A BETTER FUTURE

White Paper #2
January 2020

Net Zero 2050 – can the UK deliver a locally-led revolution to decarbonise our built environment?

Better infrastructure

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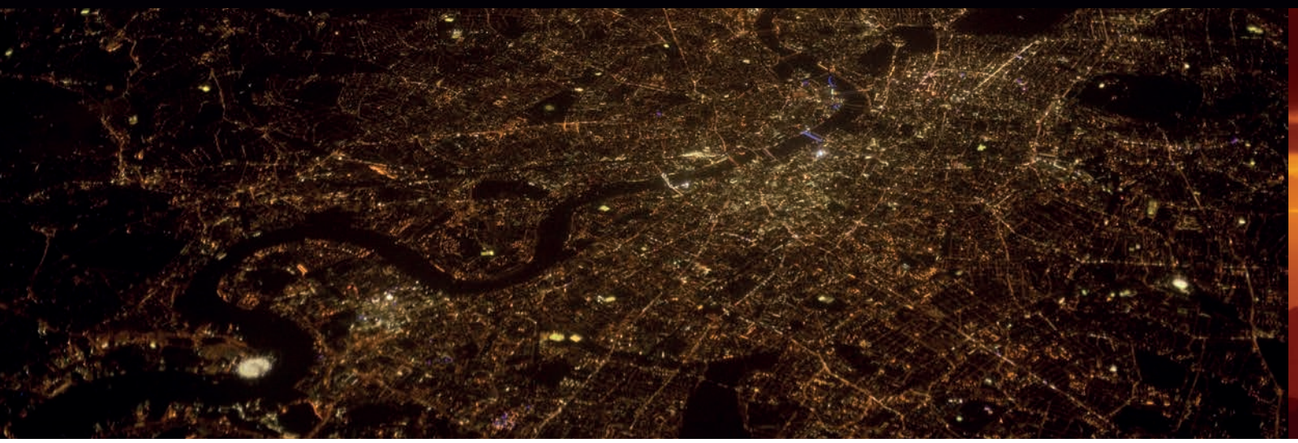
About this white paper



This white paper tackles the big challenge ahead – reaching Net Zero by 2050. It looks at how decarbonising our current consumption of energy and in particular heating in the built environment must be addressed urgently if this target is to be reached.

It is the latest in a series of white papers produced by Amey to stimulate thinking, discussion and, ultimately prompt actions across the diverse range of partners in the public and private sectors operating in the infrastructure market. Paper one looked at mobility and how this is changing the way we travel. This paper two focuses on energy, a huge topic with much written on it, which becomes even more relevant when we consider the demands future mobility will place on it.

For this paper, our focus is on the role local authorities and central government organisations such as the Ministry of Defence (MOD) and the Ministry of Justice (MOJ) can play and how energy management and consumption need to change to meet increasing demand and to achieve Net Zero targets.

Amey believes that whatever decisions are made to meet future energy consumption, they need to be sustainable, create social value and support the local development of small businesses and start-ups.

Introduction

Most of our energy goes into heating our homes, businesses and public buildings. Heating, according to a 2017 study by the Energy Systems Catapult, generated 2,745 kg of CO_2 emissions from an average household every year[1].

Heating emissions represent 31% of total CO_2 produced in the UK[2]. In 2017, transport represented 34% of total CO_2 emissions[3].

Reaching Net Zero will not be achieved through a top down approach alone. Real success will be when both local authorities and wider central government organisations such as the MOD, Home Office and NHS, are empowered with the business models and funding to address heating and energy management in our homes, businesses, prisons, hospitals and central government estate. Amey believes that success in decarbonising heat at the local level will depend on three things:

1. *Clear and consistent government policy to steer the market in the direction of low carbon technologies*
2. *Clear investment models so that authorities have an approved standard approach to engage with the market and investors have a pipeline in which they can invest with confidence*
3. *Empowering local authorities and central government organisations with business models and funding to make decisions that work for the individual needs of their estate, towns and cities.*

We believe that these three steps, if put in place now, will transform the UK's energy and heating markets, opening new supply chains and new markets where innovation thrives.

1 Living carbon free: Exploring what a net-zero target means for household – Energy Systems Catapult report, 2017
2 Significant changes are coming to the UK heating market – Energy Savings Trust, 12 November 2019
3 UK greenhouse gas emissions – Department for Business, Energy & Industrial Strategy, 2017

Context

31%
OF THE UK'S CO^2 EMISSIONS COME FROM HEATING[4]

84%
OF THE UK POPULATION (23 MILLION HOMES) USE GAS AS THEIR HEATING SOURCE[5]

Just 1%
OF NEW HOMES IN 2018 WERE ENERGY PERFORMANCE CERTIFICATE BAND A[6]

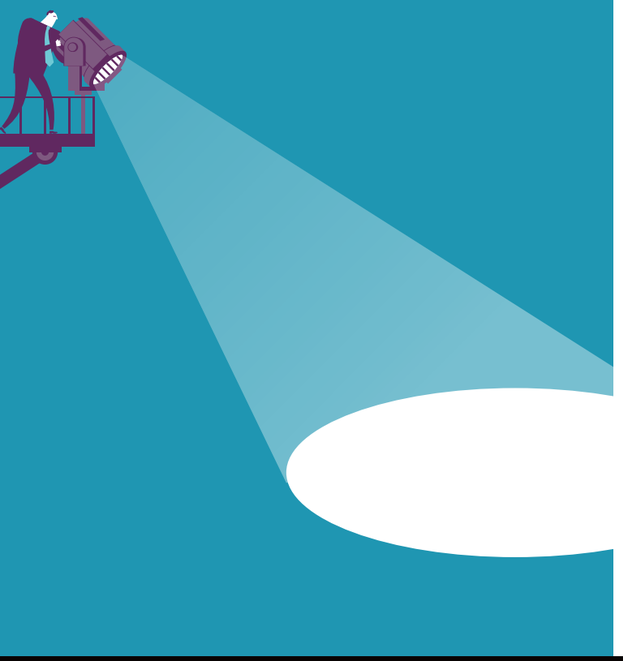
40%
OF NATIONAL ENERGY USE AND 33% OF EMISSIONS IN THE UK ACCOUNTED FOR BY BUILT ENVIRONMENT[7]

