PART TWO

INSIGHTS

A COLLECTION OF SPECIALLY COMMISSIONED THOUGHT LEADERSHIP ARTICLES ALONGSIDE PERSPECTIVES FROM OPERATORS WE HAVE SPOKEN TO AS PART OF THIS PROGRAMME

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Views from operators within the sector on how they see some of the issues involved in creating a holistic approach to these agendas.

E.ON

Chris Norbury, Chief executive officer, E.ON UK

The last few years has seen the world experience an energy shock, the likes of which we have not seen in a generation. Bills remain stubbornly high for too many people and the pace of the energy transition has started to stall, exposing UK households and business to volatile global fossil fuel prices.

E.ON is doing everything we can to deliver a better energy future. In 2022, we worked at pace to deliver a multi-billion-pound Government package of support for all our customers. Last year, we took the decision to invest substantial sums into a targeted support package to help those on the lowest incomes be in a better position to afford to heat their homes. We have also focussed our strategy on providing customers with smarter, personalised and affordable energy solutions, which can help them permanently reduce their energy bills whilst at the same time cutting emissions. Delivering positive outcomes for individuals and communities is an integral part of our mission. This is true for both our customers and our employees Our 9,000 employees work at a company which has been recognised in the Inclusive Top 50 UK Employers List for six consecutive years and in 2022-23, was listed as one of the Best 100 Apprenticeship Employers. By creating a supportive and dynamic working environment for our employees we know we can deliver better solutions for our customers. We know what we need to do to make the vital progress required to deliver a fairer and more sustainable energy landscape for the people of the UK. At the end of the next Parliament, the UK should have made substantial progress towards meeting its 2030 emissions goal agreed at COP 26 in Glasgow. It represents a 68% reduction in greenhouse gas emissions compared to 1990 levels.

Green infrastructure investment and skills:
The Challenge - An energy system that works well requires substantial, long-term investment

in infrastructure and supply chains. Most importantly, we need to make sure that there are enough people with the right skills that want to work in the sector. Long-term, consistent policy with cross-party backing and support has played a vital role in attracting private sector investment into offshore wind. This provides a role model for how we can scale up investment to address the next challenges we face in decarbonising the energy system. 27% of the energy utilities workforce are expected to retire in the next decade Alongside this, we need to make sure the country has the right skills in the right areas to deliver the full potential of green growth. As the sector decarbonises, some of the jobs currently performed will over time disappear, but many will have the skills that can be usefully deployed with some training to support the new growth areas. For example, gas boiler engineers are well placed to install, with a targeted training package, heat pumps.

What is E.ON already doing?
At E.ON, we are proud of our investment in the UK over the last twenty years. From investing in some of the very first offshore windfarms in the world, we are now delivering flagship projects supporting major businesses across the UK to invest in their own energy infrastructure, such as with Peel Ports in Liverpool, where we are delivering the largest roof-top solar project in the country and at Queen's Medical Centre in Nottingham, where we are delivering ground-source heat pumps and upgrading energy efficiency to provide a better environment for patients at a lower cost to the NHS.

Heat Networks: Heat networks supply heat from a central energy source to consumers, via a network of underground pipes carrying hot water. They can cover small and large communities including Cities and can help avoid the need for individual boilers and heating systems in every building. There are many possible technologies that can provide the input to a heat network including energy from waste (EfW) facilities, biomass and biogas fuelled boilers, Combined Heat and Power (CHP) plants, fuel cells, heat pumps and geothermal sources. Although heat networks are still in their early stage of development in the UK, they are widely used across Europe. Whilst only 2% of UK homes are currently supplied by heat networks, the Climate Change Committee has concluded that with adequate support, this could rise to 18% by 2050. Recent legislation extends customer protections for heat network users and enables local authorities to designate 'heat zone' areas. E.ON supports the use of heat zoning to scale up the sector over the next decade. E.ON has already invested in more than 50 heat networks in Britain, supplying over 30k customers. We have pioneered the delivery of bespoke, local heat zone solutions across the country. Citigen, a pioneering heat network in London, is now complementing its gas CHP energy centre with a new ground source heat pump solution to support the long-term decarbonisation of the scheme. The network comprises over 6km of heat pipelines and over 4.5km of cooling supply to commercial and residential properties from the Guildhall to the Barbican Centre, providing heating and cooling to the equivalent of 11,300 homes. Citigen is a key part of the solution for the City of London's environmental targets.

EV Charging Infrastructure:
We build, own, and operate public charging infrastructure for all types of electric vehicles. We also provide EV charging in people's homes, at work destinations and in public destinations. Our charging posts have a 99% level of reliability and we operate a 24/7 contact centre to help our EV customers. In total, E.ON operated charge points in the UK supplied approximately 6.5 million miles of travelling in 2022.

Driving the energy skills of the future: Kingswinford, in the West Midlands, is home to E.ON's Net Zero Training Academy. Since it was opened in 2017, we have provided over 2,000 technicians and engineers with skills needed to help run a smarter, cleaner energy system. Now, it is focused on becoming a hub to train people in the wide array of skills necessary for the greener energy solutions that will be the future of more affordable and more sustainable energy in our homes and businesses. E.ON supports a wide-ranging and comprehensive programme of apprenticeships, including degree level apprenticeships in areas such as electromechanical engineering, supply chain management and project management. We will be offering a number of new programmes linked to net zero in 2024. We currently have 209 apprentices on the programme and have invested £3,575,333 in our apprentices over the last 5 years.

Case study: City Partnerships
Across Europe, E.ON works in partnership with cities like Berlin and Malmo. We think this partnership approach would benefit British cities too. Coventry City Council has joined forces with E.ON to launch a pioneering 15-year Strategic Energy Partnership. A first in the UK, this will see our two organisations collaborate on revolutionising energy use in the city for the benefit of local communities and the wider economy.

We have set ourselves several objectives for the partnership,

which have been divided around four strategic themes: (1) clean local energy, (2) jobs and skills, (3) innovation and scale, and (4) community benefit. Each of these themes will drive our focus towards outcomes that benefit Coventry in a variety of ways. Through our partnership, we will transform the city's approach to carbon reduction focussing on energy sustainability, efficiency and boosting the local economy. We will create new jobs, tackle green skill-gaps through a deliberate push to preference local supply chains, businesses and educational institutions and deliver projects that will generate and supply energy, help tackle fuel poverty, enable energy resilience, help create cleaner air, and help promote health and wellbeing.

We will work together to initiate, develop, and deliver innovative projects, strategies and business models that will drive the city towards net zero. By having a single strategic partner, projects and initiatives that would otherwise be unable to be undertaken, are able to be considered on a longer term, holistic basis so that both Coventry City Council and E.ON can achieve a truly unified approach to energy management and decarbonisation across the city.

What would E.ON like to see?
Our overarching ask of all political parties is this: work with us to develop a long-term plan for energy security in this country, with a focus on the delivery of infrastructure and skilled jobs. Long-term policy certainty will drive investment in both these areas.

However, Government intervention is needed to ensure (i) that feasible career paths exist for the delivery of essential net zero infrastructure in a timely enough fashion; and (ii) that these careers are attractive enough to deliver the number of skilled workers needed to reach net zero in the time required.

