

gas emissions from waste disposal

The disposal and treatment of waste can produce emissions of several greenhouse gases (GHGs), which contribute to global climate change. The most significant GHG gas produced from waste is methane. It is released during the breakdown of organic matter in landfills. Other forms of waste disposal also produce GHGs but these are mainly in the form of carbon dioxide (a less powerful GHG). Even the recycling of waste produces some emissions (although these are offset by the reduction in fossil fuels that would be required to obtain new raw materials). Waste prevention and recycling help address global climate change by decreasing the amount of greenhouse gas emissions and saving energy (Environmental Protection Agency).

GHG emissions and waste management

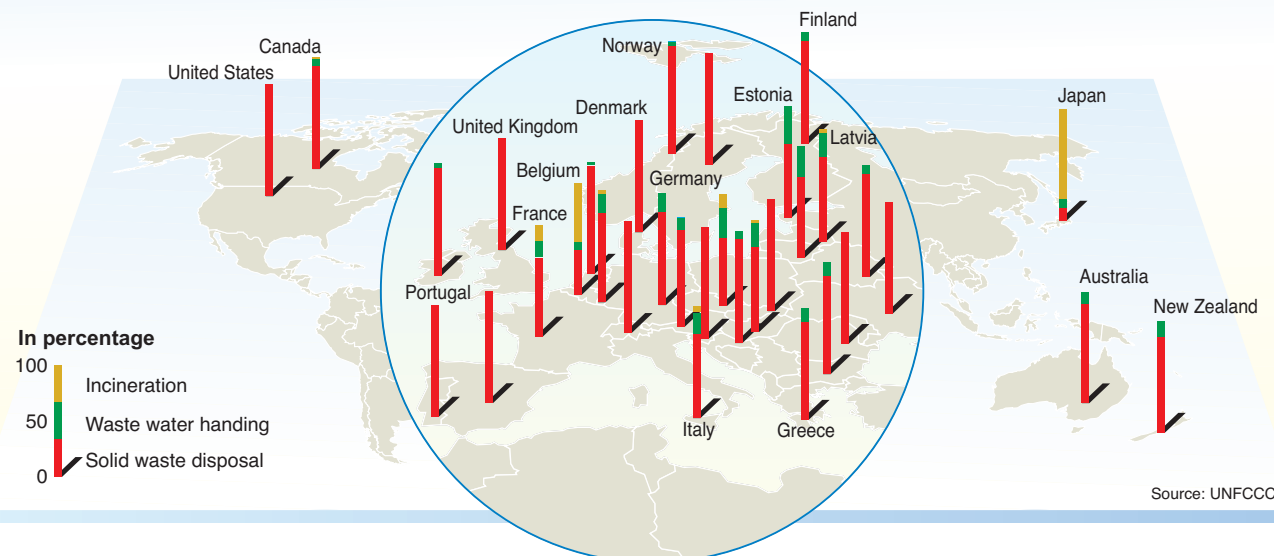
Composting (an option for organic materials such as food scraps, yard waste and agricultural waste). Composting is the natural biological breakdown of organic material. During the process of aerobic composting (in the presence of oxygen), microorganisms consume the organic matter and release heat and carbon dioxide (CO²). However, most of the carbon contained in the organic matter is retained in the compost and therefore not released into the atmosphere. Composting is a waste management system that creates a recycled product that can be used in place of inorganic fertilizer. The net GHG emission is reduced because the energy intensive fertilizer production and associated GHGs are reduced.

Combustion releases both carbon dioxide and nitrous oxide (around 300 time more potent a GHG than carbon dioxide, but making up only a small percentage of the total emissions). Energy released during combustion can be harnessed and used to power other processes, which results in an offset of GHG emissions from a reduction fossil fuel use. In addition combustion diverts waste from landfill, reducing the amount of methane produced. However burning garbage also produces waste in the form of ash. Most of this ash is sent to landfill but some is used to make products like building materials and road base.

