



Review

Current status of solid waste management in small island developing states: A review



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ARTICLE INFO

Article history:

Received 26 February 2015

Accepted 8 June 2015

Available online 23 June 2015

Keywords:

Small islands developing states

Waste management

Recycling

Composting

Anaerobic digestion

Thermochemical processes

ABSTRACT

This article reviews the current status of waste management in Small Island Developing States (SIDS) and the challenges that are faced in solid waste management. The waste generation rates of SIDS were compared within the three geographic regions namely Caribbean SIDS, Pacific SIDS and Atlantic, Indian Ocean, Mediterranean and South China (AIMS) SIDS and with countries of the Organisation for Economic Co-Operation and Development (OECD). Only Pacific SIDS had a waste generation rate less than 1 kg/capita/day. The waste generation rates for the three SIDS regions averaged 1.29 kg/capita/day while that for OECD countries was at a mean value of 1.35 kg/capita/day. The waste compositions in the different SIDS regions were almost similar owing to comparable consumption patterns while these differed to a large extent with wastes generated in OECD countries. In SIDS, the major fraction of MSW comprised of organics (44%) followed by recyclables namely paper, plastics, glass and metals (total: 43%). In contrast, MSW in OECD countries consisted mainly of recyclables (43%) followed by organics (37%). This article also reviewed the other functional elements of the waste management systems in SIDS. Several shortcomings were noted in the process of waste collection, transfer and transport namely the fact of having outdated collection vehicles and narrow roads which are inaccessible. Among the waste management practices in SIDS, waste disposal via landfilling, illegal dumping and backyard burning were favoured most of the time at the expense of sustainable waste treatment technologies such as composting, anaerobic digestion and recycling.

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1. Introduction

Small Island Developing States (SIDS) are a group of small developing economies that share certain similarities in terms of their remote location and isolation from developed economies, population density, land scarcity and challenges in several sectors of climate change, environment, energy, economy and heavy dependence on the international market (UNEP, 1999; UN-OHRLS, 2014; UNDESA, 2014). There are currently 51 SIDS countries listed worldwide by the United Nations Department of Economic and Social Affairs (UNDESA) (UNDESA, 2014) although the UN (2014a) listed only 39 SIDS while 52 SIDS are also reported when both Bahrain and Netherlands Antilles are included. The list of 39 SIDS can be explained by the fact that islands that are dependent on developed economies are not considered thereby resulting in a lower number of SIDS as reported by UN (2014a). Due to their geographic locations, the 52 SIDS have been grouped in three regions namely: Caribbean SIDS, Pacific SIDS and Atlantic (or Africa), Indian Ocean, Mediterranean and South China (AIMS) SIDS (UNDESA, 2014) as summarised in Table 1.

Among several issues faced by SIDS over the years, increasing waste generation is becoming one of the major problems. Consequently, with this rapidly increasing waste generation, SIDS are faced with a serious issue of solid waste management (SWM). In addition, the problems of land scarcity, lack of economic resources and expertise in the field of waste management considerably reduces the waste management potentials in these islands (UNEP, 1999). As such, the aim of this article is to review the current status and challenges of waste management in SIDS.

2. Waste generation

SWM is a major issue affecting both developed and developing economies due to the increasing amount of wastes generated annually. Increases in waste generation are often associated with economic growth, higher industrialisation, rise in population and higher standards of living (Kothari et al., 2014). Waste generation differs between economies. Developed countries generally have higher waste generation rates than less developed ones. Fig. 1 presents a summary of average municipal solid wastes (MSW) generation rates for the different geographic SIDS regions and countries

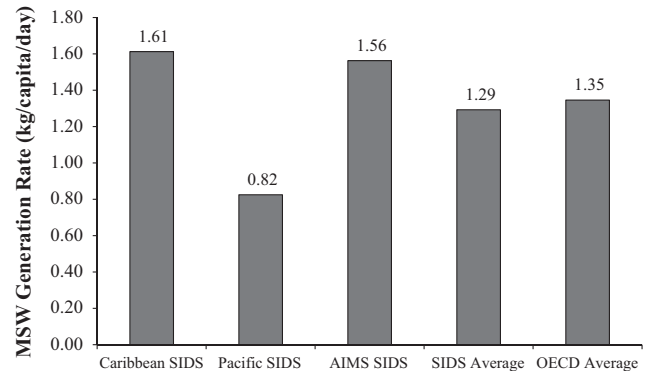


Fig. 1. MSW generation rates in SIDS and OECD countries (compiled based on data from Tables A.1 and A.2).

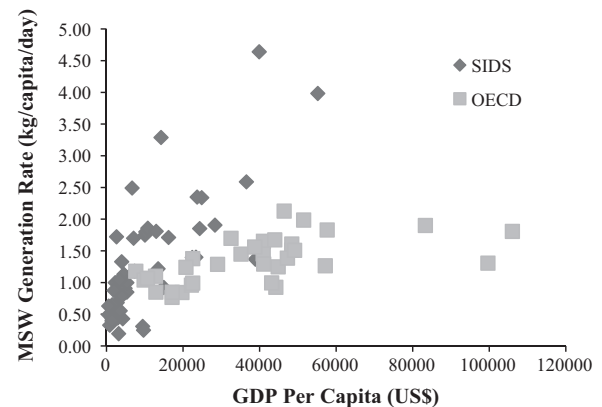


Fig. 2. MSW generation rates vs. GDP per capita in SIDS and OECD countries (compiled based on data from Tables A.1 and A.2).

of the Organisation for Economic Co-Operation and Development (OECD).

Comparing MSW generation rates between SIDS, it can be observed from Fig. 1 that Caribbean SIDS possess higher generation rates as compared to the other SIDS. This can be explained by several factors such as standards of livings and economic growth.

Table 1

List of 52 SIDS (UN, 2014b; UNDESA, 2014; UNESCO, 2014; UN-OHRLS, 2009).

SIDS Region	SIDS Countries
Caribbean	Anguilla, Antigua and Barbuda , Aruba, The Bahamas , Barbados, Belize , British Virgin Islands, Cuba , Dominica, Dominican Republic , Grenada, Guyana , Haiti, Jamaica , Montserrat, Netherlands Antilles , ^a Puerto Rico, Saint Kitts and Nevis , Saint Lucia, Saint Vincent and the Grenadines , Suriname, Trinidad and Tobago , US Virgin Islands
Pacific	American Samoa, Cook Islands , Fiji, French Polynesia , Guam, Kiribati, Marshall Islands, Federated States of Micronesia , Nauru, New Caledonia , Niue, Northern Mariana Islands (Commonwealth of the Northern Marianas) , Palau, Papua New Guinea , Samoa, Solomon Islands , Timor-Leste, Tonga , Tuvalu, Vanuatu
AIMS (Atlantic, Indian Ocean, Mediterranean and South China)	Bahrain, ^b Cape Verde (Cabo Verde) , Comoros, Guinea-Bissau , Maldives, Mauritius , São Tomé and Príncipe, Seychelles , Singapore

^a Netherlands Antilles has been dissolved in 2010 and does not exist per se (Government of the Netherlands, 2015). Nonetheless, it is still included in some SIDS list.

^b Bahrain is sometimes excluded from the SIDS list.

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