

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DAR ES SALAAM CITY COMMISSION
THE UNITED REPUBLIC OF TANZANIA

**THE STUDY
ON
THE SOLID WASTE MANAGEMENT
FOR
DAR ES SALAAM CITY**

**FINAL REPORT
VOLUME II**

MAIN REPORT FOR THE MASTER PLAN

SEPTEMBER 1997

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JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**DAR ES SALAAM CITY COMMISSION
THE UNITED REPUBLIC OF TANZANIA**

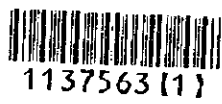
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PREFACE

In response to the request from the Government of the United Republic of Tanzania, the Government of Japan decided to conduct the Study on the Solid Waste Management for Dar es Salaam City in the United Republic of Tanzania and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to Tanzania a study team headed by Mr. Susumu Shimura, KOKUSAI KOGYO CO., LTD., three times between February 1996 to August 1997.

The team held discussions with the officials concerned of the Government of Tanzania, and conducted field surveys at the study area. After the team returned to Japan, further studies were made and the present report was prepared.

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

I wish to express my sincere appreciation to the officials concerned of the Government of the United Republic of Tanzania for their close cooperation extended to the team.

September, 1997



Kimio Fujita
President
Japan International Cooperation Agency

September 1997

Mr. Kimio Fujita
President
Japan International Cooperation Agency

Dear Mr. Fujita

Letter of Transmittal

We are pleased to submit to you the report on the study of Solid Waste Management for Dar es Salaam City in the United Republic of Tanzania.

This report contains the urban environment sanitation study, the solid waste management master plan until the year 2005 and the feasibility study on the first priority projects which cover 39 wards in Dar es Salaam.

The urban environment sanitation study identified the importance of solid waste management in various public services after assessing the present sanitary condition of Dar es Salaam.

The master plan comprises the forecast of future waste generation, planning framework with phased goals / targets / strategies, technical system and institutional system. Since the improvement of the institutional system is required to materialize the master plan and to establish a sustainable solid waste management system, eight items proposed on improvement of the institutional system, including establishing the independent solid waste management authority, were recommended.

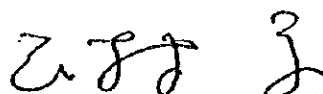
The feasibility study was conducted on the first priority project consisting of improvement of refuse collection and transportation system, construction of the new Kunduchi disposal site, improvement of the maintenance workshop, etc. The project was evaluated from financial, economical, technical, social and environmental views. It found it would be feasible in all aspects.

Four pilot projects were conducted during the study. One of them, the enhancement of public awareness which was so called "Beautify Your City" campaign provoked response from many citizens.

We wish to take this opportunity to express our sincere gratitude to your Agency, the Ministry of Foreign Affairs, the Ministry of Health and Welfare and the Environmental Agency. And in the United Republic of Tanzania, we also wish to express our deep gratitude to the Prime Minister's Office, Dar es Salaam City Commission, the Embassy of Japan and the JICA office in the United Republic of Tanzania.

Finally, we hope that this report will help to enhance the solid waste management and the urban environment sanitation in Dar es Salaam

Respectfully,



Susumu Shimura
Team Leader
The Study of the Solid Waste Management
for Dar es Salaam City in the United
Republic of Tanzania

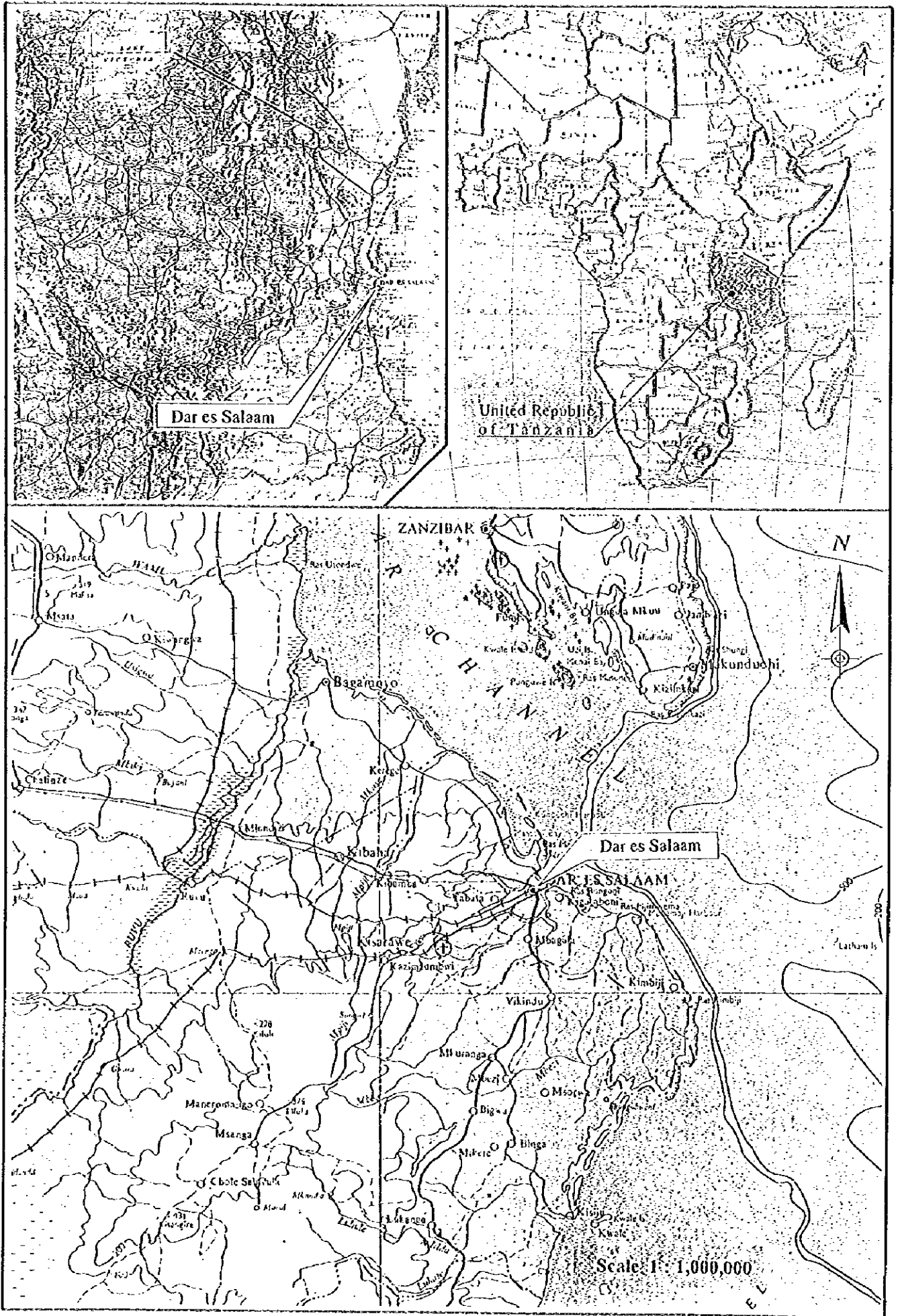
**The Study on
The Solid Waste Management for
Dar es Salaam City**

List of Volumes

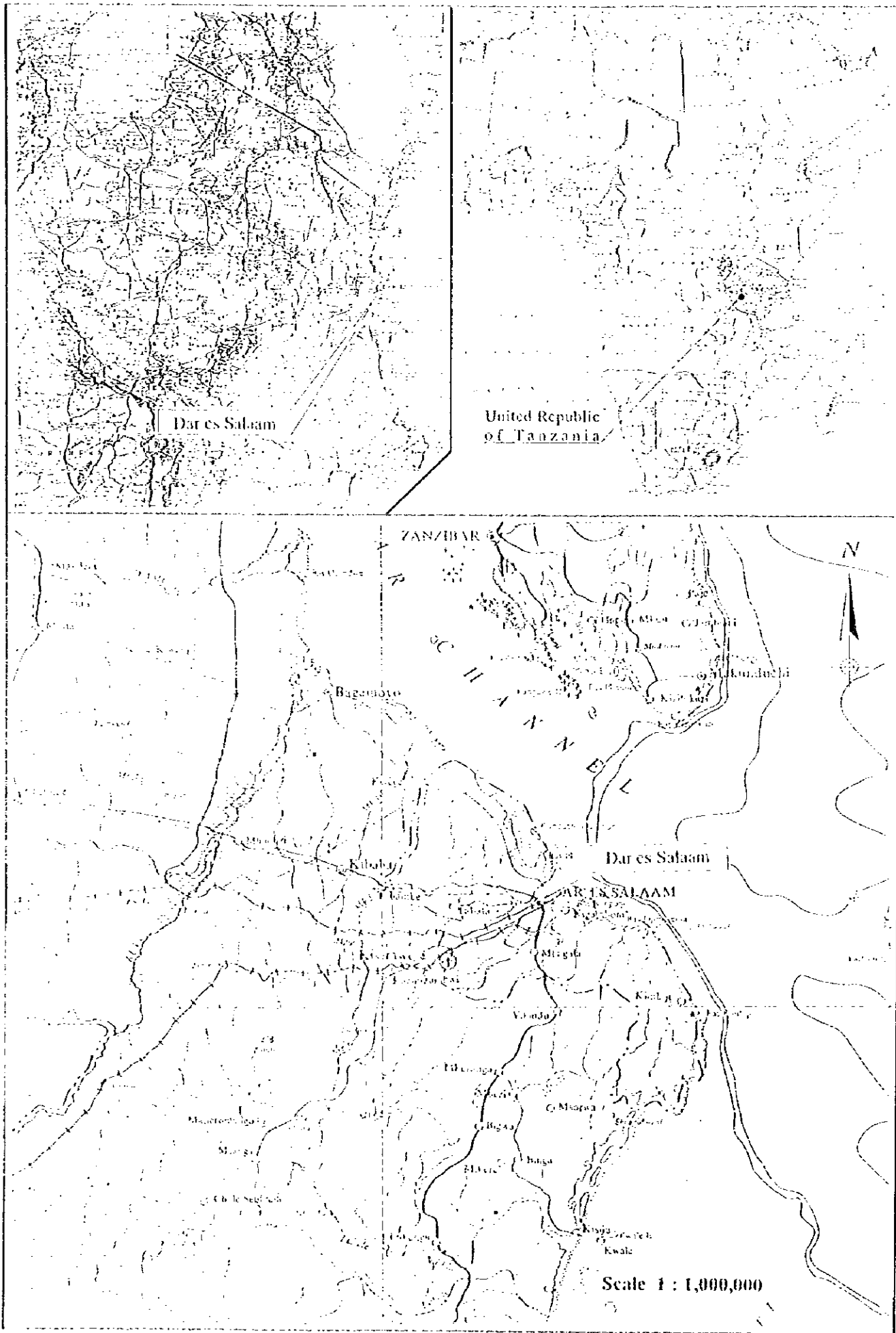
| | |
|------------|---------------------------------------|
| Volume I | Executive Summary |
| Volume II | Main Report for the Master Plan |
| Volume III | Main Report for the Feasibility Study |
| Volume IV | Annex |
| Volume V | Data Book |

This is the Main Report for the Master Plan.

