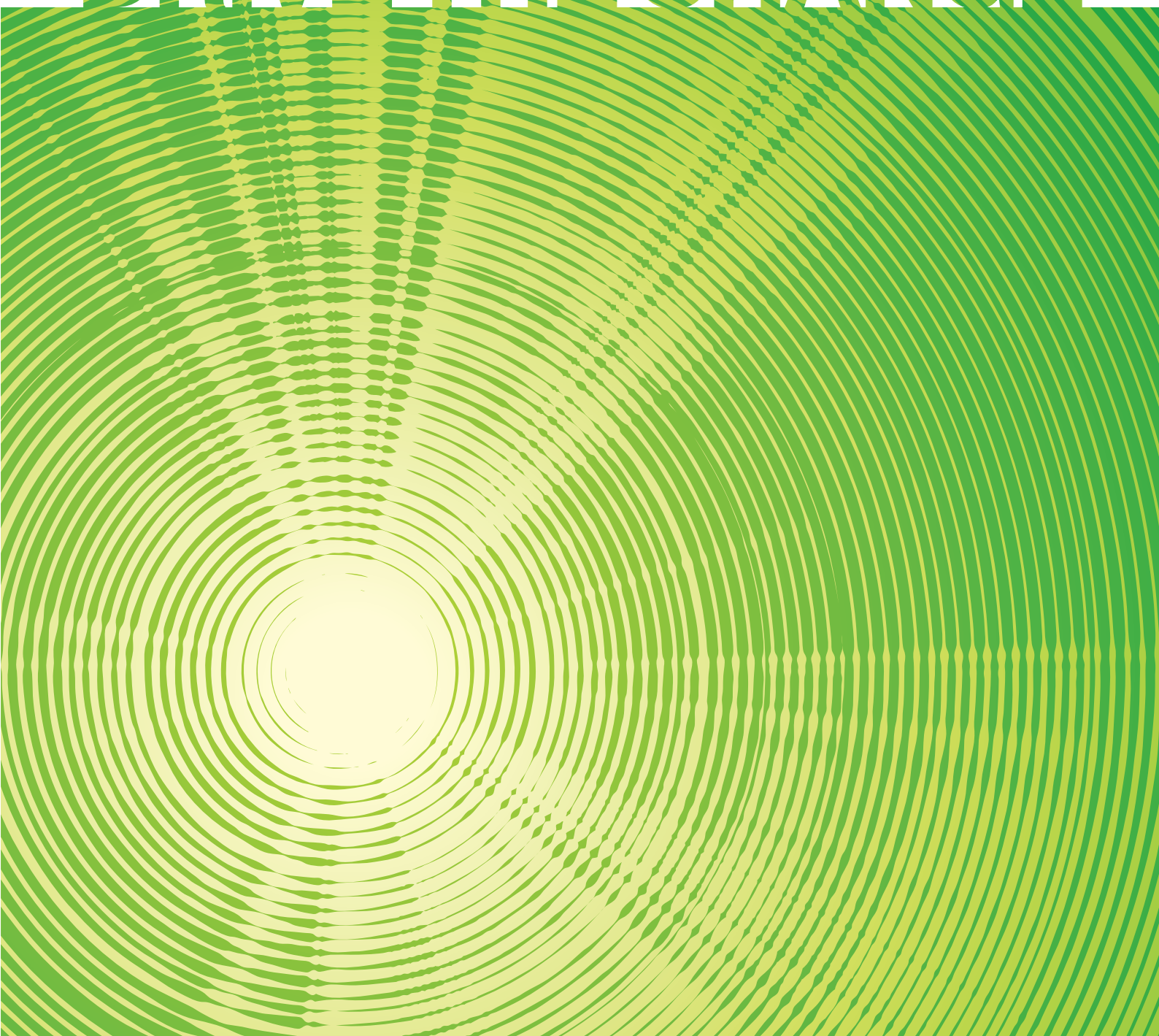
Constructing Excellence
South West

Climate Crisis
Published by the CESW
Climate Crisis Focus Group

NET ZERO IN THE SOUTH WEST

DRIVE THE CHANGE



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Natalia Sokolov
Chair
CESW Climate Crisis Focus Group

THRINGS
SOLICITORS

Introduction

Constructing Excellence South West (CESW) is the single organisation charged with driving the change agenda in construction within the South West region. CESW exists to improve construction industry performance to produce a better built environment.

CESW Climate Crisis Focus Group members are actively driving sustainable change across the region. The contributors to this publication represent differing perspectives and roles across the construction industry. Each one is pioneering transformation in construction and engineering practices, products and methodology across the public and private sectors on their path to Net Zero.

Their passion and motivation to initiate sustainable change and make an impact has led us to compile this publication. The aim is to demonstrate the vast opportunities and challenges that exist for the construction industry in the South West region, by way of real-life case studies, practical advice and detailed data analysis.

The South West is swiftly becoming the UK's natural powerhouse, with its future green and clean energy potential growing exponentially on and off shore. The South West region is set to be one of the key providers of sustainable energy in the UK, blazing a trail for a better and more resilient future.

I would like to thank Johnny Gowdy, Director of Regen, the independent centre of energy expertise, for providing his valued insight for this publication. I also extend a heartfelt thanks to each of our contributors, who have all worked hard to create a thought-provoking and impactful publication.

Foreword

Meeting the UK's world-leading Net Zero target requires a transformation in how we heat our homes, power our lives and fuel our economy.

From replacing fossil fuels with clean technologies to upgrading our leaky building stock, before us lies a challenge on an unprecedented scale. But it is also the biggest economic opportunity of the 21st century. Seize it, and the prize is the growth of new clean industries, future-proof jobs, healthier communities and better lives.

The South West is set to be at the forefront of delivering this transformation. Thirty years after the UK's first commercial onshore wind farm was developed here, the region has proven itself as a place to design, demonstrate and deploy innovative clean technologies.

We already have an exceptional array of large-scale renewable energy generation projects in operation, including over 1.6 GW of solar PV and 0.2 GW of onshore wind, with more in development. Boasting some of the UK's best solar, wind, wave and tidal resource, the South West's future energy generation potential is transformational. The vast wind resource and deep waters off our coasts in the Celtic Sea, for example, uniquely position the region as a proving ground for innovative floating offshore wind technologies, which are critical to meeting national clean energy targets.

Alongside our abundant natural resources, we have the groundbreaking companies, cutting-edge research institutes, and highly skilled workforce to deliver. Hinkley Point C, the biggest and most complex energy engineering project in the UK, is being delivered in the South West, creating a legacy of skills, expertise and supply chain capabilities in the construction of high-integrity, mission-critical developments.

From centres of excellence in nuclear, offshore renewables and geothermal, to High Potential Opportunity areas of marine autonomy, tech metals and aquaculture, the South West has the expertise and infrastructure to deliver the next generation of Net Zero projects required to support the UK's clean energy ambitions – all while creating jobs, bringing down energy costs and modernising the economy.

As the examples in this guide demonstrate, businesses and public sector organisations in the South West are also pioneering innovative solutions to achieve Net Zero in the heat and buildings industry. Cleaning up how we heat our homes and construct our building stock is one of the biggest challenges on the path to Net Zero and will require almost every home to be properly insulated and heated by a low-carbon source. Despite the challenges, scaling up the supply chain and upskilling the workforce is an opportunity to create a thriving regional low carbon industry.

We are pleased to see the innovation, ingenuity and capability we have here in the South West being showcased, showing once again that the region is leading the way in helping to build a sustainable future.

Johnny Gowdy
Director, Regen

Johnny Gowdy is director at Exeter-based Regen, which provides evidence-led insight and advice to transform the UK's energy system for a Net Zero future.

Turbines near St Austell, Cornwall. Cornwall was home to the UK's first wind farm.

Gilbert Lennox-King
Co-founder and CEO

Tom Scott
Co-founder and Executive Chair

CONSTRUCTION CARBON

Embracing Sustainable Construction: The Role of Life Cycle Assessments (LCA) training

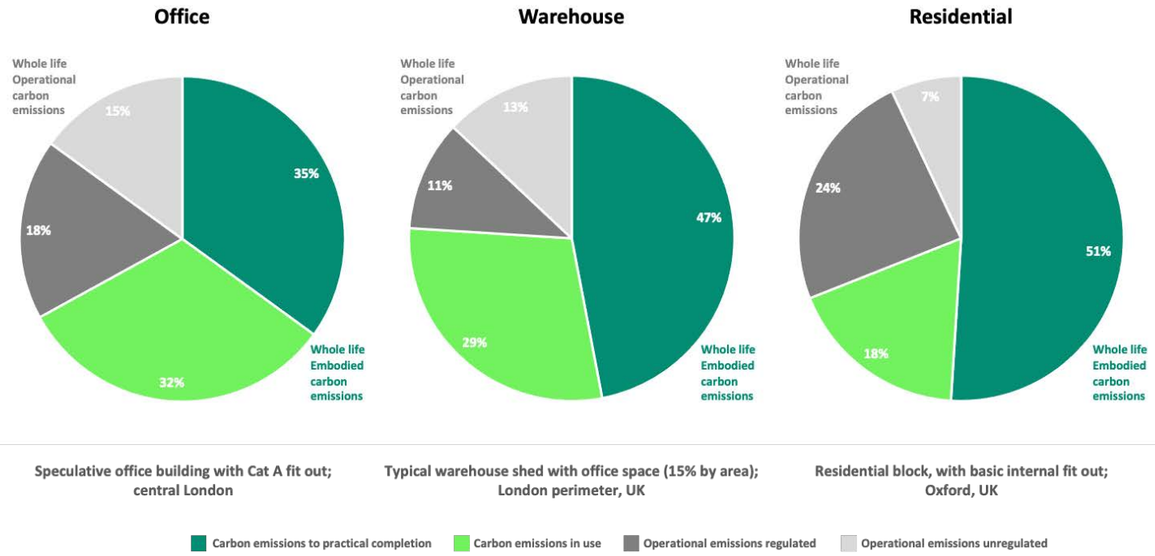
In construction, sustainability has evolved from being a buzzword to becoming a fundamental pillar of industry practices. One crucial tool at the forefront of this movement is Life Cycle Assessments (LCAs). This article delves into the significance of LCAs, their integration into construction practices, their alignment with standards, and the importance of training for industry professionals.

Carbon emissions from the built environment

It is well documented that the built environment is responsible for around 40% of global carbon emissions with construction responsible for around 11%. The focus over the last twenty years or so has been on operational emissions produced from heating and operating a building throughout its use. However, when it comes to new buildings, up to 50% of the total emissions produced by that building through its lifetime can come from the construction process. Put another way, up to half of the carbon emissions a building will ever produce occur before any heating, lights, or power are turned on.

The industry is now turning its attention to the 'embodied carbon' emissions from construction, and the method used to assess these are Whole Lifecycle Carbon Assessments (WLCAs).

Figure 1: Embodied Carbon in Construction
Source – Whole life carbon assessment for the built environment RICS professional statement, UK 1st edition, November 2017 Sturgis Carbon Profiling



What is a Life Cycle Assessment (LCA)?