Underpinning these overall asks are a series of specific policy asks which can help such a strategy prove transformative:

Faster grid connections: It takes far too long for energy infrastructure to connect to the electricity networks. This includes domestic level installations such as EV charging points, medium scale technologies such as batteries and large-scale transmission level connections such as new renewable generation. Rule changes giving National Grid ESO the power to introduce strict milestones into connection agreements and terminate projects if they do not hit them at each project stage are a sensible way forward, encouraging higher quality, faster grid connections. Similarly, we welcome the idea of a strategic spatial energy plan, as well as proposed community level incentives of up to £10,000 over a decade for households living near essential new energy infrastructure to support speeding up the connection process. However, we do not believe that these benefits should be funded via a levy on energy bills.

Network competition: The 2023 Energy Act empowers Government to introduce competition into new onshore network upgrades. This must be actively pursued in order to deliver grid expansion cost effectively for customers. To minimise the cost of network investment, it is also imperative that new local flexibility markets are rolled out at pace, drawing from domestic and larger scale flexible energy resource.

Investable planning framework: We welcome proposals to update the National Policy Statements (NPS) more frequently on a 5 yearly basis. This will enable the planning system to become more agile and relevant. The recognition of EV charging infrastructure as a key priority under the updated NPS is a good illustration of this. It is important that the next Government ensures that local authorities have the right level of resources to process planning applications faster and make decisions in a timely way which provides greater certainty to developers. Ofgem's recent proposals around Regional Strategic Energy Planners (RESPs) show intent to support this objective.

Planning reforms can also address barriers to deployment. Removing the blanket ban on heat pumps not being able to be situated within 1m of a boundary wall is a welcome development and should be implemented at pace. Planning restrictions can also present a significant challenge to the installation of solid wall insulation in community schemes, which can act as a barrier and increase costs. We should look to reform this so the planning system is more aligned with our net zero goals.

Chris Norbury, Chief executive officer, E.ON UK

EQUANS

How do we deliver local solutions at scale and pace?

Colin Macpherson, Divisional chief executive officer, Equans UK & Ireland

In tackling climate change, several critical factors are often misconstrued or neglected, ultimately impeding our progress.

First, the scale of the issue cannot be understated. While many recognise climate change as a pressing global challenge, the enormity of the task has resulted in a fragmented response. Competing priorities often divert focus and resources, making it challenging to formulate cohesive strategies.

Although the UK government has demonstrated commitment by enshrining Net Zero in law and allocating grant funding, what is notably absent to date is a comprehensive plan that addresses all carbon sources. While investments in energy infrastructure are commendable, more attention is needed on the built environment, which significantly contributes to carbon emissions (20% of total[1]).

Second, the role of local government and the advantages of a place-based approach are paramount. In its landmark Net Zero Strategy[2] in 2021, the UK Government recognised that 82% of UK emissions are "within the scope of influence of local authorities, and evidence suggests that tailored, place-based strategies are often more effective and economically viable than national-level initiatives. By leveraging local characteristics and needs, these strategies can yield substantial socio-economic benefits at a fraction of the cost of broader national programs. However, local authorities face financial constraints exacerbated by recent crises, limiting their capacity to implement climate initiatives. Devolving more power and resources to them is essential for fostering effective local action.

Finally, a skills crisis threatens the implementation of scalable solutions. The workforce required to address climate change is aging, with the average technician in their fifties. The industry needs 429,000 retrofitters to decarbonise buildings alone[3], but there is a shortage of trained

professionals. This skills gap puts immense pressure on the industry and lack of visible long-term pipeline discourages private sector investment in decarbonisation efforts.

To address these challenges, we must adopt a holistic approach that considers the end goals and works backward to develop actionable strategies.

Our approach with our partners is very much to start at the end and work back. We look at what impacts our customers are trying to achieve and map out the road to get there. In other words, the outcomes and impacts will drive the inputs.

We then collaborate with our partners to gather accurate data, enabling them to make well-informed decisions. Armed with the right information about regional carbon footprints, infrastructure, transport, the number of homes in fuel poverty, and those needing retrofits, we can then roadmap comprehensive regeneration projects for a place. Our expertise ensures that these initiatives not only drive health and wellbeing but also achieve desired outcomes efficiently and effectively.

Despite the complexity of dealing with the above factors, we are continuing to collaborate with local authorities to drive innovation and seek alternative routes to decarbonisation amidst the lack of funding and control.

Once the plan is created, we then translate it into actionable projects to deliver the desired outcomes. At the same time, we begin the process of exploring funding options and our approach leverages a blended financial strategy, combining central government funding through the likes of the Public Sector Decarbonisation Scheme (PSDS), the Warm Homes: Social Housing Fund (formerly SHDF) or the Low Carbon Skills Fund (LCSF) with private finance. In the absence of local funding, these funding schemes have been paramount to unlocking net zero; in that they have shown, at micro levels, what can be achieved when there is money and measures put in place to decarbonise.

Equans is also committed to developing scalable solutions for place-based decarbonisation, tackling capital investment challenges while maximising social impact. Our initiative with Dudley Metropolitan Borough Council aims to create Europe's first net-zero carbon neighbourhood, addressing both climate change and fuel poverty. This innovative community led approach not only pioneers' local energy supply solutions but also seeks to generate revenue streams that can unlock private finance for local authorities.

At the core of our place-based strategy is the concept of systems optimisation. By leveraging multiple technologies and solutions across the whole system of buildings, infrastructure & transport, we can choose the best technologies for that specific place, saving costs and maximising value.

To achieve the required scale, we need to get as much funding into the system as possible, and we champion blended finance as a critical tool for mobilising capital. By combining public and private investment, we can mitigate risks and incentivise stakeholders to support green initiatives and lower the cost of capital. This financing model will enable local authorities to fund large-scale projects that deliver tangible environmental benefits while ensuring financial returns for investors.

Our commitment to maximising social impact ensures that the benefits of decarbonisation extend beyond environmental gains. We are focused on creating inclusive opportunities for local communities, empowering them through job creation and capacity building. By engaging with community stakeholders, we can ensure that our initiatives address local needs, contribute to equitable economic development and boosts public adoption.

Navigating the legal and commercial landscape is crucial for successful decarbonisation efforts. Our approach involves adopting new legal frameworks and commercial strategies that facilitate collaboration across sectors. By fostering partnerships between government and businesses, we aim to create the right team of organisations that can achieve our collective zero carbon ambitions. We are steadfast in our belief that it is only through sharing ideas and collaborating with our peers that we will meet our countries goals & targets.

Through these solutions we can create a clear, investible roadmap for decarbonising the UK. It won't be easy, but with a robust strategy and commitment from central government, alongside capable & ambitious devolved powers at a local level, we believe we can make this a reality, together.

↘ Colin Macpherson, Divisional chief executive officer, Equans UK & Ireland

1. 2022 UK Greenhouse Gas emissions: one page summary (publishing.service.gov.uk)
2 net-zero-strategy-beis.pdf (publishing.service.gov.uk)
3 https://www.localis.org.uk/wp-content/uploads/2022/03/050_MappingARoute_2.pdf

MEARS

How to engage effectively at a community and local level

Mears is one of the UK's leading housing solutions providers to both the public and private sector and we understand the value of effective customer engagement at both a community and local level.