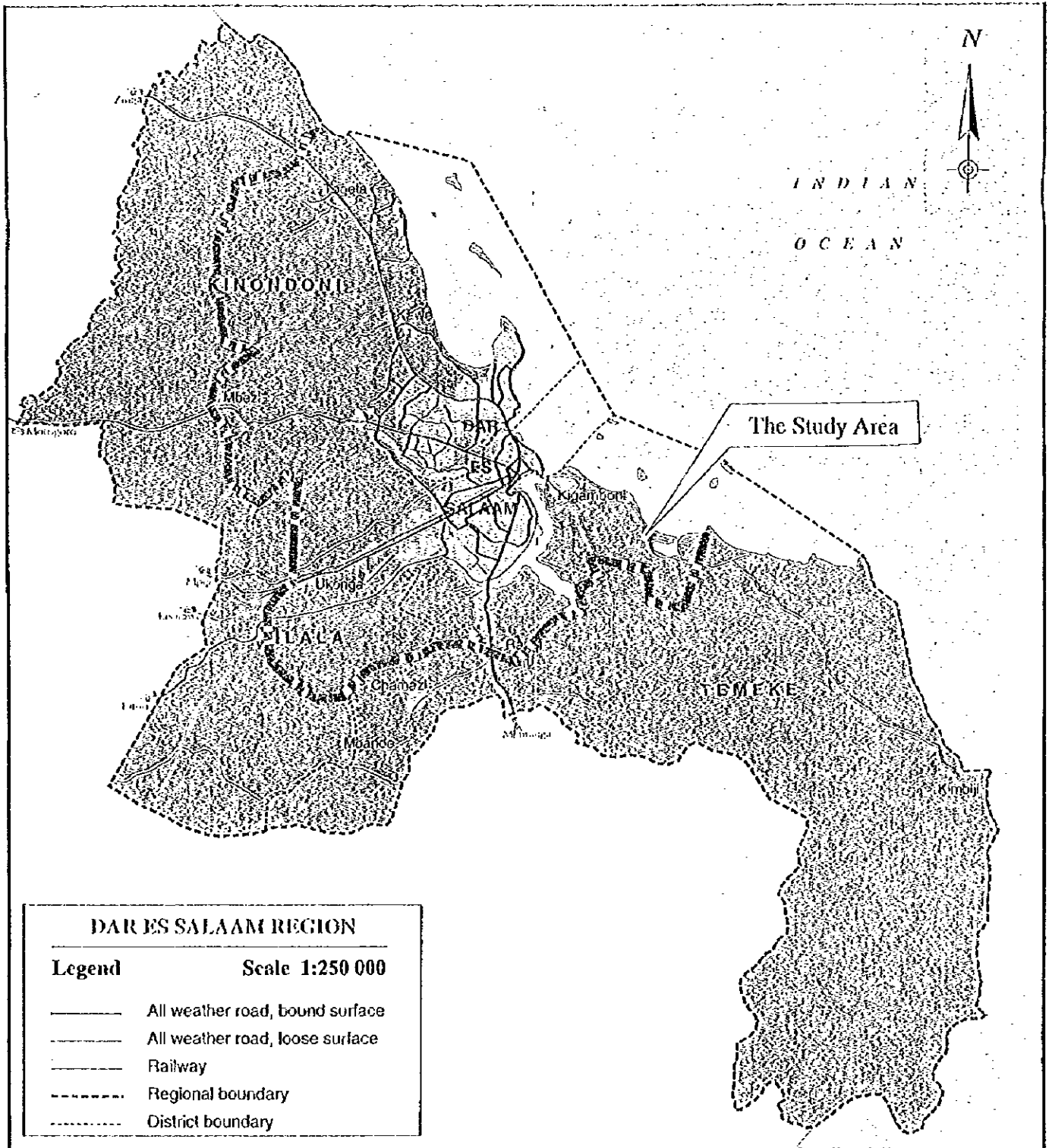
In this report, the project cost is estimated using the February 1997 price and at an exchange rate of 1US\$ = 120.85 Japanese Yen = 597.8 Tanzanian Shilling



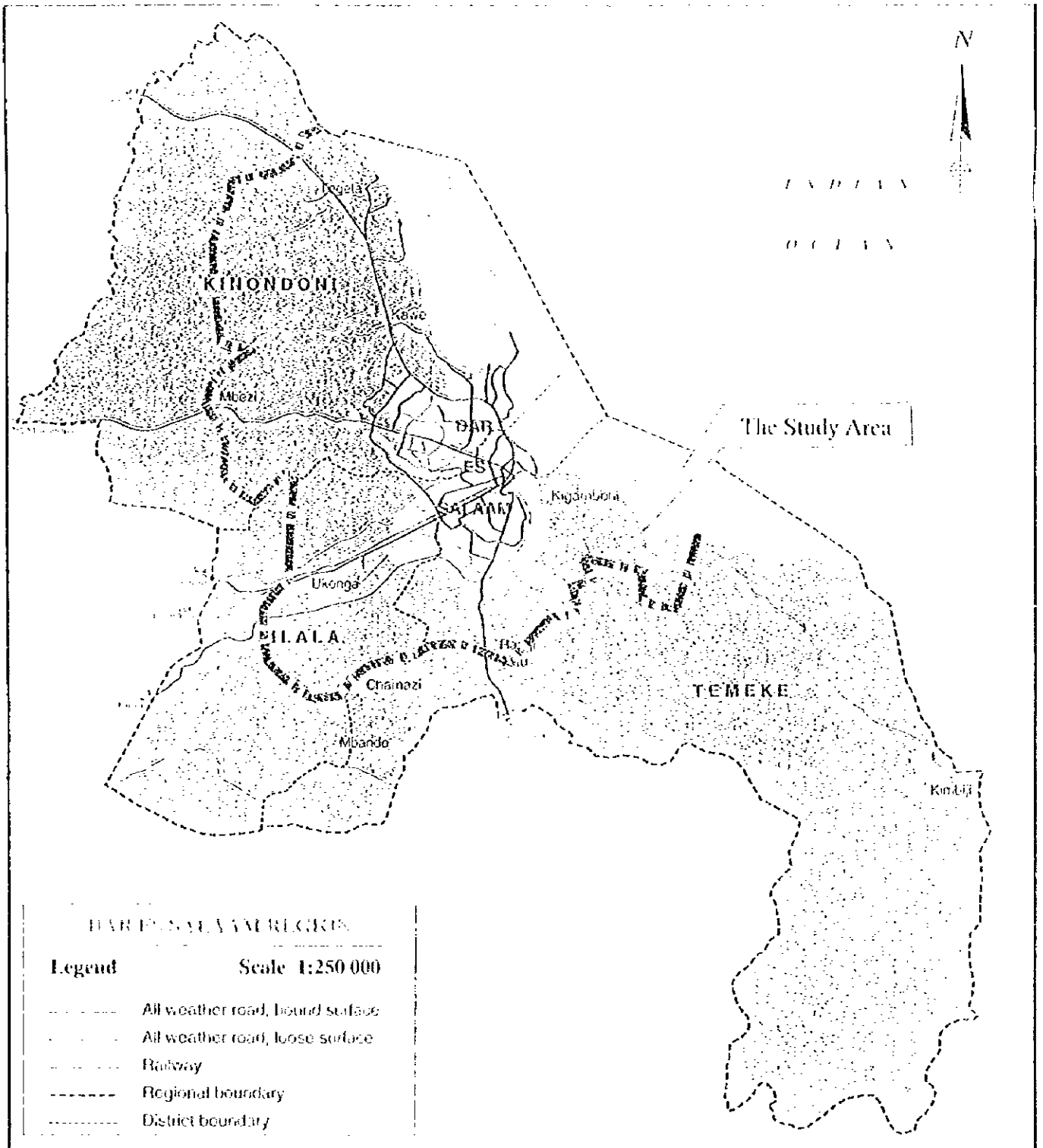
Map 1 : The Location Map of the Study Area



Map 1: The Location Map of the Study Area



Map 2 : The Location Map of the Study Area

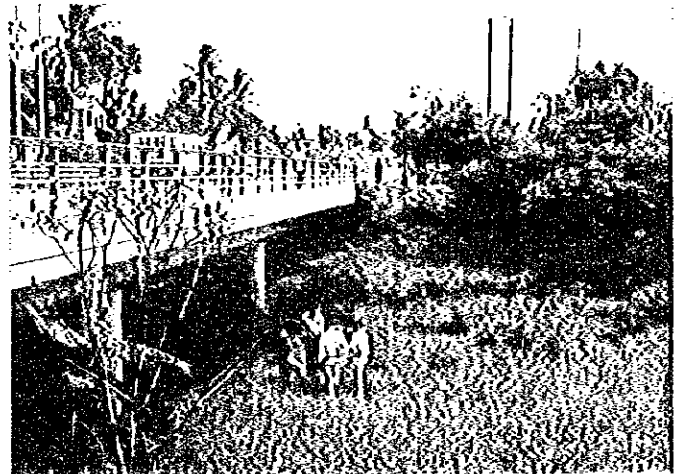


Map 2 : The Location Map of the Study Area

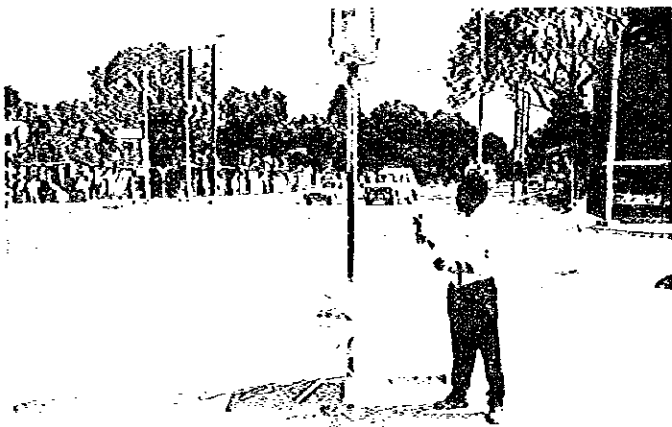
Plate 1 : Urban Environmental Surveys



A member of staff from UCLIS is taking a water sample at Vingunguti.



Measuring the water quality of the Msimbazi River.



Taking the noise level at the intersection of Bagamoyo Road and Morocco Road.



Traffic volume survey being conducted.

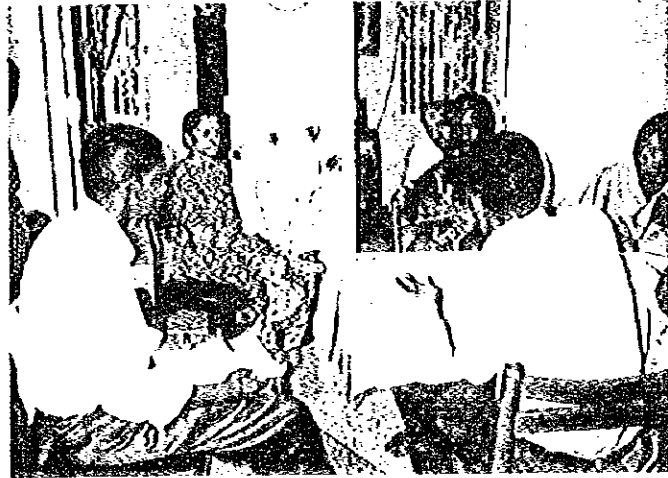


Measuring the air with a gas detection tube.



Taking a soil sample at Vingunguti for soil contamination analysis.