At its core, a Life Cycle Assessment (LCA) is a comprehensive methodology used to evaluate the carbon impacts of a product, process, or service throughout its entire life cycle.

This assessment considers various stages, from raw material extraction and production to use, maintenance, and disposal or recycling. LCAs aim to quantify resource consumption, energy usage, emissions, and potential environmental burdens associated with a particular activity or entity.

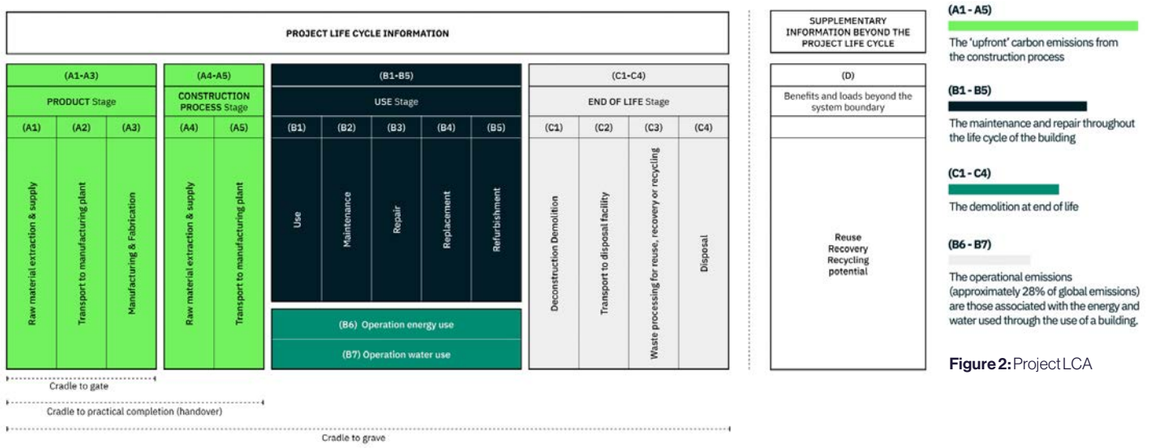


Figure 2: Project LCA

Why are LCSs fundamental?

LCAs serve as indispensable tools for decision-making in sustainable construction practices. By providing a holistic view of environmental impacts, LCAs enable stakeholders to identify opportunities for improvement, optimise resource utilisation, minimise waste generation, and ultimately enhance the overall sustainability performance of projects. Moreover, LCAs foster transparency and accountability, aligning with the increasing societal and regulatory demands for environmentally responsible construction practices.

How will they be used?

In the construction industry, LCAs find application across various stages of project development and execution: LCAs are now mandatory for larger developments as part of the Greater London Authority (GLA) planning requirements, and the UKGBC's roadmap to Net Zero in Construction. They are a foundational part of the Science Based Targets initiative embodied carbon curves and any Government backed initiative to limit embodied carbon will require consistent application of LCA methodology.

Design phase: Architects and engineers utilise LCAs to assess the environmental implications of different design alternatives, materials, and construction methods. This enables them to make informed decisions that prioritise sustainability without compromising structural integrity or functionality

Procurement and material selection: Procurement professionals leverage LCAs to evaluate the environmental footprint of construction materials and components. By considering factors such as embodied carbon, energy efficiency, and recyclability, they can choose environmentally preferable options and drive sustainable supply chain practices.

Construction and operations: During construction and operation phases, project teams use LCAs to monitor resource consumption, energy usage, and emissions. This facilitates proactive management of environmental impacts, adherence to sustainability targets, and continuous improvement initiatives.

End-of-life considerations: LCAs inform decisions regarding end-of-life scenarios, such as demolition, decommissioning, or recycling. By assessing the environmental consequences of disposal options, stakeholders can adopt strategies that minimise waste generation and promote circularity.

How do they fit into other standards (at a high level)?

LCAs complement and align with various international standards and frameworks aimed at promoting sustainability in the construction industry. Some notable examples include:

ISO 14040 / 14044: These International standards provide guidelines for conducting LCAs, ensuring consistency, rigor, and comparability of assessment results. Adherence to ISO standards enhances the credibility and reliability of LCA studies, facilitating their acceptance and adoption by stakeholders.

RICS whole life carbon assessment (WLCA) for the built environment (2nd edition 2023): This standard builds upon European Standard EN 15978:: "Sustainability of construction works. Assessment of environmental performance of buildings. Calculation methods". The WLCA standard provides the detailed methodology to enable consistent measurement and quantification of whole life carbon emissions, inclusive of all embodied and operational carbon throughout the whole life cycle of the asset, from initial design to end of life.

Green building certifications: Leading green building certification schemes, such as LEED (Leadership in Energy and Environmental Design) and BREEAM (Building Research Establishment Environmental Assessment Method), recognise the value of LCAs in assessing and rewarding sustainable design and construction practices. LCAs contribute to earning credits related to materials selection, life cycle impacts, and environmental performance.

Net Zero and carbon neutrality initiatives: With the growing emphasis on achieving net-zero carbon emissions and carbon neutrality, LCAs play a pivotal role in quantifying and reducing embodied carbon across the entire life cycle of buildings and infrastructure. Integration of LCAs into carbon accounting frameworks facilitates informed decision-making and progress tracking towards carbon reduction goals.

The Science Based Targets initiative (SBTi) has published the draft embodied carbon targets. There are currently over seven thousand companies signed up to the SBTis, with over eight hundred companies in the real estate and construction industry signed up. Below are the draft embodied carbon benchmarks from the SBTi.

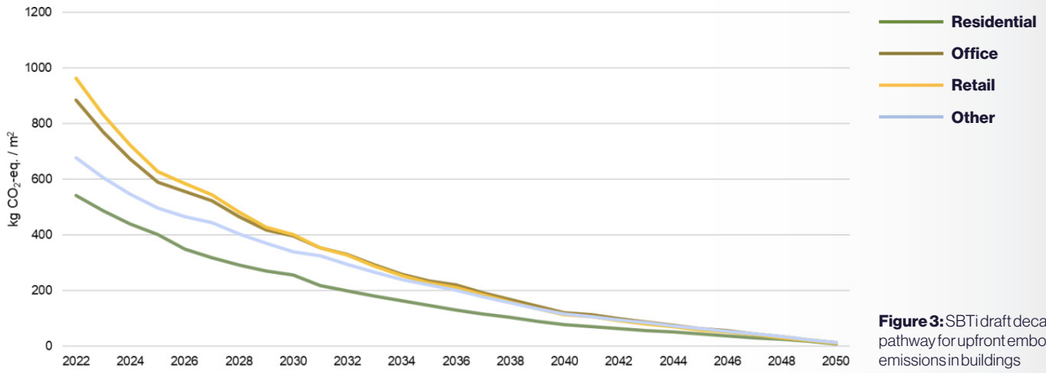


Figure 3: SBTi draft decarbonisation pathway for upfront embodied GHG emissions in buildings

Why is verification required?

It increases the accuracy and credibility of results. It is a requirement under the Greater London Plan, the UKGBC's Net Zero Carbon framework definition, and the new RICS professional standard.

It helps ensure that an assessment is consistent and comparable with different projects, allowing for meaningful benchmarking and analysis. It provides assurance to stakeholders, including clients, investors, and regulatory authorities, that the assessment has been conducted in a rigorous and transparent manner.

What training is available?

Recognising the critical role of LCAs in advancing sustainability in construction, Construction Carbon has worked with industry partners to develop a two stage training program focused on building LCAs. These training sessions equip industry professionals with the knowledge, skills, and tools necessary to conduct robust and meaningful LCAs, aligned with best practices and international standards. Participants gain insights into LCA methodologies, data collection techniques, software applications, and interpretation of results, enabling them to integrate sustainability considerations effectively into project planning, design, and decision-making processes.

This programme has been developed by leading industry professionals, including Simon Sturgis, lead author of the RICS professional Standard (2017 and 2023), Jane Anderson author of European standards (including EN 15978) and a leading EPD verifier, Pat Hermon, BRE technical Lead, Leonardo Poli (introba and OneclickLCA). The programme is supported by the Laudes Foundation, designed in partnership with CIBSE Training and the free initial training is to be delivered in partnership with the Supply Chain Sustainability School.

This course is suitable for anyone working within the real estate industry. It is aimed at developers, surveyors, contractors, consultants and their teams who would benefit from a foundation in sustainable construction, life cycle assessments and the standards, policy, legislation and guidance impacting construction decision making.

This course will form the foundation to becoming an accredited UK Life Cycle Assessor, as an Accredited LCA Training programme will be launched by CIBSE by the end of 2024.

What you will learn

This free course is designed for developers, students and sustainability professionals who wish to learn more about carbon efficient construction, life cycle carbon and the process of assessing carbon in a consistent way.

Key topics

- What is embodied carbon and its impact on the climate emergency. What is carbon efficient construction and the regulations driving the need to measure and reduce life cycle carbon in construction.
- Life Cycle Assessment (LCA) core concepts, including building life cycle stages, environmental impact assessment, and the data types required for performing LCAs.
- Environmental Product Declarations (EPD), what they are, why they are so important and how they are managed.
- Materials, what are the key contributors to embodied carbon, how do building techniques impact embodied carbon, decarbonisation and where to focus attention.
- International Standards overview including standards, policy, legislation and guidance.
- Wider context of sustainable construction including global regulation, the business case and sustainability beyond carbon

Delivery method:

- Six 45min pre-recorded modules.
- One live 90min course recap / Q&A session.
- One online course assessment, a multiple-choice test issued after completion of sessions 1-6 and having attended the live course recap / Q&A session.
- A CPD Certificate of Course Completion issued upon passing the course online assessment which will confirm CPD hours attained. To enrol, simply register using this link here: **https://www.constructioncarbon.com/training/lca-training**

About the authors: Gilbert Lennox-King and Tom Scott are co-founders of Construction Carbon, a company dedicated to simplifying embodied carbon for industry stakeholders through training, verification and software. Between them they have over 35 years delivering carbon reductions in the property industry, both in construction and operation. To learn more, visit **www.constructioncarbon.com**

Dr. Natasha Watson
Associate

BURO HAPPOLD

Embodied Carbon

With decarbonisation of the UK energy grid and more efficient building systems, embodied carbon is already a much bigger percentage of a building's whole life carbon than before, and the United Nations Environment Global Status Report (2017) indicates that 49% of the total carbon emissions from global new construction between 2020 and 2050 will be embodied carbon.

What is Embodied Carbon, and why is it relevant to achieving Net Zero Carbon?

Embodied carbon is a term used to describe all of the green house gas emissions associated with the extraction, manufacture, transportation, construction, maintenance and disposal of the materials used to construct buildings and infrastructure. Carbon dioxide (CO_2) is not the only gas that contributes to global warming, however embodied carbon uses carbon dioxide equivalent (CO_2e) as a unit to compare the relative global warming potential of many greenhouse gases compared to CO_2 over a 100-year life span in the atmosphere.

