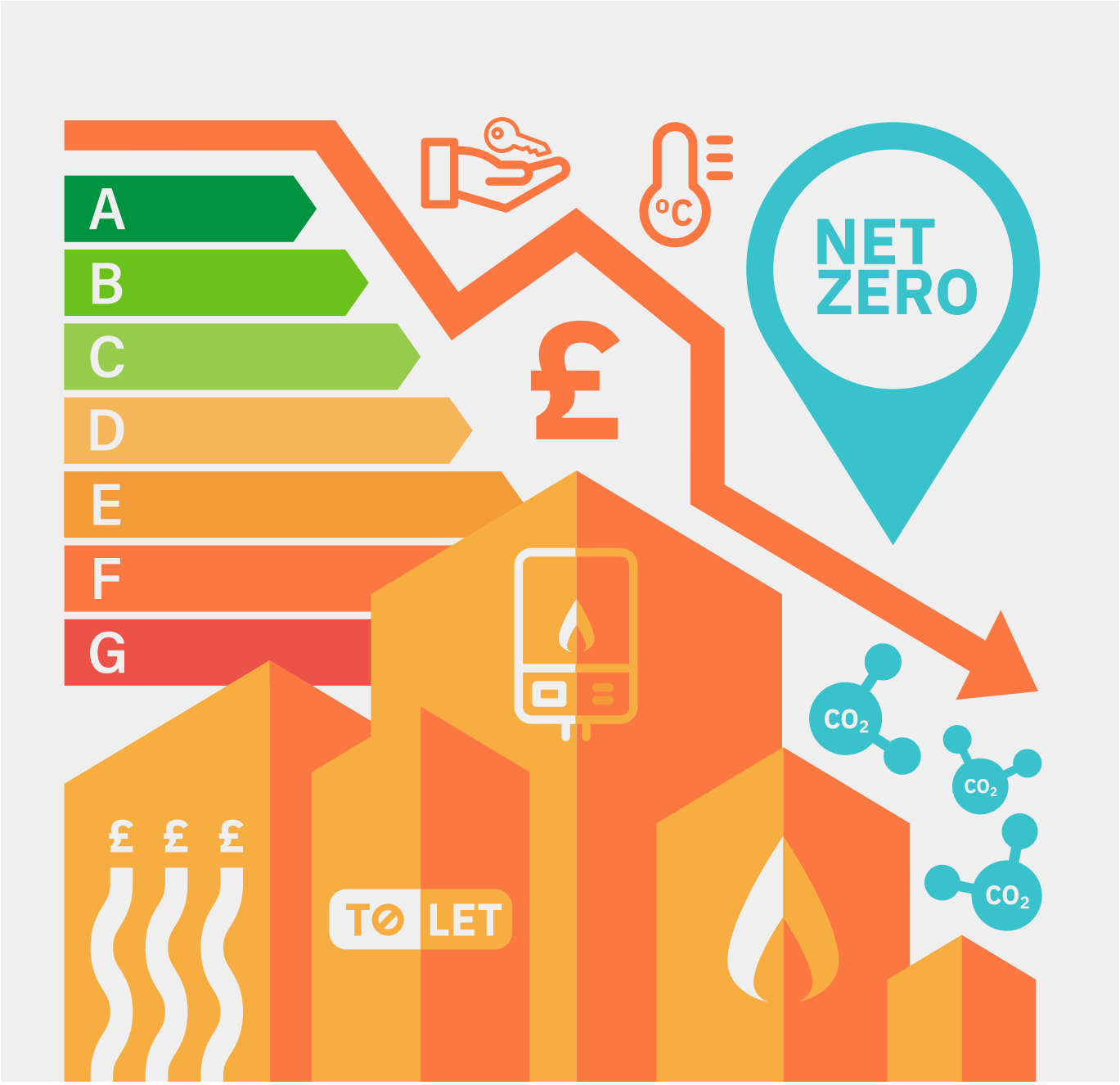
MITSUBISHI ELECTRIC

Stranded Assets:

A roadmap to **Net Zero** for new and existing buildings



Guide

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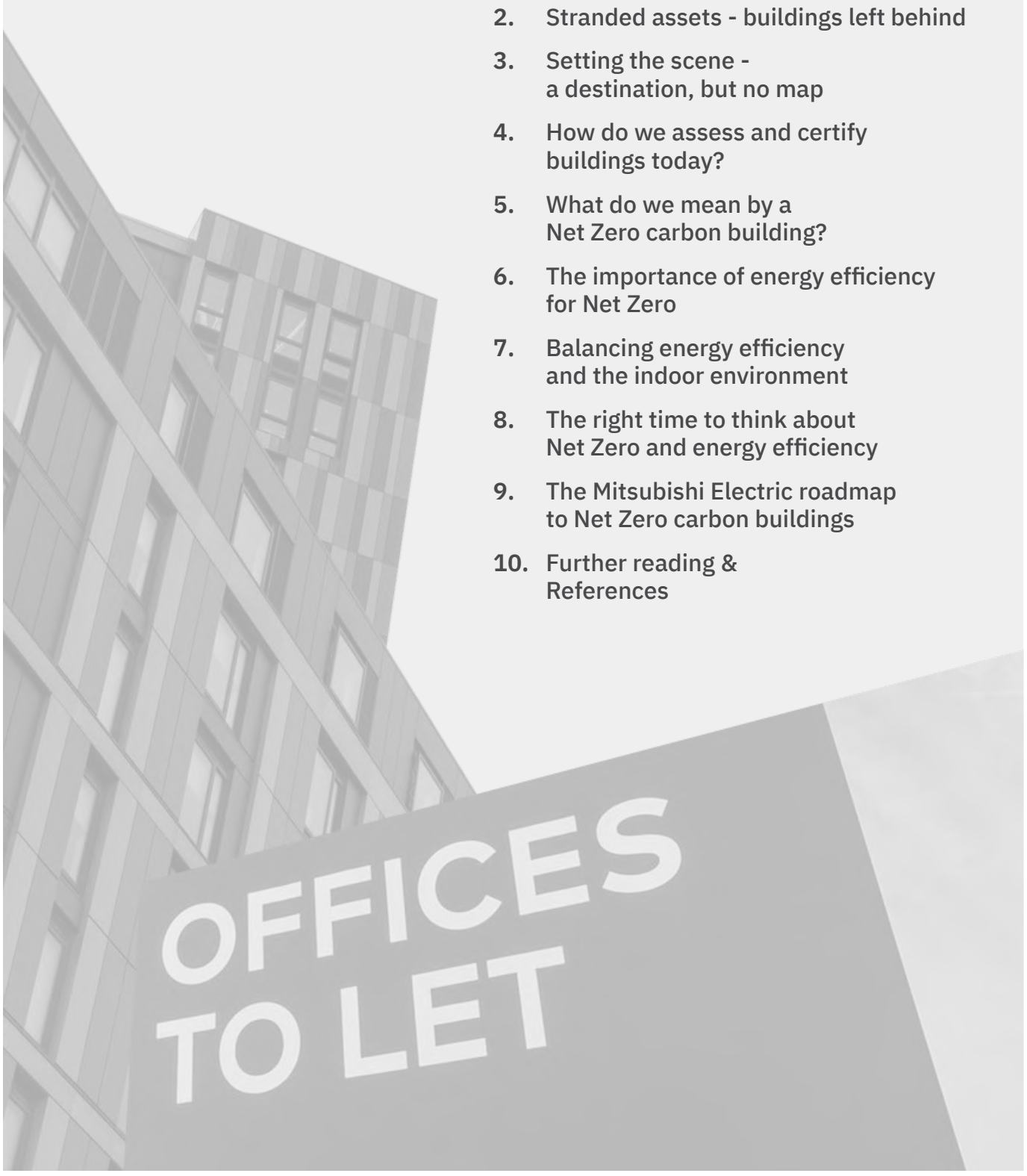


Introduction

A growing body of legislation on reducing energy consumption and delivering decarbonisation of heat in our commercial building stock is putting some of our existing buildings

in danger of becoming stranded assets.

