Editorial

Crisis, what crisis?

Four months in and we are still not clear. Even when this lockdown is lifted it is going to take some time before we can start organising events again. Meanwhile we thought we'd reboot the District Energy Vanguards Network Newsletter to stay in touch and keep you informed and entertained. If you are intrigued by the reference in the title to a supposed quote from Prime Minister Jim Callaghan then read on.

Despite the lockdown heat networks up and down the country have continued to provide homes and businesses with the heat and hot water they need. The three network companies in which I have an involvement had previously laboured over the development of business continuity plans (BCPs). Long hours were spent running up and down the accountability chains and agonising over every link to make sure it was secure. So many 'what if's?' to be considered. But when the lockdown hit they all clicked neatly into place. Could it have been that the response to the crisis might have been easier if others had done the same?

Which reminds me that the BEIS consultation on the 'Heat Networks Market Framework' closed at the start of last month (a number of responses to which are highlighted below). This is primarily about regulation to protect consumer interests. My correspondent at Fuel Poverty Action shared their response with me (below) and it makes depressing reading. The overarching impression is of customers playing a bizarre game of snakes & ladders - with a few extra cul de sacs thrown in, in trying to secure accountability for the poor service they endure. Ofgem has been suggested as the likely regulator. If they are able to pin down responsibility and straighten out these chains of accountability then we will all be well served.

The proposals under consultation also seeks to strengthen demand certainty so as to increase confidence amongst investors. Developing heat networks has at least six classes of risk. Most of these are within the control of proposers, developers and operators and can be managed with prudence and patience. There are others that are entirely unknown and are contractually covered by 'force majeure' clauses that are the legal equivalent of rolling your eyes, throwing up your hands and exclaiming 'whatever!!'. But a known risk outside the control of the project managers is demand risk. You know how much load is needed to make a project fly but you just can't guarantee it. This is the biggest barrier for investors that causes them to shy away or add multiples of percentages to the cost of capital that eventually sinks the project under the weight of debt.

BEIS's consultation document identifies three ways of addressing demand risk. We consider each in turn.

Demand Assurance is considered on page 21 of the consultation document and is in response to a proposal set out by the ADE in their 2018 Heat Network Taskforce Report. The basic proposition is that an 'unspecified other' underwrites a pipe run or spur to a potential customer until that customer connects. This was declined by Government as, firstly, they figured out that they are (and the public purse) the 'unspecified other' picking up the risk. And, secondly, it could encourage developers to install speculative pipes runs to prospective loads that take a very long time to materialise – or even never – whilst being paid for by the taxpayer. Although BEIS does leave to door open to underwriting projects that have a strategic importance. The other facet of the ADE offer was that if the industry was given this assurance then it would deliver customer standards. Whilst not responding directly to the sequencing of this offer the whole BEIS consultation essentially says that they will insist on having the customer standards up front.

Regulated Asset Base (RAB) [page 20] is what happens in other major regulated infrastructure sectors – water, gas and electricity. The cost of any individual project is spread or 'socialised' across the entire customer base. As payment by customers is guaranteed (that is they are obliged to pay by the regulator acting in their best interests) it provides a very stable and low risk revenue stream which the network operator can use to leverage in private sector investment, typically from pension funds. Key features are that the customer base is very large (i.e. all customers connected to gas, electricity or water networks) and that a large proportion of the infrastructure network has been amortised. Taken together this means that the actual charge paid by customers is relatively small.

RAB was declined by BEIS in the consultation on the grounds that the customer base for heat networks was too small and patchwork. Additionally, it would require the regulator to scrutinise the business plans and financial models of heat network operators to ensure "returns are legitimate". This scrutiny would add to the regulatory burden and, taken together, the consequent costs falling on individual customers would be too high.

However, in discussing the features for a regulatory framework (Table 1 p28) BEIS declares that: *"Requirements of the framework should, in the main, be outcome focused rather than prescriptive."*

What is the outcome sought? I would suggest that it is reliable, affordable decarbonise heat. Heat networks are only a means to that end. As such should the Regulated Asset Base for this outcome not be extended to cover all consumers of heat no matter how that is produced? This would include all consumers currently receiving heat from gas boilers. With such a huge customer base the objections set out above would fall away. It would also provide a framework under which energy network operators and investors would be encouraged to select the technical option that will be most effective to securing the desired outcome instead of focusing on the vector for distribution.

Heat Zoning is a policy under which the characteristics of particular areas lend themselves to certain technologies which are then prioritised. A study by Element Energy for for the National Infrastructure Commission considered seven bundles of technologies that could be used to decarbonise heat. However, each was best applied in certain locations – biomass in rural areas, heat networks in heat dense urban areas or close to major sources of waste heat. The authors conclude: *"it may be appropriate and beneficial for the public sector – most likely through the local authority – to develop 'heat zoning' policy to incentivise and/or regulate the use of different heating and other energy technologies, where market failures persist or where substantial benefits can be gained through coordinated behaviour".* (p10).