Our customers are at the heart of everything we do, and our ambition is to become the most socially responsible business in the housing sector by 2025. Our approach to customer engagement prioritises where we can have the greatest impact with customers, to raise standards for every resident in the sector.

We understand that the transition to a low-carbon future must be inclusive for it to have an impact. But before engaging with customers, it's crucial to understand the dynamics of the community. Once we understand the needs and wants of each community we work in, we can start to make meaningful change.

Building trust and rapport is the foundation to effective engagement, and without this, customer programmes will not deliver. As a sector we need to prioritise transparency, honesty, and integrity in interactions with our customers. Regular communication, active listening, and responsiveness to concerns are key components of building trust and rapport.

In change programmes, distrust can easily manifest through previous experience with both client and contractor. When making changes to decarbonise the nations homes, communities receiving the works tend be those where properties are already underperforming, which in turn lends to negative customer satisfaction before the engagement has started. The customer may have experienced delays with works starting, due to extensive PAS (Publicly Available Specification) design processes, planning applications, reengineering specifications due to cost inflation and accrediting supply chain.

The customer engagement strategy

Originally published on Unlock Net Zero – 08.08.24

we delivered under the Social Housing Decarbonisation Fund (SHDF) Wave 1 for our client Milton Keynes City Council demonstrates how challenging customer engagement can be when perception of outcomes is derived from previous experience. After promises had not materialised under previous planning measures, we developed a multi-channel engagement plan that truly captured hearts and minds. We delivered a two-tier approach, starting with consultation with the local parish council to understand the driving factors that would engage the community best. From here, we delivered in person customer engagement sessions which allowed the whole community to have a voice on the retrofit plans, which covered everything from the aesthetics of products in the programme through to colour scheme choices of render, cladding and doors. Over 200 customers took part, had their concerns heard and listened to and left feeling that retrofit hadn't been done to them. Instead, they had been empowered to be part of the journey.

When it comes to the topic of decarbonising homes, there are additional barriers to communications and perception that we also have to overcome as a sector. Evidencing cost savings and impact on the customers day-today life being of vital importance. To effectively listen to our customers, we have developed the Your Voice Scrutiny and Advisory Board. Your Voice is part of our Customer Involvement Strategy and aims to drive action from insight and advance service standards for Mears customers, through customer-led scrutiny, challenge and support of Mears' improvement plans and performance in these areas.

Your Voice sets the highest standards of customer involvement and engagement across the Group, leading the way nationally and delivering real benefits to all our customer groups.

The learning from the Scrutiny Panel and associated groups also promotes best practice and shared learning across the Group through insights, challenges and innovation. We also see how empowering customers to participate in decision-making processes in retrofit is essential for fostering a sense of ownership and community pride. Within the sector we need to create opportunities for participation in our journey to net zero, through customer councils, community meetings, surveys, and focus groups. By involving residents in decision-making, providers can ensure that their services align with residents' needs and preferences.

Our experience has also taught us the value of effective communication, which requires understanding customers preferred communication channels and tailoring messages accordingly. With the challenges we face around decarbonisation this is more prevalent than ever. While some residents may prefer face-to-face interactions, others may prefer digital communication platforms such as email or social media. Housing providers should offer multiple communication channels to accommodate diverse preferences and ensure that information reaches all residents.

Accessible information is critical for ensuring that residents are well-informed and engaged. We need to communicate valuable information on retrofit and its benefits in clear, simple language, and provide translations or accommodations for customers with language or accessibility barriers. Additionally, providing information in multiple formats, such as written materials, audio recordings, and videos, can improve accessibility for all customers. We have developed a series of DIY and fact-based videos to support customers with the work we are delivering under SHDF.

Listening to customer concerns and feedback is essential for identifying issues and improving services. Often resident and community concerns will not be obvious to design and delivery teams when determining the needs of an "Asset" rather than a "Home". By establishing clear channels for residents to voice their concerns and provide feedback, such as suggestion boxes, hotlines, or online forums we're able to address any concerns raised and follow up with customers, demonstrating responsiveness and commitment to their well-being.

In addition to delivering energy efficient measures in homes, many of our customers require support services to address social, economic, or health-related needs. Together we can collaborate with local agencies, non-profit organisations, and service providers to offer a range of support services, such as employment assistance, financial literacy workshops, and mental health support. By addressing customers' holistic needs, we can promote stability and well-being within the communities we operate and effectively make the change needed for us to transition to a net zero future.

Originally published on Unlock Net Zero – 08.08.24

SARAH DALY

Where does the intersection of people, place and net zero reach its sweet spot?

Sarah Daly is Editor-at-large for this programme of work

The UK market for net zero/ decarbonisation has evolved rapidly since 2020, mostly stimulated by targeted government interventions including pump-priming the decarbonisation of the poorest housing through a variety of grant-funding initiatives like Social Housing Decarbonisation Fund and Home Upgrade Grant which have recently been relaunched by the Labour Government as Warmer Homes funding.

The Public Sector Decarbonisation Scheme (PSDS) and targeted regional funding have also built capacity, capability, knowledge and supply chain viability. Whilst progress has been demonstrably exponential, there have inevitably been many lessons learnt and the sector will continue to grow and mature at speed over the remainder of this decade on the path to net zero.

We have undoubtedly reached an inflection point, partly led by increased capability client-side and partly through the proven market opportunity which is stimulating major contractors to see beyond the Cinderella image of retrofit. Main contractors are pulling through supply chains, who can finally see procurement routes and scaled opportunities to further drive innovation and investment. Finally, despite bumpy national policy historically, devolved agendas are flourishing as regional and local government see that sustainability is essentially an all-encompassing approach to resolving multiple complex issues, from helping them to meet carbon reduction targets and improve resilience to economic development, especially dealing with inequality by increasing local skills by create long-term, well-paid green jobs.

So where does this intersection of people, place and net zero reach its sweet spot? Those who follow Kate Raworth's doughnut economics, or the principles of

the Sustainable Development Goals (SDGs) will be well-acquainted with the intersections of all the components of socially, environmentally and economically equitable places. In most regions this is now manifesting itself as Net Zero or Livable Neighbourhoods. In London it is Future Neighbourhoods 2030 and in Scotland, Local Living & 20-minute Neighbourhoods. Whatever the name, they are all variations on community or place-centred adaptation and resilience with economic regeneration and people at the core.

There is a simple reason for this move to devolved and regional leadership in the pursuit of net zero. Whilst national policy plays a pivotal role in setting the context, especially with systemic requirements, each region's challenges need an integrated approach to create community buy-in. In this context, community encompasses where and how people live alongside the business/industrial communities, with the public sector playing a crucial intersectional role.

Major public estates such as universities, hospitals and local authorities are also creating the capability and business case/investment evidence for commercial entities to decarbonise their operations. This is very appealing to the investor community looking for low-risk, long-term opportunities that underpin and enhance their Environmental Social Governance (ESG) scores. Additionally, public sector procurement is increasingly leveraging their opportunity to select from more sustainable and responsible suppliers, further driving transformation through bid compliance.

