

Policy Barriers and Solutions for a
**Technology-Agnostic
Approach to Heat and
Buildings**

Workshop Report



2024

Foreword | Lord Best



Our journey to Net Zero 2050 will change the fundamentals of many aspects of our society and economy. We must detach our country from its strong reliance on fossil fuels, strengthen our energy security, protect and help vulnerable people, and transition our buildings to use sustainable energy.

Buildings play a huge part in our living and working lives. They also contribute a significant volume of emissions to the UK's carbon budgets: currently the second highest-emitting sector at just under 20%. Therefore, transitioning energy in buildings to a sustainable future will sit at the heart of our Net Zero strategy. We must all be aiming to secure our buildings as Fit for the Future.

This will require wholesale change to all types of buildings and users. From offices, factories, and public buildings to high-rise apartment blocks, social houses, and terraced homes: the UK and its population will have to move to a new normal. It will be the technologies, solutions, and services installed in these buildings that will deliver this change. And making sure that these technologies are most suitable for every person and building, will be key to delivering the future we need and is the challenge that Government policy needs to overcome.

The Sustainable Energy Association and Partners have come together once again to inform this important journey. Following on from the group's first defining report, [A Technology-Agnostic Approach to Heat and Buildings Policy](#), this latest report continues on the theme of collaboration in pursuit of evolving and refining Government policy for heat and buildings.

The important recommendations that this work makes aligns concretely with the Government's ambitions for a cost-effective transition to an energy-efficient and net-zero-carbon future. They make the case that the current policy landscape can be adapted in the short and long term to make best use of the solutions of today and innovations of tomorrow. In doing so, we can reap the benefits of a more prosperous transition to Net Zero, create a booming economy for low-carbon technologies, build a new and competent workforce, better engage and educate people on the transition, unlock significant private investment, deliver better outcomes for the UK, and create living and working spaces fit for future generations.

I thank the SEA and all collaborating organisations for their invaluable insights and leadership in this important industry.

A handwritten signature in black ink that reads "Richard Best". The signature is written in a cursive, flowing style.

Lord Best, President of the Sustainable Energy Association



Executive Summary

The UK must transition all buildings to be fit for the future, meaning they are energy efficient, net-zero carbon, warm and healthy. All buildings are constructed, changed over time, and used differently. This means that each property will perform and operate uniquely, and the technologies and solutions for transitioning them to Net Zero will be individual.

This complexity must be accounted for. A whole range of low-carbon technologies (LCT) for heating buildings, generating, controlling, flexing, and storing energy, must be used where they are most appropriate. These LCTs should ultimately be specified to achieve the best outcomes for individual occupants, buildings and the country as a whole. And as government policy steers what specific technologies are deployed and where, the Government must ensure that its policies for heat and buildings are 'technology agnostic'. In other words, policy that ensures the most appropriate technologies for the person, building, and country are delivered for the best outcomes.

If policies can shift towards becoming more technology agnostic, then a host of benefits can be achieved for the UK. This was laid out in our first report, [A Technology-Agnostic Approach to Heat and Buildings Policy](#). The associated benefits include: accelerating our route to Net-Zero buildings; unlocking flexible and smart building energy systems; effectively educating and engaging consumers on the transition; creating high-quality skills through clear local and national planning; and stimulating manufacturing, supply chains and innovation.

It is the SEA's view that a fabric-first approach should sit alongside technology agnosticism. Considering the energy efficiency of a building's fabric first, and alongside wider LCTs, should be a priority, as the Government have committed to doing. This is critical, as it places the emphasis on improving the quality of the UK's housing stock, delivering healthy buildings that promote wellbeing, minimising energy demands, increasing energy security, and many wider benefits, before or alongside the benefits attributable to using LCTs. The scope of this report will cover LCTs that are used to decarbonise space and water heating and manage the wider energy demands in buildings.

In order for a technology-agnostic approach to be fully incorporated across the entire policy landscape for heat and buildings, wholesale change to the existing structure must first be made. This report initially lays out the policy barriers in the way of the Government achieving a technology-agnostic approach: what is preventing the most appropriate solutions being applied. The report then discusses the policy solutions and levers available to the Government to realise this objective and develop the right policy landscape to deliver a prosperous Net-Zero transition. These recommendations are separated into Aspirational and Longer-Term, and Practicable and Shorter-Term, as to be clear where solutions will take additional time, resource and engagement to deliver.

BARRIERS, SOLUTIONS & RECOMMENDATIONS

A summary of the barriers identified during the workshop, along with solutions and recommendations made, can be found in the table below. We would, however, strongly encourage you to read the full workshop findings from page 14.

Please navigate through the document by clicking on the individual sections below.

Solutions & Recommendations
Aspirational & Longer Term
The Government must create a long-term, joined-up approach to retrofit policies—a National Retrofit Strategy
The Government should focus on an outcomes-based approach to policies for decarbonising buildings
The Government must develop devolution arrangements that deliver place-based retrofit in a technology-agnostic way
The Government must set up independent, holistic and joined-up consumer advice—a National Education Campaign for technology-agnostic retrofit
The Government should drive the redevelopment of routes into built environment jobs and build cross-sectoral and holistic skills that deliver technology-agnostic policies
Practicable & Shorter Term
The Government must urgently reform SAP and EPCs, whilst developing routes to advanced building assessments and passports, to recognise the most appropriate technologies for the best outcomes

The Government should target retrofit policies at trigger points and other key stages in a building's lifecycle to install the best technologies at appropriate times

The Government must ensure lists of eligible measures for specific government funding schemes are broadened to recognise the most appropriate solutions for the types of buildings and scheme outcomes

The Government must widen its communications on low-carbon technologies and retrofit to include the diverse range of appropriate solutions available

The Government must urgently rebalance social and environmental policy costs levied on electricity and decouple electricity and gas prices to incentivise the transition to low-carbon technologies

The Government should improve consumer protection policies and ensure a Just Transition across all appropriate low-carbon technologies

The Government must introduce a transparent, robust, and streamlined innovation methodology for businesses to get their products certified and ready for government schemes within the built environment

The Government should ensure taxation is technology agnostic, whilst stimulating domestic manufacturing to create the right outcomes for businesses and the country

Barriers

Existing policy support is not conducive to building long-term certainty nor a strong market for the transition

Government communications and policy are typically hyper-focused on specific technologies and building types and lack a holistic view

No clear definition or playbook on how to balance delivery from top-down government strategy and policy, with bottom-up market-driven industry action

Local and national planning policy blocks and creates friction in the transition
The current energy market arrangements dissuade consumers from making the transition
There is a narrow, and often downplayed, government policy regime for domestic high-rise, public, commercial, and industrial buildings
The Energy Performance Certificate (EPC) framework is not fit for purpose
There is poor availability of data on some technologies to satisfy policy
Innovation is not well supported, nor routes clearly defined through government policies
There is a lack of sufficient advice and awareness-raising for businesses and consumers across all appropriate technologies
There is inadequate consumer protection for advising on and installing low-carbon technologies
There are not enough installers, across a range of technologies, with the right skills and competencies, to deliver the transition

The content for this report was gleaned from a workshop, held in late 2023, attended by government officials and industry experts. The event explored the policy barriers, solutions and recommendations to the Government taking a technology-agnostic approach. Discussion has been written as it was raised in the workshop and augmented with content from wider conversations from across the partnership and SEA membership.

Thank you to all of the workshop participants for their thought-provoking discussions, views and information (see Appendix 2 for the delegate list). Many thanks also goes to the breakout group chairs, David Adams, David Weatherall, and Malcolm Farrow for expertly facilitating each of the three groups and feeding in their views.

Partners

SUPPORTING ORGANISATIONS



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Introduction

The purpose of this report is to summarise the Sustainable Energy Association (SEA) and Partner's workshop on policy barriers and solutions to taking a technology-agnostic approach to heat and buildings policy. This was a half-day event held at the Which? headquarters, London, on 26th September 2023 (see Appendix 1 for the agenda).

The workshop was a continuation of existing work from the SEA and Partners on technology agnosticism, following on from a report released in early 2023, [A Technology-Agnostic Approach to Heat and Buildings Policy](#). This report detailed the definition of a technology-agnostic approach and why it would be beneficial for the UK to be more agnostic, with analyses and case studies to reinforce discussion. This work brought together a number of trade bodies, businesses, individuals, and SEA members to define and align under a unifying message of technology agnosticism. It was then evident that further work was needed on how to this approach might be practically delivered through Government policy.

The workshop, therefore, sought to assemble ideas on how the Government could be more technology agnostic in their policies for heat and buildings. This covered what policy barriers currently stand in the way, what solutions exist to realise this approach and what recommendations would then be made to the Government.

WHAT IS TECHNOLOGY AGNOSTICISM?

Technology agnosticism, or neutrality, is the requirement for policy to preserve optionality to deliver the best technologies for the right outcomes in order to decarbonise heat in buildings. There are a great many number of low-carbon technologies (LCT) that can be used to decarbonise a building and its heat demands, and these can range from low-carbon heating, on-site energy generation, energy storage solutions, heat recovery from air or waste water, building controls, and much more.

Government policy should ensure that these technologies, in the right mix, are installed where and when they produce the best outcomes for people and buildings. The scope of this paper will revolve around the LCTs installed around fabric solutions: noting that the SEA support a fabric-first approach should be taken. It will consider technologies that decarbonise space and water heating, and manage the wider energy demands in buildings.

It is key that these outcomes are clear and delivered upon for every installation and building. There are three main outcomes that should be central to all heat and buildings policy: ensuring the installation is targeting net-zero carbon emissions or beyond; increasing energy efficiency and considering the cost effectiveness of the measures installed (running costs for consumers, capital needed to install technologies, cost to the Government, etc.); and enhancing the comfort, health and wellbeing of occupants within buildings, including adaptation for the impacts of a changing climate. Around these, there are many outcomes that should and can be achieved, like supporting greater levels of household energy flexibility, increasing energy security and independence, reducing electricity grid demands and investment requirements, matching the needs and wants of the consumer, and much more.

The challenges with current government policy revolve around the limited range of technologies supported and how technologies are communicated through policy and official advice services. A number of different technologies have been uniquely supported over the years, including solar PV, biomass boilers, and now air-source heat pumps (ASHP) (specifically hydronic or air-to-water heat pumps).

The Government are—to a degree—rightfully focusing on electrification for decarbonising buildings in the UK as the increasing prevalence of low-/zero-carbon electricity through the grid will create a highly cost-effective route to Net Zero. To support this, ASHPs are an efficient and cost-effective electrified technology, and the Government should continue to strengthen and lengthen their support for them.

However, it is this systematic selection of individual technologies, and their associated time-limited funding, that is creating an ineffective market for holistic, whole-house retrofit that will help to transition all UK buildings to Net Zero with the best outcomes. ASHPs, specifically air-to-water or hydronic heat pumps, are one type of heat pump in a list of many, like ground- and multi-source heat pumps (GSHP & MSHP), air-to-air heat pumps (AAHP), exhaust-air heat pumps (EAHP), and more. Heat pumps are themselves in a pool of diverse and appropriate electrified technologies: ranging from direct electric heating, like infrared, resistive or storage heaters, to solar thermal, mechanical ventilation with heat recovery (MVHR), deep geothermal heating, and many others. Yet, government policy and communications regularly fails to support and encourage these solutions equally through their schemes and targets, in spite of past support and whether the same outcomes could be reached by installing a range of supporting LCTs.

Many hundreds of thousands, if not millions, of buildings will require alternative heating solutions to ASHP, with some being better suited to other electrified heating or low-carbon fuels, like HVO, green hydrogen, woody biomass, etc. Wider than heating, there are many ancillary and complementary technologies, solutions, and services available to transition buildings and match their energy system needs, like smart building controls, onsite generation, smart thermal or battery storage, waste-water heat recovery (WWHR), and much more.

These technologies should be considered or offered as appropriate to every building across the UK, not just the 'complex-to-decarbonise' stock that will more likely require greater levels of support and technology diversity to ensure an effective and just transition. A policy regime that takes a technology-agnostic approach would account for all appropriate technologies and apply them where and when they can create the most prosperous pathway to Net Zero individually and collectively.

The next section summarises the outcomes from the workshop and explores how the Government can begin to be more technology agnostic through their heat and buildings policies, assess which technologies are most suitable for a range of building types and their occupants, and describe the best outcomes in the transition to Net Zero.



Figure: example of the variety of appropriate technologies for home.

Barriers

EXISTING POLICY SUPPORT IS NOT CONDUCTIVE TO BUILDING LONG-TERM CERTAINTY NOR A STRONG MARKET FOR THE TRANSITION

Although we have seen success in installing fabric measures and LCTs in buildings over the past decade and a half, historic policymaking and delivery in the heat and buildings industry has been marred by short-term schemes, gaming and poor-quality outcomes. The uncertainty of timescales on many government policies and their successive waves, the disjointed nature of the various policy incentives and regulations within the sector, and the sometimes-variable quality of scheme delivery at scale, has created an industry that is focused on delivering from wave to wave.

The instability of policy can also be attributed to parliamentary terms and political cycles. The five-year term often leads to policies being implemented for the duration of a party's sitting, and no longer. And when new leadership takes to power, it is unlikely that the existing suite of policies align with the new manifesto, and are altered, phased out, or removed quickly as a result.

