CEWEP's response to the
Green Paper on a 2030 framework for climate and energy policies

CEWEP would like to highlight the role Waste-to-Energy (WtE) plays in producing

Sustainable **Low Carbon** **Cost-Effective** **Reliable** **Local** **Energy**

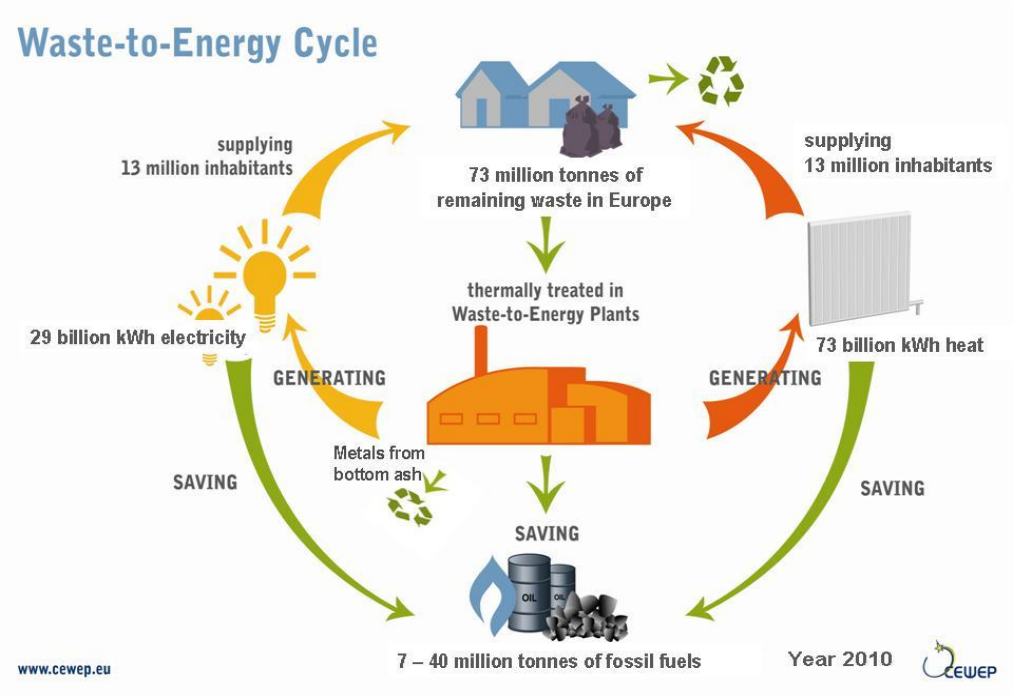
while replacing fossil fuels and helping to divert waste from landfills.

Waste-to-Energy Plants (waste incineration with energy recovery) thermally treat waste, which is not suitable for recycling and which would otherwise be consigned to landfills, and transforms it into sustainable energy. CEWEP respects the priority given to recycling according to the waste hierarchy, and experience shows that Waste-to-Energy and recycling are complementary in order to divert waste from landfills and reduce Greenhouse gas emissions[1].

Waste-to-Energy has a role to play in both: sustainable Waste Management and Energy supply.

Waste-to-Energy replaces fossil fuels and produces sustainable energy
Energy recovery from waste incineration replaces fossil fuels that would have been otherwise used to produce energy.

It helps achieve **low-carbon policy** objectives and to ensure **security of energy supply**.