The embodied carbon typically comes from three main sources. Firstly, carbon dioxide and other greenhouse gases may be emitted due to chemical processes involved with the creation of building materials. For example, the processing of limestone to turn it into cement results in the release of carbon dioxide gas as a by-product. Secondly, carbon dioxide is emitted if fossil fuels are used to provide the heat and energy needed for the processing of raw materials into building products (e.g. smelting iron from iron ore). Finally, carbon dioxide is released if petrochemical-fuelled vehicles are used to transport building materials between locations such as from a quarry to a processing plant.

The Paris Agreement is an international treaty that was signed by 196 parties at COP 21 in 2016 to keep global warming to no more than 1.5°C. In order for this to be achieved, carbon emissions need to be reduced by at least 45% by 2030. Reducing embodied carbon will have a significant impact on the ability of the industry to reach this target.

Where are embodied carbon hot spots on projects?

The majority of the embodied carbon of new buildings is in the making of the new materials that go into a project (modules A1-A3; please see Embracing Sustainable Construction: The Role of Life Cycle Assessments (LCA) training on page 28 for more information).

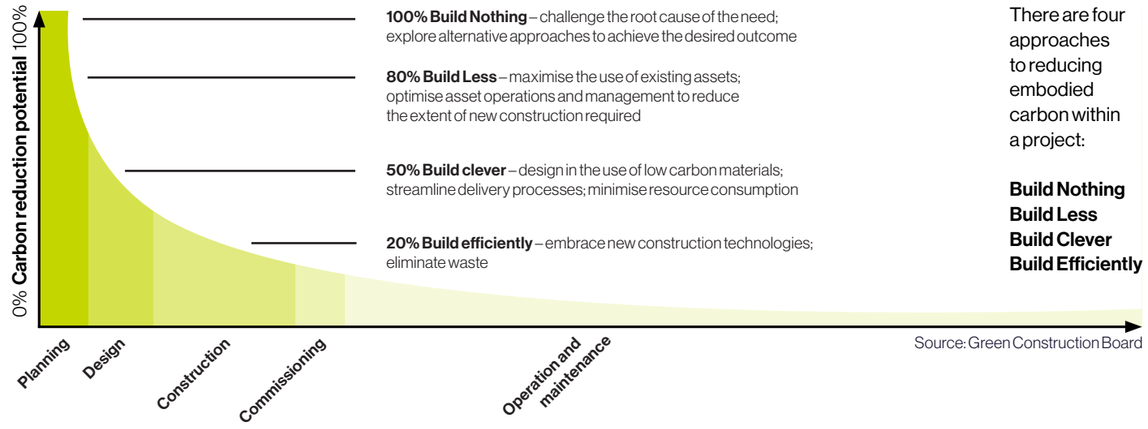
The specific breakdown of which elements of a project contribute the most to the total embodied carbon of a project will vary depending on building type, size, design, replacement rate assumed, refrigerant type, and whether the building is a retrofit or not. For infrastructure projects, it will vary depending on the type of infrastructure project and the relative size and extent of the different elements (e.g. kilometres of road, area of hardstanding).

It is generally accepted that for projects which create new buildings, the substructure and superstructure are the largest portion of the embodied carbon. However findings are showing that refrigerant leakage and regularly changing fit out also have a significant impact on embodied carbon.

For infrastructure projects, typically the elements that use the most material will be the elements that contribute most to the embodied carbon of the project. This is unlikely to be true for projects that use bespoke machinery and chemicals (e.g. electrical sub stations and water treatment plants), however there is not yet enough evidence to understand exactly where the hotspots for these projects may be.

How can Embodied Carbon be reduced?

Embodied Carbon reduction on a project can happen at any stage; it's never too late to make savings. However, the earlier that embodied carbon reduction is pursued, the larger the potential savings.



There are four approaches to reducing embodied carbon within a project:

Build Nothing
Build Less
Build Clever
Build Efficiently

Build Nothing

Although a seemingly counterintuitive approach for professionals working within the built environment, challenging the need to build something to solve the client's problem is an important step for embodied carbon reduction.

This can be achieved through challenging the need to create new spaces to achieve the desired outcomes. Leveraging hybrid ways of working and learning can reduce the amount of new space needed for desks and classrooms, and certain requirements can be hosted in existing buildings (e.g. create a partnership with a café close by to provide sustenance rather than creating a new canteen in an office. The amount of construction needed can be further reduced through creating multi-functional spaces and using outdoor covered spaces to provide functions that are required.

Another solution is to use vacant properties that are already available. Within the UK, there are over 170,000 empty commercial buildings (Glide Real Estate 2019) and over 300,000 homes in England, Wales, and Scotland that have been vacant for more than 6 months as of November 2021 according to the Statistical release Local Government Finance Local Authority Council Tax base England 2021, Scottish Empty Homes Partnership, and Welsh Government.

For infrastructure projects, 'build nothing' could look like rigorous assessments and detailed modelling of existing infrastructure to determine the minimal interventions that are needed. An award-winning example of this is the 'Elizabeth Line Gantry Rigorous Assessments' project in London undertaken by the Buro Happold Bridges team.

Build Less

Retrofitting an existing building or asset has a significant impact on the reduction of the embodied carbon of a project, as the existing building elements are currently considered as having a much-reduced embodied carbon.

Retrofitting appropriately requires a shift in perspective compared to building new. When considering buildings new, the building itself is being shaped around the requirements. When retrofitting, the requirements need to be shaped appropriately to the existing building. This can sometimes be considered limiting for clients, but these boundaries and limitations, if paired with the right amount of time to design and iterate, can create more interesting spaces.

Unchallenged requirements ▶ **New building** to suit those requirements ▶ **Existing building** ▶ **Adjusting requirements** for that building

Retrofitting does not need to be an 'all or nothing' endeavour. A good way of considering the different levels of retrofitting that can be explored for a building is by considering its different building elements using Brands 'shearing layers' model.

Figure 1 Examples of Retrofitting using Brands Layers
(Images from Buro Happold and Adaptable Futures)

Lakeshore Phase 2
Structure – Floor plates removed to form atrium

Appleton Building
Services – Removal of roof plant
Skin – New facade

Here East
Skin – Glazed façade to let in light
Structure – Mezzanine floors added

Analytics
Social – People flow modelling for increasing performance of existing building

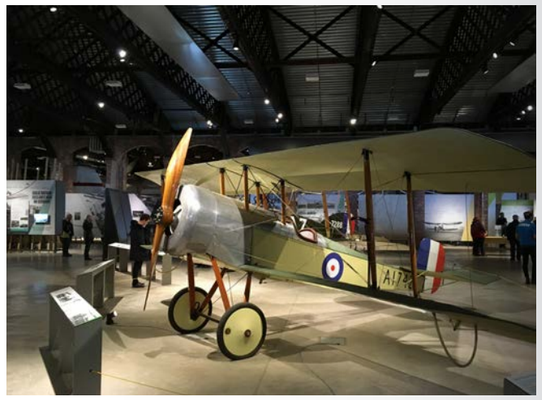
Bristol Aerospace, Patchway

An award-winning example where the best balance of conservation and new-build was struck, is Bristol Aerospace in Patchway, Bristol.

Bristol Aerospace comprises of two main buildings; a new hangar as home for Concorde and the retrofit of the existing WWI Grade II Listed hangar 16S to house other elements of the aerospace collection.

Prior to its new home, Concorde was parked on the runway and at risk of degradation and vandalism. It was also difficult for visitors to truly appreciate this piece of aircraft history. Only the space that was needed was built for the new hangar, which resulted in an efficient use of materials and lower running costs as there was less space to heat and ventilate. This meant that a complex construction process was needed where Concrete was moved into the new hangar, and the building completed around it.

Hangar 16S required upgrades to improve thermal comfort for the museum visitors and ensure that the collection had the best conditions for conservation. The existing uninsulated roof which contained asbestos was replaced with a new insulated roof that was in-keeping with the original vernacular and repairs to the timber-lattice Belfast trusses were made in un-stained softwood, to indicate where repairs have been made. The existing hangar doors were not secure, and so a secondary layer of removeable insulating panels was installed behind them on a new floor plinth. This improved the thermal comfort of the space, but also allowed for the collection to be moved.



Build Clever

Further embodied carbon savings can be achieved through challenging certain design criteria that result in an increase in material usage. The amount of material used can act as a rough proxy for embodied carbon; with the heavier the building, the higher the embodied carbon typically.

The specific design criteria for the project will vary greatly, however there are a few key challenges that are common across different project types from a Structures perspective, reducing the space between columns and challenging the need for 'adaptability'.

Regardless of whether a building is made from steel, concrete, timber, or otherwise, reducing the distance that the floors have to span between columns and walls will result in a reduction in embodied carbon. This is because floors are a significant contribution to the overall material used within a building and they are inherently inefficient structures as they prevent people from falling to the floor below. Through having a smaller distance between the vertical supports for a floor, the amount of material can be reduced, and subsequently the embodied carbon.

Secondly, the requirement for an 'adaptable' building is typically within a brief and can lead to an unnecessarily high level of redundancy within a building as the potential future use of the building is what is designed for, not the initial use-case. This not only adds embodied carbon upfront for a potential future use, but also upfront cost. One way of mitigating this is to design the floor slabs for the initial use case and include redundancy in the columns and foundations only.

Build Efficiently

Once all of the previous steps have been taken to reduce embodied carbon, the final step is to ensure that the material that is being used within the building is being used efficiently.

Efficient design can only be achieved if there is sufficient time to optimise and there is a certainty that there will not be late changes to the design. This is a key area that project managers and clients can help ensure, through adhering to design freezes and programming design optimisation stages within a project.

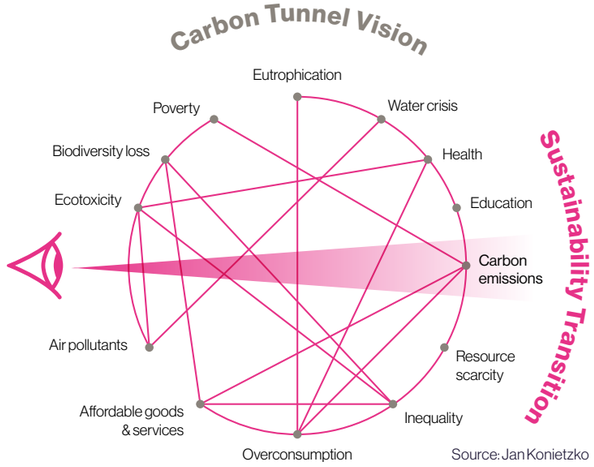
Conclusion

The above steps can help reduce the embodied carbon of your project, but it's important to realise that carbon emissions are not the only aspect to consider if we are to achieve an equitable and just transition to a sustainable future.

For an inclusive, sustainable, and appropriate design, reducing the embodied carbon of a project must be balanced with the value that design decision can provide.

