

GE 2211 Environmental Science and Engineering

Unit – III

www.msubbu.in

Solid Waste Management

M. Subramanian

Assistant Professor
Department of Chemical Engineering
Sri Sivasubramaniya Nadar College of Engineering
Kalavakkam – 603 110, Kanchipuram (Dist)
Tamil Nadu, India
[msubbu.in\[AT\]gmail.com](mailto:msubbu.in[AT]gmail.com)

Contents

- Solid waste management - causes, effects and control measures of urban and industrial wastes

www.msubbu.in

Solid Waste Generation in India

- The per capita of MSW generated daily, in India ranges from about 100 g in small towns to 500 g in large towns

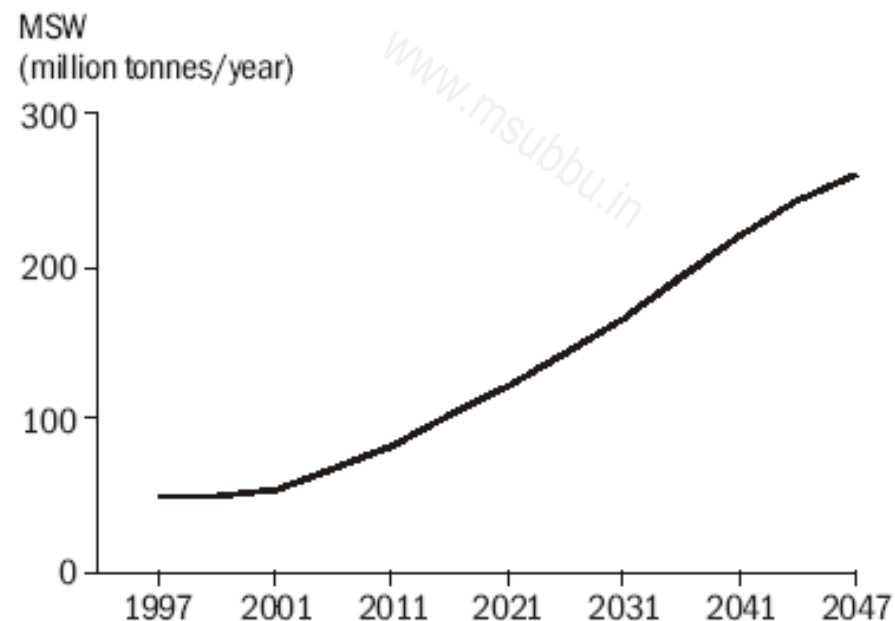


Figure 1 Projected trends in the generation of municipal solid waste (million tonnes/year) according to BAU scenario

Contd..

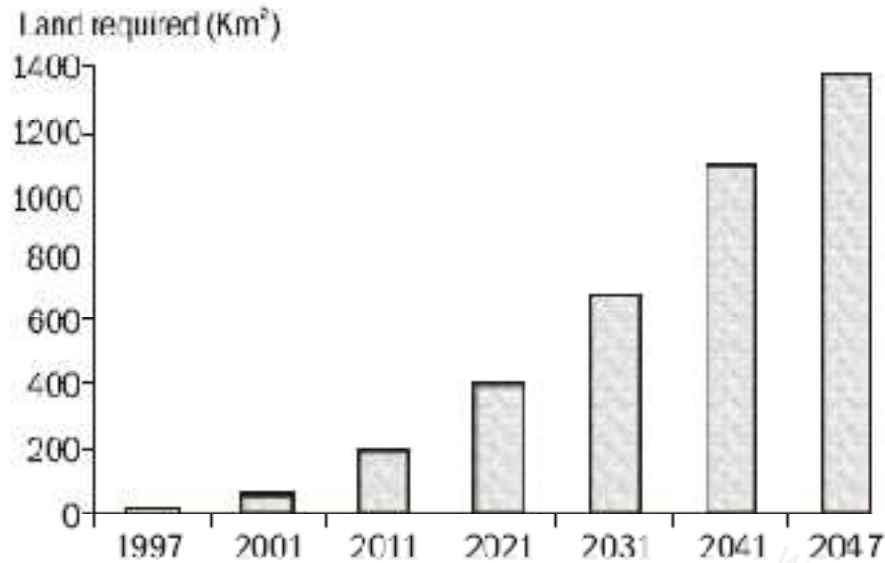


Figure 2 Cumulative land requirement for disposal of municipal solid waste (Km²)

Methane emissions
(million tonnes/year)

