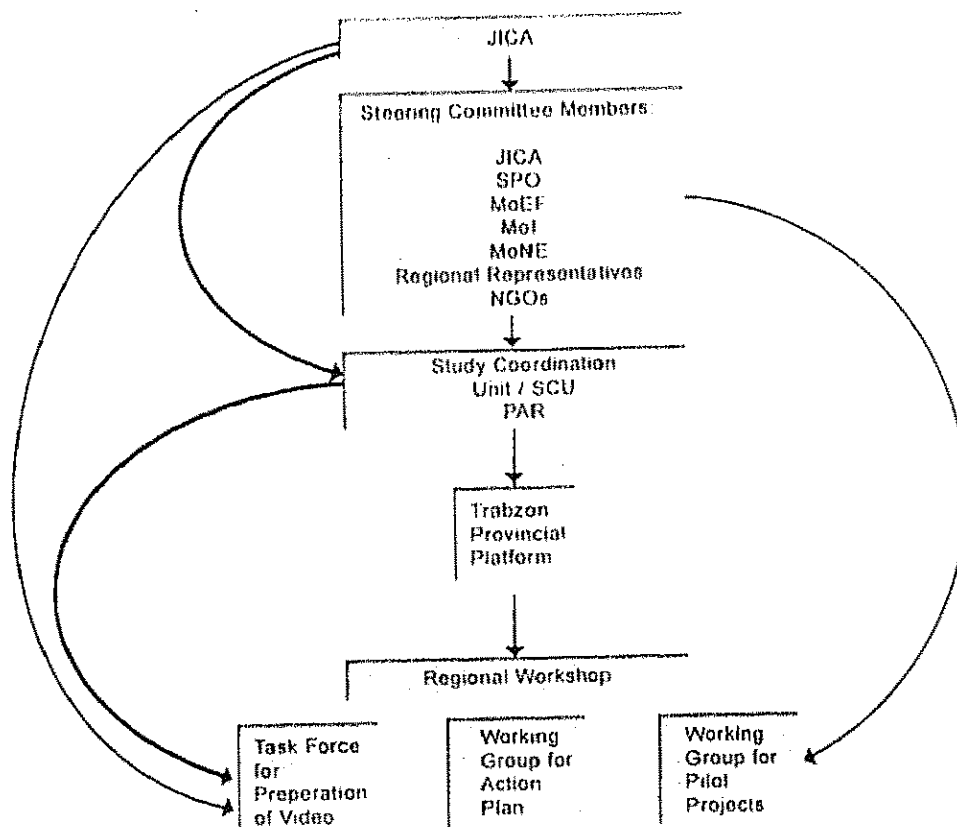


Graphic 1 Conceptual Framework of Environmental Awareness Raising on SWM

As adopted in the Johannesburg Summit (2002), the spirit of environmental best practices is founded on the establishment of "partnerships for sustainability", which foster the encouragement of voluntary multi-stakeholders initiatives. In this context, the basic approach also aimed to create an awareness of partnership among the stakeholders, which will in turn feed the SWM awareness to strengthen and guarantee the sustainability of study objectives. This process also includes the formation of a highly participatory mechanism where all the stakeholders, including the private sector, come together on voluntary basis to create synergy to solve local SWM problems. Voluntary and participatory character of this approach is the pillar, which local environmental governance will rise upon.

1.4 Methodology of the Study

The study consists of two phases; preparation and implementation. While each phase of the study has its own methodological characteristics, an integrated and participatory approach was their common denominator. In this context, each phase is defined task by task in the following sections. In line with the methodology, the institutional structure of the study, including the Steering Committee (SC), is given in Graphic 2 below.



Graphic 2 Institutional Structure of the Study

In line with this methodological preference, at the beginning of the study an "Inception Report" is prepared and presented to the members of the SC. At the SC meeting held on 6th July 2004 the inception report is discussed. The comments and recommendations of the members of the committee are reported in order to consider at the implementation stage of the study.

1.4.1 Phase 1 – Preparation

The studies and activities carried out under Phase One are:

1. Review of existing studies on SWM in study area
2. Data collection and field Investigation on SWM focusing on environmental awareness
3. Production of a video and VCD for raising environmental awareness
4. Evaluation of current environmental awareness on SWM
5. Preparation of an Improvement Plan of environmental awareness on SWM
6. Identification and preparation of Pilot Projects (PPs)

In addition to the above stated items, Introductory Meetings were held during 23-30 June 2004 in all six provinces, in order to introduce the study activities and objectives to stakeholders (See **ANNEX 2** for the local news and photographs of Phase 1 activities). Phase 1 was completed with the Regional Workshop held on 13 September 2004 in Trabzon at the Chamber of Architects. During this phase, the SC (see **ANNEX 3**) has assembled two times to follow study progress and actions taken.

1.4.2 Phase 2 - Implementation

The activities undertaken within Phase 2 are given below:

1. Implementation of PPs
2. Formulation of an action plan of raising environmental awareness on SWM
3. Formulation of JICA'S cooperation project(s)

In addition to the above mentioned tasks the final SC meeting was held on November 9, 2004 for the evaluation of the content of the draft final report. This Final Report was prepared by revising the draft final report with respect to the suggestions of the SC. Study results will be presented to the local stakeholders with a meeting to be held by SCU in December.

2 ACTIVITIES OF PHASE 1

As stated in Section 1 above, tasks and activities undertaken within Phase 1 are discussed in detail in the below headings.

2.1 Review of Existing Studies

As indicated at the Inception Report, studies on SWM services of the region were investigated and following reports were examined in detail:

1. TRAB-RI-KAB/KfW, Inception Report: Concept and Feasibility Study for Regional Solid Waste Management System, March 2004.
2. ERM/TÇT, Solid Waste Management Application Study: Volume 1: Waste Disposal Strategy for Trabzon and Rize, January 1997.
3. T.R. Ordu Province, Provincial Directorate of Environment and Forest, Ordu Solid Waste Management Project, 2004
4. T.R. Giresun Province, Provincial Directorate of Environment and Forest, Solid Waste Issue in Giresun, 2004.

In order to access studies of Bank of Provinces, an official letter has been sent, but any response has not been received yet. On the other hand, at mutual interviews, authorities from Bank of Provinces stated that the solid waste studies of the Bank are just preliminary studies for site selection and there are no reports prepared from these studies yet.

Additionally, in order to understand comprehensively the situation of local SWM system, studies of scientific community, NGOs and local governments are examined. The following studies were used:

5. UCTEA Chamber of Environmental Engineers, Trabzon - Rize Solid Waste Management
6. Berkun, Nemlioğlu ve Aras, "Integrated Solid Waste Management at the Coastal Black Sea Region in the Turkey", KTU.

Inception Report produced by TRAB-RI-KAB/KfW is a product of a project that aims at solving solid waste problems of Trabzon and Rize together. The first studies for this project is started with the project named as "Trabzon – Rize Solid Waste Management: Pilot Project" that was a sub-part of METAP – Turkey Solid Waste Management Project financed by World Bank and implemented by T.R. Ministry of Environment. A consortium composed of a British firm, ERM and a local firm TÇT was assigned for this project, and it prepared two interim reports on April 1996 and September 1996. The final report dated January 1997 "Waste Disposal Strategy for Trabzon and Rize: Preliminary Environmental Assessment Report". These reports were discussed by related parts at the meetings organized in Ankara and the region.

In this study carried out by ERM/TÇT, administrative, economic, geological and topographical features of the region were examined. It also analyzed a number of issues including current SWM system, and related management organization, institutions taking responsibilities in these organizations and their roles, current solid waste produced and its composition.

One of the important features of this report is that, it examines and compares the different alternative solid waste disposal strategy for the region.

The report assesses alternative technologies of sanitary solid waste landfill, recycle plants, anaerobic digestion and incineration, and decides that the sanitary landfill is "most suitable technological solution" for the region.

In line with this technology selection for solid waste disposal, site selection studies were carried out. In order to find a suitable landfill site, landfill alternatives of Gölçayır, Çukurçayır, Düzyurt Araklı and Sürmene districts from Trabzon and, Gündoğdu, Kalkandere, İyidere and central districts from Rize were assessed and an abandoned copper mining site Sürmene Çamburnu town is selected to develop a new regional sanitary landfill.

This project covers the districts between Trabzon and Rize Centre. These are Darıca, Kavaklı, Akçaabat, Söğütlü, Yıldızlı, Akyazı, Trabzon, Çukurçayır, Yalınca, Yomra, Arsin, Araklı, Sürmene, Yeniay, Çamburnu, Of, Kırıkkale municipalities from Trabzon and İyidere, Derne, Rize and Gündoğdu municipalities from Rize. In order to transport solid wastes of all of these municipalities, two transfer stations, one in Trabzon, and one in Rize, were planned.

The solid waste disposal complex that was planned to construct in Sürmene Çamburnu Kutlular neighborhood, is composed of a sanitary landfill, a collector system for methane, a wastewater treatment plant, a compost fertilizer plant in pilot scale, an incineration unit for medical wastes, a separation unit for recyclable solid wastes, transfer stations and management and social buildings.

The ERM/TÇT Report consists of a financial affordability analysis. Total investment period of the project is planned as two years development and nine years operation periods. Total investment cost calculated at above-mentioned report is 15.8 million USD. If the price increases due to inflation is taking into account, total cost rises to 17.1 million USD. According to the ERM/TÇT Report, domestic resources will meet 30 per cent of this amount and remaining 70 percent will be obtained from international credit institutions.

This ERM/TÇT Report is discussed at the regional meetings carried out in the scope of METAP – Turkey Solid Waste Management Project implemented by the Ministry of Environment. Finally, it is decided to establish a municipalities union to implement this project at May 1996. For this purpose, a regional meeting is organized under the presidency of Trabzon Governor with the participation of all related districts mayors on August 9, 1996, and the draft statute of the union is discussed. As a result of these studies, Trabzon and Rize Provinces Solid Waste Local Authorities Union for Construction and Operation of Solid Waste Plants (TRAB- Rİ-KAB) is founded by a decide of Council of Ministers on October 27, 1997. Initially the union has 19 member municipalities. Later on, Maçka, Yıldızlı, Akçakale, Mersin and Pelitli municipalities from Trabzon and Derne municipality from Rize participate to TRAB-Rİ-KAB.

Environmental impacts of the project are discussed at the Provincial Environmental Committee meeting on May 28, 1998. In addition to permanent members of the committee, some NGOs are also invited to this meeting and after discussions, "Environmental Impacts are Negligible" decision is taken for construction of a sanitary solid waste landfill plant at the old copper mining site at Çamburnu district Kutlular neighborhood.

Çamburnu Municipality that was a member of TRAB-RI-KAB before site selection decision resigns from the union after above-mentioned decision. Moreover, Çamburnu Municipality raises an objection against the decision of Provincial Environmental Committee and appeal to Trabzon Administration Court against the Ministry of Environment and Trabzon Governorship. Trabzon Administration Court rejects Çamburnu Municipality's demand of cancellation of decision. Similarly, Council of State to which Çamburnu Municipality appeals to correct the decision of Trabzon Administration Court rejects the demand of Municipality and approves the decision of local court.

In order to finance this project, in the framework of 1997 Turkey – Germany Financial Cooperation Protocol, a 19 million DM credit is provided from German Financial Cooperation Funds. However, since the site selection decision is on the jurisdiction procedure, this credit could not be utilized until 2000 and in that year, this credit is transfer to another project with a new protocol.

In the year 2003, studies of the project start again and a new protocol is signed between KfW and TRAB-RI-KAB on August 9, 2003. In accordance with this protocol, KfW devotes a new 500.000 Euro donation to be used a new feasibility and the best suitable technology studies for Çamburnu Sanitary Landfill. KfW with the authority given by Council of Union, determine the firm that will carry out the new feasibility studies in October 2003. The assigned firm prepares Inception Report in March 2004. It is estimated that feasibility studies will continue approximately 10 months. After feasibility study, research for financial resources for the project will go on. TRAB-RI-KAB has an expectation to obtain financial resources from Environment Funds of European Union.

Another report examined is the report of T.R. Ordu Province, Provincial Directorate of Environment and Forestry named as Ordu Solid Waste Management Project 2004. This report evaluates environmental impacts of current and alternative disposal sites of Ordu. The methodology used in the report is gathering all municipalities of Ordu in six groups in terms of topographical structure and transportation opportunities, and then determining a suitable disposal site for each group. In this way, the report envisages that the municipalities of the first group can utilize Akkuş disposal site; the municipalities of the second group can utilize Ünye disposal site; the municipalities of the third group can utilize Kumru disposal site; the municipalities of the fourth group can utilize Gürgentepe disposal site; the municipalities of the fifth group can utilize Gölköy disposal site; and the municipalities of the sixth group can utilize Mesudiye disposal site. In the scope of the report of Ordu, site surveys for all of the above mentioned regions are carried out and "Solid Waste Disposal Site Investigation Reports" are prepared for each site.

The last report examined is the report of Giresun Provincial Directorate of Environment and Forestry, named as Solid Waste Issue in Giresun, 2004. In this report, Provincial Directorate carries out an inventory study for 16 districts of Giresun. According to this report, all of the districts of Giresun dump their solid wastes into open areas, sea fill areas, or streambeds without any sanitary measure. 138.556 people live in Giresun and its districts and produce approximately 200 tons solid wastes daily. This report also indicates location of dump sites, number of worker assigned to solid waste services, number of vehicles, containers and garbage baskets for each of the district. The report offers to municipalities that they should associate with each other in the form of municipality unions to carry out their duties about solid waste management services as a conclusion.

2.2 Data Collection and Field Investigation

2.2.1 Purpose

According to 2000 general census of SIS, total population living in the study area is approximately 2.961.157 and 542.681 of them live in the central districts of these provinces. In the project area, there are considerable problems regarding proper disposal of solid wastes. Lack of suitable final disposal site causes haphazardly disposal of solid wastes into empty fields and/or seashores. Especially this problem is serious in all coastal cities. Therefore, there are considerable public health risks and environmental deteriorations due to improper disposal of solid waste in Black Sea Region.

The increasing population growth rate, improper urbanization, geographical condition of the Black Sea region and lack of effective solid management system cause serious problems in terms of solid waste management. Growing negative impacts of solid wastes on human health and environment have become one of the major problems in the project region. For the design and implementation of an effective and sustainable solid waste management system, it is essential to consider the social, political, economic and environmental characteristics of urban areas where a new system is to be established. It is also equally important for ensuring the smooth working of the system to reflect on the opinions, problems and demands of those who will benefit from and pay for the system. It is therefore necessary to identify social factors which will influence the design and implementation of the solid waste management system.

The main targets of the research are to collect data on socio-economic conditions of the household in the project region, environmental awareness, reuse of the used materials, collection of the waste, cleaning the streets and costs of these activities. Hence, the objective of the research is to determine the long run effects of the system and the participation and contribution by people as well as to identify the social factors relevant for the system.