Whilst BEIS acknowledges that local authorities are best placed to deliver such a policy it could find nothing to prevent local authorities from implementing them. And whilst showcasing a number of leading examples in Bristol, Leeds and Birmingham it expressed caution over mandating such a policy for fear it could overburden some local authorities. My experience is that those local authorities currently lacking the capacity to consider such a policy choose to do so precisely because it is not a mandated activity. Instead BEIS proposes to work with a number of pilot authorities to develop local heat decarbonisation plans. If HNDU are not effectively doing so already, might this be a good place to start?

The Scottish Government, on the other hand, have chosen to make it mandatory by obliging local authorities to undertake Local Heat & Energy Efficiency Strategies (LHEES) which will then be used as a basis for the identification of Heat Network Zones. Currently a Heat Networks Bill in progressing through the Scottish Parliament to provide the necessary legislative powers. This is a thorough-going piece of legislation covering the duties on local authorities in establishing heat network zones, licensing of heat network operators, permits to operate within a heat network zone and more. What is missing is an 'obligation to connect'. This was floated in the first consultation on LHEES. It was a longstop power that would only be used when the heat network operator could prove that it was in the longterm interest of a major heat consumer to connect but they refused to do so. This disappeared from later versions. An international review of heat network market frameworks published alongside the BEIS consultation found that: *"Mandatory connection is cited throughout the literature, and by stakeholders, as being crucial for creating a stable investment environment. At least in the early stages, most markets have adopted this in some form or another" (P35).*

A key aim of the BEIS Heat Networks Market Framework and the Scottish Government's LHEES approach is to increase investor confidence. But the former fights shy of mandating heat zoning whilst the latter avoids mandatory connection. If the latter is because of concerns over commercial, legal and consumer protection issues then at least the Heat Networks Bill could require a major heat consumer to provide an explanation of why they refuse to connect.

Last year the Scottish Government declared a Climate Emergency. In the present COVID crisis, all UK Governments jointly closed down society and the economy and

ordered everyone to stay at home. If we cannot mandate heat zoning in England & Wales or require an explanation of the major heat user's refusal to connect in Scotland then you have got to ask *'are we in a climate crisis or not?'*

Stay safe!!

Michael King, *Editor*

Spotlight on... *Reducing UK emissions Progress Report to Parliament June 2020 (Committee on Climate Change)*

Electrification of heating remains the main route for decarbonising buildings, whether through heat networks or at a household level. There are 37 million heat pump units installed in EU countries.68 Public subsidies have been available since 2011 in the UK, primarily under the Renewable Heat Incentive. However, UK deployment remains below 30,000 units installed a year, or just 2% of annual boiler replacement sales. The attending lack of public awareness and support for lowcarbon heating is arguably the single greatest consumer barrier to achieving Net Zero. [p80]

A £270m Green Heat Network Fund was also committed to support the deployment of lowcarbon heat networks, along with the proposed green levy to support biomethane. The UK Government is consulting on regulatory frameworks for heat networks, including: a new regulator, rights and powers for heat network developers (to align with other utilities) and consumer protection measures. The Scottish Government has proposed an approach which includes local concessions reinforced with planning policy in its new Heat Networks Bill and a new Scottish regulator. The UK Government is considering local zoning and concessions amongst other options. [p119]

As we emerge from the crisis, supply chains must be developed including the rollout of heat pumps and heat networks, with further funding for heat pumps off the gas grid to 2025. [p151]

The National Infrastructure Strategy, which is due to set a vision for infrastructure development over the next 30 years consistent with Net Zero, was delayed from Budget 2020. It should prioritise early funding for areas needing public finance that will support the recovery and prepare for net-zero and the impacts of climate change. Important priorities include energy efficiency in buildings, electric vehicle charging infrastructure, heat networks, hydrogen production and carbon storage infrastructure, 5G and fibre broadband, and risk management for flooding and coastal erosion. [p165]

The new green levy for biomethane will ensure a stable market for biomethane through the next decade. It is essential that the proposed new market framework for heat networks achieves the same respective outcome. Government should harness the planning framework (e.g. through zoning and concession arrangements) to manage demand risk and unlock investment at scale. [p178]

Table 5.2.b Recommended measures to support a resilient recovery - low-carbon heating