The value can be in terms of inclusive design interventions, such as evacuation lifts for occupants with impaired mobility in an emergency situation and increased space requirements for transition spaces in accordance with PAS 6463:2022 to help make spaces more inclusive for those with neurodiversity. These are two examples of interventions that will result in a higher embodied carbon, but the value is high as the spaces are more inclusive, and so it is worth the 'carbon spend'.

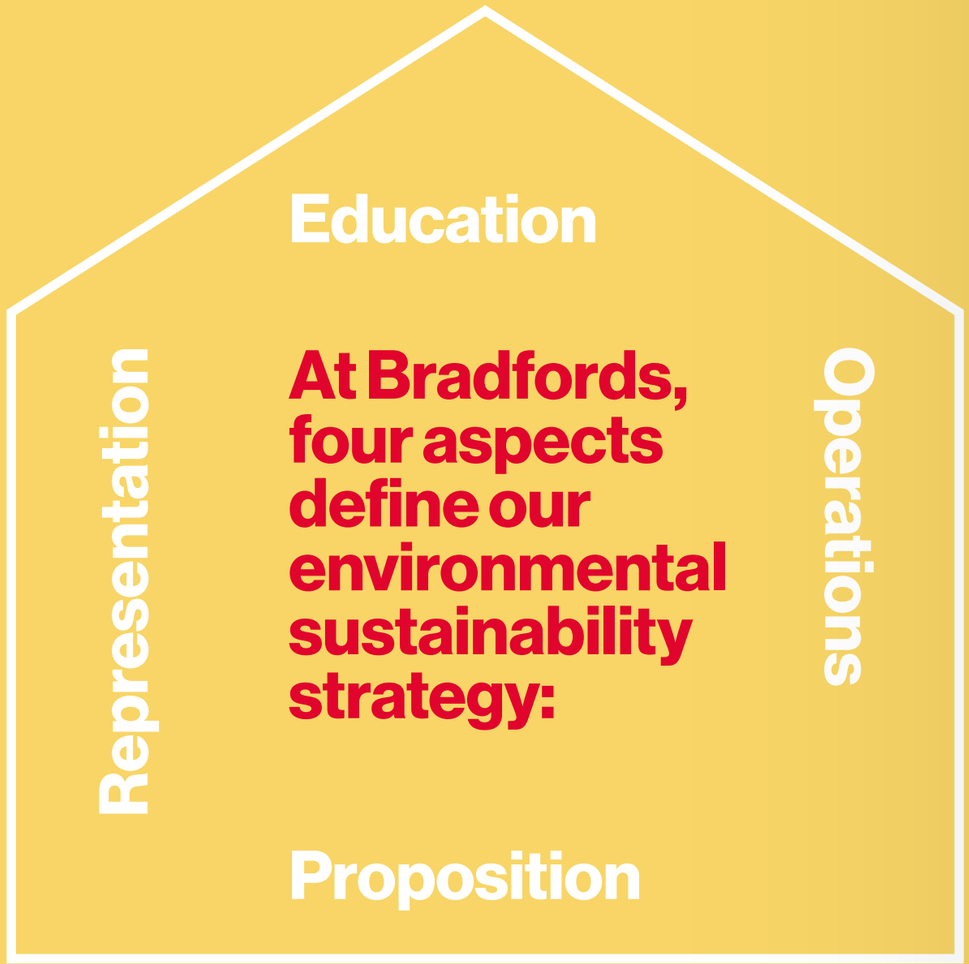
The value can also be in terms of lowering the operational energy of the spaces, for example increasing the quantity of insulation in external walls, installing louvres, or using triple glazing. These measures also increase the embodied carbon of the project, but they reduce the energy demand of the building, and so can also be considered high value embodied carbon.



Source: Jan Konietzko

Giles Bradford
Head of Sustainability
Bradfords Building Supplies

Materials, Merchants and Net Zero



At Bradfords, four aspects define our environmental sustainability strategy:

Education

There are plenty of lower impact solutions – systems, materials and products – out there. Some new, some as old as building itself.

Image copyright: Södra

But the perception amongst both the merchant customer base, and the merchants themselves are that they're:

– New, and therefore scary, and eyed with suspicion against a backdrop of methods and materials which have done the job over centuries.

– Expensive.

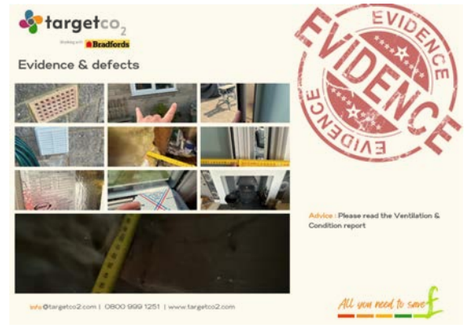
"More than a fifth of merchants said they are being prevented from moving to more sustainable building materials or products because their customers are unwilling to pay more. The other main barriers for merchants are too few sustainable products, lack of clarity about what makes a product more sustainable and low customer awareness of the need."

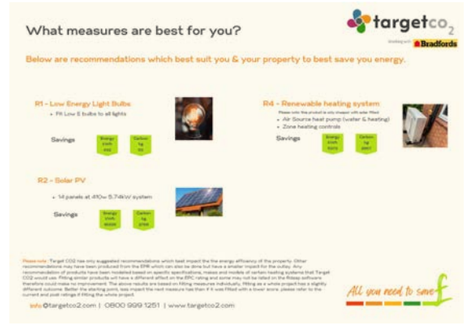
Source: BMF State of Sustainability in the Building Materials Sector, September 2023

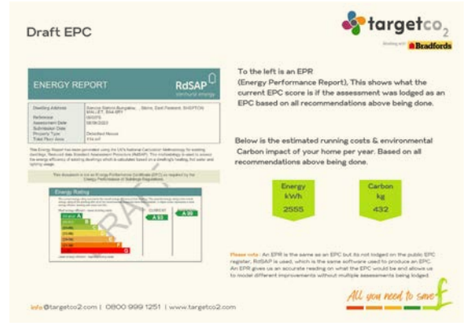
There's work to be done, all within the remit of the merchant, to demonstrate value, and to ensure that their teams are confident to advise on and sell lower carbon alternatives. At Bradfords this is achieved through engagement with our supply partners and increasingly asking them to deliver training and information to both our teams and our customers. It will take time – carbon is scientific, and anyone who's tackled an EPD will know that the information is not simple to apply to a product in the units which a builder generally measures it in, whether that's numbers of blocks or sheets of plasterboard.

Since 2022 we have been running our 'Building Sustainable Communities' events, which have always included some level of brief around carbon in building materials, and we are about to work with Plymouth University's Net Zero Exchange programme to put many of our teams through a climate literacy course.

Bradfords approach to domestic retrofit gives a great example of where we've understood the need for confident teams ahead of the main demand for solutions, giving 48 employees full retrofit assessments of their homes during 2023. Feedback has been universally positive, and has started the journey of understanding for what will become a significant part of our market.

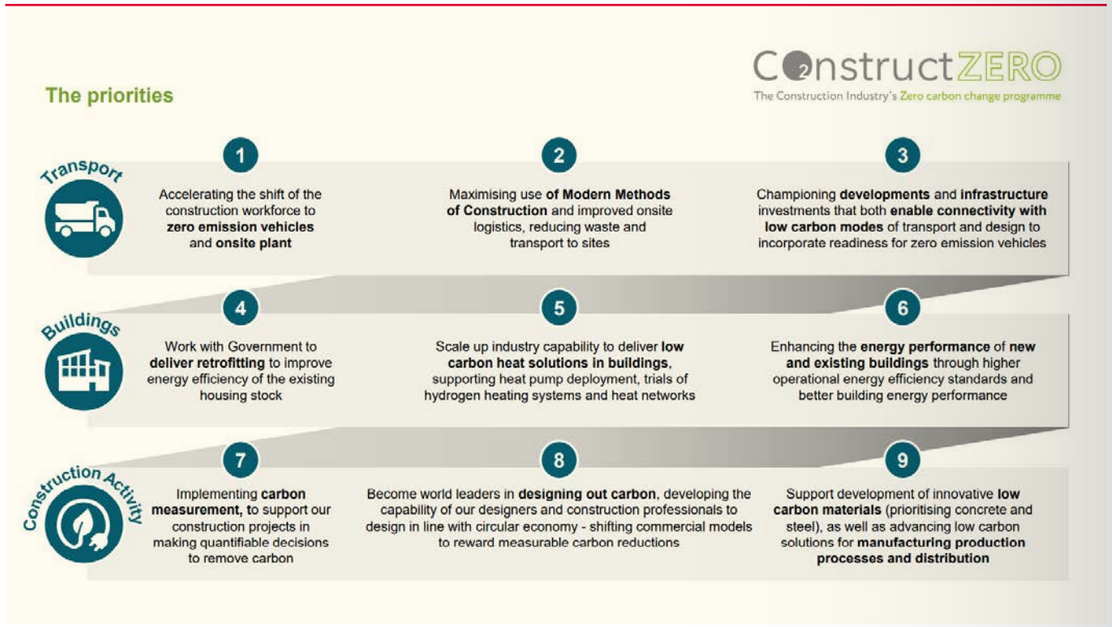






Excerpts from one of the Home Energy Saving Packs for an employee home

Operations



CO_2nstructZero's 9 priority framework

As high level guidance, the Construction Leadership Council's 'CO_2nstruct Zero' framework challenges the industry to decarbonise around the transport aspect of building, as one of the three core themes. This aligns with our priority to reduce our Scope 1 carbon footprint.

The real prize here is to improve the efficiency of the fleet which in simple terms is simply reducing the miles per delivery. At the same time at Bradfords we continue to assess alternative fuels. Whilst it's in the merchant's gift to route efficiently, as contractors, developers and builders start to grapple with Scope 3, they too can make a dent in this through careful attention to aggregating orders and therefore minimising the deliveries to site.

Beyond this, renewable energy supply, electrification of forks and cars, and better behaviour around use of utilities in our branches make a significant contribution to reducing Scope 1.

Proposition

Between 95-99% of a merchant's carbon footprint lives in Scope 3. Of which the majority is about the products we buy and sell. In their manufacture, packaging, distribution and associated activity upstream, and in the emissions associated with operational use.

It's in our gift to choose what we sell, and whilst the move to lower-carbon materials and products is necessarily a transition, Bradfords are working hard on two aspects – firstly to make sure that we know enough and have appropriate low carbon solutions in our range to influence the purchasing decisions of our customers, and by default therefore drive demand and give manufacturers confidence to transition faster to their lower carbon solutions.

Second to be challenging our suppliers on their carbon credentials. With the cost of carbon only going one way, there's a real commercial benefit to understanding this and leveraging it to drive the right behaviour up the supply chain.

75% of Bradfords' Scope 1 carbon footprint is created by our delivery fleet: some 140 LGVs and a similar number of vans contributing 3,270 tonnes CO_2e in 2023.

Electric fork lift truck battery pack. Bradfords added 27 of these to its fleet in 2023.

