

Municipal Solid Waste Management in Asia



Asian Regional Research Program on Environmental Technology (ARRPET)



Asian Institute of Technology

Table of Contents

Project team	i
Preface	iii
Executive Summary	v
Table of Contents	vii
List of Acronyms and Abbreviations	x
Chapter 1 URBANIZATION AND MUNICIPAL SOLID WASTE MANAGEMENT	1
1.0 Introduction	1
1.1 Significance and Issues of Municipal Solid Waste Management	1
1.2 Current Scenario of the Study Countries	3
1.2.1 China	3
1.2.2 India	3
1.2.3 Sri Lanka	4
1.2.4 Thailand	5
1.3 Emerging Trends and Changes	5
1.3.1 China	5
1.3.2 India	6
1.3.3 Sri Lanka	7
1.3.4 Thailand	7
1.4 Conclusion	8
Chapter 2 PRESENT SCENARIO OF MUNICIPAL SOLID WASTE MANAGEMENT	9
2.0 Introduction	9
2.1 Overview of Technical Issues	9
2.1.1 Waste generation	10
2.1.2 Waste composition and characterization	11
2.1.3 Source segregation	16
2.1.4 Waste collection and transport	18
2.1.5 Processing of MSW: Composting	23
2.1.6 Processing of MSW: Incineration	26
2.1.7 Waste minimization and recycling	28
2.1.8 Disposal of MSW	32
2.2 Stakeholders and Management of MSWM	36
2.2.1 National and local government agencies	36
2.2.2 Formal and informal sector	40
2.2.3 Non governmental organizations and other private organizations	45
2.2.4 Public participation	49
2.2.5 Women's participation	52

2.3 Economic and Financial Aspects	52
2.4 Health Aspects	57
2.5 Legal Aspects	60
Chapter 3 RECOMMENDATIONS FOR NEW DIRECTIONS AND STRATEGIES	67
3.0 Introduction	67
3.1 China	68
3.1.1 Technical aspects	68
3.1.2 Institutional aspects and capacity building	69
3.1.3 Legal aspects	70
3.1.4 Economics and finance	70
3.2 India	70
3.2.1 Technical aspects	71
3.2.2 Institutional aspects and capacity building	72
3.2.3 Legal aspects	73
3.2.4 Economics and finance	73
3.2.5 Health issues	73
3.2.6 Social aspects and public awareness	74
3.3 Sri Lanka	74
3.3.1 Technical aspects	74
3.3.2 Institutional aspects and capacity building	75
3.3.3 Legal aspects	75
3.3.4 Economics and finance	76
3.3.5 Health issues	76
3.4 Thailand	76
3.4.1 Technical aspects	76
3.4.2 Institutional aspects and capacity building	77
3.4.3 Legal aspects	77
3.4.4 Economics and finance	77
3.4.5 Health issues	78
3.4.6 Public awareness	78
Chapter 4 SUSTAINABLE MUNICIPAL SOLID WASTE MANAGEMENT	79
4.0 Introduction	79
4.1 Approaches to Sustainable Municipal Solid Waste Management	81
4.1.1 Upstream approach	83
4.1.2 Downstream approach	86
4.2 Approaches to the Existing MSWM Problems	89
4.3 Recommendations for Sustainability of MSWM	90

4.3.2 Management aspects	92
4.3.3 Financial aspects	92
4.3.4 Legislative aspects	93
4.3.5 Supportive aspects	95
4.4 Conclusions	96
References	97
Appendices	99