£130 million
OF SAVINGS AVAILABLE TO THE NHS EVERY YEAR BY IMPROVING ITS ENERGY EFFICIENCY MEASURES[8]

Decarbonising our buildings across the UK is one of the greatest challenges of achieving Net Zero and can only be delivered through coordinated action between central and local governments and the private sector.

"For real efficiencies, you need to be able to bring together the public estate, private facilities and industry. However, delivering a workable commercial structure can often be more difficult than the technical challenges of a project."

Andy Compton
Energy Systems Catapult



On 27 June 2019, the UK government committed to legally binding targets to bring greenhouse gas emissions to Net Zero by 2050. Net Zero implies that any emissions would be balanced by offset schemes of an equivalent amount of greenhouse gases released to the atmosphere. These schemes could include for example, technology such as carbon capture and storage or tree planting.

Emissions come from several areas – transport being one and heating another. In our mobility white paper of 13 November 2019, Amey proposed means by which a focused approach to mobility solutions can significantly contribute to the government's emissions targets. This white paper looks at our energy mix in residential and public buildings in the UK and puts forward recommendations to meeting the 2050 target.

But time and emissions trends are against us. According to the Global Carbon Project's emissions trends[9], CO2 will have risen by 0.6% in 2019. With just three decades remaining to reach the target, the scale of investment by government and the private sector is immense; the roll-out of decarbonising technologies will need to be rapid and these technologies will need considerable government policy support.

By way of example, heat networks and district heating schemes can significantly reduce carbon emissions from heating but currently only deliver about 2% of UK heat, supplying around 17,000 heat networks in the UK, connecting nearly 492,000 buildings, homes and retail outlets[10].

Government research backed by the Committee on Climate Change suggests that 18% of the UK heat demand could be supplied by heat networks by 2050[11]. The size of the opportunity is immense if we can get the business models and incentives right.

Schemes need to be considered not only for new housing developments, but existing housing or mixed-use developments, universities and student accommodation, hospitals, large military bases, social housing and public buildings.

Furthermore, it's not all about energy production but more efficient energy management using data sources and adapting existing buildings across the public estate.

4 Significant changes are coming to the UK heating market – Energy Savings Trust, 12 November 2019
5 Uncomfortable home truths: Why Britain urgently needs a low carbon heat strategy – Carbon Connect, October 2019
6 Energy Performance of Buildings Certificates Statistical Release – Ministry of Housing, Communities & Local Government, Q4 2018
7 Government unveils new net-zero support for buildings and 'every single mode of transport' – edie.net, 15 October 2019
8 What energy efficiency initiatives can we implement to save the NHS millions? – nationalhealthexecutive.com, 22 August 2018
9 Climate change: Emissions edge up despite drop in coal – bbc.co.uk, 4 December 2019
10 Market report: Heat networks in the UK – The Association for Decentralised Energy, January 2018
11 Clean Growth: Transforming Heating – Department for Business, Energy & Industrial Strategy, December 2018

The challenges to decarbonising our buildings

- Nottingham has set a target of the whole city being carbon neutral by 2028
- Stroud in Gloucestershire has adopted a carbon management plan since 2009
- Bristol has committed to being Net Zero by 2030
- York will ban cars in the city centre by 2023

"It would be helpful to have a selection of technologies to pick from that we know work. That makes the funding easier and more deliverable."

Asif Ghafoor,
Managing Director
Amey Investments

A realignment of relationships between local authorities and central government

Over 100 local authorities across Great Britain and Northern Ireland have declared a climate emergency[12].

Many are ahead of their peers in terms of the actions taken to reduce emissions, but despite impressive progress many local authorities, whilst knowing that they need to champion a decarbonised UK, still lack enough guidance and policy clarity from central government on what approaches are permissible and possible and what finance models are available to fund the changes needed.

At the same time, central government leaders and policy-makers are calling on local authorities to ramp up their efforts and are frustrated at what they perceive to be slow progress. The urgency of the task ahead requires a revamped and much stronger relationship between local authorities and government departments at the local and at central government level.

Investment that fosters an open, more innovative market

While public sector financing will be significant in realising a decarbonised energy and heating infrastructure, private sector investment will be key to the public sector getting best value for money. We need competitive markets incentivised to innovate and implement an extensive investment programme across the UK.

The good news is that there is an abundance of private sector companies ready to invest in this market. However infrastructure investors can't invest if it is unclear what business models are acceptable to government and they will invest more and more competitively if standard models are used by the public sector to involve the private sector. They want clear, stable, investable structures that allow them to finance new developments and understand where the funding will come from to repay that investment when projects are successfully delivered.

Therefore, there needs to be a range of acceptable, standardised business models that can be used to deliver decarbonisation at the local level, suitable for new developments but equally for retrofit or city scale projects.

If these were in place, the market would open, allowing a competitive private sector to promote technical solutions and innovative ideas to push the decarbonisation agenda at pace and scale.

Serious re-consideration of how homes and businesses are heated

If the UK is to achieve Net Zero by 2050, there needs to be a sea change in how we heat our homes, businesses and public sector buildings.

As with the uptake of any new technology, the public and leaders in the public sector need to be informed and incentivised to take part.