	Tackle the resilience deficit	Support the economic recovery and jobs	Shift towards positive long-term behaviours	Do not lock in GHGs or increased risk	Fairness	Finance
Low-carbon heating - heat pumps	Annual installations well below required level	Significant scope to increase deployment within current budget; but medium-term expansion supply-chain will be required, and measures to promote consumer demand	Opportunity to increase awareness needed to accelerate required shift away from fossil-based heating systems	Alternative replacement heating systems predominantly gas or oil	Start with homes off-gas grid, social housing and area-based schemes - potential to target areas most affected by job losses	Needs significantly more funding than currently allocated
Low-carbon heating - district heating	Current growth well below required level	Pipeline of early projects exists	Opportunity to increase awareness	Would need to focus on zero-carbon heat sources (i.e. not gas CHP or biomass)	Urban focus - but could potentially target lower-income areas or those most affected by job losses	Some funding already in place along with pipeline
Local area plans & green passports	Needed to broaden buy-in and begin progress	Could be directed to areas in need of stimulus support first. Small scale initially, but can follow up with identified measures	Builds on sense of community during lockdown and buy-in to required changes	Supports the right choices for the local area	Involves local people in energy decisions; can target fuel poverty as well as emissions	Relatively low cost and could be recouped from network charges

Heating buildings and energy efficiency

To reach the target of reducing residual emissions from heating buildings to 4.1 MtCO2e, compared to the previous target of 10 MtCO2e, more heating systems will need to be upgraded, even in buildings that are hard to decarbonise. This will take more time, and will be more difficult to do, so this process may need to begin earlier.

The Commission's recommendation to carry out trials for heat pumps and hydrogen heating to inform this decision is still important to prove these technologies, so they can start to be installed in households across the UK. Some steps have been taken: the government is consulting on introducing a new grant scheme for investing in heat pumps and biomass boilers from April 2022,13 while the Budget confirmed further funding for low carbon heat networks and heating systems.

However, the increased volume of new heating systems that will need to be installed mean taking steps to trial heat pumps and hydrogen heating is even more urgent. Energy efficiency measures should be installed in the short term to reduce emissions from heat. Whichever approach the government chooses to take to decarbonise heat, energy efficiency measures will be be needed to reduce energy demand from heat. Energy efficiency measures will be particularly important if heat is electrified, as heat pumps work best in buildings with reasonably high insulation standards as they provide constant, but low level, heat.

Table 1.1 Comparison between the Committee on Climate Change's 'further ambition' scenario (in green) and the Commission's recommendations[6]

CCC Net Zero 'further ambition' scenario vs Commission recommendations to date 2020 to 2050 by sector

	2020s	2030s	2040s	2050 emissions ($MtCO_2$)
Electricity	Largely decarbonise electricity: renewables, flexibility, coal phase-out	Expand electricity system, decarbonise mid-merit/peak generation (e.g. using hydrogen), deploy bioenergy with CCS		2.9
	Reach 50% renewable energy generation by 2030, develop interconnection, storage and demand flexibility	Transition to a low carbon, highly renewable energy system by 2050, develop system flexibility (including use of electric vehicle batteries for storage)		8
Hydrogen	Start large-scale hydrogen production with CCS	Widespread deployment in industry, use in back-up electricity generation, heavier vehicles (e.g. HGVS, trains) and potentially heating on the coldest days		3.1
	Trial hydrogen production with CCS by 2023			
Heating buildings	Heat networks, heat pumps (new-build, off-gas, hybrids)	Widespread electrification, expand heat networks, gas grids potentially switch to hydrogen		4.1
	Evidence on heat pumps by 2021, hydrogen trials to 10,000 homes by 2023	Transition to low carbon heat by 2050 through either heat electrification or hydrogen-led heat		10
Energy efficiency	Insulation in residential buildings, energy management and efficiency in non-residential buildings	Further efficiency measures in all buildings, no new non-efficient buildings, insulation in smaller homes and heritage buildings, energy management in non-residential buildings		
	21,000 energy efficiency measures a week up to 2035 (or until a decision is made on heat), £3.8bn for energy efficiency in social housing, trial initiatives for owner occupiers, regulations in private rented sector			

Also see: *Model and scenarios for cost analysis of future heat infrastructure options.* This model and input scenarios generate many of the results presented in the report Cost analysis of future heat infrastructure options. The report was produced by Element Energy Limited and E4Tech and published alongside the Commission's National Infrastructure Assessment.

Also see: Infrastructure Commission for Scotland report.

UK News

25 June 2020: District Heat Networks Need the Private Sector to Deliver a Net-Zero Transition (BNEF)

Singapore has built what it says is the largest district cooling network in the world, to handle rising cooling demand in a sustainable manner for both carbon emissions and the power grid. Meanwhile, the U.K. expects a ninefold increase in district heating by 2050 to meet its net-zero emissions target. The Netherlands sees a 17-fold increase as it moves completely away from natural gas in homes. Getting the private sector involved in district heating depends on providing solutions to manage risks and returns.

23 June 2020: Heat Networks (Scotland) Bill (Economy, Energy and Fair Work Committee)

Our main item of business this morning is to take evidence on the Heat Networks (Scotland) Bill. I am pleased to welcome our first panel of witnesses. We have Nicola Mahmood, senior business development manager at ENGIE; Eoghan Maguire, director for Scotland and the north with Vattenfall UK; and Claire Mack, chief executive of Scottish Renewables. More on the Bill here.

