reimagining the future of construction

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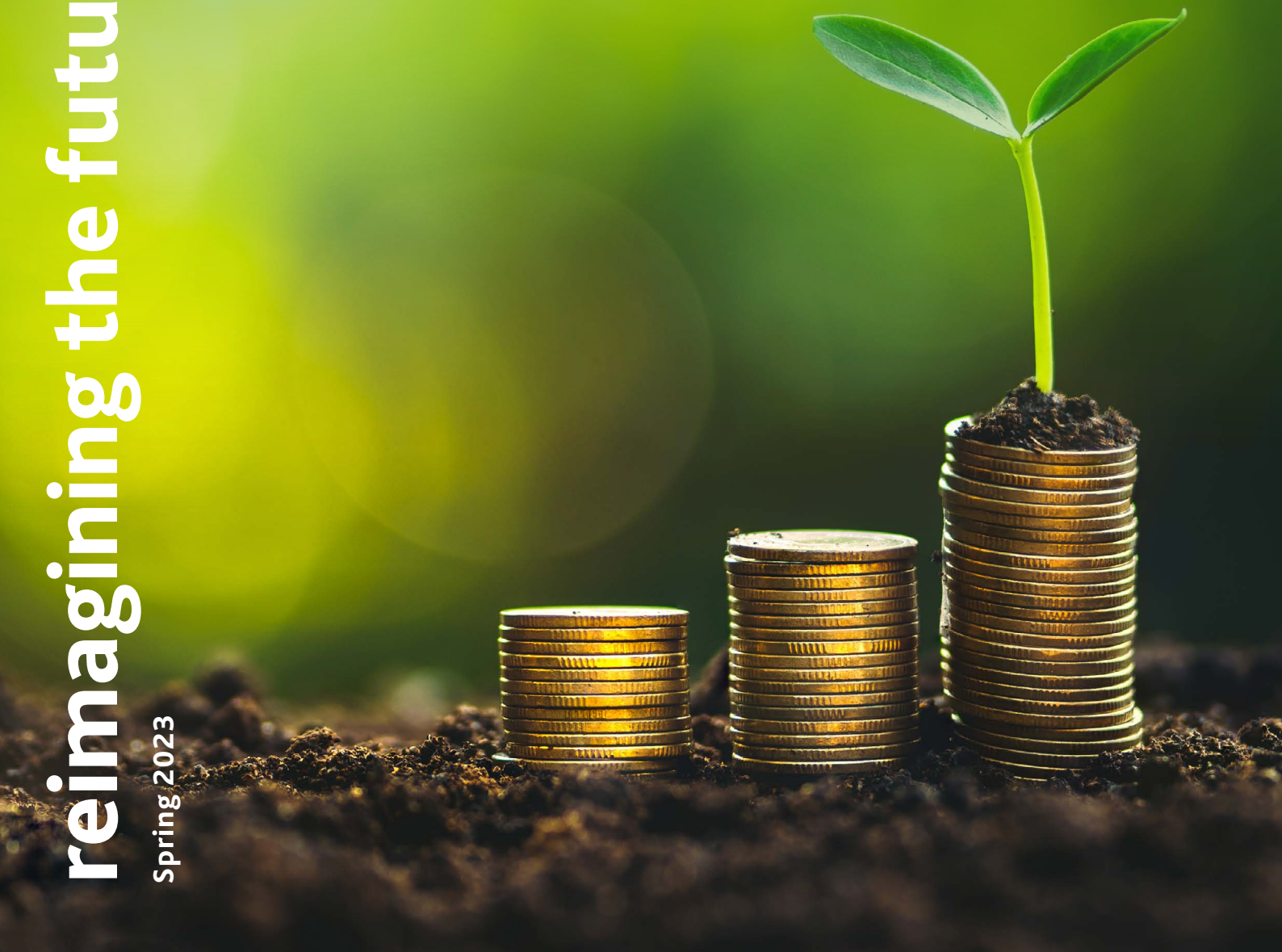
WILLMOTT DIXON
SINCE 1852

green finance

how can we increase green building finance to ensure the UK can meet its decarbonisation commitments?



Spring 2023

Reimagining the future of construction - roundtables to challenge our future path

At Willmott Dixon we want to reimagine the future of construction. We believe that the lens that we look at the future is very clear. If we continue on the same path, and don't innovate, we will become obsolete – business as usual is not an option. Just like the car industry, we are having our "electric" moment. Decades of innovation stagnation are coming to an end as "perfect storm" conditions brew.

Our thought leadership series seeks to bring together the built environment to debate some of the fundamental challenges affecting our industry both now and the future.

We believe a sustainable built environment, will need true collaboration. Contractors, consultants and customers all taking responsibility to tackle global and local sustainability challenges.

Reimagining the future is about improving the quality, efficiency, cost effectiveness and end user experience of what we deliver together - ultimately positively contributing to our towns and cities.

Delivered across our Wales and West region, the roundtable resulted in this paper which is the fourth in our series.

Decarbonise Today

Willmott Dixon is a privately-owned contracting and interior fit-out group. Founded in 1852, we have a purpose beyond profit to leave a positive legacy in our communities and environment.

