



Recycling and Waste Treatment

High Risk Sector



Disassembling of waste and scrap into material for recycling or disposal at landfill sites.

Related Sectors:

- Water Supply
- Construction



Production Processes

Recycling means reusing materials which would otherwise be treated as waste. It allows the reuse of materials for the same or for different purposes. Typical examples are scrap metal, glass bottles, wood, textiles and plastics. Materials to be recycled may be either collected separately or extracted from waste. For this, there are different methods, such as mechanically sorting by size, density, by hand or magnetically. Unusable waste and contaminants have to be separated from the recyclable materials. The remaining waste may be incinerated in order to extract the energy contained in it as heat or electricity. Recycling businesses may be of any size and usually sell their output in second hand markets (textiles) or to other industries for further processing (scrap metal).

Waste treatment describes the process of managing waste materials from transport and processing to their final disposal. Landfills are the most traditional method of waste disposal and remain common practice in many countries. Incineration involves burning waste streams under controlled industrial conditions. There are two main categories of incineration: Hazardous waste (toxic chemicals, infectious waste from the healthcare sector) and solid municipal waste. The differences in incineration arise from both the different characteristics of the waste streams and their concomitant regulatory contexts. Industrial incineration has the potential advantage of producing energy, of minimizing the volume of remaining waste (slag) to be disposed of and of eliminating most hazardous substances.

A method of treating **liquid waste** and wastewater is its discharge into sewage systems and subsequent treatment in sewage treatment plants. The storage of liquid waste on site and transport by truck to a sewage treatment plant may be an option for some industries. Depending upon the technology employed, sewage treatment eliminates a large proportion of pollutants from wastewater. This can then be discharged into rivers, lakes or the sea.

Sustainability Issues

M	Energy
L	Water Use
H	Emissions to Water
H	Waste
H	Emissions to Air
M	Ecosystems
H	Workplace Health & Safety
M	Disaster Risk
H	Site Contamination

Sector Rating

- H High risk issue
- M Medium risk issue
- L Low risk issue

Risks & Opportunities

- **Recycling processes may be very energy-intensive: They either require or produce large amounts of energy.**
The recycling of scrap metal requires a lot of energy, such as for extraction and smelting. Incineration plants may produce excess heat that can be used directly or for generating electricity.
- **Recycling facilities, sewage plants, dump sites and landfills may contaminate water.**
Examples are hazardous liquids seeping into the ground, wastewater discharged into rivers and seepage water from landfills.
- **Recycling facilities and incineration plants may produce hazardous waste.**
Examples: Slag and cinder from waste incineration plants; oil and other fluids from vehicle wrecking; plastics, electronic parts and heavy metals from computer and household goods recycling.
- **Emissions to air can be a nuisance and a health risk for humans and animals.**
Incineration plants and some recycling facilities emit smoke and fumes which may contain bad-smelling and toxic substances. These emissions can often be substantially reduced by process design and technology.
- **Landfills require large areas of land and may have an impact far beyond the actual disposal site.**
Incineration of waste on the disposal site causes emissions to air, and wind may disperse waste to the landfill's surroundings. Some waste presents health risks or may attract pests. Seepage water may negatively affect the quality of groundwater and rivers.