

# Annex 1

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## *Profile of the Study Area*

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# **1 Profile of the Study Area**

## **1.1 Country Profile on SWM**

### **1.1.1 National Development Plan**

Under the heading “Basic Structural Reform Projects”, the 7<sup>th</sup> Five Year Development Plan (1996 – 2000) devotes a specific reference to the preservation of the environment with respective institutional setting. Under a separate heading “Arrangements Regarding Metropolises” the 7<sup>th</sup> Plan also elaborates the general problems of selected metropolitan centres of Turkey with a short reference to solid waste management. Following a basic analysis on the current status of the environmental issues and solid waste management practices in Turkey, the 7<sup>th</sup> Plan puts forth the objectives, principles and policies along with complementary legal and institutional arrangements.

#### **a. Current Environmental Conditions**

Starting from the “sustainable development” concept incorporated into the 6<sup>th</sup> Five Year Development Plan with due priority to the integration of the environment and the economy, it is indicated in the 7<sup>th</sup> Plan that since then insufficient progress has been achieved in terms of organisational and legal arrangements for a functional and dynamic environmental management. The 7<sup>th</sup> Plan emphasises that the authorised and responsible institutions – primarily the Ministry of Environment – have failed to realise effective vertical and horizontal coordination and cooperation, which are of vital importance mostly for setting a data-base, an up-dated inventory of researches and analyses, proper planning, monitoring and evaluation system as well as a financial model.

Furthermore, partial reorganisation attempts without any holistic standpoint have had caused controversies in the distribution of authority, competence and responsibility between related bodies, which presently reflect an inadequate administrative structure. Although there are plenty of jurisdictional regulations, according to the 7<sup>th</sup> Plan, these contain deficiencies, contrasts and repetitions causing practical difficulties in implementation, whereas the Environmental Act No. 2872 has had lagged far behind the actualities.

The 7<sup>th</sup> Five Year Development Plan also draws attention to the fact that, the expectations from environmental impact assessment practices have not been fully met due to shortcomings in data management, information flow and qualified manpower. Another issue which has found a sound relevance within the 7<sup>th</sup> Plan is the internalisation of environmental costs. It has been stated that the management of natural resources and protection of the environment should well comprise financing mechanisms.

The 7<sup>th</sup> Plan mentions that previously pursued environmental policies were mostly reactive in character rather than active. Although the passive approaches oriented towards the cleaning of already polluted environment are recently shifting to active approaches by taking appropriate and in due time measures towards preventing pollution, the 7<sup>th</sup> Plan judges the development of local, regional and central policies

and strategies accompanied by economic, administrative, legal, financial, social and cultural instruments as indispensable means for sustainable use of the natural and man-made environment.

Lastly, the 7<sup>th</sup> Plan accentuates that the growing awareness about the environmental issues is one of the key indicators of democratisation process. Accordingly, participation of people in environmental management and decision making process through voluntary bodies and non-governmental organisations need to be more favoured and promoted than ever.

Subsequent to the critical evaluations made on the environment sector, the 7<sup>th</sup> Five Year Development Plan latently and implicitly mentions that three fundamental actions could perform tremendous contribution in the upheaval of environmental management conditions in Turkey namely:

- International obligations related to the environment
- Implementation of environmental impact assessment procedures
- Environmental education and training

**b. Objectives and Environmental Policies and Principles**

In the light of above mentioned assessments on the current status of environmental issues, the 7<sup>th</sup> Five Year Development Plan refers to the following objectives, principles and policies:

- A nationwide compromise will be achieved for harmonisation of developmental and environmental policies.
- Distribution of authority and responsibility among all concerned ministries and local authorities engaged in environmental affairs will be revised and legislative shortages will be eliminated.
- All legislation and provisions that distort the compatibility between economic development and environmental protection will be amended and controversial arrangements directly or indirectly related with the environment will be removed,
- Inter-agency co-operation and pluralistic approaches in coping with environmental matters will be promoted in order to establish an effective control system,
- For a better management of the environment, an appropriate combination of instructive and incentive measures will be used.
- In preventing pollution, priority will be given to active strategies rather than reactive approaches.
- Necessary environmental expertise at international and national platforms will be improved through co-ordination and information flow between all concerned bodies.

- Nationwide strategies will be further specified at regional and ecological basin scales, where the local authorities and initiatives will be involved in decision making, monitoring and inspection processes.
- Infrastructure for an information system on environment will be set up; environmental inventories, statistics and standards will be developed depending on a multi-dimensional data and information access system; an indicator catalogue for development and environment will be prepared as decision aid.
- Environmental impact assessment will be applied as an instrument to determine and minimise adverse effects of prospective actions as well as to adopt suitable technologies.
- Policies of international organisations will be keenly followed and solutions for environmental problems will be kept in accordance with European Union norms and international standards.
- Voluntary initiatives and non-governmental organisations as well as formal and informal education and training endeavours will be supported to promote environmental awareness and to combat with deteriorating actions on the environment.
- Efforts towards waste minimisation, material recovery and recycling will be supported.
- Further incentives will be applied for construction and operation of waste treatment plants.
- The financial system will be revised in favour of the environment and allocations from the national budget for environmental investments will be increased.

**c. Current SWM Conditions, Policies, and Objectives**

Further to environmental issues, the 7<sup>th</sup> Five Year Development Plan elaborates the problems of metropolitan centres of Turkey in general, however with a slight touch on solid waste management aspects. Upon a brief account on current bottlenecks, with which the huge settlements centre and Greater Municipalities are confronted in form of unemployment; irregular urban expansion practices; housing deficit; environmental degrading; inefficiencies in providing urban infrastructure, transportation, health and education services along with distorted public order; the 7<sup>th</sup> Plan gives indications on inadequacies in solid waste management.

According to the 7<sup>th</sup> Plan, solid waste management systems capable of sorting and recycling waste and storing it in a regular and safe manner without any damage to the environment have not yet been set up. Unhealthy dump-sites are emerging due to improper fulfilment of requirements related to location identification and spatial allocation in urban development plans.

To surmount this problem, the 7<sup>th</sup> Plan mentions that sanitary landfills will be developed so that adverse effects on the environment could be prevented. In this respect, priority will also be attached to the rehabilitation of existing dumpsites in the metropolis.

Another interesting policy stated in the 7<sup>th</sup> Plan is the encouragement of private sector to venture in sub-sectors of solid waste management; e.g., recycling, material recovery and dump-site operations.

Regarding industrial wastes, the 7<sup>th</sup> Plan emphasises that regulatory arrangements will be made introducing stack filters and treatment facilities as basic requirements for industrial plants.

As essential policy action of the central government is also reflected through the 7<sup>th</sup> Plan, underlining that public services supplied in metropolises will not be subsidised; and connectedly, in financing these services, local resources will also be made use of.

#### **d. Legal and Institutional Arrangements**

Regarding the legal arrangements, the 7<sup>th</sup> Five Year Development Plan claims that, the articles of the 1982 Constitution directly or indirectly concerned with environmental matters should be amended in line with the principles of a sustainable economic development.

According to the 7<sup>th</sup> Plan; Environment Law No. 2872, Law on Forests No. 6831, Law on Encouraging Tourism No. 2634, Law of Resettlement No. 3194, Law of Coasts No. 3621, Law on the Protection Cultural and Natural Assets No. 2864 have to be amended in order;

- To conform economic and social development targets with protection and improvement of the environment.
- To ensure the preservation of the natural environment.
- To rationalise land use practices.
- To update clauses in compliance with current realities.

### **1.1.2 National Environmental Action Plan**

Despite some positive developments in recent years, the 7<sup>th</sup> Five Year Development Plan recognises that environmental issues have not been adequately incorporated into economic and social decisions and calls for identification of a national environmental strategy. The National Environmental Action Plan (NEAP) prepared in 1997 responds to this quest with concrete actions for integrating environment and development, which could also be referred as a building block for Turkey's National Agenda 21.

At the initial stage, the NEAP gives the profile of environmental problem areas, in which waste management also stands. According to the flash findings; 95% of municipal solid waste is disposed by uncontrolled dumping on land, seas, lakes, or rivers, and only 22% of private firms engage in some recycling. NEAP indicates that waste management problems are results of low level investments in waste reduction, recycling and disposal facilities, rapid urbanisation, the lax performance of state owned enterprises that are more polluting than their private sector counterparts, and low level of awareness about rules and options. Consequently, the NEAP comes to the conclusion that, although Turkey has an extensive legislation, relevant officials are not sufficiently familiar with waste management and EIA rules.



**a. Status of Waste Management**

Relying on the efforts of the State Institute of Statistics (SIS) since 1991, some quantitative assessments have been achieved on survey basis related to solid waste inventories, industrial waste inventories and municipal environment inventory.

Twenty two point three (22.3) million tons of municipal solid waste was generated in 1991, corresponding to 392kg/annum/capita. In the major cities, winter waste is composed of: 45-50% food waste, 5-10% recyclables and 40-50% ash, slag and other non-recyclable waste. In summer, this composition changes to: 80-85% food waste, 15-18% recyclables and 1-3% non-recyclables. According to a 1991 survey, 80% of municipal solid waste was disposed in open dumps, 15% in seas, lakes and rivers, 2% was composted, 1% disposed in sanitary landfills, and 2% was burned in the open, buried or dumped in agricultural lands.

Twenty five (25) million tons of industrial solid waste was produced in 1992. Of this: 47% was sold, 36% was sent for ultimate disposal, 15% recycled, and 2% unaccounted for. Recycling rates in the non-household sectors are relatively low; some kind of recycling is done by 22% of firms in the service and commercial sectors, 21% of industries, 25% of hotels, and 18% of restaurants. Of the firms that recycle, 75% collect newspapers and magazines, 46% packing paper, 24% metal, and 9% paper and glass in 1992. Just over half of the firms used some of the collected materials in their own establishment, 43% sold or gave the recyclables away, 18% burned some of the materials, and 6% gave some recyclables to the garbage collectors.

**b. Causes of Inadequate Waste Management**

Waste management problems of Turkey are caused by a number of factors which could roughly be attributed to the following:

- Low level of investment – some of major cities; e.g., Ankara, Istanbul, Izmir and Izmit, are recently building or operating their first sanitary landfills. Only one integrated waste treatment project is nearly completed in highly polluted area of Izmit, with a sanitary landfill for municipal and industrial solid waste as well as an incinerator for hospital and hazardous waste.
- Rapid urbanisation – rapid population growth in the cities has put pressure on the limited existing systems for solid and liquid waste management where utilities and networks could not keep pace with growing demand.
- Lax performance of state owned enterprises – parastatals generated 54% of industrial solid waste, which was sent for ultimate disposal rather than being recycled, reused or sold. This rate was 21% for private firms.
- Low level of awareness – a solid waste control regulation emphasising recycling and safe disposal came into effect in 1991. However, a recent survey of nearly 2000 municipalities indicated that none were enforcing the regulation, more than half cited economic constraints and one third indicated lack of adequate staff, technical skill and vehicles. One third of the municipalities were unaware that the regulation existed.

- Financing mechanism – the current array of financing mechanisms also constrain to a large extent environmental management and connectedly waste management particularly at local level. Local governments' share in the national budget and tax revenues is only 1.4% of GNP or 12% of all public expenditures. Consequently 22% of all environment related investments are made by local governments.

Following these factual identifications, the NEAP states that in order to reduce the negative consequences of waste management, below mentioned barriers must be overcome. First, there is a low level of awareness in industrial and domestic waste treatment and disposal facilities as well as in programs and policies to reduce, reuse and recycle solid wastes. Second, state enterprises set a bad example by generating the largest quantities of untreated and poorly disposed solid waste. Third, there is a low level of awareness about rules and regulations concerning waste management. Finally, there is a low capacity at local level (financial resources, equipment, staff) to properly control and manage solid wastes.

#### **c. Approach to Waste Management Improvement**

The problem of waste management has a permanent place on the agenda for several reasons such as multi-faceted and wider scope of direct and indirect impacts of wastes; versatility of the sources of waste including individuals; presence of agencies and organisations of different functions equipped with varying degree of authority and responsibility for waste management; and technological level of relevant counter measures. In order to simplify this complex picture of current problems and solution proposals, the NEAP has developed a methodological approach which the following are systematically based upon:

- Problem areas and action categories
- Optional policies
- Project implementation matrix for improving waste management

#### **d. Problem Areas and Action Categories**

As a basis for sectoral optional policies, the NEAP has identified 10 problem areas including 'wastes' as of domestic, industrial, hazardous, medical in type and liquid, solid, gas in state. The rest of the problem areas are constituted by population/urbanisation, air quality, energy, water resources, soil and land use, sensitive environments, forest/vegetative cover, historical/cultural/natural heritage, and noise. For each identified problem area, the methodology envisages application of 8 action categories, which are listed as: policies, institutional reforms, legislation, economic and financial measures, education and awareness, tools and techniques, participation, research and development.

