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A PARIS-PROOF RETAIL REAL ESTATE SECTOR

TAKING STOCK
OF REGULATORY
AND MARKET
DEVELOPMENTS



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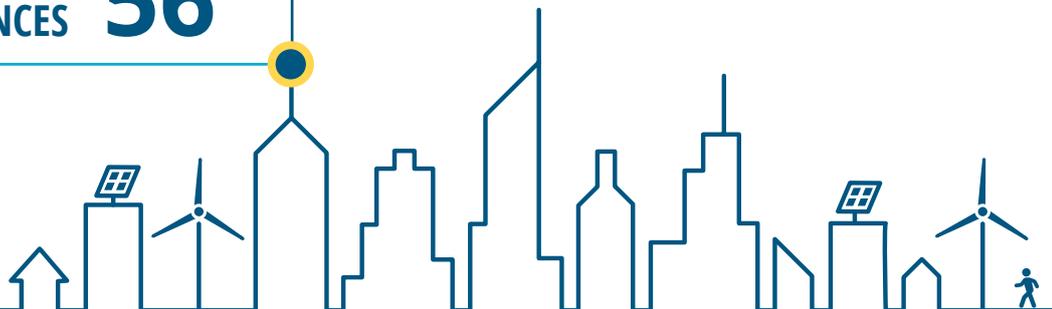
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EXECUTIVE SUMMARY

The 196 signatory countries of the Paris Agreement have agreed to a common goal of maintaining the global temperature increase to well below 2 degrees, and preferably no more than 1.5 degrees, by the end of the century. According to the 2020 UNEP Emissions Gap report, to be on track for the 1.5 degree goal, the world needs to reduce global emissions by over 50% by 2030 and work towards carbon neutrality by 2050. As the buildings and construction sector accounts for 35% of final energy use and 38% of energy and process-related carbon dioxide (CO₂) emissions globally, the retail real estate (RRE) sector will have to play a major part in achieving this vision.



Understanding who the key actors are, how to engage them and supporting them with viable solutions are the focus of this initiative.



The challenge for the sector is clear: to be carbon neutral by 2050. Achieving this outcome requires a substantial shift towards an efficient and resilient building stock with zero carbon emissions. Reaching net zero carbon emissions by 2050, including both embodied and operational carbon emissions, will require an integrated value chain approach, effective policies and greater collaboration within the sector. A carbon trajectory with intermediate milestones and clear strategies need to be developed to guide the significant reduction of greenhouse gas (GHG) emissions by 2030 and 2050.

The building sector and, implicitly, the RRE sector are not on track to meet these goals. [The UNEP 2020 Global Status Report for Buildings and Construction](#) shows that decarbonisation efforts and energy efficiency improvements are being outpaced by the increase of extreme weather conditions, rapidly expanding floor area and growth in demand for energy-consuming services. Delivering the zero-carbon vision is only achievable if the whole building stock, including retail portfolios, is thoroughly renovated and sustainable design of new buildings is adopted. The RRE sector is interested in increasing the sustainability of its buildings and with a renovation rate of about 4.4%/year¹ the opportunities abound: more than 60% of the retail stock will be upgraded by 2030, a unique trigger point to introduce sustainable solutions and apply the best available clean technology and low-carbon materials.

The year 2020 saw unprecedented global economic and social challenges in the form of the Covid-19 pandemic, prompting many retail actors to reconsider the link between environment, society, good governance and profit. The health crisis has resulted in massive

public money recovery programmes being issued by governments. While governments, public institutions and the private sector focus urgently on protecting health, incomes and businesses, building future capacity and resilience into social and economic systems is equally important. By placing greater emphasis on environmental, social and governance (ESG) criteria and investments, the disruption can become an opportunity to rebuild a greener and a more resilient RRE sector.

The ongoing health crisis has shaken our sense of invulnerability and made people much more aware of the environment, sustainability and wellbeing. Across all real estate sectors, the importance of ESG considerations and perceived value of sustainable assets are increasing.² For the RRE sector, this means that tenants and customers aren't just looking for shopping places that are energy efficient and low carbon — they want them to be smart, clean and to promote wellbeing. As a consequence, the zero-carbon strategy shouldn't only comprise technical solutions but should concomitantly include a focus on good quality buildings that meet evolving user needs. Finally, RRE companies contribute to maintaining the social fabric by providing environmental and social infrastructure – e.g. the role of retail in delivering a vibrant and vital inner city – which underlines the importance and relevance of brick and mortar retail, even against accelerating retail transformation such as the rise of e-commerce.