The research focuses on the following main sections in line with the basic objectives stated above:

Recycling practice and market survey (see Section 2.2.4)

The main aim of this survey is to understand current reuse/recycling practices and the market for reused/recycled waste, the degree of cooperation among institutions and amount and type of the reused material.

Study on the level of environmental awareness (see Section 2.2.5)

The purpose of this study is to understand the current degree of awareness of the people on environmental deterioration caused by improper SWM, and how important these problems in comparison to other environmental problems.

Study on discharge/collection and street sweeping system (see Section 2.2.6)

The purpose of this study is to understand the current discharge/collection and street sweeping system in six cities and their vicinities in order to identify issues/problems of the system.

Study on expenditure for SWM and identification of unit costs (see Section 2.2.7)

The purpose of this study is to understand the current expenditure for SWM in accordance with works, i.e. collection, transportation service, street sweeping service, treatment service.

2.2.2 Methodology

In this study, both qualitative and quantitative techniques were employed to collect data. Information required to realize the objectives of the study was obtained through the following ways:

By conducting a household survey, basic socio-economic data and existing waste disposal practices and problems, recycling activities, etc. were elucidated. Total 1750 household survey questionnaire were carried out in the study region.

The sampling for the research covered the central districts in the cities and these districts were categorized by grouping lower, middle and upper socio-economic levels. In addition to these districts, the closest district to the landfill site was covered (See **ANNEX 4** for sample selection).

The sampling used in the survey was determined in the following ways:

1. The percentage of each province population to total population of region
2. The percentage was multiplied by the number of interview for each province.
3. If the number of questionnaire is less than 100, the number is increased 100.
4. The number divided into a cluster of 25.
5. Accordingly number of questionnaires and clusters were determined (see Table 1).
6. Quarters are categorized by grouping lower, middle and upper socio-economic level and then their population size.

Table 1 Sampling procedure for the household survey

Province	2000 Total	Population (%)	Number of Interview	Exact number of Interview	Cluster
Artvin*	23.157	4,3	74,7	100,0	4,0
Rize	78.144	14,4	252,0	250,0	10,0
Trabzon	214.949	39,6	693,2	650,0	26,0
Giresun	83.636	15,4	269,7	300,0	12,0
Gümüşhane	30.270	5,6	97,6	100,0	4,0
Ordu	112.525	20,7	362,9	350,0	14,0
Total	542.681	100,0	1750,0	1750,0	70

* In order to carry out statistically rational analysis the number of interviews to be held in Artvin was increased to 100 from 74. The additional 26 interviews were included by adding equal number of interviews from each quarter.

Household survey was prepared based on previous studies about solid waste management and all questions were reviewed by the Study Coordination Unit (SCU). The household survey covers all questions related to the objectives of the study and it consists of 4 main parts (See **ANNEX 5** for revised questionnaire).

The Research Team and Field Survey

The survey was carried out in the study region in July 2004. The technique employed in the survey was that of interviewing through standard questionnaire form. The survey was conducted in face-to-face interviews. Sample households were selected on a random basis. In each district, people whose economic and social characteristics appropriate for the survey purposes were selected. The team tried to interview the most knowledgeable person in the household to collect detailed and correct information. If that person was not available, the next most economically active person or the spouse was interviewed. In the most cases, these persons were women of the middle generation of the household.

A research team carried out the interviews. The research team consists of 10 members who have experience on field research. The findings of the survey will be the result of the statistical analysis of questionnaire applied to 1750 households. The data processed and analyzed using SPSS.

Before the survey, the research team was given training and each of the questions were discussed in detail. A pilot study for the questionnaires were carried out in Mamak and Bahçelievler districts of Ankara. Some of the questions were changed according to the answers received.

Interviews and Focus Group Meetings

Interviews and focus group meetings were carried out on July 18-24, 2004. In-depth interviews were held with people working in municipalities, provincial offices of Government, schools and NGOs, health center workers, scrap dealers, janitors and informal waste collectors (See ANNEX 6). When the research team visited the institutions, they tried to get some former reports and researches about the solid waste management in the region. These interviews provide some detailed information but scrap dealers and informal waste pickers were not willing to answer the questions.

Two focus group meetings were carried out in a squatter neighborhood (*gecekondu*) and in a neighborhood where higher income groups live. Through focus group meetings, qualitative data was obtained on the study region. At least 7 people were participated on the meetings and their ages were 20-60 years old.

2.2.3 Main Findings of the Field Survey

The data presented in this section were obtained from the household survey conducted in Study provinces. In these provinces, it was interviewed with people from upper, middle and lower socio-economic level and who live near the landfill site. Out of those interviewed, 63% are female and 39% are male (see Figure 1). Interviews with women provide more accurate information about household waste practices, recycling activities because these activities are mostly done by women.

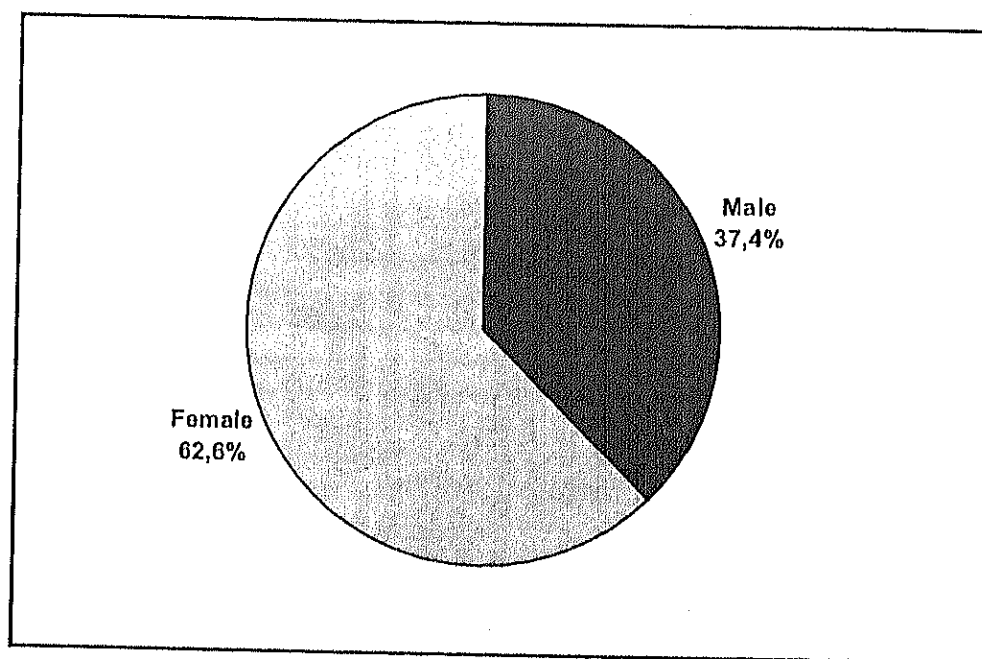


Figure 1 Sex of respondents

33% of the people interviewed are head of household; 51% of the people interviewed are spouse and 15% of people interviewed are other members of household. Table 2 shows the person who was interviewed whether is head of household.

Table 2 Head of household

	N	%
Head of household	580	33,1
Spouse	900	51,4
Other	270	15,4
Total	1.750	100,0

The cities in the Black Sea Region are located in mountainous terrain, with the majority of population living in a narrow strip of flat land between coastline and the mountains. In addition to geographic condition, migration from rural areas to urban areas, improper urbanization and rapid population increase cause many problems in the region. In some areas the basic infrastructure services are not sufficient. There are some apartments in multi-story building (5 or more floors) and these buildings are new. Most of people in the study region live apartments in low-rise apartment building (1 to 4 floors). It was observed that squatter houses are the most common in Trabzon.

While 55% of the respondents live apartments in multi-story apartment building, 28% of the respondents live apartments in multi story building. 6% of the respondents live private single family house and only 1.5% of the respondents live squatter houses (see Figure 2). It was stated that janitors works in multi-story building and waste are collected and thrown away by them. In the other housing types, waste is taken away by the members of the household.

Out of those interviewed 64% live in their own houses while 35% live in rented houses.

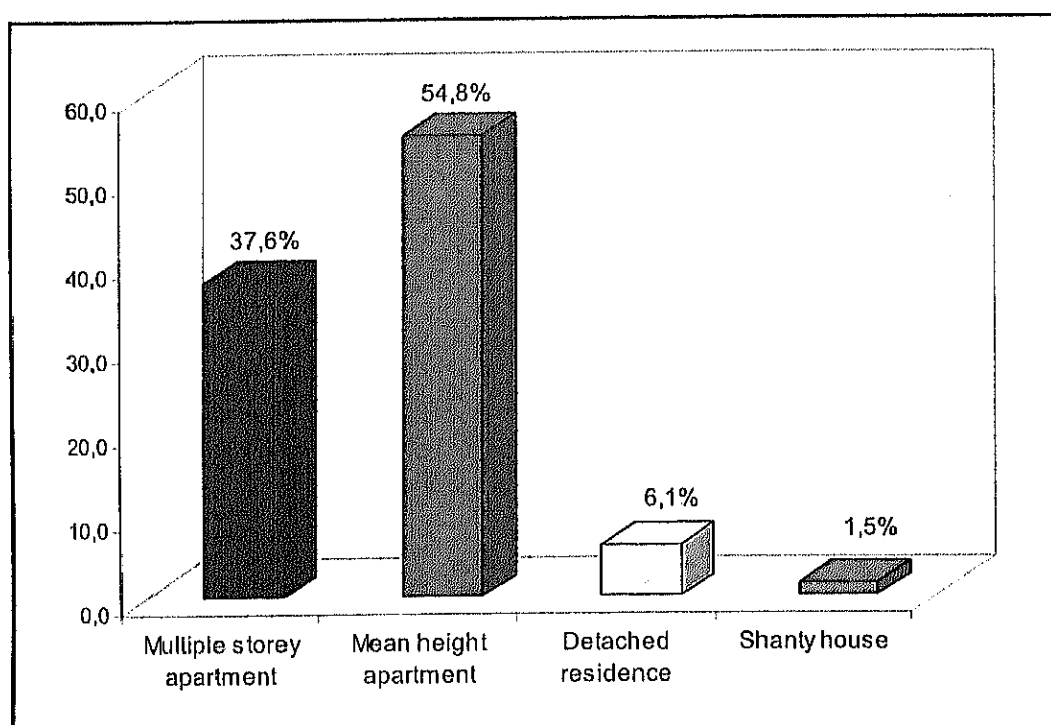


Figure 2 Type of housing

Most of the respondents are primarily high school graduates and followed by primary school graduates. The rate of illiteracy is about 4%. The Figure 3 shows level of education.

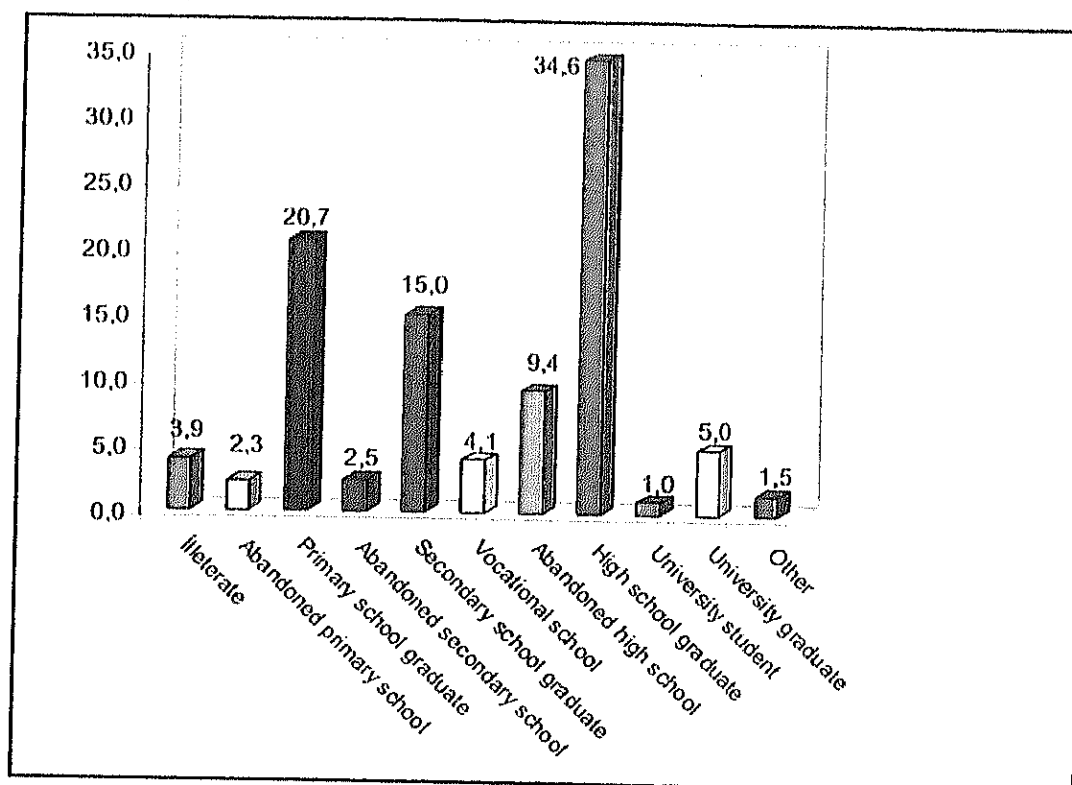


Figure 3 Level of education

Most of the respondents (82%) were born in the provinces where the interviews were held (see Table 3). It is assumed that these people have knowledge about the problems of the cities where they live.

Table 3 Where they born

	N	%
Yes	1.433	81,9
No	317	18,1
Total	1.750	100,0

46% of the respondents stated that there are 2 adults; 26% of the respondent stated that there are 3 persons (see Table 4). It can be said that the nuclear family is common in the study region based on the information about the number of adults in the household. Extended family exists but very few.

Table 4 Number of adults

Person #	N	%
1	62	3,5
2	803	45,9
3	470	26,9
4	294	16,8
5	88	5,0
6	27	1,5
7	4	0,2
8	1	0,1
10	1	0,1
Total	1.750	100,0

The average household size is 4 (32%) and followed by 3 (26%). The household had 5 people is 16% and people who live alone is 3%.

Generally one person in the household works (62.3%). In 19.5% of households there are two members working (see Table 5). Some families lived in big cities are engaged agricultural production and these people are not considered working. 10% of all households have one member presently unemployed. 86% of the respondents stated that there are no unemployed people in their households.

Table 5 The number of working people

Person #	N	%
0	266	15,2
1	1.090	62,3
2	341	19,5
3	49	2,8
4	2	0,1
5	2	0,1
Total	1.750	100,0

The average monthly income of households is 400-600 million T.L. (32%). According to the data collected, while the average income of the higher income group is over 1 billion T.L. (16.5%), the figure drops to 0-200 million T.L. for lower income groups (1.1%). The average monthly income of the middle group is 600-800 million T.L. (25%) (See Figure 4).

