WASTE MANAGEMENT IN THE TURKISH COASTAL SITES OF THE MEDITERRANEAN SEA

The Mediterranean region, due to its climatic and geographical features, has been the home of many civilizations throughout history. Today, it remains to be one of the most densely populated areas of the world at the crossroads of important trade routes in the East-West as well as North-South axis. Rapid increase in urban populations, industrialization as well as tourism has had negative implications for the environment of the Mediterranean Sea, especially the coastal areas.

In addition to the above, climate change is also threatening the environmental balance of the Mediterranean region. According to the Report 2007 of the Intergovernmental Panel on Climate Change(IPCC), the Mediterranean is one of the most vulnerable regions to climate change. If necessary steps are not taken, temperature rise, desertification, salination, land degradation, the rise of the sea level will continue to increase. All this will have negative impacts on the environmental situation of the Mediterranean region.

To combat the adverse effects of climate change, effective policies must be pursued. To this end, many countries of the region have been taking various measures especially in the waste management sector. Almost all Mediterranean countries have already invested in this sector but more needs to be done to preserve nature and biodiversity and to eliminate risks threatening human health and economies.

In general coastal water pollution has many causes: the discharge of untreated sewage, industrial, manicipal waste, including those caused by the tourism industry; the discharge of sewage and rubbish from ships; the exploration of the sea bed; accidents of tankers carrying pollutant substances such as oil etc. With wastes which contain persistent pollutants, such as industrial chemicals or agricultural pesticides and fertilizers, discharged into rivers upstream can also result in substantial coastal pollution.

Floating garbage and oil slicks are the most visible forms pollution in the Mediterranean. However the most common form of pollution in the Mediterannean is the discharge of municipal sewage and industrial wastes into coastal waters. Pollution has considerable damage to the flora and fauna of the coastal areas. It also creates risks of diseases on people in the coastal areas both on locals and tourists. People are exposed to

marine pollutants mainly through the consumption of seafood, the ingestion and contact of sea water while swimming or bathing. Exposure to bacterial or viral pollution produces relatively short-term effects in both local people and tourists. However, exposure to chemical pollutants, both directly or through seafood may have relatively long-term effects.

Efforts to control coastal pollution is gradually continuing in most Mediterranean countries, however, due to rapidly rising population growth in coastal areas due to tourism, urbanization and industrial development, coastal pollution continues to be serious threat.

Turkey for its part, has accomplished many investments and projects in the waste management sector and new ones are under way. Details given below indicate the waste management in coastal areas of Turkey.

Turkey as a country having a wast coastal line in the Mediterranean Sea, the Aegean Sea and the Black Sea, gives utmost importance to combating pollution of its coasts and in within this framework, supports international and regional efforts aiming at reducing pollution of seas and coastal areas.

As is the case in most Mediterranean countries Turkish coasts are being threatened by pollution deriving from industry, tourism, urbanization, and transportation. The measurements in the Mediterranean and Aegean Sea indicate that the coastal areas of İzmir, Mersin and İskenderun are especially overwhelmingly exposed to pollution mainly due to industrial activity in these areas. Furthermore, the Straits and the Marmara Sea are adversely affected by vessel traffic, ballast waters and solid wastes.

The Administration Council of UNEP (UN Environmental Programme) gave priority to the protection of the Mediterranean and launched the Mediterranean Action Plan (MAP) with support of 16 countries and the EU, in 1975. A framework convention was prepared to establish the legal basis of activities in the context of MAP and consequently the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention) was opened for signing in 1976. Turkey became party to this Convention in 1981.

In 1995, a new Regulation changing the geographical scope and content of the Convention was prepared and the geographical implementation area of the Convention was extended so as to include coastal areas.

On the other hand, Turkey is Party to some of the IMO Conventions related to ships and land based sources of pollution, these are given below;

IMO Conventions;

- MARPOL 73/78 Convention and its Annexes (I, II, V)
- OPRC Convention
- CLC Convention
- FUND Convention
- LLMC 76

In addition, Turkey is working on the harmonization of the following EU directives related to the protection of the environment;

- 76/464/EEC Pollution Caused By Certain Dangerous Substances Discharged Into The Aquatic Environment of the Community Directive
- 91/271/EEC Urban Waste Water Treatment Directive
- 76/160 EC Bathing Water Directive
- 79/923/EEC Quality Required of Shellfish Waters Directive
- 2850/2000 EC Decision on Cooperation in the Field of Accidental or Deliberate Marine Pollution

Turkey exerts efforts and carries out projects for the protection of coasts in the Mediterranean in the framework of its obligations stemming from international conventions and national regulations. In this regard, projects and programmes which have been pursued by Turkey are as follows:

I. Emergency Response Studies

Turkey has been pursuing a policy of prevention of accidental and deliberate pollution of seas by active participation in studies of the International Maritime Organization (IMO),

the Regional Marine Pollution Emergency Response Centre (REMPEC) and the European Maritime Safety Agency.

The Turkish national legislation regarding the prevention of accidental pollution is harmonized with EU legislations and IMO decisions by the "Law Related to Compensation of Actions and Damages in Emergency Cases of Pollution of Sea Environment with Petroleum and Other Hazardous Substances", of March 2005. According to this Law, the Ministry of Environment and Forestry is directly responsible of preparing Regional and National Emergency Response Plans In the framework of said Law, 161 emergency response plans have been prepared and approved.