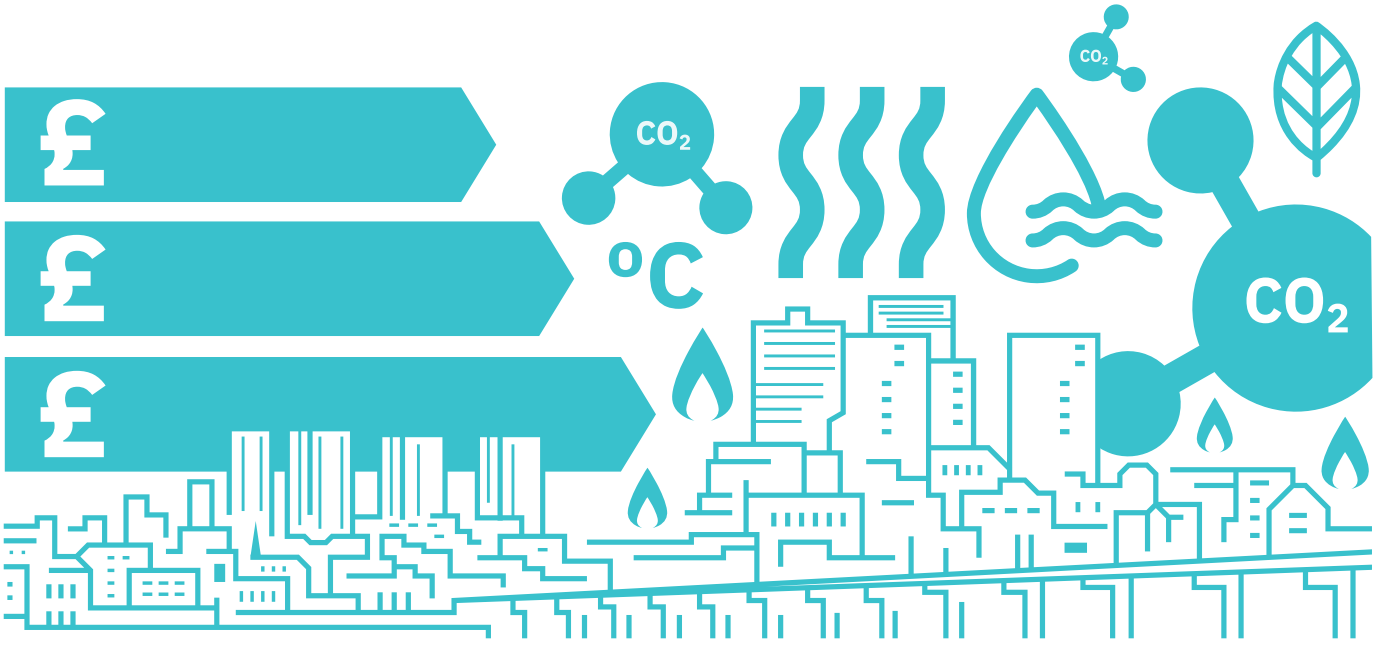
Stranded Assets

Some owners of older buildings face significant costs associated with meeting higher standards for Energy Performance Certificates (EPCs) or disruption in switching out old gas boilers for renewable heat pumps.

Their buildings fall further behind environmental requirements every year, leaving them un-lettable, with shrinking sales values - in other words, they become **stranded assets**.

But legislation is not the only driver for change in our built environment. Many corporations are setting their own net-zero carbon emissions targets and want low-carbon buildings to align with these strategies. Financial investors are also showing an increased preference for sustainable/environmental property developments.

A new generation of employees and customers is also making it clear that they want to work in or deal with organisations that demonstrate (and deliver) commitment to environmental issues. The building an organisation occupies is a very public statement of those ideals and can also help attract the right staff and draw in customers.



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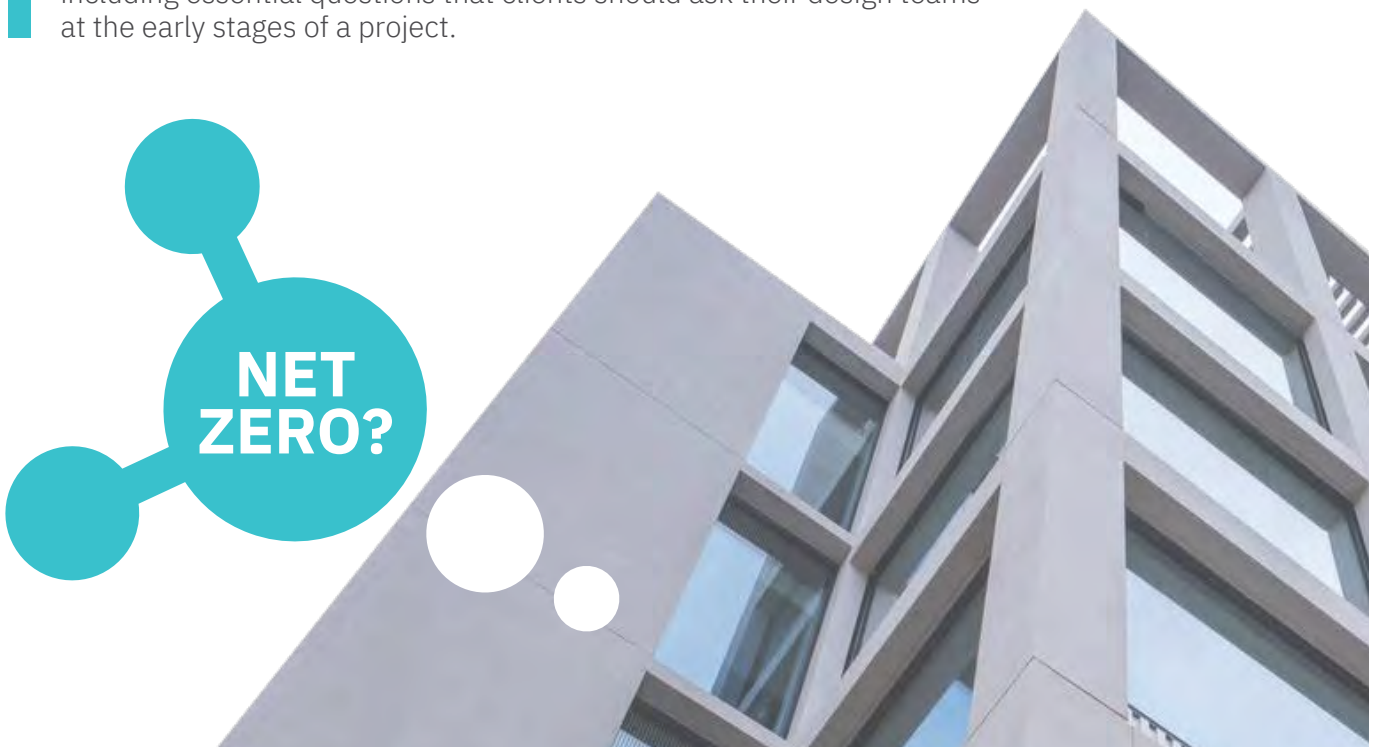
While government policy focuses on legislating for energy efficiency in buildings, it has fallen short of providing clear regulations or definitions for **'Net Zero carbon'** buildings. It is challenging for clients to specify even a brand new 'Net Zero' building simply because today's definitions are unclear.

This means there are buildings currently in the design or early construction phases that are also in danger of being stranded assets even before they open their doors to potential buyers or tenants. While these buildings may meet the current requirements of Part L of the Building Regulations, for instance, the buildings are not necessarily 'Net Zero'.

These changing demands are already impacting the office market, with buildings that can demonstrate environmental credentials attracting more interest and, in some cases, higher rental income. But other sectors such as universities, retail and build-to-rent are feeling the effects of a new focus on Net Zero buildings.

This guide offers insights into current thinking on what Net Zero buildings are and where current proposed legislation and guidance on this issue is heading. It will also look at HVAC systems that can help deliver Net Zero carbon emissions for new and refurbished buildings, including essential questions that clients should ask their design teams at the early stages of a project.



Stranded assets - buildings left behind

Historically, investing in a physical asset such as commercial property has effectively realised capital appreciation.

In most investors' minds, commercial real estate (CRE) is regarded as a **'safe'** investment.

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However, the world faces challenges in climate change and public attitudes to the problem. We can already see that the property and construction sectors are setting out to achieve Net Zero carbon goals in the built environment, even ahead of UK government legislation (though this is catching up).

The interest in 'sustainable' buildings that meet corporate Environmental, Social, Governance (ESG) targets is reflected at the property investment level on a global scale. Emmanual Verhoosel, global head of real estate and hospitality for French investment bank Natixis, said: **"The wider financial industry is evolving more rapidly than the real estate sector on ESG. Occupiers are also driving this as they require better assets from a sustainability point of view."**[1]

Green loans, as they are known, are a growing phenomenon as the investment sector seeks out 'future-proofed' built assets. One recent example in August 2022 is ICG Real Estate's £86.8 million green loan to future-proof Reading International Business Park[2]. The property was completed in 2001, and Tristan Capital Partners will use this investment "to refurbish the building and to deliver grade A specification and improved amenities, suited to all types of occupiers."

The commercial real estate sector is very aware of the importance of demonstrating sustainable credentials. Nicki Fuchs, CEO of London office provider Office Space in Town (OSiT), said in August 2022 that the market faces a 'triple threat' of rising interest rates, remote working and a push for greener buildings. **She commented:**

£86.8m
Green Loan

"This will ensure what many in the industry have long known; sustainably-focused serviced offices that are run with resilience in mind will emerge from the impending downturn in a better position than ever to dominate the market." [3]

The message is clear that commercial buildings which cannot demonstrate sustainable, low-carbon credentials will fall behind the market. The stranded asset risk is not simply about lost revenues or value. Regulatory stranding is also a future problem, as government legislation catches up to voluntary schemes on building carbon emissions.

But the commercial office property sector is not unique in facing these challenges. According to a 2021 survey from the Office of National Statistics (ONS), the only sector currently taking more actions to reduce carbon emissions than the real estate sector is the UK Government's own Department for Education (DfE)[4]. The DfE has announced that all new school buildings will be Net Zero in operation, and it recently launched the Let's go Zero 2030 campaign[5] aims to transform schools to Net Zero carbon in the next eight years.