In the case of heat networks, for example, there is a lack of understanding of how the technology works and very little publicly available information or policy from the government backing this and other carbon saving technologies.

Proposed way forward

Amey believes that success in decarbonising heat at the local level will depend on three things:

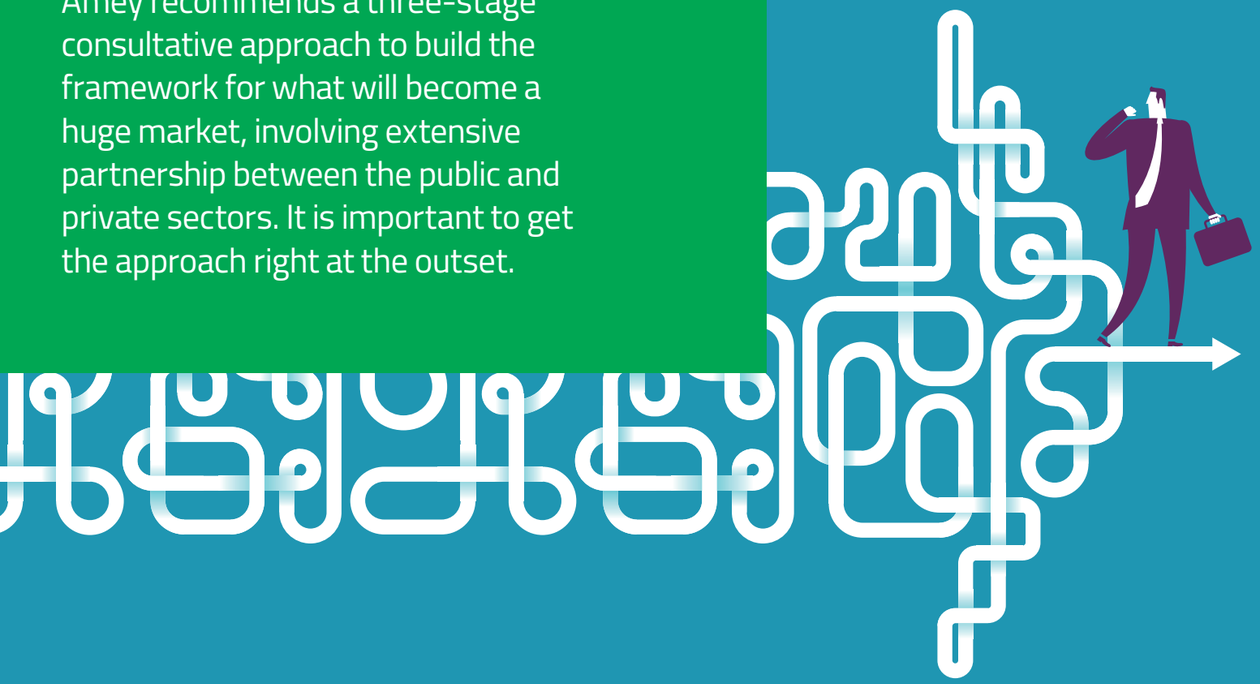
- **Clear and consistent government policy to steer the market in the direction of low carbon technologies**
- **Clear investment models so that investors have a pipeline in which they can invest with confidence**
- **Empowering local authorities and central government organisations to make decisions that work for the individual needs of their towns and cities.**

Let's look at these in turn.

12 List of councils who have declared a climate emergency – climateemergency.uk, 21 October 2019

Challenge 1: Clear and consistent government policy

Amey recommends a three-stage consultative approach to build the framework for what will become a huge market, involving extensive partnership between the public and private sectors. It is important to get the approach right at the outset.



Typically, central government sets out the priorities and strategy for a sector or a challenge while local authorities and government departments deliver it; successful implementation comes from local people and local decision-makers implementing within a clear policy framework. But that clear framework does not yet exist for heating:

- Is central government clear as to the wealth of opportunities to decarbonise at the local level and the barriers local authorities face to implement them?
- Do local authorities and departments have enough guidance on the business models that they can use to promote investment in energy efficiency? What level of central government funding may be available to underpin incremental commitments?

Programmes such as street lighting were successful through clear policy coupled with expertise which enabled effective delivery at a local level – they ensured that everyone knew the business models and preferred approach, creating innovation in the sector along the way.

What's missing currently is the top down direction and guidance from central government of policies that respond to specific, regional or commercial barriers and which both empower and fund them, enabling local authorities to develop Net Zero plans.

In Scotland, there have already been two rounds of consultation on district heating with substantial responses from local authorities as well as from industry[14].

For England and Wales, Amey recommends a three-stage, iterative consultation process to progress this market:

1. **An initial consultation by central government to local authorities and central government departments to understand the wealth and range of local decarbonisation opportunities – housing, managed estate, prisons, schools, district heating opportunities – and the barriers to implementing them – technical, lack of funding, no clarity as to the business models, and the need to develop private sector competition.**

2. **Central government should then issue guidance on preferred business models, approaches to procurement and funding (including whether to allow incremental prudential borrowing) that can be made available to support decarbonisation. It can also give guidelines as to expected or mandatory improvements in local emissions which the plans must deliver.**

3. **Local authorities and government departments would then be required to deliver decarbonisation plans, confident of what funding and business models are available and with the tools to create coherent plans and use models that would be consistent across the UK. Already in Scotland, initiatives are ongoing by means of the Local Heat and Energy Efficiency Strategies (LHEES)[15].**

This approach would:

- Allow local authorities and departments to make their own decarbonisation decisions but within guidelines and policies set by central government. They would have the flexibility to make choices that work for the specific needs of their town, city or estates.
- Give local authorities and departments appropriate resources and a framework to work with the private sector to achieve local plans, but also to impose increasing standards on buildings including:
  - Becoming more demanding of property developers to improve energy efficiency in new homes
  - Prompting developers to build resilience into their supply chains to be ready for a decarbonised built environment
  - Designing and building much more efficient residential and commercial buildings.

