District Energy Vanguards Newsletter

July/August 2016

Editorial

Summer over – thoughts on the Heat Network Investment Project

Well, the consultation on Heat Networks Investment Project has been put to bed. And very welcome it is too. Who can complain about a potential £320m invested in the sector which in turn could leverage up to £2bn in total? However, whilst DECC has consistently claimed that the consultation was truly open to all possibilities it is possible to discern the parameters of their vision.

Firstly, the primary objective is carbon. Nothing wrong with that - we have ambitious carbon targets to meet and the wider deployment of heat networks will help to achieve them. However, developers of heat network projects will know that one of the essentials for getting a project right is clarity about its objectives. Relief of fuel poverty may be a side benefit. But it is not a primary objective for HNIP.

This also becomes clear with my second point. This is that the other main objective is to leverage a private 'secondary market' investment. This is the route to a long term sustainable market. Once again nothing is wrong with that. But it has implications. One of the consultation questions asks about what types of organisation might be eligible for support and casts a wide net including communities, not-for-profits and the wider public sector, presumably university and health campuses. However, the bidders will be expected to submit documentation on their planned commercial structure. This will need to be shaped to:

> *"eliminate contractual and financial impediments to expansions and interconnections (aggregation) as well as accessing cheaper capital, possibly through refinancing or selling the network".*

Debt is a short to medium term operational financing mechanism - secondary market investors are primarily interested in equity that provides dividends and long-term capital growth. This includes Government should it decide to take an equity stake – which it then, presumably, may want to sell on its stake at some point. Therefore the most flexible and likely commercial structure is a limited company based on shares. This is not to say that community-owned, not-for-profits or in-house ownership won't be eligible. But they are less flexible. Applicants will therefore need to decide early on how to package their projects in order to be sure of success.

The knock on effect is that the need to pay dividends to attract investors will create a tension against any desire to address fuel poverty through the provision of lower cost heat. Striking a balance will require careful consideration. This will favour projects not on

gas networks where the higher cost of the counterfactual will provide a bigger cake to share out between consumers and investors.

A few other points that stand out.

Some Vanguards' Network members harboured a desire that budgets might be devolved to regional administrations such as combined authorities in Greater Manchester, West Yorkshire and the West Midlands. The consultation makes clear that it will be challenging to meet the specific conditions for all projects within the time constraints of the programme through such a devolved portfolio approach. So that is not going to happen. Inclusion of all geothermal heat sources as an eligible cost is a potential hostage to fortune. The costs and risks associated with geothermal wells can be significant and could drain off money from network infrastructure which is the key to exploiting such resources. The Government may wish to assist the development of geothermal energy – something the Vanguards Network supports - but surely this belongs in a separate programme?

The consultation suggests HNIP should not be used for projects that are unlikely to attract commercial investment, either from municipal or private 'secondary market investors in the long term. How does this reasonable desire intersect with stringent planning requirements such as the London Plan where building developments, particularly by local authorities and housing associations, over a certain threshold are obligated to provide a heat network even if only marginally positive?

There is also a concern in certain circles that there may be difficulty in actually spending all the money. If the HNIP monitoring reveals this to be the case it could be possible to take the brakes off on private sector beneficiaries and push down the accelerator pedal to enormous effect.

Lastly, the definition of *'efficient district heating*' in Article 2(41) of the Energy Efficiency Directive is a nonsense. The efficiency of a heat network should be defined by the heat losses from the system and not by the source of heat. The focus of attention should be on reducing losses of valuable heat no matter where it comes from.

This is tremendously exciting time. HNDU announcement on £2.8m awarded to 38 local authorities in Round 6 takes the total to over a third of all English and Welsh authorities. Get to work on developing those applications and good luck.
Looking forward to the pilot in the autumn to see what comes forward.

