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District Energy Vanguards Newsletter
June 2016

Editorial

What to do?

After a week of utter chaos in our public life the thoughts of many people are turning to what it all means for them personally. This initially focuses on the impact on projects they are working on - but then ultimately on their jobs. Some might argue that as district energy is inherently a local matter that international relations will have little impact upon it. But it will – and it is too early to say what.

Firstly, it is certain that the cost of energy will rise. Trade in oil is quoted in US dollars and all other fuels, particularly gas, are tied to it. The shock and continuing uncertainty created by the referendum result has seen the value of the pound sterling dive against the dollar. Sooner are later this will feed through to customers energy bills. This could have a beneficial impact on district energy developers and operators, particularly for EfW projects benchmarking their prices against gas. Then again if power prices – based on a broader portfolio of generation sources (think wind) - do not rise in tandem then the 'spark spread' will narrow for projects built around CHP.

As argued previously in this column, district energy offers customers a buffer against the volatility of the energy markets. Not only can projects draw upon alternative energy sources – geothermal, EfW, waste and naturally occurring heat as well as balancing the power grid – but the aggregated demand of multiple customers and purchasing expertise enables them to get a better deal in the market. These benefits are highlighted in a report this week from SSE (see news below). In comparison, individual consumers are buffeted around by the vagaries of the market, have little individual purchasing power and lack the expertise. Hopes that the recent investigation into the operation of the retail energy markets by the Competition & Markets Authority might benefit customers seem unlikely as their recommendations have been roundly condemned as ineffectual.

Secondly, the hardware for a district energy project – pipes, pumps, HIU's - is mainly imported from Europe. Once again the pound sterling has lost value against the euro and consequently

prices will rise, increasing the CAPEX for projects. Additionally, there may also be tariffs imposed in future trade negotiations adding uncertainty to forward financial planning for projects. However, in the medium to long term this could be an opportunity for the UK-based manufacturers of hardware. At the moment they are mostly small players in the market. But this could be their opportunity – provided that they recognise it and invest to expand their production capacity.

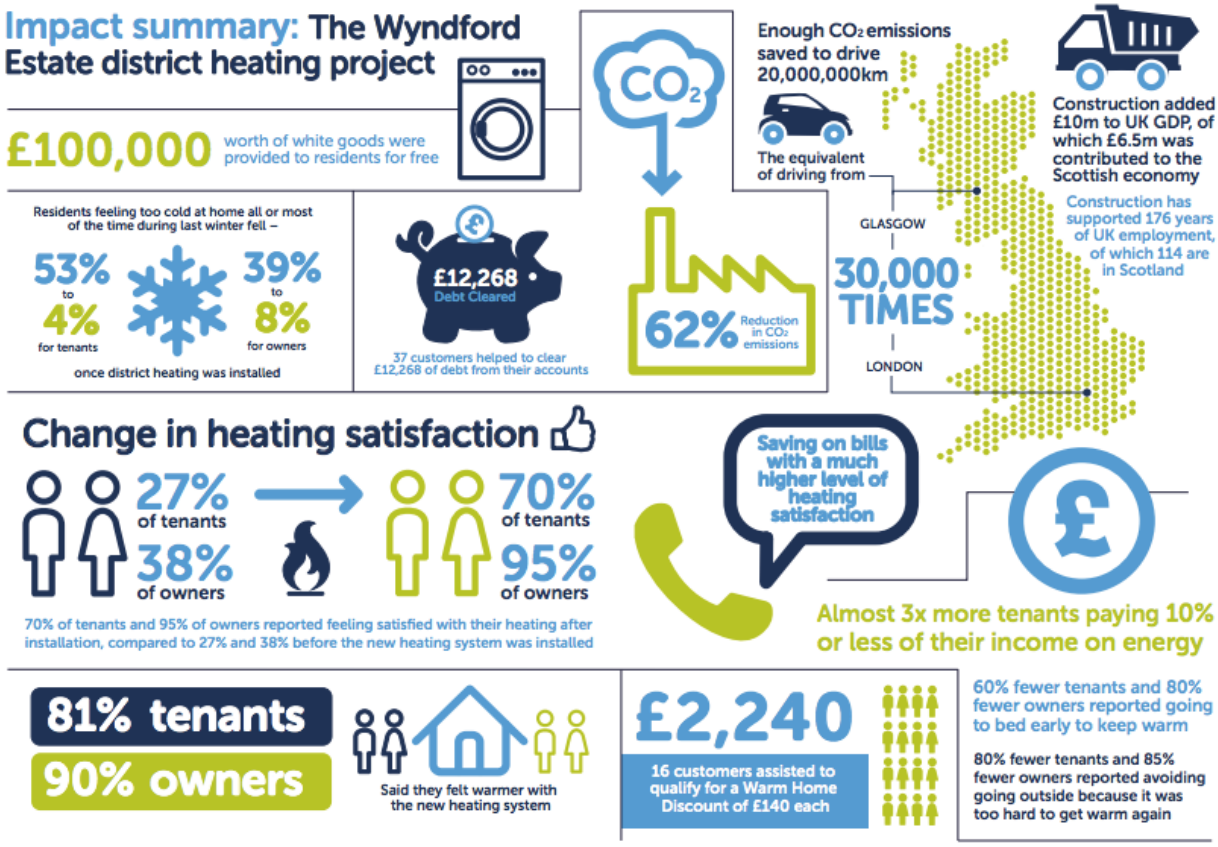
Thirdly, the general uncertainty will cause investors to pause. Visiting a district energy project serving a private housing development earlier this week the developer said that some of their overseas buyers rang up on Friday morning to cancel. But by the end of the day others had come forward to replace them as the drop in the value of the pound made the investment more attractive. Of course this will make housing associations valuable customers for private developers and maybe they should also be seizing the opportunity to get a good deal.

