Summary:
Warmth from Waste: A Win-Win Synergy

... A roadmap to assist Europe to meet its objectives to decarbonise its energy supply system - by realising the potential of generating renewable energy from waste and using it for district heating and cooling.

This summary is from a detailed project development paper, *Warmth from Waste: A Win-Win Synergy*, which is a joint initiative by the **Confederation of European Waste-to-Energy Plants** (CEWEP), the **European Suppliers of Waste-to-Energy Technology** (ESWET) and **Euroheat & Power** (through its **DHC+ Technology Platform**).

The full paper, available to view and download at http://cewep.eu/media/cewep.eu/org/med_556/1258_warmth_from_waste2014_pdf.pdf, includes a number of proposals for possible projects that would enhance the synergy between Waste-to-Energy and District Heating and Cooling. If you would be interested in supporting one of these initiatives, please contact us.

Introduction

Waste-to-Energy (WtE) plants efficiently and safely treat the waste that remains after household waste is sorted for recycling. As a major part of this residue is biodegradable, the energy produced is regarded as partly renewable.

The fundamental idea behind modern District Heating is to make use of local heat, cooling and fuel sources that otherwise would be lost or remain underused.

Waste represents a local, cost effective, secure and sustainable energy that is already used in some District Heating and Cooling (DHC) networks, allowing them to deliver affordable energy and reducing primary energy consumption.

Increased use of the synergy between Waste-to-Energy and District Heating also supports Europe's objective to decarbonise its energy system by at least 80% (below 1990 levels) by 2050. The EU Directive on Energy from Renewable Sources also sets a 20% target for renewable energy by 2020, and targets for 2030 are currently under discussion.

The facts

According to Eurostat more than 80 million tonnes of household and similar wastes were sent to landfill in 2012 (more than 30% of the amount of waste treated in Europe) instead of being re-used, recycled or recovered. Similar waste streams such

as those from offices, shops and factories are also landfilled.

More than 400 Waste-to-Energy plants are currently operating in Europe, treating about 78 million tonnes of waste a year. This represents a calorific heat value of between 470 and 1,240 PJ - enough to heat London for five years[1].

Currently, less than half of this potentially usable energy is recovered as electricity and heat, which means that there is still significant potential for development - particularly if more heat could be recovered from existing Waste-to-Energy plants by linking them to DHC networks.

Currently, there are more than 6,000 DHC systems in Europe[2]. There are many examples proving that District Heating and Cooling is a viable, readily available solution for a quick transition from individual heating based on fossil fuels to a combination of more efficient, renewable and competitive energy supplies. Yet there is room for further improvement and, in particular, for expansion.

In Europe, the energy recovered from Waste-to-Energy plants for District Heating represents 50 TWh per year, i.e. around 10% of the total heat delivered through District Heating systems. Studies suggest that the potential for using heat from waste is equivalent to 200 TWh per year by 2050, which means that there are still opportunities for further development[3].

Also, it is expected that DHC will function as the backbone of tomorrow's *Smart Cities*. DHC will be used as the infrastructure to provide efficient exchange and redistribution of energy, including better use of local resources like waste.

Case study

Keeping warm in Paris

50% of the District Heating network in Paris is supplied by three Waste-to-Energy plants.

These are: Saint-Ouen, Issy-les-Moulineaux and Ivry-sur-Seine and they treat non-recyclable waste from some 3.6 million Parisian households. By making use of this waste, they prevent the consumption of 300,000 tonnes of oil equivalent and the release of some 900,000 tonnes of CO_2 that would have been emitted into the atmosphere each year to keep the city warm.