The university sector is also taking a solid lead in aiming for Net Zero GHG emissions. The Climate Commission for UK Higher and Further Education has set up its own Climate Action Toolkit 6 for the sector. It has set a target of Net Zero emissions for Scope 1 and Scope 2 (see box out) by 2030. Most UK universities have adopted their carbon reduction targets, driven partly by their customer group: students. **The Climate Commission notes that 91% of UK students are 'fairly or very concerned' about climate change. Hence, universities must take action to reduce emissions, including in their buildings.**

Scope 1, 2 and 3 emissions

Under the International Greenhouse Gas Protocol, greenhouse gas emissions are placed into three groups (or 'Scopes').

Scope 1:

Direct emissions from owned or controlled sources (e.g. fuel combustion; company vehicles

Scope 2:

Indirect emissions from generation of purchased electricity, heat, cooling or steam consumed by the 'reporting company'

Scope 3:

All other indirect emissions that occur along a company's supply chain, e.g. purchased goods and services; employee commuting; business travel, investments.

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The retail sector also faces a significant challenge, even in meeting proposed legislation on improved energy efficiency. A report from property consultant Savills[7] (Real estate and the carbon challenge) notes that UK government proposals to lift a minimum EPC requirement to B mean that 83% of UK retail stock will have to be improved.

This amounts to 1.4 billion sq feet of retail space, which may be unlettable by 2030. And this is without considering future uplifts to requirements or focusing on carbon emissions rather than energy efficiency.

Another sector facing the Net Zero challenge is build-to-rent (BtR). Although there is UK legislation on energy efficient design for homes, build-to-rent properties tend to be larger, multi-occupancy buildings. Moreover, as a relatively new phenomenon in the UK market, they attract much interest from prominent investors.

These properties are an excellent example of new buildings that meet current legislation but may not necessarily achieve the Net Zero standards the market is looking for - making them potential stranded assets early in their lifecycle.

In an October 2021 report, Legal and General Investment Management (LGIM)[8] noted: Build-to-rent assets, by being relatively new, are already likely to meet existing energy efficiency standards. But with regulation and policy changes increasingly focused on improving energy performance to support climate objectives, we believe assets will need to perform beyond minimum standards - or risk obsolescence and devaluation in the future."

The question is how to design or refurbish with future standards and Net Zero considerations in mind. The following sections will consider the challenge ahead and look at how the property and construction sectors are responding.

Setting the scene - a destination, but no map

In 2019, the UK government set a goal of achieving Net Zero national greenhouse gas emissions (GHG) by 2050. A year later, in November 2020, it published **The Ten Point Plan for a Green Industrial Revolution**[9].

The document considers GHG emissions across the entire UK economy and provides high-level thinking on how the government intends to make reductions.

The built environment (homes and non-dwellings) is responsible for **20% of UK emissions**, which in 2021 amounted to **89 million tonnes CO_2e** (equivalent carbon dioxide)[10].

Most of these emissions are produced through energy use (electricity generated from natural gas) and direct use of gas for space heating and hot water production. **Therefore, government policy to cut these emissions from buildings focuses heavily on improving building energy efficiency and switching to low-carbon heat.**

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Decarbonising heat reduces the UK's reliance on natural gas for space heating and hot water provision. Gas meets around **74% of heating and hot water demand in buildings**.[11]

The aim is to legislate and incentivise a shift to the use of electricity from the UK grid, which is increasingly sourcing power from wind and other renewables. Hydrogen and heat networks are also on the government priority list.

As a result of this government strategy, the construction industry has seen a raft of updates to existing legislation and the introduction of new requirements on target carbon emissions from new buildings and refurbishment projects. (Mitsubishi Electric has produced several guides on updates to the Building Regulations and other requirements, which can be found in our **CPD Library**).

While these changes have been wide-ranging and will have an impact on the energy performance of buildings, they do not provide clarity on the issue of how to achieve 'Net Zero' carbon buildings - what they are; how they should perform; or an agreed standard to denote Net Zero buildings.

> The destination may be a Net Zero built environment but there is currently no map for clients, architects, consultants or contractors to follow to get there.

How do we assess and certify buildings today?

There are several certification schemes for buildings currently used in the market. However, while these assessments are helpful on some levels, they do not always provide a clear picture of how a building performs, particularly not in terms of carbon emissions.

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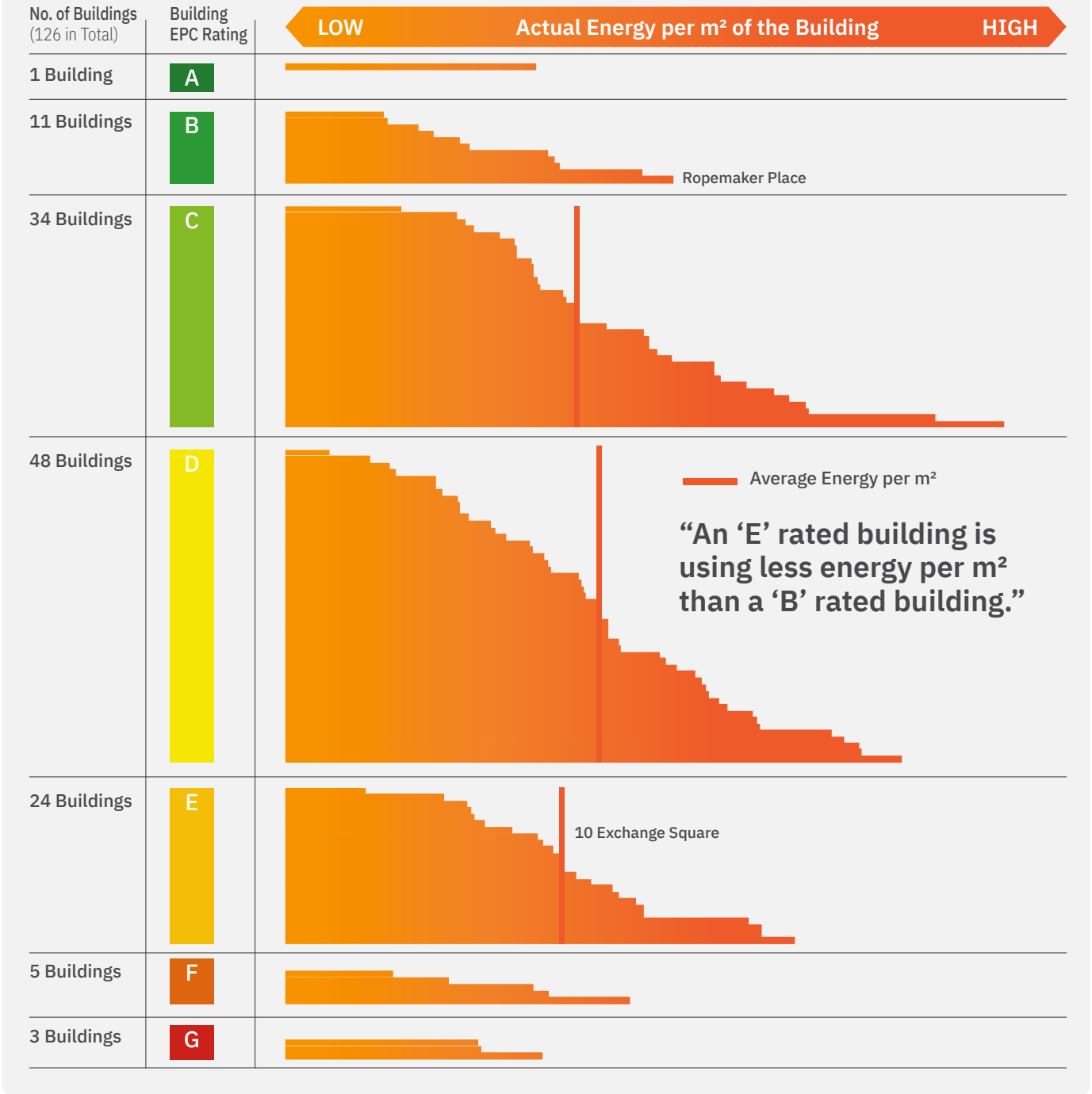
For example, Energy Performance Certificates (EPCs) are mandated for all private commercial buildings.

EPCs are an asset rating in that they measure the likely energy use of a building based on its type and design. However, EPCs do not always give an accurate picture of actual energy use.

Research from the Better Buildings Partnership (BBP) and property consultant Jones Lang LaSalle has shown that buildings with a high EPC rating (A or B) may use more energy than buildings with a D or E rating[12].

BBP's 2020 study of self-reported energy use from over 1,100 commercial properties showed that the median energy intensity for all B-rated buildings is higher than for C-rated buildings (see illustration on page 15).

Actual energy use of more than 100 BBP member offices grouped by their EPC rating



A Bloomberg report on the findings noted:

> “Just because buildings meet some of the most prized environmental building design standards doesn’t mean they’ll meet emissions goals.”

A certification scheme recently introduced into the UK from Australia, **NABERS** (National Australian Built Environment Rating System), aims to address this problem. This voluntary certification system for office buildings measures actual energy consumption - providing a more accurate measure of this aspect of building performance.

While NABERS gives office building owners and managers a better understanding of how much energy they can expect their assets to use and incentivises energy efficient building operation, it still does not provide a view of whether a building is ‘Net Zero’ carbon.

BREEAM (the Building Research Establishment Environmental Assessment Method) is one of the best-known certification schemes. It is a popular certification that building owners frequently cite as a badge of sustainable achievement. BREEAM assessment (carried out by independent licensed assessors) evaluates a development's procurement, design, construction and operation against a range of targets based on performance benchmarks[13].