23 June 2020: Energy and enterprise: Michael King says Aberdeen's low-cost district heating scheme could 'snowball' (Aberdeen Press and Journal)

Michael King, a director of Aberdeen Heat and Power, told MSPs that 1,000 new connections had been confirmed for the next three years, which would represent a 30% rise. But he believed that many more would follow, and he confirmed that talks were under way with private sector developers seeking to connect to the system.

19 June 2020: National Underground Asset Register Project Update (Geospatial Commission)

The Geospatial Commission have published a project update report on it's recently completed National Underground Asset Register (NUAR) pilots.

18 June 2020: Government makes £5.5m investment in local renewables and low carbon heat (ScottishConstructionNow)

Communities will be able to bid for a share of £4.5m through the Community and Renewable Energy Scheme (CARES), which funds local renewable projects. A further £1m is being made available through the Low Carbon Infrastructure Transition Programme (LCITP) – a scheme which provides support for innovative energy projects such as heat networks and integrated energy systems.

12 June 2020: Combined Heat and Power (CHP): the route to 2050 - call for evidence (BEIS Open consultation)

We're seeking views on the future role of efficient co-generation of heat and power to support achievement of our net zero emissions target by 2050. This consultation closes at 11:45pm on 4 September 2020.

11 June 2020: The Climate Change Emergency Hackathon (OFGEM)

Using data from across sectors – enabling it to be open, discoverable and easily linked – is key to helping decarbonise the energy system and protect consumers, while reaching towards the Government's net zero carbon emissions goal.

Reducing heat waste. The team looked at fuel poverty and the challenge of reducing heat waste in the regions across the UK. They used the BEIS, Smart DCC and Electra-link data. They presented the zero waste exchange, which is a platform to drive de-carbonisation through competitively trading heat and waste locally, helping drive down fuel poverty by supporting local communities.

11 June 2020: UK heat network projects awarded £25m (Chemical Engineer)

FOUR heat network projects have been awarded almost £25m (US$31.6m) of funding, in the third round of the UK's Heat Networks Investment Project (HNIP). Recipients include the first HNIP-funded mine water heating project, which could save 1,300 t/y of carbon dioxide (CO2) emissions.

11 June 2020: Multi-million pound grant means Gateshead Council can upgrade its heating system (Chronicle)

Millions of pounds have been awarded to Gateshead Council so that it can double the size of its heating system in the town centre. The Heat Networks Investment Project grant of £5.9m will enable the council-owned Gateshead Energy Company to install 5.5km of new heating pipes to the east of Gateshead Town Centre.

10 June 2020: The European capital goes green with district heating (celsiuscity)

This document highlights the three cornerstones for Strasbourg's energy transition: curbing energy consumption across all sectors, boosting local renewable energy production and enhancing district heating systems.

9 June 2020: Heat pump firms urge government to rethink support or "waste billions" (Energyst)

An alliance of technology companies, installers, engineers and social housing groups urge government to stop picking winners, arguing that government's plans will cut off support for heat pumps in all but off grid homes "and the occasional district heating scheme". In a bid to drum up support and pressure Beis to rethink, they have launched the Pump It Up campaign.

9 June 2020: Homes to be heated by warm water from flooded mines (BBC)

A new garden village in County Durham will soon be getting its heat from a surprising source: it will be warmed by water from a disused mine.

5 June 2020: Heat Networks: Building a Market Framework (Energy UK)

4 June 2020: Manifesto for a green recovery (Greenpeace)

"When it comes to decarbonising the UK's heating systems, the government needs to lay the groundwork now. Providing policy clarity will immediately unlock more private investment, enabling projects to be 'shovel ready' within the next few years. Known solutions must be scaled up (heat pumps for buildings not connected to the gas grid, district heating), promising technologies must be trialled at scale (large-scale heat pump roll-out, hydrogen/ hybrid systems), and research and development work on new alternatives must be increased. Large-scale trials across a range of geographical regions can also serve as an immediate stimulus, getting construction activity going in those areas and on the chosen technologies as soon as possible.

June 2020: Heat networks: Building a market framework (CIBSE)

4 June 2020: Consultation Response Heat Networks: Building a Market Framework (Law Society of Scotland)

3 June 2020: Heat Networks: Building a market framework: consultation response (Energy Systems Catapult)

June 2020: Response to the Department of Business, Energy and Industrial Strategy's Consultation on Building a Market Framework for Heat Networks (Citizens Advice Scotland)

June 2020: Final ADE Response | Heat Networks: Building a Market Framework (BEIS) (ADE)

June 2020: ELEXON's response to consultation on Heat Networks: Building a Market Framework (Elexon)

1 June 2020: Heat Networks: Building a market framework – Gemserv response (Gemserv)

1 June 2020: Ofgem response to government's heat networks: building a market framework consultation (OFGEM)

We set out a number of issues for government to consider to ensure that regulatory regime will be practicable and capable of being regulated effectively, so that heat network customers are able to enjoy the expected benefits - such as our objectives, funding arrangements and regulatory design considerations.