Fourthly, what will be the impact of the loss of overarching EU legislation? Will the metering requirements under the Energy Efficiency Directive still go forward? This week the Government confirmed its carbon targets for 2030. But the Committee on Climate Change's 2016 progress report also published this week suggests that the policies are not in place to achieve those targets. In particular it identifies the Government's cancellation of the Zero Carbon Homes policy. Previous estimates suggested that the Allowable Solutions element of this policy could deliver £200 million per annum for district energy. A paper by Exeter University referenced previously in this newsletter indicated that the next EU Energy Efficiency Directive due to take effect from 2021 will be even tougher with new homes expected to be virtually carbon free. The implication being that the considerable work invested in Allowable Solutions would not be wasted. But what will happen now?

In total then, the referendum result will have impacts and raised questions. Given the chaotic political situation it is remarkable that DECC has been able to proceed with a consultation on its Heat Networks Investment Programme issued earlier this week. This Government investment of £320 million in heat networks will hopefully calm the some of the uncertainty for this industry at least.

Michael King
Editor

Spotlight on SSE report [Reducing costs; Improving comfort; and Lowering carbon emissions]: Learning from the impacts of the Wyndford Estate district heating project 29 June 2016



UK News

Overhaul to energy network operation called for (House of Commons Energy and Climate Change Select Committee Committee) 17 June 2016
Publication of "Low carbon network infrastructure report" - includes the following recommendation:
The Government has rightly set an ambitious target for district heating—one which requires significant private-sector investment. A regulatory investment framework for district heating, similar to those for other networks, would aid this. It would also complement existing voluntary schemes in providing independent safeguarding for consumers. Ofgem should be required by the Government to regulate district heating networks, and the Government should seek to make whatever legislative changes are necessary to enable this.

Meeting Carbon Budgets – 2016 Progress Report to Parliament (Committee Climate Change) 30 June 2016
(page 16) Policy requirements for the Government's plan to meet the fourth and fifth carbon budgets include:
Clear, consistent and credible policies to drive deployment of heat pumps and district heating, including: immediate action to address barriers (e.g. upfront cost, low awareness) alongside the Renewable Heat Incentive and development of a more comprehensive policy package to drive the higher uptake needed in the long run.