Plate 2 : Waste Amount and Composition Survey



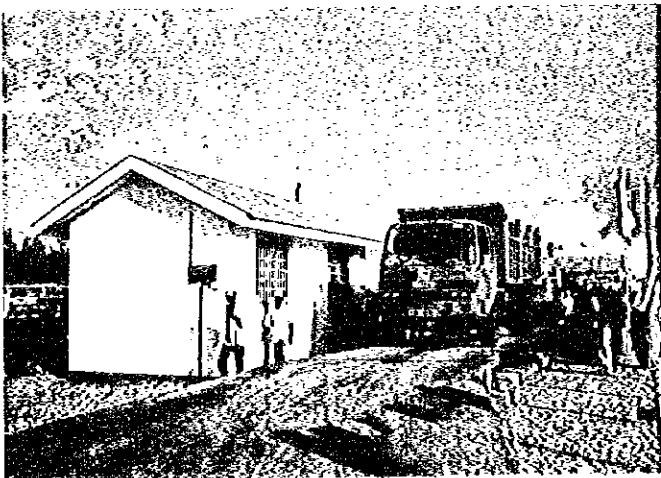
The Study Team explaining the Waste Amount and Composition Survey (WACS) to the residents of one of the sampling points in Upanga East



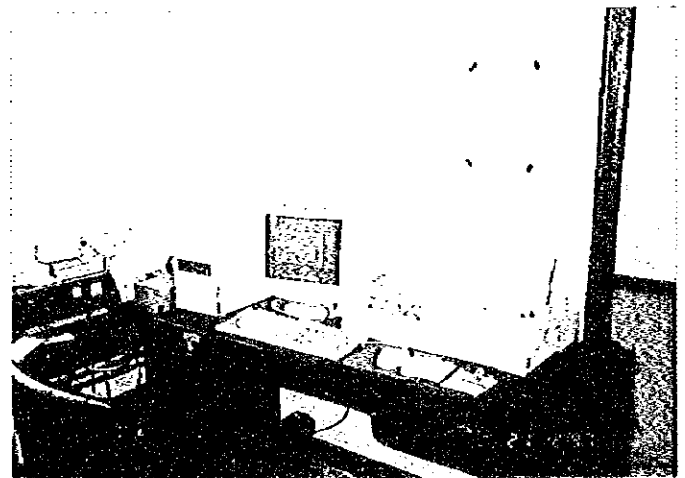
Samples of waste collected and brought to the waste composition analysis yard.



Waste composition analysis conducted at the yard near the Vingunguti disposal site during WACS.



The amount of disposal waste was measured by the weighbridge installed at the corner of Nyerere Road and Vingunguti Road.



The computer connected to the weighbridge stores all weighing data and provide us with various useful information.

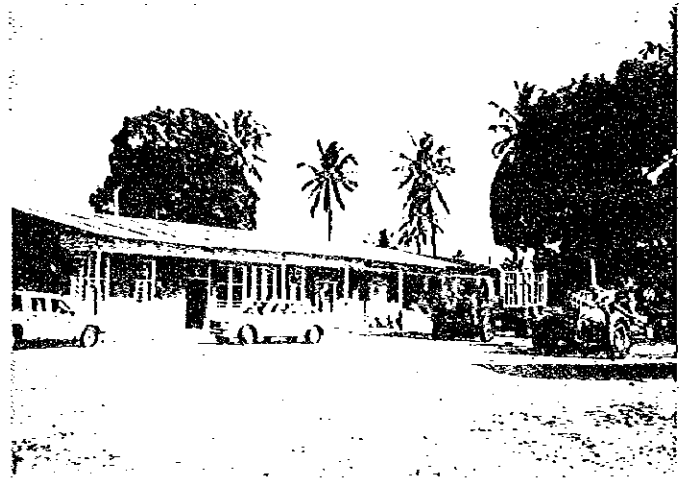
Plate 3 : Present Condition of Proposed Locations of SWM Facilities



Present condition of the New Kunduchi Disposal Site (Kunduchi New MECCO Quarry, south side).



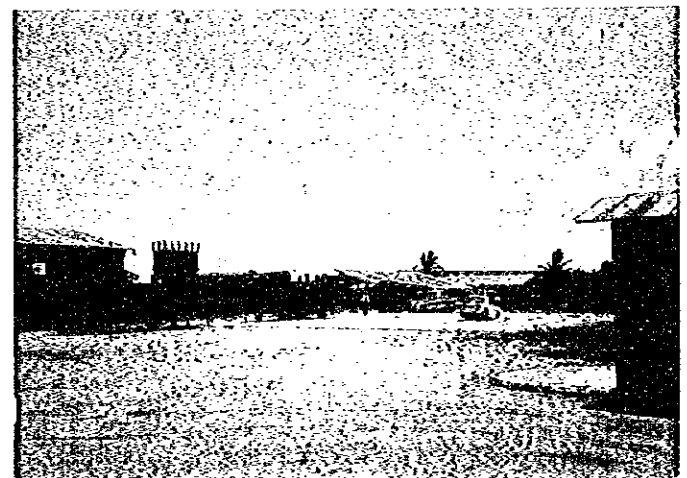
Nyerere workshop is to be improved as a central workshop.



Mwananyamala depot is to be a motorpool for the Kinondoni district.



DRIMP depot is to be a motorpool for the Hala district.



Temeke district office is to be a motorpool for Temeke district.

**The Study on the Solid Waste Management
for
Dar es Salaam City**

Preface

Letter of Transmittal

List of Volumes

Location Map of the Study Area

Plates

Plate 1: Urban Environmental Surveys

Plate 2: Waste Amount and Composition Survey

Plate 3: Present Condition of Proposed Locations of SWM Facilities

Contents

Page:

| | |
|-----------------------|------|
| Contents | i |
| List of Tables..... | vii |
| List of Figures | xiii |
| Abbreviations | xv |
| Glossary..... | xvii |

| | |
|--|------------|
| 1 Introduction | 1-1 |
| 1.1 Background of the Study..... | 1-1 |
| 1.2 Scope of the Study | 1-1 |
| 1.2.1 Objectives of the Study..... | 1-1 |
| 1.2.2 Study Wastes | 1-2 |
| 1.2.3 Target year | 1-2 |
| 1.3 Policies of the Study..... | 1-2 |
| 1.4 Key Assumptions | 1-3 |
| 1.5 Work Schedule of the Study | 1-5 |
| 1.6 Study Organisation and Persons Involved..... | 1-6 |
| 1.6.1 Study Organisation | 1-6 |
| 1.6.2 Persons Involved..... | 1-7 |
| 1.6.3 Reports..... | 1-8 |
| 1.6.4 Technology Transfer..... | 1-9 |
| 2 Profile of the Study Area | 2-1 |
| 2.1 The Study Area..... | 2-1 |
| 2.2 Natural Conditions | 2-1 |
| 2.2.1 Tanzania - Physical Features, Climate and Vegetation | 2-1 |
| 2.2.2 Dar es Salaam | 2-3 |

| | |
|---|------------|
| 2.3 Social Conditions | 2-7 |
| 2.3.1 City Administration | 2-7 |
| 2.3.2 Community Structure..... | 2-13 |
| 2.3.3 Education | 2-14 |
| 2.3.4 Public Health | 2-16 |
| 2.3.5 Customs, Language and Religion | 2-22 |
| 2.3.6 Employment..... | 2-22 |
| 2.4 Population | 2-24 |
| 2.4.1 The Population Trend in Dar es Salaam Region | 2-24 |
| 2.4.2 Population Projection Method for the Study Area..... | 2-25 |
| 2.4.3 Estimated Population in 1996..... | 2-25 |
| 2.5 Urban Structure | 2-27 |
| 2.5.1 General Situation | 2-27 |
| 2.5.2 Land Use Pattern..... | 2-28 |
| 2.5.3 Transportation..... | 2-30 |
| 2.6 Environmental Policy..... | 2-33 |
| 2.6.1 National Development Plan..... | 2-34 |
| 2.6.2 National Environmental Action Plan..... | 2-34 |
| 2.6.3 Organisations Concerned..... | 2-36 |
| 2.6.4 Legislation | 2-36 |
| 2.7 Economic Conditions..... | 2-37 |
| 2.7.1 National Economy | 2-37 |
| 2.7.2 Regional Economy..... | 2-41 |
| 2.7.3 Tax System and Utilities Charging System | 2-43 |
| 2.7.4 Financial Conditions of DCC | 2-50 |
| 2.8 Classification of the Study Area..... | 2-55 |
| 3 Assessment of Current Urban Environment Sanitation | 3-1 |
| 3.1 Environmental Measurement Surveys | 3-1 |
| 3.1.1 Water Quality Survey in Rainy and Dry Seasons | 3-1 |
| 3.1.2 Ambient Survey in Rainy Season | 3-1 |
| 3.1.3 Noise, Vibration and Traffic Volume Survey..... | 3-2 |
| 3.1.4 Soil Contamination Survey..... | 3-4 |
| 3.2 Survey on Public Services Conditions related to UES..... | 3-5 |
| 3.2.1 Water Supply | 3-5 |
| 3.2.2 Domestic Liquid Waste Management (LWM) | 3-6 |
| 3.2.3 Solid Waste Management..... | 3-10 |
| 3.2.4 Drainage and Flood Control | 3-12 |
| 3.2.5 Road Condition..... | 3-16 |
| 3.2.6 Market Conditions | 3-18 |
| 3.3 Current Urban Environment Sanitation | 3-23 |
| 3.3.1 Water Supply | 3-23 |
| 3.3.2 Domestic Liquid Waste Management..... | 3-24 |
| 3.3.3 Solid Waste Management..... | 3-25 |
| 3.3.4 Drainage and Flood Control | 3-26 |
| 3.3.5 Roads | 3-26 |

| | |
|---|------------|
| 3.3.6 Market..... | 3-27 |
| 3.4 Assessment of Current UES..... | 3-31 |
| 3.4.1 Summary of Current UES Conditions | 3-31 |
| 3.4.2 Findings from Public Opinion Survey on UES | 3-32 |
| 3.4.3 Identification of the Importance of SWM in UES..... | 3-34 |
| 4 Field Surveys | 4-1 |
| 4.1 Public Opinion Survey..... | 4-1 |
| 4.2 Waste Amount and Composition Survey..... | 4-6 |
| 4.2.1 Methodology..... | 4-6 |
| 4.2.2 Waste Generation Amount Results..... | 4-8 |
| 4.2.3 Waste Composition Results..... | 4-15 |
| 4.3 Compost Market Survey | 4-16 |
| 4.4 Assessment of the Vingunguti Disposal Site | 4-19 |
| 4.5 Time and Motion Survey | 4-22 |
| 4.6 Survey on Recycling System..... | 4-23 |
| 4.6.1 Objectives | 4-23 |
| 4.6.2 General..... | 4-23 |
| 4.6.3 Recycling at Source and by Scavenging..... | 4-24 |
| 4.6.4 Recycling System for Main Waste Items..... | 4-26 |
| 4.6.5 Possible Measures to Improve Recycling..... | 4-33 |
| 4.7 Survey on Scavengers | 4-34 |
| 4.7.1 Objectives | 4-34 |
| 4.7.2 Content..... | 4-34 |
| 4.7.3 Scavenging at Vingunguti disposal site..... | 4-34 |
| 4.7.4 Scavenging at Other Places..... | 4-37 |
| 4.7.5 Summary..... | 4-38 |
| 4.8 Survey on Private Collectors..... | 4-38 |
| 4.8.1 Private Contractors | 4-39 |
| 4.8.2 CBOs | 4-40 |
| 4.8.3 Individual Operators | 4-41 |
| 4.8.4 Summary..... | 4-41 |
| 4.9 Installation and Operation of a Weighbridge | 4-42 |
| 5 Current Situations of Municipal Solid Waste Management | 5-1 |
| 5.1 Background of SWM in DSM..... | 5-1 |
| 5.1.1 History of SWM in DSM from 1987 till 1995 | 5-1 |
| 5.1.2 Review of Relevant Studies and Projects..... | 5-3 |
| 5.2 Technical System | 5-4 |
| 5.2.1 Discharge and Storage | 5-4 |
| 5.2.2 Collection and Transportation | 5-4 |
| 5.2.3 Road Sweeping and Drain Cleansing..... | 5-6 |
| 5.2.4 Intermediate Treatment and Recycling..... | 5-6 |
| 5.2.5 Final Disposal | 5-7 |