#### **e. Optional Policies**

The formulated optional policies related to SWM are largely drawn from the action plan prepared for the MoE through the World Bank and the Middle East Technical Assistance Program (METAP) funds.

The optional policies introduced in the NEAP for waste management is the improvement and rehabilitation of waste dumps. Options related to institutional reforms encompass:

- Establishment of ‘Waste Exchange Markets’ at national and regional levels
- Establishment of ‘Hazardous Waste Management Units’ at regional level
- Establishment of ‘Emergency Management Centres’
- Establishment of ‘Waste Management Units’ with special budgets within the boundaries of greater municipalities

In addition to above mentioned institutional reforms, the NEAP also sets forth some options in connection with legislative arrangements:

- Enactment of new regulations on industrial accidents, cases requiring urgent intervention, and hazardous waste transportation
- Rearrangement of authority and responsibility sharing among relevant organisations in a co-ordinated manner, and introduction of a functional division of labour
- Enactment of a regulation on the storage of hazardous wastes
- Elimination of the variance in terms used in relevant legislation

Regarding economic and financial measures, land and credit allocation for regional resource recovery and waste disposal facilities has been stated as an optional policy. Education and training actions have following options to pursue:

- Implementation of training programs on hazardous waste management
- Training of hospital personnel at all levels
- Certification of the information and skill levels of personnel employed in hazardous and medical waste management
- Institutionalising the information flow to the public
- Implementation of training programs to encourage the wider use of ‘eco-packaging’

A wide range of options are presented for instrumental and technical actions which envisage:

- Establishment of waste processing and disposal facilities equipped with appropriate technologies.
- Support for waste producers to introduce recycling and disposal systems.
- Enlarging the scope of waste inventories and ensuring their sustainability.
- Establishment of integrated (reuse & elimination) waste processing facilities.
- Preparation of programs for the improvement of polluted areas.
- Updating topographic maps and aerial photographs.
- Develop standards for recycled products.
- Inclusion of hazardous wastes management in urban development plans.

- Wider observance in public and private industries of the principle of ISO 14000, Ecotex, and Triple Responsibility.
- Encouragement of ‘environment-friendly’ production and consumption.
- Preparation of ‘waste management plans’ by producers in sensitive environments.
- Support infrastructure for the collection, transport and elimination of hospital waste.
- Preparation of standards for collection tanks, transport vehicles, transfer stations, dumpsites and elimination facilities, specification of waste elimination and protection zones in urban development plans.

Option related to participatory actions are also given in the NEAP, which are oriented towards:

- Supporting voluntary organisations in their monitoring and project based activities.
- Conducting regional referendums on the collection, dumping and elimination of hazardous wastes.
- Encouraging persons and organisations who reduce waste at source.

The last area of action as categorised is research and development, which has following options to pursue:

- Further enrichment of waste processing options
- Establishment of a ‘Processing Development Centre’ for reducing wastes
- Wider support to the research and development work of industrial enterprises in the field of waste management
- Inventory of areas polluted by wastes
- Identification of waste dumpsites fit for urban settlements
- Development of technologies for the dumping, transport and elimination of medical wastes
- Identification of ecosystems affected by dumpsite leachate
- Preparation of a ‘Glossary of Waste Management Terms’

**f. Project Implementation Matrix for SWM Improvement**

In the list of indicators for monitoring the NEAP, ‘Improving Waste Management’ stands as a short-term priority project to be implemented in a range of 5 years with an estimated cost over US\$ 50 million. In the implementation matrix of the project, the Ministry of Environment and the local governments are entitled as leading and implementing agencies; while Ministry of Health, Ministry of Trade and Industry, Ministry of Education, Ministry of Defence, Ministry of Civil Works and

Resettlement, Ministry of Energy, State Institute of Statistics, private sector, universities and NGOs are indicated as related stakeholders.

The justification of the project relies on the detailed study prepared by the end of 1995 for the Ministry of Environment through METAP and WB funds, which had a sharp focus to appropriate waste management practices. Two broad sets of problems need to be solved to improve waste management; (i) shortfalls and constraints within institutional, legislative and financial systems, and (ii) limitations stemming from the operation of waste management. The latter includes, lack of cost-effective service provisions, inadequate standards for waste disposal, limited infrastructure and information, constraints on private sector involvement, and very modest formal sector involvement in waste reduction.

The scope of the project is determined by 4 components. The national component involves creating a National Solid Waste Control Department and funding program to support waste minimisation, recycling, hazardous waste management, landfill creation and management, dump-site rehabilitation, institutional development, and improved collection services. The municipal component would help local governments improve revenue generation, implement performance indicators and reorganise their solid waste management functions. The regional/private sector component would seek to create a regional approach to waste management with greater participation by the private sector, especially for hazardous waste treatment and disposal. The technology development component consists of support for appropriate technological options as well as capacity-building programs. Within the framework of the general project on 'Improving Waste Management', diverse demonstration projects are also planned.

### 1.1.3 SWM Administration and Organisation

#### a. Central Government Level

##### a.1 Ministry of Environment (MoE)

The MoE is the prime agency responsible for the development of national environmental policy, environmental standards, environmental protection and pollution prevention as well as for creating a suitable organisational structure and co-ordination basis for environment related activities. The MoE is also the central government authority for implementing the Environment Law along with regulations concerning water pollution, medical waste, harmful and hazardous chemicals and products, solid waste and environmental impact assessment. Tasks concerning waste management, control of hazardous waste and cradle-to-grave approaches towards the control of chemicals, could be regarded as recent executive-type functions for the MoE, which has been set up in 1991 and currently undergoes through an institutionalisation process. The MoE is further responsible for administering the Environmental Pollution Prevention Fund, which extends credits for investments in environmental improvement facilities such as waste treatment plants. The fund is financed by a range of sources, including allocations made from the Ministry's general budget, income from fines imposed for breaches of environmental laws and 10% of Cleansing Tax collected by the municipalities.

## **a.2 Undersecretariate of the State Planning Organisation (SPO)**

The Undersecretariate of the SPO attached to the Prime Ministry prepares a five-year national development and annual investment plans. The SPO also prepares sectoral plans with due emphasis on macro-environmental policy issues, and approves projects requiring large amounts of financing (over US\$ 5 million) or foreign loans. The SPO has the responsibility for ensuring the necessary coordination for the preparation and realisation of yearly investment programs with direct implications for local governments.

## **a.3 Ministry of Tourism (MoT)**

The MoT plays a co-ordinative role with respect to developments and investments in the areas possessing tourism potential. The MoT determines the boundaries of tourism regions, areas and centres and prepares land use plans. An important responsibility in this connection relates to the provision of supporting infrastructure for tourist areas, e.g., water supply, wastewater treatment and solid waste disposal. The MoT provides financing for such municipal and infrastructural investments in identified project areas, either through its own budget or as an intermediary of foreign and other lending institutions.

## **a.4 Ministry of Interior (MoI)**

The MoI has an important tutelary role with respect to local government, exercised mainly through the provincial administrations under its jurisdiction. The governor is the assigned highest representative of the central government at provincial level, who is in charge of all local government agencies. The decisions of the municipal councils concerning the budget, final accounts, work programs, debts and tariffs require the approval of the provincial governors. International relations of municipalities must also be conducted through the MoI.

## **a.5 Ministry of Civil Works and Resettlement (MoCWR)**

Despite the fact that planning functions have been decentralised to the municipal level, the MoCWR continues with the responsibility to prepare municipal land use plans under a number of conditions and circumstances specified in the Physical Planning Law. Beside the approval of amendments proposed by the municipal councils, the MoCWR has the authority to engage in planning activities with regard to issues having impacts on more than one municipality in a (sub)region.

## **a.6 Bank of Provinces (BoP)**

The BoP is affiliated to the MoCWR and is responsible primarily for:

- The distribution of municipal shares from national tax revenues
- Technical support services as a public agency undertaking a program of capital works on behalf of the municipalities.

The first major area of responsibility of BoP covers administration and distribution of central funds to local governments, according to population based formula, as well as grants and loans for municipality projects. Technical support services, which are also provided by the Bank on behalf of the municipalities, on the other hand, include: design and planning of drinking water and sewerage systems projects, providing

overall technical control of the projects along with construction management, procurement of equipment and materials as well as maps and surveys.

#### **a.7 Southeastern Anatolia Project (GAP), Regional Development Administration (RDA)**

The GAP project is implemented in 8 southeastern provinces of Turkey by the government and managed by the GAP Regional Development Administration (GAP RDA). Originally planned as a number of water and land resources development project, the GAP project is now an integrated and multi-sectoral regional development project involving agricultural, industrial, rural and urban development. It involves dams, hydro-electric power plants and irrigation facilities in the Tigris and Euphrates basins as well as investments in transportation, education, health, housing and physical infrastructure. Although the main responsibility of GAP RDA is overall planning and coordination in the GAP region, it is also empowered by government decree for project preparation, investment and implementation, particularly in infrastructural services.

#### **b. Local Government Level**

##### **b.1 Province Special Administration (PSA)**

The representative of central government in each province is the governor, who is also head of the provincial local government and its chief executive. The governor is overall head of the provincial branches of the central ministries and heads the provincial general assembly. The governor, the provincial general assembly, and the permanent provincial board are collectively known as the PSA. Each province has a provincial environment council headed by the governor. The council members are local representatives of the central ministries, the greater municipality mayor, district mayors, heads of the chamber of commerce and agriculture, and a representative of the MoE. The responsibilities of the provincial environmental council include: monitoring compliance with environmental policy, coordinating the implementation of the policies of the MoE at local level, evaluating inspection reports and environmental impact statements.

##### **b.2 Municipalities**

The basic urban administrative units are the municipalities, whose jurisdiction is limited to settlements with more than 2,000 inhabitants. Settlements with less than 2,000 inhabitants are under the ward's administration. The Municipal law empowers municipalities with responsibility for taking any and all necessary measures for the health, well-being and welfare of the population of their localities. The major environmental services of the municipalities include water supply and sanitation, solid waste collection and disposal, public transport, roads and drainage, and urban greenery. Among the major environmental regulatory functions are land use planning and development control, environmental health and pollution, conservation of areas possessing natural, cultural and historical value. Municipal administration consists of an assembly and a municipality board, headed by an elected mayor. Municipal administrations can be divided into greater municipalities, single municipalities and district municipalities within the greater municipalities.

### **b.2.1 Greater Municipalities**

The metropolitan government model introduced in 1984 is a democratically structured two-tier system, consisting of the greater municipality and district municipalities. The Greater Municipality Assembly consists of the greater municipality mayor and mayors of the district municipalities within the greater municipality boundary. Members of the municipal board include the general secretary and greater municipality directors, responsible for physical planning, law and accounting. The greater municipality has a number of supporting directorates such as the water administration as well as electricity, gas and transport directorates. In the execution of its duties, the greater municipality can also establish corporations or joint ventures and have share in corporations.

The main responsibilities and duties of the greater municipalities are:

- To prepare investment plans and programs
- To coordinate the co-financing and co-investment of large scale services
- To provide drinking water, sewerage and sewage treatment and disposal, as well as electricity and natural gas supply
- To allocate sites for solid waste disposal and provide solid waste disposal services
- To license the operations of waste disposal and treatment plants, to apply the polluter pays principle and to encourage the recycling of waste
- To plan, construct and maintain major roads and public spaces
- To create recreational and sporting areas and run social and cultural events.

The collection and transportation of waste are the responsibilities of the district municipalities within the greater municipality, although greater municipalities have responsibility for street sweeping, waste collection on main roads and dumpsite operation. Waste management tasks usually rest with the Health Directorate or the Cleansing Department.

### **b.2.2 District Municipalities**

The main responsibilities and duties of the district municipalities within the greater municipalities include the preparation of physical plans as well as operation of environmental, sanitary, welfare and consumer protection services. As individual entities, single municipalities combine the functions of district municipalities and greater municipalities. Waste management tasks of district and single municipalities usually rest with the Cleansing Directorates.