SSE report Reducing costs; Improving comfort; and Lowering carbon emissions: Learning from the impacts of the Wyndford Estate district heating project 29 June 2016

DECC Consultation: Consultation on the Heat Networks Investment Project (HNIP) 29 June 2016
HNIP aims to provide £320m of capital support to increase the volume of heat networks being built, deliver carbon savings, and help create the conditions necessary for a self-sustaining heat network market to develop.
DECC are seeking views from current and potential heat network sponsors, investors, supply chain, and any other stakeholders with views on how best to use the capital support funding to overcome barriers to investment in heat networks and increase heat network deployment rates. DECC invites views on the organisations and types of schemes that should be eligible for investment support, what form this funding should take, and the criteria that should be used to assess applications for funding.

Urban heat networks set to receive £320m government funding boost (BusinessGreen) 30 June 2016
DECC aims to launch the first pilot funding round this year, followed by a series of full-scale funding rounds through to early 2021. Eventually it hopes the £320m investment will leverage up to £2bn of additional capital investment, creating hundreds of heat networks around the country to supply more than 400,000 homes.

Government's 'central heating for cities' scheme to bring energy bills down (DECC Press Release) 29 June 2016
Secretary of State for Energy and Climate Change said: "This is an important next step in developing more home-grown energy, which is a vital part of our plan to ensure long-term energy security and affordable energy for our families and businesses.
"The funding we're consulting on today will enable these schemes to provide affordable low carbon energy to thousands of homes and businesses across Britain's towns and cities."

Heat networks: where is innovation needed? (networks) 29 June 2016
Unlocking innovation in the UK heat sector means; being more joined up as an industry, settling asset ownership confusion and ensuring experts are responsible for delivering network efficiencies, argues Casey Cole.

Creating Warmer, Greener Homes (SSE Press Release) 29 June 2016
Working with the University of Edinburgh the report concluded:
- 81% of tenants and 90% of owners said they felt warmer with the new heating system;
- 60% fewer tenants and 80% fewer owners reported going to bed early to keep warm;
- Tenants cutting back on food expenditure fell 50%;
- Tenants borrowing money for heating fell 60%; and
- Tenants putting off paying other bills fell 40%.

£8 million river powered heating for Perth plan backed by councillors (The Courier) 28 June 2016
Councillors unanimously backed the business case for the £8 million plan which will use water heat pumps to capture renewable energy from the river – without damaging wildlife – and create a district heating network which will supply cheap heat to buildings in North Muirton, adjacent to the Tay.

Russian visitors' praise for Cube's innovative district heating system (24dash.com) 23 June 2016
CUBE Housing Association's innovative district heating system in Glasgow has attracted international attention. A group of Russian construction and engineering students visited Broomhill recently to see for themselves how Cube's district heating system will make homes warmer and cut tenants' bills.

Biomass boiler delivered for Scottish district heating project (Decentralised Energy) 23/06/2016
A 6.5 MW biomass boiler weighing in at 130 tonnes has been delivered for a university campus district energy project in Scotland, developer Vital Energi has announced.
The £25 million ($37 million) project at the University of St Andrews in Fife, currently under construction, includes a biomass combined heat and power (CHP) plant and a 14-mile district heating network connecting 37 buildings.

Bristol flicks the switch on pioneering green heating system (BusinessGreen) 21 June 2016
A community centre in Bristol has become host to the first air-sourced district heating system in the country, providing low-carbon heat throughout the winter months. Easton Community Centre's renewable heating system, which launched on Saturday, uses air source pumps to trap heat from the summer sunshine underground, which will be stored underneath a local park until the winter months when it will be released for use as central heating. The new system will provide enough heat to fully meet demand from the community centre throughout the winter.

Presentations from "The Liveable City's district energy seminar Towards A Zero Carbon London" (21 June 2016) brought together experts and a packed audience of architects, designers and local government officials to discuss how heat networks can enable new and existing developments reach low and zero carbon emissions from heating and cooling.

Swedish biofuel producer agrees 10-year offtake agreement for district heating (BiofuelsDigest) June 20, 2016
In Sweden, Södra Cell Mörrum has signed a 10-year agreement to supply residual heat from its biofuel production process to Karlshamn Energi for its district heating system that supplies more than 1,500 customers.