| | |
|---|------------|
| 5.2.6 Maintenance of Vehicles and Equipment | 5-7 |
| 5.3 Institutional System..... | 5-8 |
| 5.3.1 Administration and Organisation..... | 5-9 |
| 5.3.2 Legislation and Enforcement..... | 5-10 |
| 5.3.3 Financial Sources and Refuse Collection Charges | 5-12 |
| 5.3.4 Privatisation and Contracting System..... | 5-22 |
| 5.3.5 Monitoring and Information Management System..... | 5-23 |
| 5.3.6 Human Resources Development..... | 5-24 |
| 5.3.7 Public Education and Co-operation..... | 5-24 |
| 5.3.8 Guidelines..... | 5-25 |
| 5.4 Evaluation of Current MSWM..... | 5-25 |
| 5.4.1 Waste Stream..... | 5-25 |
| 5.4.2 Technical System..... | 5-40 |
| 5.4.3 Institutional System | 5-41 |
| 5.4.4 Changes in 1996, During the Study Period..... | 5-42 |
| 6 Pre-Conditions for a Master Plan | 6-1 |
| 6.1 Siting the Future Disposal Sites | 6-1 |
| 6.2 Forecast of Future Waste Amount and Composition..... | 6-3 |
| 6.2.1 Population Forecast | 6-3 |
| 6.2.2 Waste Amount Forecast..... | 6-5 |
| 6.2.3 Waste Composition Forecast | 6-6 |
| 6.3 Other Pre-conditions | 6-9 |
| 6.3.1 Financial Conditions..... | 6-9 |
| 6.3.2 Economic Conditions | 6-14 |
| 6.3.3 Conditions for Cost Estimate..... | 6-15 |
| 6.3.4 Conditions for Cost Estimation | 6-15 |
| 7 Institutional System | 7-1 |
| 7.1 Administration and Organisation | 7-1 |
| 7.1.1 Integration of Functions..... | 7-1 |
| 7.1.2 Guidelines for the new administrative and organisation model | 7-2 |
| 7.2 Proposed Waste Management Authority..... | 7-2 |
| 7.2.1 Administration and Financial Section | 7-3 |
| 7.2.2 District Operational Structure..... | 7-3 |
| 7.3 Staff Specification and Number of Personnel..... | 7-4 |
| 7.3.1 Rules and Organisational Structure of the Supervision and Monitoring Committee..... | 7-7 |
| 7.3.2 Head Office of the Waste Management Authority | 7-10 |
| 7.3.3 Planning and Control Unit..... | 7-10 |
| 7.3.4 Public Relations (and Environmental Education) Section..... | 7-11 |
| 7.3.5 Legal Affairs Unit | 7-11 |
| 7.4 Legislation and Enforcement | 7-12 |
| 7.4.1 Guidelines for Legislation and Enforcement | 7-12 |
| 7.4.2 Procedures to be followed | 7-12 |
| 7.5 Financial Sources and Refuse Collection Charges..... | 7-13 |

| | |
|---|------------|
| 7.6 Role of Private Sector | 7-13 |
| 7.6.1 Type of Operation System | 7-13 |
| 7.6.2 Conclusion | 7-18 |
| 7.7 Rules and Guidelines for Contracting out..... | 7-19 |
| 7.7.1 Guidelines, Specifications Payment Method | 7-19 |
| 7.7.2 Service Standards..... | 7-22 |
| 7.8 Monitoring and Information Management System | 7-24 |
| 7.9 Human Resources Development..... | 7-25 |
| 7.9.1 Needs of Human Resources Development | 7-25 |
| 7.9.2 Human Development Program | 7-25 |
| 7.10 Public Education and Co-operation | 7-30 |
| 7.10.1 Improvements in Refuse Collection and Disposal..... | 7-30 |
| 7.10.2 Public Education..... | 7-31 |
| 7.10.3 Informing of Proposed Institutional, Administrative and Legislative Solid Waste Management Changes..... | 7-31 |
| 7.10.4 Conclusion..... | 7-32 |
| 8 Selection of an Optimum Technical System | 8-1 |
| 8.1 Policy for Selection of an Optimum Technical System | 8-1 |
| 8.1.1 Criteria for Selection..... | 8-1 |
| 8.1.2 Selection Procedure of an Optimum Technical System | 8-1 |
| 8.2 Preconditions for Selection of Subsystems | 8-1 |
| 8.3 Identification of Potential Subsystems for DSM..... | 8-2 |
| 8.4 Screening Potential Technologies | 8-4 |
| 8.4.1 Discharge and Storage System..... | 8-4 |
| 8.4.2 Primary Collection..... | 8-11 |
| 8.4.3 Collection and Transportation System..... | 8-14 |
| 8.4.4 Street Sweeping System..... | 8-20 |
| 8.4.5 Intermediate Treatment System | 8-24 |
| 8.4.6 Recycling | 8-41 |
| 8.4.7 Final Disposal | 8-44 |
| 8.4.8 Maintenance of Vehicles and Equipment | 8-53 |
| 8.5 Comparison of Refuse Collection and Transportation Vehicles Unit Cost | 8-53 |
| 8.6 Selection of An Optimum Technical System..... | 8-56 |
| 9 Evaluation of the Master Plan | 9-1 |
| 9.1 The Municipal Solid Waste Management Master Plan..... | 9-1 |
| 9.1.1 Frameworks of the Master Plan..... | 9-1 |
| 9.1.2 The Municipal SWM Master Plan..... | 9-10 |
| 9.2 Conceptual Design and Cost Estimation..... | 9-17 |
| 9.2.1 Design Conditions | 9-17 |
| 9.2.2 Storage and Discharge System..... | 9-18 |
| 9.2.3 Primary Collection System | 9-18 |
| 9.2.4 Secondary Collection and Transportation System..... | 9-19 |

| | |
|--|-------------|
| 9.2.5 Final Disposal System | 9-23 |
| 9.2.6 Street Sweeping System..... | 9-29 |
| 9.2.7 Maintenance Shop | 9-30 |
| 9.2.8 Motor Pool..... | 9-32 |
| 9.2.9 Administrative Expenses | 9-32 |
| 9.2.10 Project Cost Summary | 9-32 |
| 9.3 Financial Plan..... | 9-34 |
| 9.3.1 Alternative Options for the Financial Source | 9-34 |
| 9.3.2 Revenue Forecast..... | 9-35 |
| 9.3.3 Case Studies for the Financial Plan | 9-40 |
| 9.4 Examination on the Master Plan by Pilot Projects..... | 9-41 |
| 9.5 Evaluation of the Master Plan..... | 9-44 |
| 9.5.1 Technical Evaluation | 9-44 |
| 9.5.2 Social Evaluation | 9-44 |
| 9.5.3 Environmental Evaluation | 9-46 |
| 9.5.4 Financial Evaluation | 9-48 |
| 9.5.5 Economic Evaluation..... | 9-49 |
| 9.5.6 Overall Evaluation..... | 9-49 |
| 9.6 Initial Environmental Examination..... | 9-51 |
| 9.6.1 Scoping of Environmental Impacts..... | 9-53 |
| 9.6.2 Summary of Relevant Factors for each EIA Item..... | 9-54 |
| 9.6.3 Works Required for EIA..... | 9-62 |
| 9.7 Implementation Plan | 9-65 |
| 10 Other Studies | 10-1 |
| 10.1 General Recommendation on Industrial Solid Waste Management | 10-1 |
| 10.1.1 Present Conditions of ISWM..... | 10-1 |
| 10.1.2 Evaluation on the Present ISWM | 10-12 |
| 10.1.3 General Recommendation | 10-13 |
| 10.2 General Recommendation on Medical Solid Waste Management..... | 10-15 |
| 10.2.1 Definition of Medical Solid Waste..... | 10-15 |
| 10.2.2 Present Situation of Medical SWM in Dar es Salaam..... | 10-15 |
| 10.2.3 Evaluation on the Present MSWM and Suggested Corrective Measures..... | 10-22 |
| 10.2.4 General Recommendation | 10-24 |
| Appendix | |
| Appendix A: | A-1 |

List of Tables

| | Page: |
|---|-------|
| Table 2-1: List of Wards within the Study Area | 2-1 |
| Table 2-2: Health Status Indicators for Tanzania..... | 2-17 |
| Table 2-3: Number of Institutions and Beds in different health sectors | 2-17 |
| Table 2-4: Number of Cumulative AIDS Cases in DSM Region (1985-1993) | 2-18 |
| Table 2-5: Percentage of Different Disease for Tanzania Mainland and DSM | 2-19 |
| Table 2-6: Breakdown of Employment by Main Sector | 2-23 |
| Table 2-7: Breakdown of Employment by Industries | 2-24 |
| Table 2-8: Population Change of DSM and Tanzania | 2-24 |
| Table 2-9: Estimated Population and Number of Households in the Study Area in 1996.... | 2-27 |
| Table 2-10: Summary of Roads in DSM..... | 2-30 |
| Table 2-11: Mode of Distribution of Cargo | 2-32 |
| Table 2-12: Variation in the Gross Domestic Product (at factor cost)..... | 2-38 |
| Table 2-13: Balance of Payments during 1991 - 1995 | 2-39 |
| Table 2-14: Total Debt Service and Debt Service Ratio in Tanzania | 2-40 |
| Table 2-15: Variation in Gross Regional Products for DSM during 1992 - 1994 | 2-42 |
| Table 2-16: Composition Rate of Industrial Output Value in DSM in 1989 and 1990 | 2-42 |
| Table 2-17: Composition in the Tax Revenue for the Central Government of Tanzania in the Fiscal Year 1993/1994 | 2-44 |
| Table 2-18: Income Tax Table as of July, 1996..... | 2-46 |
| Table 2-19: Revenue Sources for Local Government (In Case of DCC in the Fiscal Year 1995/1996))..... | 2-47 |
| Table 2-20: Revenue in the General Budget of DCC in 1995 | 2-51 |
| Table 2-21: Variation of Revenue and Expenditure of DCC's General Budget from 1986 to 1995..... | 2-52 |
| Table 2-22: Variation of Revenue and Expenditure of the Central Government of Tanzania from 1989 to 1996..... | 2-53 |
| Table 2-23: The Details of the Expenditure Details for the General Budget of DCC in 1995..... | 2-54 |
| Table 2-24: Classification of the Wards in the Study Area..... | 2-57 |
| | |
| Table 3-1: Soil Analysis Data | 3-4 |
| Table 3-2: Types of Domestic LWM in DSM | 3-6 |
| Table 3-3: Location of Oxidation Ponds and Dumping Stations in DSM | 3-7 |
| Table 3-4: Summary of Pavement Condition..... | 3-16 |
| Table 3-5: Selected Markets for Surveying by District..... | 3-18 |
| Table 3-6: Market survey results (Ilala district)..... | 3-18 |
| Table 3-7: Market survey results (Kinondoni district)..... | 3-19 |
| Table 3-8: Market survey results (Temeke district)..... | 3-19 |
| Table 3-9: Assessment of Current Negative Impacts to UES by Inadequate Public Services..... | 3-31 |
| | |
| Table 4-1: Comparison of WAGRs | 4-8 |
| Table 4-2: Calculation of Household Waste Generation | 4-9 |
| Table 4-3: Commercial Waste Generation Amount..... | 4-9 |
| Table 4-4: Waste generated by Informal Sector non-home Based Enterprises..... | 4-13 |
| Table 4-5: Waste Amount Generation Rates for Surveyed Waste Types | 4-14 |
| Table 4-6: Summary of Daily Waste Generation Amount in 1996..... | 4-14 |
| Table 4-7: Analysis Results of Waste Composition for Household Wastes | 4-15 |