Meanwhile there is cognisance that data is required to create clear baselines and to evidence the multi-faceted paybacks of better health, educational and economic outcomes that provide the indisputable business case for the return on investment per £ invested in sustainable interventions. Digital solutions and the ability to share and learn from big data looking across regions and sectors, further underpins these more strategic,

> **THIS AGENDA NEEDS CLEAR CROSS-PARTY SUPPORT WITH LONG-TERM HORIZONS.**

multi-sectoral approaches. Large-scale social and low-income private housing is creating playbooks to decarbonise the most common and complex archetypes and creating the economies of scale and supply chains to roll out multi-tenure solutions on an area or street-by-street basis. We are at the vanguard of this process in 2024 as we learn from targeted pilots whilst evolving to more holistic solutions. Along with integrated thinking comes the realisation that at community level, overheating and flood risk adaptation should happen concurrently. Improvement to green spaces and biodiversity gain further uplifts community opportunities for environmental enhancement and resilience. And whilst the buildings and natural environment are upgraded, why wouldn't you look at connectivity and ensure that the local infrastructure encourages active travel and public transport to ensure optimal air quality and healthier people?

Whilst many of these interventions have happened in a disconnected way responding to crises such as fuel poverty, flooding or chronically poor air quality – the idea that all these solutions can combine to create more liveable, productive and healthier places is finally leading to the view that net zero or sustainable towns and cities is just another way of expressing levelling-up and safeguarding of future generations.

This agenda needs clear cross-party support with long-term horizons. We all want cleaner, safer, healthier and more productive places; the challenge is to ensure there is a mandate to put placemaking at the heart of the agenda, and that this is fully understood and championed by everyone.

In terms of what the next time-horizon brings – we expect to see more market collaboration, with the requirement for fully-integrated net zero solutions crossing all sectors and all disciplines from transport/travel, water, waste and local energy, with essential environmental solutions including natural flood remediation and biodiversity to enhance green spaces – all underpinned by decarbonisation to normalise the aspiration of better, healthier and livable places.

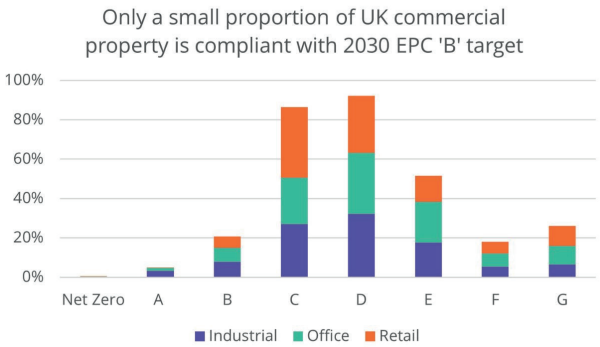
↘ Sarah Daly, Sustainability strategist

AVISON YOUNG

How are the public and private sectors delivering decarbonisation strategies across the UK?

Originally published on Unlock Net Zero – 14.06.24

Achieving net zero emissions by 2050 is one of the most pressing challenges for the real estate sector. With over 84% of the UK's population living in urban locations, the stakes are high.



Source: EPC register (for England and Wales)

Many urban centres are vibrant places, appealing to both residents and visitors alike, because of their cultural heritage, their diversity, their easy access to retail and leisure, strong transport connections as well as job opportunities. However, these areas face significant hurdles in their attempts to meet net zero emissions targets, whilst grappling with the crisis in funding shortfalls at the same time. With buildings accounting for around 40% of carbon emissions, both local and central government are having to partner with the private sector to help reach these goals.

In response to this challenge, the UK government implemented legislation for building owners (in England and Wales) mandating minimum Energy Performance Certificates (EPCs) standards. Initially, in 2018, the focus was on buildings either sold or newly let, which needed to hold a minimum EPC grade of E or above. In 2023, this was extended to all commercial properties including those under existing leases. By 2030, the minimum EPC grade required for a commercial building will increase to a B or above.

What are commercial property owners doing to lower carbon emissions from their buildings?

Despite this, research carried out by Avison Young shows that compliance levels of the 2030 target are alarmingly low: only 11% of industrial, 12% of retail and 9% of office properties have a minimum EPB B grade. This deadline is less than 6 years away, meaning landlords need to take action soon to avoid the risk of buildings becoming unlettable.

As part of the research, we assessed the cost of upgrading stock in the retail and industrial sectors, which proved to be substantial. To upgrade retail stock (retail parks, shopping centres and supermarkets) the estimated total cost for achieving the 2030 'B' target came to a maximum of £24bn, and over £30bn for industrial stock.

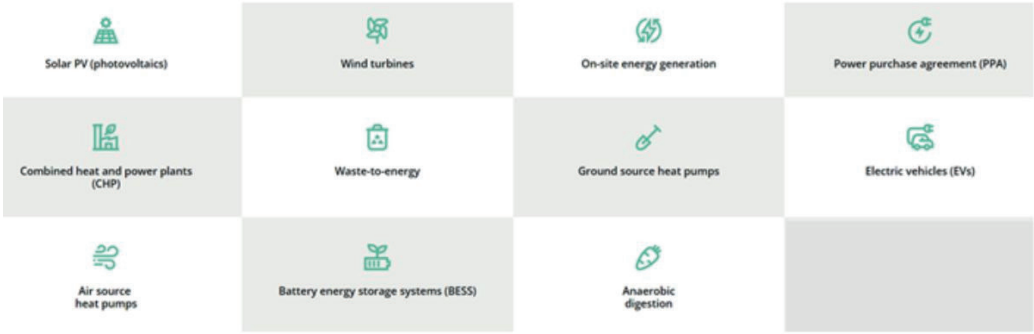
Whilst these costs present huge challenges ahead for building owners as the deadline approaches, there are some inspiring examples of both new and retrofitted buildings which are achieving 'A+' grades across both sectors. Launched in 2018, the Elliots Field Shopping Park in Rugby became the world's first 'zero regulated carbon' shopping park globally, featuring design elements that minimised energy demands such as PV panels, LED lighting, rainwater harvesting as well as the creation of a canal bankside nature area for wildlife. This building is listed on the EPC register as 'net zero'.

Originally published on Unlock Net Zero – 14.06.24

Whilst there are no 'net zero' shopping centres listed on the EPC register currently, there are some good examples of energy efficient shopping centres.

This includes Quayside at MediaCity in Salford and Gloucester Quays in Gloucester, which were the first UK shopping centres to achieve a 'Net Zero Carbon – Operational Energy' status in relation to the UK Green Building Councils' (UKGBC) Net Zero Carbon Buildings Framework. To achieve this status, upgraded lighting, which was more energy efficient, was introduced across all areas and the use of renewable energy was increased across both locations.

In Nuneaton, a one million sq. ft state-of-the-art logistics campus has completed. The two buildings, occupied by Rhenus Logistics, have been designed to achieve carbon net zero supply chains. It has been built to the highest environmental and sustainability levels, featuring the latest digital technology in robotics, AI and warehouse management systems to provide flexible solutions and control of the supply chain and is certified BREEAM Outstanding. In addition, the scheme's design has focussed heavily on social and environmental well-being, including initiatives such as encouraging biodiversity by planting numerous trees, creating log piles and bee, bat and bird boxes. Employee allotments, outdoor seating areas, sports facilities, and walk and running tracks have been installed, providing staff with green, open spaces to enjoy.



