JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE MINISTRY OF ENVIRONMENT
THE REPUBLIC OF TURKEY

THE STUDY
ON
REGIONAL SOLID WASTE MANAGEMENT
FOR
ADANA-MERSIN
IN
THE REPUBLIC OF TURKEY

FINAL REPORT
VOLUME II

MAIN REPORT

JANUARY 2000

KOKUSAI KOGYO CO., LTD.

PREFACE

In response to a request from the Government of the Republic of Turkey, the Government of Japan decided to conduct a Master plan and feasibility Study on Regional Solid Waste Management for Adana-Mersin in the Republic of Turkey and entrusted the study to the Japan International Cooperation Agency (JICA).

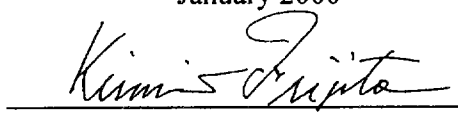
JICA selected and dispatched a study team headed by Mr. Susumu Shimura, Kokusai Kogyo Co., Ltd. to Turkey, four times between July 1998 to January 2000. In addition, JICA set up an advisory committee headed by Mr. Takashi Ikeguchi, Section Chief of Waste Disposal Engineering Section, Engineering of Waste Management Department, National Institute of Public Health, Ministry of Health and Welfare between July 1998 to January 2000, which examined the study from specialist and technical points of view.

The team held discussions with the officials concerned of the Government of Turkey and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to the promotion of this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of Turkey for their close cooperation extended to the study.

January 2000



Kimio Fujita

President

Japan International Cooperation Agency

January 2000

Mr. Kimio Fujita
President
Japan International Co-operation Agency

Letter of Transmittal

Dear Mr. Fujita,

It is our pleasure to submit to you the report on the Study on Regional Solid Waste Management for Adana-Mersin in the Republic of Turkey.

The report consists of three components: the study on the present Solid Waste Management (SWM); the formulation of the SWM master plan until the year 2020; and the feasibility study on the priority projects drawn from the master plan.

During the study on the present SWM, six field investigations were conducted, and existing data and information of various sources were collected and examined. By doing so, the current status of SWM in Adana-Mersin was thoroughly understood, and the issues to be considered identified.

The master plan was formulated with the principal goal of "creating a closed-loop society on solid waste in Adana and Mersin Greater Municipalities by the target year 2020" through waste minimisation (the control of waste generation as much as possible), recycling (the recycling of generated waste as much as possible), and waste stabilisation (the safe disposal of wastes that cannot be recycled in an environmentally friendly manner).

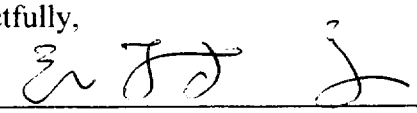
The feasibility study was carried out on five priority projects that should be implemented from 2000 to 2005: the introduction of a separate collection system; the construction of sorting and composting plants; and the construction of municipal and medical solid waste final disposal sites. From the technical, the social, the environmental, the financial, and the economical assessments of these projects, we concluded that they would be viable and sound in every aspect.

During the study we conducted two pilot projects, with the close co-operation of the Turkish counterparts, in order to identify and to overcome the difficulties that may arise in the realisation of the master plan: Experiment of Sofulu Disposal Site (a open dump site) Improvement and Experiment on Separate Collection/Compost Quality Improvement. We also held workshops on technology transfer to publicise the results of the study. These activities were reported in the local media.and attracted much attention from the general public.

We would like to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs, and the Ministry of Health and Welfare of Japan. We would also like to extend our deep appreciation to the Ministry of Environment of Turkey, Adana and Mersin Greater Municipalities, the Embassy of Japan, and the JICA office in Turkey for their vital co-operation during the implementation of our study in the Republic of Turkey.

Last but not least, we hope that the output of our study presented here will contribute to the improvement of SWM and the creation of a closed loop society.

Respectfully,



Susumu Shimura
Team Leader
The Study on Regional Solid Waste Management
for Adana-Mersin in the Republic of Turkey

The Study on Regional Solid Waste Management for Adana-Mersin in the Republic of Turkey

List of Volumes

Volume I	Executive Summary
Volume II	Main Report
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This is the Main Report.

In this Report, the project cost is estimated by using the price as of the end of May 1999 and the exchange rate of US$ 1.00 = 120.0 Japanese Yen = 407,000 Turkish Lire(TL.).

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PART II The Solid Waste Management Master Plan

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List of Abbreviations

ACC	Agricultural Credit Cooperative
AGM	Adana Greater Municipality
AM	Adjacent Municipality
ASG	Apparent Specific Gravity
BoP	Bank of Provinces
CBD	Central Business District
C/P	Counterpart
DF/R	Draft Final Report
DM	District Municipality
DWAS	Disposal Waste Amount Survey
EIA	Environmental Impact Assessment
GAP	Southeastern Anatolia Project
GDP	Gross Domestic Product
GM	Greater Municipality
GNP	Gross National Product
GRDP	Gross Regional Domestic Product
GSHC	Guven Sitesi Housing Complex
F/R	Final Report
F/S	Feasibility Study
IC/R	Inception Report
IEE	Initial Environmental Examination
IT/R	Interim Report
JICA	Japan International Co-operation Agency
METAP	Middle East Technical Assistance Program
MGM	Mersin Greater Municipality
M/M	Minutes of Meeting
MoE	Ministry of Environment
MoI	Ministry of Interior
MoT	Ministry of Tourism
MoCWR	Ministry of Civil Works and Resettlement
M/P	Master Plan
MSW	Municipal Solid Waste
NEAP	National Environmental Action Plan
NGO	Non Governmental Organisation
O&M	Operation and Maintenance

POS	Public Opinion Survey
P/R	Progress Report
PSA	Province Special Administration
RDA	Regional Development Authority
RDF	Refuse Derived Fuel
SM	Single Municipality
SPO	State Planning Organisation
SDM	Seyhan District Municipality
SSI	State Statistic Institute
S/W	Scope of Work
SW	Solid Waste
SWM	Solid Waste Management
SWMS	Solid Waste Management System
WACS	Waste Amount and Composition Survey
WB	World Bank
YDM	Yenisehir District Municipality