| | |
|---|------|
| Table 4-8: Analysis Results of Waste Composition for Other Type of Wastes..... | 4-16 |
| Table 4-9: Results from Questioning Farmers in the Dar es Salaam Area. | 4-17 |
| Table 4-10: Recycling Breakdown by Major Waste items | 4-24 |
| Table 4-11: Sources, Collectors, End Uses and Users of the Major Waste Items Recycled. | 4-25 |
| Table 4-12 Large Waste Paper Processing Industries | 4-26 |
| Table 4-13: Large Scrap Metal Processing Industries..... | 4-30 |
| Table 4-14: Estimation of Amounts of Different Items Collected..... | 4-37 |
| Table 4-15: Buying and Selling Prices of Recyclable Materials..... | 4-37 |
| Table 4-16: Private Contractors Survey Summary..... | 4-39 |
| Table 4-17: Phase II: Contractors and Contracted Areas..... | 4-39 |
| | |
| Table 5-1: Acquisition and Operational Status of Waste Management Equipment since 19875-3 | |
| Table 5-2: Actual Expenditure for Refuse Disposal by DCC in 1994..... | 5-14 |
| Table 5-3: Amount of Wastes Collected by DCC in 1994..... | 5-15 |
| Table 5-4: Unit Cost of Refuse Disposal by DCC in 1994..... | 5-16 |
| Table 5-5: Unit Cost of Refuse Disposal by Multinet in 1994 | 5-17 |
| Table 5-6: Comparison of Unit Cost of Refuse Disposal between DCC Operation and Multinet Operation in 1994..... | 5-19 |
| Table 5-7: Revenue Collected by DCC from January to June, 1995 | 5-20 |
| Table 5-8: Present Tariff Structure | 5-22 |
| Table 5-9: Amounts of Waste Disposed by Different Methods for Households | 5-28 |
| Table 5-10: Breakdown of Recycled Household Waste | 5-29 |
| Table 5-11: Summary of Amounts of Waste Disposed by Different Methods | 5-31 |
| Table 5-12: Self Disposal of Waste | 5-32 |
| Table 5-13: Comparison of Average Trip and Tonnage Data for Different Periods..... | 5-33 |
| Table 5-14: Disposal Site Data during WACS | 5-33 |
| Table 5-15: Weighbridge data for 11-28 February 1997 inclusive | 5-34 |
| Table 5-16: Comparison of Estimated Recycled Amounts for Different Items and Calculation of the Recycled Waste Amount..... | 5-36 |
| Table 5-17: Summary of Recycled Waste Amounts | 5-37 |
| Table 5-18: Summary of Waste Stream Amounts | 5-39 |
| Table 5-19: Contractors and Corresponding Wards..... | 5-43 |
| Table 5-20: RCC Collection Rates of Multinet and Mazingila | 5-44 |
| Table 5-21: RCC Collection Rate of Private Concessionaires..... | 5-45 |
| Table 5-22: Projection of Profit and Loss Statement of Mazingila..... | 5-46 |
| Table 5-23: Incentives for Collectors of RCC | 5-47 |
| Table 5-24: Short-Term RCC Improvement Programme by SDP | 5-49 |
| Table 5-25: Transition of Major Revenue Sources from 1995 to 1997 | 5-50 |
| Table 5-26: Transition of DCC's Revenues (Amount)..... | 5-51 |
| Table 5-27: Transition of DCC's Revenue (Growth Rate to the Previous Year) | 5-52 |
| Table 5-28: Transition of DCC's Revenue (Composition Share)..... | 5-53 |
| | |
| Table 6-1: List of Candidate Sites..... | 6-1 |
| Table 6-2: Population Forecast for the Study Area | 6-4 |
| Table 6-3: Waste Amount Forecast for DSM | 6-6 |
| Table 6-4: Comparison of Waste Composition Data | 6-7 |
| Table 6-5: Waste Composition Forecast..... | 6-8 |
| Table 6-6: Statistical Summary for Willingness to Pay | 6-9 |

| | |
|--|------|
| Table 6-7: Review on Transition of Inflation Rates, Interest Rates and Estimated Cut-off Rates | 6-11 |
| Table 6-8: Review on Transition of Exchange Rate | 6-13 |
| Table 6-9: List of Unit Rates..... | 6-16 |
| Table 7-1: Waste Management Authority..... | 7-4 |
| Table 7-2: District Operational Services Sections | 7-6 |
| Table 7-3: Proposed Scheme for Privatization..... | 7-19 |
| Table 8-1: Potential Subsystems for SWM in DSM..... | 8-3 |
| Table 8-2: Summary of Collection Systems | 8-16 |
| Table 8-3: Characteristics of Possible Intermediate Treatment System..... | 8-40 |
| Table 8-4: Comparison of Waste Composition..... | 8-41 |
| Table 8-5: Outline of Sanitary Landfill Development and Operation..... | 8-50 |
| Table 8-6: Environmental Standards for Each Sanitary Landfill Development and Operation Level..... | 8-51 |
| Table 8-7: Unit Cost Comparison for Waste Collection and Transportation..... | 8-54 |
| Table 8-8: An Optimum MSW Technical System for DSM..... | 8-56 |
| Table 9-1: Target Year | 9-2 |
| Table 9-2: Targets for Establishment of Major Technical System Components | 9-3 |
| Table 9-3: Outline of the SWM M/P | 9-10 |
| Table 9-4: Waste Generation and Collection Amount per Day Based on 7 Collection Days per Week | 9-18 |
| Table 9-5: Summary of Transportation Distance to Landfill Sites | 9-19 |
| Table 9-6: Assignment Plan of Refuse Collection Truck | 9-19 |
| Table 9-7: Productivity Determination | 9-20 |
| Table 9-8: Required Number of Equipment..... | 9-20 |
| Table 9-9: Procurement Schedule | 9-21 |
| Table 9-10: Investment Schedule..... | 9-22 |
| Table 9-11: Required Quantities for Operation | 9-22 |
| Table 9-12: Required Operation Cost Schedule..... | 9-22 |
| Table 9-13: Required Maintenance Costs Schedule | 9-23 |
| Table 9-14: Estimated Costs of Secondary Collection and Transportation | 9-23 |
| Table 9-15: Annual Estimate of Waste Amount at Disposal Sites (1)..... | 9-24 |
| Table 9-16: Annual Estimate of Waste Volume at Disposal Sites (2)..... | 9-24 |
| Table 9-17: Estimate of Waste Accumulated at Disposal Sites..... | 9-25 |
| Table 9-18: Required Landfill Volume including Soil for Coverage | 9-25 |
| Table 9-19: Proposed Capacities of Disposal Sites..... | 9-25 |
| Table 9-20: Summary of Investment O & M Costs | 9-26 |
| Table 9-21: Required Number of Landfill Equipment..... | 9-27 |
| Table 9-22: Procurement Schedule of Landfill Equipment | 9-28 |
| Table 9-23: Investment Schedule for Landfill Equipment..... | 9-28 |
| Table 9-24: O & M Schedule for Final Disposal | 9-28 |
| Table 9-25: Estimated Cost Schedule of Final Disposal..... | 9-29 |
| Table 9-26: Required Equipment and Manpower..... | 9-30 |
| Table 9-27: Procurement and Investment Schedule..... | 9-30 |
| Table 9-28: Operation Cost Schedule | 9-30 |
| Table 9-29: Maintenance Cost Schedule..... | 9-30 |

| | |
|---|-------|
| Table 9-30: Manpower Schedule | 9-31 |
| Table 9-31: O & M Cost Schedule..... | 9-31 |
| Table 9-32: Operation Cost Schedule | 9-32 |
| Table 9-33: Administrative Costs | 9-32 |
| Table 9-34: Project Costs Summary | 9-33 |
| Table 9-35: Unit Solid Waste Management Cost | 9-33 |
| Table 9-36 Options for the Financial Scheme for the Master Plan..... | 9-34 |
| Table 9-37 Maximum Collection Rate of Potential Revenue | 9-36 |
| Table 9-38 Scenarios of DCC's Total Tax Revenue..... | 9-38 |
| Table 9-39 Estimated Budget Allocation of DCC's Tax Revenue to SWM..... | 9-38 |
| Table 9-40 Scenarios of Budget Allocation Amount for SWM..... | 9-39 |
| Table 9-41 Alternative Scenarios in terms of Revenue Forecast | 9-41 |
| Table 9-42: Contents of Pilot Projects | 9-42 |
| Table 9-43: Summary of Environmental Evaluation of the SWM Master Plan | 9-46 |
| Table 9-44: FIRR of Each Financial Case Study..... | 9-48 |
| Table 9-45: Scoping of Environmental Impacts for Proposed Disposal Site at New MECCO Quarry..... | 9-53 |
| Table 9-46: Explanation of Item 2 | 9-54 |
| Table 9-47: Explanation of Item 3 | 9-55 |
| Table 9-48: Explanation of Item 7 | 9-55 |
| Table 9-49: Explanation of Item 8 | 9-56 |
| Table 9-50: Explanation of Item 9 | 9-56 |
| Table 9-51: Explanation of Item 10..... | 9-57 |
| Table 9-52: Explanation of Item 12 | 9-57 |
| Table 9-53: Explanation of Item 13 | 9-58 |
| Table 9-54: Explanation of Item 15 | 9-58 |
| Table 9-55: Explanation of Item 17 | 9-59 |
| Table 9-56: Explanation of Item 18..... | 9-59 |
| Table 9-57: Explanation of Item 19 | 9-60 |
| Table 9-58: Explanation of Item 20 | 9-60 |
| Table 9-59: Explanation of Item 21 | 9-61 |
| Table 9-60: Explanation of Item 23 | 9-61 |
| Table 9-61: Explanation of Item 24 | 9-62 |
| Table 9-62: Work Required for EIA and Environmental Conservation/Mitigation Measures | 9-62 |
| Table 9-63: List of Works required for EIA..... | 9-64 |
| | |
| Table 10-1: List of Solid Waste Producing Industries in Dar es Salaam | 10-2 |
| Table 10-2: List of wastes to be expected from various industrial groups | 10-4 |
| Table 10-3: Classification of Factories in accordance with the Potential of Generating Hazardous Wastes | 10-5 |
| Table 10-4: List of surveyed industries in Dar es Salaam..... | 10-7 |
| Table 10-5: Inventory of Industrial Solid Waste Generation in Dar es Salaam | 10-8 |
| Table 10-6: Industries Producing Hazardous Solid Waste In Dar Es Salaam..... | 10-9 |
| Table 10-7: Range of items scavenged from city's solid waste..... | 10-12 |
| Table 10-8: Health Care Facilities in Dar es Salaam City | 10-16 |
| Table 10-9: Medical waste generation rates in some hospitals in Dar es Salaam..... | 10-16 |
| Table 10-10: Waste generation rates in some hospitals and dispensaries in Dar es Salaam. | 10-17 |
| Table 10-11: Average generation rates for hazardous and non - hazardous wastes in some dispensaries in Dar es Salaam. | 10-18 |