[1] Recycling and Waste-to-Energy in combination for sustainable waste management, http://www.cewep.eu/information/policy/m_1038

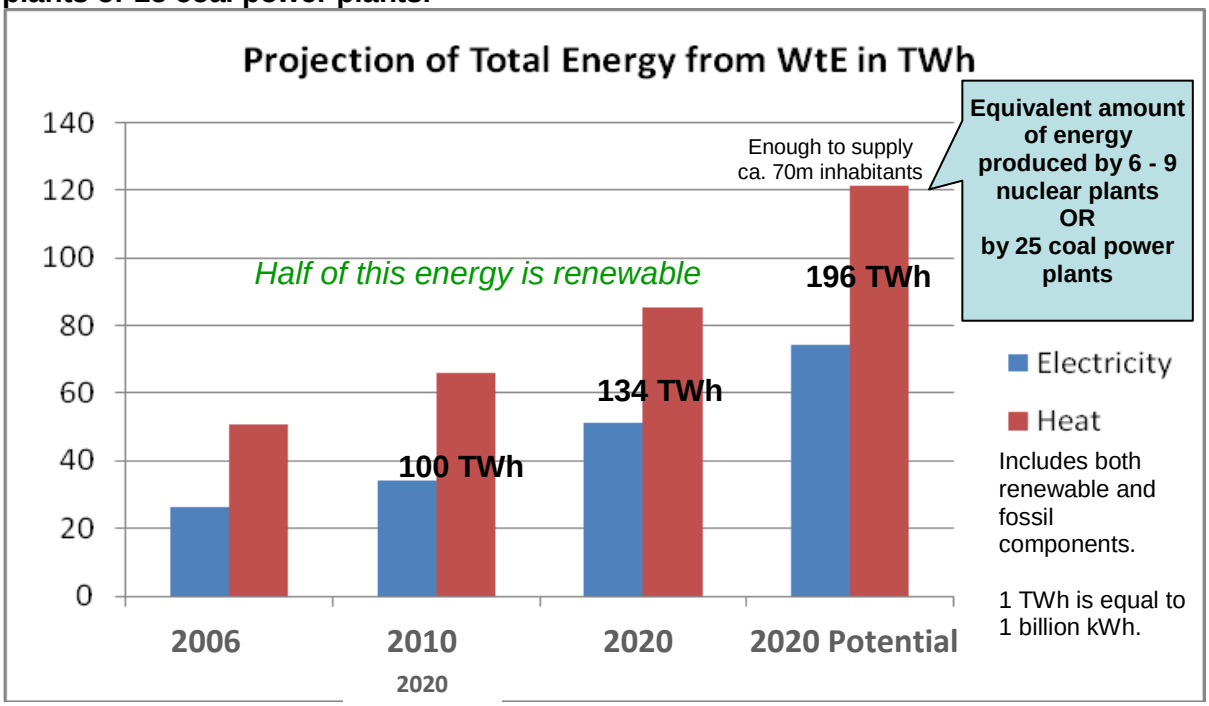
Considering that about 73 million tonnes of household and similar waste that remains after waste prevention, reuse and recycling, was treated in Waste-to-Energy Plants across Europe in 2010, from this waste 29 billion kWh of electricity and 73 billion kWh of heat can be generated.

Then between 7 – 40 million tonnes of fossil fuels (gas, oil, hard coal and lignite) can be substituted annually, which would emit 20 – 40 million tonnes of CO_2.

WtE also helps to achieve the EU's policy for **renewable energy sources** to cover 20% of the whole energy consumption by 2020. About 50% of the energy produced by WtE Plants comes from biodegradable biomass.

In 2010 WtE Plants supplied about 50 TWh (50 billion kWh) of **renewable energy** in Europe. This will grow by 2020 to a level of at least 67 TWh (67 billion kWh), and **potentially to 98 TWh** (98 billion kWh).

The total amount of energy (renewable + carbon components) produced by WtE Plants would be double this and could potentially reach 196 TWh by 2020 - enough to supply 45 million inhabitants with electricity and 24 million inhabitants with heat[2].
This would be the equivalent amount of energy that is generated by 6-9 nuclear power plants or 25 coal power plants.



This potential can only be realized if waste is diverted from landfilling and what is not suitable/feasible for recycling is processed by efficient WtE Plants.

For WtE Plants' energy efficiency access to grid and local infrastructure for heating and cooling is of tremendous importance.

[2] This is based on the assumption that electricity demand per capita equals 1.62 MWh/capita/yr and heat demand per capita equals 5.03 MWh/capita/yr.