In 2022, we launched a bespoke service called 'Decarbonise Today' to help organisations, particularly in the public sector, make their property portfolios more energy efficient so they can reduce running costs and meet net zero goals.

Decarbonise Today provides additional skills, resource and expertise to help public sector organisations bid for Government funding to make property more energy efficient, as well as accelerating the process through upgrade work and post-completion analysis of energy performance.

We are already helping many organisations deliver on their decarbonisation plans, and can support yours.

Want to find out more?

Contact Kelly Crews, our Head of Decarbonisation: Kelly.Crews@willmottdixon.co.uk

DECARBONISE TODAY
FUTURE PROOF TOMORROW

Issue 004

green finance: how can we increase green building finance to ensure the UK can meet its decarbonisation commitments?

Following lengthy discussions hosted by Willmott Dixon that focused on how to improve the flow of finance to decarbonise buildings, a number of points were brought up by the broad range of interested parties that attended.

In this white paper, they are summarized in the form of seven points of interest or recommendations that could help speed the pace of decarbonisation in the sector:

1. **Get the efficiency measure right and use it the basis for allocation of public funds.**
2. **Improve net zero policy alignment across all national and local government departments**
3. **Social factors also need to be considered – switch to a "values based" project assessment.**
4. **Private finance needs to get more involved - and more innovative.**
5. **Building regulations need to be toughened, and passive build should be put before technical decarbonisation solutions where possible.**
6. **Expect higher costs of energy and emissions – look at buildings' lifetime costs.**
7. **Area based approach can be most effective, alongside use of big data.**

This paper sets out some basics of the current situation regarding public and private finance for the built environment, and then goes on to look at each of our points of interest/recommendations in more detail, relating to comments raised in the discussions.

Introduction

So far, the electricity and transport sectors have been the main focus of low-carbon policies, but if long-term 2050 net zero targets are to be met, energy use in buildings urgently needs to be addressed. The sector is responsible for about 25% of the nation's emissions[1] – compared to 24% for transportation, with the remainder mostly from the power sector and industry.

Of all the sectors to decarbonise, buildings is the most complex, due to a combination of the wide variety of age, materials, owners, interested parties and building types that are involved. The EU estimates building decarbonisation costs at 100-300 €/t CO_2, and this could be higher in the UK where the housing stock is among the oldest.

Decarbonising buildings relies on lowering the energy demand through passive design, which ensures the structure, insulation and orientation minimises energy use, as well as the use of more efficient heating and electrical devices – such as heat pumps and solar panels - and behavioural changes by consumers. Net zero builds also rely on decarbonisation of the power supply. Record high gas prices over the past 18 months have increased the focus on how we heat our buildings, adding affordability and energy security concerns to the environmental benefits of decarbonizing the sector. Now, bringing down energy bills, improving the UK's energy security, and meeting net zero are all seen as mutually complementary goals – which is helping build consensus in parliament and spur the government to greater action.

The amount of money required is substantial. Estimates suggest that upgrading all UK homes to EPC band C by 2035 (where technically possible) will require up to £65 billion of investment for housing, and another £20 billion for non-domestic buildings – so far government has pledged £9.2bn up to 2030, leaving private and local government finance to meet the bulk of spending requirements.

Adding costs to operating or constructing buildings to make decarbonisation more attractive is a politically sensitive matter, and unpopular among the public – although the government is currently considering £30,000 fines for privately rented properties still below EPC C after 2025, which could drive investment there.[2] For poorer owner-occupiers it is more difficult to penalise inefficient buildings, making market based solutions problematic, unless the focus is entirely on subsidy (carrot not stick) – which incurs significant up-front costs (normally offset by lower lifetime costs). Subsidies have worked well with EVs, solar and wind, driving down costs, and it was felt that the same could be done for green buildings.

Willmott Dixon is fully committed to playing its part in the drive to decarbonise buildings and is eager to draw lessons from the front line that would help address the problems of transition - In particular, of securing and matching green finance with the most suitable and effective means of both decarbonising and improving the energy efficiency of our building stock.

To that end we invited a number of our colleagues from government, the public sector, finance, consultancy and elsewhere to discuss the challenges faced in implementing these goals today. The discussion ranged widely, but centred around these four questions:

1. **Where is the investment likely to come from?**
2. **How can the investment be unlocked?**
3. **How should Governments and the Private Sector change their current approaches?**
4. **Can we learn from progress already being made in the UK or elsewhere?**

25%

of the nations carbon emissions are caused by building and construction

energy use in buildings

urgently needs to be addressed

if 2050 net zero targets are to be met

What is already available?

When it took office, the current government pledged £9.2 billion of taxpayer funding over the next decade through proposals on public sector, social housing, and fuel poor schemes. Chief among the multitude (estimated at 45 - NB) of government schemes are the Public Sector Decarbonisation Scheme (PSDS)[3] and Social Housing Decarbonisation Fund. Others include the Boiler Upgrade Scheme, Local Authority Delivery Scheme, Green Home Finance Scheme, Low Carbon Skills Fund, Home Upgrade Grant, and others.