Working in this way, local authorities and central government can encourage new entrants and strong competition in the UK heat market.

With central government having signalled the desire to deliver local decarbonisation and given local authorities and departments the means to deliver it, the private sector will be incentivised to invest and compete to deliver services, which will inevitably lead to more and more efficient services, lower prices and technological innovation.

14 Scotland's Energy Efficiency Programme: Second consultation on local heatand energy efficiency strategies, and regulation of district and communal heating – consult.gov.scot, 14 November 2017

15 Local Heat and Energy Efficiency Strategies (LHEES) – 6 September 2019

Kickstart the market through funding

In the three years to 2013, the UK attracted £6.9 billion[16] of offshore wind investment. The same approach now needs to be taken for the energy and heat sectors through a joined-up strategy to decarbonise the market. We note that some funding is starting to flow via the Heat Networks Investment Project (HNIP) initiative[17].

Amey recommends the setting of clear budgets by central government available to local authorities and departments to bid to fund innovative and competitive decarbonisation schemes across the country.

Setting a central budget would mean that the overall budget allocated to decarbonisation can still be controlled and that local authorities and departments will effectively be competing for central limited funds, so will need to demonstrate how their proposals are getting the greatest impact and the best out of the market.

There are several related issues to consider for getting the best out of the market:

- **Getting onto government procurement frameworks can be complex and time-consuming, especially for small businesses, yet from these businesses often emerge the most innovative ideas. Smaller firms can be nimbler and can deal with the pace required of the transformation ahead. We need to make it as easy as possible for smaller companies to compete in this space.**
- **Government should put a value on carbon reduction, and this should be priced into whole life cost of alternatives. This could be through a carbon tax on any technology that does not help achieve the Net Zero objective.**
- **A safe space to trial new and innovative technologies should be available, backed by government. This would not only prompt innovation; it would also stimulate the supply chain and would further knowledge and skills by helping businesses to better understand new and emerging technologies that could be deployed. That means funding at scale test of competing technologies to provide the evidence base to choose what works and then leading investment to stimulate uptake.**

Consistency

Within all this space we also need consistency. Today the District Heating market is benchmarked by the Heat Trust. Investors will need price certainty that the main basis of the pricing regime they invest at will remain so for the term of the investment, typically 15-20 years.

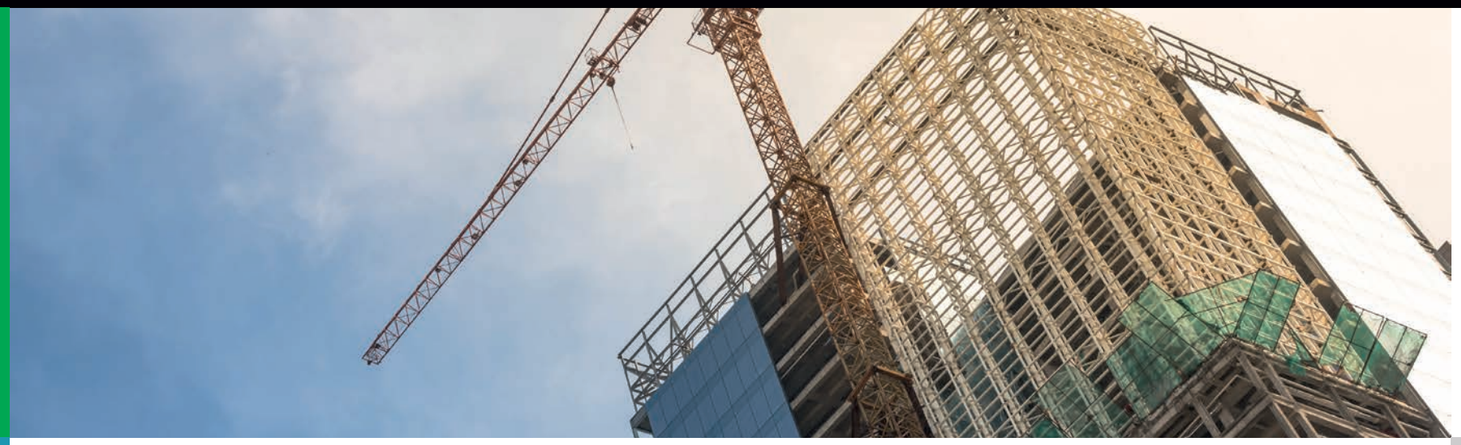
The early days of solar energy had a consistent policy on subsidy which investors knew had grandfathering rights and they were able to invest. Consistency is key to ensure long term investment in areas such as energy.

16 UK offshore wind in the 2020s: Creating the conditions for cost effective decarbonisation – Green Alliance, 2014

17 Apply for the Heat Networks Investment Project (HNIP) funding – 21 December 2018

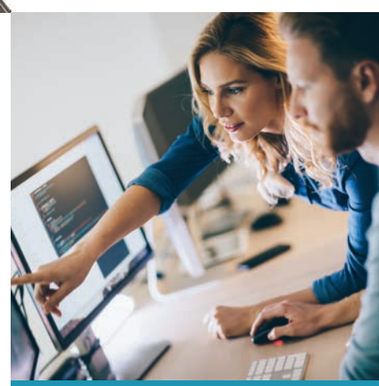
Challenge 2: Clear investment models

Amey recommends the adoption of standard business models across the UK to encourage strong competition and innovation in delivering heat and energy at the local level.



"We need standardisation. That's not to say one size fits all, but as with the renewable energy market 30 years ago, we needed standardised approaches for different asset classes and different subsidy levels for different technologies."