Appendix

| | |
|---|------|
| Table A - 1 Estimate of Revenue from Development Levy..... | A-1 |
| Table A - 2 Estimate of Revenue from Property Tax | A-2 |
| Table A - 3 Estimate of Revenue from Petrol Levy..... | A-3 |
| Table A - 4 Estimate of Revenue from Service Levy | A-4 |
| Table A - 5 Estimate of Revenue from Hotel Levy | A-5 |
| Table A - 6 Estimate of Revenue from Business Licences | A-6 |
| Table A - 7 Estimate of Revenue from Market Dues..... | A-7 |
| Table A - 8 Estimate of Revenue from Other Sources..... | A-8 |
| Table A - 9 Achievement Rate of Each Source to the Potential (%) (Optimistic Scenario). | A-9 |
| Table A - 10 Achievement Rate of Each Source to the Potential (%) (Moderate Scenario) | A-9 |
| Table A - 11 Achievement Rate of Each Source to the Potential (%) (Pessimistic Scenario) | A-9 |
| Table A - 12 Growth Rate of Each Revenue to the Previous Year (%) (Optimistic Scenario) | A-10 |
| Table A - 13 Growth Rate of Each Revenue to the Previous Year (%) (Moderate Scenario) | A-10 |
| Table A - 14 Growth Rate of Each Revenue to the Previous Year (%) (Pessimistic Scenario) | A-10 |
| Table A - 15 Estimate of DCC's Revenue (Scenario 1 = Optimistic Scenario) | A-12 |
| Table A - 16 Estimate of DCC's Tax Revenue (Scenario 3 = Moderate Scenario)..... | A-13 |
| Table A - 17 Estimate of DCC's Tax Revenue (Scenario 3 = Pessimistic Scenario)..... | A-14 |
| Table A - 18 Estimate of DCC's Expenditure (Scenario 1 = Optimistic Scenario)..... | A-18 |
| Table A - 19 Estimate of DCC's Expenditure (Scenario 2 = Moderate Scenario) | A-19 |
| Table A - 20 Estimate of DCC's Expenditure (Scenario 3 = Pessimistic Scenario)..... | A-20 |
| Table A - 21 Alternative Scenarios for DCC's Revenue | A-21 |
| Table A - 22 Financial Planning (Case Q-1-a : Cost = All Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Optimistic) | A-22 |
| Table A - 23 Financial Planning (Case A-1-b : Cost = All Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Moderate)..... | A-23 |
| Table A - 24 Financial Planning (Case A-1-c : Cost = All Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Pessimistic)..... | A-24 |
| Table A - 25 Financial Planning (Case A-2-a : Cost = All Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Optimistic) | A-25 |
| Table A - 26 Financial Planning (Case A-2-b : Cost = All Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Moderate)..... | A-26 |
| Table A - 27 Financial Planning (Case A-2-c : Cost = All Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Pessimistic) | A-27 |
| Table A - 28 Financial Planning (Case B-1-a : Cost = Partial Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Optimistic) | A-28 |
| Table A - 29 Financial Planning (Case B-1-b : Cost = Partial Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Moderate)..... | A-29 |
| Table A - 30 Financial Planning (Case B-1-c : Cost = Partial Loan, Revenue Source = Joint Billing + Tax, Revenue Forecast = Pessimistic) | A-30 |
| Table A - 31 Financial Planning (Case B-2-a : Cost = Partial Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Optimistic) | A-31 |
| Table A - 32 Financial Planning (Case B-2-b : Cost = Partial Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Moderate)..... | A-32 |
| Table A - 33 Financial Planning (Case B-2-c : Cost = Partial Loan, Revenue Source = Special RCC + Tax, Revenue Forecast = Pessimistic) | A-33 |
| Table A - 34 Financial Planning (Case C-1-a : Cost = All Grant, Revenue Source = Joint Billing + Tax, Revenue Forecast = Optimistic) | A-34 |

| | |
|--|------|
| Table A - 35 Financial Planning (Case C-1-b : Cost = All Grant, Revenue Source = Joint Billing + Tax, Revenue Forecast = Moderate)..... | A-35 |
| Table A - 36 Financial Planning (Case C-1-c : Cost = All Grant, Revenue Source = Joint Billing + Tax, Revenue Forecast = Pessimistic)..... | A-36 |
| Table A - 37 Financial Planning (Case C-2-a : Cost = All Grant, Revenue Source = Special RCC + Tax, Revenue Forecast = Optimistic)..... | A-37 |
| Table A - 38 Financial Planning (Case C-2-b : Cost = All Grant, Revenue Source = Special RCC + Tax, Revenue Forecast = Moderate)..... | A-38 |
| Table A - 39 Financial Planning (Case C-2-c : Cost = All Grant, Revenue Source = Special RCC + Tax, Revenue Forecast = Pessimistic)..... | A-39 |
| Table A - 40 FIRR (Case A-1-a : Most Optimistic)..... | A-40 |
| Table A - 41 FIRR (Case A-1-b : Most Likely)..... | A-40 |
| Table A - 42 FIRR (Case A-1-c : Most Pessimistic)..... | A-40 |
| Table A - 43 FIRR (Case A-2-a : Most Optimistic)..... | A-41 |
| Table A - 44 FIRR (Case A-2-b : Most Likely)..... | A-41 |
| Table A - 45 FIRR (Case A-2-c : Most Pessimistic)..... | A-41 |
| Table A - 46 FIRR (Case B-1-a : Most Optimistic)..... | A-42 |
| Table A - 47 FIRR (Case B-1-b : Most Likely)..... | A-42 |
| Table A - 48 FIRR (Case B-1-c : Most Pessimistic)..... | A-42 |
| Table A - 49 FIRR (Case B-2-a : Most Optimistic)..... | A-43 |
| Table A - 50 FIRR (Case B-2-b : Most Likely)..... | A-43 |
| Table A - 51 FIRR (Case B-2-c : Most Pessimistic)..... | A-43 |
| Table A - 52 FIRR (Case C-1-a : Most Optimistic)..... | A-44 |
| Table A - 53 FIRR (Case C-1-b : Most Likely)..... | A-44 |
| Table A - 54 FIRR (Case C-1-c : Most Pessimistic)..... | A-44 |
| Table A - 55 FIRR (Case C-2-a : Most Optimistic)..... | A-45 |
| Table A - 56 FIRR (Case C-2-b : Most Likely)..... | A-45 |
| Table A - 57 FIRR (Case C-2-c : Most Pessimistic)..... | A-45 |
| Table A - 58 Result of FIRR Calculation (Typical Cases)..... | A-46 |
| Table A - 59 Conversion Factors for Investment, Operation & Maintenance and Indirect Cost | A-47 |
| Table A - 60 Financial Planning for Economic Evaluation..... | A-48 |
| Table A - 61 Economic Internal Rate of Return..... | A-49 |

List of Figures

| | Page: |
|---|-------|
| Figure 1-1: Study Organisational Structure..... | 1-6 |
| Figure 2-1: Map of the Study Area | 2-2 |
| Figure 2-2: Location Map | 2-4 |
| Figure 2-3: Landforms | 2-6 |
| Figure 2-4: Principal Topographical Areas..... | 2-6 |
| Figure 2-5: Distribution of Significant Soil Types..... | 2-7 |
| Figure 2-6: Administrative Structure linking with the Prime Minister's Office with DCC.... | 2-8 |
| Figure 2-7: Organisational Chart of the DSM City Commission..... | 2-11 |
| Figure 2-8: Population Density Map..... | 2-26 |
| Figure 2-9: Land Use in 1992 | 2-29 |
| Figure 2-10: Transportation System in DSM..... | 2-31 |
| Figure 2-11: Composition of the Revenue of the Central Government of Tanzania in the Fiscal Year 1993/1994..... | 2-44 |
| Figure 2-12: Income Tax Rate Payable per Month | 2-46 |
| Figure 2-13: Variation of Revenue and Expenditure of DCC's General Budget from 1986 to 1995..... | 2-52 |
| Figure 2-14: Variation of Revenue and Expenditure of the Central Government of Tanzania from 1989 to 1996..... | 2-53 |
| Figure 2-15: Ward Classification Map..... | 2-58 |
| Figure 3-1: Location Map of Survey Points..... | 3-3 |
| Figure 3-2: Drainage Network of DSM | 3-14 |
| Figure 3-3: Map of Flooded Areas..... | 3-15 |
| Figure 3-4: Road Density Map..... | 3-17 |
| Figure 4-1: Assumed Finishing Dimension of the Vingunguti Site..... | 4-20 |
| Figure 4-2: Waste Paper Recycling System | 4-27 |
| Figure 4-3: Scrap Metal Recycling System..... | 4-28 |
| Figure 4-4: General Plan of Vingunguti Weighbridge..... | 4-43 |
| Figure 5-1: Present Organisational Structure of DCC | 5-9 |
| Figure 5-2: Cleansing Services Unit Structure..... | 5-10 |
| Figure 5-3: Breakdown of Refuse Disposal Cost for DCC in 1994..... | 5-14 |
| Figure 5-4: Amount of Wastes Collected by DCC in 1994 | 5-15 |
| Figure 5-5: Breakdown of the Unit Cost of Refuse Disposal | 5-16 |
| Figure 5-6: Unit Cost of Refuse Disposal by Multinet in 1994 | 5-17 |
| Figure 5-7: Comparison of Unit Cost of Refuse Disposal between DCC Operation and Multinet Operation in 1994..... | 5-19 |
| Figure 5-8: Proposed Waste Stream Model for DSM..... | 5-26 |
| Figure 5-9 shows the current waste stream..... | 5-39 |
| Figure 5-10: Waste Stream in DSM in 1996..... | 5-39 |
| Figure 5-11: Latest RCC Collection Rates of Private Concessionaires..... | 5-45 |
| Figure 5-12: Incentive for Collection of RCC | 5-47 |
| Figure 5-13: Short-Term RCC Improvement Programme by SDP..... | 5-49 |
| Figure 6-1: Location of Candidate Sites for Final Disposal..... | 6-2 |

| | |
|---|-------|
| Figure 6-2: Population Forecast for the Study Area..... | 6-5 |
| Figure 6-3: Estimated Range of the Population Mean of Willingness to Pay by Type of Area..... | 6-10 |
| Figure 6-4: review on Transition of estimated cut-off Rates | 6-12 |
| Figure 6-5: Review on Transition of weighted Average Yields during Treasury Bill Actions..... | 6-12 |
| Figure 6-6: Review on Transition of Exchange Rate | 6-13 |
| Figure 7-1: Proposed Basic Organisational Structure of Waste Management Authority | 7-2 |
| Figure 7-2: Proposed Administration and Financial Unit | 7-3 |
| Figure 7-3: Proposed Districts Operational Services Section | 7-3 |
| Figure 8-1: Intermediate Treatment Technologies and Resource Recovery Method..... | 8-25 |
| Figure 8-2: Landfill Structures | 8-46 |
| Figure 8-3: Illustration of Prospective Sanitary Landfill Development and Operation Levels 2, 3 and 4..... | 8-48 |
| Figure 8-4: Comparison of Collection Cost by Vehicles | 8-55 |
| Figure 9-1: Waste Stream for DSM in 2002 | 9-6 |
| Figure 9-2: Waste Stream for DSM in 2005 | 9-6 |
| Figure 9-3: Location Map of SWM Facilities | 9-13 |
| Figure 9-4: Master Plan of Waste Collection..... | 9-14 |
| Figure 9-5: Master Plan of The Waste Stream..... | 9-14 |
| Figure 9-6: Main Indices of the Master Plan..... | 9-16 |
| Figure 9-7: Required Number of Trucks for Refuse Collection | 9-21 |
| Figure 9-8: Proposed Waste Collection Amount by The Type of Vehicles..... | 9-21 |
| Figure 9-9: Procedure of Environmental Consideration of JICA | 9-52 |
| Figure 9-10: Implementation Programme of the Master Plan..... | 9-65 |
| Figure 10-1: The existing medical waste disposal methods in Dar es Salaam | 10-20 |