For social housing, a £3.8bn fund has been allocated[4] – but this is only £900/building (Craig) – so it needs to act as seed finance to attract private capital. The opposition Labour party has pledged £6 billion per year for homes decarbonization. Councils can also use levelling up funds, in-house recycling of savings, and the sale of land to boost funding.

The government's green spending is being partly funded by Green bonds (or 'green gilts') and retail Green Savings Bonds, which were launched in September 2021. Money from their sale goes to government expenditures that tackle climate change, biodiversity loss and other urgent environmental challenges and raised £16.4bn in first year to April 2022. Energy efficiency received the second largest allocation of £2.4bn.[5] However, this was a distant second, and could be raised as the challenge of decarbonising the UK's building stock rises up the agenda.

The incentives to decarbonise buildings and heating are largely in the form of individual building improvements, so they need to be aggregated to appeal to large investors. The government has also published a strategy for decarbonising buildings,[6] and last autumn, the Chancellor set a new energy demand reduction target of 15% for all UK buildings and industry by 2030. At national level in Wales, the Development Bank of Wales launched a new £10m 3-year Green Business Loan Scheme at the time of the round tables to offer discounted interest rates and flexible repayment dates to decarbonisation schemes.

Private finance organisations increasingly focused on decarbonisation

In an effort to channel the growing volume of Environmental, Social, and Governance (ESG) funds and private green finance of other sorts into decarbonisation, companies within the banking sector have formed various alliances over recent years. These include Bankers without Boundaries, Bankers for NetZero (UK chapter of UN net zero banking alliance, formed 2019) and the Green Finance Institute (GFI). Bankers for Net Zero aims "to enable cross-sector collaboration that delivers practical results", making then an important organisation for builders to connect with.

The GFI aims to "accelerate the transition to a clean, resilient, and environmentally sustainable economy by channelling capital at pace and scale towards real-economy outcomes". To this end, it established the Coalition for the Energy Efficiency of Buildings (CEEB), with support from E3G, as its flagship coalition in December 2019.[7] CEEB's remit is to develop the market for financing a net-zero carbon and climate-resilient built environment in the UK, initially by catalysing the widescale retrofitting of residential buildings.

CEEB has also published important research[8] on the investment barriers to widescale decarbonisation of the UK's domestic heating, including recommendations to overcome them, in an attempt to turn investment challenges into an opportunity for the finance sector. Professional bodies, such as RICS, have produced similar research.[9]

Not an overnight job

There was broad consensus that while it was a growing priority, and at the centre of what many attendees did, improving the energy efficiency of Britain's building stock was not going to happen overnight. Average efficiency is currently still among the lowest in Europe (partly due to cheap domestic gas), despite efforts over recent years. Many of these assets have a natural lifespan and replacement point, and that applies to fixtures and fittings too, which should improve underlying efficiency over time in any case as more up to date items are installed (such as replacement doors and windows).

As for measures specifically aimed at decarbonisation, many of the easy options, such as the installation of LEDs and basic insulation have been widely carried out already, at least in public buildings. Now the process has moved on to the much tougher job of reducing or getting rid of gas use, while keeping the cost per unit CO_2 saved as low as possible.

This takes time and carries an inevitable lag – often projects with funding secured on old rules are now being built. These will be to lower standards than those of today. But there will be moral pressure to sweat the budget for higher efficiency standards, as those involved don't want to leave a renovated or new building with an expensive legacy problem (JC). These include gas-fired Combined Heat and Power (CHP) units, which were seen as an important part of the solution only a few years ago but are now part of the problem - as the aim is now to remove hydrocarbons altogether. Some recently installed CHPs at housing associations are already stranded and unused assets – which highlights the risk of picking the wrong low carbon technology. Biomass was another option that was encouraged but is no longer mainstream.

As more energy saving aspects are added to any building, the marginal gain decreases, making each one more expensive in energy saved per pound spent. The value of the property is important – commercially, the most attractive work is on large buildings in sought after locations, where it would be a relatively small part of the total cost/value of the building.

Attendees noted that the industry had moved on significantly from where it was just a few years ago. And more change is expected as building decarbonisation increasingly becomes a focus for government amid growing political consensus around net zero objectives. Higher gas prices, and concerns over security of gas supply in the wake of Russia's invasion of Ukraine, are adding to the momentum.

Given this consensus, it was felt that long term funding and regulatory solutions from government to speed up decarbonisation of buildings should be possible.

Points of interest/ Recommendations

The discussion identified several key elements:

1 Get the efficiency measure right and use it as the basis for allocation of public funds

The view was expressed that plenty of funding existed, but that it was difficult to match with projects - partly due to problems with way the government money is allocated. It was criticised for often being short term, linked to the wrong measures and released in small areas in parcels that require a lot of data to qualify for.

To improve the situation, round table members agreed that the Energy Performance Certificate (EPC) system currently used by government was not the best measure of housing efficiency, and that a measure of energy efficiency improvement, measured in kWh/m^2, would be far a more suitable and effective. This is reflected in recommendations from the GFI, which is calling for a national, standardised way to measure the energy saved by retrofit works – which it says is vital to unlock the funds required.