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Policy recommendations

Waste-to-Energy can make a significant contribution to sustainable energy, ensuring security of energy supply as well as treating waste that is not otherwise recyclable in an environmentally sound way. In order to improve the contribution WtE can make towards climate protection, we recommend the following to decision makers:

Diverting waste from landfills - *burying waste means wasting precious energy*

The EU Landfill Directive with its requirement to divert waste from landfills, is a good tool to protect the climate, but it must be properly implemented. It is worth noting that some countries have gone further and reduced dependence on landfills dramatically (1% or less) using a combination of Recycling and WtE (Germany, the Netherlands, Austria, Belgium and Sweden).

> *A more ambitious EU policy on diverting waste from landfills would potentially reduce 142-192 m t CO_{2equ} /year by 2020*
> *= 24 - 32 % of the amount to be reduced by 2020 (600 m t CO_{2equ}).*

This is calculated in a study by the German Environment Ministry (2010). They say:

> *"With regard to climate protection a strict landfill ban for unpretreated waste (as in place in, e.g. DE, AU, CH) would be a necessary condition for a significant optimasation within EU27"*[3].

Policies to foster Energy Efficiency

European policy focuses on the generation of renewable energy. However, distribution is also a key element in order to improve energy efficiency, reduce CO_2 emissions and ensure security of energy supply. There is a major opportunity to use even more energy from waste in the form of heat, if the appropriate linking of heat (or process steam) customers to WtE Plants would be encouraged. Therefore we need drivers for improving **infrastructure for district heating and cooling** in addition to **incentives to maximize electricity production from waste**.

Access to the grid/infrastructure

Waste-to-Energy Plants should not be put at a disadvantage in comparison to other renewable energy sources.

[3] Study on behalf of German Environment ministry (January 2010)
http://www.bmu.de/english/waste_management/downloads/doc/46494.php

Waste-to-Energy Success Stories

50% of Paris, including the famous Louvre museum, is heated by 3 Waste-to-Energy Plants.

These WtE Plants are: St Ouen, Issy-les-Moulineaux and Ivry/Seine.

The Plants treat non-recyclable household waste from some 3.6 million Parisian households. By treating this waste they prevent the consumption of 300,000 tonnes of oil equivalent and the release of some 900,000 tonnes of CO_2 into the atmosphere each year.

The steam from the combustion process is used to generate:

- Electricity, the majority of which is sold to EDF to supply the electricity grid.
- Heat is sold to the Parisian company for district heating to supply heating and hot water to some 300,000 households, including offices, hospitals and other buildings each year.

Also, the **WtE plant in Malmö** (Sweden) supplies 60% of the heat demand of the city

and the **Brescia WtE plant** (Italy) provides 75% of the city's heat demand.