Examples of sustainable solutions to help with decarbonisation

How are cities tackling decarbonisation?

Whilst building owners are embarking on their own paths to achieve net zero, local authorities across the UK are stepping up with bold initiatives, launching their own carbon neutral commitments, and engaging with residents, local businesses and strategic partners to reduce carbon emissions in line with the national 2050 net zero target. But the latest data from the Office of National Statistics (ONS) reporting on greenhouse gas emissions shows that emissions only fell by 3.5% between 2021 and 2022 and were just 9.3% lower than pre-pandemic levels. This demonstrates that a significant amount of effort and resource will need to be invested across the UK in the coming years to address this challenge.

However, there are some good examples of initiatives from local authorities across the country who are leading the way in their attempts reduce carbon emissions.

One of the most innovative strategies is being implemented in Bristol, where the city council

Originally published on Unlock Net Zero – 14.06.24

has set itself a target of becoming carbon neutral by 2030. 'Bristol City Leap' is a joint venture between the council, Ameresco (a renewable energy company) and Vattenfall (a European energy company), which will deliver hundreds of millions of pounds into low carbon energy infrastructure, including solar, wind, heat networks, heat pumps and energy efficiency measures to help meet its carbon reduction targets. This will enable the delivery of over £1 billion of investment into Bristol's energy system and within 5 years plans to deliver 140,000 tonnes of carbon savings.

To enhance local biodiversity Sunderland City Council have installed living roofs (also known as 'Bee Bus Stops') across 90 bus shelters in the city. These living roofs, which are made of recycled materials, sit on top of the bus shelters and are planted with a mix of wildflowers to support bees whose numbers are declining. They also help provide natural cooling to combat the effects of 'urban heat islands', absorb rainwater to alleviate flooding, and filter fine dust particles from the air.

> **NOW IS THE TIME FOR DECISIVE ACTION, INNOVATIVE SOLUTIONS, AND UNWAVERING COMMITMENT TO OUR CLIMATE GOALS**

In Edinburgh, planning permission has been approved for a new 'eco neighbourhood' in the city centre. The development will consist of 256 sustainable homes (of which 25% will be affordable) and will include a large central communal garden, biodiverse green roofs, and a 'wetland' area. No fossil fuels will be used, as each home will also its own air source heat pump.

There are still major challenges ahead to tackle decarbonisation

While EPCs are a critical part of the route to decarbonisation, the broader challenge lies in managing the reduction of Scope 3 emissions (indirect emissions from supply chains). This requires collaboration across supply chains and industries. Organisations must work closely with suppliers to track and reduce indirect emissions, leveraging technology and innovation.

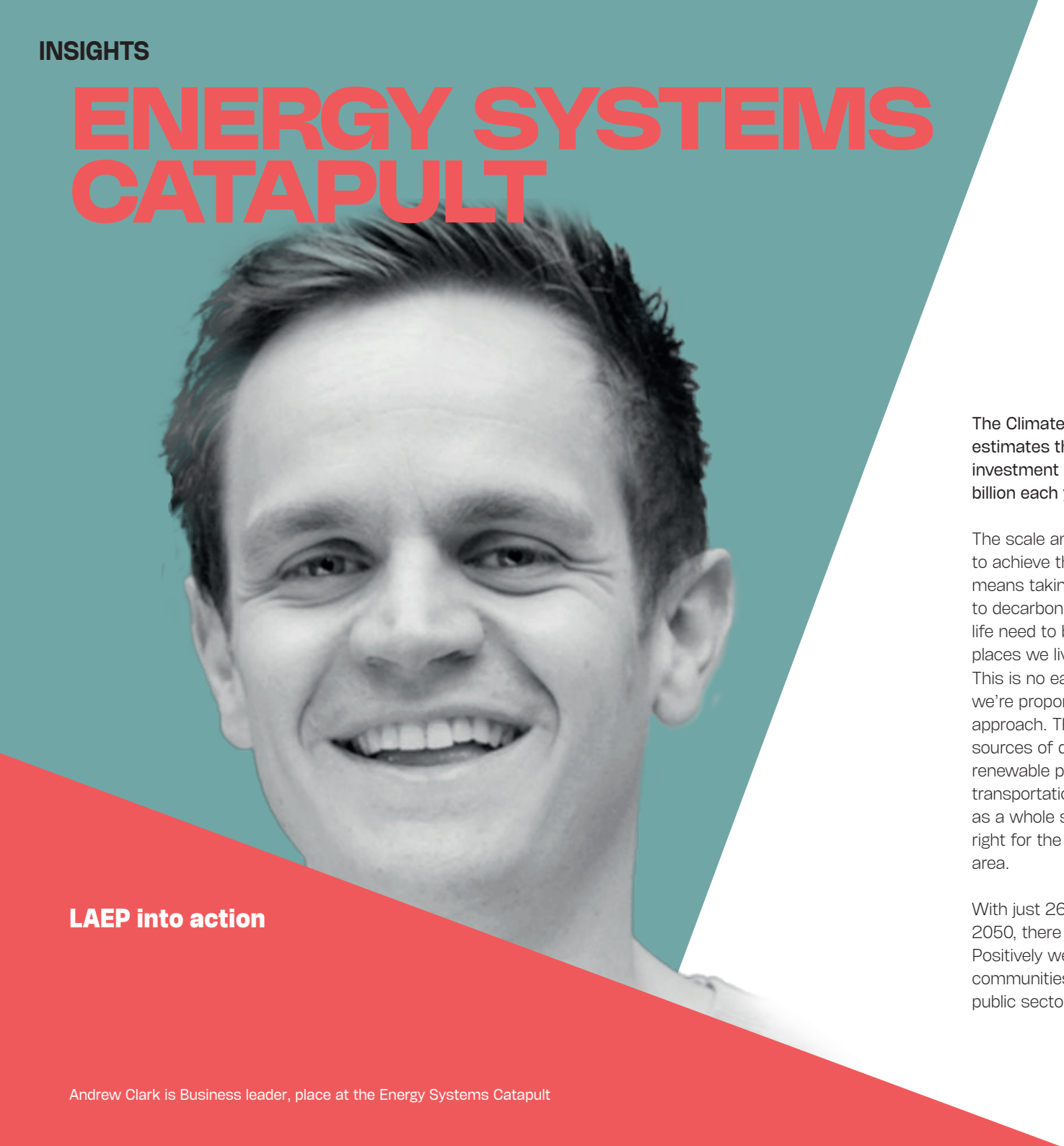
Recent policy shifts and rolling-back of some green initiatives, including delaying the ban on petrol and diesel cars, pose challenges to achieving the 2050 net zero target. It is crucial for policymakers to provide clear, unwavering support for decarbonisation initiatives, including financial incentives and regulatory frameworks. The positive news though is that many organisations in the property industry have the knowledge and the influence to take actionable steps towards decarbonisation and can work together with the public sector to achieve net zero targets.