1 June 2020: EAUC – The Alliance for Sustainability Leadership in Education: - response to Heat Networks: Building a Market Framework (EAUC)

1 June 2020: Heat networks: building a market framework Response from Citizens Advice. (Citizens Advice)

1 June 2020: Heat Networks: Building a Market Framework Fuel Poverty Action response (Fuel Poverty Action)

29 May 2020: REHAU supplies first stage of future district heating network (BuildingTalk)

The Regional Performance Centre (RPC) Dundee at Caird Park, Dundee, is a community hub that not only provides sporting facilities, but also marks the beginning of a district heating revolution for the area, with help from REHAU.

28 May 2020: Southwark's 'ageing and ailing heat networks' (The Ecologist)

Southwark Council has been ordered to refund money paid for ineffective District Heating, in a pathbreaking decision from the First Tier Tribunal. The Tribunal, which determines leasehold disputes, ruled that Mr Murat Kaya owed only one quarter of what had been demanded of him. Three quarters of what he had paid must be

returned. Such victories are rare for District Heating users.

26 May 2020: Heat Trust Annual Report 2019 (Heat Trust Annual Report)

This is our fourth annual report. It presents analysis of data from both Registered Participants and the Ombudsman from 2019, as well as our reflections on the first four years of Heat Trust and recommendations for developing regulation which draw on this experience. We are pleased to see that the voluntary standards set by Heat Trust are having a positive impact on the market and delivering improvements to customer experience.

26 May 2020: UK's Largest Gas Replacement Project Bringing Ground Source Heating To Sunderland Apartment Blocks (businessupnorth)

Oakes Energy Services is supporting a major environmental project for Gentoo Group to replace gas boilers in seven tower blocks in Sunderland with ground source heating.

21 May 2020: Vattenfall agrees to 8MW district heating scheme in Barnet (EDIE)

Vattenfall Heat UK will deliver an 8MW districting heating system to heat homes, schools and businesses in Barnet, with a view to removing all carbon-emitting sources from the system.

19 May 2020: Major grant will connect Gateshead homes to mine water energy scheme (Gateshead Council)

Gateshead Council has been awarded a grant of almost £6m to double the size of its heat network in Gateshead Town Centre. The Heat Networks Investment Project grant of £5.9m will enable the council-owned Gateshead Energy Company to install 5.5km of new heating pipes to the east of Gateshead Town Centre. This will supply a further 12 Gigawatt hours of heat to up to 1,250 new private homes, a care home, Gateshead International Stadium and other Council-owned buildings in Felling.

18 May 2020: Innovative Mine Water Heat Network secures Government funding in HNIP Round 3 (TriplePoint)

Today Triple Point Heat Networks Investment Management in partnership with the Department for Business Energy and Industrial Strategy (BEIS) has announced the outcome of funding round three of the Heat Networks Investment Project (HNIP). Four projects have been awarded a little under £25 million of funding, bringing the total to 11 successful schemes since the programme launched for applications. The total funded network trench length has now grown to 41.5km.

15 May 2020: Heat Networks Project Pipeline January to March 2020 added (BEIS)

This pipeline provides an overview of projects that Heat Networks Delivery Unit (HNDU) and Heat Networks Investment Project (HNIP) are directly working with.

14 May 2020: Regulating heat networks in Scotland: a step towards decarbonisation (Brodies)

The Heat Networks (Scotland) Bill was put before the Scottish Parliament in March and is open to feedback until 29 May. The Bill introduces a framework to regulate the construction and operation of heat networks across Scotland with the aim of ac-celerating their deployment and decarbonising Scotland's heat supply.

13 May 2020: ADE Heat Networks Sector Conference | Write up & Resources (ADE)

Our second fully online event, the conference attracted over 120 attendees, who heard from a range of speakers from across the sector discussing how we can scale up the contribution of heat networks to the UK energy system.

13 May 2020: Vattenfall plans London heat network (thechemicalengineer)

VATTENFALL will design a heat network to supply more than 10,000 homes in London, using heat captured from Cory Riverside Energy's energy-from-waste plant.

12 May 2020: District heating can help deliver on social housing energy efficiency pledges (Municipal Journal)

In its 2019 election manifesto, the Conservative Party pledged to invest £9.2 bn in improving the energy efficiency of homes, schools and hospitals. Of this, £6.3 bn was set aside specifically to install energy-saving measures in 2.2m homes, with a focus on social housing and those in fuel poverty.