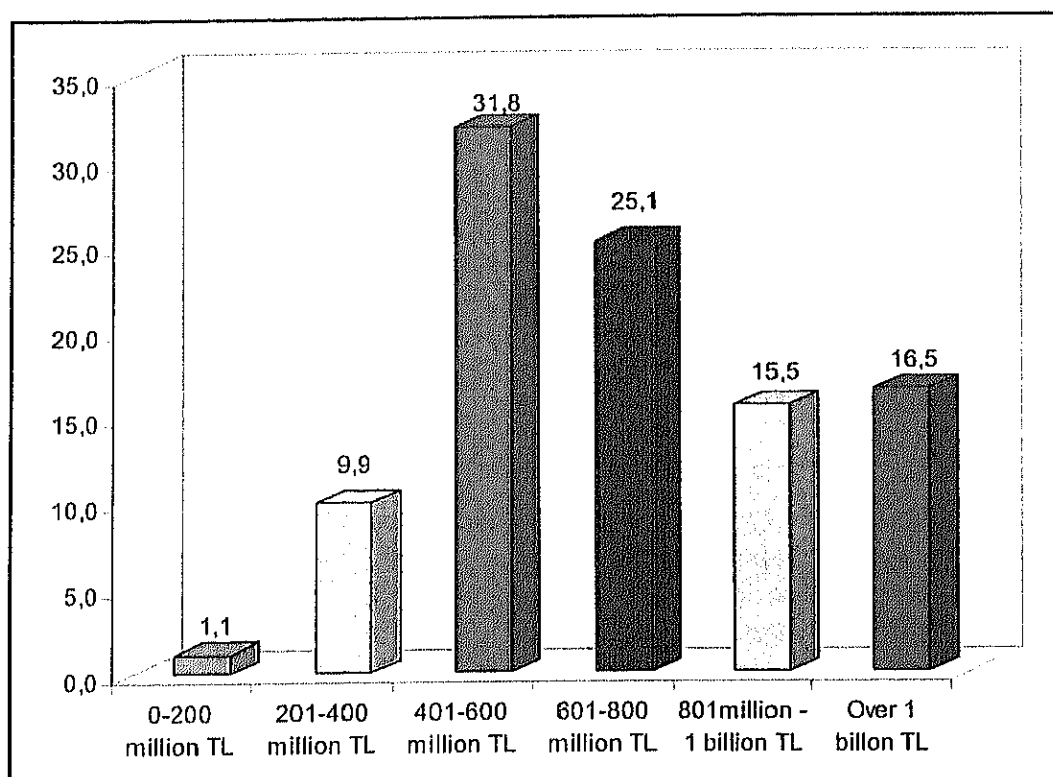


Figure 4 Monthly incomes

25% percent of the respondents stated that one person in the family is out of work due to old age or retired.

2.2.4 Recycling Practice and Market Survey

The main aim of this survey is to understand current reuse/recycling practices in the study region, related institutions and problems. The qualitative and quantitative techniques were used to collect data.

The household survey provides basic information about the current reuse/recycling practices and the depth-interviews provides information about the general condition of the region and the degree of cooperation among related institutions, problems and suggestions to solve these problems. A part of household questionnaire will include some questions about reuse and recycling practices. In addition to these interviews, interviews with scrap-dealers and informal waste pickers provides some detailed information about the issue

Basic subjects that will be undertaken are:

- Organizations involved in reuse/ recycling activities and their roles
- Involvement of the public sector (municipalities, provincial offices, etc.)
- Kinds and amount of materials reused and recycled
- Prices of materials reused and recycled
- Quality required and/or price change in accordance with the degree of contamination or purity of the recovered material
- Location of the final users of the recovered wastes
- Current issues and problems

Recycling and reuse practices are very important to protect environment and sustainable development. In the developed countries, people are aware of the importance of the recycling practices and the arrangement for recycling has more common than developing countries.

In the study region there are no formal recycling programs except some limited activities; for example, in Giresun the Provincial Directorate of Environment and Forestry has started a recycling project to collect batteries.

Sorting out the domestic waste before dumping is very important. According data obtained from household survey, 95.5% of all families do not sort their waste (see Table 6). Some participants from focus group discussion were complaint about the absence of formal recycling activities in their cities. It was stated that

"There is no sense in sifting out our wastes. Even if we do, they are all dumped on the same place. They are not recycled".

Focus groups participants stated that bread is kept separated from other wastes. Traditionally leftover bread is not put with other wastes.

Table 6 Household waste separation

	N	%
Yes	78	4,5
No	1.672	95,5
Total	1.750	100,0

The waste is separated by women. Household members take out the wastes and in buildings where janitors serve, they naturally do this work. %99 of households stated that waste is separated by women (See Table 7).

Table 7 Who separates waste

	N	%
Men (adult)	1	1,3
Women (adult)	77	98,7
Total	78	100,0

The reuse of used material is very low for all socio-economic levels. 76.5% of the households do not reuse the used material. There is no significant difference among socio-economic levels (See Table 8 and 9).

Table 8 Reuse of used material

	N	%
Yes	411	23,5
No	1.339	76,5
Total	1.750	100,0

Table 9 Reuse of used material by socio-economic levels

		Do you reuse the used material?		Total (%)
		Yes (%)	No (%)	
Economic level	Upper	21,7	78,3	100,0
	Middle	21,7	78,3	100,0
	Lower	22,7	77,3	100,0
	Near landfill	34,7	65,3	100,0
Total		23,5	76,5	100,0

The reuse of used materials is very limited. Rich households give their old clothing to people who need them. Focus group participants state that they are practicing some form of waste separation. Plastic bags are used to collect wastes in the houses. Based on focus group discussions with housewives, it can be said that glass bottles are used at home to preserve various food products. Many women in the region use glass bottles for storing some foods such as rice, lentil, sugar, flour, etc. Paper wastes are used as fire starters in stoves (see Table 10).

Table 10 Reused material

Type of material	Economic level				TOTAL
	Upper	Middle	Lower	Near landfill	
Plastic	33,3	51,9	11,1	3,7	100,0
Paper	38,3	33,0	20,0	8,7	100,0
Paperboard	32,2	31,1	24,4	12,2	100,0
Metal cans	21,7	43,5	21,7	13,0	100,0
Clothing	66,7	33,3	-	-	100,0
Other	-	100,0	-	-	100,0
Total	27,5	49,6	17,9	5,0	100,0

There are some informal waste pickers in the study region. Other semi-formal sector recycling activities are carried out at the dump sites. Most of the Municipalities in the study region allow some people to collect to waste in some areas. For example, the Giresun Municipality allows collection of waste for some people and earns 2 billion TL. per month.

84.3% of the households stated that there are no waste pickers in their districts. 15.7% of households states that some people collect cans, paper, plastic, and other metal articles from containers or cans. There no significant differences among different socio-economic level (see Table 11 and 12).

Table 11 Are there any waste pickers in your districts?

	N	%
Yes	275	15,7
No	1.475	84,3
Total	1.750	100,0

Table 12 Are there any waste pickers in your districts? (socio-economic levels)

		Are there any waste pickers in your districts?		Total (%)
		Yes (%)	No (%)	
Socio-economic level	Upper	13,0	87,0	100,0
	Middle	18,9	81,1	100,0
	Lower	21,8	78,2	100,0
	Near landfill	6,2	93,8	100,0
Total		23,5	15,7	84,3

The household survey points out that glass rank first among articles sifted out of containers with 40%, and followed by paper (See Table 13). According several participants, the scavengers harm the environment by spreading wastes surroundings.

Table 13 What type of waste does someone else pick up?

Material	N	%
Glass	190	40,2
Plastic	27	5,7
Paper	115	24,3
Cardboard	90	19
Plats for used fertilizer	1	0,2
Metal cans	46	9,7
Clothing	3	0,6
Other	1	0,2
Total	473	100

Interviews with waste pickers in Giresun reveal that paper, cans, scrap and plastic bag are collected by children and adults. They collect these items for selling and for income generating. They collect these items from the central streets of the city. They have stated that they collect wastes everyday. One interviewee said:

"We collect paper, plastic, cans and scrap. Everybody in our family collects waste. We sell these things. This is not an easy job but we do not have any choice. There are 20 families in Giresun to collect waste".

The collected items are categorized before selling. They stated that they collect 3-4 tons paper everyday.

Interviews were carried out with scrap dealers in Trabzon. They stated that they buy every kind of material and at least 100 people are working in this sector. It was not obtained any information the price and amount of the collected material.

2.2.5 Environmental Awareness Status and its Education System

This section covers the issues regarding environmental sensitivity and awareness of people living in the region, relations between institutions and the present problems in respect to solid waste management. Furthermore, in this section, environmental problems in the region and what kind of information, data are needed will be analyzed. Basic subjects that will be undertaken are:

- Degree of public cooperation for SWM
- Public relation and information activities on SWM conducted by the administrator

- Cooperation among the organizations concerned on SWM (municipalities, provincial offices of the Government, schools, NGOs, etc.)
- Environmental education programs and system
- Identify basic target groups in relation to SWM systems
- Current issues and problems

Contemporarily, the increasing environmental problems and the difficulties they engender are attracting the attention of more and more people and institutions everyday. Today, the fact that we are facing a global environmental crisis is an undeniable truth. The gradually thinning of ozone layer, global climatic changes, the increase of drought and desertification, the extinction of many plant and animal species and the decrease in biological diversity, as well as the increasing pollution in air, water and soil are all apparent evidences of an environmental crisis that we are confronting in today's world. In the last 20 years, NGOs have played an important role in voicing environmental problems, increasing public awareness and forming pressure groups. Hence, NGOs' significant role in the environmental issues is growing in our country as it is in the rest of the world.

In those provinces in the study region, 97% of the people who were interviewed for the household survey denoted that they were not a member of any NGO. Only 15% of those who are a member are part of an environmental organization (see Table 14 and 15). Moreover, during the interviews made with the NGO representatives, it was stated that the participation of the people in the region to NGOs were very low and that there was also a disinterest towards environmental problems.

"People, generally, accept the problem as none of their interest. Participation of the public to our activities is very low." (Interview with the NGO representatives, Giresun).

Table 14 Member of NGOs

	N	%
Yes	48	2,7
No	1.702	97,3
Total	1.750	100,0

Table 15 Are NGOs interested in environmental problems?

	N	%
Yes	7	14,6
No	41	85,4
Total	48	100,0

Environmental policies, which the countries adopt, not only effect the environment, but also the living conditions of people residing there. Within the preparation process of the environmental policies, in the decisions taken, it is very crucial whether or not there are impacts that will directly or indirectly effect people's lives. During the individual interviews and focus group discussions, it was observed that such a point of view was dominant: that these policies did not interest ordinary citizens or nobody would take into account their opinion. Majority of the people interviewed, that is, 90% of them, declared that they did not contribute to any of the environmental policies that were brought forth (see Table 16). This situation can be explained as a lack of environmental awareness, low amount of participation to the NGOs and having inadequate knowledge about the seriousness of the problems.

Table 16 Contribution to environmental policies

	N	%
Yes	175	10,0
No	1.575	90,0
Total	1.750	100,0

When examined within the context of provinces, inadequate sanitation is regarded as the most important environmental problem. Unsafe drinking water and infrequent waste collection are cited as other important environmental problems (See Table 17). Focus groups discussions and formal and informal interviews with residents of these provinces reveal that most people in the project area are not satisfied waste disposal. When asked to identify the city's second most important environmental problem, most of them again mentioned inadequate sanitation, unsafe drinking water and unsafe disposal of waste. People in the project are stated that problems of waste-water-sewage are all threatening factors to their health.

Table 17 The most important environmental problem

	Artvin	Giresun	Gümüşhane	Ordu	Rize	Trabzon	Total
Air pollution	2.0	3.7	1.0	8.0	21.2	10.0	9.1
Unsafe drinking water	26.0	11.0	37.0	28.6	18.0	28.2	24.2
Insufficient water supply	5.0	3.0	3.0	2.3	1.6	2.3	2.5
Inadequate sanitation	35.0	23.0	35.0	27.1	29.2	28.8	28.2
Infrequent waste collection	26.0	23.7	17.0	16.0	12.0	17.2	17.8
Unsafe solid waste disposal	-	10.7	-	3.7	10.8	3.1	5.3
Traffic and congestion	5.0	10.7	6.0	12.6	6.0	9.2	9.3
Unsafe disposal of hazardous waste	-	5,0	-	0,6	-	0,5	2,4
Other	1,0	9,3	1,0	1,1	1,2	0,8	2,4
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

The economic conditions and education level may affect people's opinions on the environmental problems. In Turkey, the infrastructural services are insufficient in the squatter neighborhoods, whereas in the areas or districts where socio-economically higher groups live, infrastructural problems are either not experienced or faced less. Therefore, socio-economic differences among the areas will result in people confronting different problems.

In the provinces of the study region, it is observed that unsafe drinking water and inadequate sanitation are the most important environmental problem for all socio-economic levels. The most crucial environmental problem for the people live near the landfill is problem related to sewage. Infrequent waste collection is an important environmental problem for all income groups (See Table 18).

Table 18 First priority in environmental problems

	Upper	Middle	Lower	Near Landfill	Total
Air pollution	18,1	5,7	2,7	4,0	9,1
Unsafe drinking water	21,4	29,5	25,3	13,3	24,2
Insufficient water supply	2,1	2,1	3,6	4,0	2,5
Inadequate sanitation	26,7	25,8	29,8	39,1	28,2
Infrequent waste collection	12,2	18,3	25,8	22,7	17,8
Unsafe solid waste disposal	7,7	3,7	6,2	3,1	5,3
Traffic and congestion	8,0	11,6	5,3	8,9	9,3
Unsafe disposal of hazardous waste	1,0	1,7		0,9	1,1
Other	3,1	1,7	1,3	4,0	2,4
Total	100,0%	100,0%	100,0%	100,0%	100,0%

The waste problem threatens both the human health and the environment in the provinces within the study region. For this reason, the opinion of the people, living in the study area, on the issue of whether the waste dumping sites are safe or not in terms of environment is important as it reflects their point of view on this matter.

Nearly 80% of the people interviewed have worries about the safety conditions of waste dumping site in respect to the environment (see Table 19).

"Waste storage has negative impact on all of us. First of all, it causes bad odor in the city as well as sea pollution." (Focus Group Discussion, Trabzon).

This anxiety is related to the environmental awareness, knowing the negative impacts caused by unhealthy waste dumping and living close to the waste dumping site.

Table 19 Do you have any concern about waste dumping and processing site environmentally safe?