The path to net zero is fraught with challenges, but also ripe with opportunities. By learning from successful case studies and fostering collaboration between the public and private sectors, the UK can make significant strides towards a sustainable future. Now is the time for decisive action, innovative solutions, and unwavering commitment to our climate goals.

↘ Lesley Males, Director, market intelligence at Avison Young

Originally published on Unlock Net Zero – 14.06.24

ENERGY SYSTEMS CATAPULT



LAEP into action

Andrew Clark is Business leader, place at the Energy Systems Catapult

The Climate Change Committee estimates that low carbon investment must scale up to £50 billion each year to deliver Net Zero.

The scale and pace required to achieve this ambitious goal means taking a holistic approach to decarbonisation. All facets of life need to be considered in the places we live, work, and play. This is no easy feat. That is why we're proponents of a place-based approach. This means adopting sources of decarbonised heat, renewable power, and low carbon transportation, and operating them as a whole system in the way that's right for the context of every local area.

With just 26 years to go until 2050, there is no time to delay. Positively we're seeing individuals, communities, businesses, and public sector bodies, taking the right steps forward. Whether that is by developing a coordinated plan, and installing electric vehicle (EV) charge points, installing ground and rooftop solar arrays, or fitting low carbon heating solutions in homes and commercial and public sector sites.

While these are positive actions, there is no clear and recognisable path to Net Zero for every place in the UK. This results in opportunistic delivery with some local areas charging ahead and decarbonising at pace, while leaving others behind.

LAEP forward

As a direct response to this challenge, Energy Systems Catapult pioneered the creation and delivery of Local Area Energy Planning (LAEP), a stakeholder driven, evidence-based approach that uses whole systems thinking to map out the optimal route for a local area to decarbonise.

Originally published on Unlock Net Zero – 11.03.24

A LAEP provides a level of detail comparable to an urban masterplan and considers a range of technologies and scenarios – such as deploying different heat decarbonisation technologies in different areas to avoid a high-cost upgrade of the electricity network. When combined with stakeholder engagement – incorporating their data, knowledge, and future plans – a LAEP is built on a common evidence base so that council planners, network operators, businesses and community groups know they are working towards a common Net Zero goal built on strong foundations.

The scope of a LAEP covers the current energy consumption and associated greenhouse gas (GHG) emissions, as well as the projected consumption in a defined area, primarily focusing on the area's built-environment (all categories of domestic, non-domestic, commercial, and industrial buildings) and some aspects of energy used for transportation. The plan looks forward from this current baseline to find a pathway forward to 2050 and any other local targets.

Setting the standard

LAEPs are becoming a recognised standard for local energy planning across the UK. Local authorities in areas such as Peterborough, Greater Manchester, and York and North Yorkshire have all developed and adopted LAEPs.

Welsh Government is forging ahead and demonstrating the effectiveness of considering LAEP as standard for all local authorities. Welsh Government is the first

> **LAEPs ARE BECOMING A RECOGNISED STANDARD FOR LOCAL ENERGY PLANNING ACROSS THE UK**

national government to fund the roll-out of LAEP for all its local authorities. In 2022 we were appointed official technical adviser for the delivery programme of Local Area Energy Plans across eighteen Welsh councils, a further four councils (Bridgend, Conwy, Newport and Pembrokeshire) already have LAEPs.

Uniquely as a government, in 2021 the Welsh Government, incorporated Local Area Energy Planning within its national planning policy. This was hugely significant as it paved the way for Welsh Government's decision to agree funding for all eighteen remaining local authorities to receive LAEPs.

The LAEPs in Wales will comprise both urban and rural locations, with differing contexts and unique opportunities and challenges. Residents in mid-Wales could share their views on energy and transport use until March 31 2024. Responses will inform the design and delivery of the mid-Wales LAEPs.

From plans to action, the LAEPs in Wales will provide local evidence and plans to help catalyse investment and action. Once all the LAEPs have been completed and aggregated, Welsh Government intends for them to inform a National Energy Plan and to turn its attention to delivery as early as 2025.

Peterborough LAEP

Away from Wales, cities across the UK are turning plans into action. Peterborough declared a climate emergency in 2019 and the development of a comprehensive, data-driven, and cost-effective plan for decarbonisation of the whole energy system swiftly followed. The LAEP covered 70% of Peterborough's total emissions.

The LAEP demonstrated that meeting a Net Zero target of 2040 would require investment of £8.8 billion into the city. The forecast investment required is the total capital costs of the whole energy system (including domestic heating, insulation, networks etc.). Investment would most likely come from a combination of private investment, residential home upgrades, and government grants.

Adrian Chapman, Executive director, place and economy at Peterborough City Council commented: "[The LAEP] will act as a blueprint for positive and real change in our city that directly benefits existing residents and businesses as well as future generations".

On the back of the LAEP, the authority has been considering how it turns the plans into action. They've recently been successful in securing £2.7 million in funding from Innovate UK's Net Zero Living programme to fund a project which will turn their LAEP into deliverable packages of work. It will work on governance, funding routes, skills and capability needs and customer engagement and specifically focus on the rollout of heat pumps in rural areas.

What is key about this work is the partnership working between the public and private sector from the council, Energy Systems Catapult, Edenseven, and Nordic Energy.

Originally published on Unlock Net Zero – 11.03.24

Joining the dots

A strategic decarbonisation plan is only the beginning of a local area's Net Zero journey. Once a plan is in place, the hard part follows, namely, turning that plan into local action for communities.

This means tackling emissions in our homes, communities, and local places. Having a plan like a LAEP allows us to give shape to the nature of these changes, what needs to happen where, when and how many, and the size of the aggregate investment opportunity. It also allows us to take a more efficient and coordinated approach de-risking delivery, such as through purposeful consumer engagement.

It is staggering that our domestic properties account for over one quarter of total GHG emissions. Concerningly, the average household emits 2.7 tonnes of CO2 every year from heating alone.

Consumers are curious about the future of home heating and the impact this will have on their lifestyle. This is understandable, particularly as 78% of UK homes are heated by a natural gas boiler – that is a big chunk of the population to convince that readily available alternatives such as heat pumps work. LAEPs allow us to plan consumer engagement around issues like this more effectively as part of a coherent plan being turned into action. We need to be upfront and honest with consumers, not only about the options that are available, but the impact the low carbon switch could have on them.

The Electrification of Heat Demonstration Project sought to understand the technical and practical feasibility, and constraints of a mass rollout of heat pumps into British homes. The Project, which is funded by the Department for Energy Security and Net Zero installed 742 heat pumps in a variety of housing archetypes such as flats, terraces, and semi-detached homes.

The Project found that not only are heat pumps three times more efficient than gas boilers, but they also work in a broad spectrum of housing archetypes. The Demonstration Project also found that energy efficiency upgrades were only required in 15% of homes.

For LAEPs to ensure scaled investment, we need to demonstrate that the technologies proposed within the plans will help householders to decarbonise their heating without compromising on comfort. We've done the hard work and proven that heat pumps work, now it's time to maximise those learnings and understand how their rollout can be supported once a plan is in place.