12 May 2020: UK led low carbon heating project gets £5 million funding from EU (Current)

A project to develop a green domestic heating solution, led by the University of Exeter, has received £5 million (€5.7 million) of funding from the EU's INTERREG 2 Seas programme. The Sustainable Heating: Implementation of

Fossil-Free Technology (SHIFFT) project will look at how the UK and other European countries can transform low carbon heating in houses and public spaces.

11 May 2020: Harnessing heat from the Tube (newcivilengineer)

It is estimated that London's wasted heat could meet 38% of the city's heating demand, so a new project harnessing London Underground's waste heat could be a game changer. Nestled between towering high-rise blocks, a new energy centre in the London Borough of Islington is a shining example of how energy from waste can decarbonise urban areas.

May 2020: Transporting and storing heat efficiently (European Commission)

Urban district heating networks can work more efficiently and save energy, thanks to innovations developed under the Horizon 2020 programme. The H-DisNet project has demonstrated new thermo-chemical fluid networks that reduce thermal losses while transporting and storing heat. The technology, which was demonstrated for the first time at sites in Berlin, Zurich and Newcastle, can reduce the energy consumption of space and water heating by between 30 and 50%.

8 May 2020: How a shuttered London Underground station became a model for green energy (CityMetric)

Islington's brief stipulated a base that was vandal-proof but also attractive. "That set us up with the idea of a plinth and a top," Abbey says. "So we had some fun with the client looking at old precedents for the site – for example, the original underground station had the classic oxblood tiles on it, and there are a lot of buildings in the London Underground with vitreous enamel panels, which are really tough and good against graffiti." In the end, Cullinan came up with a two-part base: There is a skirting board of black glazed brick, and above that, black vitreous enamel panels. Set within these are Scottish artist Toby Paterson's work – his cast aluminium panels with coloured enamel insets are based on the internal layout of flats in the nearby King's Estate.

6 May 2020: Old coal mines to heat £7m Tyneside district heating scheme (energyst)

Coal mines as heat sources took another step forward this week a councillors ap-proved an ambitious municipal district heating scheme. South Tyneside's hybrid Viking Energy Network aims to use water pumped from 300 metres below the former Hebburn Colliery combined with heat pumps, solar generation and a CHP unit. The scheme will be sited on the Tyne near Jarrow.

5 May 2020 Council uses drones as part of energy savings drive (Placetech)

Nottingham City Council has brought drone inspections to heat networks in what the council says is a UK-first, allowing its 90km network to be surveyed in one-and-a-half nights and cutting back on loss of water.

1 May 2020: Putting customers at the heart of our pandemic response, says Heat Networks Industry Council (ADE Press Release)

A new consumer protection agreement has been agreed today (1 May 2020) between members of the Heat Networks Industry Council. Measures agreed include ensuring all customers remain supplied with energy, heating and hot water through challenging times and supporting customers in financial distress. [HNIC consumer protection agreement]

28 April 2020: Future support for low carbon heat (BEIS Consultation)

This consultation sets out proposals for:

· a Green Gas Support Scheme (GGSS): increasing the proportion of green gas in the grid through support for biomethane injection

· a Clean Heat Grant: support for heat pumps and in certain circumstances biomass, through an upfront capital grant to help address the barrier of upfront cost

· budget control and financial management of the spending proposals for green gas and buildings technologies

· participant compliance

15 April 2020: Huge £120m tomato greenhouses will make East Anglia a beacon for low-carbon farming (Eastern Daily Press)

Low Carbon Farming is developing the massive greenhouses on the Colman family's Crown Point Estate at Kirby Bedon, and at Ingham in Suffolk – each covering an area larger than the O2 arena –which will grow tomatoes in a hydroponic system using waste heat from Anglian Water treatment facilities.

9 April 2020: Electrification of Heat Demonstration Project

This project looks to demonstrate the feasibility of a

scale roll-out of heat pumps in a representative range of British homes.

In November 2019, a consortium led by Energy Systems Catapult with Delta Energy and Environment and Oxford Computer Consultants was awarded the Management Contract for the Electrification of Heat Demonstration Project.

International News

July 2020: Potential of integrating industrial waste heat and solar thermal energy into district heating networks in Germany (Energy)

The German Federal Government identifies the integration of industrial waste heat and solar thermal energy into district heating systems as two measures to decarbonise the heating and cooling market in The Climate Action Plan 2050.

22 June 2020: New ways for the energy transition – the Viennese approach (municipalpower)

The city of Vienna and its wholly-owned energy provider are testing a range of par-ticipatory approaches to meet the city's decarbonisation goals. From sustainable ur-ban planning, through geothermal engineering to blockchain technology, Vienna is contributing new ideas and sustainable solutions for the city of tomorrow.