	N	%
Yes	1.389	79,4
No	361	20,6
Total	1.750	100,0

Information on environmental issues is obtained from several resources. Information on preventing environmental problems and preserving nature and related education should be provided by utilizing various resources. In this respect, it is apparent that the media plays a significant role.

During the interviews held with the households in the provinces of the study area, it was denoted that most of the information was obtained via national TV by 71%, national newspaper by 9.5% and local TV by 9% (see Figure 5). For this reason, this fact should also be taken into consideration while developing educational programs and projects.

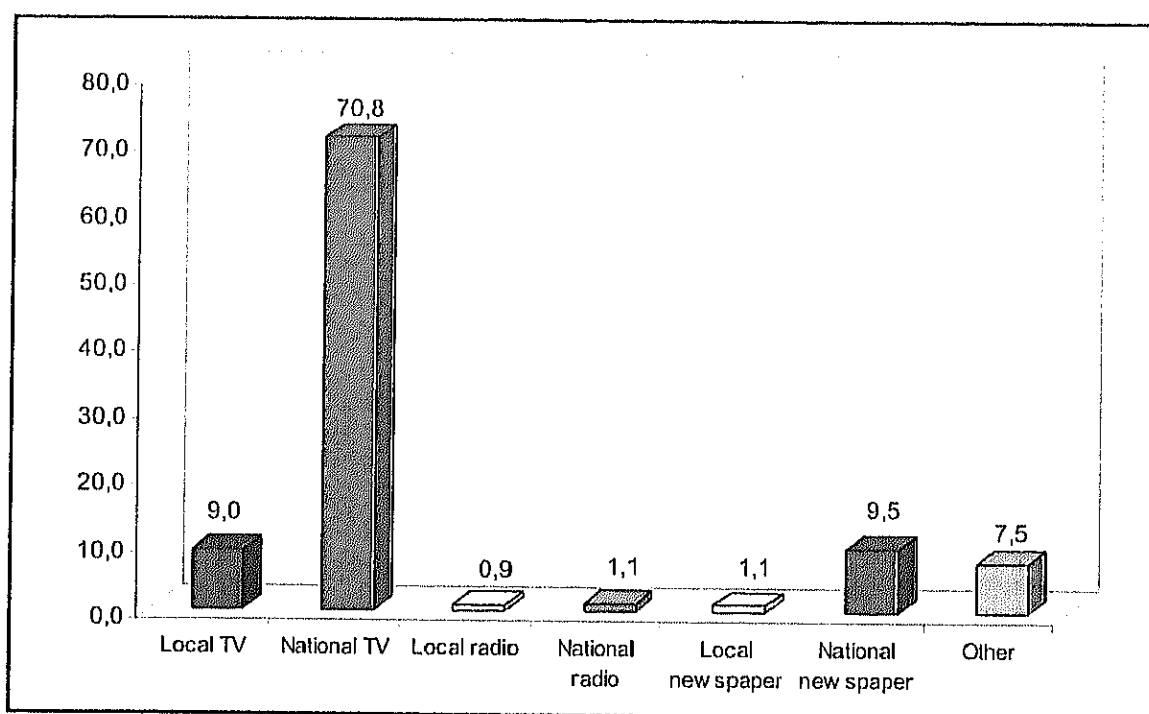


Figure 5 Information about environmental problems

One of the important issues is having adequate knowledge on how and which institution to apply to when a problem occurs. In modern societies, individuals act more consciously towards the problems they encounter and claim their rights. The majority of the people interviewed, that is, 96% of them, know that they should apply to the municipality when a problem regarding waste occurs (see Table 20).

Table 20 Do you know who to contact if you have any problem with you solid waste service

	N	%
Municipality	1.683	96,2
Governor	23	1,3
Headmen	11	0,6
Total	1.717	98,1

On the other hand, only 7.5% of the people have applied to the municipality until today concerning a problem in respect to waste. Generally, households try to solve these problems initially on their own or by getting help from their relatives and/or friends. 73.5% of the people who have applied to an institution concerning waste noted that they could not receive a satisfactory answer on this issue (see Table 21 and 22).

In the focus group discussions, the following viewpoints were expressed:

"There are too many stray dogs. They are messing up the garbage and causing too much noise. We have applied to the municipallty several times however we couldn't reach a solution. There is nothing we can do anymore. Nobody pays attention." (Focus Group Discussion, Giresun).

Assuming that their applications would be useless, people generally avoid applying.

Table 21 Have you ever called the office?

	Number	%
Yes	132	7,5
No	1.618	92,5
Total	1.750	100,0

Table 22 Were you satisfied with their response?

	Number	%
Yes	35	26,5
No	97	73,5
Total	132	100,0

For maintaining a healthy and systematic solid waste system and decreasing its problems, the related information should be known by those people who receive this service. Authorities interviewed in the municipalities stated that despite the provision of the necessary information, people were not complying with these measures. 73% of the people interviewed expressed that they had sufficient knowledge on the waste collection system (see Table 23).

Table 23 Are you provided sufficient information about solid waste system?

	Number	%
Yes	1.280	73,1
No	470	26,9
Total	1.750	100,0

As to the provinces, 78% of the people interviewed in Gümüşhane, 75% in Artvin, 75% in Rize, 60% in Trabzon, 60% in Ordu and 32% in Giresun declared that they needed to know the exact day and hour for the garbage collection. Especially, in the neighborhoods where garbage is collected in plastic bags, information on waste collecting hours is thought to be effective in preventing problems such as dissemination of garbage and odor. The other issue which those people interviewed wanted to know was how different types of waste could be stored. These two issues of concern were followed by the preoccupation of who to complain when these problems took place. According to the provinces, Table 24 shows on which issues information is needed.

Table 24 What type of information do you want to have?

Provinces	Solid waste collection schedule	Where to complain if there are problems	Proper handling of different kinds of waste	Other	Total (%)
Artvin	75,0	21,4	32,1	-	100,0
Giresun	32,4	29,4	61,8	2,9	100,0
Gümüşhane	78,4	21,6	27,0	-	100,0
Ordu	57,6	31,3	39,4	-	100,0
Rize	75,6	24,4	26,7	-	100,0
Trabzon	60,8	29,9	36,6	-	100,0
Total	59,7	28,5	38,9	0,4	100,0

When looked at the information needed according to the households' socio-economic conditions (see Table 25), 72% of the upper income group and 9.5% of those living close to the waste dumping site stated that they required information on the day and hour for the garbage collection; whereas 50% of the middle income group and 41% of the lower income group noted that they required information on how to store various types of waste.

On the other hand, 50% of the people who wanted to receive information on whom to address their problems and complaints were those living close to the dumping site. When either observed according to the provinces or examined taking into consideration the socio-economic levels, information that have been mostly required were the issues regarding the hour and day for garbage collection and how to store different types of waste.

Table 25 What type of information do you want to have? (socio-economic levels)

Socio-economic level		Solid waste collection schedule	Where to complain if there are problems	Proper handling of different kinds of waste	Other	
Upper		71,2	21,2	26,5	0,8	100,0
Middle		52,0	26,4	49,3	0,4	100,0
Lower		50,0	35,3	41,2	-	100,0
Near landfill		79,5	50,0	18,2	-	100,0
Total		59,7	28,5	38,9	0,4	100,0

The unhealthy and incautious storage of wastes cause negative impacts on human health and the environment. The majority of the people interviewed (92%) emphasized that they knew the side effects of this problem on human health (see Table 26).

Table 26 Do you know the impact of improper waste disposal on human health?

	N	%
Yes	1.617	92,4
No	133	7,6
Total	1.750	100,0

Generally, during the interviews and focus group discussions, it was observed that everyone was aware of the negative effects generated by the unhealthy storage of wastes. As to the provinces, when looked at the significance of this matter, the problem is either accepted as important or very important (see Table 27). Such a viewpoint is also shared by the municipality and government officials, as well as the NGO representatives. Almost every official who were interviewed highlighted the necessity of a system that involves the utilization of modern technology and the separation of wastes initially at homes. What's more, during the establishment of such a system, environmentally hazardous risks should be minimized by taking into account the peculiar structure of the region.

Table 27 Are you concerned about whether ultimate disposal is environmentally safe?

Province			Total
	Very important (%)	Important (%)	
Artvin	40,0	60,0	100,0
Giresun	35,1	64,9	100,0
Gümüşhane	28,6	71,4	100,0
Ordu	33,8	66,2	100,0
Rize	32,3	67,7	100,0
Trabzon	29,1	70,9	100,0
Total	32,2	67,8	100,0

Participation is very important in establishing and maintaining a solid waste system which is safe for the environment and human health.

At the same time, the taxes that are paid also play a rather significant role for the continuation of the solid waste system in a secure way. In this respect, 97% of those who were interviewed had paid their garbage collection tax (see Table 28).

Table 28 Payment of the garbage collection tax (last year)

	Number	%
I paid	1.704	97,4
I did not pay	46	2,6
Total	1.750	100,0

14% of the people who were interviewed stated that the amount of taxes collected were definitely sufficient for the municipality to fulfill its waste collection services and 64% noted that the amount of these taxes were sufficient, whereas 20% said that the amount of these taxes were not sufficient at all (see Table 29).

Table 29 What do you think about the amount of the tax the municipality collects?

	N	%
Definitely sufficient	245	14,0
Sufficient	1.121	64,1
Not sufficient	366	20,9
Definitely nor sufficient	18	1,0
Total	1.750	100,0

The opinions of the NGO representatives can be summarized as follows:

- Garbage is one of the important environmental problems of the Black Sea Region.
- The awareness of the public should be raised on waste storage and separation. Training should be conducted on this issue and garbage should be initially separated at homes. However, separation at homes is not by itself sufficient; a system where these can be utilized must be developed.
- Plans that are specific to the region and the cities, as well as short term and long term plans should be realized. In this respect, everybody should carry out the tasks that are expected from them.
- Projects with the motto "that which comes from the nature goes to the nature" should be initiated. For instance, money that is earned from waste papers may be spent on planting trees.
- People are sensitive towards these environmental problems, nevertheless participation is very low.
- Projects and practices that are conducted in those countries which have overcome their garbage problems should be adopted; and with the guidance of the experts, activities for resolving these problems must be commenced.
- In order to solve the garbage problem, people must be organized and their awareness should be raised.
- In the selection of the waste dumping site, environmental impact analysis should be performed and the opinions of those living close should be taken; the process of problem solving must not generate environmental problems in other districts.
- Related training should be realized via associations, and the training programs must be maintained as long as needed.

When the education programs are examined, it is observed that the TEMA Foundation has training programs in various schools. Moreover, this foundation organizes education camps every summer for the village headmen, imams and university students. In these camps, education is given until noon and practices are carried out in the afternoon.

In conclusion, various studies must be carried out in order to heighten the environmental sensitivity and awareness. These studies should be planned in a way that embraces every group of people in the society, as well as in a way that will continue to exist for a long time. Furthermore, problems related to garbage are well known, nonetheless the solution for these problems are expected to be brought forth by the institutions. More detailed information must be provided to the public on waste separation and garbage collection days and hours. Also, the fact that TV is a forceful medium for receiving information on environment should be taken into account.

2.2.6 Discharge / Collection and Street Sweeping System

In this section, services provided for garbage discharge/collection and street sweeping in the study provinces, to what extent people are satisfied with these services and the problems that are encountered will be discussed. Issues that will be specifically analyzed can be outlined as follows:

- Method, equipment, frequency and time expenses of discharge/collection and street sweeping services according to districts,
- Productivity of services provided as per districts,
- The evaluation of public relations and municipalities' information systems on discharge/collection and street sweeping systems,
- Current problems regarding the household solid waste practices and SWM systems,
- Determining how important these problems are compared to other environmental problems,
- Determining whether or not there are groups under probable risk and if there is, to take relevant preventive measures in order to reduce the negative impacts of the study,
- Determining necessary tools for providing the participation of people to solid waste disposal systems in a more productive way,
- Current situations and problems.

The healthy collection of garbage is very important for both the environment and the health of those people living around. In the study provinces, garbage collection and street sweeping are carried out by the municipalities and in some provinces by specific firms that operate under these municipalities.

Although the municipalities are generally responsible for the areas within the province territories, they also conduct the duty of garbage collection in some areas outside the provincial borders. In the province of Gümüşhane, the sub-district of Sobrun and the area in which Karaca Cave of Torul District is located, 22 neighborhoods as well as Ülper and Kemaliye villages in the province of Giresun, 22 neighborhoods and 4 villages from different areas of the province of Ordu, the villages situated in the municipal borders of Trabzon as well as the sub-districts and municipalities of Akoluk, Çukurçayır, Gürbulak and Yeşilova with which protocols have been signed, and all the areas that fall in the municipal borders of Artvin and Rize, the garbage collection is carried out by the municipalities concerned.

The municipalities, generally, perform the garbage collection and street sweeping services through their own personnel and vehicles. The number of vehicles owned by municipalities in the study provinces is shown in Table 30 (this information has been provided by the municipality officials).

Table 30 Fixed assets of municipalities in study area

ARTVIN		GİRESUN		GÜMÜŞHANE		ORDU		RİZE		TRABZON	
Type	#	Type	#	Type	#	Type	#	Type	#	Type	#
Container	260	Vehicle	14	Waste bin	250	Hydraulic compressor Truck	10	Container	2000	Vehicle	3
2.5 ton vehicle	3	Tank Carrier	4	Container	400	Hydraulift truck	1	7-8 ton compressor truck	2	Compressor type vehicle	19
		Midipar	4	7 ton compressor truck	1			4 ton compressor truck	7	Vehicle without compressor	4
		Sweeping	2	ton compressor truck	1			Muck machine	1	Dozer	2
		Dumping truck	2	3 ton compressor truck	1			Salvage tug	8		
		Compressing tank	1	Small open vehicle	1						
		Service vehicle	1								
		Container	250								
		Waste bin	100								

The municipality officials during the interviews stated that apart from these vehicles, tools such as handcarts and brooms were used for the street sweeping services and the number of these tools was unknown.

When the relevant systems in the study provinces are examined, it is observed that generally the household wastes are put in container/garbage bins or in plastic bags which are dumped in predefined areas and in specific hours.

In Artvin, the garbage is collected either in containers or in plastic bags. The hour for putting the garbage out is 7:30pm, which is collected between 7:30pm and 12:00pm everyday. Waste from the hospital is picked up by the Municipality, after the telephone is received from the hospital that there is enough waste to be thrown away.

In Giresun, the garbage is collected when container/tanks are full enough. In some areas the garbage is collected twice a day, in Çıtlakkale once a week, and in some places once every two days. Furthermore, in the city centers, garbage is collected everyday, generally after 11:00am. Medical wastes are collected by the Municipality upon a certain payment.

In Giresun, the garbage is gathered generally in containers. The garbage collection time is not the same in each neighborhood. The garbage is put out to the predefined places at 09:30am and 09:30pm at the neighborhoods where the garbage collection time has been determined. The large health centers such as the hospitals have containers where the top is closed and locked and from where the garbage is collected in the mornings every 2 days by a municipality team.