Assessments take place at the design stage and post-completion. More than 2,250,000 buildings have been registered for BREEAM assessment, and the scheme is used worldwide.

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BREEAM has the benefits of being widely understood, applicable across a range of new and refurbished property types and recognised in the market. It provides clients and the construction sector with a shared language - so that the client can clarify preciselywhat they are looking for - BREEAM Excellent or BREEAM Outstanding, for example.

BREEAM addresses many sustainability metrics, including energy, water, materials, waste, and building management. It also encompasses occupant health and wellbeing. However, since the 'points' available cross several metrics, it is possible to use gas or oil boilers, for example, and still achieve the desired BREEAM rating. Hence, a BREEAM rating may not denote that a building is 'Net Zero carbon' by the CIBSE/LETI definition (detailed later in this Guide).

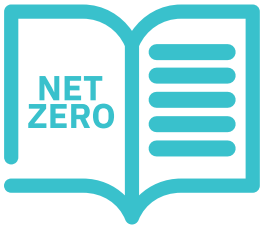
This lack of a dedicated Net Zero carbon assessment process or certification scheme is problematic for building owners and the construction industry. Without agreed definitions or targets, there is the additional problem of unwanted 'greenwashing' in the property sector, where buildings are labelled 'Net Zero' with no clear indication to users of what that means. As a result, the property and construction sectors have been working to produce their own schemes to address the issue.

What do we mean by a Net Zero carbon building?

The definition of a **Net Zero building** is important because a shared understanding across project stakeholders is vital to delivering successful outcomes.

Given the market interest in owning or occupying low-carbon buildings, it is also crucial to have a recognised certification or accreditation.

This is recognised by clients in the property sector, as highlighted by research carried out by the Better Buildings Partnership (BPP), which showed strong demand for a clear and agreed methodology.[14]



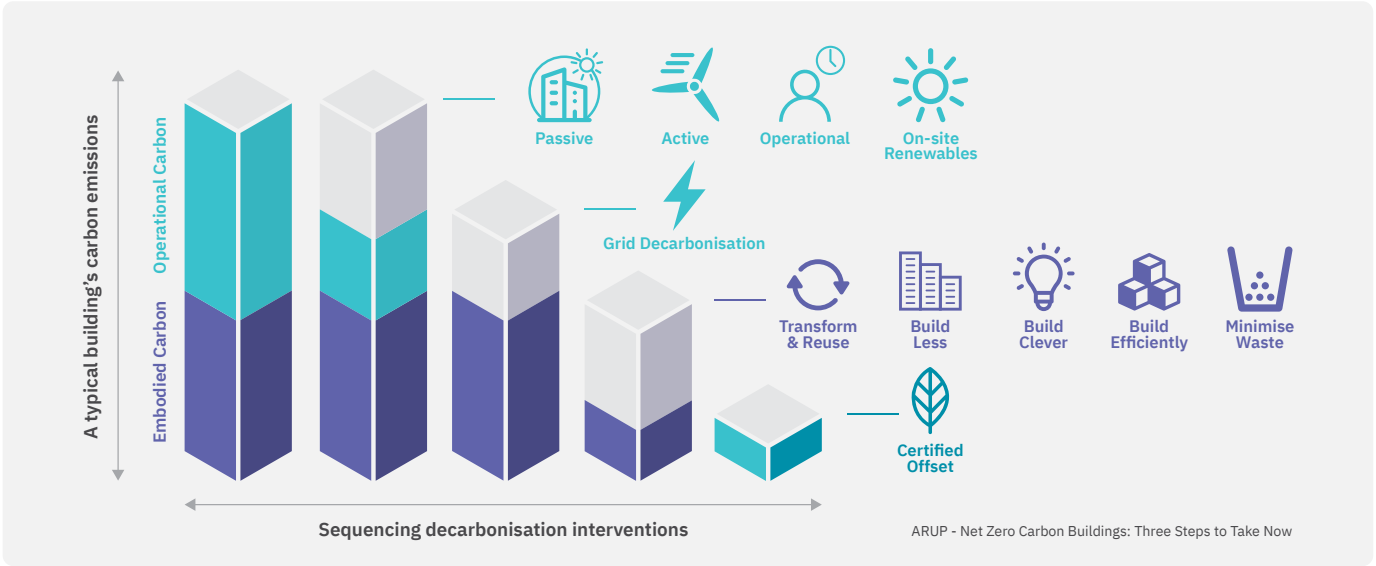
Several construction and building services organisations have been moving forward on agreed definitions of 'Net Zero' in the built environment. CIBSE (Chartered Institution of Building Services Engineers) and the London Energy Transformation Initiative (LETI) have worked with other associations and bodies such as RIBA, RICS and BRE to develop agreed definitions around this topic.

Early in 2022, CIBSE and LETI produced a list of frequently asked questions (FAQs) to clarify some fundamental issues[15]. The document describes a Net Zero (Whole Life) Carbon asset as:

> "One where the sum total of all its asset related greenhouse gas emissions, both operational and embodied, over an asset's life cycle are minimised, meet local carbon, energy and water targets and with residual 'offsets', equals zero."

But defining a Net Zero building is only part of the solution. With more clients showing interest in achieving 'Net Zero' buildings, they need a way to assess and certify Net Zero in a clear and agreed format while guiding architects, design engineers and contractors.

Route to Net Zero Carbon Buildings: Getting the Sequencing Right



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With this challenge in mind, a group of organisations (including BRE, BBP, CIBSE, UK Green Building Council, LETI, RIBA and the Carbon Trust) is now working to produce a UK Net Zero Carbon Building Standard. On launching the cross-industry steering group for this Standard in March 2022, the CEO of BBP, Sarah Ratcliffe, stated[16]:

> “A UK Net Zero Carbon Buildings Standard will be critical for asset owners and managers to evidence that their buildings are built and operating in line with climate science. An industry-wide Standard will enable stakeholders, including investors, to differentiate between assets that are ‘Net Zero’ and those that are not.”

The proposed Standard[17] is intended to be applied at the building level in the UK. It will set out several definitions and methods:

- Metrics and performance targets used to determine Net Zero carbon performance such as energy use, up-front embodied carbon, space heating/cooling demand and peak load.
- Carbon accounting methods concerning renewable energy and treatment of residual emissions
- Requirements for validation
- Interim verification of a built asset (for example, at the design stage or when it is completed but not operating)
- Application of these points to different building types.

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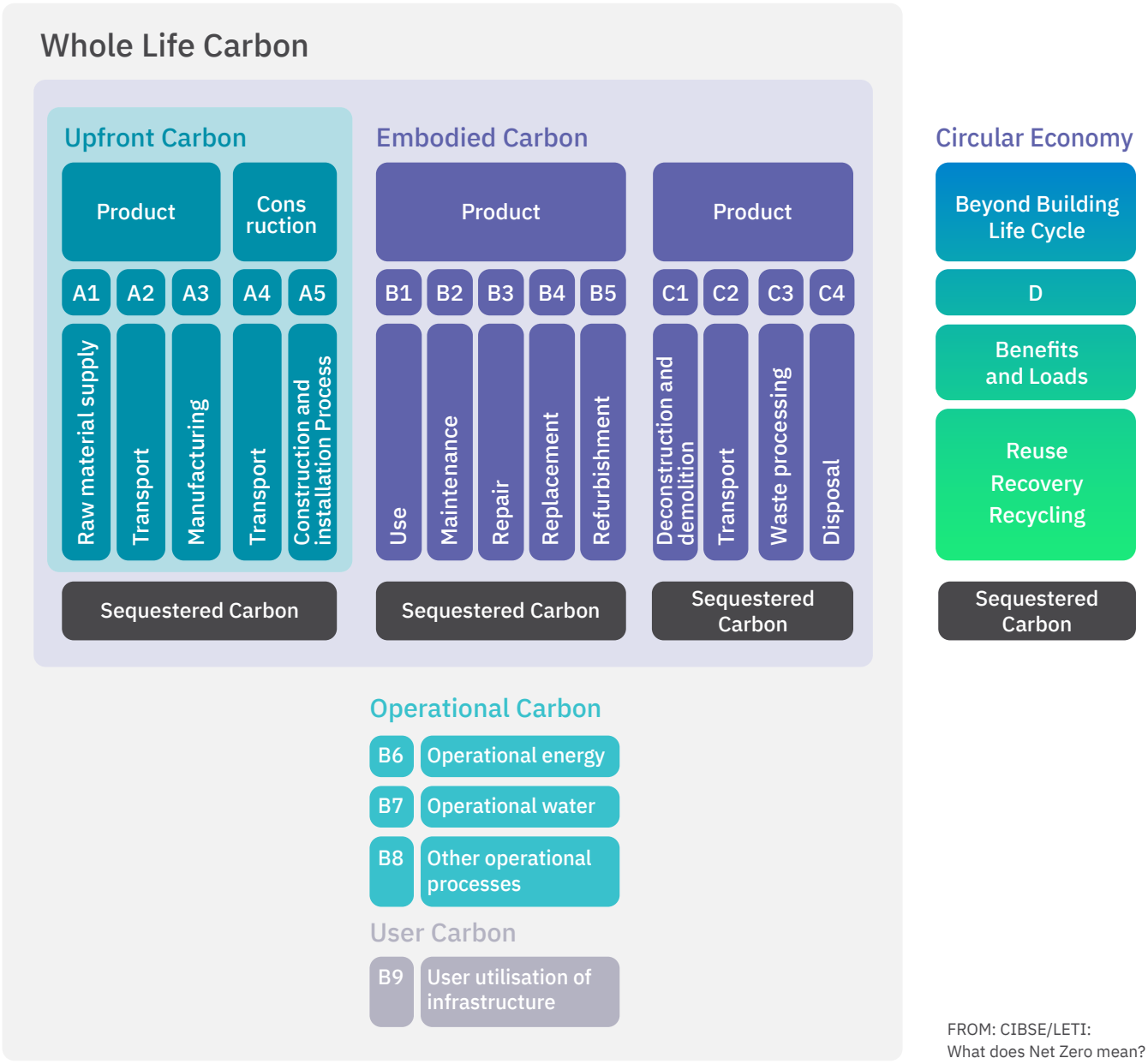
The level of industry bodies involved in developing the Net Zero Carbon Buildings Standard makes it likely to be welcomed by all stakeholders in the property and construction sectors, from investors to occupiers. It will also provide clarity on how we can achieve truly Net Zero carbon buildings.