Susannah Stock, Director
Infrastructure Debt, Aviva



Decarbonising our heating infrastructure will require material, long-term funding. A 2018 report for the National Infrastructure Commission cited the cumulative additional cost to 2050 being in the range of £120 - 300 billion[18].

The size and scale of the investment required means it is essential that local authorities and government departments use business models that encourage a plethora of market entrants and will lead to strong competition that will drive down prices and deliver technical innovation.

Again, the wind sector sets a good precedent. It was through the letting of consistent contracts across the UK that the level of investment and competition has radically impacted prices, so that wind is now cost competitive with fossil fuels.

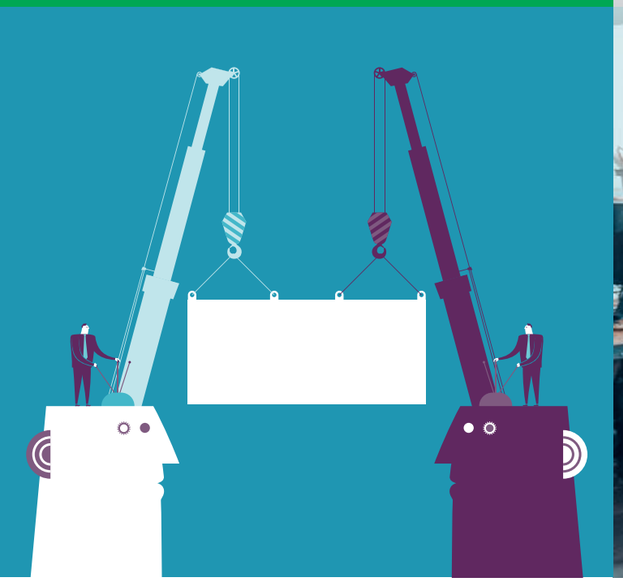
When assessing the attractiveness of business models, the key question should therefore be, "will this model lead to the most competitive industry and best value for money solutions?"

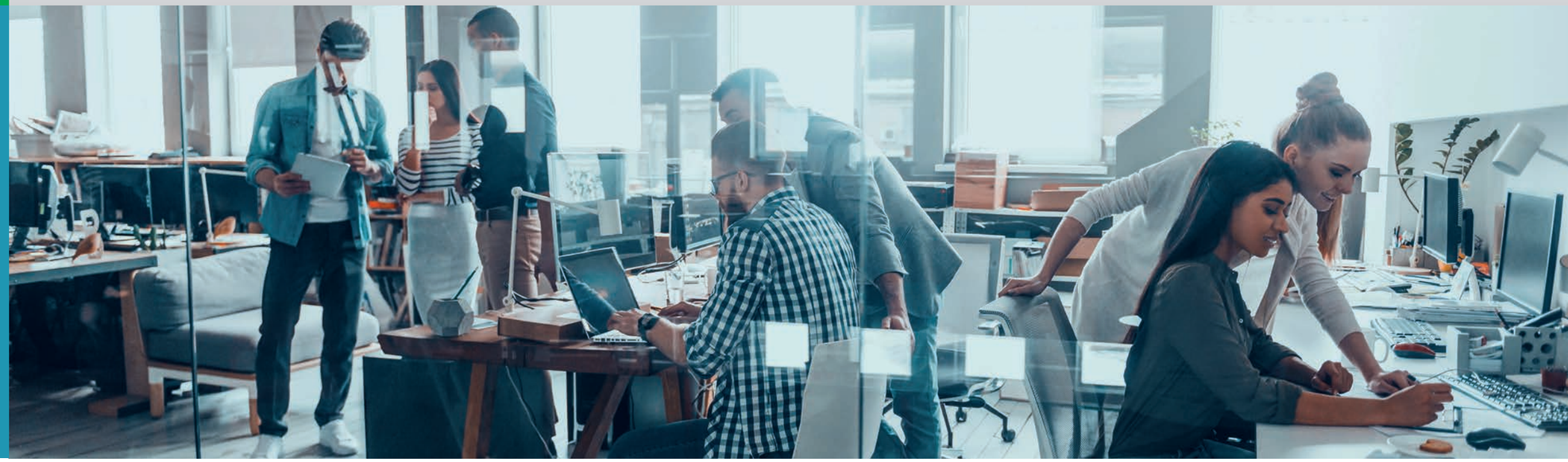
The scale of investment required means that third party investment will be critical to developing low carbon, local energy and heating solutions. The challenge is to ensure that local authorities design and procure their projects as "fit for funding"; maximising the benefits that this third-party investment can offer. In principle, investors are keen to back this new asset class. Standardisation is critical if private investment is to be brought into the market.

The contractual structures that sit around these assets are typically very different from existing energy or heating projects, making it very difficult to acquire and manage them as portfolios. Investors typically do not have the time required to assess the plethora of small models with different characteristics.

Standardisation around technology, corporate funding structures and around the process of due diligence will overcome some of the difficult commercial and technical challenges and will enable the market to move forward and accelerate third party funding. Developing this standardised approach will also help to bring in the investment community behind the development of larger portfolios of assets, increasing investment value and sustainability. Added to this is the requirement that local planning policy not only connects investors to investment opportunities but is willing to implement and see projects through to their completion.

18 Cost analysis of future heat infrastructure options – Report for National Infrastructure Commission, March 2018





Forget balance sheet treatment

Trying to ensure private sector concessions are off balance sheet in other infrastructure sectors has led to inflexible contracts, too much risk transfer and the inability to adopt models which are more collaborative between the public and private sectors. Arguably, the focus on achieving off balance sheet classification for deals has been the root cause of much of the dissatisfaction with existing private sector concessions; particularly PFI. We need to avoid the same mistakes in heating.