### **b.2.3 Ward Administration**

Wards are set up by judicial powers, whereas ward administrations are made up of Muhtar and Board of Seniors. The Muhtar is the representative of the ward responsible for population and residential registry, health and security issues. The functions of the Muhtar are a continuation of the central administration, whose salary is paid from the national budget. The Muhtar and the 4 members of the Board of



Seniors, responsible for raising public awareness of environmental issues, are elected by the residents of the ward.

#### **b.2.4 Unions of Municipalities**

The Turkish Constitution and the Municipal Law enables municipalities to establish unions in order to undertake common services and to encourage co-operative activities among them. There are a number of municipal unions operating in different regions and sub-regions. Within the overall framework of by-laws, the unions enjoy the authority, powers and rights of individuals.

#### **c. Non-Governmental Organisations (NGO)**

There are a number (over 55) of environmental NGOs in Turkey, which are also currently active in solid waste management. Under relevant on-going NGO activities, e.g., Environmental and Woodlands Protection Society of Turkey, Nature protection Association of Turkey, Black Sea Environment and Cultural Association, etc., perhaps the most significant one related to solid waste management is of the Trust for Environmental Protection and Packaging Waste Recovery and Recycling. This NGO is established co-operatively by packaging manufacturers, and currently has responsibility for waste recovery and recycling working alongside the municipalities.

### **1.1.4 Legislation on SWM**

In Turkey, the environment is managed by over 200 laws and regulations. Despite the wide range of regulations, the Environmental Law is limited in its coverage concerning solid waste management. In this respect, the Municipalities Law and the General Hygiene Law are more comprehensive, particularly in terms of solid waste treatment. Thus, it would be more convenient to examine the solid waste management related legislative instruments under two main headings, namely, (i) Legislation on SWM with direct environmental essence, and (ii) Legislation on SWM with indirect environmental essence.

#### **a. Legislation on SWM with Direct Environmental Essence**

The Environment Law No. 2872 – 1983 and the Decree of the Council of Ministers on the Establishment and Duties of the Ministry of Environment No. 443 –1991 are the two essential legislative documents with direct environmental essence. The subsequent supplements of the Environment Law are the waste control regulations, which are (i) Solid Waste Control Regulation and Revisal 1991 / 1998 , (ii) Medical Waste Control Regulation 1993, (iii) Control of Harmful Chemicals and Products Regulation 1993, (iv) Water Pollution Control Regulation 1988, and (v) Hazardous Waste Control Regulation 1995. In addition to these, Environmental Impact Assessment Regulation is another instrument primarily used as an aid for decision making and evaluation.

##### **a.1 Environmental Law**

The Environmental Law stipulates that the polluters should contribute indirectly to the cost of controlling pollution through the payment of taxes, fines or breaches of the law and charges. The operation licence of any person or entity in breach of the Environment Law has to be removed by the relevant authority.

## **a.2 Decree on the Establishment and Duties of the Ministry of Environment**

According to this Decree of the Council of Ministers, the Ministry of Environment is responsible for identifying the national policies on solid waste management with due measures to be taken up in this respect. Connectedly, supervision of waste removal and disposal activities in an appropriate manner and without any pollution on the environment also falls under the main duties of the Ministry.

## **a.3 Waste Control Regulations**

As introduced in 1991 and revised in 1998, the Solid Waste Control Regulation imposes a wide range of responsibilities for solid waste management on individual waste producers, central government, the municipalities and other relevant authorities. The regulation requires central government to set standards for landfill sites and develop a framework for the separate classification disposal of hazardous waste. It also attaches a responsibility to waste producers to separate waste types at source, and wherever possible, to minimise and recycle wastes. In this respect, the Recycling Commission, consisting of representatives from various industrial sectors and chaired by a representative from the Ministry of Environment, is obliged to set targets for the recovery of plastics, glass, metals and paper. However the Commission fulfils an advisory role and forwards recommendations to the Ministry of Environment on options for developing separate collection and sorting systems for recyclable or recoverable wastes.

Under the Solid Waste Control Regulation, municipalities and, where appropriate, Greater Municipalities are responsible for granting licenses for waste disposal sites. In case of site locations lying outside municipality boundaries, the Governor of the respective province carries this responsibility. Anyway, before granting the license, the concerned authority must obtain the permission from the Local Environment Board for settlements with a population of less than 10,000. For settlements with a population of over 10,000, permission must be obtained directly from the Ministry of Environment, the Ministry of Civil Works and Resettlement, the Ministry of Energy and Natural Resources.

The provisions of the Solid Waste Control Regulation stipulate that municipalities are obliged to inspect and control the transportation of waste to dump-sites and to neighbouring areas outside the municipality. Municipalities are additionally responsible for the operation of separation, disposal and composting facilities.

Medical Waste Control Regulation came into force in May 1993, setting standards for the treatment of clinical waste. Permission for the siting of an incineration plant for medical wastes must come from the Local Environment Board, with the approval from the Ministry of Environment. Construction licences for final storage facilities are granted by the municipality, greater municipality or relevant authority outside municipality boundaries.

Control of Harmful Chemicals and Products Regulation issued in 1993 and Hazardous Waste Control Regulation issued in 1995 state that waste producers must not store harmful chemicals outside without taking the necessary safety precautions. Minimisation of such wastes at source must be attained, whereas their transportation under supervision and their disposal at a nearest convenient site under environmentally secure management have to be provided. Water Pollution Control

Regulation issued in 1988, on the other hand, prohibits waste dumping close to drinking water reservoirs and their catchment areas. The construction of polluting production facilities nearby these watersheds and sources are forbidden by concerned regulation.

#### **a.4 Environmental Impact Assessment (EIA)**

The majority of the provisions of above mentioned regulations are in direct relevance with the Environmental Impact Assessment Regulation as enforced in 1993. An “Initial Environmental Evaluation Statement” consisting of a check-list and an evaluation table is required for a range of activities, which is a preliminary report by its nature needed during preparation of conceptual designs. The complete Environmental Impact Assessment report must be prepared during the planning phase of an investment activity. The activity can only be approved, authorised or licensed to proceed, if an “EIA Positive Certificate” has been granted.

#### **a.5 Environmental Pollution Prevention Fund**

The Environmental Pollution Prevention Fund has revenues from diverse sources; such as, motor vehicle inspection fee, auto sales tax, airplane ticket sales, nominal fees on air and sea cargo, and transfers from other sources. In past years selected projects are funded with an average of USD 1 M per investment; pertaining to reforestation, sewerage and drainage, stream rehabilitation and geo-thermal energy resources. Although not necessarily excluded, a list of criteria in regard to prioritisation of any solid waste management project is however not apparent in the Regulation, which indicates that the Minister of Environment determines how the fund will be used.

### **b. Legislation on SWM with Indirect Environmental Essence**

#### **b.1 Social Welfare Oriented Laws**

Even being not directly involved in environmental affairs and specifically in solid waste management issues, there are some laws and regulations which influence the fulfilment of waste collection, removal and disposal services at least from a social welfare standpoint. General Hygiene Law No. 1593 – 1930, Physical Planning Law No. 3194 – 1984, Water Products Law and Regulation No. 1380 – 1973 could be counted as social and community welfare oriented legislative instruments along with other municipal laws. Among these, Municipalities Law No. 1580 – 1930 and Greater Municipality Law No. 3030 – 1984 are relevant for the concrete identification of local and communal services to be carried out within the framework of solid waste management. On the other hand; Municipality Income Law No. 3914 – 1993 and Privatisation Law No. 4046 – 1994 are also significant with their due references to Environmental Cleansing Tax and contracting modes, respectively.

#### **b.2 Municipalities Law No. 1580 – 1930**

Both the Municipalities Law and the General Hygiene Law charge municipalities with responsibility of collection, removal and disposal of domestic and hazardous wastes from public areas and private residences. Municipalities are, in addition, responsible for determining the location, construction and operation of waste collection, disposal and incineration units for settlements with a population greater than 50,000.

### **b.3 Greater Municipality Law No. 3030 – 1984**

According to the Greater Municipality Law, greater municipalities are responsible for selecting sites for the construction of waste collection, processing and disposal units and granting permits to operate them. They are however not responsible for the collection and transport of waste, and restrict their duties to street sweeping as well as cleansing of selected public parks, squares and facilities.

### **b.4 Municipality Income Law No. 3914 – 1993**

Municipalities are able to derive income for solid waste management activities from several financial laws. The Environment Cleansing Tax was originally introduced under the Municipality Income Law in an attempt to cover the budget deficits of the municipalities. 20% of the Environment Cleansing Tax collected by the district municipalities is to be transferred to greater municipalities to be used to establish and operate waste disposal facilities, while a further 10% is to be transferred to the Environmental Pollution Prevention Fund managed by the Ministry of Environment. The Law for the Transfer of Income from the National Budget to the Municipalities and Province Special Administrations requires a decree of the Council of Ministers on the share and amount to be passed to the respective municipalities and province special administrations.

### **b.5 Privatisation Law No. 4046 – 1994**

Municipalities may prefer the option to carry out waste collection, removal and disposal functions by using their own vehicles and equipment, or make arrangements to contract these operations out to the private sector. The Privatisation Law allows the privatisation of all establishments belonging to the municipalities and special province administrations engaged in commercial activities. Such applications must however comply with the main objective of privatisation, which attains increasing economic efficiency and decreasing public expenditure. Accordingly, contracting out of collection services and concession contracts to design, build and operate a waste treatment and disposal facility are the privatisation choices of the municipalities in dealing with solid waste management. In these models, however, the responsibilities as providing the service and the revenue collection to pay the contractor, still remain with the municipality.

## **c. Environmental Manual for Municipalities**

As an extension of a prime obligation related to the production and dissemination of practice oriented instructions and manuals in accordance with respective laws and regulations, the Ministry of Environment has, in 1998, prepared an Environment Manual for Municipalities. Although this document broadly covers the implementation guidelines for technical applications, it also devotes a brief reference to joint-management models in coping with solid waste services.

### **c.1 Technical Specifications on SWM Activities**

The specifications in the Environment Manual for Municipalities refer firstly to the practices of waste sorting at source as well as their collection and recycling techniques. Subsequent to a comparative analysis of material recovery facilities, separation and segregation activities, as well as open dump-site practices, the manual gives details on sanitary landfill implementations. Apart from operational issues, the

manual also describes basic methods of sanitary landfill management. Further specifications on rehabilitation of unsanitary and closed dump-sites as well as their control and maintenance take place in the final sections of the concerned chapter.

## **c.2 Joint-Management Models for SWM Activities**

By emphasising potential advantages of joint actions in cleansing and waste disposal services, the manual promotes collective use of facilities with cooperative engagements in overall management. An exemplary institutional framework typical for inter-municipal collaboration is also set forth with financing and contracting options based on alternative organisation models.

### **1.1.5 Policy on SWM**

#### **a. National Policies and International Commitments**

National environmental policy was first articulated in the 3rd Five Year Development Plan (1993-1997), whereas the 7<sup>th</sup> Five Year Development Plan (1996-2000) is the most recent document, in which national policies in all key sectors, including the environment are embodied.

The underlying policy objective is to ensure natural resource management that improves the natural, physical and social environment, while balancing human and ecological health. The rest of the environment related policy objectives in the latest development plan are based upon the principles of; sustainable development; harmony with economic and social policies; commitments to international agreements; social consensus and participation; transforming values and behaviour; as well as reforming institutional and legal structures.

Beside developing domestic policies, Turkey has become a party to 38 international conventions, signed 29 declarations and enacted 15 bilateral agreements related to environmental protection and management.

#### **b. Policy Instruments**

In order to identify clearly the national policy adopted in Turkey towards environmental issues with a particular focus on solid waste management, a critical review of selected policy instruments would be beneficial. These policy instruments are gathered under headings as; legislative base, institutional setting, planning techniques, economic means, financing mechanism and human resources development. Analyses of these issues would avail a reasonable assessment of policy implements related to the management of the environment and solid wastes.

##### **b.1 Legislative Base**

According to the Article 56 of the 1982 Constitution, both the citizens and the State have been given the duty of not only (passively) protecting but also (actively) up-grading the environment. Following the Constitution, the Environment Law No. 2872 embodies the "polluter-pays" principle and sets forth the conception of absolute liability. The provisions of this Law includes bans on certain pollutive operations and compulsory environmental impact assessment applications for specific activities. However "command and control" is the essential approach to environmental management within all related laws and regulations.