In the city center and 4 neighborhoods of the province of Ordu, the garbage collection is carried out by picking up wastes that are stored in plastic bags.

In other places the garbage is stored in container/bins. In the areas where the garbage is stored in plastic bags the collection is carried out everyday and where it is stored in container/bins, the garbage is collected once every two days. In the neighborhoods, the garbage is collected between 10:00am -02:00pm and in the city centers the garbage collection is carried out between 04:00am-08:00am. 2 hospitals possess medical waste storages that are eligible for municipal regulations, where the wastes here are collected by the Municipality when needed.

In Rize, the garbage is stored in containers and is collected everyday between 06:30am-03:30pm and 04:00pm-01:00am via labor shift system. Approximately half a ton of medical waste is produced everyday in various hospitals.

In Trabzon, 2/3 of the city has its garbage thrown away in plastic bags and the rest (1/3) has its garbage discarded in containers. In this province, the garbage is collected between 09:00pm-03:00am in those neighborhoods where there are containers, and between 08:00am-02:30pm everyday where the garbage is stored in plastic bags. The waste of the hospital of the Faculty of Medicine is collected three days a week and that of other hospitals 2 days a week, and the wastes of public and private health clinics are picked up 2 days a week or when the request is made by phone.

The sweeping of the streets are performed by municipalities or in some areas by particular firms that operate under municipalities. During the interviews made with the municipality officials, specific information on the issue of street sweeping in each province was obtained.

All the streets in the municipal borders of the city of Artvin are cleaned everyday between 08:00am-06:00pm by the municipality's labor teams in shifts. Approximately a total length of 50km is swept per day. Moreover, the containers on streets are emptied by the Municipality's own vehicles.

In Giresun, 22 neighborhoods, 388 streets, 41 avenues and 2 boulevards are swept. Totally 62 people (including executive personnel) work in the street sweeping in 3 shifts. The main avenues in the city center are swept everyday.

In Gümüşhane, the streets are cleaned by the Municipality's own workers by both sweeping and washing out. The Municipality has just one truck with a vacuum facility. Garbage collection is carried out by two groups: workers in shifts and neighborhood teams. What's more, in Gümüşhane, nearly a total of 30km of streets is swept everyday. From time to time there are complaints concerning the garbage containers on the streets, which are taken into consideration by the Municipality when carrying out the task of street sweeping.

In Ordu, the street cleaning process is carried out by the Municipality and ORBEL. There are totally 31 personnel working in ORBEL. Furthermore, around 48-52 workers deal with street sweeping, and nearly 45-50 workers engage in garbage collection and their transportation. When the executive personnel are included, there are 130 laborers in total working for this task.

In Rize, street cleaning process is carried out in shifts by workers of the Municipality's own cleaning firm. The city center is cleaned out from 06:30am in the morning to 01:30am at night and one motorized street sweeping vehicle is used for this purpose.

Although there are garbage containers in the streets of suburbs, there are no containers in the main avenues in the city center. These containers are washed out from time to time. Moreover, although the number is not exactly known, it is assumed that approximately 30km is swept per day.

In Trabzon, streets are swept by both the Municipality and its firm everyday except Sundays, where the main avenues are cleaned everyday. Each day 1500 streets are swept. The main arteries are swept with motorized sweepers. Also, 10 of the 39 neighborhoods in Trabzon have garbage containers, some of which engender odor, flies and hygiene problems.

In the study provinces, the garbage is gathered in plastic bags, placed in wastebaskets which are then either put into containers or left on pavements. According to the household survey conducted in 6 provinces, 90% of the people interviewed stated that they had wastebasket/bins for storing garbage, 4.6% of who explained that metal or plastic wastebasket/bins were placed at the entrance of the apartment building and 6.6% highlighted that these were placed outside of the building (see Table 31). During the focus group discussions held in the cities, it was told that generally a plastic or metal wastebasket/bin was used for storing garbage.

"We have the wastebasket in the kitchen. Inside the wastebasket we put a plastic bag and when it is full we throw it in the container outside." (Focus Group Discussion, Giresun).

Generally, in the neighborhoods where upper and middle income groups live, the garbage is collected in wastebasket/bins inside, whereas in those neighborhoods where lower income groups live, some households gather garbage in wastebasket/bins outside their houses.

Table 31 Is there a garbage can?

	Number	%
Yes, there is a garbage can in house/apartment	1.554	88,8
Yes, there is a plastic can in front of house/apartment	80	4,6
There is a garbage can outside of house/apartment	116	6,6
Total	1.750	100,0

91% of the households interviewed explained that they threw away their garbage in a shared container/barrel, 5.9% on pavements and 3% in a larger garbage barrel that is kept inside the apartment building. Table 32 displays where outside the building the garbage is left. What's more, in the study provinces, garbage is generally stored in container/bins which are afterwards collected by the municipality teams. Although, efforts are spent to collect the garbage in plastic bags in specified hours in some neighborhoods, this application is not widespread.

Table 32 Garbage dumping places

	Number	%
On the side walk (taken from there)	104	5,9
A barrel shared by apartment	53	3,0
A barrel shared by neighborhood	1.591	90,9
Other	2	0,1
Total	1.750	100,0

62% of the people interviewed in the study provinces told that garbage was collected by the municipality once a day, 21% said 3 times a week and 13% noted twice a day. Table 33 shows how frequently the garbage is collected. Garbage is gathered everyday in neighborhoods where it is stored in plastic bags. On the other hand, some problems are experienced on garbage collection where container/barrels are placed for the storage of wastes.

"The garbage is collected; nonetheless sometimes the accumulated wastes are messed up by cats and dogs. Dirty water leaks out from the garbage and our children play in this polluted environment." (Focus Group Discussion, Ordu)

As the garbage is thrown away into containers any time a day, it is inevitable that an accumulation of wastes occurs, which is a problem mostly experienced in the neighborhoods where lower income groups live. In the winter times, most of the households in the area warm up with stove, and they place the burnt residue of the stove in the containers which may as a result cause fires. The municipality officials state that they continuously warn the public for not throwing away these residues into containers, unless they are completely extinguished.

Table 33 The frequency of garbage collection

	Number	%
Twice a day	233	13,3
Once a day	1.086	62,1
Three times in a week	374	21,4
Two times in a week	34	1,9
Once a week	17	1,0
I do not know	2	0,1
Other	4	0,2

In the study provinces, the wastes are generally put outside by households themselves. It is observed that janitors work mostly in the recently built many-storied apartment buildings. 98% of the households interviewed stated that as there were no janitors in their buildings, they did not make any payment for this purpose (see Table 34). At the buildings where janitors are working, the garbage is collected once a day, generally in the evenings.

"I'm taking care of two buildings, that is, a total of 60 apartments. I start to collect the garbage at 06:30pm and it takes almost 2 hours for me to finish this job. The garbage that I pick up from the apartments are put inside plastic bags, which I gather them in a wastebasket/bin and place it outside the building." (Interview with the Janitors, Giresun).

Table 34 Do you have a janitor that you pay any fee?

	Number	%
Yes	28	1,7
No	1.652	98,3
Total	1.680	100,0

In the buildings where janitors work, the garbage is collected more regularly; nevertheless the number of janitors in the study provinces is rather low. However, when the collected garbage by the janitors is picked up late by the municipality, there may emerge some problems.

"The janitors collect and put the garbage on the street in time, but the municipality picks up these wastes late. This may result in the dispersion and messing up of the garbage." (Focus Group Discussion, Trabzon)

50% of the households interviewed, in the buildings with janitors, stated that they paid 300 million TL, whereas 21.4% told 250 million TL and 18% noted 50 million TL. 300 or 250 million TL includes fuel and other expenditures. In Table 35, payments made for the janitor and other building expenses are indicated.

Table 35 Payment for janitors in six provinces

	Number	%
15.000.000	1	3,6
40.000.000	1	3,6
50.000.000	5	17,9
60.000.000	1	3,6
250.000.000	6	21,4
300.000.000	14	50,0
Total	28	100,0

In all of the study provinces, either the officials or the inhabitants emphasized that although there were some problems concerning garbage collection, it was not an important issue as the waste dumping sites.

In this respect, 9.9% of the households interviewed stated that they were very satisfied with the garbage collection services, 73% were satisfied and 17% were not satisfied at all (see Table 36).

Table 36 Satisfaction from garbage collecting services

	Number	%
I am very satisfied	174	9,9
I am satisfied	1.278	73,0
I am not satisfied	298	17,0
Total	1.750	100,0

As to the garbage collection, there are some complaints from both the municipalities which provide this service and the households which benefit from this service. Municipality officials claim that in the neighborhoods where garbage is put out in plastic bags, people do not obey the exact hours for putting these out, and the garbage is put into the containers carelessly, which enable them to disseminate. Moreover, the knowledge and awareness level of the public is rather low on this issue. Furthermore, these officials denote that due to the population increase in the cities and the geographical structure of the Black Sea Region, people should act more consciously regarding the garbage collection services.

Those who are not satisfied with the garbage collection services, complain mostly about the seldom collection of the wastes (36%), the unhealthy conditions of the containers/barrels (33%) and the places of the garbage barrels (18.5%) (see Table 37). During the focus group discussions in Ordu and Giresun, it was frequently underlined that there were too many stray dogs in the area which messed up and disseminated the garbage around.

Table 37 Complaints about garbage collecting

	Number	%
Collecting garbage infrequently	111	36,0
Collecting garbage unsafely	24	7,8
Unsuitable location of garbage barrels	57	18,5
Insufficient number of garbage barrel	14	4,5
Non-hygienic conditions of garbage barrels	102	33,1
Total	308	100,0

The officials and the people interviewed stated that the streets in the city centers were frequently cleaned and some problems occurred in this respect were never big issues. The officials further emphasized the problems mostly caused by the deficiency of supplies and equipment.

Additionally, some environmental problems in the study provinces were mentioned during the interviews made with the NGO representatives. Among the most significant environmental problems, agricultural chemicals, the extinction of biological diversity, the damage caused in the forests and distorted urbanization were defined, which were followed by the deficiency of sewerage and water system that are peculiar to the provinces studied. When the mountainous geographical structure and the dispersed settlements specific to the Black Sea Region are taken into account, these environmental problems gain even more importance. According to the results of the household survey, the most significant environmental problem was defined as the insufficiency in the sewerage system (28%), which was followed by the lack of pure and healthy drinking water (24%) and the inadequacy of garbage collection (18%) (see Table 38). The water, sewerage and garbage problems, which are expected to be solved in the modern cities of today, are still important in these provinces of our study. When it is kept in mind that these problems directly concern the public health, they become even more significant. Besides, in some cases, sewerage and wastes are discharged into the streams and sometimes they mix with underground waters.

Overall, these problems do not differ according to the provinces and the socio-economic classification of the neighborhoods, but become a common problem of everybody in the study region.

Table 38 The most important environmental problem

	Number	%
Air pollution	160	9,1
Non-hygienic drinking water	424	24,2
Shortage of tap water	44	2,5
Inadequacy of sewerage system	494	28,2
Inadequacy of garbage collection	312	17,8
Inadequacy of garbage storing	92	5,3
Traffic and traffic jam	162	9,3
Storing hazardous material improperly	20	1,1
Other	42	2,4
Total	1.750	100,0

When responses given to the question 'what is the secondary most environmental problem?' evaluated, the insufficiency in garbage collection took the first place with a rate of 28%, which was followed by inadequacy of sewerage by 21%, and lack of pure and healthy drinking water by 18%.

Table 39 The secondary most important environmental problem

	Number	%
Air pollution	58	3,3
Non-hygienic drinking water	311	17,8
Shortage of tap water	36	2,1
Inadequacy of sewerage system	377	21,5
Inadequacy of garbage collection	493	28,2
Inadequacy of garbage storing	143	8,2
Traffic and traffic jam	137	7,8
Storing hazardous material improperly	16	0,9
Other	179	10,2
Total	1.750	100,0

Although the garbage collection and street sweeping are not among the most important environmental problems in the study area, 69% of the households interviewed defined it as a serious issue, and 30% a very serious issue, while 73% stated that street sweeping was important and 27% claimed that it was very important (see Table 40).

Table 40 The importance of garbage collecting and street cleaning

	Number	%
Inadequacy of garbage collection		
Very important	219	29,8
Important	507	69,1
No significant problem	8	1,1
Total	734	100,0
Street cleaning		
Very important	200	27,2
Important	533	72,6
No significant problem	1	0,1
Total	734	100,0

At the Provincial Platform Meetings held within the context of the study, majority of the participants from NGOs, municipalities and various governmental offices expressed that the garbage was the most important environmental problem.

However, the most significant issue that should be emphasized here is not the collection of wastes from houses, but rather the problems generated by the storage of garbage in the dumping site. As a result, garbage collection is deliberated together with sewerage and pure drinking water problems, and the priority changes according to the specific conditions of the province.

The greatest problem in the study provinces is encountered at the garbage dumping site. In the whole Black Sea Region, the barriers due to the geographical feature of the Region, the steep and rugged terrains, and the density of forests and water resources create difficulties in respect to establishing a regular solid waste dumping site. At the same time, dispersed settlements and densely populated coastline make the problem even more difficult. In the Region, wastes are discharged to either the seashores or the banks of streams, which is referred to as 'violent garbage storage'. Generally, the process of garbage disposal in the study provinces is inadequate and these sites threaten public health and environment. However, the most significant risk is the collection and storage of medical and other hazardous wastes without any cautious treatment.

The garbage collected from the households in Artvin is discharged in an open field in the İskebe area. While the medical wastes, produced in the hospital, are gathered upon request and buried in this area, the medical wastes produced by private health clinics are not notified and discharged together with the "normal" garbage. Besides, burning these wastes from time to time by the municipality generates heavy smoke which has a negative impact on the settlements situated on the upper part of the dumping site. Therefore, many complaints are received from this area. What's more, as a result of the site's situation on the bank of Çoruh River, the wastes mix in the river and cause pollution in the environment; nonetheless the actual risk being faced at the coastline.

In Giresun, the garbage has been stored in an area on the coast since 25 years. Approximately 2.5-3 tons of medical waste is gathered in the same area everyday. Being insufficient to meet the needs of the gradually developing city, this dumping site creates a threat for the public health and environment as well.

In Gümüşhane, the garbage collected is stored outside the contiguous area of the Municipality, in a site between two valleys. Further, the authorities highlighted the fact that the site is surrounded by a fence and that it does not cause any danger. Yet, a few kilometers away of the dumping site there is a small settlement. When the entrance of the fenced site is open, the cows of the villagers are able to sneak into this area. Therefore, due care is given to keep the entrance of the dumping site closed. The medical wastes stored next to the dumping site are covered with soil.