Bradfords Glastonbury branch conduct the sector-first end-end fully transactional test of the Pallet LOOP circular economy model, supporting one innovative approach to drive waste and carbon out of the sector.

Indinature Inditherm hemp insulation. Image copyright: Inditherm

Representation

There are some practical barriers to decarbonisation, and concerns from our customer base and peers. Bradfords focus on representation sees us proactively send feedback to government through our trade federation, the Builders' Merchants Federation (BMF), covering topics such as the heat pump quota for boiler manufacturers and nutrient neutrality.

We also sit on the Green Construction board providing feedback to this Net Zero-focussed group from the merchant perspective, as well as chairing the BMF Sustainability Working Group, which has specific direction to deliver solutions for how merchants can accelerate the adoption of more sustainable materials. Aligning with the sector's product data standardisation project (also chaired by Bradfords), focus is on carbon and EPDs, and will see initiatives delivered by the BMF to provide guidance and training around this.

MP Mel Stride visiting constituency branch, Moretonhampstead with branch manager Dan Mullin and BMF Policy and Public Affairs Officer, Brett Amphlett, April 2023

Summary

Merchants are uniquely placed to support the transition to Net Zero:

Our proposition – lower carbon solutions and the knowledge to make sure that we supply the appropriate materials and products.

Our customers – Bradfords has over 50,000 trade customers, many of whom we see in person daily. We have the ability to influence through those strong relationships and regular touch points.

Our manufacturers – a crucial route to market as the breaker of bulk, aggregator and final mile delivery, we can transmit and influence our supply chain's decarbonisation.

SCOPE 3 AND ORGANISATIONAL DECARBONISATION

Emma Sueref MSc MRICS
Director of Sustainability and Growth
Coreus Group

Pressures to decarbonise are mounting from multiple directions; the IPCC published a stark review in 2023 that outlined how critical it is to act now to keep global temperature rises below the target 1.5 degrees outlined in the 2015 Paris Agreement. Even organisations who are not themselves dedicated to a sustainability agenda will be subject to commercial pressures to engage with progress towards Net Zero; the link between strong Environment, Social and Governance (ESG) credentials and business success means investors are using them to decide on how they spread their finances.

Scope 1 – Emissions arising directly from activity owned or controlled by the reporting organisation, such as fuel combustion.

Scope 2 – Emissions arising indirectly from purchased electricity consumption – for heating and cooling buildings.

Scope 3 – All other indirect emissions arising from an organisation's value chain, including but not limited to capital goods, purchased goods and services, upstream activities, downstream impact of sold goods and services and business travel.

The nature of the Scope 1, Scope 2 and Scope 3 emissions model introduced by the Greenhouse Gas Protocol means that organisations with Net Zero targets must collaborate with their supply chains to promote decarbonisation and sustainable operations to address their own Scope 3 emissions, which are very often the largest contributors to an organisation's total footprint.

Now more than ever, there is an increasing demand for suppliers who can demonstrate sustainable solutions and contribute to progress towards Net Zero, and opportunities to collaborate throughout the value chain for a more sustainable future are growing constantly.

Data reporting for Net Zero

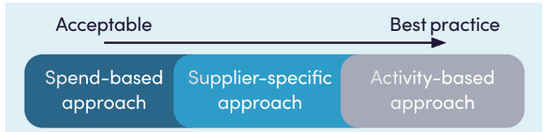
With technologies surrounding energy metering such as smart meters, smart building technology and sophisticated BMS systems widely available to estate owners, Scope 1 and 2 emissions reporting is often reasonably straightforward thanks to sufficient guidance and government-published emissions conversion factors available on an annual basis. All carbon accounting data processes follow the same high-level approach:

Challenges related to carbon accounting are more often associated with Scope 3 reporting, where organisations are expected to collect significant amounts of data in order to cover all the 15 Scope 3 reporting categories.

There are many benefits of accurately measuring Scope 3 emissions, as it allows businesses to:

- **Evaluate the focal points throughout the value chain to determine priority areas for reducing emissions.**
- **Distinguish between leading and lagging suppliers based on their sustainability efforts.**
- **Guide decision-making within procurement, product development, and logistics teams to implement interventions that yield substantial emission reductions.**
- **Promote product innovation aimed at crafting more sustainable and energy-efficient products.**
- **Enhance the climate strategy to deliver tangible, measurable, and noticeable improvements.**
- **Engage employees positively to curb emissions from business travel and commuting.**

There are three main types of consumption data that most organisations choose to collect in order to report on their Scope 3 carbon emissions, leading to widely-accepted hierarchy of best practice.



A spend-based approach applies conversion factors based on a sophisticated input-output model that estimates the $tCO_2e/£$ of products within a given procurement category. These are great for where organisations struggle with collecting volume data within their supply chains.

Supplier-specific data often follows on first, where organisations can obtain conversion factors from their own suppliers to better reflect the emissions intensity with their specific value chain, again often represented as $tCO_2e/£$. The readiness of supply chains to provide this data is sector specific, and organisations should expect to need to collaborate with their supply chains in order to obtain this over time.

Best practice though, is to apply an activity-based approach where the conversion factor is reflective of the specific activity taking place, and applied to the direct unit of measurement, rather than a proxy such as expenditure. These are typically most accessible for the likes of utilities consumption, waste activity and travel activity.

Choosing an appropriate conversion factor is crucial to maintaining a reliable data reporting system that can lead to responsible decision making, and consultancies are now well equipped to support in the development of a comprehensive, appropriate carbon accounting system. Organisations reporting their emissions must ensure that the conversion factors applied in their calculations are appropriate regarding:

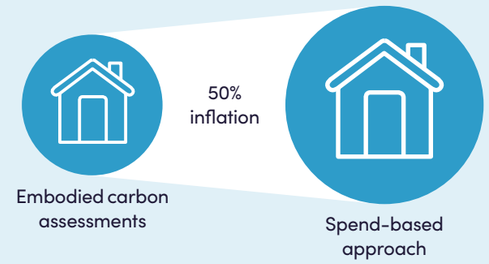
- **Temporal accuracy – how close to the time of activity does the conversion factor apply?**
- **Geographical accuracy – how reflective of the geographical emissions specificity is the conversion factor being applied?**
- **Consistency across the reporting scope – is the calculation scope for conversion factors consistent across all areas of reporting?**
- **Consumption data availability – can an organisation actually measure the consumption required to apply a given conversion factor?**

Spend-based methodologies have come under criticism in more recent years due to questions over their accuracy and their ability to really demonstrate progress against targets. Comparisons with supplier-specific and activity-based approaches have seen significant differences in the reported emissions. Construction projects calculated using a spend-based approach could be inflated by more than 50% compared to embodied carbon assessments, and the adoption of supplier-specific values can lead to similar differences, many cases show variation of between 30 and 50%. Conversion factors are also published several years following the data collected to calculate them, which means changes to value chain emissions and costs since the year of calculation leads to inaccuracy, particularly during periods of high inflation.

The important question for organisations to ask themselves is: Is the data accurate enough to act upon? In the majority of cases, even those based heavily on spend-based methodology, the answer to this is yes.

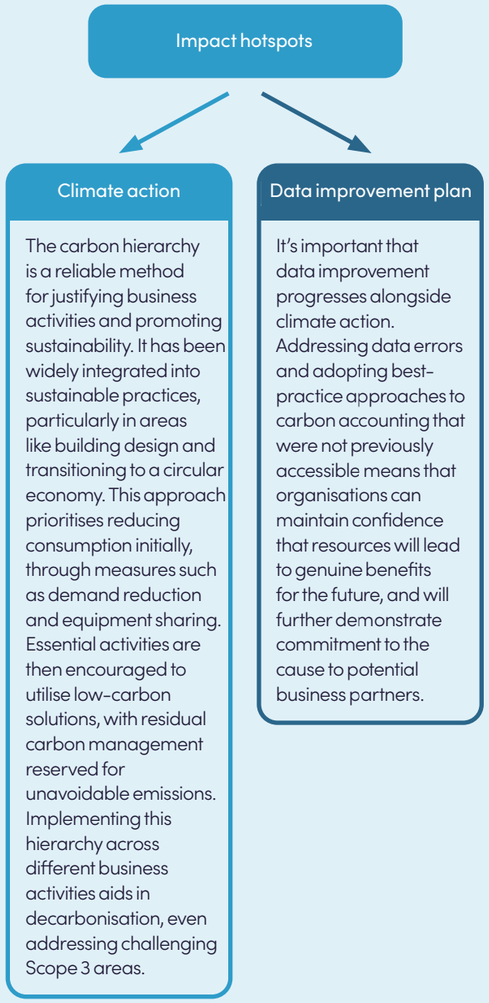
Even if the absolute reported value might carry room for improvement, the emissions profile will allow high-impact areas to be identified, and resources can be directed to address them appropriately.

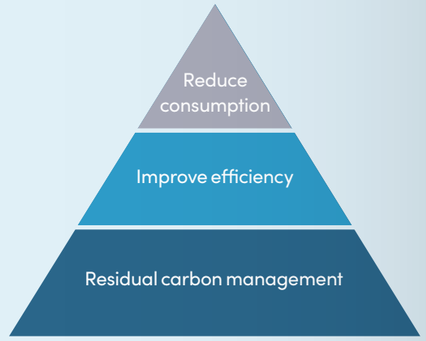
Construction projects calculated using a spend-based approach could be inflated by more than 50% compared to embodied carbon assessments, and the adoption of supplier-specific values can lead to similar differences. Many cases show variation of between 30% and 50%.



Acting on data

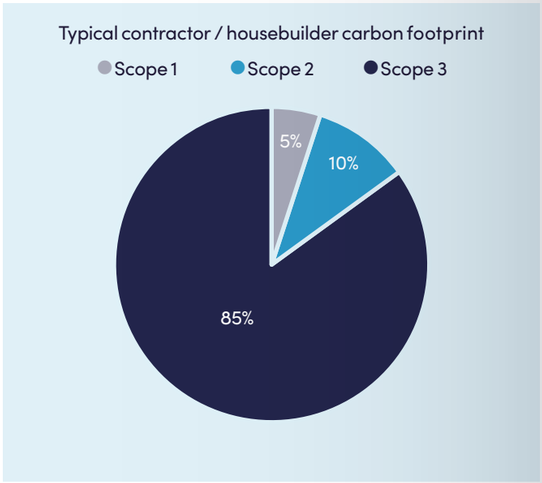
Acting on a sustainability data system to progress towards Net Zero should lead to two parallel sets of activities:





The carbon hierarchy

Organisations looking to achieve Net Zero cannot afford to ignore the importance of engaging with their supply chains. It is not unusual to see over 50% of an organisation's emissions footprint arising from their purchases alone, particularly for those embarking on new-build construction projects. Our experience of working in the built environment and with contractors and housebuilders is that total Scope 3 emissions often represents 85% of their overall carbon footprint. Engaging with supply chains can open doors to both enhanced data collection for carbon accounting, and for promoting innovation for sustainable solutions via the creation of sustainable markets.