## **b.2 Institutional Setting**

Central and local agencies as well as private and non-governmental initiatives constitute the main actors within the institutional setting. As an extension of national policies within an highly centralised system, the Ministry of Environment as a central governmental agency is overloaded with specific duties which comprise; preparation of relevant legal arrangements, creation of necessary institutions, supervision and planning, formulation of policies and strategies, coordination of activities, undertaking monitoring and data collection, financing and fund management, organising research, extension and training programs. Neither the organisational structure nor the institutional maturation of the Ministry of Environment has been fully achieved. This undesired situation is further hampered by new legislative arrangements, which originally intend to reorganise and restructure the fulfilment procedures of new institutional assignments, but these actions have regrettably led to ambiguous laws and regulations.

Local governments are directly instructed for the protection and management of the environment, and specifically responsible for solid waste management among other urban services. The municipalities have an additional important role as agencies for approving structure (scale: 1:5000) and implementation (scale: 1:1000) plans, that determine the physical and functional development within their boundaries. This legal authorisation has direct relevance with spatial dimension of public investments and environment related project implementations.

The private sector is a key environmental actor as a polluter, a supplier of environmental goods and services, and a voluntary enforcer of environmental practices. As a polluter, private enterprises generally perform better than parastatals. In this respect, accelerated privatisation of state owned enterprises may lead to a reduction in industrial pollution. As a supplier of environmental goods and services, private sector maintains expertise and provides equipment for waste treatment and purification, pollution control, solid waste management, environmental impact assessment, etc. As a voluntary enforcer, some manufacturers are seeking to comply with international standards practised for the sake of environmental protection.

The establishment purpose of some of the non-governmental and voluntary organisations, associations and foundations is particularly oriented towards environment related activities. Nevertheless their engagements in decision making process are rather limited and moreover consultative in character, which are marginally effective in formal procedures.

## **b.3 Planning Techniques**

One of the key features of “command and control” style of environmental management is the development and use of various plans. Apart from the approval of the structure and implementation plans revealing the physical dimensions of urban development, Ministry of Environment is responsible for environmental plans (scale: 1:25,000) in compliance with development and regional plans prepared by the State Planning Organisation or GAP-Regional Development Administration. There are 22 agencies and organisations in Turkey fulfilling their diverse planning tasks based on 24 legislative arrangements concerned with planning. Beside these macro-level planning practices, an instrument of micro-level planning is the environmental impact

assessment report, which must be prepared during the planning phase of an investment activity and subjected to the approval of the Ministry of environment.

#### **b.4 Economic Means**

Types of goods and services that have environmental impacts are not widespread. Those such as the gasoline, electricity and coal-gas consumption taxes mostly go for operating budgets of related governmental organisations, whereas portions of the motor-vehicle, automobile and air-plane ticket sales go for environmental purposes. Various fines are also levied on violators of the Environment Law. Except from these direct penalty practices, there is a deposit-refund scheme for beverage containers and buy-back program of 12V vehicle batteries. At local level, some environmental fees are levied under the Municipality Income Law in granting permits and licences, which can be used for environment related investments. The most important one among these is so called Environmental Cleansing Tax used for solid waste management. During last decade, the private sector has been encouraged to make investments in environment related fields.

#### **b.5 Financing Mechanisms**

Financing mechanisms used for environmental protection and development activities consist of; allocations from the national budget, non-budgetary domestic funds, taxes, fines and charges, credits and grants from international organisations, as well as revenues obtained from the operation of existing facilities. Environmental Pollution Prevention Fund is managed by the Ministry of Environment, which had a total revenue of USD 340 M between 1991 – 1996 and availed disbursement for diverse projects. On average, 40% of a municipality's budget is spent for cleansing activities comprising primarily solid waste collection and disposal. The Bank of Provinces, a public entity, is another source for the municipalities, which gives grants and extends credits, makes advance payments, and serves as a loan guarantor for financing environmental infrastructure; e.g., water treatment, drinking water supply, sewerage, waste management, etc. International organisations and financial institutions; e.g., the World Bank, United Nations, European Union and their connected funds, as well as bilateral commitments provide further supports for environment related projects and investments in Turkey.

#### **b.6 Human Resources Development**

Relevant central government agencies, universities, professional organisations and local administrations produce diverse environmental information. However these activities vary in terms of purpose, scope, content, technique and means which handicap a smooth access to a consistently compiled and systematically categorised information source. In order to avail accessibility to environmental data, necessary steps have been undertaken early this decade on physical and natural environmental conditions and waste inventories.

Environmental education is given by a number of institutions, organisations and agencies. In formal education, starting from pre-school age, environmental subjects are introduced to children and youth. In higher education, programs directly or indirectly related to the environment are offered in at least 18 universities. In non-formal education programs which recruit about 1 million persons each year, there courses that can be included in the context of environmental education and training.

Although environment related research activities cannot be distinctively identified, according to 1993 figures 0.44% of GNP corresponding to USD 801 M is devoted for overall research and development activities.

At certain phases within the system of environmental management, there are some limited and formal participatory mechanisms functioning through local environment committees, councils and EIA engagements. Environmental education, training and research programs are expected to enhance the environmental awareness of the Turkish publicity for effective participation in the disputes on environmental affairs.

### c. Policy Constraints

As a legislative instrument, Environment Law includes no arrangement to make main objectives achievable and feasible, due to shortcomings in implementation related issues. The provisions and clauses of the law are not sufficiently adopted by officials. This fact constitutes another substantial constraint for implementation. The results of a survey on this subject matter indicate that, 94% of all public officials have not accessed the regulations of the Environment Laws.

Ministry of Environment cannot function as effectively as it should. Due to presence of more than one authority on the same issue, there are conflicts in authorisation, duty and responsibility levels of environment related organisations. The organisational ambiguities observed at central level are also present at local level, which reflect institutional constraints for appropriate policy actions.

Planning instruments are unable to keep pace with rapid population growth and changes in settlement patterns. By nature, they are confined to physical dimensions and do not necessarily deal with environmental issues. Beside authorisation of diverse agencies for the preparation and implementation of plans at different scales, which is a main obstacle for securing integrity, the plans are also crippled by deficiencies in available data base and techniques used. Absence of baseline and inventory studies on environmental conditions and expertise as well as patience for long lasting procedures form the main bottlenecks for EIA practices, which ought to be incorporated into planning practice at required levels.

The range of economic measures applied for environmental protection and control in Turkey is relatively limited in comparison with other countries, in which they are successfully used. Instrumental package of economic measures need to be enriched in order to provide sufficient sources to activate financing mechanism towards favouring local governments' position in the implementation of public service projects, including solid waste management.

Despite to quantitative achievements recorded in environmental education and training of human resources; the techniques, equipment and information used for this purpose yield in poor qualitative indicators. Consequently, neither the desired returns have been attained nor the behaviour and attitude of individuals and committees have been significantly changed. Since the political structure generally permits participation only through indirect and formalised mechanisms, the engagements and initiatives of citizens and non-governmental organisations are restricted to consultative or advisory functions.



#### **d. Synopsis of To-Date Policy Consequences**

In the light of above expressed state-of-the-art of applied policy instruments and the constraints encountered throughout implementation, a synopsis of consequences can be drawn. Although these consequences are closely interrelated, a logical arraying could be made as the following:

- High centralisation of authority, information and budgetary means lead to less efficiency in addressing to local issues and hinders the promotion of bottom-up initiatives.
- Over-reliance on “command and control” approach based on fixed regulations causes an idle environmental management style when compared with a balanced mix of economic and regulatory instruments.
- Extensive education system but inadequate educational content does not convey appropriate information specifically tailored for factual needs of identified target groups.
- Weak linkages between information management, analysis and decision making stages results in improper actions.
- Extensive legislation but low level of awareness gives rise to failures in reaching environment related policy objectives.
- Disintegration in planning actions yields in negligence of local environmental priorities.
- Inadequate public resources (staff, budget, information, equipment) evoke insufficiencies in environmental monitoring, control and enforcement.

#### **e. Policy Action Proposals for SWM**

The utmost problem of Turkey in solid waste management is the dump-site implementation habits of the municipalities without undertaking hygienic and technical measures required for waste disposal. Over 99% of all dump-sites in Turkey, which are about 2200 in sum, are lack of sanitary conditions, even such practices are strictly prohibited by the Solid Waste Control Regulation. The prime reason for this acute problem could be attributed to the missing clauses of the concerned regulation related to the financing of such an obligation to be fulfilled by the municipalities. Not only from the financing but also from the economical standpoint, it would be rational policy to undertake necessary actions towards developing regional and/or subregional sanitary landfills for collective use of neighbour municipalities. Another urgent policy action is required for the rehabilitation of the existing dump-sites by taking into consideration the relevant issues pertaining to risk assessment, monitoring, phasing, financing and identification of suitable technology.

Incentives towards waste minimisation and recycling are the basic requisites of improving solid waste management accompanied with participation in waste collection, transportation, disposal and stabilisation costs as well as increasing public awareness in these issues. However, the functional dissociation of those actors active in production and haulage of solid wastes, is the main reason for extremely modest

public awareness in Turkey. Therefore, the waste producers must be directly associated with the disbursement of waste removal and disposal costs. Environmental Cleansing Tax does not reveal exemplify a suitable instrument neither for covering the waste elimination costs nor for increasing the public awareness. A modification of Environmental Cleansing Tax is inevitable in order to charge the fees not on location oriented tariffs, but on amount of waste produced. Establishing a direct proportionality between waste amount and removal fee would be the right political action to persuade people for less waste production, which automatically leads to higher awareness for minimisation of waste and maximisation of recycling.

Respective policy actions towards new institutional arrangements must also be taken regarding; (i) regional and sub-regional sanitary landfill management and operation models, (ii) in-depth instructions and manuals as supplements to the Solid Waste Control Regulation, (iii) acceleration of decision-making process particularly EIA procedures, (iv) privatisation of solid waste management services, (v) development of standards for operations as well as principles for monitoring, supervising and independent auditing.

Privatisation and contracting actions have to be promoted with due attention to secure a competitive business environment, which means competent firms are active in a non-monopolistic market. Contract duration must also be kept at a reasonable extent (3-5) years, so that the private contractor is also motivated for further investments. While monitoring and supervising ought to be carried out by respective units of municipalities, the contractor must be controlled periodically by independent auditors. As concrete outputs of above elaboration, identified preferences could be transferred short, medium and long-range policy priorities as mentioned below:

#### **Short-range (2 years) Policy Priorities**

- Developing the legislative and institutional basis for the administration, management and operation of regional and sub-regional sanitary landfills.
- Harmonising the legislative infrastructure and institutional superstructure through fulfilment of intermediate structure requirements (in other words; elimination of mid-level organisational deficiencies).
- Preparing an inventory on waste collection, cleansing, transportation and disposal activities.
- Preparing a medium and a long-range action plan based on preceding inventory.
- Developing standards for solid waste management operations in accordance with international norms.
- Initiating waste minimisation and recycling programs and projects.
- Promoting projects on rehabilitation of dump-sites.

#### **Medium-range (5-10 years) Policy Priorities**

- Extending regional and sub-regional sanitary landfill management and operations model.

- Establishing the transfer stations in the light of the preceding models.
- Preparing the infrastructure of the solid waste management system as envisaged by the medium-range action plan.

#### **Long-range (10 – 15 years) Policy Priorities**

- Structuring the solid waste management network in respect to regional development plans and environmental plans.
- Maturing the institutional framework of the preceding network with cooperative engagements of all relevant agencies.