Appendix

| | |
|--|------|
| Figure A - 1 Estimate of Revenue from Development Levy..... | A-1 |
| Figure A - 2 Estimate of Revenue from Property Tax | A-2 |
| Figure A - 3 Estimate of Revenue from Petrol Levy..... | A-3 |
| Figure A - 4 Estimate of Revenue from Service Levy | A-4 |
| Figure A - 5 Estimate of Revenue from Hotel Levy | A-5 |
| Figure A - 6 Estimate of Revenue from Business Licences..... | A-6 |
| Figure A - 7 estimate of Revenue from Market Dues | A-7 |
| Figure A - 8 Estimate of Revenue from Other Sources | A-8 |
| Figure A - 9 Achievement Rate of Each Revenue Source to the Potential (%)..... | A-11 |
| Figure A - 10 Growth Rate of Each Revenue Source to the Previous Year (%)..... | A-11 |
| Figure A - 11 Estimate of DCC's Revenue (Optimistic Scenario) | A-15 |
| Figure A - 12 Estimate of Share in All (Optimistic Scenario)..... | A-15 |
| Figure A - 13 Estimate of DCC's Revenue (Moderate Scenario)..... | A-16 |
| Figure A - 14 Estimate of Share in All (Moderate Scenario)..... | A-16 |
| Figure A - 15 Estimate of DCC's Revenue (Pessimistic Scenario)..... | A-17 |
| Figure A - 16 Estimate of Share in All (Pessimistic Scenario)..... | A-17 |
| Figure A - 17 Results of FIRR Calculation (Typical Cases)..... | A-46 |

List of Abbreviations

| | |
|----------|--|
| AIDS | Acquired Immune Deficiency Syndrome |
| a.m.s.l. | Above Mean Sea Level |
| ANGOZA | Association of Non-Governmental Organisations in Zanzibar |
| BET | Board of External Trade |
| CBO | Community Based Organisation |
| CCF | Consumption Conversion Factor |
| CCM | Chama Cha Mapinduzi (The Revolution Party) |
| CRE | Central Register of Establishment |
| DANIDA | Danish International Development Assistance |
| DCC | Dar es Salaam City Council or Dar es Salaam City Commission |
| DF/R | Draft Final Report |
| DIS | Disposal Interview Survey |
| DLW | Domestic Liquid Waste |
| DSM | Dar es Salaam |
| DSSD | Dar es Salaam Sewerage and Sanitation Department of the City Council |
| EIRR | Economic Internal Rate of Return |
| ESAF | Enhancement Structural Adjustment |
| FIRR | Financial Internal Rate of Return |
| F/S | Feasibility Study |
| F/R | Final Report |
| GTZ | Deutsche Gesellschaft fur Technische Zusammenarbeit |
| HISW | Hazardous Industrial Solid Waste |
| HIV | Human Immune-deficiency Virus |
| IC/R | Inception Report |
| ILO | International Labour Organisation |
| ILW | Industrial Liquid Waste |
| ISW | Industrial Solid Waste |
| ISWM | Industrial Solid Waste Management |
| IUCN | International Union for Conservation of Nature and Natural Resources |
| IW | Industrial Waste |
| JICA | Japan International Cooperation Agency |
| IDS | Illegal Dumping Survey |
| IT/R | Interim Report |
| M.A. | Medical Assistant |
| M/M | Minute of Meeting |
| MSW | Medical Solid Waste |
| MSWM | Medical Solid Waste Management |
| MI&T | Ministry of Industry and Trade |
| MLD | Megalitres per day |
| MWEM | Ministry of Water, Energy and Minerals |
| NCSSD | National Conservation Strategy for Sustainable Development |
| NEAP | National Environment Action Plan |
| NEMC | National Environment Management Council |
| NEAP | National Environment Action Plan |
| NEP | National Environment Plan |
| NGO | Non-Governmental Organisation |
| NHC | National Housing Corporation |
| NORAD | Norwegian Development Agency |

| | |
|----------|--|
| NUWA | National Urban Water Authority |
| O & M | Operation and Maintenance |
| PMO | Prime Minister's Office |
| POS | Public Opinion Survey |
| P/R | Progress Report |
| RA | Rural Area |
| RCC | Refuse Collection Charge |
| RMA | Rural Medical Aid |
| RPF | Rolling Plan and Forward Budget |
| RS | Recycling Survey |
| RTD | Radio Tanzania Dar es Salaam |
| RTO | Regional Trade Office |
| SAF | Structural Adjustment Facility |
| SCF | Standard Conversion Factor |
| SCP | Sustainable Cities Programme |
| SDP | Sustainable Dar es Salaam Project |
| SKAT | Swiss Centre for Development Co-operation in Technology and Management |
| SIDA | Swedish International Development Authority |
| STD | Sexually Transmitted Disease |
| SUPA | Semi-urban Planned Developed Area |
| SUUA | Semi-urban Unplanned Developed Area |
| S/W | Scope of Works |
| SWM | Solid Waste Management |
| TACOSODE | Tanzanian Council of Social Development Inc. |
| TANGO | Tanzanian Association of Non-Governmental Organisations |
| TANESCO | Tanzanian Electricity Supply Company |
| TAZARA | Tanzania Zambia Railway Authority |
| TCCIA | Tanzanian Chamber of Commerce, Industry and Agriculture |
| TRC | Tanzania Railways Corporation |
| Tsh | Tanzanian Shilling |
| TTCL | Tanzanian Telephone Company Ltd. |
| UA | Urban Area |
| UCLAS | University College of Land and Architectural Studies |
| UDSM | University of Dar es Salaam |
| UES | Urban Environment Sanitation |
| UN | United Nations |
| UNCHS | United Nations Centre for Human Settlements (Habitat) |
| UNDP | United Nations Development Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| UPE | Universal Primary Education Contribution |
| URTI | Upper Respiratory Tract Infections |
| USAID | United States Agency for International Development |
| USD | United States Dollar |
| WACS | Waste Amount and Composition Survey |
| WCP | Waste Collection Point |
| WAGR | Waste Generation Rate |
| WHO | World Health Organisation |
| WMA | Waste Management Authority |
| WOSS | Waste from Other Sources Survey |

Glossary

| | |
|---------------------|---|
| Concession contract | A contract system in which the contractor which is entrusted refuse collection and transportation work in a certain area are granted the right to collect RCC from its beneficiaries. |
| Contracting out | A contract system in which the client make payment to the contractor in return for performing refuse collection and transportation work. |
| Concessionaire | The contractor that works in the concession contract. |
| Special RCC | A refuse collection charge which is applied to all wastes other than household and informal wastes and also applied to bulky waste collection, door to door collection, garden waste collection and any other refuse where collection costs are generally more expensive than for household waste. DCC collects Special RCC in this report. |
| Informal waste | Waste generated through the activities which do not reflect the statistic data. |

Chapter 1

Introduction

1 Introduction

1.1 Background of the Study

The city of Dar es Salaam is the centre for the industrial, commercial and administrative activities of Tanzania, and has a population of about 2.26 million. Due to rapid population growth and lack of adequate infrastructure improvement schemes, the urban environmental condition is deteriorating rapidly.

To solve this problem, the Government of Tanzania formulated the national environmental action plan with the assistance of the World Bank in June 1994. Although the plan proposes the improvement strategy of the urban environment sanitation, concrete countermeasures have not been proposed yet.

The present solid waste management system of the city only collects about 8.1 % of the total waste generation amount, 1,772 tons per day, due mainly to insufficient and decrepit equipment. Uncollected refuse are mostly stockpiled in vacant lands near residential areas, thereby deteriorating the sanitary conditions of the town and exposing the area to dangers of fire. The living environment of neighbouring areas of the existing disposal site is also affected by the insanitary disposal operations.

Consequently, the enhancement of the sanitary conditions of the urban environment, especially through the reinforcement of the cleansing services to cope with the increase in solid waste generation, and the formulation of a master plan are urgently required.

Under such circumstances, the Government of Tanzania officially made a request to the Government of Japan to implement the study on the solid waste management (SWM) for Dar es Salaam City in the Republic of Tanzania.

In response to this request, the Japan International Co-operation Agency (JICA), the official agency responsible for the implementation of the technical co-operation programs of the Government of Japan, conducted the Scope of Work for the Study with the DCC of the Government of Tanzania. Kokusai Kogyo Co., Ltd. carried out the Study.

1.2 Scope of the Study

The study area consisted of thirty-nine wards under the jurisdiction of the Dar es Salaam City Council as shown in the location map of the study area attached at the front page.

1.2.1 Objectives of the Study

The objectives of the Study were as follows.

- to identify urban environment sanitation issues after assessing the environmental conditions of Dar es Salaam City
- to formulate a master plan for the improvement of solid waste management based on the assessment of the urban environment

- to conduct a feasibility study on the first priority project based on the master plan
- to carry out solid waste management technology transfer through the conduct of the study

1.2.2 Study Wastes

This study covered household wastes, market wastes, commercial wastes, institutional wastes and street sweeping wastes. As far as industrial and hospital wastes are concerned, a rapid diagnosis was carried out based on existing information and data, and the general recommendations for the improvement in the management of such wastes in Dar es Salaam City is proposed in the master plan.

1.2.3 Target year

The master plan covers the period from 1997 to 2005.

1.3 Policies of the Study

a. Characteristics of an SWM Study

The eminent characteristics of an SWM study were as follows.

- The study had to be carried out during the time when the existing SWM system was operating.
- SWM is directly related to the daily life of the people. The proposed plan would not be sufficient and workable if it only considered the intentions of the administrators and officers concerned in SWM. It had to take the opinions of the citizens into consideration as well.
- An appropriate SWM system cannot be established without the mutual cooperation of the public and administration. In this context, a proper understanding of the social and cultural background of the study area was essential in the preparation of an SWM plan.
- The formulation of a solid waste management plan needed the understanding of the educational background of the residents, their ways of thinking, customs and traditions, as well as the technical and economic conditions of the present solid waste management system, and the natural and socio-economic conditions of the study area. Knowledge of these details contributed to the effective implementation of pilot projects, e.g., waste collection pilot projects, sanitary landfill operations pilot projects, in the study area.

b. Policies of the Studies

Upon careful consideration of the characteristics of the solid waste management system of Dar es Salaam, the following were set up as the basic policies of the Study.

- The most important issue in the formulation of the solid waste management plan for Dar es Salaam City was guidance in institutional building and consolidation of the financial system of the cleansing services. Therefore a plan that would ensure a sustainable solid waste management system should be formulated.

- The solid waste management plan to be formulated suited the conditions in Dar es Salaam City and guides the phased implementation of improvement programmes.
- The plan develops and employs the technologies most appropriate for the solid waste management system of Dar es Salaam City.

c. Joint Study

With the above-mentioned reasons, the Study Team proposed that the implementation of the study to be carried out with the cooperation and active participation of the Tanzanian side, especially regarding the following works:

- public opinion survey
- survey on private contractors of waste collection and disposal
- study on waste amount and composition
- compost market survey
- survey on scavengers
- survey of recycling system and market for reusable materials
- survey on industrial and medical wastes, including questionnaire survey
- execution of pilot projects
- educational campaign for the residents in conjunction with the pilot project
- Vingunguti disposal site improvement
- organisational and institutional planning
- financial planning
- prompt decision making for the selection of sites for primary facilities, level of the collection fees and other important matters which require the decision of the Tanzanian side.