Engaging with the supply chain

Earlier we explored the importance of moving towards best-practice carbon accounting methods to maintain confidence in progress towards Net Zero. However, the truth is that many organisations do not report on activity-related consumption as standard, outside of water and energy related activities (which in some cases also isn't accurately reported). Take purchased goods and services as an example; finance systems will usually hold value data, but will not typically hold volume data required for an activity-based approach. In the short term at least, collecting supplier specific emissions data can improve carbon accounting processes for many organisations, and can also start to trigger culture change within the value chain; just by starting a conversation.

Understanding where the greatest opportunity within a given value chain means assessing stakeholders against the following main criteria:

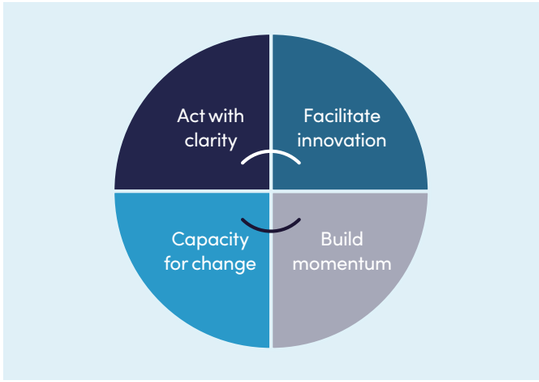
Emissions impact – What level of contribution does the supplier make to the overall emissions impact?

Net Zero maturity – How mature is the supplier with regard to providing sustainable solutions, and how mature is the sector in which they operate? Is there likely to be significantly better options regarding contributions to Net Zero?

Market competition – How competitive is the market that the supplier operates in? If sustainability requirements are ramped up, will supplier options be limited too much?

Opportunities for engaging with supply chains will very often already exist within organisations, the trick is embedding sustainability within relationship management efforts and identifying which suppliers offer the greatest opportunities for decarbonisation. Suppliers can be prioritised using their sustainability maturity, their impact on Scope 3 emissions, the commercial influence an organisation may carry, and the competitive nature of the market. High-impact, strategic suppliers should be a priority, especially if they operate within a highly competitive market, and if an organisation is of particular strategic importance to them. This scenario can spark real innovation across a value chain, where all parties recognise the need to act together to reach a common sustainability goal.

Cultural and behavioural change



Sustainability can be embedded into the culture of organisations using existing, tried and tested frameworks. Many exist for this purpose, but the four-part framework presented references the need to act with clarity so that stakeholders can all understand goals set and what is required to achieve them. Facilitating innovation to create safe spaces to try new, innovative solutions. Building capacity for change is vitally important, where fears of change often arise from uncertainty. All of these contribute to building widespread momentum, again highlighting the benefits arising from collective action.

Building a collective approach to achieving Net Zero across business networks and overlapping value chains is crucial. This will support us all in maximising opportunities for impact reduction, and mitigate risks of not achieving ambitious sustainability targets such as Net Zero.

Numerous effective working groups within the construction industry are actively addressing both challenges and opportunities. Now is the time for us to unite and capitalise on existing frameworks and channels to integrate sustainability deeply into our organisations. The significant progress that's been made to date is reason to celebrate and demonstrates that necessary changes really are possible, but, it's also evident that more work needs to be done to fully realise our sustainability goals.

A developer's decarbonisation journey

Catherine Pinney
Decarbonisation & Environment Manager

TREVETH

A CORNWALL COUNCIL OWNED PARTNERSHIP

Treveth is an innovative property and investment company, building high-quality, sustainable new homes, communities, and workspace for people who live and work in Cornwall. Created by Cornwall Council, the company has a 'profit with purpose' ethos to deliver social, environmental and commercial benefits, with profits returned to support Council services.

Treveth, together with its affordable housing company Perran Housing, has been certified as a B Corp, one of the first development companies to do so in the UK, and the first local authority owned B Corp. They also won the Carbon Neutral category in the 2023 Cornwall Sustainability Awards.

The effects of climate change highlight that we're in the decisive decade for securing carbon neutrality. We collectively need to move on from exemplars and scale up solutions to secure greater impact. This is where Treveth comes in.

Treveth is taking a strong and potentially unique lead in the volume housebuilding industry, delivering predominantly private and affordable rental housing, at scale, for locals, that are already designed to deliver on RIBA 2030 whole life carbon emissions targets. At Gwel Basset, Redruth, the first phase of 185 such homes is now in occupation, with more schemes in the pipeline. This has all been achieved by pursuing an asset-ownership model rather than a short-term gain approach to development.

The Treveth team with its B Corp certification

Community growing

Dudnance Lane commercial unit

The Coppers, Tolvaddon

As long-term stewards of their communities (3-year leases as standard), Treveth recognises the importance of embedding wider social and environmental considerations within its schemes, including water efficiency; connectivity to encourage alternative modes of travel and healthy lifestyles; as well as biodiversity net gain and community food growing inititiatives. This enables their residents to live a low carbon lifestyle with little effort.

All Treveth staff receive 'Carbon Literacy Project' training and this has encouraged everyone in the business to look at company activities through a different lens. At Park Lanneves, Bodmin, questioning of the levels strategy led to a redesign resulting in 1300 lorry loads of soil remaining on site and a verified saving of 700 tonnes CO_2e. The retention and refurbishment of an existing steel and concrete industrial structure at Dudnance Lane, Pool has saved a further 112 tonnes over new-build.

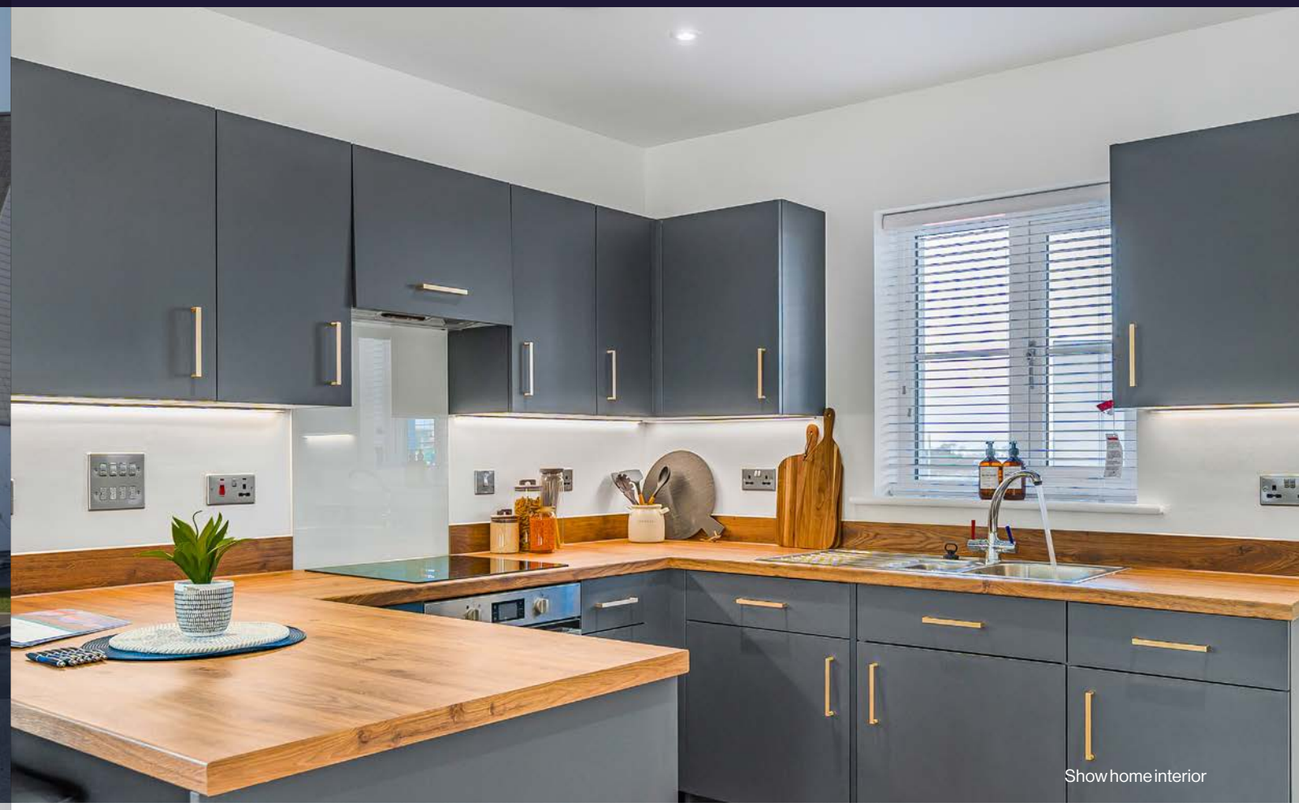
Construction and development is carbon intensive and Treveth has been considering a number of strategies to tackle this as their portfolio grows. A key priority is maximising the opportunities arising from Cornwall's abundant renewable resources and Treveth is actively supporting Cornwall's offer as part of the Great South West's 'Natural Powerhouse'. They have baselined their carbon footprint and developed a decarbonisation strategy.

From this they are now exploring the potential for greater incorporation of sustainable construction methods and materials, alongside insetting solutions for biodiversity net gain and carbon sequestration.

With the construction industry responsible for circa 40% of UK carbon emissions, it is essential that we come together to challenge the way we do things and share experience (good and bad). Treveth will continue to share findings through the theme group and on their website.

Treveth case study: Gwel Basset, Redruth, Cornwall

A typical street scene

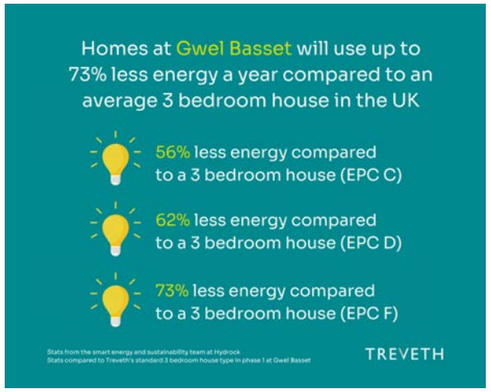


Show home interior

Gwel Basset is Treveth's first residential development to be delivered to their progressive and sustainable Design Guide. Homes are designed to achieve RIBA 2030 targets for whole-life carbon emissions, deliver high-quality standards and benefit from an in-house estate management process that aims to become the quality standard for Cornish residential schemes: prioritising local people and improving the quality of the local housing stock.

Through a series of phases,185 one to four-bedroom sustainable homes will only be available to those who live, work in, or have family connections in the immediate area. The majority of these homes are for private (90) and affordable (61) rent for an initial term of up to 3 years. Phase 1 was released in August 2022.