Our round tables proposed that the allocation of government funds could be streamlined and improved by using this measure.

Public money is currently based around multiple fixed budgets with tight eligibility criteria targeting a wide variety of specific areas (see above, 45 schemes) on a first come first served basis - so funding applications need to be ready when the funding window opens.

This requires time and huge amounts of data for each fund that companies often do not have the resources to collate. Some schemes can be applied for together and others cannot, and many have tight completion deadlines. All this adds time, cost, and complexity to projects, and makes it very difficult to qualify for the funds, leaving much unclaimed. It means

local authorities are less likely to get the more important, longer term decarbonisation work done – such as removal of gas from buildings.

If funds were allocated simply on improvements achieved in the carbon or energy intensity of the building, much of this could be avoided. It was felt that a consistent, long term, broad funding approach of this sort would allow building companies, local authorities, and private developers to plan ahead and compete with projects focused exclusively on costs (which will require retrofitting in a few years anyway).

"We need a clear idea of what good looks like"

Neil Brierley

It was noted that the Welsh government initially opted for the EPC system because it was simple to understand. Now fabric measurements based on the annual heating consumption required (with a maximum of 50 kWh/m^2/year) was said to be gaining wide support. The UK Green Building Council standards are also thought to be moving in the same direction.

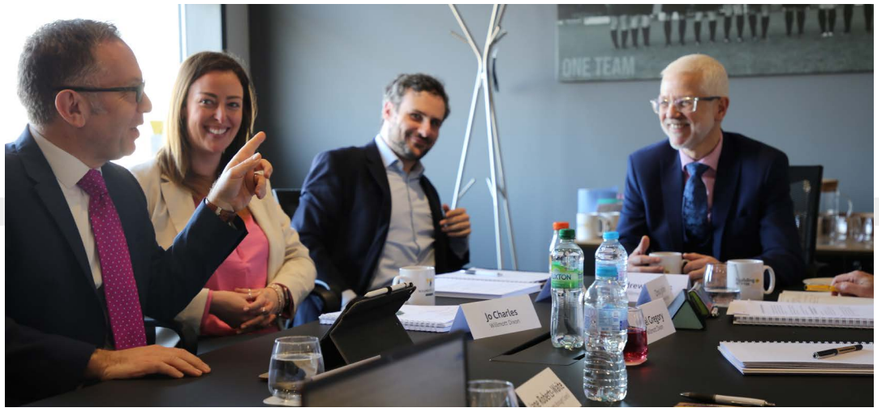
However, there were concerns (Jo C) raised about the ability and willingness of government to change funding streams. While a simplification is desirable, and civil servants (who design the programmes) do see the problem, it depends where the budgets are coming from across government departments as to what aspect of decarbonisation they are targeting.

2 Policy alignment across all national and local government departments

Attendees felt it was important for government to align policies across all departments with net zero goals, as currently there were conflicting priorities.

It was noted that the UK Government had just created a department for net zero, which should help achieve this. However, the most pressing alignment was felt to be at local authority level, where planning rules often directly conflict with decarbonisation objectives. Listed buildings in particular are often not compatible with net zero retrofits, including basics like double glazing, as well as structural changes to improve efficiency and the installation of solar panels.

As planning decisions are largely taken at a local authority level, it will be difficult to get a consistent approach across the country – although central government could encourage change. Some authorities remain very strict in maintaining listed conditions, while the leaders of others, such as South Kensington, are allowing significant compromises in the interest of energy efficiency, including solar panels.



In the North Somerset local authority area, the energy efficiency goal for property and housing is to attain EPC C or above, but listed buildings are proving to be a major obstacle. Net zero targets are also compromised by the need to prioritise fixing buildings that are not fit for purpose, rather than spending the money of decarbonisation projects – for example a leaky roof must be fixed before heat pumps are installed.

The Department for Education (DFE) has a clear net zero target for new schools, but Naomi Addicott of Somerset Council warned it needed a full buy-in from the teaching establishment.

This would avoid further instances of schools asking for the installation of mains gas for use in science lessons and exams after school heating systems are decarbonised – which has led in one case to a potential retrofit bill of almost £500,000. Net zero goals need to be built into the curriculum, as well as adopted and taught by schools.

In the NHS, the approach to decarbonisation was said to be dependent on the attitudes of individual finance directors, with most focused exclusively on short term savings. A minority acknowledge the importance of decarbonisation, along with local content and social factors, and make sure these aspects are considered in new projects. Only then is the data collected and provided for applications for extra money; projects managed by other finance directors doesn't even get to that stage – highlighting the need for a consistent net zero approach across the service. If lowest cost is the only consideration, there may be procurement barriers to opting for low carbon options.

"we can alter the procurement criteria to align with net zero objectives."

Amy Slocombe

3 Social factors need to be considered (values based project assessment)

Attendees agreed that "values based" project assessments – including environmental and social benefits – rather than purely monetary concerns, should be the norm when considering building proposals.