This occurs even within five-year parliamentary terms and across different Prime Ministers from the same party. New PMs have different priorities and political ideologies, and can, at short notice, disassemble the work of previous party leaders without proper consultation or due process. This is hugely deleterious for market certainty, and usually has the opposite intended effects, because the industry would be unwilling to invest in training, resources, manufacturing and staff if there is uncertainty that the current policy incentives or regulations will be operating five years in the future. There is a failing in political leadership to create these long-term, cross-party drivers for low-carbon technologies, and create a stable environment in which to grow the market for transitioning UK buildings to make them fit for the future.

Retrofit delivery schemes, like the Energy Company Obligation (ECO), Social Housing Decarbonisation Fund (SHDF), Home Upgrade Grant (HUG), Public Sector Decarbonisation Scheme (PSDS), Industrial Energy Transformation Fund (IETF) and many more, run in successive waves. Despite the various cost and carbon savings the UK is now benefitting from as a result of these schemes' successes, the scheduling and timelines of these waves are not tipping the scales fast enough to the level of private investment and economies of scale needed to deliver UK-wide building retrofit. Although, we have seen immense progress in the falling costs of some LCTs, like solar PV, and availability of green finance.

The finite nature of grants however, their relatively short term of allocation and delivery, and their usually limited focus to specific technologies, means businesses and supply chains will gear up around delivering these schemes. This creates supply chain inflexibility, as the skills and jobs, financing, and solutions may not be available for other opportunities. This is also artificially driving the market for retrofit and creating bias in the technologies and techniques to deliver the transition. If policy delivery continues to feed and starve in this way, delivering more in line with parliamentary terms than any other, the market will struggle to mature beyond its current spread of technology delivery, nor reach the scale necessary to transition buildings with the best outcomes.

When it comes to new buildings, building regulations are not effectively driving the best outcomes, and therefore, the technologies needed to deliver them are not being specified and designed into buildings. With the scrapping of the Net Zero Carbon Standard for new buildings in 2015, building regulations have been incentivising meeting minimum, non-Net-Zero standards for the hundreds of thousands of new homes built each year. Without progressive standards pushing the sector to specify the most appropriate technologies, the market for these technologies will grow slower and to a lesser extent. Furthermore, current regulations are delivering buildings that will need to be retrofitted to reach Net-Zero 2050—a missed opportunity to deliver the right outcomes from the beginning of a building's lifecycle.

The timescales for updating existing policies, or creating new ones, is also a long process and one that can delay action and investment in this area. Innovation is often penalised due to the slow-moving nature of the sector (as is discussed in a later section), and barriers are created for SMEs to compete in this growing market. Innovations and small businesses are agile and fast moving. In a market where policy is not currently geared up to support them, nor can it shift quickly enough to accommodate for new and improved technologies and techniques, these businesses will struggle to get their solutions to market and reduce competition overall. This will also hinder the much-needed ‘test-and-learn’ approach for testing assumptions and finding new market drivers in a diverse building landscape.

Finally, the UK taxonomy across LCTs and their energy sources is not adequately set up to drive the transition as rapidly or prosperously as it could. There is a lack of key financial incentives for consumers and businesses to invest in manufacturing, skills, and training, and installing low-carbon technologies other than ASHP, and too few disincentives to move away from fossil-fuel heating. Without fundamental reform to the tax system, these technologies will continue to deter long-term investment and drive down certainty in key growth areas.

GOVERNMENT COMMUNICATIONS AND POLICY ARE TYPICALLY HYPER-FOCUSED ON SPECIFIC TECHNOLOGIES AND BUILDING TYPES AND LACK A HOLISTIC VIEW

From a political and government perspective, a significant challenge with engaging people and businesses to transition buildings to a Net-Zero future, is balancing the need for simplicity and long-term certainty of policy, with the complexity and detail of constructing and retrofitting buildings to a new paradigm of efficiency and sustainability. On the one hand, ensuring messaging and communications is simple enough for average consumers to understand and relate to should be a priority—as well as the policies charged with delivering these technologies. Whilst, on the other, facing up to and delivering on the complexities of transitioning individual buildings: this must be simplified for consumers, however. This will help with the consumer ask and in engaging home occupiers and businesses on the necessary changes. It will also ensure policy is effective and easy to follow or use.

However, the Government has simplified their communications and policy too significantly in the name of a unified direction of travel. Air-source heat pumps, specifically, air-to-water heat pumps, have been ‘chosen’ as the primary technology for delivering Net-Zero buildings. This comprises 80% of homes transitioning to an ASHP, with the remaining homes having some form of bespoke solution applied. Not only does this miss all other buildings that are not homes, but it fails to capture the idiosyncrasies and intricacies of individual buildings and occupants, which are typically immense.

As a result, no other technologies are given the same level of support or favour in consumer-facing communications or in policies. So much so, that some policies that once supported certain technologies, like woody biomass, solar PV, solar thermal, etc. fail to even mention them in newer phases or iterations—yet their appropriateness is ever-more important. The Boiler Upgrade Scheme (BUS), a replacement for the domestic Renewable Heat Incentive (RHI), removed solar thermal and restricted the use of biomass further, and now chiefly delivers ASHPs.

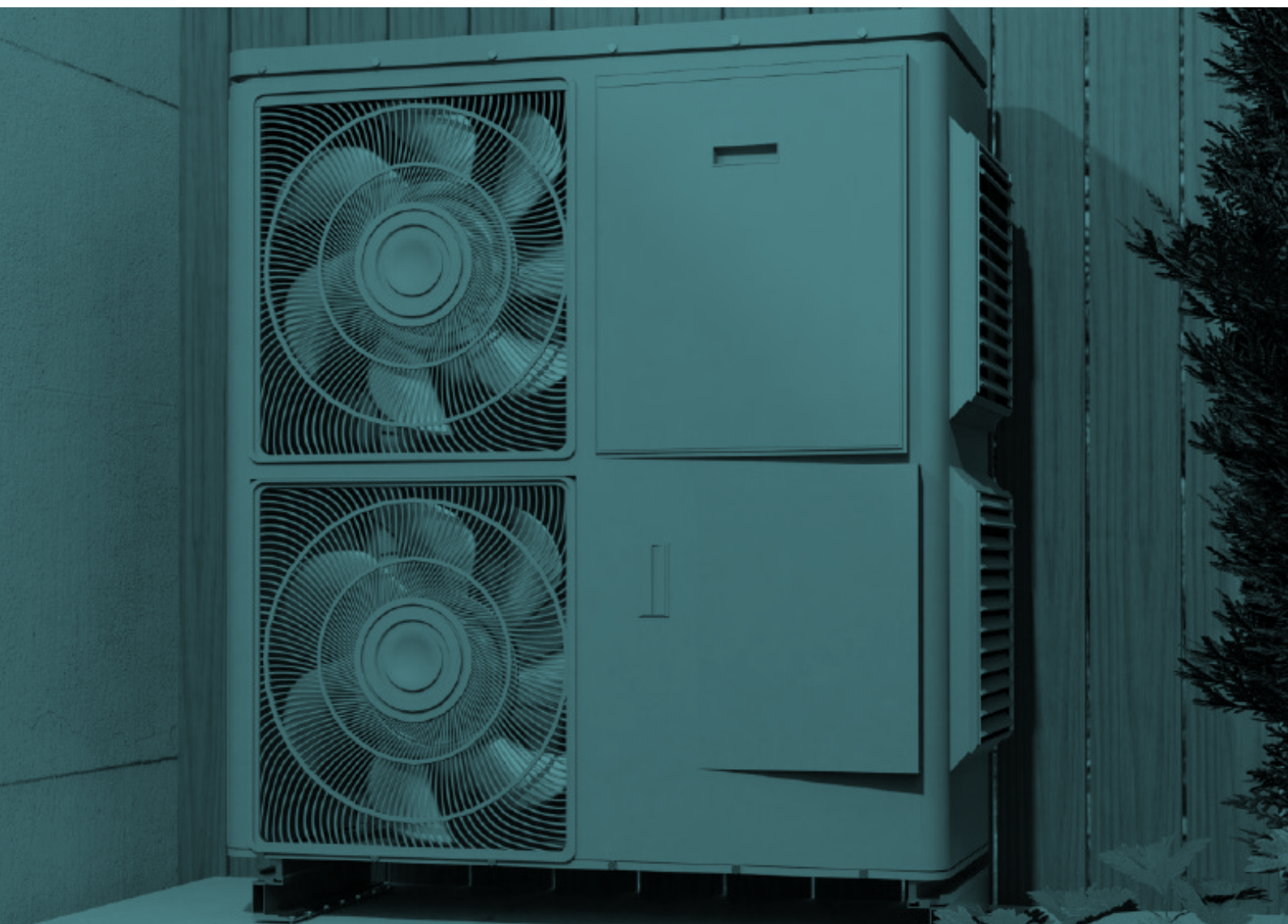
The Clean Heat Market Mechanism is a bespoke regulation to mandate boiler manufacturers to install heat pumps at a maximum rate of 6% of annual gas boiler sales. Only domestic-sized, retrofitted hydronic heat pumps are permitted, limiting the scope of this major clean heat policy to exclude many non-domestic buildings and all new buildings, and all other clean heating solutions, save for ASHPs and hybrid heat pumps.

The same is true in public campaigns and advice sources, where air-to-water heat pumps are championed as the solution to heat decarbonisation. Leading consumers to believe of an ultimatum between a gas boiler or a heat pump as being the only available choice for home heating. Not only is this not true, but it is failing to appropriately arm consumers with the knowledge of the different technologies they could invest in to decarbonise, reduce running costs and create a healthy indoor environment.

ASHPs are a major and appropriate technology for decarbonising many buildings in the UK. However, they are by no means the only, or most effective technology for all. Even in buildings that an ASHP would be an effective tool for decarbonising, it may not produce the most prosperous outcomes in all senses of the occupant, building and local area.

These heat pumps are also likely to need supplementing with some form of energy storage, onsite generation, or smart control to ensure the electricity network can cope with the influx of electricity demand over the coming decades and benefit consumers with flexible, cheaper energy. The electricity distribution network is already experiencing significant congestion and delays in installing and connecting renewable and low-carbon technologies. Technologies like solar thermal panels do not require a grid connection and do not draw large energy demands, providing an effective solution for alleviating dependence on the electricity grid. Smart energy storage solutions (electrical or thermal) complement flexible and smart energy use in buildings and create a significant opportunity for reducing grid demands and increasing national resilience.

There are many considerations inherent in transitioning a building, and many desirable outcomes that should be aimed at. Without systems-based, holistic, and technology-agnostic communications and policy, the wide range of LCTs available will be missed, technologies installed may create serious unintended consequences and the Government may fail to drive the right outcomes for the UK in reaching Net Zero.



NO CLEAR DEFINITION OR PLAYBOOK ON HOW TO BALANCE DELIVERY FROM TOP-DOWN GOVERNMENT STRATEGY AND POLICY, WITH BOTTOM-UP MARKET-DRIVEN INDUSTRY ACTION

Decarbonisation efforts have historically been driven from the top down. Government targets, regulations, and incentive schemes have shaped the market into conformity with these targets. They have also seeded it with financial support, driving a desired approach and building product and service offerings to realise these objectives. However, there has also been a healthy delivery of local, area-based activity around the built environment that has driven effective, relevant and place-specific support for transitioning buildings. The ideal situation for delivering the most appropriate technologies for the right outcomes, should come from a primarily individual-building-/occupant-led approach, which is consistent with Local Area Energy Plans and national targets and policies—ensuring it is headed in the correct long-term direction.

There exists a barrier to being technology agnostic in the intersect between these two policy domains. Where the remit of government-led, top-down policy making ends, and the bottom-up, local-authority-led delivery begins, is not obvious or standardised and changes from area to area (varying on devolution arrangements, amongst other things). There is no specific detail on how much of a role individual buildings and occupant choice should preside over national construction and retrofit policies and targets. As well as any concrete legislative structure for effective devolution of monies and responsibilities to transition buildings at a locally relevant level.

The Government cannot deliver a place-based approach without suitable devolution of funding and responsibility, engaging consumers on their individual needs and wants, assessing individual buildings in detail, and planning out local area energy transitions. Without due consideration for consumers and the specific characteristics of buildings at a hyper-local level, only a blanket approach can be applied from the top down, which fails to capture the discrete details of buildings and consumers and will likely miss creating a prosperous route to Net Zero. So long as this top-down approach to delivery persists, a truly technology-agnostic landscape will fail to materialise.

LOCAL AND NATIONAL PLANNING POLICY BLOCKS AND CREATES FRICTION IN THE TRANSITION

Planning rules and Permitted Development Rights (PDR) legislation have fallen behind innovation in LCTs and are now unfit for purpose in several areas. This is further exacerbated by differences in PDR and planning rules across the devolved administrations. The current regulations are restricting LCTs from being installed, elongating works, costing additional money, and putting off installers, businesses and consumers as a result. It is vital that these legislations are kept current with the technologies they are governing over as to ensure there are no barriers or additional hurdles when deploying LCTs at scale.

Rooftop solar, for example, faces a number of planning-related challenges. For businesses, installing rooftop solar over one megawatt in size requires planning permission; for domestic and non-domestic flat roofs, planning permission is required too. Applying for planning permission in these instances can create delays of over eight weeks and hundreds of pounds of extra cost. There are also barriers to installing solar panels in already developed spaces, like car parks, which are ideal for generation and creating wider benefits like solar shading.

When it comes to heat pumps, the PDR that control the siting, size, aspect, and other elements of their installation, are blocking their potential in appropriate new builds and retrofits. For example, the boundary rule, under which heat pumps are required to be a specific distance from any property boundary to prevent noise or other pollution, is not only out of date, but is different across property types and the devolved nations.