Amey recommends that the balance sheet treatment of business models should no longer be relevant when assessing value for money.

In practice, any concessions in the heating sector will prove hard to get off Government's balance sheet. This is for the simple reason that the capital expenditure required to implement a project is often not stand-alone, meaning the expenditure may be conversions of existing assets or incremental expenditure to larger assets (piping, connections, etc) – the investment is integral to the larger asset. So, whatever the business model and risk transfer for the heating scheme, the aggregate risk transfer will not get the whole larger asset off balance sheet.

Trying to promote structures because of their balance sheet treatment will limit the number of deals possible or create structures too rigid for the challenges they are designed to overcome.

New business models

If achieving value for money becomes the sole measure of the attractiveness of business models, then several alternative business models might be considered by government to underpin the development of this market:

- **Public private partnerships – major schemes financed and delivered by private sector operators, paid in turn for the delivery of heat (particularly appropriate where the assets are separable and therefore an off-balance sheet treatment is more likely)**
- **Guaranteed saving models – provision to a collection of accommodation at a unit cost of heat less than that currently paid for by consumers**
- **Cost plus – pass through cost to consumers, who benefit from the heat efficiency of central provision, but take the risk on usage (so that the customer is still incentivised to minimise use)**
- **Customer ownership – schemes financed by local customers, perhaps with a degree of local authority underpinning them to address credit risk and generate initial buy-in.**

Amey is not recommending only one model in the sector; different models may be appropriate for different challenges. But in determining the best models to roll out, the sole focus should be getting the best out of the sector.

Critically, Amey believes that while some structures may be on government's balance sheet, different forms of long-term concessions between public and private sectors will still deliver best value for money.

Fresh approach, delivering better value for money

Given the size and scale of the opportunity, we should ensure things can be structured radically differently from the outset, incorporating new elements designed to get the best out of all parties and avoid some of the structural difficulties of previous concessions. Particularly if unconstrained by balance sheet, the business models can include elements not common in public private partnerships including:

- **Joint public-private ownership and therefore aligned incentives to make profits and deliver efficiencies**
- **The ability to have lower base returns, with increased returns for delivery of desired outcomes such as cost savings, energy savings and project delivery milestones and satisfactory delivery**
- **Customer representation on project governance**
- **A more flexible capital structure, able to accommodate change and grow the partnership rather than be on a fixed, rigid contractual basis**
- **Ruling out aggressive financial engineering and refinancing gains**
- **Shorter term concessions where risk is clearly transferred but for a limited period; enough to incentivise investment and reward performance, but not to lock the authority into long-term contractual obligations. The authority can get the benefits of clear delivery risk transfer but not then the consequence of fixed, inflexible contracts.**

This is a huge market that is about to be developed and will endure for the long term.

Amey believes there is an opportunity to embrace models which lead to a far more partnerial style of relationship between public and private sectors.

"The best value for money may be delivered from partnerships with the private sector which create the right incentives but may mean the investment is not off government's balance sheet. We need some central direction as to what business models local authorities can use to get best value, irrespective of balance sheet treatment."

Paul Davies, Chair
Carbon Capture and Storage Advisory Group

Challenge 3: Empower local authorities and central government organisations

There are several key areas where local authorities and business can work together to transform heating and energy production and usages in this country. These include district and communal heating, heat pumps, low carbon gases, energy efficiency measures and localised energy production.

Local authorities

One size does not fit all, so finding the optimal balance between each initiative and identifying where and how investment is likely to have the most impact, is a critical challenge for both central and local government. The point is that with the right will, these currently available solutions could be deployed in the short term. They face many challenges:

- The government understands it needs to set a clear direction for the future of localised energy and heating. It is also conscious that it must do so without preventing the development of any new or developing potential solutions. The risk is that without giving a clear steer around the potential for low carbon gas, heat pumps or repurposing of the gas grid, the market will simply move to provide electrification by default.
- In some parts of the world, for example, in the Netherlands, central government has taken a strong role through legislation to promote change at local levels. The Dutch government has taken the decision to stop extracting natural gas at Groningen[19] and to start a phased de-gasification of seven million homes, at a rate of 30,000 to 50,000 homes per year until 2022, accelerated to 200,000 homes per year thereafter. The same impetus is not present in the UK. In 2018, there was a 3% rise in residential emissions. While the government has mandated no new homes having gas boilers from 2025, more than 1.6 million homes use oil to heat their homes[20] and 84% of the population (23 million properties[21]) use gas. The transition to new solutions that contribute to Net Zero is vast and expensive and can only be realised through central government policy, increasingly stringent standards and supported by schemes that incentivise take up by the public and the public sector.
- Energy management as much as energy production is key. Much heat is being wasted by poorly insulated, poorly designed existing and new homes. It is expected that 1.5 million new homes will be built in the UK by 2022. Even today, many new homes are built to a minimum energy efficiency and heating standards. The government's recently announced Future Homes Standard[22], requiring all new homes to adhere to stringent new buildings regulations with low carbon heating and the highest rates of energy efficiency will not be introduced until 2025.
- An honest conversation between the public sector and the supply chain over solutions is vital. Quite often, for example, energy efficiency is still best value for money which means that there is a very strong case for the retrofitting, modernising and, in some cases, replacing old buildings rather than or before investing in low carbon energy. So far, the public and private sector have not succeeded in working together to tackle this challenge – one that could be overcome through more openness and deeper collaboration.
- Local authorities are looking to their supply chains for the answer. However, the supply chain is stymied by public sector procurement frameworks which by their nature tend to be rigidly structured in terms of how companies supply. When a supplier approaches a client with a new technology or a new approach to an existing technology, the supplier is asked to provide the service or product within an existing publicly procured framework, a system that doesn't work for new thinking and innovation. More focus needs to be placed on the required outcome rather than the means of getting there.

