



Waste Management

International

Countries having the most efficient material waste management system

1. Germany
 2. Austria
 3. South Korea
 4. Wales
 5. Switzerland
- **Sweden** is aiming for a zero waste society.

- Kuwait **produces the most waste**,
 - Generating 5.72 kilograms per capita per day
 - Country lacks proper landfills to dispose of all the **waste**.

Best Recycling Rates (World Economic Forum, 2019)

Top 10 from Longlist - Adjusted Recycling Rate - MSW



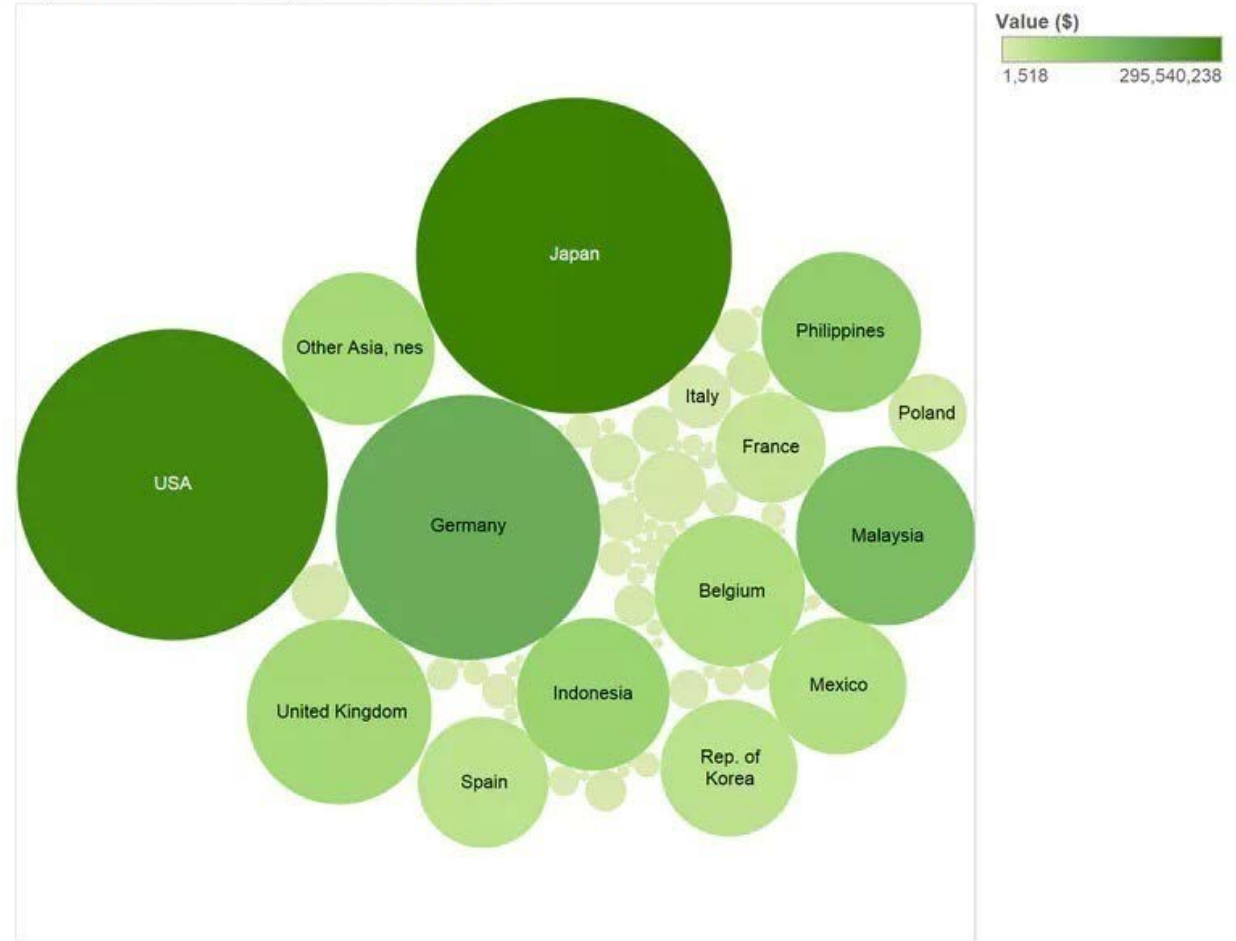
Policies of Top Performing Countries

- Government policies encouraging recycling
 - Easy for households to recycle waste
 - Adequate funding for recycling
 - Financial incentives
 - Clear performance targets and policy objectives for local governments.
 - Wales aims to achieve zero waste by 2050,
 - EU adopting a new target for 2030, thought to be at least 65% (Eunomia, 2019)



Exports of Plastics to China 2016

Exports of Plastic Scrap to China 2016



Data from UN Comtrade Database. Color indicates sum of value in U.S. dollars; size indicates sum of weight in kilograms. Kate O'Neill, CC BY-ND

Germany

- In 1950, Germany had around 50,000 landfills; now they have only 300 which do not accept unsorted garbage
- In 2005, Germany banned traditional garbage dumps replacing them with a much more sophisticated system.
- By 2022, they aim to have decommissioned their remaining landfills and implement plans to utilize all waste and the energy produced
- Garbage dumps have been transformed into:
 - incinerators
 - biological and mechanical waste processing factories
 - Compost