Work by CIBSE and LETI[15] to provide clear definitions of carbon in the built environment breaks down the life-cycle of a building to show where carbon emissions are created.

The diagram below shows how these are categorised:



FROM: CIBSE/LETI:
What does Net Zero mean?

The importance of energy efficiency for Net Zero

Any discussion about Net Zero carbon buildings must include a close consideration of energy efficiency.

Both new-build and existing buildings must operate efficiently if they are to achieve Net Zero.

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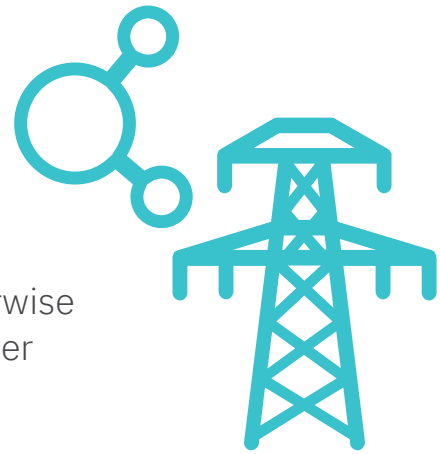
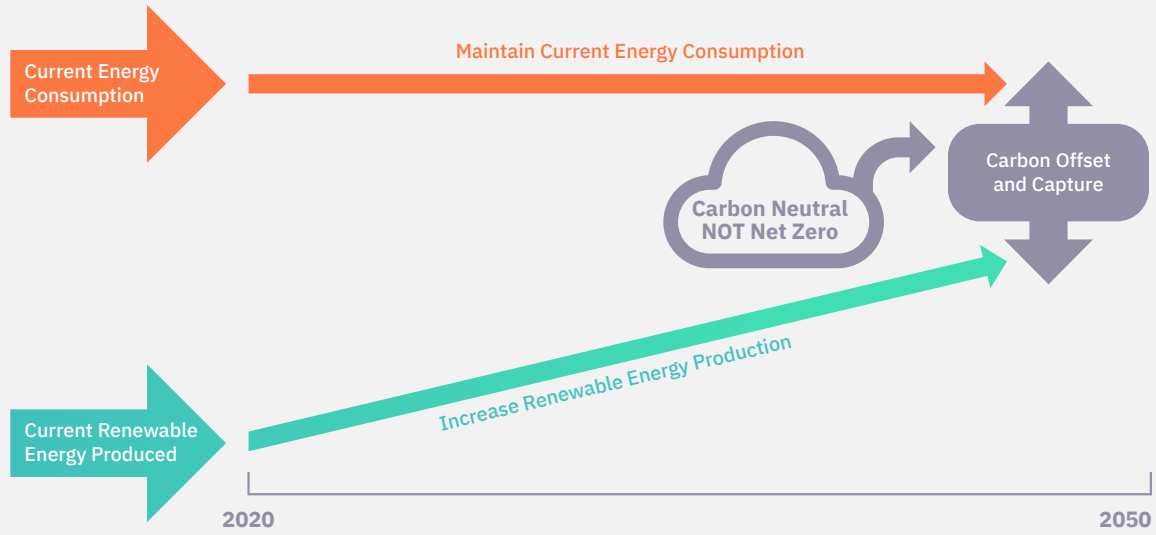
As CIBSE/LETI point out in their FAQ's document[15]:



> "A (Net Zero) building needs to meet energy targets because buildings cannot be considered in isolation, achieving Net Zero needs the whole system: in order to contribute to a Net Zero energy system, buildings need to have low energy use otherwise a zero carbon grid will not happen, or will happen later at much higher cost (financial and embodied carbon and other resources)."

To decarbonise the UK economy, we must move away from using fossil fuels. This means switching from oil and gas to electric systems for heating, cooling and hot water in buildings which must meet energy efficiency targets.

Although it is possible to offset a certain amount of national carbon emissions, there is a point at which this is not a practical solution, as we see in the diagram below.



x 1 tree offsets approx. 1 tonne of CO_2 throughout its lifespan (100 years)

We currently capture 40 Mt and need to capture 5635 Mt by 2050

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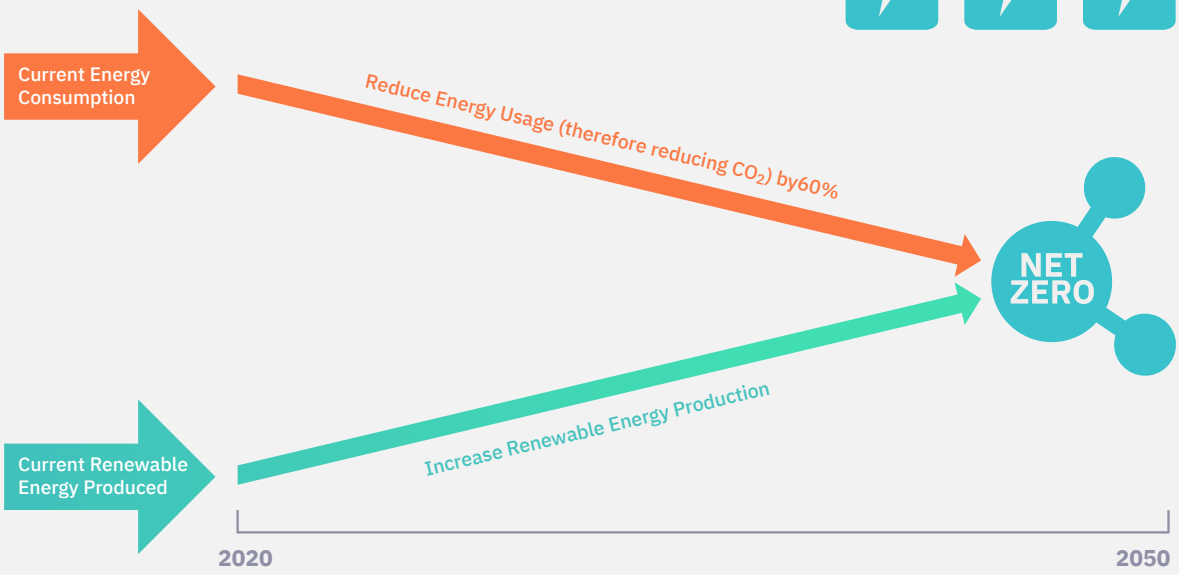
Therefore, we must reduce our current energy demand while increasing our use of renewable energy sources to achieve Net Zero 2050.



Total current energy demand	**944 TWh**
Total low carbon energy supply in 2050	**BEIS projections: 374 TWh**
Percentage in energy demand reduction required	**(944 - 374) / 944 = 60.4%** (60% rounded)

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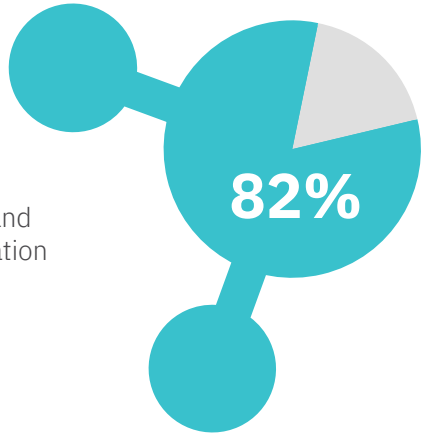
The link between Net Zero and energy efficiency is particularly important when we consider our existing building stock and how we can lower its carbon footprint. New-build projects can reduce the embodied carbon of a building by focusing on materials used, transportation to site and considerations such as the embodied carbon of products installed within the building.

> The Net Zero Carbon Buildings Standard project estimates that to reach the Net Zero carbon 2050 target, we must achieve an **82%** cut in the embodied carbon of non-domestic buildings.



For existing buildings, however, little can be done to alter the embodied carbon created during construction. In the past, we have seen a demolish-and-rebuild approach to commercial building projects, but this is becoming increasingly problematic.

Re-using existing buildings through refurbishment is better for the environment and achieving our Net Zero targets. Research from RPS Group[18] estimates that renovation projects save between **50%** and **70%** of embodied carbon compared to a new building.