Gas engine power plants are an ideal solution for district heating (PowerMag) 17 June 2016
A study conducted by the Essen-Duisburg University in cooperation with MAN Diesel & Turbo compares engines and turbines in CHP applications. In the generation of district heating from combined heat and power (CHP) sources, gas engine power plants offer a number of advantages over classic gas combined-cycle power plants. This is the conclusion drawn from a comparative study conducted by the Essen-Duisburg University in cooperation with MAN Diesel & Turbo. Engine combined power plants were found to be operationally superior, both in terms of energy efficiency as well as cost-effectiveness.

Veolia CHP unit to power London Royal Wharf homes and businesses (BusinessGreen) 15 June 2016
Up to 20,000 residents at a new housing development in London Docklands will be supplied with low carbon energy from a combined heat and power (CHP) unit being developed by water, waste and energy giant Veolia.
Set to begin operating at the £1bn Royal Wharf development in August, the 1MWe mains gas-fired CHP unit will provide 43.5 per cent electrical efficiency and eventually help deliver a district heating network for thousands of homes on the 40-acre site, according to an update from Veolia.

Low Carbon District Heating discussed at ASHRAE UK District Heating Seminar (Star Refrigeration) 15 June 2016
Dr Andy Pearson, Director of Star Refrigeration and ASHRAE Fellow, presented a paper on 'Low Carbon District Heating: Centralised Heat Pump Systems' at

Birmingham University, last evening.The open seminar event was hosted by ASHRAE UK in association with IOR, CIBSE West Midlands, BRSA and the BEI.

Night-time district heating improvement works on Canal Street (MyNottinghamNews) 13 June 2016
Improvements are to be carried out on the city's District Heating system on Canal Street at its junction with Trent Street. To reduce the impact of the works, they will take place through the night.

Bristol mayor approves major clean heat network (BusinessGreen) 9 June 2016
Bristol's newly elected mayor, Marvin Rees, has approved the city's first major step towards becoming carbon neutral by 2050, giving the go-ahead for £5m in capital funding to build a low-carbon district heating network to serve the city. The first phase of the heat network, which was approved earlier this week, will supply low-carbon heat to buildings throughout Bristol via a network of underground pipes connected to a number of energy centres, including biomass boilers and gas combined heat and power plants. Over time the city plans to phase out the use of natural gas in favour of renewable alternatives.

District Heating – does it work with Passivhaus? (Passive House Plus) June 9, 2016
Cost effective district heating schemes need a nice dense energy demand. They also involve a lot of circulating hot water, which with the best will in the world, is going to involve continuous heat loss. Highly-insulated low energy buildings need very little heat – and in the summer, heat gains can be a positive menace. So can the two work together? I explored the question a bit in this article for Passive House Plus – downloadable here as a pdf.
Greenwich Peninsula district energy system: hot property (IET Magazine) 7 June 2016
In a matter of months, a dazzling district energy system will come online at the Greenwich Peninsula, UK. Comprising a low-carbon energy centre and Europe's largest residential new-build district heating system, the structure is set to provide heat and electricity to thousands of new homes and businesses under construction in this up and coming area of London

Presentations from Scottish Renewables Low-Carbon Heat Conference 2016, Perth, 07 June 2016

District Heating Loan Fund supports sustainable local regeneration in Foyers (EST video) 3 Jun 2016
This case study looks at a district heating project serving the Loch Ness Shores camp-site in the village of Foyers, funded by the Scottish Government's District Heating Loan Fund, and managed by the Energy Saving Trust.

UK firms to form district heating JV (Decentralised Energy) 01/06/2016
Renewable power project developers Peel Energy and Vital Energi are set to form a joint-venture Energy Services Company (ESCo) to develop a district heating network in the UK. The companies aim to distribute heat to the greater

Manchester area from Peel Energy's planned 20 MW Barton biomass combined heat and power (CHP) project (pictured, artist's rendition), which received planning permission in 2014.