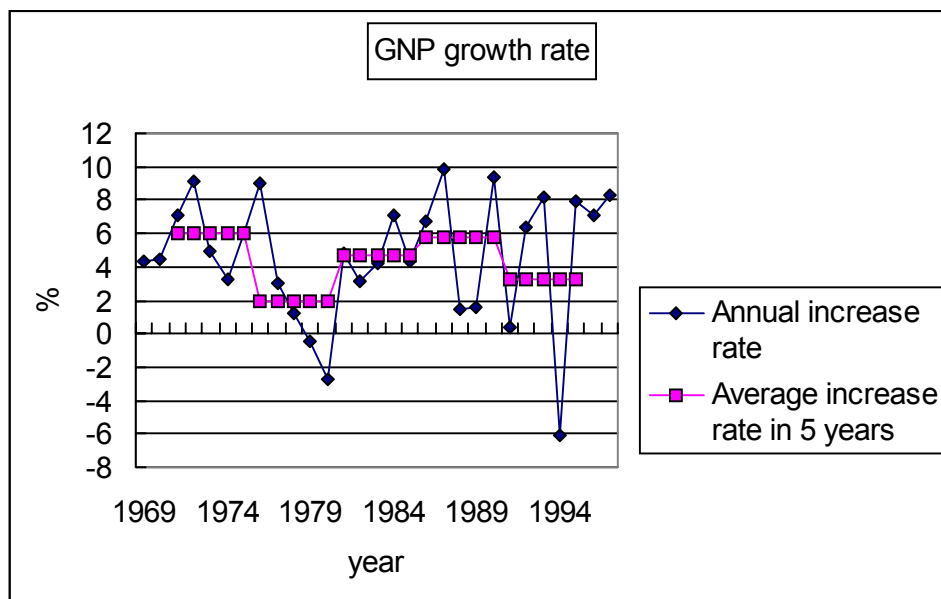
### **1.1.6 National Economy**

#### **a. Historical Background of Turkish Economy**

The share of industrial sector in Gross Domestic Product (GDP) went up owing to the growth of industrialisation accelerated between 1950s and early 1970s. After first Five Year Development Plan was formulated in 1963, import-substituting industrialisation led by the State was promoted. As a result, average economic growth rate marked GNP 7% in annum between 1966 and 1973. However, foreign currency crisis, caused by two oil crises and the harmful effects brought about by the import-substituting industrialisation, often stagnated the development of Turkish economy.

Under these circumstances, economic policy shifted from state initiative to open economic policy led by private sector as a result of the introduction of free trade policy (1980) and financial deregulation (1984). Although this change contributed to the high growth of Turkish economy again, Gulf War in 1991 has done a great deal of damage to the Turkish economic activities. Iraq being the major export market for Turkey, the loss of such important market, the stop of oil pipeline operation and attack of the tourist industry and the construction sector were the main causes for the damage. Although the recovery trend of its economy was observed after the war, Turkish economy cooled down again in 1994 due to the recession as exemplified in the sudden fall of Turkish lira, price increase of imported goods, and the reduction of domestic consumption. This recession was caused when some credit rating agencies pulled down the rank of Turkish state bond. However, in 1995, Turkish economy started to recover again.

The average economic growth rate between 1980 and 1995 in Turkey was 4.5% on Gross National Product (GNP) basis. Annual growth rate and average growth rate for every five year are shown in Figure 1-1.



Source: Statistical Yearbook of Turkey 1997, SSI  
Monthly Bulletin of Statistics August 1998, SSI

Figure 1-1: GNP Growth Rate

## b. Economic Trend in 1997 and 1998

The Turkish economy in 1997 continuously showed high growth owing to the impressive activities of private sectors, increase of importation and high demand of domestic consumption.

### b.1 Gross Domestic Product (GDP)

According to the State Statistics Institute (SSI), actual growth rate of Gross National Product (GNP) in 1997 was 8.3% largely exceeding the rate of 7.1% in 1996. GDP growth rate of 7.5% in 1997 also exceeded 7.0% of previous year's figure. While actual growth rate of GDP per sector showed 11.7% increase for commercial sector, 10.4% increase for industrial sector, 7.6% increase for the transportation and communication sector and 6.9% for service sector against previous year respectively, agricultural sector resulted in 2.3% minus.

The boom in the Turkish economy may be attributed to the following:

- High level of consumption was maintained as previous year.
- Active investment and manufacturing activities was carried out by industrial sector.

As a result of these economic activities, industrial structure has changed. While industrial and commercial sectors were pushed up as the major force, agricultural sector ranked as the secondary force closely followed by transportation and communication sector.

Table 1-1: Changes in the Industrial Structure

(unit: billion TL in 1987 price)

	1992		1997		1997/92
	Value	%	Value	%	
Agriculture	14,651	16.4	14,927	13.2	1.019
Industry	24,268	27.1	32,835	29.1	1.353
Construction	5,814	6.5	6,511	5.8	1.120
Trade	17,902	20.0	25,024	22.2	1.398
Transportation & communication	10,899	12.2	14,485	12.9	1.329
Financial institution	2,463	2.8	2,573	2.3	1.045
Real estate services	4,841	5.4	5,475	4.9	1.131
Business & personal services	2,051	2.3	2,564	2.3	1.250
Imputed bank service charge *	-2,116	-2.4	-2,113	-1.9	0.999
Government services	4,259	4.8	4,473	4.0	1.050
Private non-profit institutions	386	0.4	390	0.3	1.010
Import duties	3,982	4.5	5,486	4.9	1.378
GDP	89,400	100.0	112,630	100.0	1.260

Note: \* evaluated charges without actual transactions.

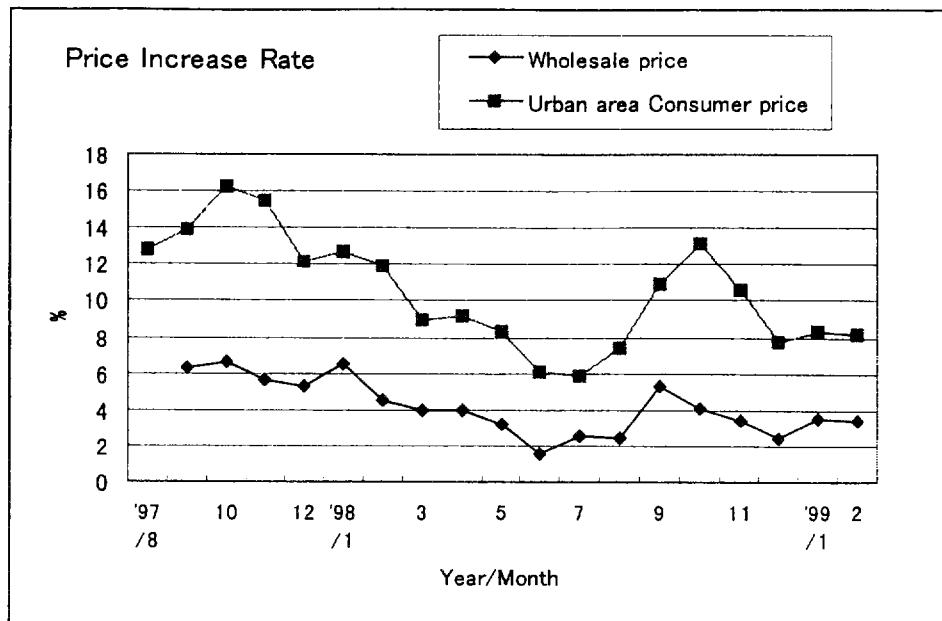
Source: Statistical Yearbook of Turkey 1997, SSI (State Statistics Institute, Prime Ministry Office, Republic of Turkey)

The GNP growth rate in 1998 is expected to be 4.5%, though the actual GDP growth rate in the first nine months is 3.6%.

## b.2 Prices

Due to the high inflation, which is one of the anxieties in Turkish economy, wholesale price index went up by 76.0% and consumer price index in urban area increased by 80.4% in 1996 against those of previous year. This is because the price increased for public utilities such as electricity and water supply at the beginning of 1996, which have been controlled before the general election held at the end of 1995, and Turkish Lira fell. This trend continued in the first half of 1997 and wholesale price index increased by 81.0% and consumer price index in urban area in 1997 increased by 85.7%, resulting in worse condition than those of 1996. But the rates started to improve gradually after October, 1997 onwards.

In December of 1998, wholesale price index went up by 54.3% and consumer price index in urban area increased by 69.7% against those of December of 1997.



Sources: Monthly Bulletin of Statistics August 1998, SSI

Figure 1-2: Price Increase Rate

### b.3 Public Finance

The deficits of public finance, which is one of the main causes of high inflation, reached 1,946 trillion TL in 1997, which was 1.6 times of that of 1996. This is due to the increase of public expenditures incurred by the increase of public officers' wages and of payment for the interest of state bond. Finance of public sector in Turkey is comprised of central government, state enterprises, local administration, funds and social security. The share of public expenditures within GNP has increased to 30.8% in 1996 from 26.1% in 1995. The share of revenues within GNP has also increased to 21.8% in 1996 from 20.9% in 1995. Although the share of revenues within GNP in 1997 was planned to be 27.4% and that of expenditures to be 27.8% in order to reduce the financial deficit, in reality, the share of revenues was estimated to be 21.8% and that of expenditures to increase to 31.3%.

As a result, the loan request taking into account the revaluation of assets reached 2,302 trillion TL in 1997, which was 1.7 times of that of 1996. The majority of the requests were made for the consolidate budget. The other public finance such as State Financial and Economic Enterprises (SEE) and local administration generated a surplus in 1997 contributing in the reduction of such request.

Table 1-2: Public Sector Cash Balance and Loan Request (1993-1997)

	Unit	1993	1994	1995	1996	1997 Plan	1997 Actual (Estimate)
Cash Balance	trillion TL	-200.2	-204.5	-315.5	-1,192.2	98.2	-1,945.7
Revaluation of assets	trillion TL	-31.8	-100.9	-87.8	-171.6	-203.1	-356.5
Loan request	trillion TL	232.0	305.4	403.3	1,370.8	104.9	2,302.2
Loan request/GNP	%	11.6	7.9	5.1	9.1	0.4	8.0
- Consolidated Budget/GNP	%	6.3	3.9	3.7	8.4	0.0	7.4
- Non-financial SEEs*/GNP	%	3.5	1.9	-0.7	0.1	0.2	1.0
- Funds/GNP	%	0.8	0.9	0.6	0.1	-0.2	0.2
- Other Public**/GNP	%	1.0	1.2	1.5	0.5	0.4	-0.6

Note: \* Non-financial SEEs (State Economic Enterprises)

\*\* Financial SEEs, local administration and social security organisations

Source: Annual Report 1997, CBRT (The Central Bank of the Republic of Turkey)

Regarding the situation of the consolidated budget, the following can be pointed out.

- The revenue has slightly increased accounting for more than 20% of GNP in 1997. As a result, balance of primary budget is almost zero.
- The increase of tax revenues is remarkably big comparing with that of 1993.
- However, comparing with 1995, increase rate of the primary expenditure such as personnel expenses is higher than that of revenue.
- As a result, the budget balance is worse than that of 1995 and compared with GDP in 1995, it reached almost double in 1997.

Table 1-3: Changes in Consolidated Budget (1993-1997)

	Unit	1993	1994	1995	1996	1997
Total Revenue/ GNP (A)	%	17.6	19.2	17.7	18.3	20.1
- Tax Revenue/ GNP	%	13.2	15.1	13.8	15.2	16.3
- Other Revenues/ GNP	%	4.4	4.1	3.9	3.1	3.8
Total Expenditure/GNP (B)	%	24.3	23.1	21.8	26.2	27.7
- Primary Expenditures/GNP (C)	%	18.5	15.4	14.6	16.3	19.8
- Interest Payments on Domestic Debt/GNP	%	4.6	6.0	6.1	8.8	6.8
- Other Expenditures/GNP	%	1.2	1.7	1.1	1.1	1.1
Budget Balance	Trillion TL	- 134.0	- 152.0	- 316.6	- 1,238.0	- 2,180.8
Budget Balance/GNP (A-B)	%	- 6.7	- 3.9	- 4.1	- 7.9	- 7.6
Primary Budget Balance/ GNP (A-C)	%	- 0.9	3.8	3.1	2.0	0.3

Note: GNP is forecast by State Planning Organisation.