However, many developers and owners are still unsure how to prepare for a zero-carbon journey. Understanding who the key actors are, how to engage them and supporting them with viable solutions are the focus of this initiative.

¹ CommONEnergy (2017) [Cost-competitive deep renovation of shopping centres, a driver for EU policies](#)

² KPMG (2020) [Real estate in the new reality](#)

ABOUT THE INITIATIVE

Paris-Proof Retail Real Estate is an initiative that aims to put decision-makers from policy and the RRE sector on a trajectory towards jointly accelerating the transition to carbon-neutral building portfolios by 2050, in line with the ambition of the Paris Agreement. The initiative will develop, support, and promote a common vision and strategy with and for RRE sector and policymakers, identifying the policy solutions and market enablers that will

unlock investment in long-term sustainability measures at scale. In this way, the initiative puts a strong emphasis on knowledge creation and facilitating communication and cooperation between policymakers and the wider RRE sector, towards identifying and implementing solutions applicable across the board that will accelerate the sector's transformation towards carbon neutrality.

Specifically, the initiative will:



IDENTIFY WHICH LEGISLATION AT EU AND NATIONAL LEVEL

needs to be adapted to move towards a carbon-neutral RRE building stock and communicate this with the relevant policymakers.



DEMONSTRATE THE BUSINESS CASE AND BEST PRACTICE

for investing in improving a building portfolio's carbon profile, for investors and boards of RRE companies.



FOSTER A DIALOGUE BETWEEN THE WIDER RRE SECTOR AND POLICYMAKERS

in order to increase cooperation and improve mutual understanding between the two groups, all while ensuring a common vision and action points are identified, communicated and implemented in the long term.

ABOUT THIS REPORT

This report is a status quo analysis of existing policy and market approaches to climate change actions and strategies relevant to the RRE sector. The report consists of three main sections:

- A review of existing EU legislation that impacts the decarbonisation of the sector.
- An overview of market initiatives including metrics and targets, definitions of zero-carbon buildings and other tools available to the RRE community that could provide critical pointers towards the appropriate level of ambition in terms of low-carbon performance.
- A brief discussion of the key issues and challenges related to carbon measurement, setting targets, and developing and implementing mitigation strategies.

The status quo analysis represents the starting point for developing a common vision and language on how to decarbonise the sector. The report aims to identify relevant policy and market developments that can inform tailored recommendations for industry players and policymakers respectively. Both these aspects will be further developed in the forthcoming outputs of the initiative.

The report has been drafted based on desk research and semi-structured interviews with representatives of leading RRE investment and management companies. The interviews with management members responsible for sustainability, corporate responsibility, corporate communication and property investment provided insights into the risks, opportunities, key drivers and barriers associated with the decarbonisation efforts of the RRE sector.



As the buildings and construction sector accounts for 36% of final energy use and 39% of energy and process-related carbon dioxide (CO₂) emissions globally, the retail real estate (RRE) sector will have to play a major part in achieving this vision.