In England and Scotland, the rule for an air-source heat pump (ASHP) installation is a minimum of one meter from any property boundary. Ground- and water-source heat pumps have no minimum. In Wales, the minimum is a three-meter boundary for any ASHP, with ground- and water-source heat pumps having no minimum. In Northern Ireland, the boundary rule is also three meters for an ASHP, and three meters for ground- and water-source heat pumps (five meters in non-domestic premises).

This locationally variable approach to permitting heat pump installations creates unnecessary burden for the transition and fails to capitalise on opportunities for installing low-carbon heating where it could create positive outcomes. The challenges with this approach could, for example, prevent a new property development in Wales or Northern Ireland from installing ASHPs if they require the heat pumps to be cited three meters from a property boundary due to space constraints. This is in spite of the fact that most modern heat pumps are significantly quieter and more efficient than previously available models when these regulations were last reviewed.

Current models on the UK market run at between 40-60 decibels (quieter than typical conversation)—a domestic boiler produces between 35-50 decibels. Most operate within the minimum noise requirements as stated in permitted development legislation. Many heat pumps also market themselves with specific noise and sound certifications, like Quiet Mark, which focus on minimising the adverse impacts of all elements of sound (pitch, tone, volume, etc.). This underscores the importance of regulating low-carbon heating installations on more than simple decibel levels, and focusing on the citing of the unit, orientation, tonality, reflective surfaces, etc.

Larger (in footprint) heat pumps are also typically quieter but are restricted in size by PDR. The drive to smaller units is creating a more challenging environment to reduce noise pollution levels.

It is, therefore, encouraging to see recommendations from the Government's independent review of PDR legislation on heat pumps calling for the minimum boundary limit to be removed, as well as increasing the outdoor unit's volume. We hope these recommendations will be acted upon and wider low-carbon technologies appropriately legislated for in PDR.

Without these considerations and an update to PDR legislation, low-carbon heating will continue to be unnecessarily penalised and prevent many properties from transitioning. Consumers could be locked into fossil-fuel heating systems for longer, and potential trigger points missed, at which installing a low-carbon heating system would cause minimal disruption.

THE CURRENT ENERGY MARKET ARRANGEMENTS DISSUADE CONSUMERS FROM MAKING THE TRANSITION

As the Government are rightly prioritising the electrification of UK buildings, so comes the challenges inherent with transitioning demand, en masse, onto the electricity grid. There are many electrified technologies other than ASHPs that are being disfavoured due to the energy market arrangements. Without reforming the costs of energy, the transition to low-carbon, electrified heating will be very hard to deliver.

One of the largest barriers to delivering low-carbon electrified heating comes from the environmental and social policy costs levied onto every unit of electricity sold to consumers. These levied funds are used to support fuel poverty and energy efficiency schemes, like ECO and the Warm Homes Discount, among other schemes. This creates a varying separation in energy prices between gas and electricity, known as the spark gap: with gas being three to four times cheaper, per unit of energy, than electricity. The spark gap creates an artificial price barrier for electrification, typically whereby the greater a consumer's proportion of demand is moved to electricity, the higher the price paid to heat a property of the same heat demand.

This is particularly a challenge for electrified technologies that are 100% efficient, like resistive and storage heaters, electric boilers, and others. Even though they are 10% to 20% more efficient than incumbent gas combination boilers, they would still be around three times more expensive to heat a property to the same level. This creates a barrier to their installation where they may be the most appropriate technology for the building, occupant and area.

Some electrified technologies can improve their efficiency beyond 100% and others can heat buildings in a way that requires less energy. Heat pumps, for example, of all different types can achieve wildly varying but greater than 100% efficiencies. These can be from as low as a Seasonal Co-efficient of Performance (SCOP) of 2, up to a SCOP of 7 and beyond—effectively two to seven times as efficient as a gas combination boiler. The higher the efficiency, the greater the energy cost saving.

Direct electric heating, for example, can reduce final energy consumption by heating specific rooms to a lower air temperature and/or at different times, whilst creating a comfortable indoor environment. Infrared heating does this by delivering greater levels of radiant heating to room occupants and surfaces; optimised convective heating provides more even temperature profile within a specific heated room. Both approaches lead to improved occupant comfort from less electricity usage.

However, despite certain technologies' ability to save energy and improve efficiencies, these solutions may still be significantly less cost competitive than an efficient (92%) gas combination boiler, due to the cheaper price of gas. Electrification could force many people into fuel poverty with higher running costs, and without rapid reform, could jeopardise the Government's critical early delivery of these technologies.



THERE IS A NARROW, AND OFTEN DOWNPLAYED, GOVERNMENT POLICY REGIME FOR DOMESTIC HIGH-RISE, PUBLIC, COMMERCIAL, AND INDUSTRIAL BUILDINGS

The Government's mainstream communications on transitioning buildings focuses heavily on domestic homes. High-rise domestic dwellings and non-domestic buildings are all too often deprioritised in favour of schemes around fuel poor and vulnerable home occupiers. This creates an overshadowing effect across the nearly two million non-domestic buildings in the UK, whereby the focus on technologies for transitioning are seen as chiefly hydronic heat pumps for homes.

The language and discussion also used around building decarbonisation has become excluding of high-rise domestic and non-domestic buildings, and usually revolves around home decarbonisation. This is inappropriate, as not only are the building uses and requirements very different from domestic premises, but the range of useful technologies is also very different.

Take, for example, a factory or hospital that will require a constant source of high-grade heat or steam. Or a church, that is solid stone and unable to be insulated, consisting of a cavernous interior, and specific heating needs for congregations and other events across a week. Or a school, office or hotel that is inhabited by people during across a day, may have high hot water demands, and could have high energy efficiency. Each of these situations will have very different heating cycles, peak heating demands, access to facilities, available space, historic protections, user requirements, budgets, and more. And will subsequently need a unique mix of LCTs to suit these requirements.

There are a number of technologies that could create better outcomes for domestic high-rise flats and non-domestic buildings, than they could for typical homes. The value of these technologies—like large solar PV or PV-thermal (PVT) arrays, GSHP shared ground loops, heat networks, deep geothermal heating, types of direct electric heating, biofuels, Building Energy Management Systems (BEMS) and Building Automation and Control Systems (BACS), green hydrogen, and many others—is not adequately reflected in the discussion on building decarbonisation.

BEMS and BACS, for example, were one of the most commonly installed LCTs in all three [Public Sector Decarbonisation Scheme](#) (PSDS) phases, and yet, their associated benefits for managing heat, water, lighting, and occupancy wellbeing are not a key focus through all government policy. Deep geothermal, whereby heat from the Earth's core is used as a source for heating, rather than heat stored in the ground as sunlight (as GSHPs use), could be a cost-effective way to decarbonise large buildings, estates or heat networks. It may also help with transitioning skills from the oil and gas sector. Large solar thermal, or PVT panels, can often be a highly cost and carbon-effective solution for transitioning large buildings, and for limiting a building's impact on the grid. These solutions are particularly effective when considering the lifetime cost of carbon abated, which is not currently a focus for schemes like PSDS, and can integrate well with BECS and BEMS.

Although there are successful policies that cover many appropriate technologies in parts of the sector, like PSDS and the IETF, they are not given as important a role, or referenced in discussion as often, as homes are. This can be construed as an unequal landscape for building decarbonisation, where non-domestic buildings are treated with less importance than homes.

As with domestic properties, non-domestic properties require a holistic bespoke plan for each building, taking into account the fabric and ventilation, the heating system and wider complementary and ancillary technologies, as well as the desired outcomes across carbon, cost, health and wellbeing, and others. The current policy landscape does not support this approach, and typically excludes high-rise flats and non-domestic buildings from mainstream conversation. This makes advocating for the technologies that can appropriately decarbonise this sector hard and perpetuates the one-size-fits-all approach the Government are risking delivering.

THE ENERGY PERFORMANCE CERTIFICATE (EPC) FRAMEWORK IS NOT FIT FOR PURPOSE

Reform to EPCs is long overdue. The speed at which building design and retrofit, and the associated policy landscape has progressed, has outpaced EPC development. We are now at the stage where EPCs are used for purposes they were not intended to satisfy and are negatively impacting the transition to Net Zero as a whole.

The cost of an EPC (being only around £60 for the assessor's time, labour and travel); the relatively short time it can take to assess a property using SAP (or RdSAP more specifically); and the accuracy and suitability of RdSAP assessments for determining the actual energy performance of a building, are all counter to the usefulness of an EPC. We hope to see these barriers addressed in the forthcoming government consultation on reforming the EPC framework.

When it comes to engendering a technology-agnostic approach for LCTs in buildings, EPCs and SAP have inherent biases that disfavour what would be appropriate technologies. The RdSAP methodology, that sits behind an EPC generated for an existing building, does not adequately or accurately record the information needed to guide the decisions that EPCs should be making. Instead, a calculation of building fabric, heating performance, occupant behaviours, energy demands etc., is made from assumptions, which the EPC then translates into a 'cost-to-run' metric. Little of which is based on real-world measurements of energy performance. From this, technologies (that have an entry in SAP) are applied to the building model, and the associated cost savings they would have on the building are factored into the suggestions an EPC makes for improving 'energy performance'.

Furthermore, EPCs are not geared towards holistic building design and retrofit, and do not have enough data, based on reality, used accurately enough, to appropriately suggest technologies for transitioning all parts of a building—even though many of the technologies for doing so have entries within SAP (and are therefore modelled accurately according to the technology). This is a significant barrier to achieving an outcomes-based approach to policy, where the outcomes span from the wide range of benefits that Net Zero can achieve for individuals, society, buildings and the whole energy system.

Specifically within electrification, the Government's preferred route to Net Zero, SAP unfairly discriminates against available solutions. Along with underestimating the efficiency of well-installed heat pumps, SAP/EPCs disincentivise these technologies in both new build and retrofit as a result of the cost-to-run metric and the previously discussed spark gap. This drives installers to specify technologies that generate the highest profit (or greatest cost saving) for a building, which heat pumps rarely score highly on. Rather than whole-life decarbonisation, creating a comfortable indoor environment that promotes wellbeing, matching consumer needs and wants, or any other outcome.

SAP/EPC scores are negatively affected even when other appropriate electrified technologies are specified. This can prevent the installation of multiple technologies that work effectively together or may be preferred by the resident, like infrared heating in a highly insulated, triple-glazed property with solar PV and battery/smart thermal storage. Consumers are also becoming more interested in being able to control these technologies more precisely, with self-learning systems able to optimise space and water heating. However, SAP has limited credits available for controls, and does not take into account the wide range of benefits an advanced control system can create.

There are many solutions, in different configurations, that can deliver the best outcomes for the building, occupant and grid, that are often discredited as a result of the SAP and EPC framework, in spite of their congruence with the Government's electrification priorities.

There are barriers to a technology-agnostic approach within the SAP model as well. As a new technology or innovation, getting an entry within SAP is a time-intensive and costly process—things many SME's do not have an abundance of. This is compounded by the artificial labels within SAP: measure types and descriptions that new entries to SAP will have to fit within.

In reality, innovations can fall between these existing measure types, and in order to be accurately modelled in SAP, they will have to be supplemented with a new measure category. This is an even more time- and cost-intensive process and can result in the measure being lodged in the wrong category, and modelled using unsuitable parameters, eventually leading to inaccurate representation in a building design or EPC. As the next iteration of SAP is currently under consultation—the [Home Energy Model](#) (previously SAP 11)—we would like to see the right processes for innovative technologies addressed in the new regime.



THERE IS POOR AVAILABILITY OF DATA ON SOME TECHNOLOGIES TO SATISFY POLICY

Many of the technologies needed in the transition to Net-Zero buildings are novel, have not been installed widely across the UK, and have not received government funding for trials and in-situ testing. Even for those that have and seen installations across the globe in millions, like ASHPs, they are plagued by hearsay and misinformation, and are continually receiving funding to test their performance and appropriateness across tenures throughout the UK.

Therefore, for technologies that have not received this same level of attention and funding, it is even harder for them to get the data needed to prove their appropriateness and efficacy. Without going through the often convoluted, expensive, and time-intensive approach of testing their products (in a lab and in-situ), and meeting product standards and processes that are disjointed and not designed with products in mind (approval in SAP, product certification, meeting requirements of PAS 2035, TrustMark, insurance-backed guarantees, etc.), these products will likely not make it to mass market, and the business (usually an SME) could fail.

As discussed in the next section, the barriers innovations face in getting to market and into Government schemes create immense pressures on these small businesses. And the data needed to satisfy the many product regulations, consumer protections, and installation standards is often not clear and not financially assisted in any way. It is even more important for SMEs that have developed solutions with government innovation funding that they are supported to complete the whole process and a clear pathway to doing so created. Therefore, without the necessary data, new and innovative solutions will be effectively barred from entering the mass market and specifying these products for new buildings and retrofits made difficult or impossible.

INNOVATION IS NOT WELL SUPPORTED, NOR ROUTES CLEARLY DEFINED THROUGH GOVERNMENT POLICIES

Innovative products and services are not well supported into Government policies for heat and buildings, and as referenced in the previous section, face many barriers to participation. Innovation is an integral part of the transition to Net Zero and the prosperity of our journey there. Creating more efficient, smaller, quieter, cheaper (to make and run), easier to install, more comfortable, less carbon intensive solutions is how we will deliver the best outcomes for every person and building in the UK.