Source: Annual Report 1997, CBRT

#### b.4 International Balance of Payments

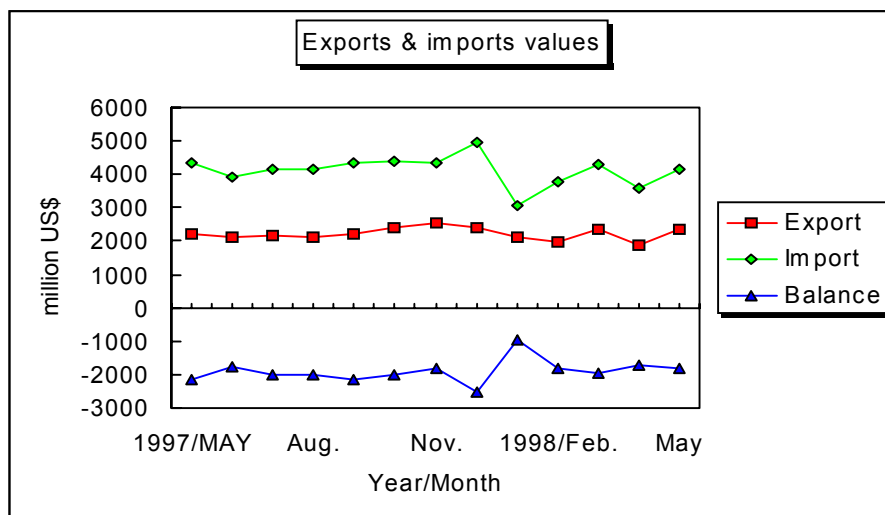
The trade balance of 1997 was rapidly deteriorated due to the influence of the stagnancy of export in spite that the amount of import has increased. The

improvement of capital account turned total overall balance of payments surplus. The trade balance in 1998 slowly shows the sign of the improvement.

Table 1-4: Changes in Balance of Payment (1994-1997)

	1994	1995	1996	1997	1997/94
Export (FOB)	18,390	21,975	32,303	32,631	1.774
Import (FOB)	22,606	35,187	41,935	48,097	2.128
Trade Balance	- 4,216	- 13,212	- 9,632	- 15,466	3.668
Invisible trade balance	6,847	10,873	8,182	12,716	1.857
Current account balance	2,631	- 2,339	- 1,450	- 2,750	
Capital account	- 4,194	4,643	8,740	8,616	
Errors & omissions	1,769	2,354	- 2,745	- 2,522	
Total overall balance	206	4,658	4,545	3,344	16.233

Source: Statistical Yearbook of Turkey 1997, SSI  
Monthly Bulletin of Statistics August 1998, SSI



Source: Monthly Bulletin of Statistics August 1998, SSI

Figure 1-3: Export & Import Values

### b.5 Employment

With active economic activities of private sector, the unemployment rate is slowly decreasing.



Table 1-5: Fluctuations in Unemployment Rate

unit : %

	Unit	1995/October	1996/October	1997/April
Labour Force	1,000	22,901	23,030	22,537
Woman/L. Force	%	30.4	29.6	29.1
Employment	1,000	21,378	21,698	21,201
Unemployment person	1,000	1,522	1,332	1,336
Unemployment rate	%	6.6	5.8	5.9
Urban Area	%	10.0	9.3	9.2
Rural Area	%	3.9	2.9	3.2
Underemployment	%	6.3	6.2	5.1
Inactive labour	%	13.0	12.0	11.0

Source: Annual Report 1997, CBRT

### c. Major Economic Indicators

The major economic indicators of Turkey are summarised in Table 1-6.

Table 1-6: Major Economic Indicators (1993-1997)

	Unit	1993	1994	1995	1996	1997
Nominal GNP	trillion TL	1,997	3,888	7,855	14,978	29,393
Real GNP Growth Rate	%	8.1	-6.1	8.0	7.1	8.3
Per capita GNP *	US\$	2,611	1,846	2,547	2,499	2,604
Central Government Deficit/GNP	%	6.7	3.9	4.1	7.9	7.6
Consumer Price Index	% Increase	66.1	106.3	93.6	79.4	85.0
Unemployment Rate	% in April	7.5	8.4	6.6	6.3	5.9
External Debt	million US\$	67,356	65,601	73,278	79,767	92,216
Average US\$ Exchange Rate	TL/US\$ in October	12,967	35,200	50,803	97,306	180,655
Population **	1,000	58,973	59,831	60,701	61,584	62,480

Source: Statistical Yearbook of Turkey 1997, SSI  
Monthly Bulletin of Statistics August 1998, SSI  
Annual Report 1997, CBRT  
\*Calculated by JICA study team according to the following formulation;  
Nominal GNP/Population/Exchange rate  
\*\*Estimated by JICA study team based on the population census in 1990  
(56,473,000) and in 1997 (62,480,000) using average increasing rate.

## 1.2 Adana Greater Municipality (GM)

### 1.2.1 Target Area

#### a. Division of Municipalities

This study will collectively refer to the municipalities in the Republic of Turkey as the “*Belediyesi*”, which means municipality in Turkey. As shown in the table below, the belediyesi is divided into three categories. Greater municipalities (GM) refer to large cities established in 1984, which constitute more than two district municipalities (DM). DM refers to autonomous municipalities within the GM. Although the GM

and DM are each assigned their own areas of jurisdiction, some administrative functions overlap and cause confusion. A single municipality (SM) refers to municipalities with the combined administrative functions of a GM and a DM, and those adjacent to a GM require the GM's approval for budgetary plans. Consequently, for convenience, this study divides an SM into a single municipality (SM) and an adjacent municipality (AM).

Table 1-7: Division of Municipalities

Municipality	Item	Turkish	Study Terminology
Greater municipality		Buyuksehir Belediyesi	Greater municipality (GM)
District municipality		Belediyesi	District municipality (DM)
Municipality	Single municipality	Belediyesi	Single municipality (SM)
	Single municipality adjacent to the GM	Belediyesi	Adjacent municipality (AM)

#### b. Study Area & Target Area

As indicated in the IC/R (Inception Report), the study will cover the provinces of Adana and Icel. In accordance with the results of the discussion on the IC/R, which are recorded in the M/M on the IC/R, the study will focus on the greater municipalities of Adana and Mersin. Accordingly, the target areas are under the jurisdiction of these two greater municipalities, as shown in Figure 1-6 and Figure 1-11, respectively. Further, the target area does not include the municipalities adjacent (AM) to Adana and Mersin GMs.

### 1.2.2 Natural Conditions

#### a. Physical Features, Climate and Vegetation

Turkey has an area of approximately 780,000km<sup>2</sup>, and is located between 35° and 42° of north latitude, and 25° and 45° of east longitude. While the majority of the country, referred to as Anatolia, is in the Asian continent, 3% lies in the European continent. The latter is separated from Anatolia by the Bosphorous, the Sea of Marmara, and the Dardanelles Strait. The national capital is Ankara, which is situated almost at the centre of Anatolia.

As shown in Figure 1-4, Turkey is bordered on the east by Iran, Armenia and Georgia, by Iraq, Syria and the Mediterranean Sea on the south, by Bulgaria, Greece, and the Aegean Sea on the west, and the Black Sea on the north. Almost 2/3 of Turkey is bordered by water.



Figure 1-4: Map of Turkey

Asiatic Turkey includes a belt of mountain ranges with a mean elevation of about 1100m dominating the north and south and encircling the Central Anatolian Plateau. North of the plateau are the Pontic Mountains, and to its south rise the Taurus Mountains. Lowlands are mainly in coastal areas.

Turkey has a rugged terrain that was formed in relatively recent geological times, and this region of the Earth's crust is quite active as evidenced by frequent tremors and occasionally destructive earthquakes. The following details the four climatic regions of the country:

- Low southern and western coastal region  
Generally humid and characteristically Mediterranean climate: hot, dry summers, and mild, rainy winters. The average annual rainfall in this region is 650mm. The mean annual temperature is about 20°C, ranging from an average of 11°C in the coldest month to 29° C in the warmest month.
- Black Sea coast  
Warm summers, mild winters and a fair amount of rainfall throughout the year: average annual rainfall of 2,400mm. The mean annual temperature is about 14°C, ranging from an average of 7 °C to 23 °C.
- North-eastern Highlands  
Warm summers but severely cold winters. The mean annual temperature is about 4 °C, with a monthly average ranging from -12 °C to 18 °C.
- Central Anatolian Plateau  
Hot, dry summers and cold, moist winters. The mean annual temperature is about 12 °C, the highest being 0 °C and the warmest at 23 °C on average.

Large areas in the south, west, and Northwest are covered by vegetation typical of the Mediterranean region, consisting mainly of thick, scrubby underbrush in the lowlands and deciduous or coniferous forest at higher altitudes up to the timberline. The humid northern areas of the country are the most densely wooded regions of Turkey. On the eastern Black Sea are subtropical forests, while the Anatolian interior is made up of steppes. Forests, mostly oak and coniferous forests, are observed only on elevated parts.

**b. Adana**

**b.1 Location and Area**

The province of Adana is located in fertile Cukurova plain at the southern part of Turkey. It is the most developed city in the Mediterranean Region, with its very rapidly developing trends in agricultural and industrial sectors.

Adana is located on the Mediterranean coastline at 34.5° east longitude. The city is bordered by the town of Tarsus in the west, Taurus Mountains in the north, the town of Seyhan in the east, and the Mediterranean Sea in the south. Figure 1-5 shows the location of the project area.

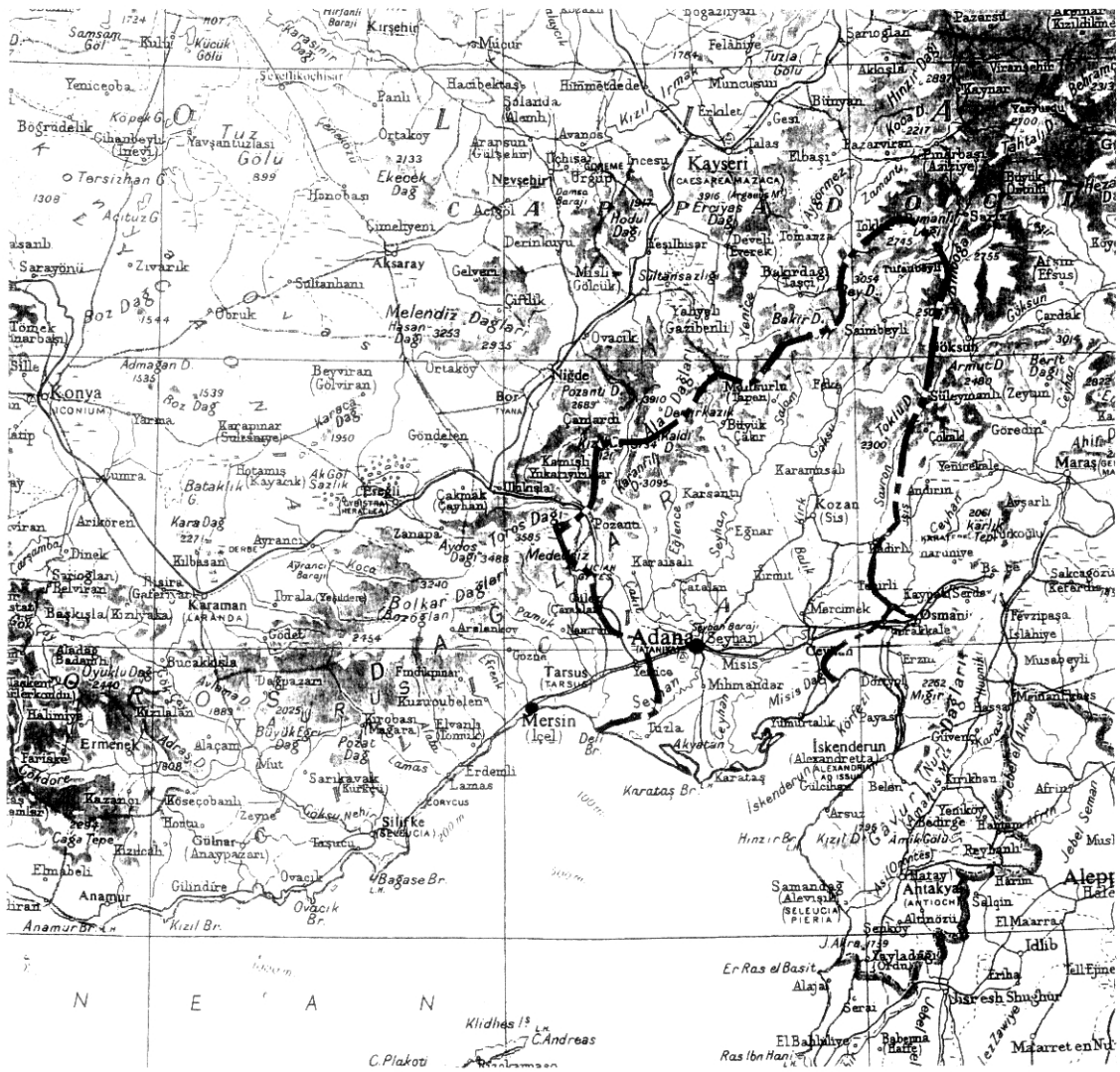


Figure 1-5: Map of the Study Area (Adana Province)

## b.2 Climate

The climate of Adana shows the typical characteristics of the Mediterranean, that is hot and dry in summer, mild and rainy in winter. The average temperature is 18.8 °C, with the highest at 25.2° C and the lowest at 13.1 °C. The relative mean humidity is 66% and the average annual precipitation is 647.1 mm. The largest amount of rainfall falls in December. July gets the least amount of rainfall.

