

## Local Success Stories

Country	Ireland
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#	Name of Example	Location
1	Dublin District Heating	Dublin Docklands

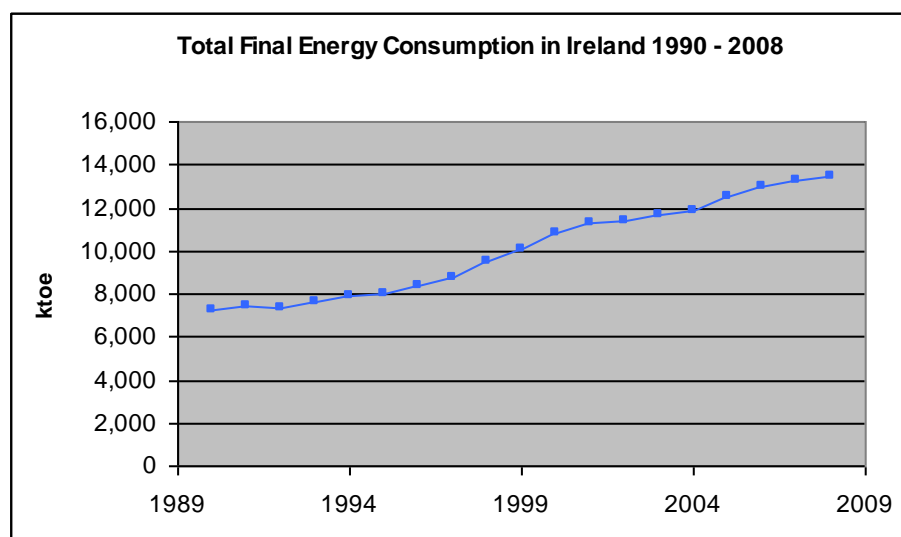
### The Initiative

#### DRIVERS

District Heating (DH) presents the opportunity to improve the overall sustainability of Dublin City. The main drivers are discussed below.

#### Increasing Energy Demand

Ireland's Total Final Energy Consumption in 2007 was 13 Mtoe, an increase of 83% on 1990 levels. The following trend uses data from Sustainable Energy Ireland.



#### Policy Drivers

Fossil fuels accounted for 96% of all energy used in Ireland in 2007. A key driver for DH/CHP as set out in the [National Climate Change Strategy \(2007-2012\)](#) is for Ireland to reduce its carbon dioxide emissions by 0.162 Mt by 2010 through the installation of new CHP schemes, which can both support, and benefit from, connection to a DH system. The Government's ambition for CHP is underpinned by a target to achieve an installed capacity of 400 MW<sub>elec</sub> by 2010 and 800 MW<sub>elec</sub> by 2020.

The [Dublin Waste Management Plan \(1999\)](#) and its replacement Plan (2005) both recommend the use of thermal waste treatment to meet Dublin's requirements for managing its waste and national targets for diversion of waste from landfill.

#### Key Stakeholders

Dublin City Council is a key stakeholder in the city's development. To date they have used their unique position to promote and coordinate the development of a DH system. They have a long term vision for the city which prioritises the diversion of waste from landfill and the reduction of carbon emissions, both of which will be achieved by construction of the Waste to Energy plant and DH system.

Treasury Holdings are building a mixed use development in a phased manner at Spencer Dock in the city centre. They are constructing all buildings to enable connection to the DH system when it commences operation. In the interim they will use on site gas boilers.

**Other Drivers**

- Volatility in world energy market prices,
- Ireland's vulnerability to security of supply issues (Ireland's overall energy import dependency was 89% in 2007 according to Sustainable Energy Ireland),
- Carbon tax which promotes use of renewable energy in place of fossil fuels,
- Building controls,
- Planning requirements.
- Increased construction of concentrated mixed use development in Dublin City Centre,

**DESIGN CHARACTERISTICS**

The proposed DH network for Dublin will circulate hot water in an underground system using pre-insulated pipes according to the following specifications:

EN253, "District Heating Pipes - Preinsulated bonded pipe systems for directly buried hot water networks. Pipe assembly of steel service pipe, polyurethane thermal insulation and outer casing of polyethylene" and

EN489, "Preinsulated bonded pipe systems for directly buried hot water networks - Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene".

Design temperature will be 120°C and design pressure will be 16 bar, with a hydrostatic test pressure of 25 bar.

Operating flow temperature will be in the range of 80 – 120° C and operating return temperature will be in the range of 40 – 60° C.

**Heat Sources**

The main heat source will be the planned Dublin Waste to Energy facility. This facility will have an annual capacity of 600,000 tonnes and is expected to commence operations in 2013. It will be located on the Poolbeg peninsula which is in close proximity to the city centre. This project is a Public Private Partnership to Design, Build, Operate and Finance.

Other potential heat sources include the electricity generating plants in the Poolbeg area, ESB and Synergen, and a small number of CHP plants in the locality such as the Guinness Brewery, St. James' Hospital and the Dublin City Council Civic Offices CHP.

In 2007 Sustainable Energy Ireland granted funding to support a feasibility study. This was subsequently carried out and is available here: [http://www.dublinwaste.ie/District\\_Heating\\_Feasibility\\_Study.html](http://www.dublinwaste.ie/District_Heating_Feasibility_Study.html).

To date several hundred metres of DH pipework have been laid at Spencer Dock in Dublin city centre (see photograph on previous page). Construction of the Waste to Energy facility commenced in December 2009 and installation of DH pipework in a services tunnel underneath the river Liffey is due to commence in January 2010.

Further expansion could include Dublin Port, the Elm Park Development and Heuston South Quarter together with other areas in the DCC jurisdiction

## Nature of the impact

- The displacement of conventional heating by this DH system will not only reduce the cost to consumers but also reduce their exposure to a highly volatile international gas market and reduce Ireland's dependency on imported gas. It will also increase both the revenue generated by the production of energy in this country and add to the security of supply of the Irish energy market.
- The development of DH networks when coupled with the use of indigeneous fuels could lead to a reduction in Ireland's external energy dependency. This will increase both the revenue generated by the production of energy in this country but also increase the security of Ireland's energy supply and decreasing Ireland's dependency on fuel import.
- The replacement of conventional fuels for heating with DH will also improve the local air quality by reducing the number of local sources of emissions.
- In the context of the Energy Performance of Buildings Directive, the utilisation of DH particularly that derived from a CHP installation will also prove valuable to consumers, increasing the rating of their home in comparison to conventionally heated buildings of a comparable nature in terms of construction and energy usage profile.
- DH allows the efficient use of surplus heat from "low grade" combined heat and power plants (CHP), refuse incineration plants, waste heat from industrial processes, natural geothermal heat sources, and fuels which are more easily used centrally including renewables like wood waste and residues, as well as coal and peat (fuel flexibility).
- Using indigenous fuels like biomass or waste enhances fuel supply reliability, security and flexibility. Generating power nearer to population centres also increases power grid reliability.
- Further, given that the primary source of the heat energy produced will be waste, it would reduce Dublin city's reliance on imported fuel.
- By supplying heat to DH, the energy recovery rates at the WTE plant could potentially increase to 80-85%, which would be superior to the traditional power plants (30-40%) and even superior to the more efficient Combined Cycle Gas Turbine (55%).
- DH customers will be saved both the capital investment (including space) for their own boiler equipment and the operating and maintenance costs.

## Main Barriers

- Initial capital investment,
- Uncertainty on customer uptake,
- Lack of government policy specifically supporting DH.