The policy landscape for driving LCTs into new and existing buildings is not only fragmented and not long-term, but they often do not place enough importance on finding the most appropriate solutions by using innovations and alternative technologies. For example, many policies create short lists of eligible technologies (e.g., the Boiler Upgrade Scheme, Clean Heat Market Mechanism, and Great British Insulation Scheme) or prioritise specific technologies into grades or hierarchies of importance (Home Upgrade Grant, Social Housing Decarbonisation Fund), and do not regularly or drastically update their scopes. Although some level of prioritisation/incentivisation for the most efficient and cheapest technologies needs to be made, the lists with support schemes often have a limited scope, do not get updates frequently enough, and do not drive alternative technologies into the market.

In order to get their products installed under a government policy, a technology or service-providing business will need to overcome a number of obstacles (usually entirely unsupported), like obtaining a SAP score, obtaining insurance-backed guarantees, complying with PAS 2035 which is designed for installers rather than products, and more. And even if an innovative product becomes eligible under a government policy scheme, there is no further support for further scaling or commercialising, leaving them financially exposed and without certainty of demand, in what is usually a critical time for these types of businesses. This actively disincentivises a technology-agnostic approach through innovation routes.

The SEA has covered further details and advice on this process through our paper: [‘Helpful Information and Tips for Manufacturers and Innovators on Gaining Access to Government Energy Efficiency Schemes’](#), which advocates for the creation of a transparent and effective process for the adoption of innovation.

THERE IS A LACK OF SUFFICIENT ADVICE AND AWARENESS-RAISING FOR BUSINESSES AND CONSUMERS ACROSS ALL APPROPRIATE TECHNOLOGIES

The UK has no independent, joined-up and holistic advice in the retrofit, energy efficiency, and low-carbon heating space, adequate enough to support all consumers and businesses in the choices they need to make to transition their properties. Consumers are not signposted to the right sorts of advice when they need it (trigger points, for example), to support the transition at these critical stages.

The available advice is usually partisan and driven by individual businesses or installers, creating significant bias in the technologies and pathways consumers are encouraged to take. For example, gas boiler installers are more likely to recommend measures they are more familiar with, can install conveniently and profit more from.

Advice is also usually piecemeal and fails to consider the wider picture for building retrofit and the necessary stages and aspects to a whole-building retrofit. Even the retrofit co-ordinator role (in compliance with PAS 2035), will be far more likely to recommend an ASHP for the heating system, than any other solution. Typically, this is because retrofit co-ordinators are imbedded within installation and retrofit companies that have a select portfolio of heating technologies (usually ASHPs). It is also because the Government are prioritising ASHPs through supporting policies, making them a more compelling and cost-effective choice, irrespective of whether they are always the most appropriate technology for the situation.

Consumers often look to local heating engineers and retrofit co-ordinators as a source of trusted advice and are in an ideal position to offer impartial recommendations. However, there is a significant amount of burden and onus placed on installers to recommend the right measures: responsibility that should be shared with other key stakeholders in the retrofit process.

Operating consumer advice in this fashion could lock consumers into a particular technology for long periods of time without the necessary assessment to prove it’s suitability; create unintended consequences from measures interacting deleteriously with one another; or miss out on the opportunity to carry out a whole-building assessment, create a plan of works to fully transition that building over time, and stage works appropriately to reduce cost, complexity, risk and burden.

Finally, the advice offered and messaging around retrofit is also often focused on abating carbon emissions and the payback of technologies installed. Not enough consumers are engaged with the transition, which is partially driven by available advice missing the full scope of benefits associated with retrofitting. Decarbonisation may be a strong motivator for early adopters, but it is not necessarily the only motivating factor for all consumers.

Cost does strongly influence consumer purchasing decisions, particularly capital and operational expenditure, and therefore their want to retrofit, but it is only one pillar of financial consideration for consumers and businesses. Other metrics could include cost of ownership, cost per unit of carbon abated, net present value, embedded carbon payback, lifetime/whole-life cost, and more.

However, advice on retrofit should engage businesses and consumers on a suite of resources and activities, tailored to individual needs and wants. Ultimately, this advice should educate people on the holistic and wide-ranging benefits that retrofit can deliver. The current approach leaves gaps in the framing of the transition to consumers and businesses, and why they should invest in retrofit to reap the wide range of benefits involved.

THERE IS INADEQUATE CONSUMER PROTECTION FOR ADVISING ON AND INSTALLING LOW-CARBON TECHNOLOGIES

It is critical that UK businesses and governments build consumer trust in the transition and the technologies needed to get us there. Consumers and businesses need to be confident in their investment decisions and the outcomes they aim to deliver.

The current state of consumer protection standards in the UK are a barrier to advising consumers on what the right technologies are and installing them without creating unintended consequences. The landscape is overly complex, leading to confusion about which bodies or schemes a business is required to be member of, and what protections consumers are entitled to and can take advantage of. There are a number of competing standards and consumer protection and certification bodies, with varying levels of robustness for protecting consumers: as businesses are able to be members of multiple schemes, this adds further complexity and uncertainty.

Further, the interaction between the various consumer protection and installation standards does not adequately cover the range of appropriate technologies needed for a prosperous transition to Net Zero. Interactions between standards and bodies like, Microgeneration Certification Scheme (MCS), Trustmark, Consumer Codes, Certification Bodies, and funding scheme delivery standards, like PAS 2035, is complicated and not fit for delivering a technology-agnostic approach, whilst protecting consumer rights and delivering intended outcomes.

THERE ARE NOT ENOUGH INSTALLERS, WITH THE RIGHT SKILLS AND COMPETENCIES, TO DELIVER THE TRANSITION

The UK will need to attract and develop the workforce needed to deliver the Net-Zero transition. There is a significant shortage in both the number of tradespeople across the built environment, and with the skills and competencies required to deliver holistic Net-Zero buildings.

The lack of public demand in transitioning buildings at scale and the absence of Net-Zero-focused building regulations, means there is little certainty over the long-term stability and requirements of jobs in the sector. The education system, and its routes into specific training and qualifications, is not delivering the volumes and types of skilled workforce needed. It is challenging for young adults to see a career within construction or the built environment, and even more challenging for them to find the right pathways into them. Furthermore, the lack of policy certainty and demand means it is just as difficult to transition those in the latter stages of their careers into installing or working with LCTs. Making best use of the current trained and experienced workforce is equally as important as attracting new talent.

The qualifications and courses aimed at skilling or up-skilling personnel to the level of competency required for different trades are not always optimal. This is compounded by the complex and disjointed nature of the skills and training landscape across the built environment. This can lead to two of the same qualifications, aimed at the same competency level, but delivered by different providers, producing very different real-world levels of competence.

The training timescales to gain qualifications for those already working in the sector is a significant barrier to building the skilled workforce needed. Many of the diverse skills needed across different LCTs are not well-supported by government funding, which help installers make up for lost revenue when training. There are currently not the right incentives and standards in place to push and pull people into these career pathways.

There are also technologies, like direct electric systems (resistive, storage, infrared heaters), that can often be installed quickly, with minimal disruption, and with existing skills and trades. They would only need the manufacturers guidance for sizing, siting, etc. Making more use of direct electric technologies could enable a faster transition to net zero. These could also be particularly appropriate in retrofit situations where there is no existing wet heating distribution (or only partial), and high fabric efficiency, like new builds. These buildings require very little and infrequent space heating, and hence, lower whole-life carbon than would be associated with a full wet system installation including pipework, heat emitters, outdoor units, and more.

Finally, skills we are developing in order to advise, specify, install, and maintain the many appropriate technologies needed for the transition are not always technology agnostic. There is a lack of upskilling and Continuing Professional Development across certain jobs, like retrofit co-ordination, retrofit advising, building designer, etc., to develop their knowledge on technologies and innovations in the sector. So long as the standards and policy landscape are supportive of installing these technologies, then it will be critical to ensure that the skills to deliver them are technology agnostic.



Solutions and Recommendations

We have separated our recommendations to the Government into two sections, those which are aspirational and will require significant reform to achieve over time, and those which are relatively simpler and easier to achieve in the shorter term. This, we believe, will help to distil out the ‘quick wins’ from the larger-scale, more systemic challenges that will take more time and investment to deliver.

ASPIRATIONAL & LONGER TERM

THE GOVERNMENT MUST CREATE A LONG-TERM, JOINED-UP APPROACH TO RETROFIT POLICIES—A NATIONAL RETROFIT STRATEGY

The Government should reimagine the current policy landscape to more effectively join up its disparate parts and deliver holistically over longer timescales. The sectors, businesses, solutions, and trades that need to come together to deliver the transition to buildings fit for future generations are many and diverse. They also all require long-term certainty, clarity and support that transcend political cycles and map our route to success. These policies must have cross-party support and be entirely detached from election cycles to ensure they are not used as political ammunition.

Implementing a National Retrofit Strategy (NRS) should become part of this new approach to retrofit. It should bring together all elements of retrofit at a top level across all UK buildings, provide long-term certainty of policies and funding, align with regional retrofit plans and link into the consumer offer and advice services for the general public. A NRS would provide a pathway to delivering buildings fit for the future by aligning best practice with the skills to deliver, green finance to fund, communications to drive, and the tools to deploy the best technologies for the best outcomes for people, buildings and the country.

Funding, timescales, skills, technologies, and more, all need to be agreed in consultation with the industry and guaranteed over the long term. For housing associations and large businesses, for example, budgets and financial forecasts can be drawn up 10 to 20 years ahead of time. Creating policies that are relevant for businesses to plan investments and activities over these timescales should be a priority. For innovations and proven technologies alike, understanding the available support and aligning these with government objectives and outcomes is vital. Guaranteeing the support landscape over the long term will have one of the most significant impacts on investment and growth in this area.

Alongside this, the Government will need to uniformly bring together all energy efficiency, low-carbon heating, fuel poverty, energy bill, manufacturing and innovation support policies. As well as look to simplify, amalgamate and strengthen support across these areas. It is not obvious enough for businesses and consumers what the Government are offering, whether they are eligible or not, how and where different policies overlap, and be provided with confidence that a solution offered is the most appropriate one.

The policy landscape and support should be made simpler to follow and provide the right outcomes for transitioning buildings. Where it would make sense to agglomerate multiple policies into a single, simpler one, language and terminology should be kept simple and relevant to consumers, perhaps as the Green Homes Grant was, or Boiler Upgrade Scheme and Home Upgrade Grant is, while taking an agnostic approach.

The Government should ensure that grant funding is not adversely warping the market. Without long predetermined phase out dates, grant starvation or removals have the potential to create huge market instability, damage supply chains, knock confidence and slow progress where the opposite is needed. This longer-term approach would ensure that fixed dates for ending support are agreed well in advance, and a controlled, measured and an appropriate phase down is implemented over time. Clear messaging around when and where funding will not be available, and for what technologies, will allow the market time to adequately prepare for phase out dates and build them into their future plans.



THE GOVERNMENT SHOULD FOCUS ON AN OUTCOMES-BASED APPROACH TO POLICIES FOR DECARBONISING BUILDINGS

Following on from a re-imagined, joined-up and long-term policy landscape, the Government should re-evaluate the outcomes of their policies for heat and buildings. Taking a technology-agnostic approach that focuses delivery of LCTs on the best outcomes from the Net-Zero building transition. In order to move forwards, a critical question the Government should ask themselves and the industry is, “what outcomes are we aiming at for people, buildings and the country, when transitioning all properties to a Net-Zero future.”

Once these outcomes are clarified, outcome-based policies can begin scrutinising the technologies being deployed through them and how closely they deliver all of these outcomes from an individual installation’s perspective. This is a complex process, requiring trade-offs in order to satisfy as many requirements and outcomes as possible. We would advocate for scrutiny of outcomes to take a three-pronged approach, with several further outcomes that sit beneath them.

One of the three outcomes should be on cost. Aim to design policies and select a mix of technologies that reduce running costs (OPEX), minimise upfront costs (CAPEX), increase potential property market value, and all elements relating to improving the financial side of the transition. This will ensure people are financially able to participate in the transition, or even be incentivised into it through energy bill savings, more attractive property listing prices, profiting from self-generation, and more.

A second key outcome should be on carbon. It is one that is well delivered on through current policy, and often above other outcomes. Policies should support technologies that decarbonise the building and energy system as a whole. However, it is key this pivots to an evaluation of whole-life carbon emissions, using standards like: [BS EN 15978:2011](#), [BS EN 15804:2012+A1:2013](#), CIBSE [TM65 Embodied carbon in building services](#) and similar such standards. These may reveal different appropriate technologies for decarbonising and ensure that the UK meets its important Net-Zero climate change obligations. The Government should also consider the positive impacts this could create for an accelerated decarbonisation, by saving on emissions sooner through earlier replacement and fewer embodied emissions in some appropriate LCTs (like direct electric heating).

The third desirable outcome of government policy should be to reform around delivering improved health of indoor environments and greater wellbeing for those living and working within them. This brings the building transition much closer to the interests and basic needs of consumers and businesses. Most people are highly motivated to live and work in comfortable, green, and healthy buildings that cultivate wellbeing, and this can be achieved through the right types of LCTs. Living and working in draughty, cold/hot, underheated/undercooled, damp, mouldy, dark, cramped, unsustainable buildings is often linked to poor societal outcomes. It can also inflict mental and physical harm, and create societal unrest and unhappiness, economic stagnation, and unnecessary public spending on health care, bill support, among other issues.

Alongside these key outcomes, there are a litany of important factors that government policy must take into account when deploying LCTs. For example, with electrifying buildings, policies must be designed to not only reduce demand (and therefore cost and carbon emissions) but also flex demands. A measure of smart and flexible capabilities within buildings is important on the journey to a net-zero-carbon energy system, to further aid grid flexibility in line with rising energy demands from buildings over the coming decades. Flexibility and smart control are the keys to managing peak demands, using cleaner, cheaper energy when it is supplied and giving consumers the power to take advantage of it, and increasing energy security.