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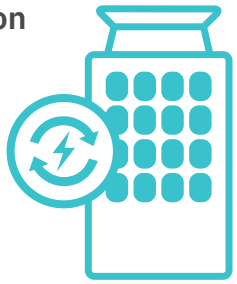
As Arup recommends in its Net Zero Carbon Buildings report [19], **"Any organisation seeking to achieve Net Zero across its property assets should embed a process that encourages the exploration of refurbishment as a preferred option at the outset of each potential new building development or investment in newly-built assets."**

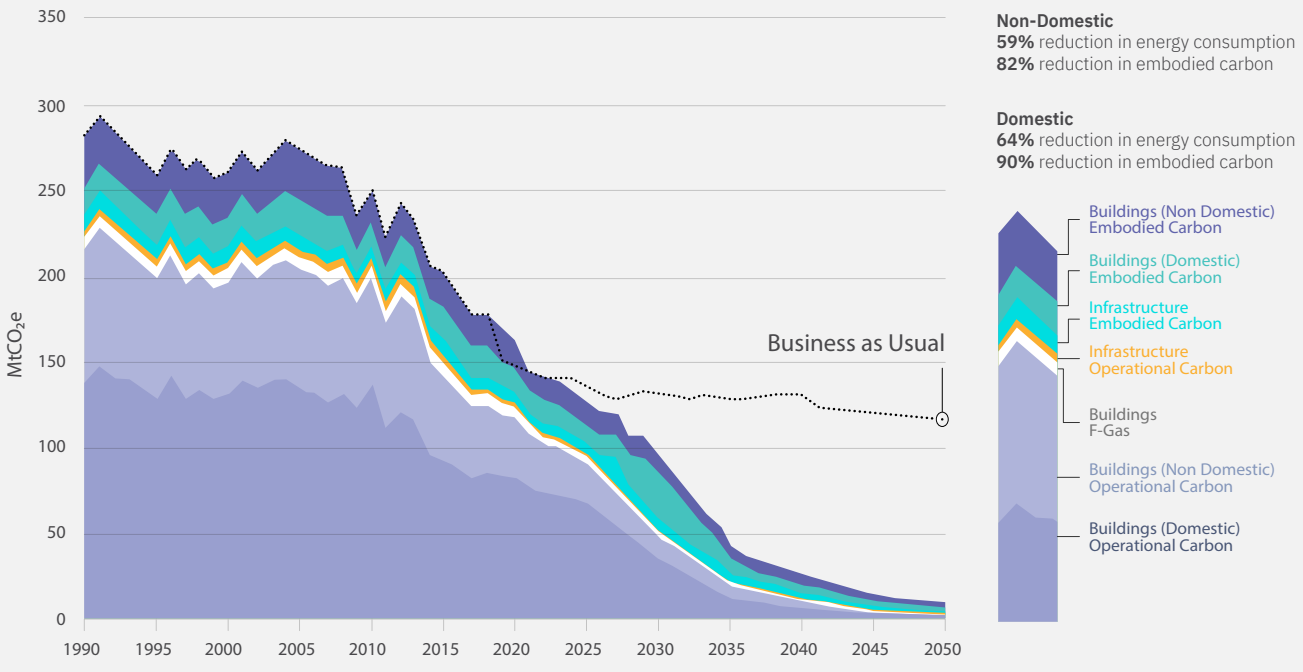


Energy efficiency is, therefore, an essential area for existing buildings to focus their attention when refurbishing to achieve Net Zero carbon. The CIBSE/LETI definition of a Net Zero carbon (operational energy) built asset is:

"A Net Zero Carbon - Operational Energy asset is one where no fossil fuels are used, all energy use has been minimised, meets the local energy use target (e.g. kWh/m_2/a) and all energy use is generated on-or off-site using renewables that demonstrate additionality. Direct emissions from renewables and any upstream emissions are 'offset'" Arup's report also notes: "All systems - from heating and air conditioning to lighting - must be designed to be as efficient as possible with good control to maintain effective use. Minimising operational carbon this way is an important aspect of Net Zero design."

The NZC Buildings Standard estimates that non-domestic buildings will have to achieve a **59%** reduction in energy use to achieve the 2050 Net Zero target.

Net Zero Whole Life Carbon Roadmap



And in 2020, the UK Green Building Council published energy performance targets "for buildings targeting Net Zero carbon for operational energy".[20] The UKGBC recommended that the office buildings sector reduce energy demand by an average of **60%** by 2050 to help the UK achieve Net Zero. The table below shows interim and final targets.

Energy performance targets for buildings targeting Net Zero carbon for operational energy

		Interim Targets			Paris Proof Targets
Scope		2020-2025	2020-2030	2020-2035	2020-2050
Whole building energy	kWh_e/m^2 (NLA) / year	160	115	90	**70**
	kWh_e/m^2 (GIA) / year	130	90	70	**55**
	DEC rating	D90	C65	B50	**B40**
Base building energy	kWh_e/m^2 (NLA) / year	90	70	55	**35**
	kWh_e/m^2 (GIA) / year	70	55	45	**30**
	NABERS UK star rating	4.5	5	5.5	**6**
Tenant energy	kWh_e/m^2 (NLA) / year	70	45	35	**35**

NLA = Net Lettable Area **GIA** = Gross Internal Area

The energy use intensity values represent the net import of energy (i.e. net of on-site renewables) and assume an all electric office. For buildings where other fuel types are used, the weighting factors in BBP's Real Estate Environmental Benchmark[4] should be applied to convert to kWh electricity equivalent (kWh_e).

Please note, the energy use intensity targets are indicative as they are based on standard hours of operation, with kWh_e values rounded. The DEC and NABERS UK ratings would allow for extended hours of use and for special uses, offering a more tailored approach to individual offices.

UK Green Building Council: Energy performance targets for office buildings aiming for operational Net Zero carbon.

Another important, and perhaps more immediate benefit, of reducing energy consumption is lower building operation costs. In 2022, businesses saw surging energy prices impact their costs significantly. All sectors, from hospitality to retail and office building owners, are affected, as are tenants who could see massive increases in service charges due to energy price hikes.

While this is not an ideal economic situation, one positive aspect is that any investment in energy-saving equipment (for example, air conditioning or heating) is likely to see much quicker payback periods - and add to the property's long-term value.

Balancing energy efficiency and the indoor environment

When undertaking the retrofitting of an existing building, energy use and carbon are often not the only factors in the building owner's mind.

Factors such as the indoor environment and occupant comfort must also be considered whether the building is an office, school or retail outlet.

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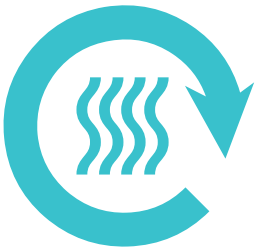
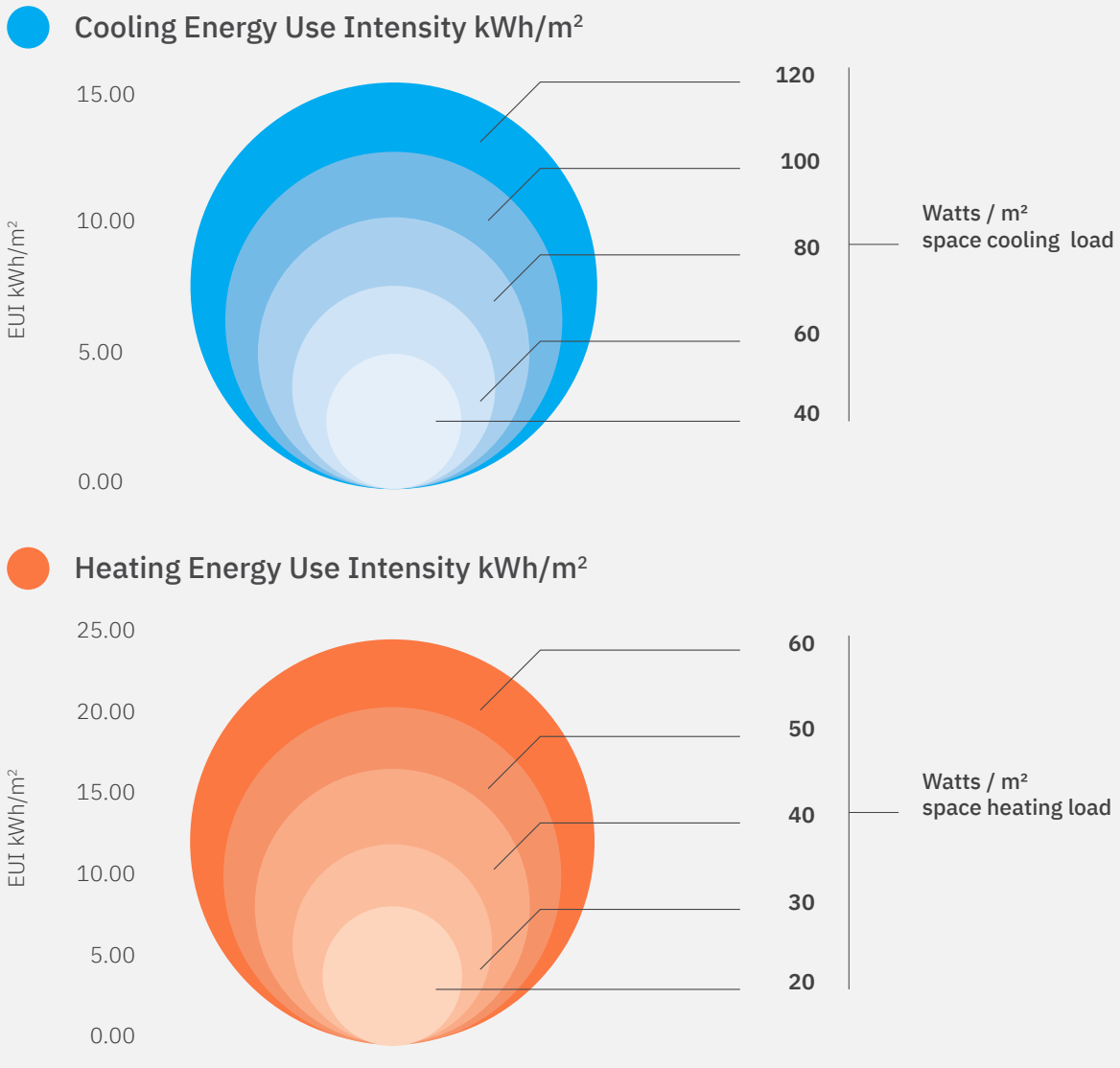
The challenge, then, is to lower energy use while delivering on these elements of building performance. Although equipment for services such as air conditioning and heating has become increasingly energy efficient over time, there are limits to what can be achieved.