In Ordu, the garbage is stored carelessly at the waste dumping site, which is 100 meters away from the Durugöl settlement area. Situated at the river basin, this site has been used since 20 years and medical wastes are also stored at the same place.

In Rize, the irregular storage of garbage on the coast and stream bank causes a rapidly increasing pollution. Also, in Rize, the most crucial problem is encountered on the coastal part of the city, where the produced medical wastes are too thrown away indiscriminately to the same place.

In Trabzon, garbage is stored irregularly at a dumping site on the coastline of the city center. Although medical wastes are collected by separate team and equipments, as in the other cities, they are discharged in the common waste dumping site, without any treatment process. The workers of the Municipality stated that this dumping site had a capacity of only 6 months left. Besides, this site is very close to the settlement areas.

32% of the households interviewed stated the inadequacy of storing garbage to be very important, and 68% noted this issue as important (see Table 41). Nobody referred to the issue as unimportant.

Table 41 Inadequacy of garbage storing

	Number	%
Very important	236	32,2
Important	498	67,8
Total	734	100,0

In some cities, the waste dumping sites are situated in the city centers, and the problems caused by this risky location are generally known by the residents. 63% of the households interviewed knew the location of the waste dumping site (see Table 42).

Table 42 Information about waste dumping sites

	Number	%
Yes	1.108	63,3
No	642	36,7
Total	1.750	100,0

The people who live close to the waste dumping sites, naturally, are more affected by the problems emerged there. 13% of the households interviewed live in the areas close to this site, and 92% of the people living there have complaints about the waste dumping site (see Table 43 and 44).

At the focus group discussions held in Ordu, it was stated as follows: *"there are huge rats in the waste dumping site and this generates a great risk for the public health and environment."*

Table 43 People live near waste dumping sites

	Number	%
Yes	225	12,9
No	1.525	87,1
Total	1.750	100,0

Table 44 Complaints of people who are living near waste dumping sites

	Number	%
Yes	208	92,4
No	17	7,6
Total	225	100,0

As a result of focus group discussions, as well as interviews with authorities from institutions and NGOs, it was observed that garbage collection services did not embody very important risks; whereas significant problems emerged in the storage of garbage, especially in Giresun, Ordu, Rize and Trabzon. The authorities interviewed indicated that the waste dumping site in Artvin could be used approximately 30 more years and that of Gümüşhane 50 more years; nevertheless it was emphasized that the capacity of the dumping sites in other study provinces were almost full and that an immediate solution was necessary. Yet, it must be taken into account that there are no separation and regular storage of garbage in the provinces of Artvin and Gümüşhane.

In the study provinces, the groups that face the greatest risks in terms of waste collection and storage can be classified as follows:

- Workers who collect and carry medical and hazardous wastes
- All waste collectors (either municipal or private)
- Residents living close to the waste dumping sites

The group that has the greatest risk is the workers who are responsible for the discharge of medical wastes. The municipality officials in each of the 6 provinces declared that they did not possess any preventive outfits (i.e. relevant dress and gloves) and equipment. Moreover, waste collectors (formal or informal) who pick up materials from containers, which are mixed with medical and hazardous wastes, are under considerable danger. Also, the incautious storage of wastes generates risks for the health of those people who live close to the dumping sites.

The problems of waste collection and storage can be classified in two groups: the first one, that which is related to garbage collection, and the second, that which is related to waste storage.

The problems concerning garbage collection and street sweeping can be defined as follows:

- The infrequent collection of wastes
- The inadequacy and filthiness of the containers
- The problems such as odor and flies around the garbage containers
- The dispersion of wastes by stray dogs and cats
- Keeping the containers unclean
- Not carrying out the separation process of wastes

Problems concerning waste dumping site are:

- The lack of a regular and systematic dumping site
- The almost filling up of the existing dumping sites in the 4 provinces of the study area
- The storage of medical wastes in dumping sites without any previous separation and treatment
- The probability of wastes to get mixed up with water resources
- The risks generated by these sites from the point of public health and environment
- Due to the geographical structure of the Region, difficulties in finding appropriate waste dumping sites.

As to the waste dumping site, everybody living around the area underlines the necessity of improving the system, and states that these conditions cannot be maintained any longer and the necessary measures should be taken immediately. 60% of the households interviewed indicated that they were certainly willing to contribute to the improvement of the waste system, whereas 27% said that they would contribute, though it would be compelling for them (see Table 45).

Table 45 Contribution to a better waste collecting system

	Number	%
I definitely contribute	1.040	59,4
I can contribute with difficulty	465	26,6
I do not contribute	225	12,9
I definitely do not contribute	20	1,1
Total	1.750	100,0

In conclusion, the waste dumping sites, especially those that are situated at the cities on the coastline, generate problems that carry great risks from the point of both public health and the environment.

Hence, it is a necessity to commence studies on the establishment of a more modern and environment-friendly system as soon as possible.

2.2.7 Expenditure for SWM and Identification of Unit Costs

The basic aim of this section is to understand the expenditures spent for each of following items separately: waste collection, transportation, street sweeping and maintenance. As stated in the Inception Report, the following are the expected outputs of this section:

- Unit actual costs for SWM and each service
- Investigation of opportunity to reduce costs of services and necessary public cooperation
- Explanation of possible price rise came with improvement of current SWM system
- Actual situation and issues
- Transparency of SWM costs

As for Solid Waste Specialized Commission Report of 8th Five Year Development Plan, approximately 40 percent of the total expenditures of municipalities is spent on SWM services. This very high ratio indicates that there is an opportunity to reduce cost to significant amount with possible improvement studies. For this reason, it is aimed to calculate costs of SWM for each province.

In the scope of this study, an interview form consisting 43 questions (see **ANNEX 7**) was prepared and applied to responsible people from municipalities and provincial directorate of Ministry of Environment and Forestry. However, it could not be possible to obtain answers for all of these questions, since there is no full consistency between recording systems of budget bookkeeping of municipalities and solid waste management system. In some cases, some items of solid waste management system are not calculated separately in municipal budget. Moreover, it was observed that municipal bookkeeping is not recorded systematically. Finally, in some cases, authorities from municipalities are reluctant or indifferent to share municipalities' information.

Although the costs of municipalities except for Trabzon and Artvin are not calculated in details in terms of solid waste service line, the high level of expenditures of municipalities might be estimated from the length of streets that are daily cleaned and the number of workers who are employed in solid waste services. It is a known fact that if public participation can be ensured, significant amount of savings can be possible especially in street sweeping, collection and transportation services. These savings acquired from these services can be used to afford the cost of proper landfill. On the other hand, in order to promote public participation, it is necessary that municipalities should give detailed and transparent information to public about their expenditures for these services. This fact once again indicates the necessity of improving the accounting system of municipalities regarding solid waste services.

The first factor which determines the costs of solid waste services of municipalities is the total amount of solid waste produced in the city center. Table 46 shows the amount of daily solid waste of 6 provinces. The first column of the table indicates the results of Solid Waste Statistics of Municipalities in 2001 carried out by SIS and the second column shows the data obtained from the interviews, which held during July 2004, with the authorized persons of the municipalities.

Table 46 Collected amount of domestic solid waste

City Centers	Data from SIS (Daily, Ton)	Interviews with the authorized persons of Municipality (Daily, Ton)
Artvin	30	10
Giresun	94	100
Gümüşhane	20	9
Ordu	107	138
Rize	74	100
Trabzon	223	390

Although ashes and coal clinker, refuse materials of buildings, medical wastes have been separately collected from domestic wastes, they are thrown away in the same area; however, there is no precise information about the production amount of these wastes. The approximate values given by the authorized persons of municipalities are shown in Table 47.

Table 47 The amount of collected and recycled solid waste

City Centers	Ashes and coal clinker(Numbers in winter, Monthly, Ton)	Refuse materials of building (Monthly,Ton)	Medical wastes (Monthly, Ton)	Total recycled wastes
Artvin	30	10	2	-
Giresun	75	15	3	-
Gümüşhane	50	80	1,5	-
Ordu	-	-	-	-
Rize	30	-	10	-
Trabzon	-	-	25	150

Another factor which determines the costs of solid waste services of municipalities is whether these services are fulfilled by the relevant departments of municipalities or by a private company.

All 6 municipalities in the region fulfill the solid waste services by means of their own departments or by their own companies. Therefore, it is not possible to compare the costs of the services provided by private and public sectors.

Recycling practices and the revenue derived from these practices are also one of the important components for determining the costs of solid waste services. Thus, the formal and informal recycling activities in all six provinces were investigated.

In the Region, there is no formal and systematic recycling practice. In all provinces, recycling is applied with two methods. The first one is the activities of paper waste collectors and scrap-dealers who collect recyclable wastes from the streets. The second one is the recycling activities, undertaken in dump sites, by means of the subcontractors determined by the tender of municipalities. However, in the Region, because of the absence of the recycling facilities which buy the recyclables, these activities cannot become widespread. Waste papers collected for recycling are sent to the facilities of SEKA in İzmit province. Thus, the transportation cost of wastes eliminates the economic rationality of the recycling activities.

Therefore, there are no systematic data about how much revenue is derived from recycled wastes. Giresun Municipality derives monthly 2.010.000.000 TL revenue from the tenders it carries out for dump sites.

Solid waste disposal technology and research and development expenditures of municipalities are also the important factors that influence cost accounting. Therefore, the existing disposal technology and their studies regarding the issue were also asked to the authorized persons during the interviews. In all six provinces of the region, domestic solid wastes are dealt with by wild storage. The surface of the waste discharged to landfill site is covered by soil. The capacities of existing waste disposal sites of Giresun, Ordu, Rize and Trabzon municipalities will become full in the near future.

Because of the reasons explained above, the costs of dump services could not be obtained from the municipalities. But it was possible to access the data below (See Tables 48-54). Some data regarding Trabzon Municipality was obtained from the study named TRAB-RI-KAB/KfW, Inception Report: Concept and Feasibility Study for Regional Solid Waste Management System, March 2004.

Table 48 Revenue of municipalities within the last 3 years (total)

Municipalities	Revenue in 2001 (million TL)	Revenue in 2002 (million TL)	Revenue in 2003 (million TL)
Artvin	3.035.322	4.204.608	4.626.303
Giresun	-	-	~23.000.000
Gümüşhane	1.795.623	1.829.681	2.567.482
Ordu	-	-	~38.000.000
Rize	11.577.380	12.906.347	14.065.433
Trabzon	22.769.603 Euro	21.457.905 Euro	-

Table 49 Expenses of municipalities within the last 3 years (total)

Municipalities	Expense in 2001 (million TL)	Expense in 2002 (million TL)	Expense in 2003 (million TL)
Artvin	2.861.856	3.763.145	4.497.893
Giresun	-	-	~23.000.000
Gümüşhane	2.104.419	2.361.203	3.216.045
Ordu	-	-	~40.000.000
Rize	12.476.070	14.746.235	16.039.631
Trabzon	21.376.582 Euro	22.971.989 Euro	-

Table 50 The solid waste service expenditures of municipalities (total)

Municipalities	Expense in 2001 (million TL)	Expense in 2002 (million TL)	Expense in 2003 (million TL)
Artvin	181.638	245.334	356.208
Giresun	-	-	-
Gümüşhane	-	-	-
Ordu	-	-	-
Rize	-	-	-
Trabzon	3.481.233 Euro	2.114.048 Euro	-

Table 51 The cleaning services revenue of municipalities within the last 3 years (total)

Municipalities	Revenue in 2001 (million TL)	Revenue in 2002 (million TL)	Revenue in 2003 (million TL)
Artvin	24.222	34.159	39.041
Giresun	-	-	-
Gümüşhane	18.478	16.356	19.368
Ordu	-	-	-
Rize	266.750	963.315	2.150.780
Trabzon	331.337 Euro	341.257 Euro	-

Table 52 The water supply tariffs, accruelements and amounts collected by municipalities

Municipalities		2001	2002	2003
Artvin	Household tariff, (TL/m3)	400.000	1.000.000	1.500.000
	Accruelement (Million TL)	922.000	1.277.857	1.716.605
	Amount collected (Million TL)	817.446	1.172.535	1.611.283
	Collection Rate(%)	89	92	94
Giresun	Household tariff, (TL/m3)	-	-	-
	Accruelement (Million TL)	-	-	-
	Amount collected (Million TL)	-	-	-
Gümüşhane	Household tariff, (TL/m3)	300.000	400.000	600.000
	Accruelement (Million TL)	-	-	-
	Amount collected (Million TL)	481.983	374.846	910.009
Ordu	Household tariff, (TL/m3)	-	-	-
	Accruelement (Million TL)	-	-	-
	Amount collected (Million TL)	-	-	-
Rize	Household tariff, (TL/m3)	400.000	800.000	1.200.000
	Accruelement (Million TL)	-	-	-
	Amount collected (Million TL)	-	-	-
Trabzon	Household tariff, (TL/m3)	-	-	-
	Accruelement (Million TL)	10.159.086	14.014.590	18.284.468
	Amount collected (Million TL)	9.647.718	12.771.627	17.376.109
	Collection Rate(%)	95	91	95

Table 53 The cleaning workers of municipalities

Municipalities	Street Cleaning	Collection and Transport	Seperation and Storage	Total
Artvin	20	10	0	30
Giresun	20	42	0	62
Gümüşhane	10	40	0	50
Ordu	81	50	0	131
Rize	36	24	0	60
Trabzon	98	52	2	152

Table 54 The solid waste costs of municipalities

Municipalities	2002, TL/ton
Artvin	32.982.222
Giresun	-
Gümüşhane	-
Ordu	-
Rize	-
Trabzon	44.933.054

2.3 Evaluation of Current Environmental Awareness

The clearest conclusion that comes from desktop studies and site survey on Solid Waste Management in Eastern Black Sea Region is that the most important factor that determines the prevailing environmental awareness is the issue of wild dumping of solid waste in all human settlements of the region without any exception. All the coastal municipalities dispose their wastes either directly to the Black Sea or filling areas in the coast.

As for inland districts, they dump their solid wastes to open valleys or streambeds without taking any sanitary measure. Similarly, medical solid wastes are not collected in line with regulations and dumped in the same areas with domestic solid wastes.

For this reason, the environmental concern in the region focuses on the issue of sanitary disposal of solid waste.

This issue influences recycling practice that is also an important aspect of solid waste management system. To illustrate, some source separation and recycling projects are implemented in pilot scale in Trabzon including the significant number of institutions like KTU, State Hydraulic Works (DSI) and schools in the past. However, local people reported that all of these projects were finalized with frustration when people learned that the municipality was dumping these separately collected recyclables to the same place with domestic solid wastes. At this point, it is important to note that there is no sufficient market for these recyclable materials in the region.

Currently, municipalities in the region are trying to establish a modern and improved solid waste system instead of their conventional methods by developing new projects. For this target, some municipalities are trying to find the opportunity to come together in terms of a municipality union like Trabzon-Rize, and they are searching for financial resources for new solid waste projects through these unions.

