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Municipal solid waste: Is it garbage or gold? Article reproduced from United Nations Environment Programme (UNEP) Global Environmental Alert Service (GEAS) ☆

Waste management has become an issue of growing global concern as urban populations continue to increase and consumption patterns change. The health and environmental implications associated with garbage disposal are mounting in urgency, particularly in developing countries. However, the growth of the solid-waste market, increasing resource scarcity and the availability of new technologies are offering opportunities for turning waste into a resource.

1. Why is this issue important?

Urbanization has increased in speed and scale in recent decades, with more than half the world's population now living in urban centres (Tacoli, 2012; UNPD, 2012a) (see Fig. 1). By 2050, urban dwellers probably will account for 86 per cent of the population in developed countries and for 64 per cent of the population in developing countries (UNPD, 2012a). Rapid urban population growth has resulted in a number of land-use and infrastructural challenges, including municipal solid-waste management. National and municipal governments often have insufficient capacity or funding to meet the growing demand for solid-waste management services (Tacoli, 2012). Solid-waste management is the single largest budget item for many cities (World Bank, 2012; UN-HABITAT, 2010).

The waste sector traditionally refers to municipal solid waste and excludes wastewater, which tends to be categorised under the water or industry sectors. The scope of this bulletin is therefore limited to municipal solid waste (MSW). Municipal solid waste is generally composed of electrical and electronic equipment (such as discarded computers, printers, mobile phones, TVs and refrigerators), construction and demolition waste, health-care waste, and waste from households, offices, shops, schools and industries, and agricultural residues. These include food waste, garden (yard) and park waste, paper and cardboard, wood, textiles, nappies (disposable diapers), rubber and leather, plastics, metal, glass (and pottery and china) and refuse such as ash, dirt, dust, soil and electronic waste (Guerrero et al., 2013; IPCC, 2007). The content of MSW differs between developing and developed countries, and even between regions or cities in countries. For example, MSW in developing countries has a much larger proportion of organic waste than in developed countries (World Bank, 2012).

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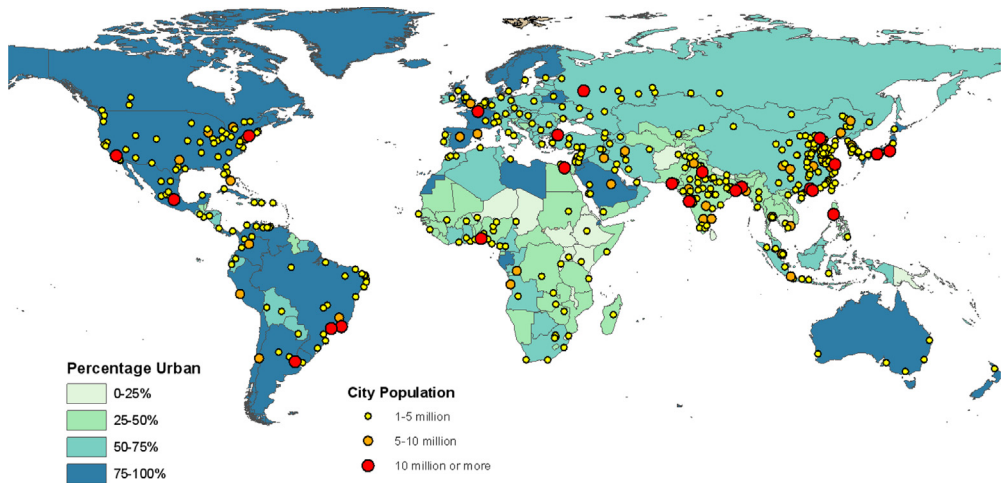


Fig. 1. Percentage of urban population and agglomerations by size class, 2011 (UNPD, 2012b).

Electronic waste constitutes a major source of new and complex hazardous garbage to the environment and human health and presents a growing challenge to both developed and developing countries (UNEP and UNU, 2009). There are concerns over medical consequences from landfill sites and older incinerators, including cancer, mortality, birth defects and low birth weight (WHO, 2007). Ozone-depleting substances released from discarded electronic appliances and building materials (e. g. foams), as well as industrial waste practices, contribute to ozone-layer depletion (UNEP, 2011).

In developing countries, open dumpsites are the most common method of disposing of waste (World Bank, 2012). Dumping of mixed waste occurs alongside open burning, grazing of stray animals and pollution of surface and groundwater by hazardous substances such as leachate and gas (UNEP, 2011). Dumpsites have been linked to many harmful health effects, including skin and eye infections, respiratory problems, vector-borne diseases such as diarrhoea, dysentery, typhoid, hepatitis, cholera, malaria and yellow fever, high blood lead levels and exposure to heavy-metal poisoning (UNEP, 2011). However, in developing countries, data on waste generation and composition are largely unreliable and insufficient, seldom capturing system losses or informal activities (Jha et al., 2011; UN-HABITAT, 2010). Without proper data it might be difficult to design sound strategies or to make wise budget decisions on waste management (Wilson et al., 2012).

This bulletin provides examples from Europe, where considerable progress has been made toward solutions for waste management. Landfill sites continue to represent one of the most serious environmental threats in several European countries (Raco et al., 2013). Cities such as Naples in Italy have experienced extended waste-management crises (Mazzanti et al., 2012). However, new communication tools and technology options such as waste-to-energy (or energy from waste) offer possible strategies forward.

2. What are the findings?

The waste hierarchy is now used globally as a communication tool to remind those who generate waste and those who manage it that **preventing** waste through efficient use of resources and raw materials is the best option. **Re-using** discarded goods without reprocessing or remanufacture is assumed to provide greater savings in resource consumption and is given priority over recycling (Fig. 2) (Wolsink, 2010).

Increased scarcity of natural resources and the consequent rise in commodity prices have influenced the demand for recycled products. The resource value of waste has become an important driver in many developing countries today and provides a livelihood for the urban poor (UN-HABITAT,

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