19 The Netherlands to go completely gas-free in the future – The Holland Times, 22 March 2019

20 More than 1.6 million people still use heating oil for their energy - and overspend by £80 a year – The Telegraph, 15 September 2017

21 Statistic cited from National Grid – nationalgrid.com, 27 February 2014

22 The Future Homes Standard: changes to Part L and Part F of the Building Regulations for new dwellings – gov.uk, 1 October 2019

Amey has a number of recommendations to help innovation and investment at the local level:

Implement a low carbon heat uptake strategy

Central government should develop a strategy and come up with policy for low-carbon heat uptake across the residential, commercial and public sectors before the end of 2021. This should be compiled following consultation with local authorities as described above.

Solutions as part of the strategy should include the mass roll out of and funding for heat pumps in homes and businesses and where applicable across the public sector; a commitment to extending heat networks in cities and built up areas through technologies such as Energy from Waste (EfW) – currently contributing less than 10% of energy to the grid[23]. The strategy should also include measures to move homes and businesses away from gas and oil through regulatory measures and taxation.

Enforce planning obligations that lead to the highest levels of energy efficiency

Local authorities should be able to enforce planning obligations for example on new housing developments which should be required to connect to a heat network and should not be allowed to connect to a gas alternative (even if under pressure from property developers). The proposed gas boiler ban in new homes from 2025 is going in the right direction but more needs to be done on a policy/planning level now.

House builders need to take more ownership of ensuring that new builds are energy efficient and provide a sustainable home for owners. Currently, there is too much focus on low cost build to maximise profits to the detriment of people's health and a low carbon future.

Adopt an interventionist planning framework

Cities should look at the success of London that has heat network markets which are highly competitive because the planning rules are clear, and the returns and the commercial models for investors are clear.

London's planning framework has been highly interventionist around the installation of heat networks. According to the Competition and Markets Authority: "All developments are required to select energy systems in accordance with a hierarchy, the top of which is connection to existing heating or cooling networks."

Amey believes that this approach can be replicated across the rest of the UK. Local authorities should be empowered to challenge developers when they push for the status quo. This can be the case where developers want to stick to what they already know, when their supply chain is in place and they don't want to disrupt it and when there are established designs for apartments and houses and a reluctance to change them.

Empower the supply chain

Amey's recommendation is that there needs to be clear policies and structures in place to decarbonise the energy and heat markets. We strongly believe that the supply chain will emerge only if the market is created as described above.

When suppliers know what the projects are going to be, how they are going to be led and have confirmation that they are backed by local planning and central government policy, they will respond at pace.

The supply chain needs to be fully resourced and trained to move forward with the scale of the transition needed. We support the recommendations made in LSE's 2018 Sustainable Growth in the UK report in which it calls on government to "help firms overcome barriers to in-house training through tax credits and partnerships with education providers".

This requires strong government backing and follow through to ensure that the supply chain serving the public sector has the skills and knowledge to advise decision-makers and deliver low carbon solutions.

23 Wind of change blows through EfW emissions – envirotecmagazine.com, 29 October 2019

Amey recommends that following an iterative consultation process, government departments have clear business models it can use to procure investment in its estate, whose structure are to get the best from the private sector in partnership, not driven by balance sheet considerations, and that they understand the incremental funding available for energy investment.

Central government

Central government departments are a very fertile ground for implementing major heating schemes that can have immediate effects. Without the complexities faced by local authorities of disparate households and businesses, departments can implement more radical solutions, quicker at its estates .

This is particularly the case for organisations like the MOD, MOJ and the NHS that are dealing with aged built estates that require critical upgrades, estimated to be cost in the region of £5 billion.

But the challenges identified above around business models and balance sheet treatment are perhaps more acute for large departments:

- **Investment in heating will be additional but integral to large buildings; it is unlikely that any concessions will be off balance sheet as the investment cannot be accounted for separately**
- **The scale of the investment required will attract investors prepared to take risk on delivery, savings and energy efficiency – departments are likely to benefit from a highly competitive market**
- **Using approved standard approaches will incentivise the private sector to look for opportunities across government's estate, providing innovation as to what efficiencies are possible**
- **Short term concessions can help departments finance and implement schemes but leave them longer term flexibility.**

It is important, to realise these benefits, that departments feel empowered to decarbonise their estates. They need to understand what business models are supported centrally and what funding is available for their chosen projects.

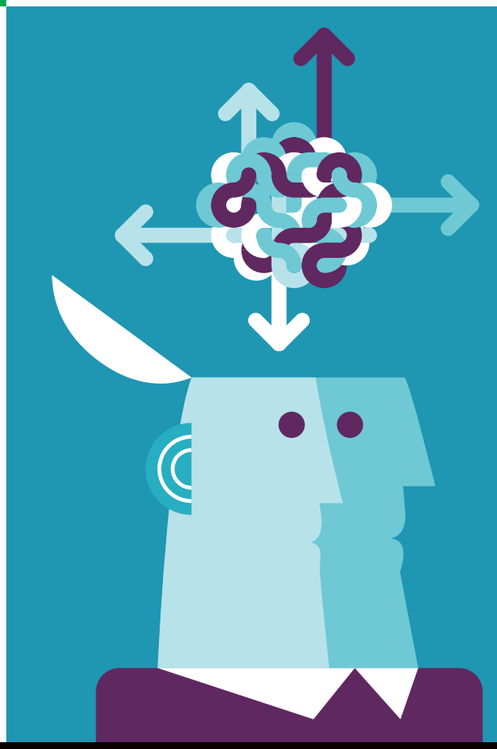
Conclusion

In this report, we have shown how clear and consistent government policy can steer the market in the direction of low carbon technologies.

