Municipal Solid Waste

Municipal solid waste (MSW) (also called trash) consists of everyday items such as product packaging, yard trimmings, furniture, clothing, bottles and cans, food, newspapers, appliances, electronics and batteries. Sources of MSW include residential waste (including waste from multi-family housing) and waste from commercial and institutional locations, such as businesses, schools and hospitals. The Environmental Protection Agency’s (EPA) definition of MSW does not include industrial, hazardous or construction and demolition (C&D) waste. Once generated, MSW must be collected and managed. Common management methods include recycling, composting, combustion with energy recovery and landfilling. Many wastes that are landfilled represent a loss of materials that could be reused, recycled or converted to energy to displace the use of virgin materials.

Before the 1970s, MSW management generally consisted of depositing wastes in open dumps, accompanied by open burning to reduce waste volumes. Often industrial hazardous wastes were co-disposed with municipal garbage and refuse in open dumps or landfills. Historically, environmental problems associated with these older landfills have included ground water contamination, emissions of toxic fumes and greenhouse gases, land contamination and increases in pest and disease vector populations, such as rodents, flies and mosquitos. Landfills are now subject to federal or state requirements to minimize these environmental impacts.

This indicator shows trends in the national generation and management of MSW, as well as trends in waste generation intensity from 1960 to 2017. MSW generation and management totals are estimated over time using a materials flow methodology that relies on production data (by weight) for materials and products that eventually enter the waste stream. These data are collected from industry associations, businesses and government agencies. Exhibit 2 compares MSW trends with the official U.S. population and real (inflation-adjusted) GDP. These data are indexed such that 1960 equals one, which allows all variables to be plotted on the same scale.

As a society consumes more materials, it demands more resources like water, energy, minerals and land and generates more pollutants and waste. Sustainable materials management (SMM) refers to the use and reuse of materials in the most productive and sustainable way across their lifecycle, while minimizing the impact on the environment. An important goal of SMM is a reduction in material use without a reduction in economic prosperity. Measuring and understanding the data on MSW generation, recycling, composting, combustion with energy recovery and landfilling is an important foundation for knowing where these valuable materials are going and as well as a good starting point to figure out trends to use resources more efficiently. By employing SMM principles, households, businesses and society can achieve cost savings and reduce the effects on the environment. See www.epa.gov/smm for more information.

What the Data Show

The total quantity of MSW generated in the U.S. grew steadily from 88 million tons (MT) in 1960 to a peak of 268 MT in 2017 (Exhibit 1). Of the MSW generated in 1960, 6 percent was recycled and 94 percent was landfilled or disposed of using other methods (including open burning) (Exhibit 1). In 2017, 25 percent of MSW was recycled, 10 percent was composted, 13 percent was combusted with energy recovery and 52 percent was landfilled or disposed of using other methods (Exhibit 1). The last several decades have seen steady growth in recycling and composting, while the total amounts landfilled peaked in 1990 (145 MT) and have generally declined since then (140 MT in 2017). The total amounts combusted with energy recovery have remained fairly steady since 1990. Disposal practices have also been influenced by the development of large waste-to-energy facilities, particularly during the 1980s.

Overall, from 1960 to 2017, total MSW generation in the U.S. increased by 204 percent. During this time, the
U.S. population increased by 80 percent and the size of the U.S. economy, as measured by real GDP, grew by 455 percent. MSW generation per capita increased by 71 percent from 1960 to 1990 (from 2.7 to 4.6 pounds per person per day) but has leveled off since then. MSW generation per dollar GDP has decreased steadily over the last five decades, with a 45 percent decrease from 1960 to 2017 (Exhibit 2).

Limitations

- The data in this indicator are derived from economic statistics on materials generation and estimates of the lifecycle of goods, rather than from direct facility-based measurements of disposed wastes. However, the four management methods shown in Exhibit 1 are rigorously defined and consistent from year to year, allowing for reliable long-term trend analyses.
- The data presented on landfills represent the amount of MSW left after accounting for recycling, composting and combustion with energy recovery. These data do not indicate the capacity or volume of landfills or the amount of land used for managing MSW. Also, land used for recycling facilities and waste transfer stations is not included in this indicator. Data to describe the amount of land used or total capacity of landfills are not available nationally.
- The data also do not indicate the status or effectiveness of landfill management or the extent to which contamination of nearby lands does or does not occur.
- In Exhibit 2, MSW intensity can only reflect national-scale materials use intensity to a limited degree. Because of international trade, materials extracted or produced in one country may end up being managed as waste in another. This indicator covers waste managed in the U.S., regardless of country of origin.

Data Sources


References


Exhibit 1. Municipal solid waste generated and managed in the U.S., 1960–2017


Information on the statistical significance of the trends in this exhibit is not presented here. For more information about uncertainty, variability, and statistical analysis, view the technical documentation for this indicator.

Data source: U.S. EPA, 2019


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