Place-based decarbonisation planning

We need to step up place-based approaches to decarbonisation within a national framework. It is in our places that people and communities take the decisions that will allow us to reach Net Zero, and that organisations, business and democratic institutions can align their action and investment.

Andrew Clark is Business leader, place at the Energy Systems Catapult

Originally published on Unlock Net Zero – 11.03.24

ANDREW SPENCER TO EQUANS

An integrated approach to tackling climate change

Andrew Spencer, Zero carbon solutions director, Equans UK & Ireland

The urgency to mitigate the impacts of climate change has required a change in our approach to environmental sustainability. While progress has been made in phasing out coal and greening electricity; sectors including heat, buildings, and transport are still lagging.

To meet the Climate Change Committee's Sixth Carbon Budget (2033-2037), a significant shift is required in how we heat and power our communities and get around. A range of low carbon measures, from heat pumps to energyefficient lighting and EV adoption, offer support; but climate change can not be tackled in silos.

Additionally, the pace of change varies across the UK's diverse regions and a whole system approach which is tailored to a relevant area, is the only way we can achieve positive results.

No two places share the same challenges, infrastructure, or people, so we cannot expect a singular solution to a very complex problem.

Place-based decarbonisation has emerged as a promising strategy, acknowledging the unique challenges and opportunities present in different geographical locations. It is a comprehensive approach that goes beyond mere carbon reduction, envisioning a transformation of the built environment, economic landscape, and social dynamics, tailoring measures to each region's requirements, and championing socially cost-effective solutions.

Equans has developed a holistic, sustainable regeneration model that integrates technical systems optimisation, a blended funding strategy, social impact maximisation, and legal and commercial innovation. This

Originally published on Unlock Net Zero – 05.03.24

multifaceted approach aims not only to reduce carbon emissions but also to create a lasting positive impact on the economic, environmental, and social fabric of the places and communities that we live and work in.

Our strategy is structured around four interconnected solutions to unlock the current barriers to large scale decarbonisation.

Systems Optimisation

Over 50% of the required emissions reductions rely on individuals and businesses adopting low-carbon solutions – choices influenced by local and personal decisions. The implementation of supportive infrastructure and systems significantly impacts these decisions.

While local authorities are accountable for just 2-5% of local emissions, they possess various tools to drive broader local initiatives for emission reduction and climate resilience.

To address this, our strategy focuses on optimising technical systems to provide a faster route to net zero, providing a turnkey whole system solution that is designed to provide scale and speed with consideration of a total decarbonisation solution for a place or community. By incorporating advanced technologies and sustainable practices, we aim to revolutionise energy consumption, and resource utilisation.

A significant shift is required in how we heat and power out communities and get around

OUR STRATEGY FOCUSES ON OPTIMISING TECHNICAL SYSTEMS TO PROVIDE A FASTER ROUTE TO NET ZERO, PROVIDING A TURNKEY WHOLE SYSTEM SOLUTION

From low carbon, built environment design and delivery, to decentralised renewable energy integration, the goal is to create places and communities that minimise their carbon footprint while maximising efficiency.

Blended Funding Strategy

Sustainability requires substantial investment, and our blended funding strategy is designed to ensure financial resilience and inclusivity. Central government grant funding has kickstarted decarbonisation projects throughout the UK, providing a foundation for

Originally published on Unlock Net Zero – 05.03.24

innovation and a demonstration of project viability; by blending this funding with local stakeholder capital, it injects local insights and commitment, while private finance ensures long-term viability and scalability.

This balanced mix not only diversifies risks but also fosters a collaborative ecosystem where public and private interests align for a common goal, decarbonisation with economic sustainability, to support the UK's transition to a sustainable future, and to realise the opportunities of net zero.

Social Impact Maximisation

Decarbonisation is not just on the environmental agenda; it is a social issue, and with any large transformation project, vast amounts of social impact can be delivered if harnessed correctly.

At Equans, we believe that Social Impact Maximisation (or Social Value) refers to the wider social, environmental, and economic value created by our organisation and partners directly and indirectly through its activities and day to day operations. We evaluate social value that we create by examining the net value generated across our entire business, operations, and projects for the communities in which we operate.

It is what we do (our projects), how we do it (our processes, approaches) and who we do it with (our partners, suppliers). Equans can help places to maximise the social impact of projects and programmes and leverage this value as a strategic asset to help fund an optimised system.

Our strategy places community engagement at its core. By involving local residents, businesses, and organisations, we aim to create a sense of ownership and shared responsibility. Solutions are tailored to address community needs, fostering not only environmental stewardship but also social cohesion. The goal is not just to reduce emissions but to empower communities to thrive sustainably.

Legal and Commercial Innovation

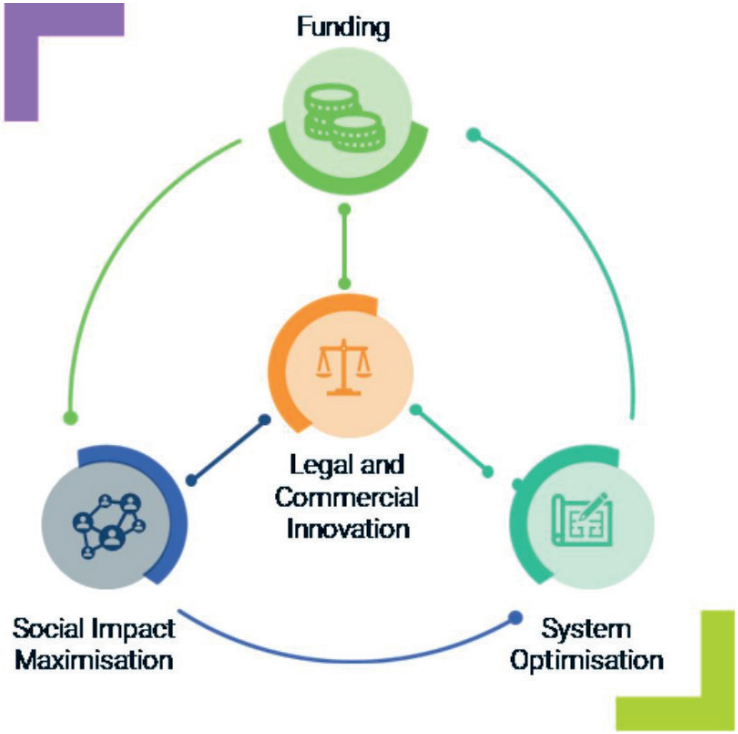
Navigating the legal and commercial landscapes is crucial for sustainable development. Our approach involves exploring and, if necessary, reshaping frameworks to support decarbonisation efforts for the benefits of the places and local communities we work in. We believe that new forms of partnership are required, within public and the private sector, with the common goal of long-term resilience that comes with investment in local sustainable approaches, creating business models that not only drive economic growth but also prioritise sustainability. By aligning legal and commercial interests, we create an environment conducive to longterm, impactful change.

What does success look like?

The success of our strategy is measured across three key dimensions – economic, environmental, and social. Economically, we anticipate job creation, new business opportunities, and enhanced economic resilience. Environmentally, the reduction in carbon emissions contributes to global climate goals, while local initiatives improve air and water quality. Socially, our strategy seeks to improve the overall well-being of communities, fostering a sense of pride and shared responsibility.