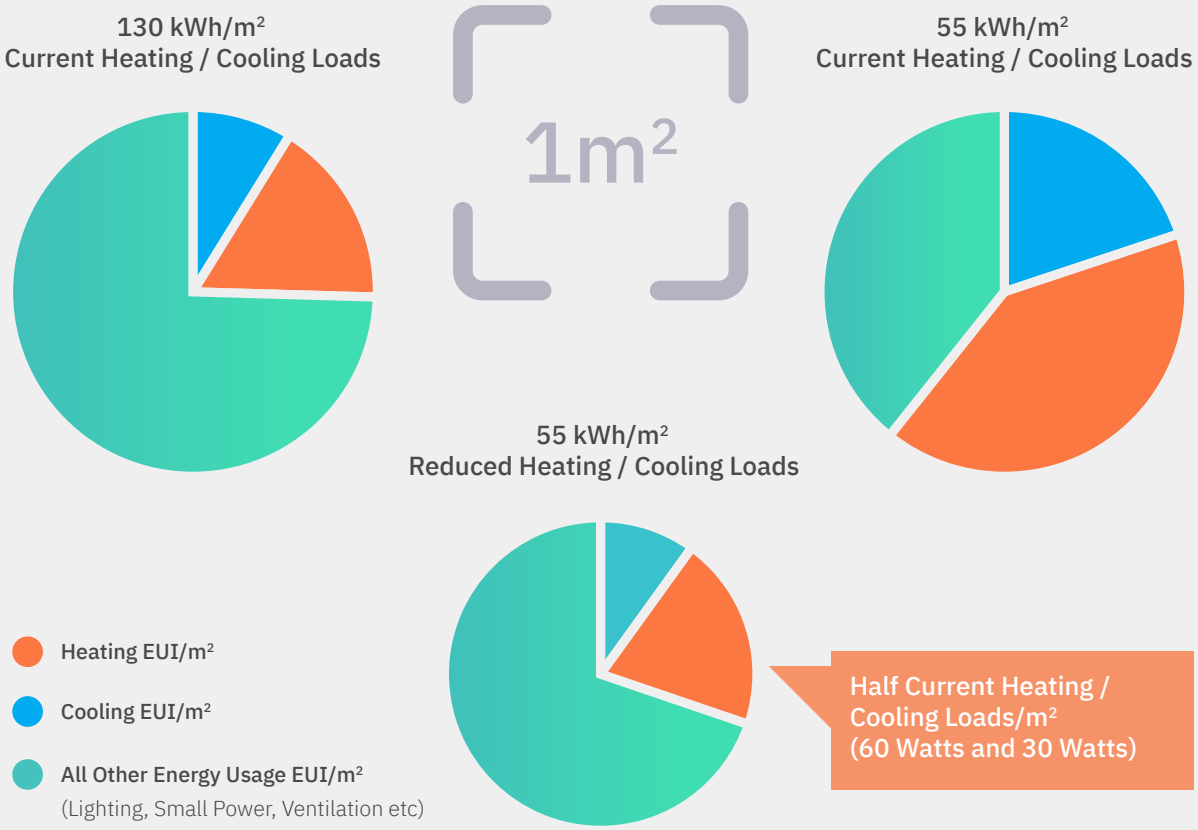


So, from a building services point of view, for example, this means lowering our heating and cooling demand in offices to achieve the **60%** cut recommended by the UKGBC.



Another way to consider this is if the energy use per square metre (also known as Energy Usage Intensity EUI) is reduced from an average of 130 kWh/m², to 55 kWh/m², heating and cooling loads could represent a much more significant proportion of energy use.

Energy Usage Intensity (EUI)



In the diagram above, if the building EUI is 130 kWh/m², heating and cooling are around 33% of energy use. However, if the building EUI is reduced to 55 kWh/m², heating and cooling energy use rises to more than half of the overall energy requirements.

It is, therefore, vital to reduce heating and cooling loads to keep heating and cooling in proportion.

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There are several energy efficient and low-carbon heating and cooling technologies that can be considered including:

- Heat pumps - for heating, cooling and hot water production
- Low-GWP refrigerant air conditioning systems in VRF or chiller equipment
- Low temperature (ambient) heat networks which can make use of heat extracted from cooling systems for space or water heating in nearby buildings
- Heat recovery such as mechanical ventilation with heat recovery (MVHR)

However energy efficiency is achieved, it is crucial to consider and specify building services systems that will deliver comfort and a healthy indoor environment. These issues must be considered early in any refurbishment (or new-build) project because timing can be critical to success.

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The right time to think about Net Zero and energy efficiency

The message is clear:

Net Zero buildings are the future.

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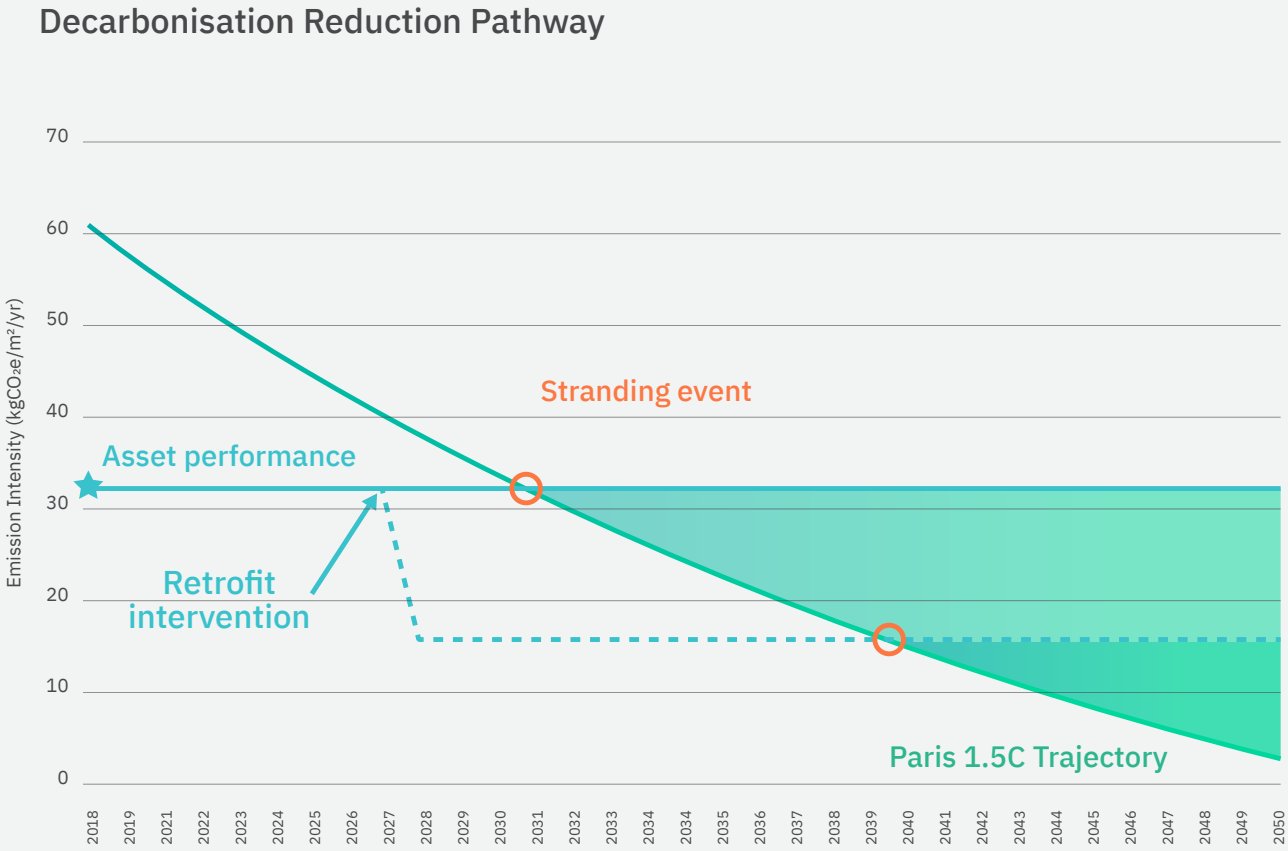
Stranded Assets

Building owners must consider the Net Zero carbon route to avoid holding onto stranded assets that are not attractive to investors, occupants or customers.