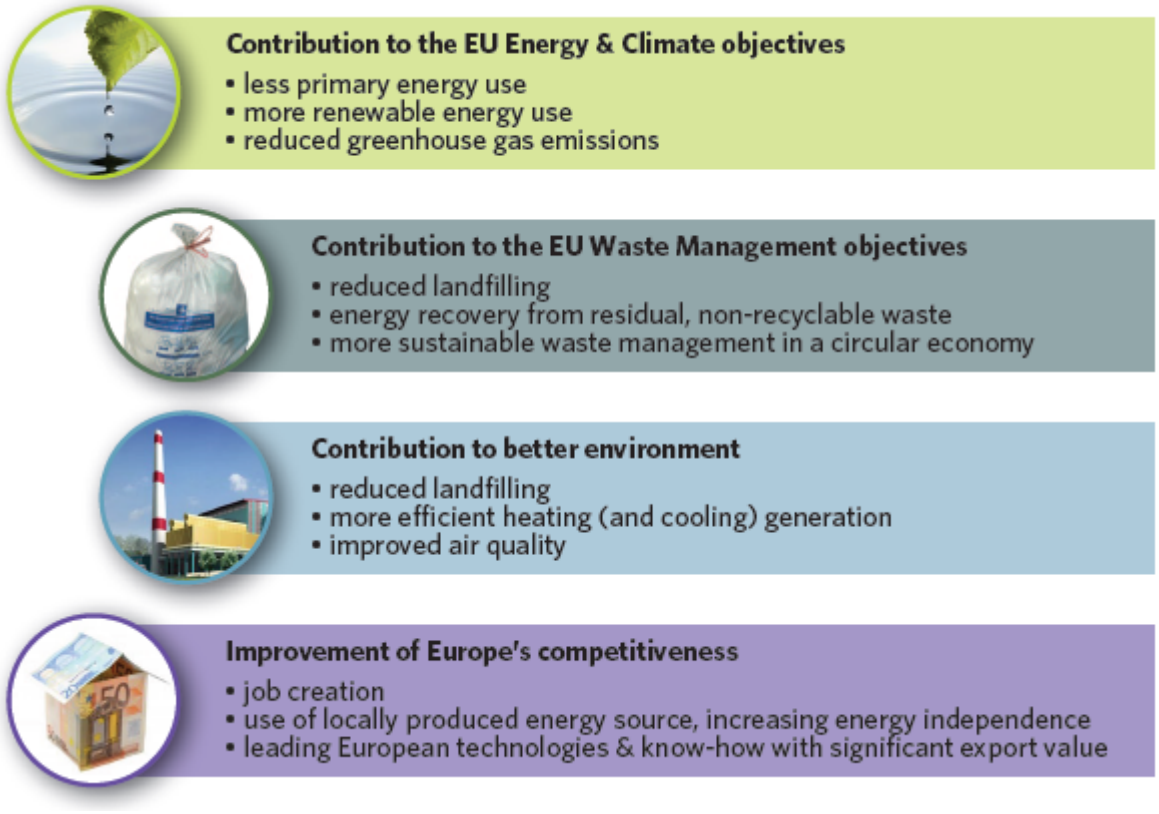
The steam from the combustion process is used to generate:

- *electricity, the majority of which supplied to the electricity grid;*
- *heat, which is sold to the Parisian company for District Heating to supply heating and hot water to some 300,000 homes, offices, hospitals and other buildings (including the famous Louvre museum which houses the Mona Lisa).*

1 London's total heat demand is 66 TWh/yr which is equivalent to 237.6 PJ/yr. Source: www.london.gov.uk/sites/default/files/031250%20GLA%20Secondary%20Heat%20-%20Summary%20Report.pdf
2 Heat Roadmap Europe 2050 (Second pre-study for the EU27), May 2013.
3 *Ibid*

Benefits of developing WtE and DHC

From an energy and environment perspective, the potential for Waste-to-Energy and DHC to work together will provide significant and lasting benefits, including:



CEWEP
Ella Stengler
ella.stengler@cewep.eu
+32 2 770 63 11
www.cewep.eu

ESWET
Guillaume Perron-Piché
g.perron-piche@eswet.eu
+32 2 743 29 88
www.eswet.eu

Euroheat & Power
Paul Voss
pv@euroheat.org
+32 2 740 21 10
www.euroheat.org

DHC+
Nicolas Février
nf@euroheat.org
+32 2 740 21 13
www.dhcplus.eu