Place-based decarbonisation is not just a technical fix; it is a comprehensive, community-driven transformation. By optimising technical systems, implementing a diverse funding strategy, maximising social impact, and fostering legal and commercial innovation, we envision a future where sustainability is ingrained in the fabric of our communities. The benefits extend beyond carbon reduction, creating resilient, thriving places that serve as models for a sustainable future.

Andrew Spencer is Zero carbon solutions director at Equans UK and Ireland



The Equans sustainable regeneration model

Originally published on Unlock Net Zero – 05.03.24

VATTENFALL

Decarbonising UK cities locally

The Climate Change Act received Royal Assent in 2008[1]. It was world leading government legislation with the UK being the first country in the world to set legally binding climate change mitigation targets. This bold ambition was transformative. Back then just one fifth of our energy generation came from low carbon sources and by 2023 this figure had jumped to more than half[2].

Since 2008, the UK has made progress on decarbonising its electricity, with a clear roadmap to decarbonisation ahead. However, 85%[3] of UK homes still use gas boilers for heating, accounting for almost a fifth[4] of UK emissions.

To meet net zero by 2050, the level of transformation established for power is also required for heat. Heat networks (or 'district heating') need to grow from supplying 3% of the UK's heating to at least 20%[5].

This means rapid, at scale growth of this tried and tested technology, which has been heating homes and businesses in Europe for more than 100 years. In Sweden, for example, half of all heating is already provided by heat networks.

So, what are heat networks? They distribute heat generated in a centralised location via a network of insulated, water filled pipes to domestic and commercial buildings for space heating and hot water.

The heat we need to heat our homes is all around us, in abundance in our towns and cities and most of it is wasted. Whether it is from sewage plants, data centres or waste management facilities, this wasted, surplus heat can all be used for heat networks to create warm homes and build local energy resilience. For example, in Bristol, Vattenfall is currently providing

1. Climate Change Act 2008 (legislation.gov.uk)
2. How the UK transformed its electricity supply in just a decade | Carbon Brief
3.Findings by the CCC in 'Heat in UK Buildings Today' in 2016 and in more recent findings from 2021 Census
4. 2021 figures, quoted here Decarbonising home heating – Committee of Public Accounts (parliament.uk)
5. Department for Energy Security and Net Zero, Heat networks market overview, Updated July 2024

heating using waste heat from the adjacent floating harbour and will soon heat homes using a waste management facility in Midlothian, just south of Edinburgh. Critically, this is local energy serving local people, breaking reliance on volatile fossil fuels from overseas.

CRITICALLY, THIS IS LOCAL ENERGY SERVING LOCAL PEOPLE, BREAKING RELIANCE ON VOLATILE FOSSIL FUELS FROM OVERSEAS

With district heating, heating homes and businesses becomes a local issue. We need the right technology in the right place. In high density areas heat networks are a more efficient way of delivering heat, whilst providing financial and social benefits. For example, Vattenfall is working as part of Bristol City Leap, which is committed to delivering an estimated £61.5m of social value in Bristol. This includes the £1.5m Bristol City Leap Community Energy Fund for the development of low carbon energy initiatives.

Heat networks enable a fairer transition to net zero. As large citywide heat 'batteries', they provide flexibility to the electricity grid by releasing heat in times of high demand or storing heat to avoid the curtailment of wind power. This benefits all by reducing the total amount of grid reinforcement required and ensuring renewable power can be directed to priority sectors, like industry and transport.

While half of all UK buildings are in areas suitable for district heating, the opportunity for private investment is huge for the UK, at upwards of £80bn by 2050[6]. Along with transforming the way that homes and businesses will be heated, heat networks will create jobs, deliver social value, support urban regeneration and enhance community wellbeing. For example, in Midlothian, just south of Edinburgh, Vattenfall has supported local education partners to deliver education and careers programmes that have indirectly reached more than 17,500 in one year.

It is estimated that the heat network sector could create between 20,000 – 35,000[7] direct jobs across the UK, including design, construction, and ongoing operation. These jobs will be needed as the industry develops to meet the government target for heat networks to supply 20%[5] of the UK's heating by 2050. In the first five years in Bristol alone, Vattenfall aims to spend £50 million with the local supply chain and create over 1,000 new jobs.

To deliver all the benefits and to establish heat networks locally, developers need to work hand-in-hand with their partners and the communities they serve. Developers need to invest in the resilience, prosperity and vitality of the local area, contributing to lasting economic growth and wellbeing which supports communities. Without this there are no incentives for consumers to make the shift to a heat network and they will be more likely to procure their own low carbon heating system. This will mean a lack of coordination, creating complications for neighbouring properties and place more strain on the grid should a heat pump be selected as the alternative.

Strategic planning has been key in helping city scale heat networks flourish in Europe. Here in the UK, we need to move away from a mindset of piecemeal development to infrastructure investment that facilitates sustainable placemaking. Heat network developers are a critical delivery partner for the built environment, energy strategy and for communities.

6. UK heat networks: market overview (publishing.service.gov.uk)
7. Green Jobs Taskforce report – GOV.UK (www.gov.uk)

Stuart Allinson is Strategic director at Vattenfall Heat UK

We should not forget that while developing infrastructure is obviously essential, customers and their needs must be at the heart of our thinking. Not only must we provide the best possible service, but we must also support them on the journey to integrate heat networks as part of the community landscape. Understanding why the infrastructure is being installed is key to acceptance and buy-in. Most consumers don't think about where their heating and hot water comes from until something goes wrong, so getting them interested is often a challenge.

Increased community participation is needed to make heat networks more tangible to people across the country. Heat network infrastructure will be serving generations to come, meaning developers become an intrinsic part of the community.

Vattenfall and other heat network developers are ready to invest in this crucial infrastructure, but there are four key requests to the government to enable their rapid, at scale deployment that is needed to reach the UK's net zero target.
Firstly, a robust heat network zoning framework is critical to supporting the development of heat networks in the right location. The sector needs clarity on how existing heat networks will be treated within zoning to avoid stalling investment in current projects.

Secondly, consumers must see a clear benefit from the transition to a decarbonised energy system. Heat networks, like other low carbon electrified heating solutions, have a disadvantage when compared to gas due to additional levies that sit on electricity bills. This needs to be addressed urgently to resolve the current imbalance between electrified and gas heating.

Thirdly, there is a role for Great British Energy in delivering heat networks through providing targeted funding, recognising heat networks as a critical part of our national energy system infrastructure. Heat network developers are ready to invest to support heat decarbonisation at scale.

Finally, heat networks need fair treatment with other technologies. They are currently disadvantaged in the way they are treated by carbon counting and building standards. To boost confidence on the part of the house building sector, heat networks need a level playing field on which to compete with other low carbon technologies.

There is no doubt that decarbonising heat is going to be challenging, but the solutions are out there. Customers expect the best possible outcome and for many heat networks will be the solution. We need to build the narrative and create a shared vision for how we can decarbonise heat at scale, using the waste heat already present in our urban areas.

Stuart Allison, Strategic director, Vattenfall Heat UK