8 June 2020: Solving the Global Cooling Problem (Bloomberg)

The rise of global cooling has prompted research and development into ways to make systems more efficient using heat pumps, solar-power, evaporative coolers and other technologies. One of the most effective is to build a system that uses a large central plant that can cool several city blocks.

3 June 2020: Denmark ushers in new Climate Action Plan (themayor)

In the Plan, the Danish government has outlined six main pathways for investment that will allow the country to achieve its ambitious climate targets. They include the creation of energy islands with offshore win turbines, the promotion of green fuels, ensuring energy efficiency in buildings, the provision of green heating through dis-trict heating systems or electric heat pumps, the use of green energy and green energy improvements in Danish industry and the pushing of the waste sector towards climate neutrality by 2030.

2 June 2020: EU project UpgradeDH launches campaign: Become a #DHCitizen

UpgradeDH is launching an image raising campaign to promote modern district heating networks. The campaign aims to improve the perception of district heating at local level, thus establishing district heating as a viable solution for the energy transition, in the minds of citizens. The webpage www.dhcitizen.eu provides information on DHC, as well as its role in decarbonising our cities. In addition, it highlights examples of decarbonisation success stories thought an integrated #DHCities map.

1 June 2020: EU to mobilise €30bn to help member states affected by the energy transition (smart energy.com)

Projects must also comply with the lending policy of the EIB. Investment areas will include energy and transport infrastructure, district heating networks, public transport, energy efficiency measures and social infrastructure, and other projects that can directly benefit the communities in the affected regions and reduce the socio-economic costs of the transition towards a climate-neutral Europe by 205.

June 2020: Megawatt Solar Thermal Installations on the Rise (IEA Solar Heating and Cooling Programme)

Solar thermal for district heating is on the rise worldwide. In Denmark, this market grew by about 170% in 2019 and other countries like China and Germany, primarily due to its improved cost-competitiveness. Market growth was also driven by the rising demand for industrial and agricultural applications.

1 June 2020: Danish district heat plant to phase out coal and slash 375k tonnes of CO2 (EnergyLiveNews)

One of the largest district heating plants in Denmark plans to phase out coal by 2022, a development which is expected to slash 375,000 tonnes of carbon dioxide.

28 May 2020: Biomass boiler delivered for district heating project in Finland (Biomass Magazine)

The plant's output is 49 MW, due to use of Unicon Condenser it produces up to 58 MW of district heat. Advanced combustion technology, efficient heat recovery, flue gas condensing and heat pump technology enable to achieve the highest efficiency on the market.

28 May 2020: Just Transition Mechanism: the EIB and the European Commission join forces in a proposed new public loan facility to finance green investments in the EU (EIB)

Today, the European Commission presents its proposal for a public sector loan facility under the Just Transition Mechanism. ..Projects must also comply with the lending policy of the EIB. Investment areas will include energy and transport infrastructure, district heating networks, public transport, energy efficiency measures and social infrastructure, and other projects that can directly benefit the communities in the affected regions and reduce the socio-economic costs of the transition towards a climate-neutral Europe by 2050.

26 May 2020 Finnish duo harness satellite imagery to detect leaks in district heating network (goodnewsfinland)

Finnish companies Fortum and Advian have partnered for a pilot project that combines the location data of the existing district heating network with satellite data to detect possible leaks. If successful, Fortum and Advian will make redundant the thermal imaging flyovers done by helicopters, eliminating the noise pollution experienced by local residents during the imaging.

26 May 2020: Technical challenges and solutions for the integration of low-grade heat sources into existing networks and buildings (Aalborg University)

Professor Brian vad Mathiesen, Assistant Professor, Aalborg University, IRENA Webinar, 26 May 2020.

25 May 2020: 3 ways district energy supports countries´ green recovery post-coronavirus (euroheat)

So, how can district energy support the green reboot?

1) Boost economic activity and enable job creation:

2) Decarbonization and sustainable heating and cooling trajectory

3) Resilience to future

21 May 2020: LUMI supercomputer to use district heating for cooling (datacentredynamics)

Pre-exascale system hopes to keep Finnish citizens toasty.

One of Europe's upcoming 'pre-exascale' supercomputers plans to install a district heating system. Finnish data center CSC – IT Center for Science will be home to the 150 petaflops LUMI supercomputer once its suite is complete in 2021, one of a number of systems serving as a stepping stone before an eventual exascale supercomputer.

20 May 2020: Danish government considers tax restructuring for better competitiveness of geothermal (thinkgeoenergy)

The Danish government is looking at abolishing a cogeneration requirement for heat and power production and green tax restructuring that could help geothermal become more competitive in the future of district heating in Denmark.

May 2020: Towards net-zero emissions in the EU energy system by 2050 (European Commission)

In most scenarios, at least 90% of the energy use in the buildings sector does not emit CO2 (28). While decarbonised power has a major role, other heat supply options (most prominently ambient heat from heat pumps and distributed heat from district heating networks) have similar contributions. Only two scenarios show lower shares of decarbonised energy use in buildings.