Design



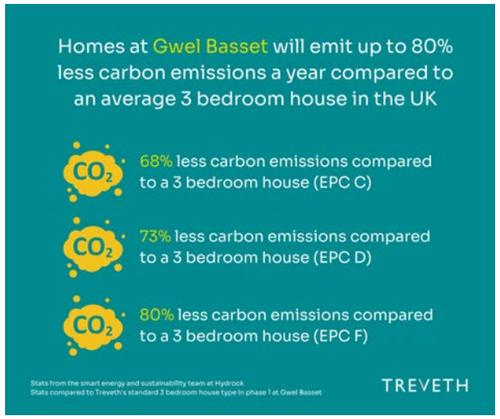
Gwel Basset benefits from a landscape led masterplan design process which has led to the creation of streetscapes and public spaces that reinforce biodiversity, character, connectivity and wayfinding. Green routes and habitat corridors have been carefully integrated into the layout, benefitting people and wildlife. Tree and plant species have been selected to thrive in the long-term challenges posed by climate change.

The homes at Gwel Basset have been designed to be distinctively Cornish in their form, materiality and arrangement around open spaces, creating harmony with the surrounding landscape. Material choice plays an important part in character, placemaking and maintenance, and was a key part of the design process. Wherever possible, materials such as timber frames and secondary aggregate blockwork have been sourced/manufactured locally, with robustness and longevity being key.

Gwel Basset homes are designed to respond to the climate emergency and help residents to live a low-carbon lifestyle with very little effort. House-types are thermally efficient, and easily maintained, having the following as standard:

- Fossil-fuel-free heating
- PV panels
- Air source heat pumps
- Fire misting system to high-risk areas
- Large porch with seat/storage suited to outdoor activities

Performance



Well ahead of the Government's plans, the homes at Gwel Basset can secure as much as 73% annual emissions savings compared to an EPC F-rated rental property in the open market. The scheme is 100% electric, so when the national grid decarbonises, the scheme will generate zero operational carbon emissions.

All homes are EPC A-rated, and Gwel Basset is believed to be one of the largest housebuilder projects in the UK targeting < 35 kWh/m²/y operational energy and < 625 kgCO_2e/m² embodied carbon. All house-types were also assessed for overheating using 2050 climate data to ensure they're resilient against overheating.

The masterplan was reviewed against the 8 design principles of the RIBA Sustainable Outcomes Guide as the scheme developed. This included assessment against parameters set out in the Building for a Healthy Life and the WELL Community Standard guidance. The results demonstrate that Gwel Basset performs well against all of these principles, ensuring excellent outcomes for residents in key health and wellbeing criteria. Additionally, the homes are 3% larger than national space standards; all houses meet M4(2) accessibility, and four bungalows are M4(3) wheelchair-user compliant.

Bee bricks

Playing our part in Net Zero: a social housing perspective

Paul Read
Director of Sustainability and Investment

Ailsa Exley
Sustainability Business Partner

magna

'Net Zero' as a concept is a key element of government policy, nationally and internationally, with the aim of eliminating net carbon emissions by 2050. Every industry faces challenges in meeting a goal, but with these challenges come opportunities.

This transition has the potential to have a positive impact for providers and their customers, redefining housing quality and creating homes that are better prepared for the future. This chapter considers some of the impacts of the Net Zero transition for the social housing sector, including the development of new Net Zero ready buildings, and the retrofit of existing homes. It will discuss primarily the context of energy usage as homes are lived in, rather than embodied carbon or supply chain emissions.

Defining Net Zero for social housing

The wider construction sector has a key in both sides of the Net Zero equation: including via developing Net Zero ready infrastructure, creating wind and PV farms, and the construction of the nuclear reactor at Hinkley Point to create supply of green energy. For registered housing providers (RPs), the focus is primarily on reducing demand, whilst contributing to the localisation of Net Zero supply.

For the purposes of this report, the following definitions apply:

- Net Zero: homes that are Net Zero in production and use
- Net Zero ready homes: homes that have been built/retrofitted in such a way that if their energy use was from a Net Zero source, they would be Net Zero
- Net Zero in use homes: homes that have been built/retrofitted to be Net Zero ready, and use a Net Zero energy source

The regional context

Within the South West, approximately 13% of homes are socially rented , and social housing providers develop around 11k homes a year (either built in-house or bought from housebuilders).

Achieving Net Zero relies on the decarbonisation of the electricity network, combined with the removal of reliance on fossil fuels to power and heat homes. For social housing providers (RPs), the focus is fabric-first, through retrofitting of existing stock, and electrification of the domestic energy supply. This is combined with the purchase or construction of 'Net Zero ready' homes (i.e., those that will be Net Zero upon full decarbonisation of the electricity grid). On top of this, RPs have the opportunity to work with other local and regional groups and stakeholders to develop long term strategies. In the South West, the South West Natural Powerhouse works to drive the Net Zero transition, and the decarbonisation of energy in the region. Whilst social housing does not control this decarbonisation, the industry can contribute via scheme- or community-based energy generation, or via collaboration with energy providers to help tenants access affordable energy.

As a region we have ambition and business case to become a net exporter of Net Zero energy by 2035. The region also has significant hydrogen capabilities to help transition heavier tasks such as heavy machinery, transport of bulk goods and aviation.

New build and retrofit – the key foci

It is now understood that there is a performance gap between design and 'in-use' for many homes, creating 'whole-life' cost implications for residents and social landlords. For landlords, new homes will often need to be retrofitted to meet requirements, meaning that having paid once to build, providers will have to 'pay again' to meet appropriate standards. For customers, this gap means that they are paying more for energy than expected and will have to contend with disruption for retrofitting works.

Magna has an MMC-first policy for new build, meaning they aim to build using MMC unless external factors prevent the use of modular construction. Homes for the South West, a collaborative body of Chief Executives in the South West, also advocate for further investment and skills development in off-site manufacturing and MMC . Magna has now delivered a series of proof-of-concept schemes with Volumetric MMC, with customers pleased with their home and its energy efficiency, and Magna achieving performance as scoped.

Alongside the construction of new build homes in-house, the focus for housing providers is on retrofitting and electrification of existing stock, a the and the purchase of 'Net Zero ready' homes. Key to this is that, whilst fabric plays an important role, we need to recognise the law of unintended consequences. In effect, a move to 'Net Zero ready' through retrofit could lower emissions, but force residents into fuel poverty if key factors such as space heating demand is not considered (for example, if energy demand is not lowered sufficiently to mitigate the impact of increased per kWh electricity costs).

Further complicating this issue is the focus on SAP ratings as a target for improvement – currently the target is for all social housing properties to be SAP C by 2035 (or 2030 for fuel poor households), and the Social Housing Decarbonisation Fund (SHDF) can be used to improve only properties that fall below a SAP C rating. However, the 'achievement' of reaching SAP C is not necessarily a reliable indicator of heating demand, meaning that the most problematic and hard-to-heat homes from a customer perspective may well not qualify for funding, and therefore retrofit costs must be met in-house. This presents a considerable challenge for already stretched budgets and means that the need to meet a centrally set target for SAP overrides the need to do work on the most difficult homes. This may result in poorer outcomes in order to meet targets, but without due consideration for what this really means for customers.

A further example of this is where retrofit works are undertaken 'incompletely' e.g., adding insulation without adequate ventilation. This can result in issues of damp and mould, adding to an already high risk and potentially high-cost area for many providers. It is crucial, therefore, that in undertaking work to achieve Net Zero, that there is effective consideration of potential unintended consequences on other areas of sustainable development.

Reaching 'Net Zero ready'

With funding such as SHDF in place, RPs are beginning to carry out wide ranging retrofit works on their stock to meet the SAP C targets, allowing better understanding of planning retrofit works and improving outcomes. Despite this, there are further challenges for RPs, outside those of SHDF funding limitations and regulated targets.

Whilst many homes can be successfully retrofitted to create more future-proofed homes that can meet and exceed regulatory requirements, many RPs will hold stock that will be more complicated or costly to retrofit, for example due to a building being listed. The clear need to retain stock due to housing need, (in the South West, it is estimated that 17k new affordable homes will be needed annually to meet needs) make it difficult to dispose of hard-to-retrofit homes. Furthermore, housing need necessitating the purchase of lower-quality housing from housebuilders has the potential to bring new stock into RP portfolios that will require retrofitting in future.

Furthermore, there is a well-documented skills shortage in retrofit. A number of colleges and training centres are beginning to plug these gaps, but it will take some time to fill the shortage occupations, creating higher levels of demand now, and a shortening timescale in which to complete works. For RPs, engagement with retrofit skills development will speed up the training of key personnel (internally and externally) and ensure directional alignment with the sector. By giving clear market signals on the direction of travel in terms of retrofit, RPs will help to encourage investment in new training and the entrance of new businesses into the market.

Customers and Net Zero living

Well-constructed and used all-electric homes can provide great benefits to customers, with lower bills, higher air quality and a more comfortable home. Magna has evidence of some enthusiasm for change as well as resistance to and the retrofit programme for some tenants, due to concerns around disruption or ongoing costs, is part of the whole system of Retrofit. Media coverage around retrofit and poor quality in new homes is unhelpful when it suggests that works result in higher bills or poorer quality of life, leading to likelihood of refusal will increase and the need to counter this with lived experience of other customers having a positive experience.

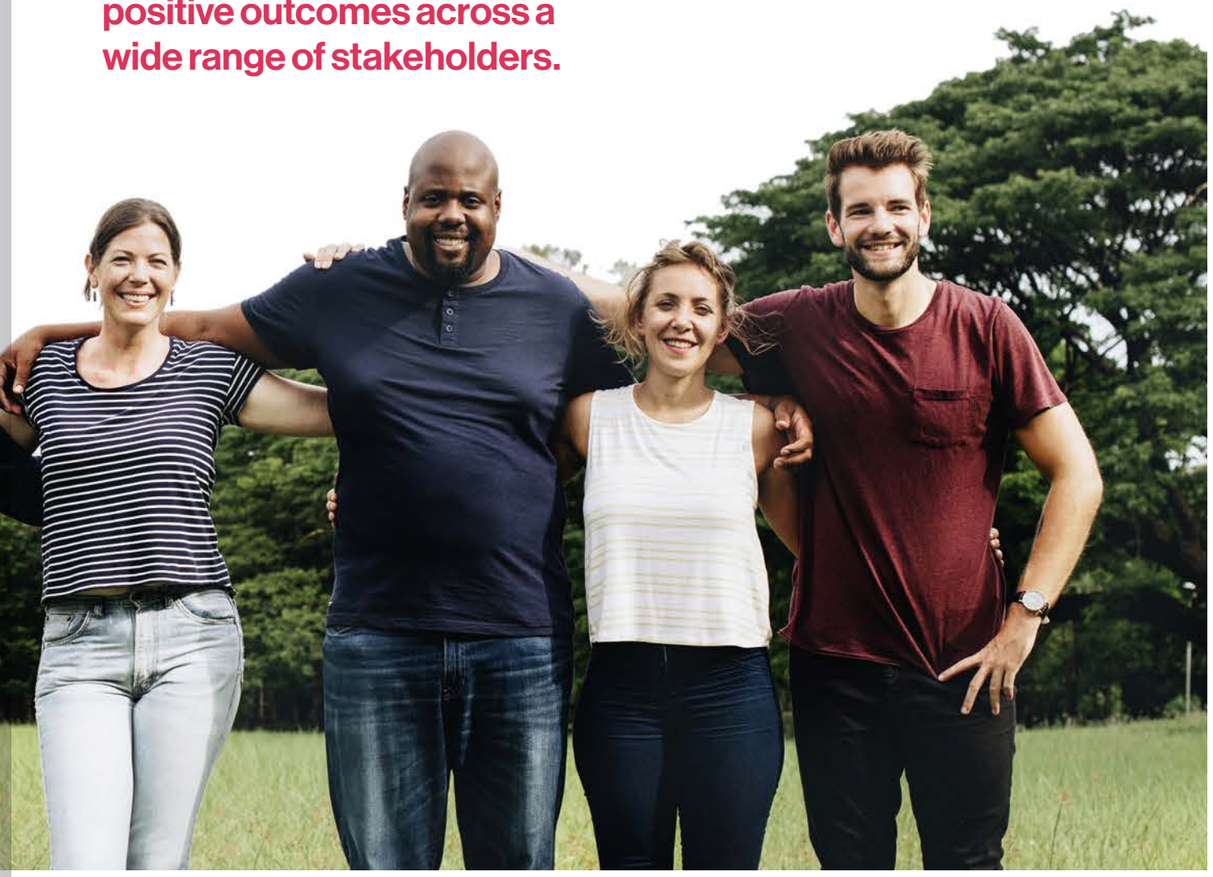
However, whilst it is clearly key that retrofit is carried out correctly, incorrect usage can increase rather that decrease customer bills. It is crucial, therefore, that retrofit project extends well beyond the works completion, with a follow-on team ensuring ongoing care to ensure the full benefits of retrofit works can be realised.