An internal carbon price can be used to assign value to emissions reductions, based on the anticipated carbon tax and other costs that are likely to be imposed under government policy at some point. Social benefits could also be assigned a monetary value, although quantifying these social and associated health benefits is difficult. They include aspects such as improved quality of life and health – and the knock on impact on NHS costs.

It was felt that private and public investors needed to value social improvements, rather than simply seeing them as an additional cost. Housing has an impact on many of the other services that councils provide, so its wider impact needs to be considered. Investment in the sector can improve local employment prospects, health outcomes and the local living environment.

This can have direct cost benefits through reduced pressure on health and support services, as well as less tangible benefits such as improved educational outcomes.

"We don't see housing newbuilds as a purely financial decision, other values need to be considered. Caerphilly Council sees itself as disruptor in this respect and will tender on this basis."

Jane Roberts-Waite

It represents a massive change for the council and has been helped by additional funding from the Welsh government.

Public sector work needs to design a method to include social and environmental elements in contracts, so not just won on lowest price. There has been research on the issue by Kelly Morgan[10] at the Welsh university in cooperation with the Welsh government, linked to earlier research on Values for Money.[11]

Caerphilly Council and other developers such as Exeter City Living may be taking on leadership positions, redefining value long term view, but these pockets of excellence and pilot projects need to expand into the mainstream, which is likely to require strategic leadership plus regulatory mandates.

Not enough private lenders stipulate or take account of social conditions, which could also be expanded in line with the increased availability of ESG/green finance. Greater availability of such finance would encourage other public and private developers to build it into their proposals and bring the approach mainstream.

But how to weight these social factors is complex and often political. Auditing of implementation is required to establish impact.

"Caerphilly have an intimate understanding of their community issues and have committed to solving them by using broad values based, not just cost based decisions in their procurement."

Andrew Dobbs

Recently completed houses and apartments in Trethomas and Trecenydd, for Caerphilly County Borough Council. Designed to Passivhaus standards.

4a Private finance needs to get more involved, and become more innovative

The round tables' points on access to public money also applied to private – plenty available but difficult to access. There are signs this could be changing.

Attendees pointed to the growing popularity of ESG-linked pension funds, which provide a major potential source of private finance for building decarbonisation. In addition, many banks and other investment groups are now setting tight ESG standards for loans and investment.

Nevertheless, this is private money that wants the best return available. This means that so far, private finance is limited to offering money at rates only slightly below levels seen for non-ESG lending. For example, Monmouth Building Society's green mortgages are set at 0.7% below standard rates, conditional on properties moving to EPC band A or B. While attractive, this does not seem to be sufficient to generate much demand, with take up still low – a similar picture is apparent across the industry.

Monmouth's CEO, William J Carrol, emphasised that it was all about the additional value that efficiency brings, set against its upfront cost. Currently, there is not enough difference in market value between an efficient and inefficient building to improve rates further or attract public interest. Creating that value – which essentially comes from lower future running and retrofit costs - is what is required from government "whether by carrot or stick". Monmouth and other green lenders are seeking to improve ways to support decarbonisation for new homes through their lending, but it needs buy in from the public.

Away from government, it was felt that the "housing ecosystem" in general could also contribute to enhancing the value of building efficiency. This would include estate agents, builders' merchants, architects, surveyors, and planning departments all changing their attitudes towards value in efficiency – although this often comes up against a lack of motivation, capacity and opportunity.

"Decarbonising a home shouldn't be any harder than getting a prepacked kitchen with finance included. Currently there are a lot of obstacles."

Chris Jofeh

It was noted that recent higher gas and electricity costs had indeed increased the value of an efficient building, and that this was leading to more public interest. With limited supply this should push up valuations associated with energy efficiency, including legacy solar Feed in Tarif (FIT) deals. The prospect of higher gas imports and future carbon taxes is expected to keep gas and power prices high long term, so those who can afford efficiency measures now may be adding more value than the market is anticipating.

Where innovative new technology is being used in buildings, there is more risk so the return must also be higher, attracting private equity. Longer term, low risk options are more suited to building societies and banks. Some small builders have managed to build to net zero on a commercial basis (Future Homes Standard and sold on that basis) but they are high-end, small scale operations – a lot more investment is required to drive costs down and produce at scale for big builders to adopt it. FHS adopted passive house standards minus the airtight aspect in order to avoid ventilation problems and complex equipment.

"How do we build in this complexity around new financial instruments… Our [Monmouth Building Society's] purpose is not just profit-maximisation, we look at the balance scorecard, and if it improves our community, we may well lend to those projects. We have to make money but can be flexible… We need to understand how we drive investment and how we can support energy efficiency."

William J Carroll

Combining private with public finance as blended finance was felt to work best of all, with the public part kept to a minimum. An ideal split for local authority works was suggested at 50% from private sources, 25% from PSDS (central government), and the other 25% from the authorities themselves. To attract this capital, tax breaks were suggested, although the biggest push is likely to come from ESG compliance which depends on behavioural change.