Energy security is an important desirable outcome as well. When using biofuels, for example, it is important that the best use cases for the feedstocks are used, whether it be for low-carbon heating, power generation or otherwise. Applications and feedstock availabilities for fuels like HVO, woody biomass, or green hydrogen, should be balanced against other desirable outcomes they can achieve. Equally, for electrified heating solutions that may not have the co-efficient of performance of an ASHP, other technologies can be brought in to offset the efficiency loss with smart and flexible use and generation (solar PV, smart controls, thermal/battery storage) for a similar cost to a standalone ASHP. Overall, the impact to energy security or the grid could be the same or less.

Consumer choice should also be a key part of any policy delivering LCTs to maximise the beneficial outcomes for people. It should be engrained, within reasonable parameters, allowing consumers to pick what technologies suit their needs the best and how they want to live or work in their properties. Optionality to allow individuals and the market to decide what the most appropriate technologies are for the right outcomes should be a priority, instead of constraining the lists of available technologies within specific policies and failing to capture enough useful and real-world data to drive the right outcomes.

Technologies like Building Energy Management Systems (BEMS) and Building Automation and Control Systems (BACS), and smart controls will also be central to giving consumers ownership of their energy and pathway to Net Zero, and building in choice as to how people want to heat and use energy in their buildings. People are already beginning to look towards controls with self-learning algorithms and smarter energy management capabilities with more precision. Policies that govern LCT delivery should target these outcomes as a priority for enabling consumer choice and ownership of energy.

In order to target these best outcomes through policy, it is also important that the Government uses the right tools and plethora of available data on LCTs in the decision-making process. Technology deployment routed in reality, using data from real installations across multiple technologies, will help to target the most appropriate solutions for the situation and get consumer buy in. The tools needed to plan in technologies should be far more sophisticated and truer to reality than they currently are, as we will explore in a later recommendation on improving the SAP and EPC process. These include linking an evolved and more appropriate EPC framework with long-term renovation plans, building renovation passports/logbooks, in-use performance measurements and guarantees, and the right independent, holistic, joined-up and local advice.



THE GOVERNMENT MUST DEVELOP DEVOLUTION ARRANGEMENTS THAT DELIVER PLACE-BASED RETROFIT IN A TECHNOLOGY-AGNOSTIC WAY

As discussed, in order for the Government to deliver a prosperous transition that considers the needs of individual consumers, buildings, and local areas, and that is in line with the national strategy, an effective policy regime must be developed that drives both bottom-up and top-down delivery to the right levels. Devolution arrangements are the key to striking the right balance between national and local considerations. More needs to be done in this area, sooner, to capitalise on the benefits of local delivery.

The [Greater Manchester Combined Authority](#) (GMCA) and the [West Midlands Combined Authority](#) (WMCA) Trailblazer Devolution Deals signify great progress in this space, and we would encourage the Government to continue these activities more widely across the UK. As in the trailblazer deals, a focus on devolving national energy efficiency retrofit funding schemes, Local Area Energy Planning (LAEP), advice provision, heat network zoning, and more, are elements all local authorities should work towards having the capabilities to deliver. The Government should continue to invest in local areas through combined and local authorities using this model.

The Government must, over time, help local and combined authorities to build their capacity and capabilities to deliver place-based retrofit and advice services in-house (to the most reasonable extent). This should be done by introducing stronger, more progressive devolution arrangements as part of the wider levelling-up activities and talent hiring support, to gradually scale up local transitions to Net Zero.

The widely applicable and effective LAEP should not just be a devolved matter, and central government should help to drive local area energy plans more widely across the UK. The Welsh Government has a target to deliver these plans in all areas across the country by the third quarter of 2024, and the UK should follow suit with local- and combined-authority-led LAEP.

This reform should go hand-in-hand with updates to Permitted Development Rights (PDR) Legislation. Amending PDR should be done in consultation with local areas, to ensure that the delivery of LCTs is appropriate for all areas and allows the right technologies to be delivered where they create the best outcomes. We are encouraged to see the results of the Government's [independent study on PDR legislation for heat pumps](#), and hope that these findings will be used in the final consultation.



THE GOVERNMENT MUST SET UP INDEPENDENT, HOLISTIC AND JOINED-UP CONSUMER ADVICE—A NATIONAL EDUCATION CAMPAIGN FOR TECHNOLOGY-AGNOSTIC RETROFIT

Consumers and businesses need to become more engaged in the transition to Net Zero and public behaviour around building decarbonisation needs to adapt. Consumers should be shown the benefits of retrofitting their buildings, and the wide scope of positive outcomes that can be delivered for themselves, their buildings and the country as a whole. In order to do so, an independent, holistic, and joined-up consumer advice organisation needs to be set up: one that focuses on outcomes and supports the most appropriate technologies to deliver them.

The service should effectively behave as an educational tool to engage consumers, sell them the benefits and help them to deliver it. It should reframe retrofit and the transition away from solely cutting carbon emissions, to a more holistic offer that the general public consider as a priority. These include cutting energy bills, increasing property values, creating healthy buildings that promote wellbeing, creating stronger communities, at the same time as mitigating and adapting to climate change and being more sustainable. Models like the Warm Homes Prescription, that link buildings to health, and provide support through health services to reduce illness and improve health conditions, are important examples of the real-world implications that buildings can have on humans.

This should be a national advice service that is comprehensive enough to provide bespoke support to all across the UK. It should then link into and deliver through the network of existing local advice and third-party bodies. Such that the consumer journey goes from national-level support, down to specific, area-based help, and eventually to bespoke advice and a physical professional consultation and whole-building assessments.

It should be set up in this 'One-Stop Shop' style to create a compelling consumer journey, and act as the central point of truth for linking consumers and businesses into local quality tradespeople for delivering the transition. And also, be in line with the National Retrofit Strategy to ensure alignment with overall ambitions and outcomes.

The Government should ensure businesses and trades are high quality and trustworthy and certified to a high level of competence. This is key to delivering quality and high performing retrofits, without which, poor public perception would damage the transition. Installers and tradespeople are massively influential on the decisions people make for their building and build up a trusted relationship with them. This shows not only the importance of adequately skilling trades to provide this bespoke, cross-sectoral, technology-agnostic advice, but also of the tools and frameworks that sit alongside it (like EPCs, Building Renovation Passports, advanced buildings assessments, etc.)

The Government should continue to make these advice services free for everyone and subsidise bespoke support and assessments. This is done across EU nations, like Germany, where bespoke assessments, building renovation plans and consultations are free or are eligible for generous subsidies. This incentivises consumers to find out more about their properties, understand who they can go to get quality independent advice, and plan out retrofit works for their building. The advice should clearly separate non-domestic and business-related support from domestic consumer advice and be tailored accordingly.

THE GOVERNMENT SHOULD DRIVE THE REDEVELOPMENT OF ROUTES INTO BUILT ENVIRONMENT JOBS AND BUILD CROSS-SECTORAL AND HOLISTIC SKILLS THAT DELIVER TECHNOLOGY-AGNOSTIC POLICIES

As explored in the barriers section, if the Government are to deliver the transition to Net-Zero buildings, a significantly larger workforce, with radically different skills will be required. In doing so, how we attract new entrants into the sector, and how we re-skill and up-skill existing trades will be a vital component to the success of the transition as a whole.

Firstly, the pathways for new entrants entering into the sector and the overall view of the sector needs to be reformed. This will require the education system to be refined to deliver content and careers advice to children as young as five- to seven-years-old, and young adults in Higher Education (HE), up to college, A-level, T-level and bachelor-degree level. The content should show the opportunities in a built-environment-based career and build base-level knowledge in key areas. This will help with perceptions of the sector, ready young people for the next steps into the built environment and create more obvious routes through education. This will be key to attracting the volumes of workforce needed for the Net-Zero transition, delivering buildings fit for the future, as well as developing the right competencies.

Secondly, the types of courses and training options available in Further Education (FE) will need clearer pathways and continuity through them. The low-carbon heating technician apprenticeship is a positive development in the sector, and more internships, apprenticeships, NVQ's and short/long courses should be created that effectively build on HE qualifications and develop the right competencies. For example, a retrofit co-ordinator apprenticeship, and apprenticeships for other key skills for delivering Net-Zero buildings, are needed to give clear routes for entry. It is important that those at any stage of their career in the sector have a clear understanding of the opportunities available to them, how they can develop and upskill, and how secure and long-term jobs in the sector can be. Occupational maps and engagement tools should be linked to these strengthened pathways to give clarity for those looking to enter or re-train in the built environment.

Finally, the Government should ensure that the skills and competencies developed are cross-sectoral and multi-disciplined. The implications and potential unintended consequences of siloed, individual work carried out on buildings are immense. Trades will need to be brought together and supervised by a unifying person or process, such as a retrofit co-ordinator.

Heating engineers and retrofit co-ordinators' specific heating and product knowledge should be widened too. This will ensure that they are more competent across a range of LCTs and help to deliver the most appropriate solutions for the application. This will also help with advising consumers on more holistic solutions for buildings and being able to better recommend solutions that match their preferences: although, specific routes into and training on local and retrofit advice roles should receive more attention.

Alongside this, individual knowledge of the complex interactions of different building elements should be included. For example, a building physics module for those undertaking any work on building fabric, heating, hot water or other services could be mandated. Other similar such modules that develop a more holistic understanding of how building products, services, and elements are interrelated, should be a priority for all installation training in built environment jobs.

Finally, the Government should explore the role that installing certain LCTs can play in making use of existing skills and trades. For example, most direct electric heating (resistive, storage, infrared, etc.) can be installed by skilled electricians with minimal additional training. Once the space heating demand is known, only guidance from the manufacturer on the heating unit, sizing and positioning is needed. This would be hugely beneficial in delivering units at scale and sooner than other technologies that do not have the same skilled installer base. Equally, technologies like deep geothermal heating can draw on existing skills from the oil and gas sector, and transitional arrangements and pathways should be developed into installing these LCTs.

PRACTICABLE & SHORTER TERM

THE GOVERNMENT MUST URGENTLY REFORM SAP AND EPCS, WHIST DEVELOPING ROUTES TO ADVANCED BUILDING ASSESSMENTS AND PASSPORTS, TO RECOGNISE THE MOST APPROPRIATE TECHNOLOGIES FOR THE BEST OUTCOMES

The Government is well overdue in reforming EPCs in the Energy Performance of Buildings (EPB) Regulations. The [EPC Action Plan](#), consulted on six years ago in 2018, is still yet to be acted upon, and plans for consulting on the EPB regulations are two years late. Government responses to consultations within the original EPC Action Plan are still yet to be received, nor have the deliverables been met on time: similarly on a [performance-based rating scheme](#) for non-domestic Display Energy Certificates (DEC), [improving the energy performance of privately rented homes](#), and more. It is encouraging to hear the Government is planning to consult on a new EPC regime in early 2024, and we hope that the original EPC Action Plan suggestions are taken forward, as well as our recommendations.

Our primary ask is that all recommendations within the original EPC Action Plan should be delivered on as planned, and consultations responded to and acted upon as soon as possible as not to further delay making EPCs fit for the future. They must all be delivered on in tandem with one another, and in the right order, to ensure no particular building type is left behind, or consumer unjustly impacted by delays to policy improvement works. Furthermore, extensive recommendations made by the [Environmental Audit Committee](#), [Climate Change Committee](#) (CCC), [Review of Net Zero](#) (chaired by Chris Skidmore), and other sources, should be assessed and collated into the EPC Action Plan as a matter of urgency.

Top level reform should include changes to:

- the headline metrics within an EPC. Ratings to consider are: Energy Efficiency (total energy use, kWh/m₂/year), Fabric (space heating demand, kWh/m₂/year), Heating Type (categorised), Cost (energy cost, £/m₂/year), Whole-life Cost (£/m₂), Carbon Emissions (kgCO₂e/m₂/year), Whole-life Carbon (kgCO₂e/m²), etc.;
- the EPC digital platform and presentation of EPC information to increase usability and consumer engagement. Updating the current digital (and physical) certificate with interactive elements, links to elements of an independent, joined-up, holistic advice services, and more;
- SAP and RdSAP as soon as possible and provide clarity on the details of the new regime. It is great to see a consultation has now been published, with plans for significant reform, alongside a new name, the Home Energy Model (HEM). HEM should more accurately reflect the wide scope of technologies appropriate for transitioning buildings and allow integration with and show the real value of time-of-use tariffs and flexible energy storage/generation. Appendix Q and the route for new measure entries should also be reformed and new funding supported to create a less costly, confusing and time-consuming route into SAP (particularly for innovations and new measure types), as well as a process for entry of innovation into government policies;
- in-use performance metrics, like Heat Transfer Co-efficients (HTC). HTCs, measured using Smart Meter Enabled Thermal Efficiency Ratings (SMETER)-compliant technologies, should be integrated into SAP calculations to measure the real performance of buildings in use, and enable performance guarantees for improvement works to de-risk investments in retrofit. Wider real-performance measurements should also be incorporated, like infrared thermography, rapid U-value, air tightness tests, etc. In-use performance measurements can then be used to design and specify LCTs for heating and energy management at the correct sizes, optimising system efficiency and minimising whole-life carbon emissions;

- data sharing and usability. Reform should allow third parties and other users to access and make use of GDPR-compliant EPC data to create a data-rich environment through which to make more informed plans for retrofit works (on individual properties or whole stocks/areas), learn and share best practice, and engage consumers in the transition.