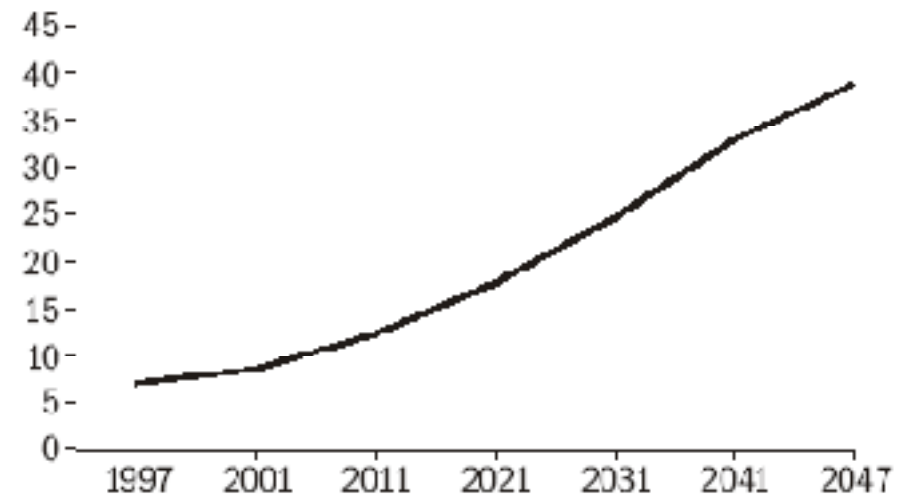
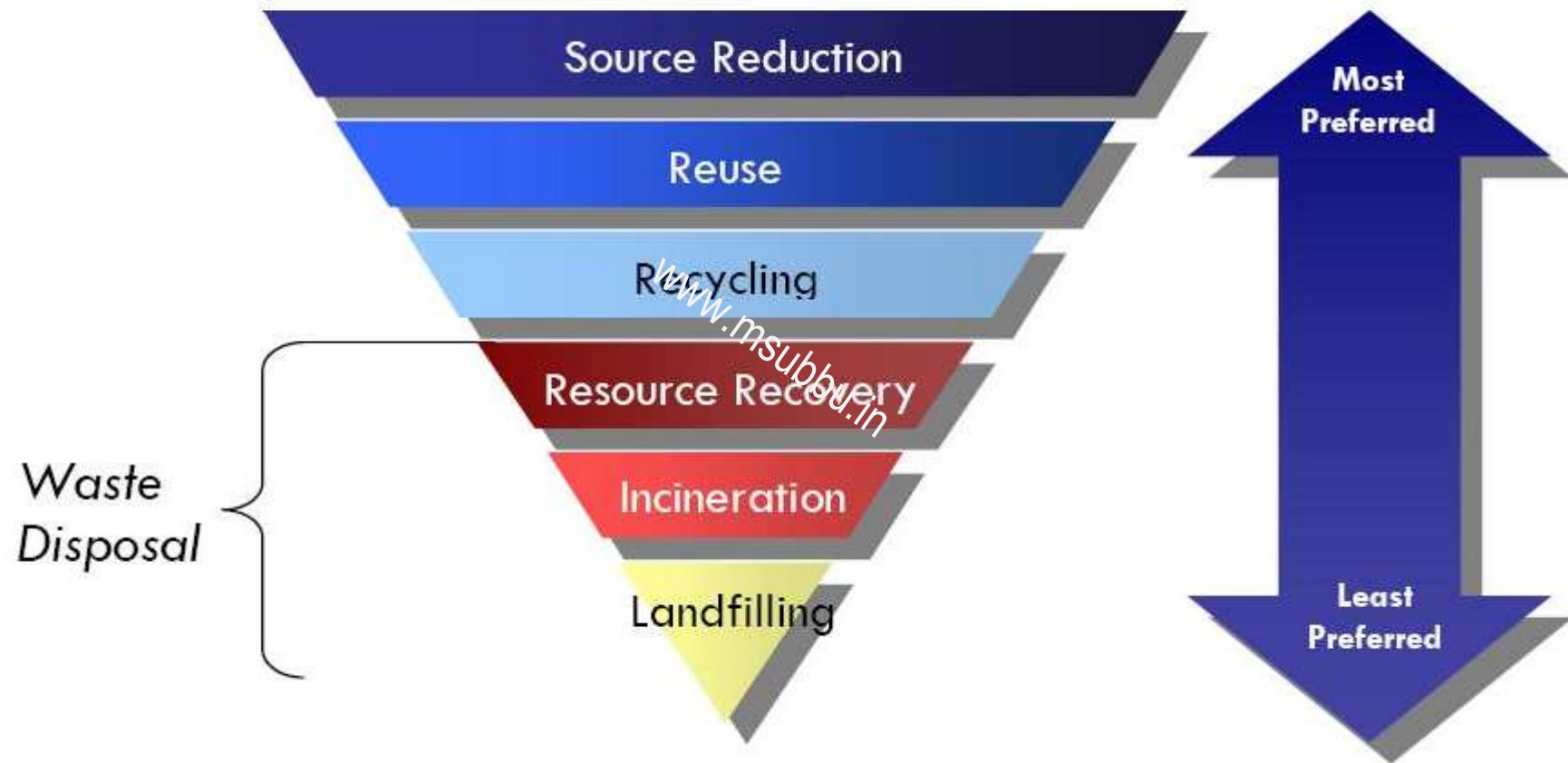