Michael King
Editor

UK News

Realising local government visions for developing district heating: Experiences from a learning country (Energy Policy)
Ruth E. Bush, Catherine S.E. Bale, Peter G. Taylor

- Local governments are key to the development of district heating (DH).
- Local government-led visions of DH seek to deliver complex value.
- In the UK development is led by funding and commercial factors and is not strategic.
- To enable DH, national policy must align with the vision of local actors.
- Social and environmental criteria must be incorporated in decision-making.

Students' Investigations of Low Enthalpy Geothermal Energy in Manchester The work presented in this paper relates to low enthalpy geothermal (LEG). This uses much lower temperatures and pressures and may be, geographically at least, much more widely applicable. In LEG systems, water (or saline solution) at temperatures less than 100^{o}C is drawn from depths of several kilometres where it resides as aquifers within regions of porous sandstone.

District heating a 'game changer' for economics of SMRs (Utility Week) 26/08/2016
The ETI has calculated that SMRs could make as much money from selling heat as they could from selling power, according to its strategy manager for nuclear Mike Middleton. As optimising the reactors for the generation of combined heat and power would lead to a 20 to 30 per cent reduction in electrical output, this would translate to a 40 to 60 per cent increase in overall revenues when compared to reactors only generating electricity.

Tullis Russell biomass plant to be put to use in district heating project (The Herald) 24 August 2016
Plans are afoot to use the heat produced at a biomass plant built for the defunct Tullis Russell Papermakers to develop a district heating network in Glenrothes.
The RWE Markinch Biomass CHP plant was commissioned in 2014 to replace Tullis Russell's previous coal and gas-fired plant with additional power being exported to the grid. Tullis Russell Papermakers went into administration in early 2015 and its electrical crepe paper division was later bought out by a group of employees to form Glenrothes Paper, which is still powered by the RWE biomass plant.

Comment: District heating provides viable alternative to Hinkley Greenpeace Energydesk – 22 August 2016
Several recent renewables proposals have shown how the new UK government can refuse to build the nuclear power station planned for Hinkley Point in Somerset. But Theresa May's delay in giving final approval to Hinkley also gives us a chance to look more holistically at future energy policy.

District Heating Loan: Bringing heat closer to home (EST) 22 August 2016

With the £320million Heat Networks Investment Project (HNIP) currently under consultation, there's set to be a lot more action on district heating projects in England and Wales over the coming years. Scotland is already ahead of the game here, having been running a District Heating Loan fund since 2011. We spoke with Energy Saving Trust Scotland's district heating programme manager Ken Brady about the work that's gone on – and how it's making a difference.

Forget Hinkley Point, open data could save us from climate change (New Statesman) 12 August 2016
You might not be familiar with heat networks yet, but they are a key part of the government's strategy to cut the UK's energy use, particularly in London. The idea is that you do away with individual boilers and instead have a centralised system that supplies a number of homes through a network of pipes. District heat networks already supply the majority of homes in Denmark with hot water and heating from a shared boiler system. And, little do most people know, localised heat networks are heating around 2 per cent of people's homes in the UK today.

GHA heating project will help tenants save money on fuel bills (Glasgow Housing Association) August 11, 2016
AN innovative £4.3million district heating scheme in the south side of Glasgow will save hundreds of GHA tenants money on their fuel bills.

District heating points way forward for energy prepayment revolution (RE World) August 11, 2016
Switch2 is working with Sheffield City Council to roll out smart meters to 6,000 homes connected to its heat network. This is predicted to reduce customers' total annual bill by £1.4 million, with the first 227 homes using the pay-as-you-go meters saving an average £238 each over the first year. The technology can be used for either prepayment or credit billing, but more than 80% of residents opted for pay-as-you-go to provide better budgeting control and because there is no price differential between the two payment types.