Finally, in the long term, work must be undertaken to implement Building Renovation Passports (BRP). The EPC framework and data generated from it should be compliant with a revolutionised building passport/logbook: able to record and track historic building work; all current building information, performance, and occupancy; and incorporate plans for future renovation works. BRPs should tap into the EPC framework and SAP data, and be the next step for engaging consumers, allowing the Government to effectively plan out the transition and gain deeper, more accurate insights into the UK's building stock.



THE GOVERNMENT SHOULD TARGET RETROFIT POLICIES AT TRIGGER POINTS AND OTHER KEY STAGES IN A BUILDING'S LIFECYCLE TO INSTALL THE BEST TECHNOLOGIES AT APPROPRIATE TIMES

The Government needs to ensure, at the very least, that prime opportunities and trigger points for retrofit are capitalised on. These are opportune moments in a consumer's plan or building's lifecycle at which the retrofit of LCTs (large or small scale) would make financial or logistical sense.

Such trigger points include when: a consumer is buying, selling or renting a property; rented dwellings are void; wider renovation works are taking place (redecorating a kitchen, bathrooms and rooms, taking up floors, building extensions, or re-fitting a roof or roof space); personal circumstances permit (like new families, marriages, children moving out, etc.); when a property is being mortgaged or re-mortgaged; and more.

Capitalising on trigger points is a low-regrets policy as it takes advantage of what are typically not energy efficiency/ decarbonisation works, but are significant works that may be exposing walls, floors, pipework, and building wiring, and is already requiring an outlay of money. Consumers are far more likely to add on energy efficiency, low-carbon heating and wider technologies into their existing work plans at these points.

As explored in the previous section, implementing Building Renovation Passports would, in this case, help to create an effective plan for retrofitting LCTs at trigger points in a building's or occupier's lifecycle. This would help building owners and occupiers to financially plan for building works and ensure they are in line with the UK's Net-Zero commitments and regulations.

Moreover, if plans for renovation works are made, or at least trigger points exploited for carrying out retrofit works, incentive schemes can be offered to consumers and businesses to install LCTs and energy-saving measures. This can include energy-saving stamp duty rebates, as well variable council tax based on EPC or a council tax rebate: all of which are explored in a previous SEA report: [Addressing the Able to Pay Sector - Update on Energy Efficiency Policy 2020](#).



THE GOVERNMENT MUST ENSURE LISTS OF ELIGIBLE MEASURES FOR SPECIFIC GOVERNMENT FUNDING SCHEMES ARE BROADENED TO RECOGNISE THE MOST APPROPRIATE SOLUTIONS FOR THE TYPES OF BUILDINGS AND SCHEME OUTCOMES

The Government needs to ensure that policies delivering LCTs are deploying the most appropriate suite of technologies for the application. As explored in the barriers section, and in our [previous report on the subject](#), a number of the policies charged with building decarbonisation are not technology agnostic, and deliver only specific technologies, which are set out in lists or hierarchies. These technologies are often not considered as appropriate to the specific needs of the building and its user(s), and do not distinguish between residential, commercial, industrial, and other building types.

If lists are used, they must be updated and regularly reviewed to ensure they are not unjustly prioritising specific technologies. As recommended in a previous section, joining up and delivering the Net-Zero transition for buildings holistically will require a greater appreciation for the diversity of technologies available across the sector, and the different building types and uses they may be better suited for: without which, we will miss delivering the most prosperous Net Zero. This will also enable the deployment of some technologies earlier, where these are not as affected by availability of appropriately skilled installers.

Alternatively, eligible measures lists (within specific policies) could be dissolved, and individual technology criterion (as is laid out in SAP or the Product Characteristics Database) should be used to instead create system-based solutions that meet or exceed the desired outcomes. This would ensure that the most appropriate range of solutions are always supported through policy and no particular sector, building, consumer or area is disadvantaged by policies for heat and buildings.

Take the Dutch SDE++ (Stimulation of Sustainable Energy Production and Climate Transition) scheme, for example. Over 87 types of technologies are supported and championed through the scheme, enabling businesses to select technologies that provide cost-effective decarbonisation across the lifetime of a project (CAPEX and OPEX) and prioritise those projects with the lowest lifetime cost of carbon abated first, when compared to a baseline. Compared to the UK Government's Boiler Upgrade Scheme (BUS), which has three eligible measures, ASHPs, GSHPs and biomass (with strict criterion), and is driven primarily by political will, not best outcome. These lists need to be expanded out and reformed in line with delivering an outcomes-based approach.

In new buildings, technologies will be heavily governed by the 2025 Future Homes and Buildings Standards (FH/BS). These two standards—the former covering new domestic buildings, and the latter new non-domestic buildings and existing residential buildings—will be charged with delivering appropriate technologies for all new buildings from the Standards initiation.

It is vital that the Government deliver a standard that does not favour a particular technology and enables construction firms to design buildings fit for the future, as new buildings in particular, can be more easily and cost-effectively designed around delivering technologies for specific outcomes. For example, it would be significantly easier and cheaper to design a new airtight, energy-efficient property around a Mechanical Ventilation with Heat Recovery (MVHR) and direct electric heating (infrared, resistive, storage), than it would be to retrofit the same level of air-tightness and energy efficiency in an existing building from the 1920's. The opportunity to lead the way and deliver significantly greater outcomes in new buildings is immense, and the FH/BS should deliver on this potential as soon as possible.

THE GOVERNMENT MUST WIDEN ITS COMMUNICATIONS ON LOW-CARBON TECHNOLOGIES AND RETROFIT TO INCLUDE THE DIVERSE RANGE OF APPROPRIATE SOLUTIONS AVAILABLE

Government communications around LCTs is closely linked with how these technologies are delivered through policy and the public's perceptions of the transition. This has been evidenced through the Government's prioritisation and strong rhetoric around the role of heat pumps and the subsequent limited technology scope of policies and relatively poor public perception.

Many businesses and consumers are worried by the Government's approach to decarbonisation, as the only solution they are told exists is ASHPs. However, when it comes to actual retrofit delivery across all buildings, a blanket solution of ASHPs for decarbonising heat is not appropriate, especially for delivering the best possible outcomes from the transition. In fact, it would be more appropriate to deliver ASHPs at least in combination with an effective use of fabric measures, considering the wider building and energy system and the technologies that can deliver better outcomes there (smart controls, solar, smart thermal storage, WWHR, ventilation, etc.), and the needs and wants of the consumer.

This is why a more holistic and joined-up approach for building decarbonisation should be accompanied by more technology-agnostic communications to industry and the general public. The Government's campaigns and advice services for transitioning buildings, like the ['Help for Households'](#) campaign and others, should offer links and advice to a range of LCTs. It must be impartial communication that offers bespoke advice, building assessments and links to tradespeople, and helps consumers and businesses to start their retrofit journey.

Current communications revolving around ASHPs as the solution, particularly with the challenges around running costs, may turn people away from these advice services and leave a lasting negative impression of low-carbon heating. Instead of the Government's tool for checking whether a home is suitable for a heat pump, create a tool for assessing a range of applicable low-carbon heating solutions, and build it into EPCs or a Building Renovation Passport. Instead of a target for installing 600,000 heat pumps by 2028, have a target for all low-carbon technologies, number of retrofits, or EPC rated properties. Advice and communications should be aligned with a long-term, joined-up, outcomes-focused National Retrofit Strategy, as to engage consumers on the things that matter to them.

Equally with the industry, the Government should ensure it is setting a level playing field for valuing technologies of all types. This means giving equal opportunity for technologies to be adequately supported in government policy, receive help as an up-and-coming/innovative solution, and be guided through the complexities of the policy landscape. It also means being agnostic in communication with the sector about what technologies are appropriate where, and using evidence to drive the many different pathways and solutions buildings can use to transition.



THE GOVERNMENT MUST URGENTLY REBALANCE SOCIAL AND ENVIRONMENTAL POLICY COSTS LEVIED ON ELECTRICITY AND DECOUPLE ELECTRICITY AND GAS PRICES TO INCENTIVISE THE TRANSITION TO LOW-CARBON TECHNOLOGIES

The Government's commitment to "outlining a clear approach to gas versus electricity 'rebalancing' by the end of 2023/4 and should make significant progress affecting relative prices by the end of 2024" should go further. With the extent of political uncertainty expected in 2024, and timescales likely involved in consulting on and proposing amendments to legislation on energy market reform, fully passing legislation through Parliament, and enacting this new legislation, it is unlikely that significant-enough reform will have been made in late 2024 to impact the transition away from fossil fuels and onto LCTs.

It is positive that this commitment has been made, but with the urgency of the UK's transition to buildings fit for the future well apparent, more needs to be done in the interim to drive uptake. The Government are committing more money than ever to hydronic heat pumps through the Boiler Upgrade Scheme, and wider policies supporting the transition. However, without key enablers (many of which are discussed in this report), like energy price rebalancing, this committed funding will fail to be used entirely, as was experienced in the BUS' first year of operation.

The Government should focus on interim solutions for incentivising the transition to LCTs through energy bill reform. This could take the form of specific tariffs or energy rates and rebates for those transitioning to LCTs and low-carbon heating. This would help to drive short-term demand for these technologies, as they would begin to make economic sense for consumers. However, wholesale reform of the energy market is still needed to support the wider spectrum of LCTs for demand-side response, smart control, flexibility, on-site generation and more.

In the long-term, the Government must look to adjust energy pricing arrangements to ensure that as we decarbonise, increase renewable generation, and electrify buildings, that electricity prices incentivise the transition. Currently, the price of electricity closely tracks that of gas, which is not suitable in the long term for transitioning away from gas. Particularly, if the aim is to insulate the UK from a volatile fossil fuel market and make best use of the cheap renewable energy it possesses.

The reason that the two fuel vectors are coupled, is because the wholesale price of electricity is set by the unit of electricity being generated at a given point in time to meet peaking demand, which is nearly always gas. This is otherwise known as the marginal generation unit. Decoupling electricity prices from gas and insulating the UK from the global market for oil and gas, will require the marginal generation unit to be set by a vector other than gas, like wind. This can be done over time through amendments to REMA (Review of Energy Market Arrangements), the Contracts for Difference (CfD) scheme, and other demand-side response schemes, linked to flexible tariffs, to encourage people to consume electricity when renewables are producing power and not gas.

It is crucial that any policy decisions made in consultation with the industry, are revenue-neutral for the Government, and continue the UK's Just Transition. They must not marginalise, discriminate against or create unintended consequences for particular consumers without alternative available routes.

THE GOVERNMENT SHOULD IMPROVE CONSUMER PROTECTION POLICIES AND ENSURE A JUST TRANSITION ACROSS ALL APPROPRIATE LOW-CARBON TECHNOLOGIES

The transition to smart, flexible, low-carbon technologies will impact UK consumers and businesses unevenly. Consumer protections are an enabler and should be a constant alongside any technology-agnostic approach. Those who are more vulnerable, like those in fuel poverty or with a disability, will require a greater level of support in order to create equal opportunities in the transition. The policies driving the transition using many different LCTs should not push consumers down pathways that leave them with unpayable bills or unable to use their home as they require.

For example, the types of energy meters that consumers have installed should be closely monitored to ensure they are appropriate for the user and do not unintentionally exclude particular vulnerable groups as a result. When transitioning a vulnerable, fuel poor consumer on a Pre-Payment Meter (PPM) onto a smart PPM with a flexible time-of-use tariff, solar PV, an ASHP, or other LCTs, it is important that they are not driven (further) into fuel poverty if the running costs increase (which they are liable to in the current climate) and left without financial help or other support options.

The Government could look at those on Ofgem's current Priority Service Register (PSR) and any hardship and vulnerability funds to ensure a cheaper unit rate for energy is applied to specific LCT installations or scenarios where consumers are left further out of pocket after a retrofit and swap to smart PPM.

This could be further built on for vulnerable consumers being swapped from a credit meter (smart or not) to a smart PPM with LCTs. The same protections should apply for these vulnerable consumers, and Ofgem/the Government could look at wiping existing credit debt from energy accounts when transitioning to LCTs, or providing similar support to ensure retrofit does not unjustly disadvantage vulnerable groups.

However, not all consumers on PPMs are vulnerable. Over 70% of consumers on credit metering are registered as disabled, and a support structure that favours smart PPM consumers could create unintended consequences for disabled smart credit-metered consumers. The transition to LCTs of all types should span all metering types, and any changes made to their billing arrangements should be well thought through to ensure a just transition.