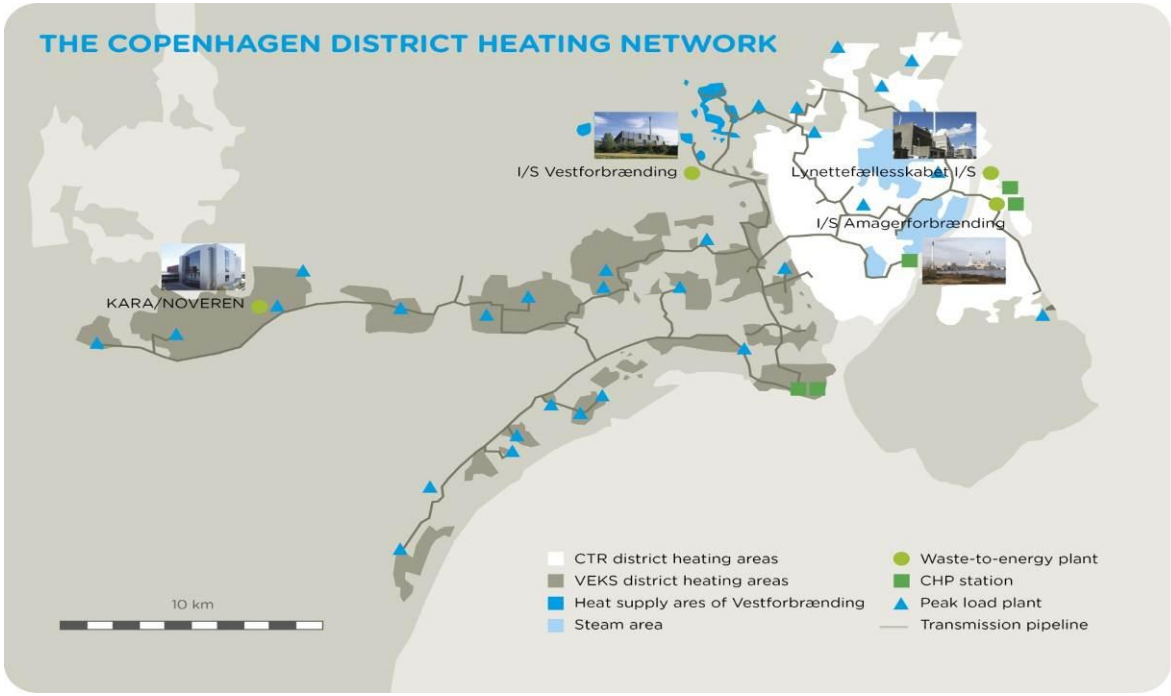
Danish success factors

- Flow control
- Landfill ban of waste that can be incinerated
- Waste-to-Energy = Combined heat and power plants
- Wide spread district heating systems - Tradition of creating collective heating systems

High utilization of energy
High energy efficiency
High public acceptance

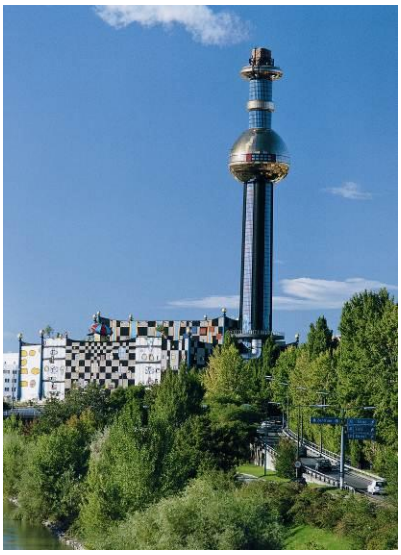
Since the oil crisis in the 1970's great efforts have been made in Denmark to establish large district heating transmission networks in order to reduce dependence on oil. WtE is a part of this policy as waste is a locally sourced fuel that in addition to reducing the use of fossil fuels, contributes to increasing fuel independence.

One of the world's largest district heating networks is the Copenhagen network, stretching more than 50km from east to west. Three WtE Plants supply heat to the same network and **more than 30% of the total district heating in the Greater Copenhagen area is generated by waste**.



And Waste-to-Energy is COOL...

A district **cooling** system has recently been set up in the centre of Copenhagen, as well as at other WtE Plants in Denmark, to supply cooling to nearby shopping centres, hospitals or other buildings with a high cooling demand.



Also the **Spittelau WtE Plant in Vienna** provides cooling and heating to the Vienna General hospital.

This is in addition to providing heating for over 60,000 households in the city each year.

The plant processes around 200,000 t/year of household waste from Vienna.

Some other cities are harnessing waste for cooling
... coming to a city near you?

Brussels, June 2013

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Transparency register number: 7899845424-69

CEWEP is the umbrella association of the operators of Waste-to-Energy Plants across Europe. They thermally treat household and similar waste that remains after waste prevention, reuse and recycling by generating energy from it. This is how they replace fossil fuels, such as coal, gas and oil, used by conventional power plants. At the same time Waste-to-Energy Plants help to reduce Greenhouse gas emissions by diverting waste from landfills.