Gateshead Town Centre District Energy Scheme (Gateshead website) July 2016
Where are we now
The District Energy Centre building in Quarryfield Road, the first of its kind and scale in the North East, is nearly completely watertight. The glazed curtain walling to the East elevation has been installed and the zinc cladding covering the whole building has now been completed. The purple louvres to the west elevation, visible from the railway line, will be installed soon. In recent months the 30m high flues have also been fitted along with the thermal stores and the Combined Heat and Power (CHP) Engines.
Energy map July 2016 (902Kb)
Energy map August 2016 (901KB)
View a plan of the initial and future energy network (894Kb)

Portmeirion Biomass District Heating Scheme (ESP Energy Youtube video) 28 Jul 2016

This year ESP Energy completed one of our largest projects to date - the deign and installation of a 2.4 megawatt biomass district heating scheme in the charming village of Portmeirion, North Wales.

District Heating Network Completes at £330m Campus (bfmmagazine) July 21, 2016
The University of Northampton is relocating to its new £330m Waterside Campus, located on a 58 acre brownfield site, and Vital Energi have completed the 1,600m district heating network which will carry low-carbon heat and hot water throughout the campus.

CHP district heating consortium starts work in UK (decentralized-energy.com) 19 July 2016
Low Carbon announced this week that it has now acquired a majority stake in ENE and the first project is set to begin as part of an urban regeneration project in co-ordination with Bristol City Council. Low Carbon said the project will involve building a replicable, scalable development and financing model for CHP-based district heating networks across the UK.

Islington District Heating Planning Guidance (energyforlondon.org) July 18, 2016
July 2016: Islington have recently published new environmental design planning guidance on heat networks: The guidance is released in two parts – with Part 1 giving an overview of the existing and and planned Islington heat networks, as well as an introduction to the principal behind heat networks

High energy efficiency for high-rise flats (HDBonline) 18 July 2016
SenerTec's Gary Stoddart explains the role that combined heat and power (CHP) can play in increasingly popular new build communal heating schemes.

New GLA Decentralised Energy Framework Notice (energyforlondon.org) July 18, 2016
The GLA have issued a tender to secure a range of services related to supporting the growth of decentralised energy projects in the capital.

IET Book: Cogeneration and District Energy Systems: Modelling, Analysis and Optimisation Author: Professor Marc A. Rosen and Dr Seama Koohi-Fayegh Year: 2016

Gateshead Council @GMBCouncil · Jul 4

@Great_Run Well done if you took part in Gateshead's 10k, here's runners at the new Gateshead **District Energy** Centre

International News

This Forestry Town Will Be Canada's First Geothermal Village Huffington Post 31 August 2016
A forestry town is working to re-invent itself as a renewable energy leader with a project that promises community revitalization from the ground up. The mountain village of Valemount, British Columbia, located along the Rocky Mountain trench is eyeing the nearby Canoe Reach hot springs -- one of the hottest surface hot springs in Canada -- as a source of geothermal heat and renewable electricity generation.

IEA DHC Introduction and Invitation to 15th International Symposium on District Heating and Cooling - details of event, September 4-7, Seoul

Hartmann says counterclaim in pending case on pricing of district heating in Denmark is unwarranted (RISI) Aug. 24, 2016 The pending case on pricing of district heating from Hartmann's combined heat and power plant to Tønder Fjernvarmeselskab in 2003-2014 has been reopened at Denmark's Western High Court on Hartmann's request. As stated in company announcement 10/2016 from 30 June 2016 and described in the interim report for Q2 2016 the case concerns collection of Hartmann's receivable of about DKK 39 million from Tønder Fjernvarmeselskab.

Drones used to monitor French district heating scheme (decentralized-energy.com) 28/07/2016
Drone technology is being used to watch over the Venissieux Energies network near Lyon in eastern France, ensuring any weaknesses to the structure are identified on time. Earlier this year the drone, equipped with an infrared thermal camera inspected five kilometers of the 20km that make up the Venissieux Energies heating network, a subsidiary of Dalkia. Ten points of weakness were pinpointed through using the drone. The aim of the thermography was twofold: pre-locate areas likely to crack and cause leakage and generally direct the pipeline renewal program in a more suitable fashion.