The risks for existing buildings are that **'doing nothing'** is not an option open to owners or investors. The graph below shows how retrofitting to meet energy use, and operational carbon standards can help a built asset retain its value.

Existing Buildings - Stranded Assets (CRREM & SBT)

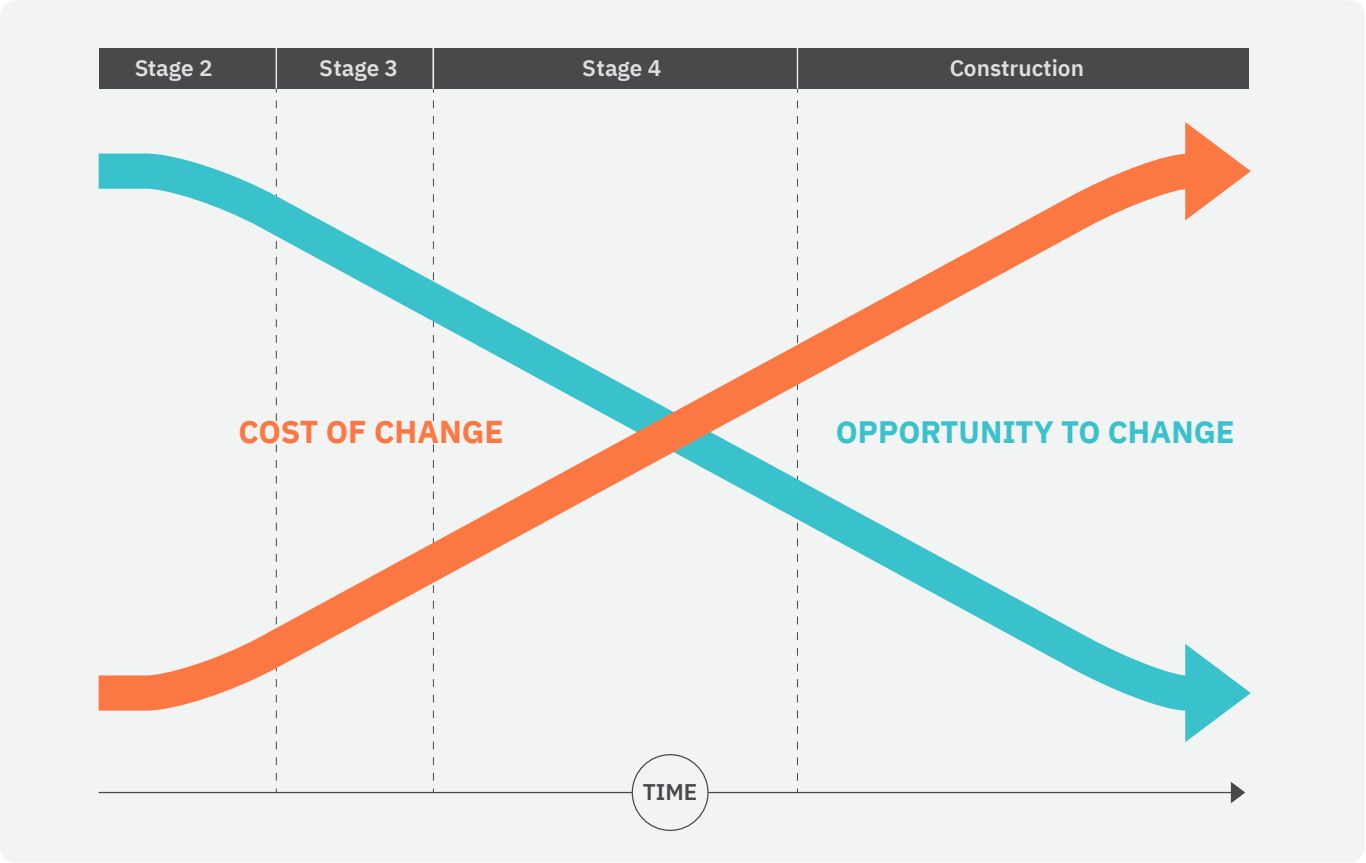


Stranded Assets

Whether a building is still at the early design stage or is an existing and occupied space, the best time to plan for a Net Zero future is now.

The graph below illustrates that planning and making net-zero adjustments to the design of a building is more cost-effective and impactful at the early stages of a project. As a project progresses, it becomes more challenging and costly to adapt. This reduces the opportunities to lower building carbon emissions (for example, through improvements to the building abric, which are high-cost post-construction).

The RIBA Plan of Work stages against cost



One of the significant challenges for building owners is finding the right time to carry out retrofit and refurbishment work. Every building in use faces the prospect of disruption while work is carried out, but as time passes, the likelihood of an asset becoming stranded grows. Approaches such as the use of modular chillers, for example, can make it easier to take a phased approach to installing more energy efficient air conditioning systems.

With this growing imperative to consider the carbon emissions of our built environment, we also need to rethink the equipment in today's buildings and analyse new approaches to cooling, heating and hot water provision.

Stranded Assets

The Mitsubishi Electric roadmap to Net Zero carbon buildings

Review:

Your current building (existing property) carbon emissions

Can you measure the building's current carbon emissions? (This should include embodied and operational carbon)

Can you calculate your energy usage intensity (EUI)?

1

Your requirements and design (New building)

How are you measuring carbon on this project?

Can you use the proposed Net Zero Carbon Standard?

Are you using other schemes such as NABERS or BREEAM?

2

Your HVAC Systems

What refrigerants are in your existing air conditioning system, if you have one?

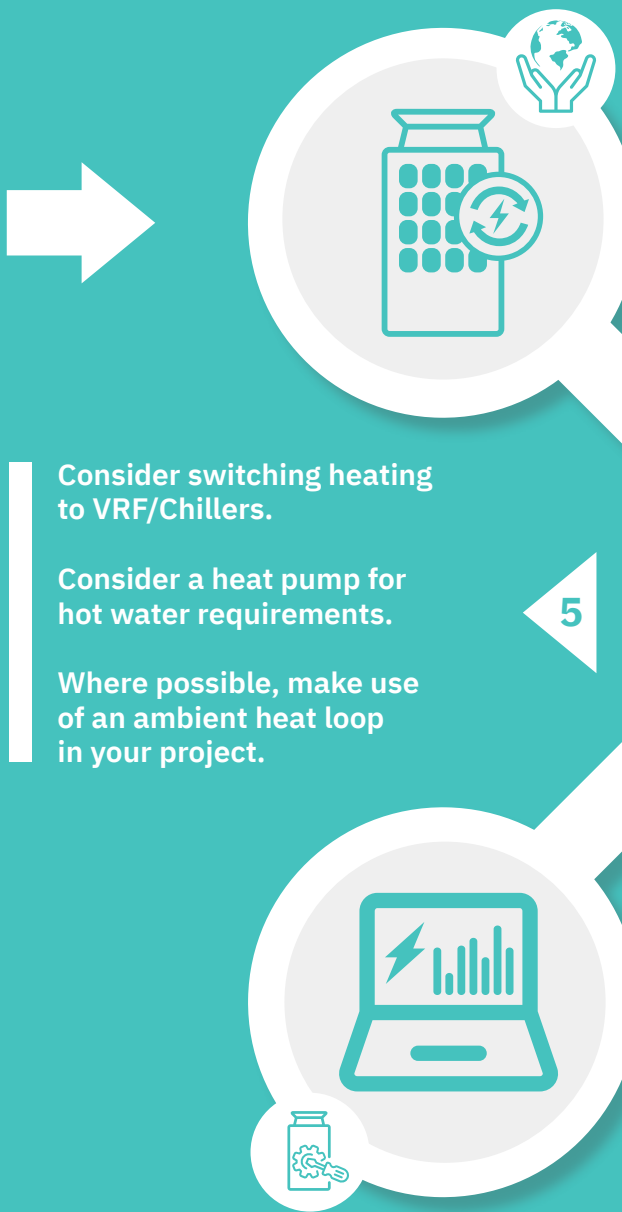
Are you making use of heat recovery in your ventilation system?

Are you using gas/oil for heating and hot water?

3

NET ZERO

Replace:



4

Where possible, replace current specification / equipment with low-carbon options.

Include low-GWP refrigerants and / or lower refrigerant use if possible.

5

Consider switching heating to VRF/Chillers.

Consider a heat pump for hot water requirements.

Where possible, make use of an ambient heat loop in your project.

6

Monitor your system for energy use (tracking through building energy management system).

Maintenance programmes should focus on efficient operation.

Work with your service & maintenance team to highlight your efficiency targets.

Further reading & references

Mitsubishi Electric has produced a library of free CPD-certified guides on a range of topics, including the latest building regulations, application of heat pump technologies, refrigerants and renewable heating.

10

References

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Note: Refer to 'Installation Manual' and 'Instruction Book' for further 'Technical Information'. The fuse rating is for guidance only and please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric's air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Green Gateway
www.greengateway.mitsubishielectric.co.uk
Mitsubishi Electric UK's commitment to the environment

Effective as of October 2022