Despite the challenges that moving to Net Zero will present, it is clear that, effectively used, retrofitting and building to Net Zero ready standards generates positive outcomes across a wide range of stakeholders.

Bringing it together

Despite the challenges that moving to Net Zero will present, it is clear that, effectively used, retrofitting and building to Net Zero ready standards generates positive outcomes across a wide range of stakeholders. Once the basics are in place, it will be possible to consider longer term strategies such as district or estate wide heating systems in new-build or regenerated estates, as is common in parts of Europe. These district schemes would reduce or eliminate the need for individual heat pumps or other systems, reducing complexities for customers and allowing improved access for maintenance or upgrades. Key to this future is a cultural shift from Net Zero as an 'added bonus' to a cornerstone of new and regenerative development, as this will be fundamental to long term success.

In order to achieve this, collaboration between different RPs, and with the wider stakeholder community will be key. For example, joined-up approaches to factors such as retrofit or electric vehicle infrastructure between different RPs with overlapping geographies could help hasten change. For RPs, an additional benefit of considering Net Zero as a holistic project is that it has the potential to not only meet regulatory requirements but create real and tangible benefits for providers, customers, and the wider communities in which they operate. Closing the performance gaps between well and poorly performing properties could help reduce complaints and generate reputational benefits, particularly when combined with an effective customer engagement programme.



Legal considerations for your Net Zero or renewable project

Eve Laws
Partner, Agricultural and Rural / Strategic Land

Natalia Sokolov
Partner, Construction & Engineering and Head of Clean Energy

THRINGS
SOLICITORS

The South West is now set to lead the way as the UK's key hub for clean energy growth. Decarbonisation of the construction and real estate industry is of course critical to addressing climate change and achieving Net Zero targets within the South West region, nationally and globally.

Investment in new technologies and products continues to grow, making this an exciting and dynamic industry in which to work. This includes floating off-shore wind, nuclear, hydrogen, wave and geothermal projects all of which are gaining momentum in the region.

The advancements in the renewable and clean energy sector in the South West is prominent and becoming increasingly commercialised, with client's looking at new technology to increase supply across the region. Changing regulation, new technologies, time and cost and economic factors mean that this brings significant commercial and legal risk.

Following are just some of the key legal considerations to consider for your project:

1 2 3

Pro-actively engage professionals and partners / stakeholders early

With clean and renewable energy moving forward fast, competition for strategic land, land assembly and long-term contracts is growing. It is important to carefully consider and negotiate the terms of your project, considering the renewable infrastructure alongside planning, tax, construction, ecological, regulatory and real estate factors. You may also need to future-proof your project and consider decommissioning and clearance at the appropriate time.

Risk profile: Ownership and structure, financing and risk allocation

It is important to ringfence risk associated with a renewables project by structuring the deal properly. Many projects typically adopt a project company (or Special Purpose Vehicle, SPV) to deal with the development, financing, construction, operation and maintenance of a project and it may also hold all of the assets. The project company will be subject to a raft of contracts in a framework to engage the project parties, contractor, professional team, lenders and stakeholders. This helps to build up a risk profile of the project which can be used to engage funders.

The industry is seeing funders tightening up their lending requirements, often with an onerous due diligence process, to be satisfied before funds can be drawn. There may also be tax consequences to consider, and we advise seeking early input from the lender and tax advisor/accountant.

Consider 'green' leases / contracts

Incorporating clauses that promote eco-friendly operations in contracts is becoming increasingly popular and they will hopefully become the norm in future.

These clauses require commitments from all parties and promote collaboration in achieving Net Zero but attention must be paid to how these contracts might fall foul of competition regulations.

In recognition of the increasing popularity of inter-company agreements which aim to promote environmental sustainability initiatives, the Competition and Markets Authority recently published their *Green Agreements Guidance*. The guidance helps business collaborate in achieving Net Zero while explaining how competition law applies to green contracts between companies operating at the same level of the supply chain. Clauses promoting environmental benefits are also becoming increasingly popular in leases and green leases are evolving as a result. Many early green leases were purely addressing energy efficiency and reduced water use and waste. Their scope is now evolving as building owners and tenants feel the pressure from new regulations, greater awareness in the general population and resulting expectations among customers, employees and shareholders of better, more efficient sustainability initiatives.

The newer green leases should not be approached as a checklist of items to include in the contract. Instead, they should be outcome-based with clear and meaningful milestones over the term of the lease and measurable goals that reflect mutual tenant and landlord interests, their respective sustainability priorities and the characteristics of the property.

Achieving Net Zero requires collaboration between the landlord and tenant by establishing common areas that benefit both parties, such as lower energy use and the installation of sustainability-related technology. Collaboration may become difficult particularly when it comes to costs, and so the parties should consider how the cost of new equipment which benefit everyone can be shared, maybe through a reduction in rent or service charge, if the tenant's consumption of water and electricity decreases for example.

Measurable goals means that the sharing of robust and accurate data between the landlord and tenant, particularly around energy performance, is key to monitoring and measuring progress, to identifying what is working well, areas for improvements and to promoting goal setting based on actual performance results.

4

Planning and Option Agreements

The planning landscape is constantly evolving in this area and it is crucial to stay in touch with the latest developments. The National Planning Policy Framework states that the planning system needs to promote renewable energy and associated infrastructure developments. The energy transition to low carbon needs to be supported by new planning decisions, including flood and coastal change risk.

In the context of clean or renewable energy, an option agreement sets out the energy company's intention to develop the land into a wind farm, solar park, battery storage site etc and provides a timeframe during which they may exercise the 'option' to take a lease of the land.

During the life of the option, the energy company will seek to secure a planning permission to develop the land for their purposes, as well as any consent and connection agreement required for their project and to secure funding.

5

Option agreements give the energy operators comfort, before they incur vast resources into the project, that the land they need to install and operate their equipment, be it solar panels, battery storage or biodigester systems, will be available to them as and when they have secured all necessary permissions. In return the landowner receives an agreed fee and payment of his professional advisers' fees. Option agreements can be particularly helpful today, where renewable energy projects are being postponed due to delayed connection dates to the grid, some unable to connect until the 2030s as well as ongoing planning pipeline delay.

6

Consider availability of grants

Energy producers/suppliers/utilities can benefit from applying for available grants within the energy industry to capitalise on the UK government's investment in clean energy, as a number of grants given by the UK government favour projects that are heavily linked to innovation. Pre-contract considerations to pick up in any grant funding requirements and think about procurement law requirements and competition law issue.

Intellectual property consideration

As energy processes are improved and developed, we are seeing plenty of new technology and innovation in the South West area. Intellectual property (IP) protection and risk allocation will be increasingly vital for a successful project. We would advise companies to address and secure IP rights early on, otherwise risk others taking ideas or lack of investment. The risk should be continually assessed throughout the project to ensure the rights extend as far as required for the expected protection. Patents play a key part in protecting technology rights, but companies may also need to consider trade secrets, brand and confidentiality arrangements, including with employees, project partners and investors.

7

Grid connection

The South West distribution network is largely full and new connections are difficult to obtain without large amounts of funding. Delays need to be anticipated in the construction programme, and the interface between the DNO, ICP and site owner needs to be contractually clear, with defined roles and responsibilities for each party set out usually by way of a connection or power purchase agreement. Using grid consultant may help to smooth this process.

8

Negotiate pragmatically

The renewables sector, like the construction sector, is particularly vulnerable to supply issues, which can lead to disputes. The global situation has created supply chain volatility, increased cost, reliance on fluctuations provisions and labour shortages. This leads to project delays and overruns, being the 2 key areas of disputes in the energy sector predicted for the next few years. Mitigation of these risks is therefore important. Factoring into contract negotiations the risk of fluctuations in cost, delay due to supply and labour shortage, and allowing flexibility in budgets for these delays may make or break a project.

Another key area of discussion needs to be the impact of weather conditions. Clean or renewable energy projects are often located in areas of unpredictable or extreme weather, leading to delays during construction. Parties should carefully review the force majeure, adverse weather, power unavailability and output/offtake agreements in contracts and allocate costs and risk of delay with this in mind.

9

Dispute management

Managing technical disputes can be difficult and one effective strategy to avoid them has been to ensure early communication between the parties regarding potential causes of delay, cost increases, programming and other factors which may lead to dispute. Contracts need to set out a straightforward disputes process, along with building in early warning systems to highlight and deal with disputes during the course of the project, so as to avoid leaving disputes until completion where costs and the gap between the parties may have become too entrenched to negotiate away.

Another High Court Judicial Review of Government approach to Net Zero

It is interesting to see the latest permission for Judicial Review granted to Chris Packham enabling him to challenges the lawfulness of the Government's decision to water down some of its green policies aimed at achieving Net Zero by 2050. We will keep up to date on matters as they progress later in 2024.

The High Court has given the claimant permission to apply for JR on three grounds:

- That the duty under section 13 of the Climate Change Act 2008 (CCA 2008) to have proposals and policies in place to meet carbon budgets is a continuing duty. The claimant will argue that it is not lawful for the government to remove key policies for meeting carbon budgets without having other policies in place to ensure they will be met.
- That the government failed to take into account the considerations listed under section 10 of the CCA 2008, such as achieving carbon budgets and the 2050 Net Zero target, and advice from the Climate Change Committee.
- That the government failed to consult properly on the changes and failed to consider previous consultation responses about the policies that were changed.

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