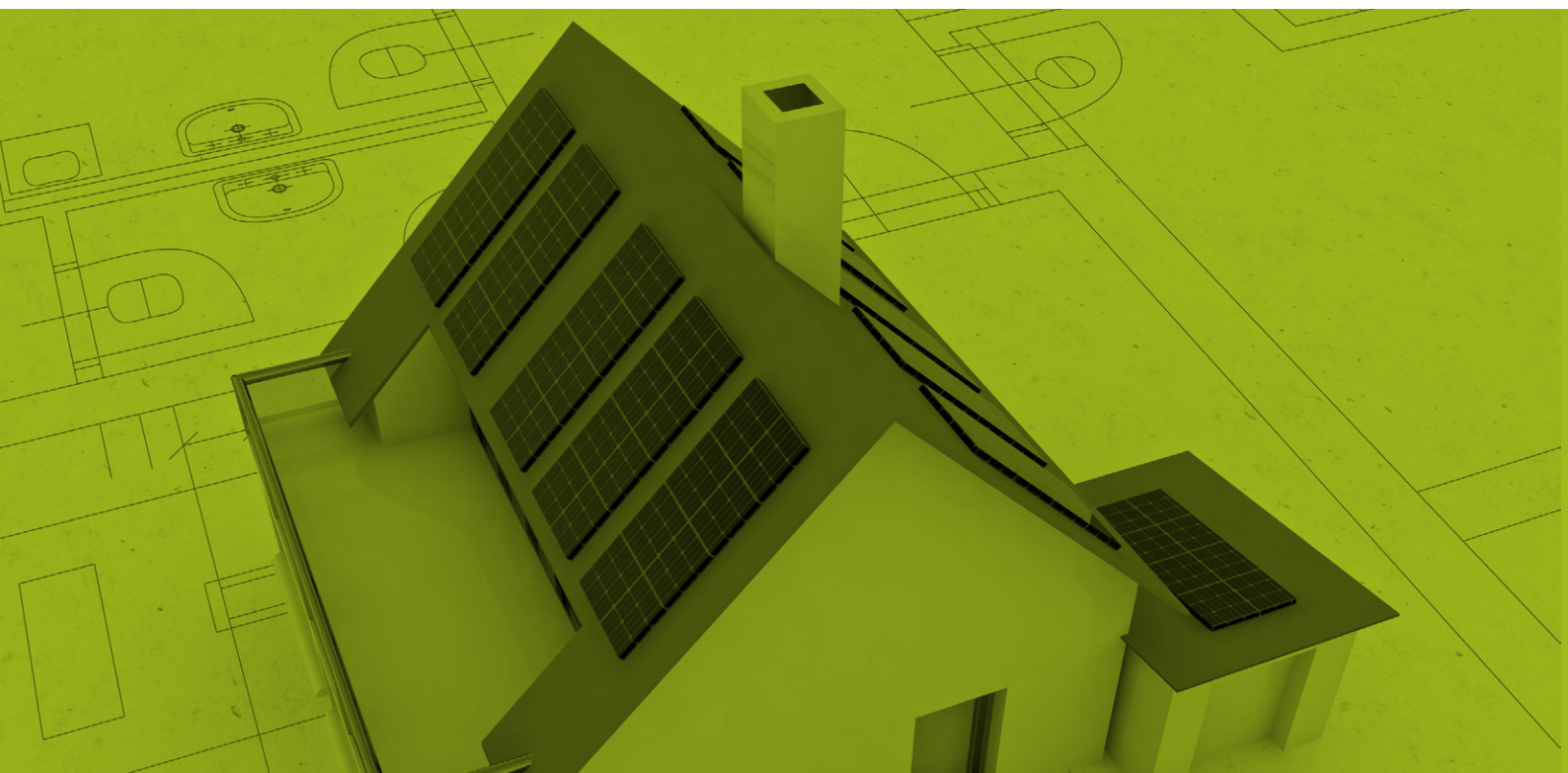
THE GOVERNMENT MUST INTRODUCE A TRANSPARENT, ROBUST AND STREAMLINED INNOVATION METHODOLOGY FOR BUSINESSES TO GET THEIR PRODUCTS CERTIFIED AND READY FOR GOVERNMENT SCHEMES WITHIN THE BUILT ENVIRONMENT

The Government will need to focus on driving innovation more intensively as the UK approaches 2050. Taking a technology-agnostic approach fully embraces the improvements or different ways of delivering building fit for the future that innovation can bring. In order to do so, the pathways through to market for innovative technologies needs to be smooth, well supported, transparent and effective. As explored in the barriers section, current innovation routes are ineffective, confusing, costly, time-inefficient and can result in businesses failing.

In the long-term, and in line with previous recommendations to redevelop and bring together policies on the built environment, the Government should overhaul innovation routes to align with the delivery strategy for retrofitting (National Retrofit Strategy), constructing new buildings, skills development, funding, advice provision and more.

In the shorter-term, the Government should look at its existing suite of policies across the built environment and introduce more opportunities for innovations to be safely tested and data collected on their appropriateness and use cases. Innovation routes through UK heat and buildings policies and regulations, like ECO, BUS, SHDF, PSDS are inconsistent, non-existent or complex at best. A transparent and effective process should be developed for the approval of innovative products and solutions in existing government funded retrofit schemes. For more information to the barriers faced by industry and information on how the current approach works across multiple policies, please refer to our paper: [‘Helpful Information and Tips for Manufacturers and Innovators on Gaining Access to Government Energy Efficiency Schemes’](#).

Innovation sandboxes should be introduced. Policies like BUS should be augmented with an innovation sandbox and a work in a ‘test-and-learn’ mindset, which will drive a more technology-agnostic approach. This will help to fund innovation installations and testing, and support innovation into the mass market, with suitable consumer protections. The Welsh Optimised Retrofit Programme takes this approach with measuring and monitoring innovations in holistic social housing retrofits, and learning can be taken from this policy structure to drive UK reform.



THE GOVERNMENT SHOULD ENSURE TAXATION IS TECHNOLOGY AGNOSTIC, WHILST STIMULATING DOMESTIC MANUFACTURING TO CREATE THE RIGHT OUTCOMES FOR BUSINESSES AND THE COUNTRY

The UK's tax system should be refined to drive the installation of all LCTs and disincentivise their fossil-fuel alternatives. A number of suggestions for tax reform were made that ranged from tax allowances and credits to carbon taxation and stamp duty reform. An effective carbon tax on fossil-fuels for domestic heating and/or power generation could be used to invest in policies incentivising LCT installations and also dissuade from using high-carbon heating.

An energy-saving stamp duty rebate across multiple technologies would create a significant incentive for consumers to retrofit their buildings holistically and use multiple appropriate LCTs. It could be combined with existing policy support structures to further join up and help consumers to make a prosperous transition.

Tax allowances could also be used to help consumers and businesses transition with a range of LCTs—it is key that the creation of any technology lists are in line with recommendations in the prior section on this topic. The allowances include reform to corporation tax, capital gains, super-deduction capital allowances, Research and Development (R&D) tax credits, Value-Added Tax (VAT) on Energy-Saving Materials (ESM), and others.

VAT on ESMs was the subject of a 2023 consultation, and reform to the list of ESMs should be more technology agnostic. The eligibility of measures and groups of solutions within the list should be simplified and made less complex, add in key missing technologies in the transition, and ensure all appropriate technologies are given an equal opportunity to receive VAT relief. This includes standalone smart hot water cylinders, batteries and thermal storage, and more.

Finally, tax credits can be used to prioritise domestic manufacturing, which should be a key focus in the transition to a prosperous Net Zero. The UK should prioritise the creation of a Domestic Manufacturing Strategy, building on the [Advanced Manufacturing Plan](#). This should focus on the balance of payments between imported and exported LCT's (which is currently heavily biased towards importing particular technologies like heat pumps, solar panels, etc.) and on domestic production and resource usage through tax credits.

A number of businesses are already manufacturing LCTs domestically but are not realising the full potential of a more progressive Domestic Manufacturing Strategy. The US' Inflation Reduction Act is driving domestic production and resource utilisation by awarding an additional bonus tax credit on top of the Investment Tax Credit (ITC) and Production Tax Credit (PTC) for using materials produced in the United States. Lessons should be taken from this and other international tax regimes to support LCT manufacturing and jobs in the UK.

Conclusions

The challenges the Government faces with taking a more technology-agnostic approach to heat and buildings policy are many and diverse. Many of the problems come from the disjointed nature of the policy landscape, and the subsequently different levels of funding, political will, and policy support in place. Without a unifying purpose for consumers and businesses to transition buildings, driven by strong, stable political leadership, the UK will fail to deliver energy efficient, net-zero carbon, cost effective, warm and healthy buildings.

However, none of the barriers explored are insurmountable, and being more technology agnostic goes hand-in-hand with a more outcomes-based, holistic and joined-up approach to the building transition. The UK can deliver a prosperous Net Zero if, in the shorter term, it focuses on scaling up the whole industry and mobilising all available technologies; setting the long-term vision and mission for holistic building transitions; and reforming policies to begin delivering technologies based on the best outcomes.

In the longer-term, the Government should look to restructure the policy landscape to deliver a joined-up, holistic, stable and long-term framework. It should bring together all policies for the building transition, manage a range of low-carbon technologies to affect the whole building energy system, support training and upskilling across all appropriate LCTs, and offer a compelling and supportive consumer journey.

If the Government can deliver on these recommendations, then it will move closer to unlocking the market for many of the available solutions and services for transitioning buildings and using them to the greatest effect in every property. Particularly for consumers, it is necessary that the Government shifts towards a technology-agnostic, outcomes-based approach as to engage the public on creating energy-efficient, net-zero carbon, cost-effective, warm and healthy buildings.

Appendices

APPENDIX 1: WORKSHOP PROGRAMME

Event kindly supported by **Which?**

Venue: Which?, 2 Marylebone Road, London, NW1 4DF

Date: 28 September 2023 (09:30 – 13:00)

Agenda:

09:30 – 10:00	Registration and Refreshments <i>Arrival from 09:30. Tea, coffee, and soft drinks will be available upon arrival.</i>
10:00 – 10:15	Opening Remarks: Jade Lewis, Chief Executive, SEA <i>Welcoming delegates to the workshop, scope and purpose of the session, recap of Phase 1.</i>
10:15 – 11:05	Breakout Session 1: Policy Barriers (45 mins) <i>Identify, discuss and prioritise the policy barriers to technology agnosticism in the heat and buildings landscape.</i>
11:05 – 11:25	Feedback to Plenary (20 mins)
11:25 – 11:40	Coffee Break
11:40 – 11:45	Introduction to Session 2
11:45 – 12:30	Breakout Session 2 – Solutions (45 mins) <i>Identify, discuss and prioritise the policy solutions and recommendations to technology agnosticism in the heat and buildings landscape.</i>
12:30 – 12:50	Feedback to Plenary (20 mins)
12:50 – 13:00	Final Comments and Closing Remarks <i>Any final remarks from delegates on discussions from the day. Followed by closing remarks from Jade.</i>

APPENDIX 2: WORKSHOP DELEGATE LIST

Attendee list

Name	Organisation
Simon Harpin	British Electrotechnical and Allied Manufacturers Association (BEAMA)
David Weatherall	Building Research Establishment (BRE)
Martin Turner	Construction Industry Training Board (CITB)
Richard Hall	Department for Business and Trade (DBT)
Matt Aylott	Department for Energy Security and Net Zero (DESNZ)
Katrina Young	Energy Systems Catapult (ESC)
Matthew Dodds	Herschell
Mike Pitts	Innovate UK
Achilleas Georgiou	Mitsubishi Electric
Tom Oldfield	Mixergy
Zanil Narsing	Naked Energy
Niki Kesharaju	National Grid
Bill Wright	National Energy Foundation (NEF)
Malcolm Farrow	Oil Firing Technical Association (OFTEC)
Ross Holleron	Sero
Cameron Loggenberg	Showersave
Ben Copson	Sustainable Energy Association
Girvin Gill	Sustainable Energy Association
Jade Lewis	Sustainable Energy Association
Sandra Morris	Sustainable Energy Association
Harriet Higgins	Tepeo
Phil Mason	TrustMark
David Adams	UK Green Building Council (UKGBC) & Energy Efficiency Infrastructure Group (EEIG)
Justin MacMullan	Which?
Charlie Lamb	Windhager

Count: 25

APPENDIX 3: WORKSHOP BREAKOUT SESSION NOTES

The workshop consisted of three breakout groups of around ten delegates each, including a facilitator and notetaker. There were 25 delegates in total (see Appendix 2 for delegate list). Two rounds of discussions were held: the first session was oriented around the current policy barriers, and the second session on policy solutions and recommendations for taking a technology-agnostic approach to heat and buildings policy (see Appendix 1 for the workshop programme). The below section covers all notes collated from the discussions held during the workshop.

Breakout Group: Malcolm Farrow

Session One—Barriers

- Lack of consumer awareness.
- Limited infrastructure to accommodate mass roll-out of heat pumps.
- Recent by-elections, leading to political shift.
- Promotion of certain technologies (heat pumps) is too simplified.
- Planning restrictions.
- Current BUS scheme needs opening up to other technologies.
- Not only schemes like BUS are a barrier, but also schemes like MCS.
- Lack of impartial consumer advice.
- EPC encourages installers to pick technologies with highest profit.
- Skills and labour shortage—lack of installers with the right skills.
- Cost of electricity and gas needs de-coupling.
- Ingrained focus on heat pumps as ‘the solution’. Makes conversation around other appropriate technologies difficult.

Top 3 barriers

1. BUS scheme doesn't recognise other technologies.
2. Lack of impartial consumer advice.
3. Gas and electricity costs coupled (and spark gap) and no recognition of other fuels such as biofuel.

Session Two—Solutions and Recommendations

1. Bring forward SAP 11 (that works) and better reflect energy tariffs and low-carbon heat.
2. Create innovation sandboxes so that innovative technologies can access funding and the market.
3. Provide impartial consumer advice, support and choice.
4. Rebalance electricity and gas prices
5. Upskill and train heating engineers/Retrofit co-ordinators to incorporate wider technologies where appropriate, and develop the workforce to deliver independent local retrofit advisors across regions.