District heating association 'sceptical' over privatisation report (ENDS Waste & Bioenergy) 18 August 2016
Denmark's district heating association Dansk Fjernvarme has called for an "open and public debate" on the sector's future, following a report into potential savings for the sector. The association released a statement this week saying a report by consultancy McKinsey, which has not yet been made public, was a "democratic challenge".
The government-commissioned report into how the sector could make savings of up to €228m was "secretly ordered without any open and public debate", according to Dansk Fjernvarme managing director, Kim Mortensen, who said the report backed privatisation of the sector. While Mortensen said heating companies could be more cost effective, the move required the right tools and "no reports commissioned in secret". Many district heating systems are waste-fired, while incentives for biomass fuels, which are excluded from heat taxes unlike fossil fuels, have boosted its use across the country.

Engaging Citizens in District Heating Management: A Case Study (districtenergy.org) August 13 2016
An example of how cloud GIS may be used in local government projects comes from Mihai Iepure, Faculty of Geography, Babes-Bolyai University Cluj-Napoca, Romania. Mihai Iepure wrote a case study in which he describes his implementation of GIS technology with a goal to assist the process of modernization of local heating network.

WBA issues report on the importance of bioenergy in Europe (Biomass Magazine) July 25 2016
A recent study published by the World Bioenergy Association addresses the challenges European cities are facing within global climate mitigation policy and explains the contributions biomass can offer to reduce the use of fossil fuels. The study mentions seven European cities, including Stockholm, Sweden; Göteborg, Sweden; Copenhagen, Denmark; Ulm, Germany; Pecs, Hungary; Paris, France; and Graz, Austria, that demonstrate how bioenergy is integrated into the urban energy system, whether for heating, transport, cooling or electricity purposes

Keeping up the heat (goethe.de) July 2016
A group of architects in the metropolis of East Slovakia came up with the idea of using dilapidated and disused structures as cultural and artistic spaces: district heating transfer stations. Built during the 1960s and 1970s, these structures originally served the purpose of redistributing heat and hot water within the neighborhood. As new heat transfer technology requires much less space, these buildings can nowadays provide space for small focal points of local culture to evolve.

Solar Heating World Champ (euroheat.org) 13 July 2016
Seasonal heat storage boosting the effect of the world's largest solar heating plant. Vojens Damvarmelager luftfoto m solfangereThe small Danish city of Vojens is perhaps best known for their accomplished ice hockey team, as well as Vojens Speedway Center, founded by the winner of several world championships, Ole Olsen. Now, the city wins gold in solar heating as well.

Future of renewables in district heating "uncertain" – AMORCE (ENDS Waste & Bioenergy) 11 July 2016
FRANCE: Current support mechanisms are struggling and can no longer create or develop functioning networks, says trade association
The association representing French local authorities involved in waste management, AMORCE, has said it is "sounding the alarm" over the future of renewable-powered district heating.
In a report, released on 8 July, the association said since 2009, when France's energy agency Ademe introduced the fonds chaleur or heat fund, real progress had been made on new build wood-fired heating plants, as well as reusing heat from industrial processes and energy-from-waste plants.
However, further progress is now "uncertain" due to the fall in fossil fuel prices and a general lack of interest in funding projects, according to the report. It says changes

made by Ademe to the heat fund in May are "not enough incentive" to create new district heating networks fired on renewables or waste.
The report puts forward solutions including an immediate increase in state aid to heat networks and index-linking that aid to reflect the prices of fossil fuels.
Union of district heating and district cooling (SNCU) chairman, Thierry Franck Preaumont, is quoted in the report. He said: "The heat fund has proved its efficiency since its establishment in 2009, allowing the construction of 1200 km of additional networks. [But] the support is no longer sufficient to accelerate development of heat networks under the oil-shock against which we live now."

In downtown Kansas City, Veolia Energy is building an energy efficient network (kansascity.com) Jul 07 2016
VIDEO: The energy plant provides heating and cooling through steam and chilled water to many downtown buildings, a concept known as district energy. It allows businesses to not have to rely on maintaining their own heating or cooling units.