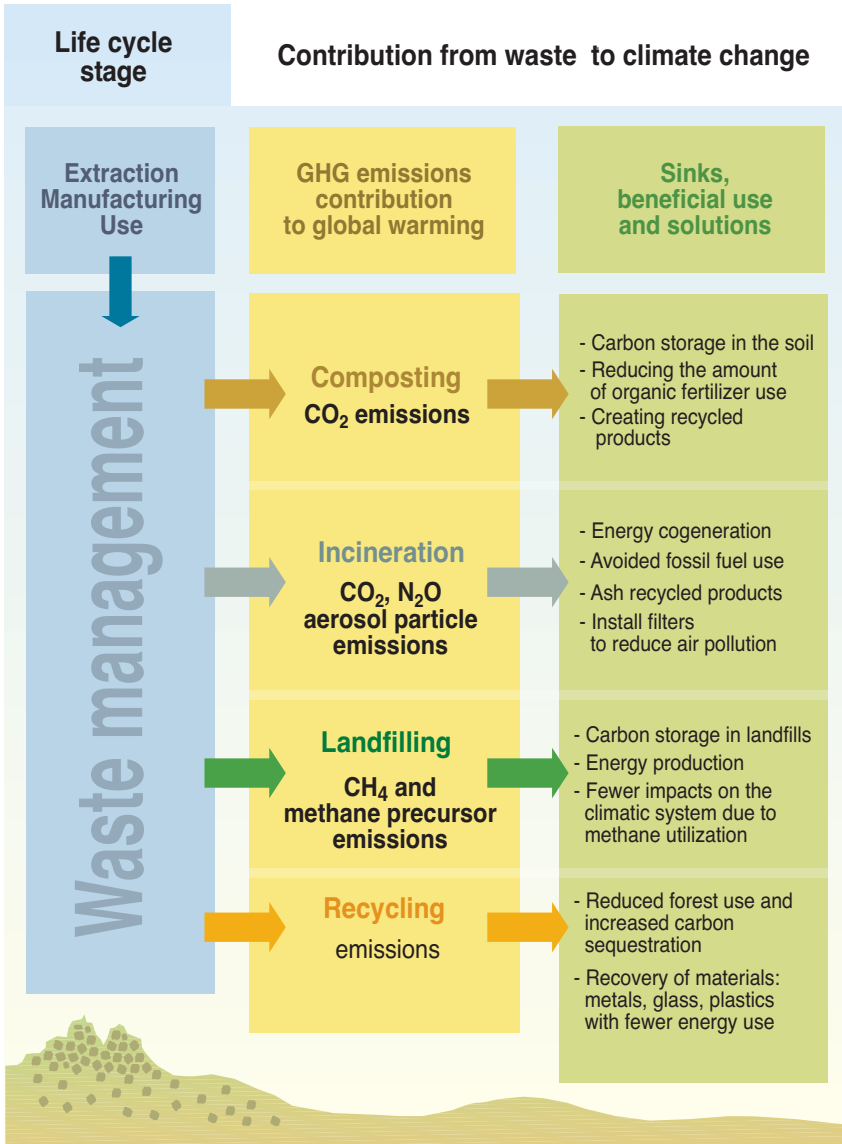
Contribution of various waste management systems to greenhouse gas emissions, 2002

Regional GHG emissions from waste in 2002:

- North America - over 200 million tonnes
- European Community - over 100 million tonnes
- Japan, Australia and New Zealand - over 50 million tonnes



In developed countries, the contribution of waste sector to total greenhouse gas emissions varies between 1% and 8%



Landfilling is the most common waste management practice, and results in the release of methane from the anaerobic decomposition of organic materials. Methane is around 20 times more potent as a GHG than carbon dioxide. If the disposal of organic matter were decreased (for example by composting or combustion) it would be possible to reduce the amount of methane emissions. However, landfill methane is also a source of energy, and some landfills capture and use it for energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.

Emissions due to solid waste disposal on land