Public-private collaboration on building decarbonisation finance is gaining momentum. For example, in August 2022, Greater Manchester Combined Authority (GMCA) and the Green Finance Institute (GFI) announced a pioneering partnership12 to provide practical and innovative financial solutions to support energy-efficiency improvements for thousands of homes.

4b Innovative finance solutions suggested at round table

Attendees contributed a number of innovative financing ideas.

At the Bristol session, *Gemma Welsher suggested extending voluntary carbon offsets (bought by companies with net zero targets that are still emitting greenhouse gases) to include decarbonisation of nearby public buildings, rather than offsets that involved planting trees in some distant country. This would provide regional social as well as environmental benefits, making the purchase of such credits attractive to companies seeking to make a positive contribution to the local community.* This approach could be encouraged by offering tax breaks.

However, this is difficult to do given the way the carbon offset market works. It cannot be done on a project by project basis – a pledge to decarbonise hospital for example but has to be through the purchase of verified VC offsets.

Public sector decarbonisation offsets are also likely to be difficult to get accredited and much more expensive than planting trees, although multiple companies could contribute to each major scheme.

Public sector must be open to opportunities too. Discussion referred to a past scheme where money was channelled from private companies into public spending in return for tax breaks. However, it was dropped because it was seen as helping companies avoid taxes and unpopular with some councils at the time. Another suggestion, for homeowners this time, was to introduce a salary sacrifice scheme to make home efficiency improvements, in a similar way to schemes designed to pay for EVs.

This might provide a more attractive alternative to green mortgages to pay for the £22,500 in average retrofit costs that each house requires to meet net zero standards. There were also comments about funding from the power grid. In some instances, power grids will pay to reduce or mitigate demands on networks, which could include batteries in homes, heat pumps and solar.

There is a split of investment between homes and the grid to achieve the same supply outcomes.

Similarly, buildings can act as a revenue generating asset by selling surplus green power to the grid – and this should be something that finance can be secured against. Octopus currently pays 15p/kWh for surplus solar, and if batteries are used then focusing these sales at peak demand times can generate even higher rates (as with the Tesla Power Wall battery concept). These options need to be long term and secure in order to attract private finance.

5 Toughen building regulations and put passive build before technical solutions where possible

Attendees reported a lack of focus on how buildings are designed and built as part of decarbonisation efforts, with most attention – and public money – directed towards technical solutions such as heat pumps and solar panels, on what are often rather inefficient buildings.

To some extent the issue has been addressed, in that public funding for heat pumps now require buildings to be well insulated and airtight. But if buildings were constructed to be more energy efficient in the first place, then there would be less need for retrofits or technical solutions – and all the resources they take to manufacture and import.

Some attendees suggested that tougher building regulations would help address this issue. In Cardiff, it was pointed out that the Welsh national government now controlled these but had reneged on a commitment to toughen efficiency standards under pressure from big private house builders. The has allowed the continuation of inefficient home building, with each new home likely to need a £10-50k retrofit to meet standards within a few years of being built – adding to the legacy problem of the UK's aging and inefficient housing stock. Coordination with other areas, such as transport, should also be encouraged, as many developers were still not including charging points at new housing developments, which is much cheaper than leaving it to individual households. Attendees urged the creation of a wholistic building sector environment, where designing for net zero was not seen as radical.

Building standards are indeed being toughened. In 2025, new UK-wide compulsory standards will be introduced, including a ban on new gas boilers. In addition, the UK Green Building Council (UKGBC) is working on more rigorous net zero standards for commercial and domestic buildings – this is a framework with specifics, and not compulsory, although it is likely to be a condition of funding for many projects.

The London Energy Transformation Initiative (LETI) has been collaborating with the UKGBC to produce useful guidance that supports the UK's transition to a net zero carbon built environment, and it is understood that some of this work will also be incorporated into mainstream building regulations. LETI bases its approach on reducing kWh/m^2, rather than EPCs. There also needs to be a push from professional bodies, and it was felt that many of the buildings that had already been built to tougher standards would look increasingly good long term, providing encouragement to those that follow.

While it was agreed that buildings themselves should work hard, it was noted (JC) that technology solutions and offsets were required to deal with remaining emissions.

And in some cases, such as retrofit projects where fabric upgrades are difficult, there was little choice but to use technological solutions to decarbonise energy use, rather than reducing it. BREEAM accreditation was criticised as often a tick box exercise with conflicting drivers that didn't always address building efficiency.

Currently, those building housing to net zero standards include private housebuilders catering to small high-end markets, and local authorities demonstrating best practice.

A prime example of the latter is Caerphilly Council (manages 10,600 homes), which is pushing ahead with optimized retrofits (to WDRQ standards) and net zero standards for newbuilds (otherwise WHQS program upgrades are required after construction, which CC wants to avoid in future).

A recent 35 house estate built there to passive standards now incurs annual energy bills of just £200/year. The design and low cost has additional benefits, such as making residents more economically active and healthier. However, the project avoided solar, as it was felt resource and ethical sourcing considerations precluded the installation of this technical solution.