Through their provincial directorates, Ministry of Environment and Forestry and Bank of Provinces are currently focusing on determining suitable sanitary landfill sites.

In the scope of alternative sites research for sanitary landfill all over country, Bank of Provinces has recently completed preliminary works in the region. On the other hand, Provincial Directorates of Environment and Forestry have prepared more detailed research reports for alternative disposal sites.

The Solid Waste issue is also at the agenda of local NGOs. Environmental NGOs carry on studies on subject and frequently organize panels. In addition the issues stated above, professional organizations like the Chamber of Environmental Engineers publish technical reports on the subject matter.

The findings of the field survey indicate that solid waste disposal systems are in bad condition which makes it urgent to introduce improvements to prevent their harmful effects on human and environmental health. The majority of people living in the region recognize that the present system of solid waste disposal is insufficient and it constitutes to be one of the major environmental problems regarding SWM. As a result, it is absolutely necessary to transform these sites so as not to pose a threat for human and environmental health.

Taking into consideration that scattered wastes even worsen the existing conditions, informal waste collection from both landfills and containers must be replaced with a good functioning separation system.

Pilot work for recycling must be started. The absence of formal recycling facilities allows many people to collect wastes in informal ways from containers and landfills. The first step for a formal recycling mechanism can be taken by identifying prospective markets for recycled materials and starting a pilot project for it.

The working conditions in waste disposal service pose a great threat for the workers' health. These people do not use any protective equipment while doing their work. For example, they use their bare hands for transferring wastes from one place to another. Considering that these wastes also include medical and other hazardous wastes, it is necessary to take relevant measures urgently to protect the health of these people.

Medical wastes must be stored in separate places and special conditions. In the region, medical wastes are kept with others without being sorted out. Since they involve high risk, such medical wastes must be stored at different places with the formal condition which these places are at least 3 kilometers away from inhabited areas.

People must be informed about waste collection days and hours to make the system run smoothly. Additionally, waste collectors of the municipalities emphasize on the problems faced due to the public's disobedience to waste collection hours. Household surveys and other interviews indicate that both waste producers and collectors need to be informed about the timing of waste collection services.

People who will be affected by new landfills envisaged by the projects must be informed about the issue. It is necessary to inform people about the superiority of new systems and techniques to the present system. There must be meetings in the field, informing people with the help of brochures about what solid waste management is and what benefits it will bring along.

2.4 Regional Workshop

A Regional Workshop was held with the participation local stakeholders (public institutions, NGOs and local media) in order to improve the draft Action Plan and video scenario considering new suggestions and opinions, to determine the methods to be followed during the implementations of pilot projects and to identify the institutions to be cooperated (see ANNEX 8 for list of participants).

In order to ensure the sustainability of the study and to form local platforms, Black Sea Environment and Culture Initiatives Association who is an active NGO in the region and is also responsible of DOKÇEP secretariat was assigned the task of informing all NGOs and local media on study activities and to coordinate the organizations to be realized in the near future. In this regard, it was decided to form only one platform under the coordination of KÇKGD instead of two platforms as mentioned earlier in the inception report. The agreement stating the up coming activities to be realized and the payment plan was signed with KÇKGD on August 30, 2004. KÇKGD which is the regional platform coordinator cooperates and works with one NGO selected as a focal point in each province.

Thirty performance indicators were prepared by the SCU in order to evaluate the coherence of Pilot Project results with the Study objectives. Providing the coordination of applying these indicators was assigned to KÇKGD which will be responsible of the coordination of realizing the pilot projects and other activities in six provinces. KÇKGD, and local focal points (one NGO from each province) will also be responsible of the analytic evaluation of pilot projects. For this purpose, a training regarding the application of the performance indicators was given to KÇKGD by SCU. This training was repeated by KÇKGD for the focal points selected in each province.

In addition to the meetings held and interviews made, a brochure; "The Adventure of Wastes" was prepared for supporting the awareness raising campaign on SWM. The brochure which in its content reaches a wide target group was distributed during the Regional Workshop. The brochure was also distributed in the activities of Phase 2.

A total of 74 local stakeholders from six provinces participated the Regional Workshop held at the Chamber of Architects in Trabzon on September 13, 2004.

During the first part of the workshop, SCU and the regional platform coordinator informed the participants about the undertaken activities up to date and the future activities. Afterwards the opinions of participants on raising awareness on SWM were taken.

In the second part of the workshop the participants were separated into three groups to discuss the action plan, video scenario and pilot projects. The topics discussed in these working groups are given in detail below.

2.4.1 Working Group for Action Plan

The working group for the Action Plan revised the draft action plan so that it would meet the needs of the region and provide feasible activities. In this regard, the 11 activities proposed in the draft action plan were examined and new categories that might be included to these activities were sought. However, it was agreed that there were no new areas that could be included to the activities. Afterwards, these 11 activities were discussed separately due to their contents and the field of activity of the stakeholders. During the discussions, it was made good use of all data collected through the field survey and the content of Improvement plan. The Action Plan was updated with respect to the final decisions agreed during the working group discussions.

In addition to the above, data obtained through the implementation of PPs (that was finalized in November) were evaluated. The Action Plan for raising environmental awareness on SWM in Eastern Black Sea Region (see Section 3.2) was revised and finalized according to the evaluation.

After deciding on the changes to be made in the draft Action Plan by examining the existing studies on SWM and evaluating the results of the field survey, it was found necessary to make some changes in the Improvement Plan accordingly. The revised Improvement Plan is given in Table 55 below.

Table 55 Improvement plan

Table 55 Improvement plan

Recommendations for Waste Discharge and Collection System			
Field	Planned Target	Actions	Stakeholders
Domestic SW	<ul style="list-style-type: none"> Source separation of recyclables (plastics, papers, glass, metals, woods) Procuring necessary containers and transportation vehicles for separate collection 	<ul style="list-style-type: none"> Public awareness meetings with students, housekeepers and administrators of apartments and residents Distribution of plastic bags, posters, brochures Announcements of the collection days for recyclables and ensuring public to be punctual Pilot applications in schools Executing pilot applications in quarters and awarding successful quarters with children parks 	<ul style="list-style-type: none"> Municipalities, municipality unions Local braches of Central Government Headmen Schools Local NGOs Local media Health organizations Private sector Professional organizations (associations/ chambers of industrialists, chambers of engineers)
Medical SW	<ul style="list-style-type: none"> Source separation of clinical solid wastes from domestic wastes of hospitals 	<ul style="list-style-type: none"> Meetings with administrative staff of hospitals and other healthcare institutions Cooperation with governmental and municipal authorities Providing special clothing for medical waste collectors 	
Industrial SW	<ul style="list-style-type: none"> Putting regulations on SWM (especially on control of hazardous wastes) into practice 	<ul style="list-style-type: none"> Meetings with administrative staff of the chambers and/or associations of industry Seminars for industrialists with cooperation of the chambers and/or associations of them Cooperation with governmental and municipal authorities 	
Recommendations on cost reduction			
Cost reduction measures of waste discharge and collection services	<ul style="list-style-type: none"> Reduction in street sweeping costs through improved cooperation of citizens Reduction in total amount of solid waste generated Attracting the attention of private sector by informing them on Waste exchange market and the economic value of wastes Providing that Municipalities give initiatives to entrepreneurs in collecting recyclable wastes 	<ul style="list-style-type: none"> posters billboards brochures 	<ul style="list-style-type: none"> Municipalities, municipality unions Local braches of Central Government Headmen Schools Local NGOs Local media Health organizations Private sector Professional organizations (associations/ chambers of industrialists, chambers of engineers)

Improvement plan (continued)

Plan to raise public awareness on environmental conservation			
Field	Planned Target	Actions	Stakeholders
Public Awareness on Environmental Conservation From Public Officers to School Children	<ul style="list-style-type: none"> Enhancing public awareness on negative impacts of improper SWM on environment and public health Enhancing public awareness on cultural, historical and natural assets Disseminating 3Rs practices 	<ul style="list-style-type: none"> Preparing brochures, posters, videos, radio and TV spots for local media, etc. for the introduction of cultural, historical and natural assets that are effected from SW problem. Showing the good examples and applications in other regions. Announcement of an annual "Environment Cleaning Week". To undertake "Cleaning Campaigns" in quarters through out the year 	<ul style="list-style-type: none"> Municipalities, municipality unions Local branches of central government Local media Local NGOs Local decision makers Universities Professional organizations (i.e. chamber of environmental engineers, chamber of industry and commerce, union of medical doctors, sports clubs)
Plan to promote of the 3Rs			
Reduce	<ul style="list-style-type: none"> Reducing the amount of unnecessary packaging Adopting practices that reduce waste toxicity 	<ul style="list-style-type: none"> Preparing brochures, posters, videos, radio and TV spots, etc. for the introduction of benefits of 3Rs Preparing and distributing Good House Keeping (GHK) guidelines introducing simple methods for 3R practices applicable at houses and workplaces 3Rs trainings with the cooperation of the Chamber of Environmental Engineers Training on waste exchange market for private sector Organizing second hand fairs in provinces Establishing a Waste Line (telephone system for paper, glass etc.) system. 	<ul style="list-style-type: none"> Municipalities, municipality unions Local braches of Central Government Headmen Schools Local NGOs Local media Private sector Professional organizations (associations/ chambers of industrialists, chambers of engineers, sports clubs)
Reuse	<ul style="list-style-type: none"> Increasing the usage of reusable products Increasing the usage of bags, containers etc. Enhancing selling or donating practices instead of throwing out 		
Recycle	<ul style="list-style-type: none"> Increasing the preference of recyclable products and containers Introducing products made from recycled materials Increasing the preference of composing some food scraps 		

Improvement plan (continued)

Plan of environmental education and training			
Field	Planned Target	Actions	Stakeholders
For Children	<ul style="list-style-type: none"> Introducing basic facts about environment and SWM Enhancing public awareness on negative impacts of improper SWM on environment and public health Disseminating 3Rs practices 	<ul style="list-style-type: none"> Implementing Eco-school projects in the schools of the study area in cooperation with TURCEV to foster the 3R activities, composting, etc. Twinning Schools Drama and play activities, picnics Competitions (e.g. Poster, Slogan, Poetry, Story, Logo, Design of the recycle bins) Organization of a football tournament (with the participation of famous local football players) Establishing e-groups for exchanging information on SW Organizing a field trip to waste dumping site 	<ul style="list-style-type: none"> Children Families Teachers School administrations Municipalities, municipality unions Private sponsors Provincial Directorate of Ministry of National Education NGOs (e.g. TURCEV) Media
For Public Institutions, Private Organizations and NGOs		<ul style="list-style-type: none"> Creating Environmental Committees within the institution Self-assessment and reviewing of the current policy on SWM of the institution and preparing a "Declaration for 3Rs" One-day interactive training of decision makers on "National and International Responsibilities and Commitments" Arrangement of recyclable waste collection points Encouraging NGOs on preparing and executing 3R micro campaigns financially supported by the study budget Creating Networks on internet and a website on SWM Organizing a field trip to waste dumping site 	<ul style="list-style-type: none"> Institutions /organization Staff Local community Students Professional Associations Municipalities, municipality unions Local branches of central government Universities Media
For Woman		<ul style="list-style-type: none"> Interactive trainings on domestic SW and daily life solutions Establishing a second hand store for reuse of household goods Organizing a fair (kermes) where women sell products made by reused material and arranging a competition for the most innovative product Competition for "the cleanest street" Organizing a field trip to waste dumping site Organizing an "Adopt a street" campaign 	<ul style="list-style-type: none"> Women Associations Women Universities NGOs Children Families Public Education Centers Municipalities, municipality unions Local branches of central government NGOs Media

2.4.2 Task Force for Preparation of Scenario and Video Production

In addition to the awareness raising events held within the scope of the Study, it was decided to produce a more tangible and lasting visual material. Therefore, it was thought that preparation of separate video cassettes for each province would assist in creating awareness regarding the solid waste problem. The videos were prepared with the intention of providing information on 3Rs, separate collection of wastes, opinions of the local community, local administration representatives etc. on the issue, giving views from the provinces, showing current SWM applications in the region and the best practices / applications in other parts of Turkey.

In this regard, it was stated in the Inception Report that Trabzon Municipality would provide both personnel and equipment for the production of the video. However, due to the reconstruction activities of the relevant department a professional production company from the region was contacted and agreed on cooperation for the production of videos.

Accordingly, the scenario (see **ANNEX 9**) was detailed through the evaluation of existing reports and the field survey and therefore was presented to the Task Force during the Regional Workshop for their opinions and suggestions.

The video task force was formed by the participation of local authorities from six provinces, NGOs and local media representatives, two representatives from the video production company and a representative of SCU. In line with the participatory approach of the Study, opinions and suggestions of all participants were taken on the issue.

The topics discussed and decided to be integrated in the video are listed below:

- Emphasizing on the importance of 3R applications and promoting their application,
- Using scenes that promote the idea of attending to our consumer behavior and reducing our household wastes,
- Emphasizing on the facts remind people should give special attention to complying with the shared responsibilities of living in the city,
- Apart from the local authorities, waste collectors, public (especially women and children) and academicians should be interviewed on SWM issues,
- Another agreement was reached in contacting and interviewing the local fisherman on the wastes dumped near the sea shore.

Different images prepared for each province and the common parts of the video were combined with respect to the finalized scenario. Six videos were completed at the end of October.

The videos which are 20 minutes each consist of 15 minutes of common parts which show the existing SWM applications in Eastern Black Sea region, 3R techniques, good examples of SWM systems and general information. The 5 minute parts those were prepared separately for each province contains images, landmarks of the province with landfill sites, SWM applications of those provinces and interviews with academicians, public and local authorities.

Additionally, one part of the video was allocated to a couple of the good practices on SWM in other parts of Turkey. This part includes scenes and information of the landfill area of Bursa Metropolitan Municipality, the solid waste separation facilities again established by the Municipality and paper recycling factory of SEKA in Izmit. The major aim of this section is to show how we can create extra space in the landfill areas by collecting recyclable wastes and by giving them to relevant recycle companies. Collection and re-usage of recyclables also will reinforce less usage of natural resources and contribute to the economy. Therefore, it was endeavored to encourage the community to start separating there solid wastes at home and the municipalities to establish relations and cooperate with relevant recycling companies for the recycling process of wastes they collect from households.

2.4.3 Working Group for Pilot Projects

Brief information on the role of pilot projects within the overall study and the proposed six pilot projects were explained in detail to the participants. After the presentation and brief questions/answers session on working procedure of the working group, pilot projects were discussed one by one.