The wind predominantly hails from the north, northwest, northeast, south, southeast and southwest. The annual average wind velocity is 2.6m/sec. The city generally experiences an average of 7.3 stormy days in February and March. The Statistical Year Book (1996) of Turkey sites the following climatic information for Adana:

- Average altitude: 20m
- Annual average temperature: 18.8 °C
- Highest and lowest temperature: 45.6 °C and -8.4 °C, respectively

- Average hours of sunshine (annual): 7.54 hrs. (4.38 in winter and 11.22 in summer)
- Average relative humidity (annual): 66% (69% in April, 60% in October)
- Total precipitation: 647.1mm
- Number of days with precipitation: 76.4
- Daily maximum precipitation: 125.5mm (October 1996)
- Number of days with frost: 6.1 days

The basic plant type in Adana is Maquis, the characteristic vegetation of the Mediterranean climate. In higher areas (800-1,200m) the forests are dominant, covering 29.46% of the entire province. The plains are used for agriculture and covers 39.1% of the province.

### b.3 Geographic and Geological Conditions

The geology of the Cukurova Region is alluvial and the soil throughout the region is class III soil due to its high humic content. Although the groundwater table is not very high, a great part of the province depends on groundwater for their drinking water supply. The aquifer should be adequately assessed by conducting hydro-geological measurements.

## 1.2.3 Social Conditions

### a. Administration

#### a.1 Area

Adana Greater Municipality was established in 1987, after the adoption of greater municipality system in 1984 in Turkey. It covers an area of 8,878 ha; 195,200ha if the adjacent areas are included. It consists of two district municipalities, Seyhan and Yuregir, and 15 town municipalities and 105 villages in the adjacent area. Table 1-8 shows an outline of Seyhan and Yuregir district municipalities in 1990.

Table 1-8: District Municipalities of Adana (1990)

DM	Area (ha)	Population	Density
Seyhan	6,035	642,321	106.4
Yuregir	2,843	273,829	96.3
Total	8,878	916,150	103.2

Source : Economic and Social Indicators, Adana, State Statistics Institute (SSI), 1997

As reflecting its long development process, both districts have a high population density. Like in all other Turkish cities, district municipality is divided into lesser sub-districts (*mahalles*). Seyhan has 70, and in Yuregir 36 sub-districts, however, these are not municipal organisations, but connected directly to the provincial government and the central government. Surrounding these two district municipalities, there spread vast adjacent areas, especially east of Yuregir. Adjacent areas are first divided into sub-districts (*bucak*). And on these sub-districts float town municipalities and villages. Table 1-9 summarises the basic data of these adjacent areas. The total population of Adana in 1990, including its adjacent area, is 1,041,650.

Table 1-9: Adana Adjacent Areas (1990)

DM	Sub-district	Population	Area (ha)	Density
Seyhan	Central	29,800	35,965	0.8
Yuregir	Central	37,410		
	Dogankent	25,975		
	Yakapinar	32,315		
	Subtotal	95,700	150,357	0.6
Total		125,500	186,322	0.7

Source : Economic and Social Indicators, Adana, SSI, 1997

## a.2 Administration

### a.2.1 Adana Greater Municipality

The urban services within the Adana metropolitan centre are politically, legislatively and administratively managed under the “Greater Municipality” status. Within the structural context of the Adana Greater Municipality, two municipalities are active, namely Seyhan and Yuregir District Municipalities. The administrative organisation of these municipalities described below, carry the characteristics of a prevalent and traditional scheme adopted by the rest of the municipalities in Turkey with trivial variations.

The Mayor of the Adana Greater Municipality carries out office operations with the Post- Secretariat. The Board of Inspectors and Legislative Advisors are the independent units attached directly to the Mayor. The General Secretary is the paramount of hierarchically organised administrative staff of the Greater Municipality, who is assisted by four Deputy General Secretaries. Within the framework of a certain task assignment, as envisaged by the Mayor, respective Deputy Secretaries are responsible for the supervision of the activities of individual departments.

The Departments of the Adana Greater Municipality are:

- (i) Official Correspondence and Decisions
- (ii) Personnel Recruitment and Training
- (iii) Research, Planning and Coordination
- (iv) Accounting
- (v) Administrative and Fiscal Affairs
- (vi) Enterprises and Dividends
- (vii) Urban Development and Environmental Protection
- (viii) Public Health and Social Services
- (ix) Civil Works
- (x) Machinery Logistics, Maintenance and Repair

Each department is headed by a Department Head with respective subordinates.

The Department of Official Correspondence and Decisions includes two subordinate sections: Official Documents Registry as well as Protocol and Archives. Similarly, the Personnel Recruitment and Training Department is also composed of two subordinate sections: Personnel Records as well as Training and Employee Relations.

Research, Planning and Coordination Department is an important unit possessing subordinate sections: Research, Development and Investment Planning; Data Processing; Infrastructure Coordination Board, Transport Coordination Board; and Public Relations. Accounting Department, on the other hand, has Revenues; Expenditures; Budgeting, Programming and Fiscal Supervision ; and lastly Credits and Dividends.

The subordinates of the Department for Administrative and Fiscal Affairs are constituted by Procurement and Contracting, Store Management, Administrative Affairs, and Civil Defence sections. The Enterprises and Dividends Department generally deals with commercial activities of the Adana Greater Municipality and is supported by Wholesale Market, Bus Terminal and Parking Places, Local Public Transportation, Commerce and Dividends Sections.

The Cleansing Section is situated within the Department of Urban Development and Environmental Protection, along with Environmental Protection and Quality Control, Municipal Police and Fire Fighting Sections.

The Department for Public Health and Social Services covers Public Health, Licensing, Veterinary Services, Cemetery, Social and Cultural Affairs Sections. Urban Development Department has further subordinate sections engaged in physical planning of Adana, such as: Urban Planning; Implementation; Mapping and Surveying; Project Development; Green Areas; Squatter Zones and Mass Housing; as well as Real Estate and Expropriation. Civil Works Department encompasses Construction and Maintenance; Street Construction; Registry and Numbering; Traffic and Sign Sections. The Department of Machinery Logistics, Maintenance and Repair comprises: Asphalt and Concrete Production; Machinery Maintenance and Repair; Machinery Operations and Insurance Sections.

### **a.2.1 Seyhan District Municipality**

The Seyhan District Municipality is governed by the Mayor and three deputy mayors. The Secretariat of the Mayor's Office and the Marital Affairs are the main units which are directly attached to the Mayor, who is also in close collaboration with advisors. One of the three deputy mayors is responsible for:

- Commercial relations
- Data processing
- Public health
- Veterinary services
- Municipal police
- Revenues directorates

The second deputy mayor is in charge of

- Personnel recruitment and training
- Official correspondence and decisions
- Legislative affairs
- Accounting
- Board of Inspectors
- Urban development
- Real estate and mapping



- Administrative and fiscal affairs
- Cultural and social affairs
- Expenditures directorates

The third deputy mayor supervises:

- Street construction
- Cleansing
- Procurement
- Machinery logistics, maintenance and repair
- Green areas directorates

### **a.2.2 Yuregir District Municipality**

The Yuregir District Municipality is governed by a mayor and three deputy mayors. The Secretariat of the Mayor's office, advisors, legislative affairs directorate, board of inspectors, municipal police and marital affairs directorate are the units, which are directly attached to the mayor. One of the three deputy mayors is responsible for

- Correspondence
- Accounting
- Expenditures
- Revenues
- Commercial relations
- Logistics
- Personnel recruitment and training
- Real estate directorates

The second deputy mayor is in charge with the supervision of the following directorates:

- Civil works
- Urban development
- Mapping and surveying
- Green areas
- Repair shop

The third deputy mayor supervises:

- Public health
- Medical services
- Veterinary services
- Administrative affairs
- Public relations
- Vocational training
- Culture and sports
- Civil defence
- Street construction
- Cleansing departments

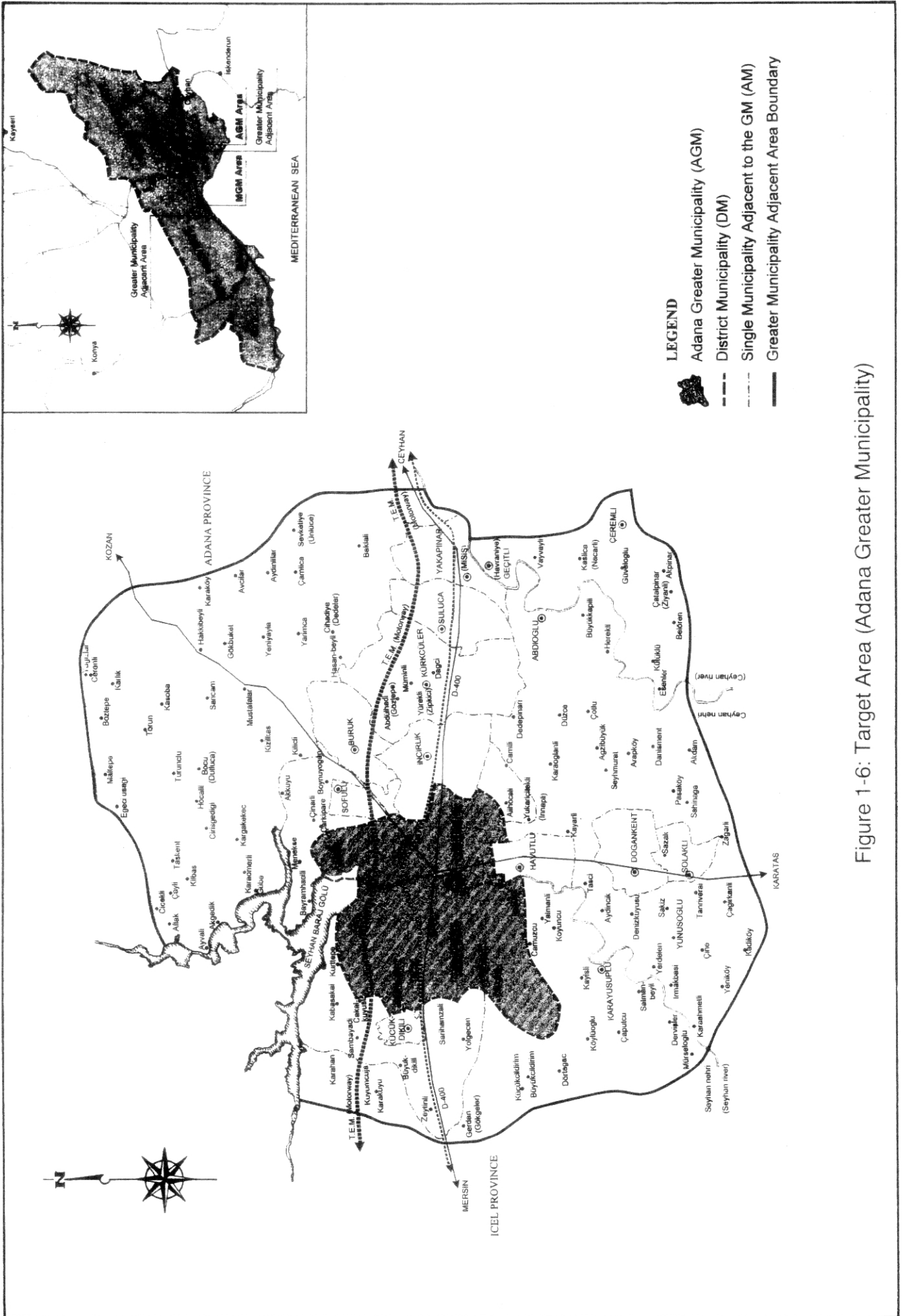


Figure 1-6: Target Area (Adana Greater Municipality)

## **b. Community**

Like most of other countries in the modern world, district community activities are not so active in Turkey. But it can be pointed out that the inside apartment houses, *kapici* system is still working and it may be said that the most powerful community activity. Almost all apartment dwellers are hiring *kapici*, or caretaker, with dwellers common expense. *Kapici* is cleaning staircase, elevator, and other common spaces, sometimes even sidewalks in front of the apartment. Moreover, he or she collecting garbage from each room and bringing down to the apartment's garbage depot or public dust bin, and keeping it and around clean. This is a quite Turkish tradition, and has a meaningful way of keeping neighbourhood clean. When social education will be programmed, *kapicis* should be the first people to be engaged.