After the preparation of all national and regional emergency response plans;

- all related organizations will be informed of their responsibilities at national and regional level,
- all rules and procedures will be defined for the response measures concerning the pollution of the seas due to oil and other harmful substances ,
- all sensitive and risk areas will be defined,
- guidelines will be prepared form marine and coastal response measures that will help define the response strategy,
- all online data will be available through a GIS based system called YAKAMOZ.

II. The Project for the Preparation of Regional and National Emergency Response Plans

In the framework of the "Law Related to Compensation of Actions and Damages in Emergency Cases of Pollution of Sea Environment with Petroleum and Other Hazardous Substances", the Marmara Research Center in the Scientific and Technological Research Center of Turkey, is mandated to conduct "Projects for the Preparation of Regional and National Emergency Response Plans". In the scope of this Project six emergency response plan will be prepared.

To this end, a regional exercise was held in Çanakkale and one national exercise will be carried out in Antalya. In addition, within the scope of another Project, a database

including international, regional, national data and the Turkish Emergency Response System, will be prepared.

III. Reception of Wastes from Ships and Waste Control in Mediterranean Sea

Turkey became party to the MARPOL Convention which is the main international convention concerning the prevention of pollution by ships in the marine environment, in 1990 and the "Reception of Wastes From Ships and Waste Control Regulation" has entered into force on 26.12.2010. The aim of the Regulation is to set up procedures and principles on building and operating waste reception ships, for the purpose of taking wastes from ships, storage of these wastes and transportation of wastes to waste disposal facilities in order to avoid discharges of wastes originating from operations of ships in the maritime areas under the jurisdiction of Turkey.

The provisions of this Regulation cover all ships, the waste reception facilities, waste reception ships and transferring of wastes to disposal facilities in maritime areas.

In the scope of this regulation, port managers are responsible for the reception of solid and liquid waste (bilge water, sludge, dirty ballast, waste oil, slop, etc.) which includes petroleum or derivates of petroleum originates from normal operational activities of ships within the context of MARPOL Annex I, toxic liquid substance waste within the context of MARPOL Annex 2, sewage within the context of MARPOL Annex 4, solid wastes within the context of MARPOL 73/78 Annex 5 and cargo residues into the waste reception facilities.

By 2010, 66 ports have been licensed by the Ministry of Environment and Forestry in Mediterranean Sea.

IV. MED POL Project

The Mediterranean Pollution (MED POL) Programme was established and launched in the 70's by the coordination of UNEP/MAP in Athens and by the contributions of experts from the Mediterranean countries. The objectives of the MED POL programme have been updated periodically by the common agreement of the National Coordinators and reached Phase IV (1. Phase; 1975-1980, 2. Phase; 1981-1995, 3. Phase; 1996-2005, 4. Phase; 2006-

2013). This programme assesses the current status and long-term trends in the loads of pollution reaching the Mediterranean coastal seas by monitoring the land-based pollution by regulating pollution sources on land under present national and EU criteria. In Turkey, the main objectives of the monitoring programme, coordinated by the Turkish Ministry of Environment and Forestry, are to carry out compliance monitoring art discharges of land based sources (rivers, municipal and industrial effluents) along the Mediterranean and the Aegean coastal areas, the long-term trend monitoring of heavy metals and organic pollutants in biota and sediments at coastal zones, evaluation and monitoring of eutrophication in the Mersin Bay. The main purposes of this programme are as follows:

* Determination of the Pollution level of the Mediterranean Sea, considering sectoral activities and the materials listed in the Annex-I of the Protocol.

* Evaluation of the effectiveness of measures taken within the framework of the protocol, action plans and programs to prevent the pollution.

The Mediterranean ecosystem is highly sensitive to environmental pressures. Therefore, in order to assess pollution levels and save the marine environments, it is necessary to monitor land-based pollutants reaching the coastal seas. Biota (Mullus barbatus and Mytilus galloprovincialis) and surface sediments have been used to assess the long-term effects of the land-based organic and metal pollutants on the Mediterranean marine ecosystem. Güllük Bay has been chosen as a pilot site for monitoring and assessing temporal changes in water quality due to massive cage-fish farms established near the coastal zone of the Aegean Sea. The Dardanelles surface water at the Aegean exit has been monitored to estimate annual loads of nutrients introduced from the upper layer of the Marmara Sea to the northern Aegean basin.

The Mersin Bay ecosystem, a typical example of the hot points on the Mediterranean shelf zone, has been adversely affected by principally polluted rivers' waters, domestic and industrial effluent discharges for years. For this reason, it has been chosen as a pilot site for monitoring and assessment of eutrophication within the framework of the MED POL Phase IV programme. The ongoing Project will lead to establish a national data-base, which can be used to assess long-term changes in coastal water ecosystems, to control and reduce land-based sources.

V. European Union Related Activities

a. Proposed Project: Classification of Coastal Waters

"The Classification of Coastal Waters Project" has been proposed to the State Planning Organization in 2010. The aim of this Project is to harmonize relevant Turkish national legislation with the European Union Acquis.

b. Urban Waste Water Management in the Turkish Coastline: Re-describing Hot Points and Sensitive Areas, Defining Waste Assimilation Capacities by Monitoring and Modeling Techniques and Developing the Sustainable Urban Waste Water Investment Plans (SINHA) Project

The SINHA Project is carried out by the Ministry of Environment and Forestry and the Scientific and Technological Research Center of Turkey. They are working for developing a new monitoring strategy. Thie Project is expected to be finalized in 2011.

In addition, hot points and sensitive areas are described and monitored according to the EU Urban Waste Water Treatment Directive and a strategy has been prepared.