Implementing procedure of Eco-Schools project, which is currently implemented by TURCEV in Turkey, is presented to participants. They stated that the cooperation of municipality and private sector is vital for success of this project. They also mentioned some older similar projects that were implemented in project provinces and unsuccessfully finished due to lack of this kind of cooperation. Working group discussed the selection criteria that will be used for determining the schools, which Eco-School projects will be applied. Working group offered that kind of school (normal, superior, vocational) income level of the neighborhoods, spatial distribution should be used as selection criteria. As for procedure of school selection, the working group offered that this group should continue to work in the following stages of the Study as Follow-up/Assessment Committee. Therefore, this Follow-up/Assessment Committee could also work in the selection of the schools. After the introduction seminars of Eco-Schools project that will be organized in each of the study provinces, the applications of voluntary schools will be presented to this committee for evaluation.

Additionally, the group offered to establish an e-mailing list that will be utilized for providing internal communication service. Participants were also informed that SCU is currently preparing a web site in the scope of the study for similar, but more general purposes, and that the web site could also be utilized for internal communication purpose.

After SCU's brief presentation on procedure of second pilot project, slogan and logo competitions, the working group examined the project. Rize Provincial Director of National Education stated that the poster announcement of competitions should be submitted to Provincial Directorates. Therefore, they could deliver posters to all schools within their service area.

They also stated that it is important to announce competitions in local media in addition to schools and suggested that provincial platforms could take responsibility to get in contact with local media.

Working group asserted that assessment committee that will evaluate the application should include representatives of the provincial Directorate of National Education and provincial platforms. They also noted that the names of owners of products should be closed during the evaluation procedure for the sake of neutrality. This issue will especially be important, when regional winner will be selected among provincial winners.

As for the competitions, working group offered two additional significant suggestions. Firstly, they offered to open the competition to students of all districts in the province instead of only central district.

Secondly, instead of considering only the winners of the competitions, all applications should be published or printed as a catalogue. For example, a New Year calendar composed of all logo and slogan applications can be published with the possible sponsorship of municipalities.

After presenting the third pilot project to participants; visits to dump sites, working group especially discussed the issues of announcement of this visits and people willing to participate in these visits. They stated that under normal conditions people would not want to visit a disgusting site such as a solid waste dumping site. For this reason, they offered more "mediatic" visits instead of didactic visits. For example, among the women who are main target groups of pilot project, wives of the well known people of the province i.e. governor or mayor should be present. They also stated that information that will be provided to the visitors during the bus trip is crucially important in this pilot project. If one can take people to dumping sites without sufficient preliminary information, there will be a risk of conflict between people and the relevant municipality. Therefore, for the municipalities to provide their buses for this pilot project, firstly municipalities should be convinced.

The working group found the idea of setting up recycle points and committees in the public workplaces very positive. They stated that if public sector will be an initiator of recycling activities, people would be affected very positively. On the other hand, there still exists an unanswered question that has appeared many times before during the site studies. Since local recycling market is not sufficient – indeed, there is no recycling market in some provinces - fate of separately collected recyclable solid wastes remain uncertain. Some participants who have experienced similar projects before especially dwelled on when people learned that their separately collected solid waste is discharged to same place with domestic solid waste, they lost their enthusiasm.

The pilot project of "waste problem" speech of imams on Fridays was found very interesting. The participants stated that this pilot project very creative and effective. Regarding Ramadan (Turkish religious holiday) the working group offered that these speeches should be delivered in *teravih namazs* that are also open to women.

As for the last pilot project, discussions programs on local TV on the problem of solid waste in the region, the working group offered that if these TV programs are organized at the same time with other pilot projects like competitions or visits of dumping sites, they can attract more attention from people.

2.5 Results of Phase 1

The activities under Phase 1 have been completed since the middle of September. Accordingly, as it was stated in the beginning of this report:

1. Reports and existing studies on SWM have been examined,
2. Six introduction meetings have been organized in each provinces and the stakeholders have been informed about the study,
3. A field survey covering six provinces was undertaken,
4. The existing studies and field survey results have been presented to the stakeholders in a regional workshop and have been improved,
5. A local NGO; KÇKGD has been assigned to coordinate the provincial platforms to be formed,
6. A training was given to KÇKGD regarding the 30 performance indicators developed by the SCU for the evaluation of pilot projects,
7. The draft video scenario was improved and presented to the video task force during the regional workshop, has been finalized with the new suggestions and video was completed,
8. In order to support the activities undertaken to increase the awareness on SWM, Aa brochure named "The Adventure of Wastes" was prepared and distributed,

9. A consensus was reached with the local stakeholders on the action plan, video scenario and pilot projects during the Regional Workshop held in Trabzon.

Having the activities undertaken since May comply with the prepared work plan and having established good relations with local stakeholders indicate that the study progress is inline with its objectives. The Study has not only reached six city centers but has also drawn the attention of other district's authorities who deal with SWM. The best example to be given to this issue would be the participation of other district municipalities who have joined the Regional Workshop. These are namely; Hopa (mayor), Pazar (deputy of mayor), Çayeli, Fındıklı, Of, Çaykent, Kendirli, Ardeşen (deputy of mayor) and Akçaabat municipality representatives. This situation clearly indicates that the Study should not only be limited to the central district of each province but also include the other districts. All awareness raising campaigns should include both central and other districts due to the geographic and managerial structure of the waste problem. Although, this Study covers only central districts, the participation of high level local authority representatives to the workshop show the necessity of expanding the Study scope to the whole province.

It is clearly understood by the high participation to the Workshop and by the intensive interest that the region urgently requires a good SWM system. This is a primary need which has to be met for all groups that constitute the society. One of the most serious problems in the regional is that the existing landfill areas are inadequate and very limited. The issue of finding an appropriate landfill area turns out to be a chronic problem that stands in the way of raising environmental awareness on SWM.

3 ACTIVITIES OF PHASE 2

As mentioned earlier in this report, Phase 2 consists of three major activities, implementation of PPs, preparation of an Action Plan on environmental awareness on SWM and the future cooperation projects of JICA. Within this scope the activities carried out are explained in detail below.

3.1 Implementation of PPs

Among a group of PPs it was decided that six PPs be implemented in Study area. The PPs found appropriate for implementation are:

1. Giving seminars on Eco-school program to schools in the study area with cooperation of TURCEV
2. Organizing slogan and logo competitions
3. Organizing field trips with the municipalities to waste dumping sites
4. Arrangement of recyclable waste collection points
5. Imams delivering special Friday speech on "garbage problem"
6. Discussion program about SWM on local TV

The implementation of above stated PPs was initiated in the beginning of October. The tasks completed within PPs are discussed under the relevant headings below.

3.1.1 Giving seminars on Eco-school program with cooperation of TURCEV

The Eco-schools seminars held with the cooperation of TÜRÇEV was undertaken with the participation of primary school representatives (teachers, school counsellors, and/or principles) from the central districts of each province on 18-19 October 2004. The seminars were held in Trabzon, Rize, Giresun and Ordu provinces. Teachers from Gümüşhane and Artvin were invited to join the meetings held in Trabzon and Rize. Mustafa Yazıcı, President of KÇKGD; Burcu Manav, Eco-Schools National Coordinator and Tülin Şener, Educational Advisor of PAR Consulting gave information about the Study activities and the pilot project.

During each seminar which lasted approximately 2 hours, the SWM problems of the region were explained. Afterwards the purpose of the study, undertaken activities and future activities were described. It was emphasized that the support of teachers were expected during the relevant pilot projects. Besides participating and adopting and the eco-schools program, the significant role of schools in raising environmental awareness was explained. With the contribution of eco-schools program or by their own facilities schools should encourage their students in participating activities regarding environmental issues. In this regard, the context, aim, activities and application procedures of the eco-schools program was explained in detail.

A total of 4 seminars were held with the participation of 66 participants in Trabzon (Trabzon + Gümüşhane), 49 participants in Rize (Rize + Artvin), 28 in Giresun and 45 in Ordu. According to the evaluation made by the provincial platforms 192 of the participants were teachers while 11 were managers from schools. The most common issues and problems that were discussed during the seminars were:

- What can we do with our solid wastes (especially paper) after we have separately collected them? Where can we give these wastes to?
- Is there a mechanism (private or public institution/company, authorized person) for the collection of such wastes? If there is how can we contact them?
- Up to date there have been many campaigns for collecting paper wastes in schools. However, there was no place to deliver the collected wastes, so they were burned for heating purposes in schools. Collecting wastes is not a problem, the real problem is where we should give them to!
- Will there be waste collecting teams? Will a vehicle be provided for this purpose?
- Can cooperation be established between schools for these issues?
- Is there any law or regulation on wastes? How can the arguments between public and government be solved on this issue?
- All training given to us is theoretical, how can we bring this knowledge into action, what can be done for implementation?

Answers were given related to the above mentioned questions and problems and opinions were taken from teachers. The two major suggestions that were agreed on were:

- Cooperation must be carried out between schools. Every month a school should be responsible of collecting the waste of other school, therefore it can provide an efficient income for itself with the wastes collected that month. This should alternately continue among schools.
- Provincial directorates of National Education should cooperate with institutions/companies that collect recyclable wastes. Providing vehicles for collection of recyclable wastes therefore the sensitivity on the issue will be increased.

At the end of every meeting, posters for the logo and slogan contest, the brochure called "The Adventures of Wastes" and training books for eco-schools program was distributed to participants.

It was observed that teachers and school managers were pleased and interested in joining the seminar. Teachers were, in general, willing to support the project. It is important that participants have expressed that they were willing to execute activities regarding solid waste management in their schools. It was observed that there are many schools that are eager in joining the eco-schools program. These indicate that the seminars have reached their goal and were effective on the target group.

3.1.2 Organizing slogan and logo competitions

In order to raise the interest of the local young people on the activities, which aim to further Environmental Awareness on the Solid Waste Management in the Eastern Black Sea Region, it was decided to organize two competitions in cooperation with the Municipalities and Directorates of the National Education of all six provinces. **"Best Slogan Competition to Raise the Awareness on the Solid Waste Management"** is conducted among the primary school students, whereas a **"Logo Competition"** is performed for the high-school students of each of the provinces of the Study Area. Competitions are open to participants from all six provinces of the study area.

The organization of these competitions was discussed with the representatives of local administrations, municipalities and local NGOs during the pilot project working group of Regional Workshop held on 13 September 2004. The methodology of implementation of these competitions was determined by the members of working group.

In order to realize these competitions, a correspondence was submitted to Ministry of National Education. Additionally, competition posters were printed on recycled paper and distributed to Provincial Directorates to delivered and posted in schools. Furthermore, the competitions were announced through a public notice published in two of the regional newspapers that are distributed all the study provinces.

All applications were asked to be sent to the office of KÇKGD in Trabzon until November 8, 2004 and then arranged according to provinces. Applications were evaluated during the regional seminar held in Rize Dedeman Hotel on November 11 by the evaluation committees formed by the representatives of municipalities, other public institutions and regional NGOs from all six provinces. The evaluation committees have made their evaluation without having any information on the owners of the projects. Six evaluation committees were formed to evaluate their own provincial winner for the slogan and logo competitions. Afterwards, a regional winner for both the slogan and logo were determined among the six winners of the provinces. The projects for the provincial and regional winners of the slogan and logo competition are presented in **ANNEX 10**.

The winners of the slogan contest in each province will be awarded with a portative CD Player (CDMAN), the regional winner of the slogan contest will be awarded with a portative CD Player (CDMAN) with a FM Receiver and speakers. On the other hand, the winner of the logo contest in each province will be awarded with a mobile phone, and finally the regional winner of the logo contest will be awarded with a PC. The awards will be given to the winner during the last regional meeting to be held in December.

The winner projects will be sent to all the related public and non governmental institutions to be utilized in their works.

In accordance to evaluation of the Provincial Platforms for the performance of pilot projects, the slogan competition was announced in a total of 252 schools from the region. The total amount of students in these schools is 106,734. On the other hand the logo competition was announced to 52 high schools with a total of 43,800 students. Thus, if it is considered that the total number of schools informed of the competition is 304 and the total amount of students is 150,534, it can be said that the pilot project has achieved its purpose since the participation of the target group (children and youth studying in the region) was ensured. Furthermore, it should also be considered that the families of these children were also aware of the competition thus this indicates that the target group reached in this pilot project is rather large.

3.1.3 Organizing field trips with the municipalities to waste dumping sites

The results of the field researches in Eastern Black Sea Region show that municipalities have been very succeed in collecting wastes from households and working places, and removing these wastes. Municipalities systematically collect the wastes from all citizens; however, they have faced with some difficulties to dispose of them.

On the other hand, in terms of cooperation with municipalities, the citizens are not enough interested in the waste problem. Therefore, in order to call public opinion attention to waste problem, it was agreed on organizing a technical trip to waste dumping sites in each provinces.

In the Regional Workshop held in Trabzon, on September 13, 2004, SCU interviewed the representatives of municipalities about organizing these trips and it is come to the conclusion that these trips can only be carried out as a result of the cooperation with municipalities. Therefore, in September, a correspondence was sent to municipalities and their contribution as cooperation was requested. Trabzon, Rize and Giresun Municipalities have considered the request and stated that they would provide assistance to realize the trips. First of the trips was realized in Giresun with the participation of local media representatives on November 4, 2004.

Participants joining the trip were informed about the importance of the subject and the attempts of the municipalities regarding the issue, and the brochure; "The Adventure of Wastes" prepared in the scope of the Study was distributed. With respect to the evaluation regarding the performance of this pilot project, it was stated by the Provincial Platform that 15 people participated in the trip organized in Giresun.

Trabzon and Rize Municipalities have planned to organize the trips within the first week of December considering the weather conditions.

3.1.4 Arrangement of recyclable waste collection points

With respect to the pilot project, a correspondence was sent to all governorships and municipalities in six provinces on October 8. The need for determining recyclable waste collection points within these institutions and establishing 3R teams to be in charge of these points were explained. Additionally, SCU prepared a list of waste recycling companies for paper, plastic, metal and glass and has also sent this to all governorships and municipalities. In this regard, the relevant institutions stated that they would participate to the project in proportion with their resources and have determined their waste collection points and formed 3R teams within their institution.

After a small market survey a private company was contacted to produce waste containers for this purpose. A total of 24 containers were ordered for six provinces. Each province was supplied with 2 paper waste and 2 plastic waste containers (a total of 4 waste containers for each province) each with a capacity of 150 lt.

According to the evaluation done by the Provincial Platforms for this PP, the announcement for establishing recyclable waste collection points was made in 33 public institutions and 14 of these have formed their collection points since November 23, 2004. Studies for establishing connections with recyclable waste collectors and forming 3R teams to be responsible of these organizations are still continuing.

The goal of implementing such a pilot application within local public institutions was to raise environmental awareness within these institutions before encouraging the project throughout the whole city. With this pilot project, it was aimed to provide guidance to municipalities which have the most important role within the SWM system by executing an example application of a campaign to be initiated in the future for "collection of recyclable wastes" throughout the city.