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DENMARK ASKS

# WHAT'S WASTE WORTH TO YOU?

**Each year, Denmark's 5.4 million citizens generate 14 million tons of waste. It's a large amount of material, but also a valuable resource to help fuel sustainable growth. The challenge is to see the potential in waste and manage it in the most efficient way.**

Attitudes to waste are changing. Despite the fact that waste generation levels are rising worldwide, waste is now increasingly viewed as an exploitable resource and not just as an environmental burden. Proactive governments are adopting sustainable waste management measures of prevention, reuse, recycling and energy recovery, in order to maximise the extractable value of waste and minimise loss.

## Maximising efficiency

Denmark has taken a leading role in improving waste management and today has substantial expertise, especially in waste recycling and energy recovery.

The Danish approach to waste management is to optimise resource exploitation via a waste hierarchy which prioritises recycling over energy recovery over landfill. The model has proved highly efficient, with the result that only 7% of all waste generated in Denmark is disposed of at landfills.

Source separation is a key feature of Danish waste management. Collection systems for paper, cardboard and glass enjoy widespread acceptance and are used extensively by both citizens and enterprises.

Reuse and recycling in various forms account for 67% of all waste, through practices such as rinsing and refilling bottles, remelting cans and glass to make new products, or recycling of residues from waste incineration through use in road construction etc.

Energy is recovered by incineration of the remaining waste in incineration plants to generate electricity and district heating. In fact, the generated heat from waste incineration covers approx. 20% of district heating in Denmark. Emissions from waste incineration are overall CO<sub>2</sub>-neutral, except for incineration of plastics based on fossil fuels, and in alignment with the Danish government's plan to reduce CO<sub>2</sub> emissions by 30% by 2020.

## Green taxes

The Danish waste model is a combination of administrative measures including EU regulations and national regulations on waste as well as various economic measures such as taxes and duties. Denmark has a general state

tax on waste, which is differentiated to encourage recycling and prevention of waste. Landfill carries a higher tax than incineration, while recycling is tax exempt. So-called "green taxes" are also applied to certain forms of waste such as packaging and plastic bags.

## Avoiding waste

Denmark has established deposit and return systems for a number of packaging types including beer and carbonated soft drinks, to encourage their return for reuse or recycling instead of being incinerated or landfilled.

Most beer and soft drinks are sold in reusable bottles. This enables Denmark to avoid management of some 390,000 tonnes of waste every year.

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### CASE

# VESTFORBRÆNDING SERVES 1 IN 6 DANES

**Vestforbrænding is Denmark's largest intermunicipal waste management company. Located in the greater Copenhagen area, it services 19 municipalities, 60,000 business enterprises and 865,000 citizens – a sixth of the entire Danish population.**

Vestforbrænding operates in all kinds of waste treatment: recycling, incineration, land-filling as well as the sorting and handling of hazardous waste.

#### Recycling

Waste recycling has a very high priority at Vestforbrænding, and the volume of material collected for recycling is growing. More than 2,500 recycling containers are deployed for collecting newspapers, advertising and magazines, glass and bottles.

Most of the municipalities that Vestforbrænding serves have recycling centres. Visited by more than two million people each year, these recycling centres are very popular. Citizens can drop off their waste free of charge, provided they sort it into suitable categories for recycling, incineration or landfilling.

The largest recycling category is garden refuse. Vestforbrænding uses special com-posting centres, where garden refuse is crushed and compressed, so that it can be composted under optimum conditions. Similarly, the other waste is recycled or processed for recycling. Altogether, the waste is separated into more than 25 categories, most of which are recycled.

#### Landfilling

A minor part of the waste, which is unsuitable for both recycling and incineration, is landfilled in a disposal site south of Copenhagen.

#### Incineration

Waste from households or businesses that is neither recycled nor landfilled is incinerated by Vestforbrænding with generation of electricity and district heating.

The incineration temperature reaches approximately 1000°C, and the heat from the incineration process is used to produce steam, which is utilised to power a turbine which generates sufficient electricity to cover the average needs of about 80,000 homes. The bulk of the steam feeds through to a heat exchanger where it supplies enough energy to cover the average heating requirements of about 75,000 homes.

These years Vestforbrænding is expanding its district heating network dramatically – to the benefit of customers, Vestforbrænding and society, since the district heat is a substitute for more CO<sub>2</sub> intensive energy sources such as oil and natural gas.

Vestforbrænding meets the requirements of the Danish national waste management plan by sorting waste in a number of categories and continues its efforts to increase efficiency in waste management for the benefit of the environment.



The flue gas treatment is so efficient that Vestforbrænding operates far below the environmental limit values.



Around 2,000 waste collection vehicles deliver to the plant each week, where they are weighed before emptied into a waste bunker.