Perhaps a good example for the housing sector is the Department for Education, which has introduced a net zero building design *"energy pod"* concept for all new builds, according to Helen Groves of Atkins.

As well as improving the efficiency of buildings, the energy pod approach relies on solar panels and heat pumps, with modular gas boilers replaced as the improvements are introduced. In older buildings the boilers are replaced as they reach the end of their design life. This form of scaling up makes decarbonisation cheaper, plus there is no need for a bespoke solution each time. And the funds are not part of an additional budget. "It's not rocket science – we're just creating a standardised piece of kit" – Helen Groves. Willmott Dixon has experience decarbonising schools, having created the UK's first Passivhaus 'plus' net carbon positive school in Surrey[13].

However, inflation is making it harder to implement the new energy pod approach (which has higher upfront costs, but lower lifetime costs) given limited money currently available. A squeeze on budgets can also lead to buildings becoming unfit for purpose, which tends to push decarbonisation down the list of priorities.

6 Expect higher costs of energy and emissions – look at buildings' lifetime costs

There was a general consensus that long term costs and value should be used to plan projects.

Many householders and builders have a "capex mentality" and look to minimise upfront costs, rather than whole life costs. If considered, future energy savings tend to be underestimated or heavily discounted, although it was noted that some investments offer a very quick payback, such as solar for businesses, which are exposed to the full energy price from April again and can set expenditure off against tax.

More enlightened developers in industry and government are already looking at whole life approach so the buildings they are constructing won't have liabilities that erode value as time passes. Once its design lifetime is over after 25 years or so, a building will have to be net zero otherwise running and retrofit costs will be prohibitive as UK will only be 2-3 years' away from its 2050 net zero target.

An assumption of rising energy and emissions costs should be made. Power sector decarbonisation costs are already being added to power and gas bills, and the EU plans to introduce a (politically very difficult) €45/tCO_2 carbon tax on buildings from 2027, extending its existing Emissions Trading System. The price will be increased after 2030. If the UK follows suit, this will add considerably to the costs of running an inefficient building. In anticipation of this, any carbon used and emitted should be priced internally by organisations including in the public sector – for example, oil company BP currently uses an internal carbon price of $100/$tCO_2$.

Universities generally take the long term view, despite extra costs now, and tend to wear their low carbon credentials as a badge of honour to help attract students (SB). 16.16 Craig Anderson - If an organisation claims a net zero target, then they must consider the cost of offsets over the lifetime of the building if nothing is done, as well as any carbon tax costs. The costs of these offsets is going through the roof – so factoring that into business planning should provide additional money for decarbonisation, alongside maintenance and refurbishment budgets. Ideally, whole life carbon costs should also cover building materials that contain embedded carbon, and the use of any fossil based energy in construction.

Despite being the best way to approach projects, it was acknowledged that long term planners couldn't guarantee that the additional costs such as carbon pricing would materialise – it is politically very difficult to add costs to energy users, especially poorer homeowners, and local authorities. A 2010 coalition plan to add to pump fuel excise duty every year in order to make petrol and diesel vehicles less attractive has been suspended in consecutive budgets due to opposition from motorists.

7 Area based approach can be most effective, alongside use of big data

A small number of attendees, led by Welsh government advisor, Chris Jofeh, emphasised an area based approach as the best way to achieve net zero goals, as it brings all sectors on board in a shared goal, and introduces economies of scale.

Buildings involve a community, transport networks, power companies, local authorities, and individuals – which makes it very complex.

He referred to Bankers Without Boundaries' net zero neighbourhood funding model, which blends funding from multiple sources for multiple outcomes. The process involves thinking wholistically on a local authority or council basis but has proven difficult, as multiple organisations must be brought together with the same long term goals. A flexible form of this type of public-private finance was felt to be the best way to unlock investment to decarbonise buildings. This might include funds from non-traditional sources such as the power grid, as noted in section 4b.

Another option that could make decarbonisation efforts more effective is the use of "big data". Mr Jofeh pointed out that a digital twin existed of every house in Wales, allowing for the modelling of energy efficiency measures, which could in turn be used to unlock finance or set priorities. In Bristol, Helen Groves mentioned Atkins' "Decarbonomics" service, which uses an extensive database to model costs for all decarbonisation modifications – which also helps gain the confidence of clients. The modelling generates options, such as the fastest or cheapest decarbonisation route. The system can also model lifetime costs for estates.

"The bigger picture needs to be considered, not just decarbonisation, so a lot of data should be analysed, covering all values in the outcome and a whole project life analysis…. Decarbonisation can improve working environments which improves health – and data relating to that, for example, could be used to secure additional funds."

Helen Groves

Conclusion

The decarbonisation of buildings is ultimately about changing behaviour – the optimum solution is that people do it because it's the right thing to do (NB) and failing that because they recognise the importance of acting now to avoid higher long term costs.

Our round tables identified some key areas for improvement, from getting the measure of decarbonisation right and seeking a simplified and joined up approach from government, to including social outcomes and all-life costs. Innovation was called for from private finance, along with higher universal standards to avoid undercutting by low-efficiency builders - with use of data and area based approaches also offering advantages.

