

Municipal Solid Wastes and Waste-to-Energy in France

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MSW Generation and Composition

- In 2005, 25 million tons of municipal solid wastes were generated, about 450 kg per person.
- Total generation has doubled in the last 40 years.
- There is a high seasonal variability due to tourism.
- Composition:

Paper, Cardboard	25%
Glass	13%
Plastic	11%
Metal	4%
Other	18%

Table1: Composition of MSW in France

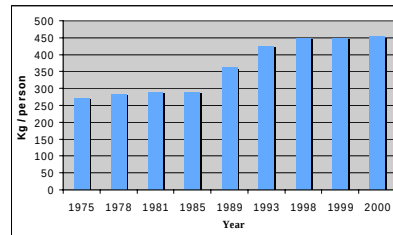


Fig1: Per capita waste generation by year

Waste Management

- About 10 billion euros (13 billion US dollars) are spent annually to handle waste
- Treatment methods:

Method	Percentage of MSW processed
Biological/mechanical	6.1
Recycling	7.6
Waste-to-Energy	47.2
Landfilling	39.1

Table 2: Treatment and Disposal of MSW in France

- Waste-to-energy (controlled combustion) is the most significant technique for solid waste processing

Waste-to-Energy

- 13 million tons of MSW are processed annually at 111 waste-to-energy plants in France; data are available for 101 of them.
- The 101 plants combusted 12 million tons MSW in 2005, generating 9 million MWh of heat and 4 million MWh of electricity.
- WTE is the largest renewable source of heat (24%) and electricity (35%) in France.
- French WTE plants have a lower efficiency than the European average. This is attributed to the small size of most of the French facilities – 111,5000 tons MSW processed annually, versus the European average of 130,000 tons.

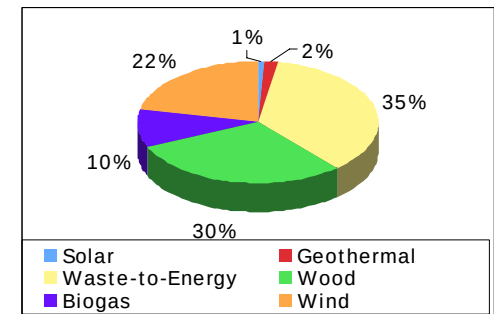


Fig 2: Renewable Electricity Generation

- WTE is still contentious and not well regarded by the general public, due to historically polluting and less-regulated MSW incineration.

•Emissions

- Regulations have changed drastically in the past 20 years and are fairly strict.
- WTE was the largest source of dioxins, but emissions have decreased from 800 grams TEQ in 1996 to less than 100 grams by 2001.

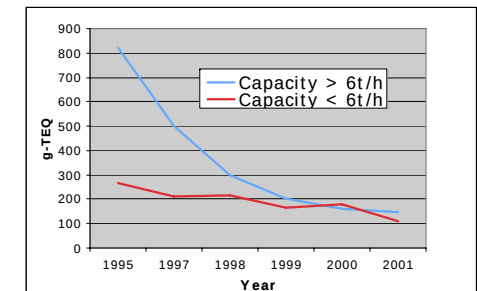


Fig 3: Dioxin emissions from WtE plans by year

Technology	No. of plants
Grill Furnace	97
Oscillating Furnace	11
Fluid Bed Furnace	3

Table 3: Operating French WtE Plants