Figure 3 Emission of methane from landfills

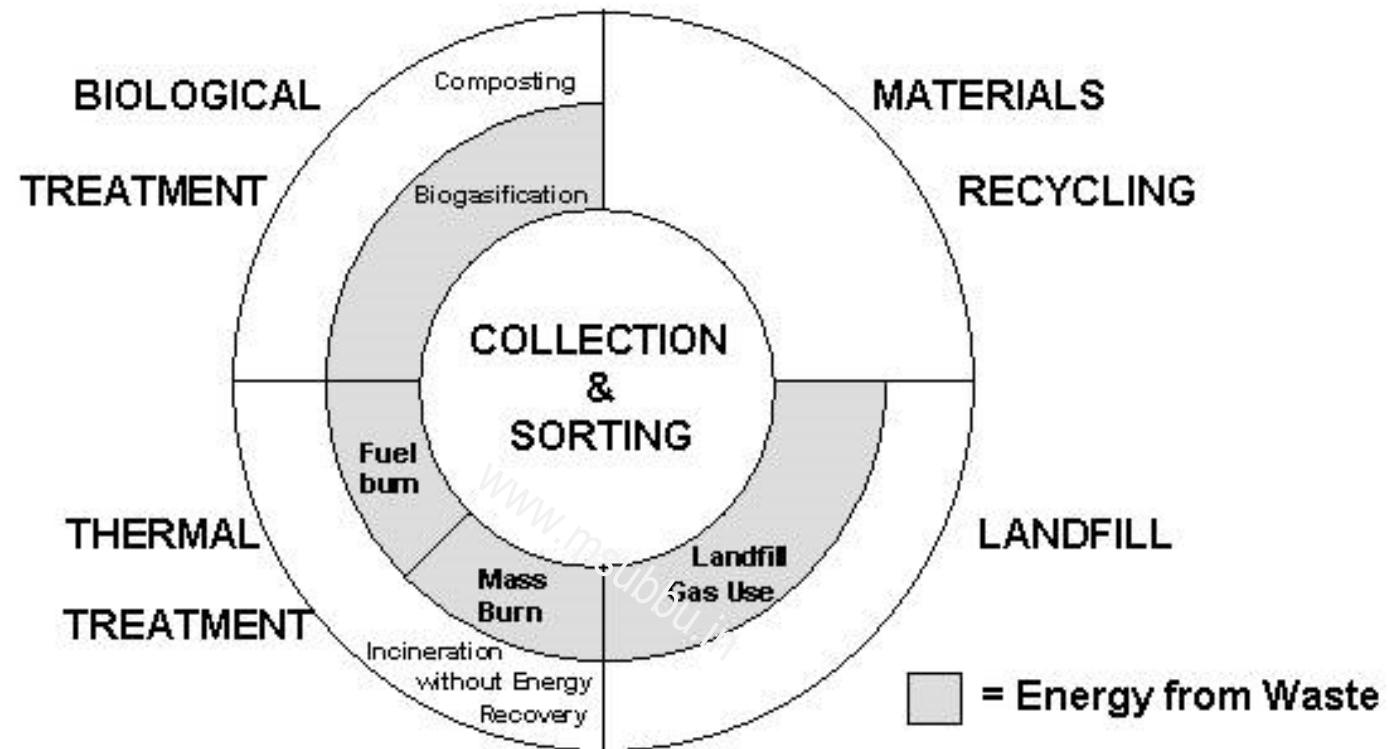
The Waste Hierarchy



The Solid Waste Management Hierarchy



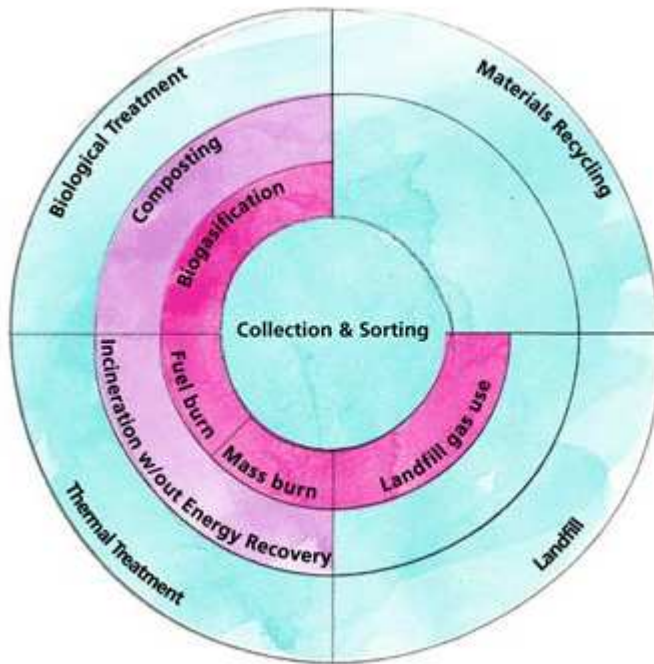
The Elements of Integrated Waste Management



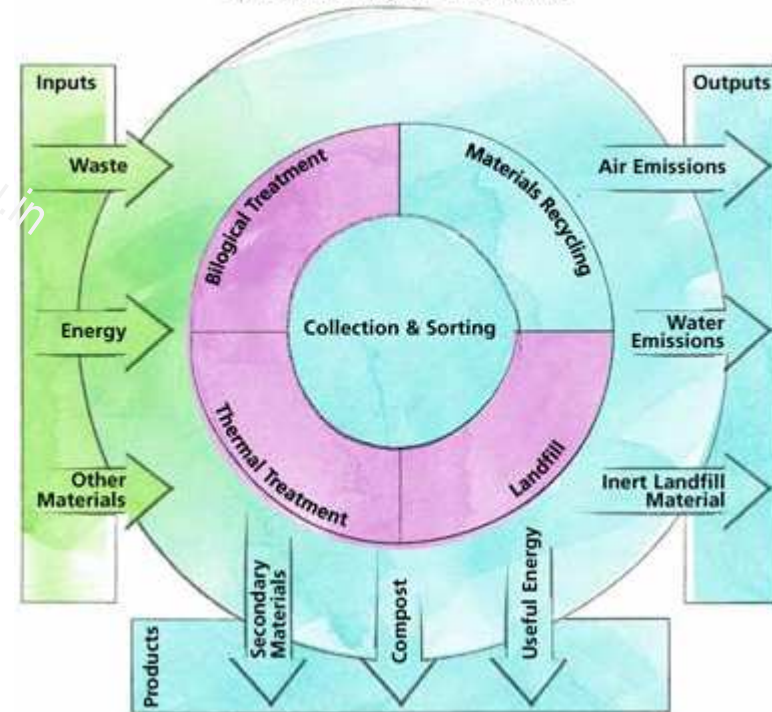
Collection and sorting are at the centre of any successful waste management system.

The four main waste management technologies surrounding the collection and sorting system are shown as equal sized quadrants to illustrate that they must be considered equally when developing a waste management strategy for any location