If the issue of decarbonising our buildings is not addressed more effectively, the long term price will be higher – both commercially and environmentally - and in some commercial buildings it could lead to stranded assets. While the entire housing ecosystem must change, construction companies themselves also have a major role to play. "Construction lacks innovation, and we have to innovate." – Andrew Dobbs.

References

1. https://committees.parliament.uk/committee/62/environmental-audit-committee/news/171103/emissions-must-be-reduced-in-the-construction-of-buildings-if-the-uk-is-to-meet-net-zero-mps-warn/#:~:text=From%20residential%20to%20commercial%2-0buildings,the%20UK%27s%20greenhouse%20gas%20emissions.

2. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/946175/prs-consultation-2020.pdf

3. https://www.gov.uk/government/collections/public-sector-decarbonisation-scheme

4. https://www.gov.uk/government/news/warmer-greener-and-cheaper-homes-as-government-opens-a-triple-win-upgrade-for-social-housing

5. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1106352/11138-HHG-HMT-UK_Green_Financing_Allocation_Report__Accessible_2.pdf

6. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044598/6.7408_BEIS_Clean_Heat_Heat___Buildings_Strategy_Stage_2_v5_WEB.pdf

7. https://www.greenfinanceinstitute.co.uk/programmes/ceeb/

8. https://www.greenfinanceinstitute.co.uk/news-and-insights/green-finance-institute-releases-report-on-zero-carbon-heating-an-opportunity-to-invest-in-a-green-recovery/#:~:text=The%20Coalition%20for%20the%20Energy%20Efficiency%20of%20Buildings,the%20finance%20sector%20and%20a%20green%20economic%20recovery.

9. https://www.rics.org/news-insights/rics-policy-report-retrofitting-to-decarbonise-uk-existing-housing-stock

10. https://phirst.nihr.ac.uk/staff/dr-kelly-morgan/

11. https://www.iwa.wales/agenda/2016/02/values-for-money/

12. https://www.greenfinanceinstitute.co.uk/news-and-insights/gmca-and-green-finance-institute-announce-partnership-for-energy-efficiency-homes/

13. https://www.willmottdixon.co.uk/projects/hackbridge-primary-school

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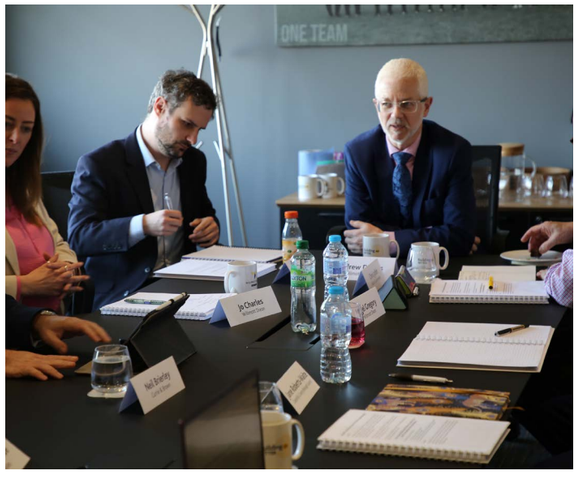

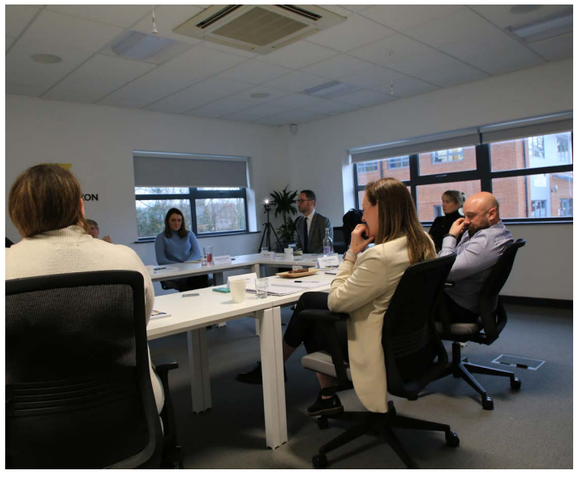

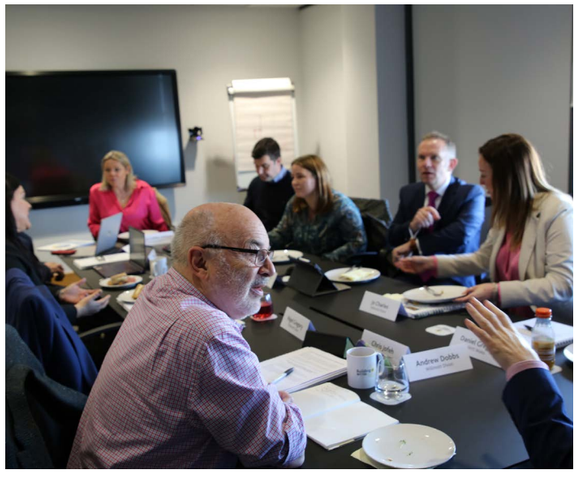

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