Blatchford and downtown district energy plans on target (Edmonton Alberta news) July 06, 2016
City councilors were talking 'green' energy at executive committee with two district energy projects. At Blatchford, the city confirms there is private sector interest to supply heating and cooling on the 550 acre site. The next step is being taken with a "Request for Information" on attracting a renewable energy provider, something Coun. Bev Esslinger is pleased to see.

Top District Heating Countries – Euroheat & Power 2015 Survey Analysis
(Euroheat) 01 July 2016
Solar district heating has enjoyed increasing attention from all across Europe and China, triggered by Denmark's enormous growth rates in the field. Until the end of last year, the Scandinavian country had seen 577 MW of solar thermal power fed into 79 district heating networks mostly run by municipalities. There are another 364 MWth in the pipeline, scheduled for the beginning of this year.

New York City Seeks Developer for District Energy Microgrid (Microgrid Knowledge) June 23 2016
Plans are in the works to build a district energy microgrid in Red Hook.
The New York City Housing Authority (NYCHA) is seeking proposals for a district energy microgrid for 28 buildings with 6,300 people on 39 acres in Brooklyn. The microgrid will deliver heat, steam and electricity to part of the Red Hook neighborhood, which was pummeled during SuperStorm Sandy and lost eight steam plants.

St. Paul Recognized as "Champion City" by United Nations District Energy in Cities Initiative (UtilityDive) June 20, 2016
Mayor Chris Coleman lauded for commitment to sustainability, district energy policies
The United Nations Environmental Program (UNEP) Sustainable Energy for All initiative today recognized the City of St. Paul, Minnesota as a "Champion City," a distinction honoring urban areas committed to developing and sharing district energy

policies with other cities and working cooperatively toward a cleaner, more resilient future.

Events

Waste heat recovery from urban facilities brokerage event Wednesday September 07, 2016 – 10:30

progRESsHEAT webinar: Waste heat integration into district heating networks - Friday 9 September
In this webinar, representatives from district heating companies will share their experiences with the integration of industrial waste heat into their district heating networks. Important lessons learned as well as barriers and success factors for these projects will be identified and discussed.

The Carbon Trust Heat Network Model Launch - TUE 20 SEP AT 08:30, LONDON
As part of the Carbon Trust's mission to support capacity building in the public sector we are pleased to be launching our cashflow model template for heat network investments, which is freely available to all UK public sector bodies.

REHAU District Heating workshop at the Wales Millennium Stadium in Cardiff on Thursday 22nd September. A number of speakers will be presenting at the event from CIBSE, REHAU and many more

Second International Conference on Smart Energy Systems and 4th Generation District Heating .On the 27th and 28th of September, 300 international researchers and industry representatives are expected to meet in Aalborg to discuss and present the future of district heating and smart energy systems.

1st National Conference on District Heating in Ireland 4th October 2016, The Marker Hotel, 9am - 1pm
District heating is a well-established technology that has been proven to be an effective model of creating low-carbon energy systems at a local level. The new EU heating and cooling strategy identifies district heating as a key technology to lower carbon emissions in the heating sector.

Low-carbon heat: ERP project launch event - Tuesday, 11 October 2016 from 12:30 to 16:00 Energy Research Partnership (ERP)
The Energy Research Partnership (ERP) would like to invite you to the launch event for our upcoming project on the implementation and implications of options for low-carbon heat. This project seeks to advance the debate on low-carbon heat and improve our understanding of the available options in terms of:

- Implementation: including retrofit practicalities, logistics for customers and utilities, and user acceptance of technologies.
- Systems Implications: including infrastructure requirements and primary energy demand

Future Thermal Energy Conference 2016 10th October - 11th October 2016
at Warwick Conferences, University of Warwick

Webinar: Barriers to district heating systems - Results from 6 case studiesBy: progRESsHEAT project – Friday 14 October 2016
The webinar will provide an insight into the EU-funded progRESsHEAT project on renewable heating and cooling solutions, investigating six European case studies - Ansfelden (Austria), Litomerice (Czech Republic), Helsingor (Denmark), Herten (Germany), Matosinhos (Portugal) and Brasov (Romania).