## **c. Public Education**

The MoE, in cooperation with the MoD, has its programme on elementally school service. Once a year, their engineers and specialist visiting schools and explaining the importance of environmental conservation, including garbage problems. They prepare some publications especially for school children with year of about ten. Their lecture is carefully done in a soft atmosphere and discussing frankly with children. In some schools, they are collecting waste paper for recycling, however, this kind of action is still with small scale and only a few examples. Beside this lecture, school gives classes concerning with environment problems and garbage problems twice a week.

## **d. Public Health**

### **d.1 Municipality Waste**

#### **d.1.1 Collection**

Greater/district/town municipalities are working very earnest in garbage collection, even in the slums (*gecekondur*), and road and public space cleansing. Thus, the city's impression through visual observation is quite good. Municipalities extending collection service to about 95% of the residents. Mechanised operation is adopted for collection works as a means of improving labour efficiency, reducing worker injuries, and reduce waste collection cost.

Municipalities and/or the residents set communal garbage bins on roads, in distance of 30-100 m. Where the communal dustbin is far or not set, each family prepares their own oil barrels. These systems are seen in the slums (*gecekondur*), except most recent developed areas. Collection time seems to be a problem, however, until night time, bins and cans filled with garbage can be observed, especially deep in sub-district areas. In detached housing areas with narrow roads, where collection truck is hard to enter, sometimes it is seen neighbours are co-operating bring their garbage to a truck. But in some low income sub-districts, illegal dumping in vacant land can be seen, although rare.

Roads and public space cleansing is a work of greater/district/town municipalities. By their effort, these space are respectably clean. Only one problem is that the time of cleansing is not regular. Sometimes we see working staff are working up to near midnight.

### **d.1.2 Composting**

Composting is not carried out in Adana Greater Municipality.

### **d.1.3 Landfill**

The health and safety of the workers at landfills is crucial in the operation of landfill.

There are several scavengers living with children in the landfill site. They work together with heavy equipment for scavenging work. Attention must be given to the scavengers not to be injured during landfill works.

### **d.2 Medical Waste**

Medical waste is separated into 3 categories namely infectious, glass, general at source in the medical institutions

Containers for infectious medical waste are locked in order to avoid people's direct contact at central collection point.

Infectious medical waste collection service is given to major medical institutions by District Municipality. Seyhan District Municipality(SDM) has a collection vehicle exclusively used for infectious waste. However, Yureigh District Municipality(YDM) does not have a special collection vehicle due to shortage of vehicles, which implies a potential contamination of general medical waste. The crew is composed of 2 workers, one is a driver and the other is a collection worker. Attention is given to the types of protective clothing and boots and puncture-proof gloves supplied to the workers.

No intermediate treatment of infectious medical waste is conducted in Adana Greater Municipality.

Final disposal has been conducted in the Sofulu Disposal Site by open dumping. Red colour plastic bag for infectious medical waste is exposed randomly without any cover.

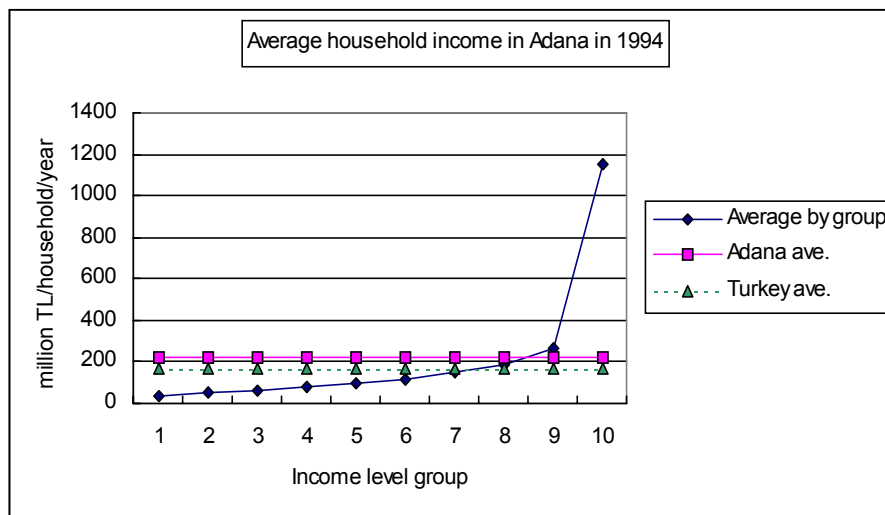
### **e. Employment**

Unemployment rate per province is not known due to lack of relevant basic data after population census was carried out in 1990. As of 1990, the unemployment rate of Adana Province was reported to be 6.05%, while the average unemployment rate on the national basis was 6.4% (these figures show unemployed persons seeking for job). While unemployment rate for male was reported high at 9.24%, that for female was reported as 2.87%. The rate of unemployed persons of 12 year old and over was reported as 41.0% in Adana Province whereas it was 36.0% on national level.

### **f. Income Level**

According to 1994 Household Income Distribution Study carried out by SSI, average income per household in Adana Province was 220.1 million TL (equivalent to US\$ 5,830), which was about 1.3 times of the average income per household in Turkey of 165.1 million TL (equivalent to US\$ 4,370). However, only top 30% earns more than average income of national level and low ranked 50% earns less than 104.0 million TL (equivalent to US\$ 2,750).

On national level, the average income per household in urban area was 202.5 million TL (equivalent to US\$ 5,360) while that in rural area resulted in 117.2 million TL (equivalent to US\$ 3,100). The discrepancy between these two are quite big. The ratio between urban population and non-urban population was approximately 4:1 in Adana Province in 1990.



Source: 1994 Household Income Distribution Study, SSI

Figure 1-7: Average Household Income in Adana

## 1.2.4 Population

### a. Population Provided by the SSI

Table 1-10 below shows the population growth in Adana; the figures do not include the adjacent areas. As Adana is the regional centre of the Cukurova region, it saw a rapid growth in its population. Most part of population increase was caused by immigration from the southeastern part of Turkey. Most migrants settled in slums (*gecekondü*), especially in fringe area (from southern to western part) of Seyhan before, and in the southern to western part of Yuregir. The growth rate in Yuregir is lower than that of Seyhan recent years, because of traffic access problem to the Central Business District (CBD).

Table 1-10: Population Growth of Adana GM (estimated by JICA)

Year	Seyhan			Yuregir			Total	
	Population	(%)	Growth Rate (%)	Population	(%)	Growth Rate (%)	Population	Growth Rate (%)
1955	-	-	-	-	-	-	168,628	-
1960	-	-	-	-	-	-	231,548	6.5
1965	-	-	-	-	-	-	289,919	4.6
1970	-	-	-	-	-	-	347,454	3.7
1975	-	-	-	-	-	-	475,384	6.5
1980	-	-	-	-	-	-	574,515	3.9
1985	-	-	-	-	-	-	777,554	6.2
1990	642,321	70.1	-	273,829	29.9	-	916,150	3.3
1997	742,619	71.8	2.1	290,952	28.2	0.9	1,033,571	1.7

Source: Data on 1955 - 90 from Adana M/P and Data on 1997 from general population survey done by SSI (State Statistics Institute) of Adana Provincial Office in 1997.

Note: Seyhan and Yuregir became independent district municipalities in 1987. Further detailed data, those of sub-districts, are not available at this moment. According to the census survey in 1990, number of household in Adana GM totals 181,198 and the average household size is 5.1/household. In recent years, it is said that the size decreased its scale in parallel with decrease in birth rate and the nuclearisation of families, but present exact number is not available.

The growth rate used to fluctuate a lot, although it has stabilised in recent years (1990-1997). In Adana GM average growth rate went down to 1.7%. It is estimated that this phenomenon is a transitory one, because of *gecekondur* construction control.

The ongoing Yeni Adana Project, the North Yuregir Housing Project currently under examination, and large scale industrial construction will invite much more migrants from the southeastern part of Turkey. And the importance of Adana in Cukurova region, and its economic and industrial growth may make growth rate recovering.

On the other hand, the representatives of AGM expressed concern about these figures due to the following:

- Since the founding of the republic, Adana has exhibited a much higher rate of increase than what was indicated in the last census (1.7% is too low compared to past actual figures and future population estimates).
- During the period 1990-1997, the years of the previous and last census, the municipality has had a great number of migrants from southeastern provinces, as evidenced in the increasing number of water bills issued by a company of the AGM. Furthermore, the overall municipal services has increased albeit the same cannot be said with regards to the degree of resident satisfaction over the services in question.
- Although the migrants left due to discomfort, they believe they will soon be returning to their respective places of origin. As the income from the central government is rated according to population, a great number of migrants have left Adana for a few days in order to be counted in their own cities and ensure themselves with a higher allocation in the future.
- In view of extending the municipal territory by 2020, the population forecast should take some of the adjacent municipalities – which will be incorporated into the Adana GM territory – into consideration.

#### **b. Population Deduced by the Current Waste Stream**

Based on the general population survey conducted by the SSI (State Statistics Institute) of Adana Provincial Office in 1997 the population of Adana GM in 1998 is estimated at 1,091,451.

The study team conducted a comprehensive WACS (waste amount and composition survey) in summer, i.e., waste discharge ratio survey, recycling amount survey and final disposal amount survey at the existing Sofulu dump site. Based on the WACS and the population in 1998, 1,091,451, the daily discharge amount is estimated at 737 ton/day. However, the daily discharge amount in Adana is calculated at 805 ton/day based on the disposal amount at the Sofulu dump site. This contradiction may be due to:

1. Some errors in the WACS such as waste discharge ratio, recycling amount, disposal amount, etc.
2. Some errors in the number of each discharge source such as population, number of restaurants, etc.
3. The population during the day, which includes visitors to the city, generates extra amount of waste.

The above-mentioned matters was examined and reviewed in the second and third study work in Turkey. Although the population provided by the SSI is an official one, there is an argument on the population of the target area and there are several figures on it. Then temporarily the team sets up the population of Adana GM in 1999 at 1,196,620 for this report in order to accord the disposal amount at the Sofulu dumpsite. Applying this figure the population growth of Adana GM is changed as shown in the table below.

Table 1-11: Population Growth of Adana GM (estimated by JICA)

Year	Seyhan			Yuregir			Total	
	Population	(%)	Growth Rate (%)	Population	(%)	Growth Rate (%)	Population	Growth Rate (%)
1955	-	-	-	-	-	-	168,628	-
1960	-	-	-	-	-	-	231,548	6.5
1965	-	-	-	-	-	-	289,919	4.6
1970	-	-	-	-	-	-	347,454	3.7
1975	-	-	-	-	-	-	475,384	6.5
1980	-	-	-	-	-	-	574,515	3.9
1985	-	-	-	-	-	-	777,554	6.2
1990	642,321	70.1	-	273,829	29.9	-	916,150	3.3
1999	859,170	71.8	4.2	337,450	28.2	3.1	1,196,620	3.8

Source: Data on 1955 - 90 from Adana M/P and Data on 1998 estimated by the study team.

Note: Seyhan and Yuregir became independent district municipalities in 1987

Consequently the team elaborates a current waste stream in Adana as presented in the section 3.1.1.

### 1.2.5 City Development Master Plan

It is said that in 1993, Adana GM began to prepare its own master plan. But only an analysis report with some projects, such like metro project, and a set of 1/25,000 maps were accomplished. Succeeding this study, in 1997, the ADANA-North Yuregir Urban Development Project Study was completed. This is the present so called master plan. As understandable from its title, grand development concept, total land use and population framework are not mentioned here. Thus, the city master plan target year and exact study area is not clarified here. The second part describes on the project study on the North Yuregir Housing Project, mentioning their land use and population framework, however, the study's situation that is under detailed study does not clarify the target year. But through interview, it is understood that they have strong wish to complete by 2020, In this sense, this is a unique master plan report. On housing projects and transportation project, which affect much on the urban development, it will be mentioned in the section of urban structure later.