14 May 2020: Intelligent and demand-driven district heating (Euroheat)

Europe has the ambition to utilise district heating as the backbone of the energy transition because it holds the opportunity to store energy from unstable renewable energy sources, which can then be used to cover a rising heating demand and provide a vital contribution to the European ambition of reducing carbon emissions by 40% by 2030.

14 May 2020: Heat pump installations for 5th generation district heating and cooling in the city of Brunssum (BuildUp)

Mijnwater B.V. is developing a circular energy system for residential complexes of social housing corporation Weller B.V. Due to Mijnwaters' heating and cooling network, the connected homes are not only heated without natural gas but will also be comfortably cooled with green energy. The new heat pump installations in Brunssum provide district heating and cooling supply for three residential areas, Tarcisius, Oude Egge and Pastor Savelbergstraat, with a total of 200 houses.

12 May 2020: E.ON unveils Germany's first-of-a-kind district heating and cooling system (smart energy.

com)

Waste heat generated during cooling of buildings is fed back into the energy cycle and is available elsewhere to cover the heating requirements. This turns consumers into so-called prosumers who both use and provide energy.

11 May 2020: Munich city utility builds new district heating plant at Kirchstockach geothermal plant (thinkgeoenergy)

With a new district heating station being built at the Kirchstockach geothermal power plant near Munich, the city utility of Munich, SWM, is now moving forward in the connection of the geothermal plants in the south of the city.

April 2020: Heating & cooling planning made easier – HOTMAPS online training (energy-cities)

HOTMAPS is an open source online software, which allows you to provide within 5 minutes a first estimation of heating and cooling demand in your region and the potentials of local renewable energy to cover this demand. By using more detailed data, thanks to its calculation modules, you can elaborate comprehensive heating and cooling strategies. The Hotmaps toolbox has been especially designed to support the elaboration of SECAP (Sustainable Energy and Climate Action Plan).

April 2020: Technical, economic and environmental optimization of district heating expansion in an urban agglomeration (Energy)

In order to integrate large shares of variable renewable energy sources, district heat-ing can play an important role. Furthermore, in order to increase the efficiency of district heating systems, interconnecting adjacent system could be socio-economically justified.

Events

30 June 2020: 08:00 – 11:30 BST (Energy Cities for Hotmaps Project)

Heating and cooling planning for greener cities: local resources first!

During this half a day conference, you will learn more about Hotmaps toolbox but also discuss how to decarbonise heating & cooling in cities

Heating and cooling accounts for almost half of the energy consumption in cities. That is why decarbonising this sector is of utmost importance, if we want to leave in healthier and greener cities – and reach EU 2050 goals. European cities and regions have prepared or are in the process of developing ambitious climate and energy strategies and action plans, committing to net-zero carbon by 2050 – some even earlier. Nevertheless, many governments still need to better identify and analyse solutions to make energy demand more efficient on one hand and to meet the demand with efficient, cost-effective and greener energy sources on the other hand.

1 July 2020: 14:00-15:00 (CET) – Kamstrup: (Euroheat)

New Digital Opportunities for District Heating

• An overview of the new EED (European Energy Directive) requirements for remote readable heat meters

• The growing importance of smart meters and how this will enable digital district heating and cooling

• How digitalisation can impact planning, operation and maintenance of district heating and cooling networks

• Current obstacles to getting started

1 July 2020: Raising standards & consistency in heat networks: Consumer Protection (Triple Point Heat Networks Investment Management)

Join us to hear from BEIS about the development of a regulatory framework to protect consumers and from industry on what is being done to support heat network customers during these challenging times. We will also explain how HNIP ensures that customers will be treated fairly once the funded schemes are in operation.

3 July 2020: From recovery to COP26: the contribution of sustainable cooling (E3G)

Cooling plays an important role in supporting societies through the Covid-19 crisis; from protecting temperature-sensitive medical supplies to ensuring reliable food supplies. Support for sustainable cooling in stimulus and recovery packages could also help reduce energy costs for households and businesses. All of this, in turn, will help governments meet near-term stimulus objectives while also meeting commitments made as a part of the Paris Agreement, Kigali Amendment, and Sustainable Development Goals, which are all crucial for a better recovery.

7 July 2020: Smart Sustainable East Kilbride (SSEK)

SSEK Stakeholder Event. Presentations from University of Strathclyde - Renewables Life Cycle Extension Star Renewables - District Heating

16 July Workshop 5GDHC (Mijnwater)

Mijnwater (Heerlen, Netherlands) is looking for potential partners for future EU funding possibilities. Be part of this huge mission to make heat and cold supply more sustainable by expanding its highly efficient 5GDHC network that is based on energy exchange. During the workshop we will discuss common insights in barriers and opportunities in the advancement of 5GDHC.