Breakout Group: David Adams

Session One—Barriers

- EPC recommendations and the data used to back them up.
 - ◊ The time, cost, SAP (and RdSAP) methodology disincentivises and disadvantages the transition.
 - ◊ Does not push most appropriate technologies, does not recognise heat pumps or renewable energy for the best outcomes (only based on cost of providing energy)
- Poor availability of data on technologies (innovative or not) to back up appropriateness and recommendations on effective use cases.
- The spark gap and policies levied on electricity discourage electrification.
- Grant and support structure for low-carbon technologies is not conducive for building a long-term market for retrofit (boom and bust, finite nature of grants).

- ◇ Impacts on the supply chain and skills delivery as they gear up for funding rounds when announced and scale down once delivery completed—no long-term demand and certainty given, which feeds and starves market.
- ◇ Technologies are not taxed correctly and rely on grant funding to make them financially viable.
 - ◇ Oil and gas prices are internationally driven. These externalities can negatively interfere with Government policy making and delay the transition to cleaner energy sources (or increase the speed of it if oil and gas are taxed more progressively).
- Government policies are not long-term or cross-party and seek to satisfy short-term political or social benefit.
 - ◇ They rarely extend beyond the parliamentary term time of 5 years and fail garner support from multiple political parties. This leads to chopping and changing of policies across parliamentary terms, and even across prime ministers within the same party, as demonstrated by recent announcements.
 - ◇ There is a failing in political leadership to create these long-term drivers, and when goalposts shift, this knocks the already low confidence in the Government and sector to deliver what needs to be done.
- The timescales involved in creating new policy or amending/evolving existing policies is too long.
 - ◇ Innovation is penalised and frequently missed.
 - ◇ SMEs face barriers to participation and reaching mass market, and therefore struggle or fail.
- Government communications and policy thinking is very single-minded/focused.
 - ◇ Political preference for silver bullets, simple solutions and one-size-fits-all approaches. Seen as favourable for planning, providing certainty and setting a clear direction in politics—which is true for particular things, but less so in others (technology bias/favouritism).
 - ◇ Policy focus in heat and buildings over the past decade and more, has systematically favoured particular technologies for periods of time, and then dropped financial and communications support abruptly (biomass, solar PV, solar thermal, etc.).
 - ◇ Policy in this space has failed to capture the complexities of transitioning people and buildings and the energy system and apply appropriate solutions to deliver it. Instead, it has opted for ASHPs in most homes (80% is latest figure from Prime Minister's speech), and the rest will require some bespoke solution. The grid will be able to approximate and model this deployment and invest in upgrades to support heat pump roll out. This is a barrier as it does not consider the wider technologies that may be more appropriate than an ASHP (or supportive of it them (batteries, smart thermal storage, etc.) and therefore the wider outcomes and benefits of doing so for people, buildings and the grid.
- Government policy on high-rise domestic, commercial, non-domestic and industrial buildings is narrow.
 - ◇ The conversation on transitioning these buildings is not always in the mainstream and leads to discussions and language being exclusive of these sectors.
 - ◇ This is a barrier to deploying many technologies that are more cost effective and appropriate in these installations, like district heating, shared ground loops from a GSHP, solar thermal and PVT systems, etc.
- There is no effective innovation incubation within Government policies. Combined with a failure to help commercialise and scale after incubation.
 - ◇ Innovative businesses and solutions are not supported into Government policies for heat and buildings, and face many barriers to entry, leading many of them to fail. See further details here: [Helpful Information and Tips for Manufacturers and Innovators on Gaining Access to Government Energy Efficiency Schemes - Sustainable Energy Association](#).
 - ◇ Some devolved nations have effective innovation routes (the Welsh Optimised Retrofit Programme, for example).
 - ◇ After an innovation has gained access to or been included in government policies for heat and buildings, many are left unsupported with no further steps for scaling or commercialising their business and products. This is a very costly and time-intensive process for businesses who have no supporting policies to assist them on the journey.
- The balance of top-down and bottom-up policy making conflicts in areas like consumer choice. There is no clear definition or playbook on how, or to what degree, consumer choice is integrated with local area planning and top-level government policy and the need for certainty in direction of transition.

- ◇ Energy network planning, in particular, would need confidence to ensure investments make a return and are effective. I.e., so that the network is not over fortified in some areas, but underserving in others because demand for electrification deviated so far from plans.
- ◇ There is very little bottom-up support and drive in UK policies for heat and buildings.
 - ◇ Insufficient interaction between property-, consumer-, and community-level outcomes and needs (bottom up) with national policies, national targets and strategies, and Local Area Energy Planning (LAEP) (top down).
 - ◇ This is a highly complex and delicate balance, but is necessary to ensure the right technologies are delivered where they are most appropriate and where/when consumers want them.
- Lack of joined-up, independent, holistic advice for consumers or businesses.
 - ◇ Consumers are not signposted to independent, holistic advice that, in a joined-up manner, helps them to transition, create a plan for their property, cut energy bills, increase health and wellbeing, etc.
- The transition is not framed in the right way for consumers to engage in it.
 - ◇ Consumers are not engaged with the transition, nor is the full scope and scale of the transition framed in a way that they can begin to engage in. Consumers are shown that the driver is decarbonising and abating climate-harmful emissions from your home and energy system. For many up and down the country, this is not a priority concern.
 - ◇ Unless in particular circumstances that showcase the benefits of energy efficiency or low-carbon heating upgrades—like in fuel poverty, struggling to pay energy bills, are eco/climate-conscious, etc.—do people engage with retrofit/decarbonisation.
 - ◇ Even for those who retrofit or energy efficiency upgrades would massively help, they would not necessarily think to seek it out, or even know where to go to get the right advice and support.
- There is not adequate enough protections for consumers when installing appropriate and effective technologies.
 - ◇ MCS, certification bodies, installers, etc., need reform to ensure that not only are the best technologies installed, but they are done in a way that prevents unintended consequences and delivers on the intended outcomes.
- We do not have adequate skills and jobs to transition heat and buildings.
 - ◇ There is a lack of demand for the transition and appropriate technologies for delivering it.
 - ◇ There is also a lack of certainty on career pathways, economic growth in the sector, etc. Challenging for those entering the workforce or at the age to consider one, and for those in the autumn years of their career as whether to transition now or wait until retirement and (the current workforce of which is chiefly comprised).
 - ◇ Training timescales are also a barrier as it takes significant time to train a skilled engineer/installer/etc., and the longer we fail to create the right pathways and incentives for transitioning the workforce, the longer it will take to get a suitably skilled workforce.
- Private-Rented Sector policies for heat and buildings are a barrier for deploying the most appropriate technologies as the tenant is left out of the decision making. The landlord will assess what is right for the building and what can be afforded (upfront cost), leaving out the conversation with the tenant on what technologies they would be happy with and what the running costs will be (assuming they are paid by the tenant).
- National and regional planning blocks or creates significant friction in heat and building retrofit.
 - ◇ Notifiable works and restrictions on low-carbon technology siting can mean plans for works can elongate massively, cost more money to the consumer and put them off.
 - ◇ Devolved Administrations also need to follow suit with their planning policies as planning is devolved.

Session Two—Solutions and Recommendations

- Reform retrofit grant funding and develop a long-term, joined-up National Retrofit Strategy.
 - ◊ This needs to be cross-party and beyond the five-year time horizon.
 - ◊ Work with the industry to reshape policy based on the market needs, available technologies, and asks from businesses delivering the transition.
 - ◊ Bring together all retrofit activity, skills, policies and communications under the NRS.
 - ◊ Ensure grants are designed to phase down and out by a fixed date, so as not to unnecessarily warp markets.
 - ◊ Clear messaging on where funding will not be available and for what technologies.
- Target funding to consumers, buildings and trigger points as an easy win—when taking out/extending a mortgage/buying a new property, renovating property, etc.
 - ◊ Energy-Saving Stamp Duty.
 - ◊ Variable council tax.
- Expand out government communications on technologies for transitioning heat and buildings through policy (to the industry) and through consumer advice (to the general public) to drive a more holistic approach.
 - ◊ Policies need to incentivise the uptake of systems of low-carbon technologies, and where possible, provide financial support to these solutions (grants, tariffs, levies, loans, etc.)
- Simplify grant schemes and make them more effective.
 - ◊ Join up, signpost and amalgamate grant schemes where appropriate and in line with the overarching strategy.
 - ◊ The Boiler Upgrade Scheme should be reformed.
 - ◊ Be more technology agnostic and consider the wider building system.
 - ◊ Create an innovation sandbox.
 - ◊ ECO reform.
 - ◊ Consider both space and water heating in measure scoring.
- Re-develop the ‘lists’ of technologies that exist for different policies.

Simplify the environment by removing complexities and measure combination eligibilities across the different policies.

- ◊ Ensure support payments are simplified across technologies. With the plethora of policies and financial support that exists, the different uplifts, bonuses, and additions need to be simplified and brought together.
- ◊ The numerous pathways for properties also needs to be brought together and simplified. There are a number of different routes and technologies properties can install, but with the current policy environment it is too confusing.
- Create consistent messaging on skills, in line with National Retrofit Strategy.
 - ◊ Ambition, commitment, consistency to drive
 - ◊ Reform pathways for entering the workforce and help develop courses with the industry and educational sector to adequately skill, up-skill and re-skill people for the transition.
- Re-frame retrofit and the transition from exclusively decarbonisation and climate change to things the general public consider to be higher priorities.
 - ◊ These include items like reducing energy bills, increase property prices, increasing health and wellbeing, creating communities, as well as remediating climate change, abating carbon emissions and promoting biodiversity and wider ecosystem health.
 - ◊ Use models like ‘warm-homes prescription’ to link health, the NHS and warmer, more comfortable homes.
- Use taxation more effectively
 - ◊ Carbon tax on fuels and products.
 - ◊ Tax allowances for growth in Net Zero space.
 - ◊ Corporation tax.
 - ◊ Capital gains.
 - ◊ R&D tax credits.
 - ◊ Super deduction capital allowances.
- Ring-fencing / Rebalancing taxes.
- Energy-saving stamp duty.

- ◇ Zero-rate VAT for Energy Saving Materials (ESMs).
 - ◇ Update ESM list to be more technology agnostic and incorporate more appropriate technologies.
 - ◇ Simplify list and eligibility of measures in systems, etc. (liabilities of works, etc.)
- Develop a domestic manufacturing strategy.
 - ◇ Prioritise UK-based manufacturing and incentivise markets this way.
 - ◇ Ensure balance of payments with import/export activities.
- Fund and roll out LAEP more widely across UK.
 - ◇ Ensure this is built into devolved funding and responsibilities, as well as national policy planning.
- Reform SAP and EPC frameworks
 - ◇ Refine RdSAP
 - ◇ Embed SAP 11 as soon as possible.
 - ◇ Reform Appendix Q and work with the industry to deliver.
 - ◇ Create smoother pathways for new measures and provide funding to help with getting into Appendix Q.
 - ◇ Deliver on the EPC Action Plan as a priority.
 - ◇ In the medium term, evolve EPCs into building renovation passports and whole-house plans as a means for employing the most appropriate solutions and helping consumers to transition.
- Rebalance gas and electricity prices.
 - ◇ In order to incentivise electrification, and while ensuring a just transition, (some of the?) the levies on electricity need to be shifted elsewhere. This will be either onto gas, or general taxation.
 - ◇ This need to be revenue-neutral for the government, whilst not marginalising/excluding/disadvantaging consumers.
- Ensure a just transition.
 - ◇ Safeguard and provide a pathway for those on Pre-Payment Meters (PPM)
 - ◇ Ensure policy changes do not leave consumers with unpayable bills and no other options to transition with financial help.

Breakout Group: David Weatherall

Session One—Barriers

Advice

- Extremely important to engage consumers. In the current climate there is a huge emphasis on 'futureproofing' a home and on cost.
- Consumers are faced with conflicting information.
- Too much focus on payback
- PM announcements and political ideology creates uncertainty.
- Wales and Scotland are further ahead with their programmes. Northern Ireland has a 'one-stop shop'.
- Health and Wellbeing is an effective motivator. Too much focus on cost and carbon.
- Installers have huge influence and people trust them. However, there is too much burden on installers and risk.
- Public behaviour needs to change.

We need an impact and outcome-based approach there is no one solution.

Underlying Mechanisms

- Building Regulations
- Trigger points, we must identify path of least resistance.
- Examine the levies on Gas and Electric
- The effect of 'Market Based Mechanism'.
- Green Finance as a motivator
 - ◇ 0% interest loans
 - ◇ Grants
 - ◇ The unfairness of prepayment meters

Retrofit

- Whole House Retrofit
- Lack of recommendations
- Planned and phased approach
- Consumer must be taken on a journey.
- Cost of living must be considered as well as EPC Reform
- Barriers to innovation

Supply Issues

- Generation and demand on networks
- Skills
- Product demand

The market must be built up.

Session Two—Solutions and Recommendations

Decouple Gas and Electric

- Industry must be communicated with

Policy around Private Rented Sector

- EPC Regulation- work on regulations around EPCs
- Examine the role of Tax on landlords

Outcome Based Approach

- Define the target outcomes.
- How to sell decarbonisation to the public
- Understanding how all the data we are now able to collect can be utilised.
- Local Energy Advice -> Medium Term Improvement Plans
- Performance Guarantees

Innovation - 'Levelling the Playing Field'

- EPC Reform
- UK Economic Opportunities. We must seize the benefits of Net-Zero.
- Global Opportunities
- Smoother Process
- Expand Grants and Policy to other solutions – all electrification?

National Re-educational Campaign

- Wales Future Generation Act
- Make sure consumers know Gas will become more expensive
- Healthy Homes and the benefits they can bring

For more information:

Ben Copson

E: ben.copson@sustainableenergyassociation.com

T: 020 7770 6773