We have explained and put forward recommendations regarding clear investment models so that investors have a pipeline to invest with confidence. We have provided perspective on empowering local authorities and central government organisations to make decisions suited to the individual needs of their towns and cities.

Across all three areas: clear and consistent government policy, clear investment models and empowering local authorities and central government organisations, we emphasize the urgency of the task ahead and the need for immediate action.

Decarbonising our buildings across the UK to achieve Net Zero can only be delivered through coordinated action between local authorities and central government and the private sector.



We’re the faces behind the services you use every day and we’ve been in the business of creating better places to live, work and travel for nearly 100 years.

Our team of 17,000 people and the depth of services we deliver, makes us a leading supplier of consulting and infrastructure support services in the UK and internationally.

We design, build, maintain and invest in services and infrastructure and we're proud to make a difference. Serving the communities we work in, whatever the weather and whatever the challenge.

Amey Investments has been helping to structure and fund vital infrastructure and services projects for nearly 20 years.

Our dedicated Investments team help our Government and Utilities clients to make and set up, really smart, innovative funding and financing structures – meeting the UK's infrastructure challenge of today and deliver technology led infrastructure solutions for our future. Over the past 15 years we've raised over £4bn of private finance, including traditional bank debt, bond issues, prudential borrowing and European Investment Bank funding.

Combining the skills of lawyers, estimators, financial modellers, commercial managers and bankers, the Investments Team has a range of specialist knowledge rarely found in companies such as ours. We help our clients structure solutions to unlock the major funding sources that transform major projects into reality.

Our objective: *financial solutions to secure infrastructure ambitions. We are part of the solution – helping to solve the UK's budget challenges.*

Strategic Business Development

Our strategic thinking creates tangible, long-term, high value infrastructure business opportunities, to meet the UK's future infrastructure needs.

We solve complex problems facing public and private sector clients, helping them deliver better outcomes for their customers.

Financial and Commercial Solutions

We are experts in; commercial structures, raising capital, financial modelling, risk management and negotiation. We solve clients' funding and financing problems to deliver the best project outcome.

Investment and Stakeholder Management

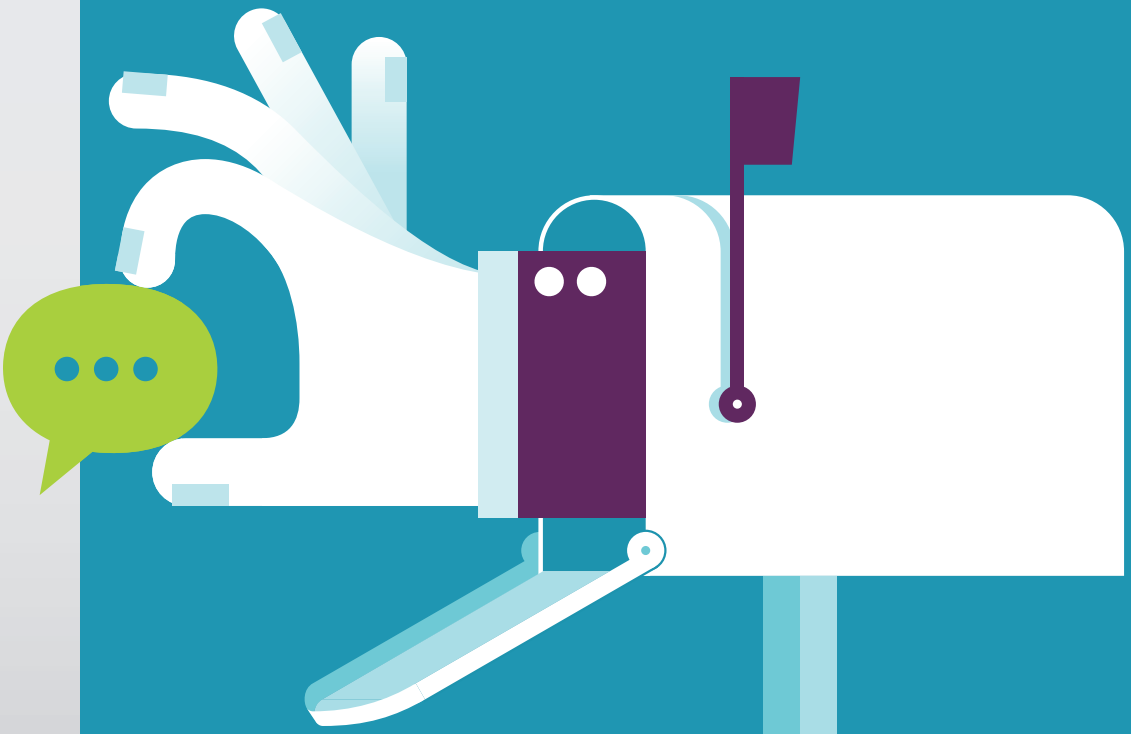
We work with our clients and other stakeholders to build the long-term relationships needed to influence better outcomes across their evolving investment objectives. Our structuring and investment management expertise protects the assets and enables our clients to maximise the value of their investments.

We drive Amey's strategy into new markets with modern technologies. Our aim is to keep the UK a global leader in infrastructure.

- Expertise in banking, equity finance, law, financial modelling, technical advisory and engineering.
- Supporting **20,000 people in 300+ locations** in the UK and overseas.
- Over **£4bn of private finance** raised over the past 15 years.
- Manage SPVs on behalf of **over 40 banks and 20 equity investors**.
- Invested over **£200m** of Amey equity.

If you would like to discuss any aspect of the points raised in this paper, please contact:

Nick Maggs
nick.maggs@amey.co.uk



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