International News

Three lessons for cities in Denmark's clean-energy revolution (Citiscope) June 30, 2016
1. Unleash the creativity of public-sector entrepreneurs
2. Reap the efficiencies of district energy
3. Give citizens a financial stake in clean energy

Decision by the Energy Board of Appeal on pricing of district heating from Hartmann's combined heat and power plant (GlobalNewsWire) 30 June 2016
The Energy Board of Appeal has made a decision in the pending case on pricing of district heating from Hartmann's combined heat and power plant to Tønder Fjernvarmeselskab in 2003-2014. The decision follows from Hartmann's complaint against a decision made by the Secretariat of the Danish Energy Regulatory Authority as described in company announcement 10/2015 on 4 September 2015.

Biomass to replace gas in Danish CHP plant (DecentralisedEnergy) 30/06/2016
Andritz has received an order from the regional Danish municipality Helsingør Kraftvarmeværk A/S to deliver a biomass boiler island for its combined-heat-and-power plant.

Intelligent Energy Planning for Largest Urban Development Project in Northern Europe (Euroheat Case Study) 28 June 2016
HafenCity is by far the largest city quarter in Germany and from the beginning it was equipped with a modern energy infrastructure. A cornerstone of the development has been the supply of combined heat and power to all business and residential buildings

District-heating considered to assist with cleaner air (Otago Daily Times) 27 Jun 2016
Central Otago's air pollution woes could be alleviated by creating New Zealand's first district heating schemes. Last month the Otago Regional Council compiled a report outlining potential solutions for polluted areas, which would inform its air quality strategy.

Smart District Heating Network Using NODA's Technology (Euroheat & Power Case Studies) 21 June 2016

Kalmar Energi and NODA Intelligent Systems are working together on an eco-smart and cost-effective district-heating network in the city of Kalmar, Sweden. The system is known as a Smart Heat Grid and is based on intelligent control functions that manage the district-heating network and coordinate the interaction between production, distribution and consumption in order to achieve energy efficiency and long-term sustainability

Australian investor to buy French district heating firm (Decentralised Energy) 20 June 2016
French district heating firm Coriance is to be acquired by First State Investments, an Australian infrastructure assets fund and a division of the Commonwealth Bank of Australia.

EU Heating Strategy Expected to kick-start DH Development (4dh.dk) 14 Jun 2016
An analysis covering the export potentials for Danish district heating system and component companies expects the district heating development in Europe to increase in the next 10 years. District heating networks in Europe are expected to grow significantly because of the great focus on phasing out fossil fuels as a result of the COP21 agreement, the new EU Strategy on Heating and Cooling, and the tendency towards urbanisation in Europe where district heating is seen as a solution to the heating needs of the many people moving to the cities of Europe.

Events

(Institution of Gas Engineers & Mangers (IGEM)) Decarbonising Heat Conference 13th July 2016
Time 09:00 - 16:45 Venue No 11 Cavendish Square, London
What needs to be done to meet our carbon targets? This is a fantastic chance to hear from key stakeholders in government and industry. Find out what the future holds for gas and how we can contribute to gaps in policy and knowledge. Discover our future customers and champion gas for their futures. Join us in London at your one-stop-shop for all you need to know about decarbonising heat and carbon targets.

sustain

Sustain has developed an innovative new approach to assist local authorities with their district heating projects. Our approach focusses on the development stages of the project and is designed to help local authorities to:

- Better understand and realise the benefits of a district heating project, including social, environmental and economic objectives
- Quantify and manage risk in a more sophisticated manner
- Improve stakeholder relationships and reduce customer connection risk
- Understand business models and contracting risk to make more informed decisions around project governance and finance

Having spent several months recruiting a team of experienced industry experts and developing a number of dedicated district heating tools, we are now available to work with local authorities on their district heating projects. Our specialisms cover:

- Project management
- Energy masterplanning
- Techno-economic analysis
- Detailed commercial and financial modelling
- Site assessments and connection management

Sustain have just been appointed under commissions in Bristol and Lambeth. We would be delighted to discuss how we may assist you in carrying your projects through to completion.

For more information about our service, please visit: http://www.sustain.co.uk/energy-systems-engineering/district-heating-consultancy.