The Elements of Integrated Waste Management



System boundaries for the environmental life cycle inventory of solid waste





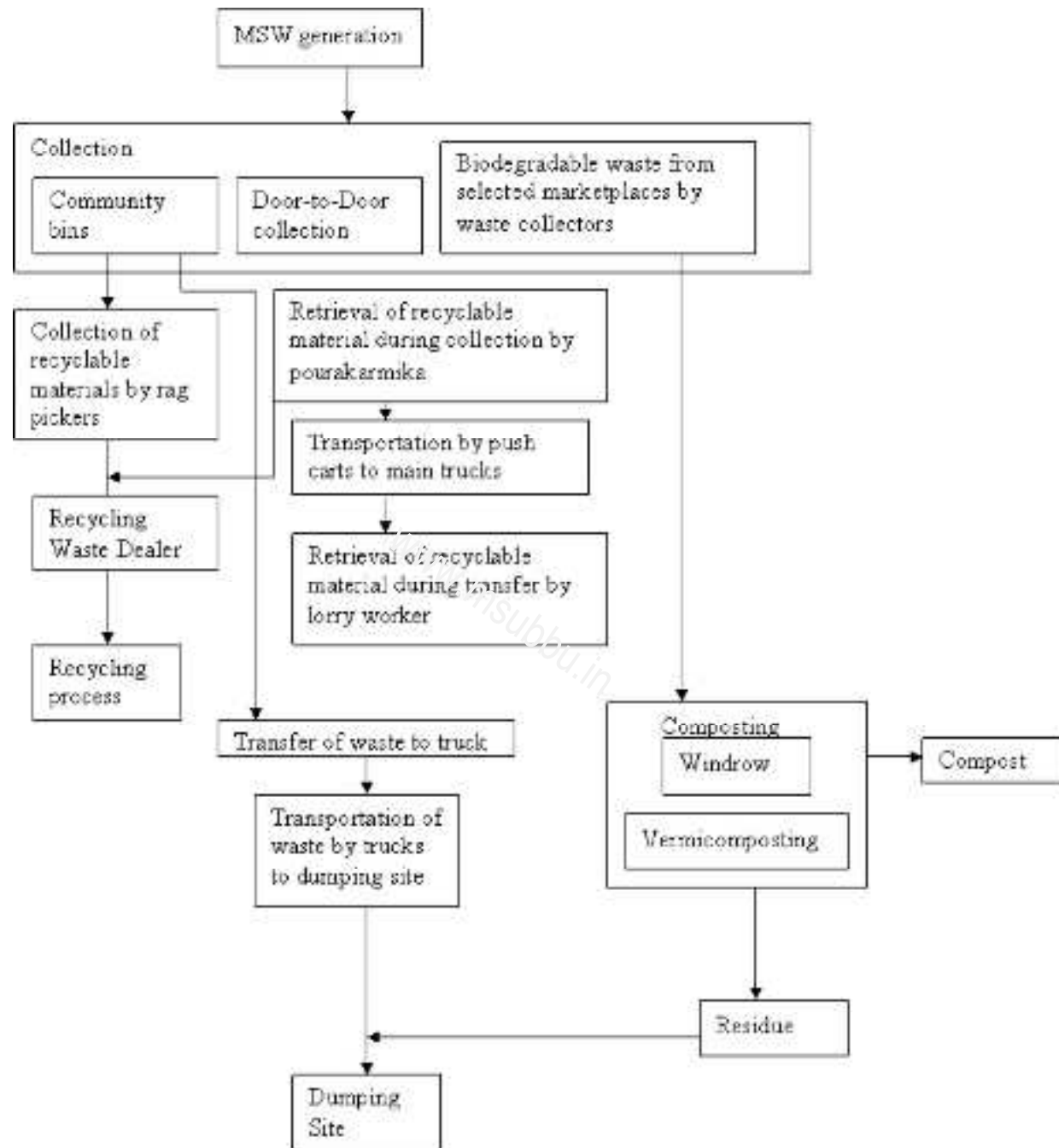
Relative composition of household waste in low, medium and high-income countries

	Parameter	Low-income countries	Medium-income	High-income countries
Contents	Organic (putrecible), %	40 to 85	20 to 65	20 to 30
	Paper, %	1 to 10	15 to 30	15 to 40
	Plastics, %	1 to 5	2 to 6	2 to 10
	Metal, %	1 to 5	1 to 5	3 to 13
	Glass, %	1 to 10	1 to 10	4 to 10
	Rubber, leather, etc., %	1 to 5	1 to 5	2 to 10
	Other, %	15 to 60	15 to 50	2 to 10
Physical and chemical properties	Moisture content, %	40 to 80	40 to 60	5 to 20
Specific weight, kg/m³	250 to 500	170 to 330	100 to 170	
Calorific value, kcal/kg	800 to 1100	1000 to 1300	1500 to 2700	

Source: (INTOSAI working group on environmental auditing, 2002)

Physical characteristics of Bangalore Municipal Solid Waste

Organic waste (%)	60
Dust (%)	5
Paper (%)	12
Plastic (%)	14
Glass (%)	4
Metal (%)	1
Biomedical waste (%)	1
Cardboard (%)	1
Rubber (%)	1
Miscellaneous (%)	1





Perungudi dumping yard

Garbage right from Battery, Plastics, Paper, home waste, extra is burnt at Perungudi Dump yard





The Hindu, 07-Sep-2009, Monday

CHENNAI: Thousands of residents of Kodungaiyur and Perungudi may breathe easy in the coming months as the Chennai Corporation is planning to use Effective Micro-organisms to cope with health hazards associated with the dump yards in the two places.