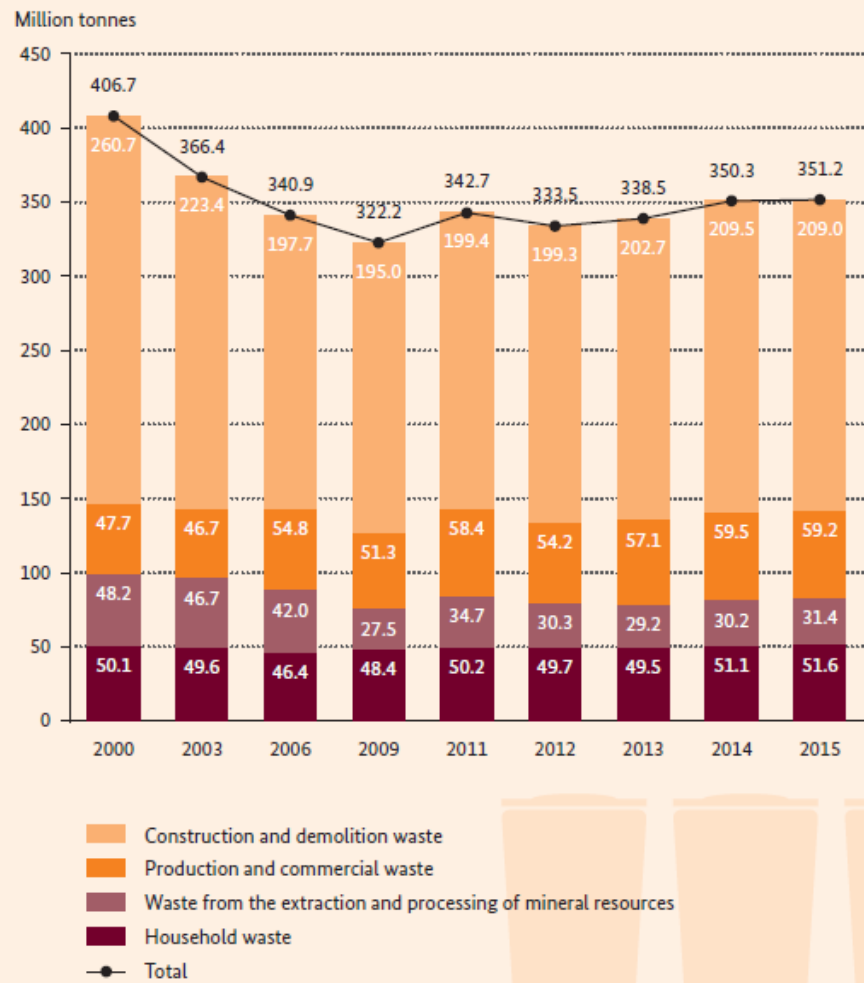


German Controversy

- Since China banned the import of plastic waste, Malaysia has become the first choice for those who want to send their plastic elsewhere.
- Between January and October 2018, Germany exported 114,000 tons of plastic rubbish to Malaysia, an increase of 125 percent.
- Germany produced around 6.2 million tons of plastic waste in 2017, according to the environmental ministry. A little over half of that was burned, while most of the rest is recycled; about a third of that recycling takes place outside the country (Handelsblatt, 2019)

Fig. 1: Waste generation in Germany 2000 – 2015

Including hazardous waste



Waste Prevention

- Waste prevention aims to reduce both the volume of waste and its pollutant content.
- The five-tier waste hierarchy defines the order of priority:
 - Prevention,
 - Preparation for reuse,
 - Recycling,
 - Other forms of recovery (particularly for energy), and
 - disposal.
- Reduce,
- Reuse,
- Recycle,
- Energy recovery
- Disposal

Singapore

- **Singapore** is a highly urbanized and industrialized small island nation with a population of 4.2 million. It has four **waste-to-energy** refuse incineration plants and an offshore sanitary landfill for the **disposal** of non-combustible **waste**.
- Semakau Landfill, Singapore's first offshore landfill, and now the only remaining landfill in the city-state.

This landfill in Singapore is a bio-diversity hotspot

Sweden

- Sweden has run out of trash and is actually asking other countries for their garbage so as it can keep its recycling plants running.
- Imports about 700,000 tons of garbage per year to help produce electricity and heating for small cities,
- High rate of recycling
 - 1% of waste winds up in landfills.
 - Half is recycled and
 - 49% is burned in waste-to-energy facilities,



India

- **PAVING THE STREETS WITH PLASTIC IN INDIA**
- Transformed common plastic litter into a substitute for bitumen — the main ingredient in asphalt used for road construction.
- Environmental and Economical
 - Cheaper plastic substitute replaces 15% of the more expensive bitumen usually used.

Circular Economy Package - Europe

December 2015, the European Commission adopted the Circular Economy Package (CEP) to ensure resources are used, reused, and recycled more consistently.

Objectives of the Circular Economy Package,

- A binding EU recycling rate target of 65% of municipal solid waste by 2030
- A binding EU recycling rate target of 75% of packaging waste by 2030
- A binding EU target to reduce landfilling to a maximum of 10% by 2030
- A ban of landfilling separately collected waste
- New rules on EPR systems and harmonized implementation
- Harmonized calculation methods for recycling rates in the EU
- Measures to promote reuse and "stimulate industrial symbiosis"
- Economic incentives for manufacturing green products and supporting recycling efforts

World Bank Loans and Assistance



The World Bank
finances and advises
on solid waste
management projects

Loans,
Results-based
financing,
Development
policy financing,
and
Technical advisory



Since 2000, the World Bank has
committed over \$4.7 billion to more
than 340 solid waste management
programs