1.4 Key Assumptions

Key Assumptions used in the Study were as follows;

a. Socio-economic Conditions

| Items | Unit | Descriptions | | | |
|--|-------------|------------------------------|-----------|-----------|-----------|
| | | 1996 | 1999 | 2002 | 2005 |
| 1. Population | | | | | |
| Population in DSM | persons | 2,261,000 | 2,859,000 | 3,736,000 | 5,066,000 |
| Population of the Study Area | persons | 2,030,000 | 2,455,000 | 3,066,000 | 3,966,000 |
| Annual Growth Rate | %/year | 7.2 | 7.2 | 7.2 | 7.2 |
| 2. Economy | | | | | |
| GDP | million Tsh | 1,830,072 | 2,118,537 | 2,452,471 | 2,839,042 |
| Annual Increase Rate of GDP in Real Term | % | 5.0 | 5.0 | 5.0 | 5.0 |
| Future Budget Scale of the DCC | million Tsh | 5,910 | 8,708 | 12,978 | 20,290 |
| Income Level of the Citizens | Tsh/month | 90,000 | 104,200 | 120,600 | 139,600 |
| Currency Exchange Rate | | 1 US\$ = 597.8 Tsh = ¥120.85 | | | |
| Inflation Rate | % | 10.0 | 10.0 | 10.0 | 10.0 |

b. Waste amount and Composition

| Items | Unit | 1996 | 1999 | 2002 | 2005 |
|---|----------|---------------|------------|------------|------------|
| 1. Waste Amount | | | | | |
| 1-1 Waste Generation Rates | | | | | |
| Household Waste | kg/cap/d | 0.698 | 0.698 | 0.698 | 0.698 |
| Commercial Waste | kg/cap/d | 0.013 | 0.023 | 0.032 | 0.039 |
| Institutional Waste | kg/cap/d | 0.005 | 0.005 | 0.005 | 0.005 |
| Market Waste | kg/cap/d | 0.017 | 0.027 | 0.035 | 0.042 |
| Street Sweeping Waste | kg/cap/d | 40.390 | 40.390 | 40.390 | 40.390 |
| Informal Waste | kg/km/d | 0.139 | 0.119 | 0.102 | 0.088 |
| 1-2 Collection Rate of Household Waste | % | 5 | 15 | 33 | 52 |
| 1-3 Growth Rate of Household Waste Generation Rate | | 0 | 0 | 0 | 0 |
| 2. Waste Composition Forecast | | | | | |
| Kitchen Waste | % | 45.03 | 43 | 42 | 42 |
| Paper | % | 4.07 | 5 | 7 | 8 |
| Textile | % | 1.10 | 1 | 1 | 1 |
| Plastic | % | 2.01 | 3 | 4 | 5 |
| Grass | % | 25.11 | 24 | 23 | 22 |
| Leather and Rubber | % | 0.71 | 1 | 1 | 1 |
| Metal | % | 1.65 | 2 | 2 | 2 |
| Glass | % | 2.90 | 3 | 3 | 3 |
| Soil and Ceramic | % | 0.33 | 1 | 1 | 1 |
| Others | % | 17.09 | 17 | 16 | 15 |
| Total | % | 100.00 | 100 | 100 | 100 |

c. Life Span of Equipment and Facilities

| | Life Span (years) | Salvage value (%) |
|---------------------------|-------------------|-------------------|
| Container | 7 | 0 |
| Truck and Heavy Equipment | 7 | 10 |
| Machinery | 15 | 0 |
| Buildings | 30 | 0 |

Note: The life span of civil works and facilities other than buildings or the disposal site depends on the period of its operation.

d. Executing Bodies and Financial Sources

| | 1997 | 2002 | 2005 |
|--|--|--|--|
| 1.Responsible Body | Cleansing unit, Health dept. | Waste Management Authority | Waste Management Authority |
| 2.Operation System of Collection Service | | | |
| UA | Concessionaire | Contractors | Contractors |
| SUPA | Concessionaire and DCC | DCC, Contractors | Contractors |
| SUUA | Concessionaire and DCC | DCC | DCC, Contractors |
| RA | No service | No service | DCC |
| 3.Operation System of Disposal Sites | | | |
| Vingunguti | DCC direct | Closed | Closed |
| Kunduchi New MECCO | - | DCC direct | Kinondoni Municipality |
| Ilala | - | - | Ilala Municipality |
| Temeke | - | - | Temeke Municipality |
| 4.Contract System | Concession | Tender by ward Lump sum contract | Tender by ward Lump sum contract |
| 5.RCC | Collected by concessionaires | Alternative 1 Joint-billing with water supply Alternative 2 RCC collection by DCC | Alternative 1 Joint-billing with water supply Alternative 2 RCC collection by DCC |
| 6.Financial Sources | | | |
| DCC's service area | DCC's budget | Special fund from city taxes as a main financial source and RCC | Special fund from city taxes as a main financial source and RCC |
| Private contractor's service area | Collection of refuse collection charge | | |

1.5 Work Schedule of the Study

The study commenced in March of 1996 and ended in September of 1997. It was carried out according to the following three phases:

Phase 1: Assessment of urban environment sanitation in Dar es Salaam City

A. Preparation work in Japan

- Preparation of the inception report

B. First study work in Tanzania, the first half

- Survey of urban environmental condition

Phase 2: Formulation of a solid waste management master plan

C. First study work in Tanzania, the latter half

- Survey of urban environmental condition
- Understanding the current solid waste management condition
- Assessment and identification of problems
- Preliminary study for the formulation of a solid waste management master plan

D. First study work in Japan

- Formulation of the solid waste management master plan

- Selection of the first priority project

Phase 3: Feasibility study on the first priority project

E. Second study work in Tanzania

- Field Survey for the first priority project
- Implementation of pilot projects

F. Second study work in Japan

- Preliminary Design of the first priority project
- Environmental assessment
- Financial plan
- Project evaluation

G. Third study work in Tanzania

- Draft final report formulation

H. Third study work in Japan

- Final report formulation

1.6 Study Organisation and Persons Involved

1.6.1 Study Organisation

Dar es Salaam City was the Team's counterpart agency and coordinating body in relation with other governmental and nongovernmental organisations concerned.

The Dar es Salaam City Council organised a Counterpart Team for the Study Team. The Counterpart Team consisted of the City Council's staff in charge of the various aspects of solid waste management.

The Steering Committee, which was organised by the Tanzanian side, convened at the time of the submission of the Inception Report, Interim Report and Draft Final Report, to make the strategic decisions related to the Study.

The Advisory Committee, which was organised by JICA, gave necessary advice to JICA.

Figure 1-1 shows the study organisational structure.

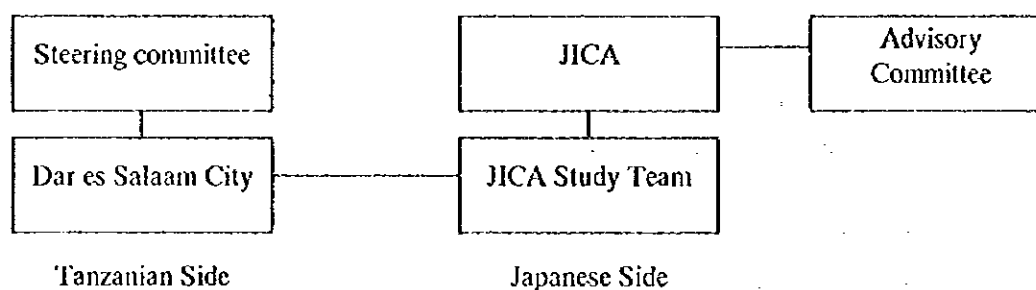


Figure 1-1: Study Organisational Structure

1.6.2 Persons Involved

a. Member of Tanzanian Steering Committee

| | |
|----------------------------|--|
| Chairman of the Committee | • City Director, Dar es Salaam City Council |
| Secretary of the Committee | • City Medical Officer of Health, Dar es Salaam City Council |
| Other Members | <ul style="list-style-type: none"> • Representative of Vice President's Office • Representative of Prime Minister's Office • Representative of Ministry of Works • Representative of Ministry of Land, Housing and Urban Development • Representative of Ministry of Finance • Representative of National Urban Water Authority • Representative of Ministry of Trade and Industries • Representative of Ministry of Health • Representative of Planning Commission |

b. Member of Tanzanian Counterpart

| | |
|-----------------------|--|
| Full Time Counterpart | • Mr. Kizito Nkwabi, Officer, Health Department |
| Part Time Counterpart | <ul style="list-style-type: none"> • Mr. A. R. M. Gamba, City Engineer • Mr. F. T. Ernest, Acting City Planner • Mr. M. C. X. Mwijhava, Acting Coordinator of Solid Waste management • Mr. P. Boma, City Mechanical Engineer • Mrs. Paulina Lerise, SDP, Member of Solid Waste management • Mr. L. C. Ndunguru, Health Officer (Cleansing) |

c. Member of the JICA Advisory Committee

| | |
|-------------------------------------|---|
| Chairman, Solid Waste Management | Dr. Isam YOKOTA Professor, Laboratory of Environmental Management, Graduate School of Nutritional and Environmental Sciences, The University of Sizuoka |
| Environmental Management Plan | Tetsuro FUJITSUKA Vice Director, Strategic Environmental Planning Division, Environmental Agency |

d. Member of the Study Team

| Assignment | Expert | Nationality |
|--|--------------------------|---------------|
| Team Leader & Solid Waste Management Plan | Susumu SHIMURA | Japanese |
| Urban Environment Sanitation (1) & Collection and Transport Plan | Akira DOI | Japanese |
| Intermediate Treatment Plan | Jacob Skovgaard Pedersen | Danish |
| Analysis of Solid Waste Composition | Precha CHUNTAKORN | Thai |
| Final Disposal Plan & Facility Design | Takeshi TOMIYASU | Japanese |
| Organisational and Institutional Development Plan | Luiz Edmundo Costa Leite | Brazilian |
| Financial and Economic Analysis | Takehiko OGAWA | Japanese |
| Environmental Impact Assessment & Urban Environment Sanitation (2) | Sean Matthew Finnigan | New Zealander |
| Social Considerations & Public Education | Hatue MAEDA | Japanese |
| Administrative Coordinator | Tomomi ABE | Japanese |

1.6.3 Reports

The JICA Study Team prepared and submitted the following reports in English to the Government of Tanzania.

| | Report | Period of Submission | Number of copies submitted |
|---|--------------------|-------------------------|--|
| 1 | Inception Report | early March 1996 | 20 copies |
| 2 | Progress Report(1) | end of May 1996 | 20 copies |
| 3 | Progress Report(2) | end of August 1996 | 20 copies |
| 4 | Interim Report | middle of December 1996 | 20 copies |
| 5 | Progress Report(3) | end of March 1997 | 20 copies |
| 6 | Draft Final Report | middle of July 1997 | Main report (1): 20 copies Main report (2): 20 copies Supporting report: 5 copies Data book: 3 copies Summary: 20 copies E.I.A. report: 10 copies |
| 7 | Final Report | October 1997 | Main report (1): 40 copies Main report (2): 40 copies Supporting report: 20 copies Data book: 10 copies Summary: 30 copies |

1.6.4 Technology Transfer

The Study Team pursued technology transfer for the Tanzanian counterparts through the conduct of the following during the study:

- On-the-job training
- Counterpart training in Japan under the Japanese technical cooperation scheme
- Explanation of reports