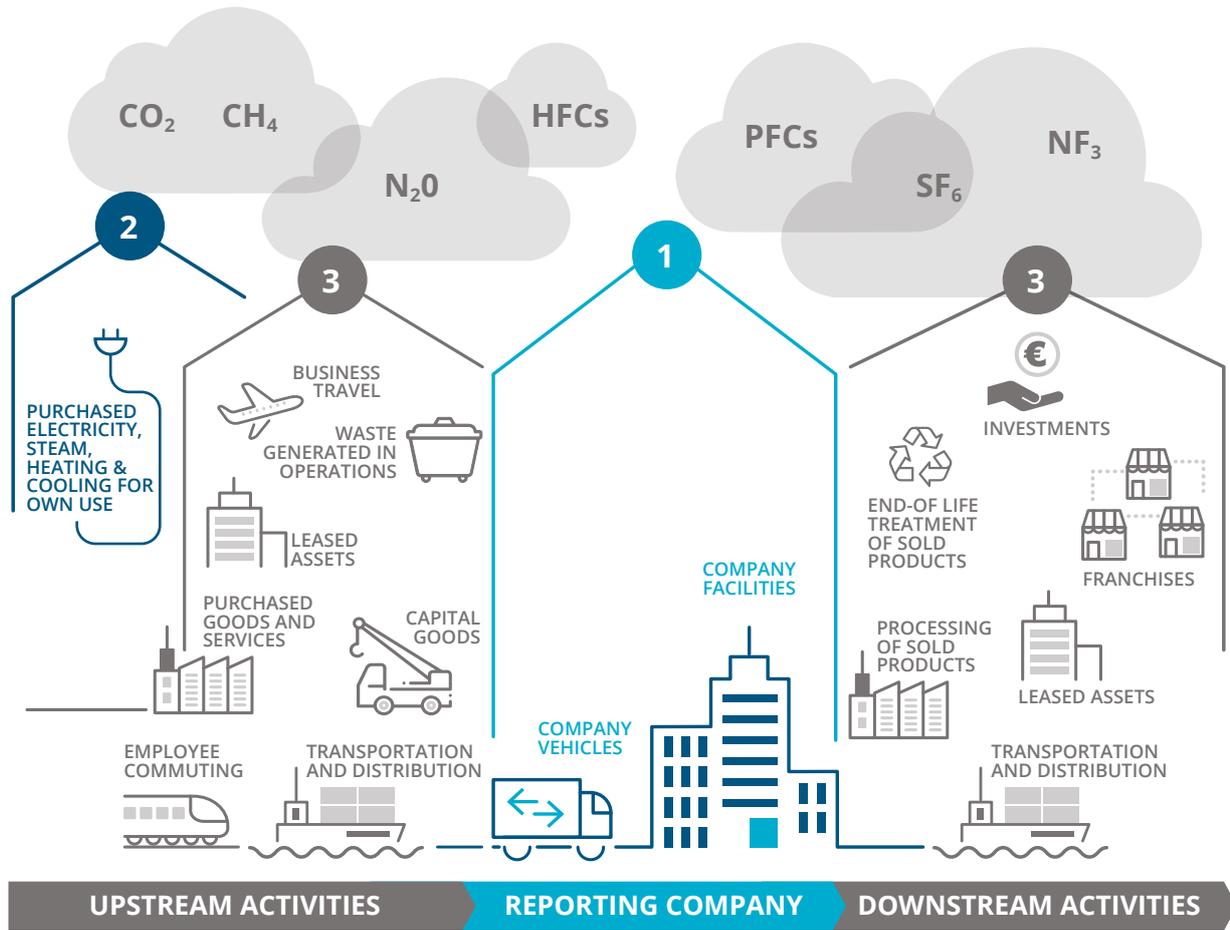


INTRODUCTION

UNDERSTANDING CLIMATE AND CARBON-RELATED RISKS

Buildings account for about one-third of global final energy consumption and about half of electricity consumption, amounting to around 20% of total greenhouse gas (GHG) emissions worldwide. With an increasing energy demand mainly due to a global increase in floor area, the building-related emissions are projected to grow in a business-as-usual scenario. The GHG emissions related to buildings are typically divided into three operational boundaries or scopes in order to identify the source of emissions:

Figure 1: Overview of scopes and emissions across a value chain (source: Greenhouse Gas Protocol).



1

DIRECT EMISSIONS

generated **on-site** by the **activities** taking place **in buildings**

This first scope concerns all the emissions generated in the building, such as space and water heating powered by fossil fuels, as well as equipment that consumes fossil fuels. It also includes fugitive emissions which result from the direct, intentional or unintentional, release of GHG compounds from various types of equipment and processes, e.g. refrigeration and air-conditioning.

2

INDIRECT EMISSIONS

from **building energy consumption**

Indirect emissions occur off-site but are a consequence of the activities that take place within the building, including the building's electricity use, as well as heating and cooling from district systems. The electrical demand in buildings induces GHG emissions in the power sector, including through consumption by electrical equipment incorporated in the building (e.g. heating and cooling systems, electric lighting, elevators, pumps) and by electrical appliances as well as related service equipment (e.g. IT equipment).

3

INDIRECT EMISSIONS

from **other sources**

These emissions encompass all other indirect emissions possible, such as emissions related to the extraction and production of construction materials and fuels, carbon emissions generated by urban planning decisions (e.g. unnecessary travel or traffic induced by the building location), outsourced activities and waste disposal.

The needed reduction of energy and material use and GHG emissions, as well as the societal, environmental and land-use impacts of the built environment, have recently been established by the [EUCalc model](#). Figure 2 displays how the building stock needs to transform by 2050 to comply with the EU's climate and energy

targets. It demonstrates that additional efforts are required compared to the current status quo. The EU Member States need to develop detailed strategies (see the section on Long-term renovation strategies) for how to make this a reality, including 2030 and 2040 milestones.

Figure 2: CO₂ emissions and final energy demand trajectory until 2050 for the building stock to be aligned with EU climate and energy targets.

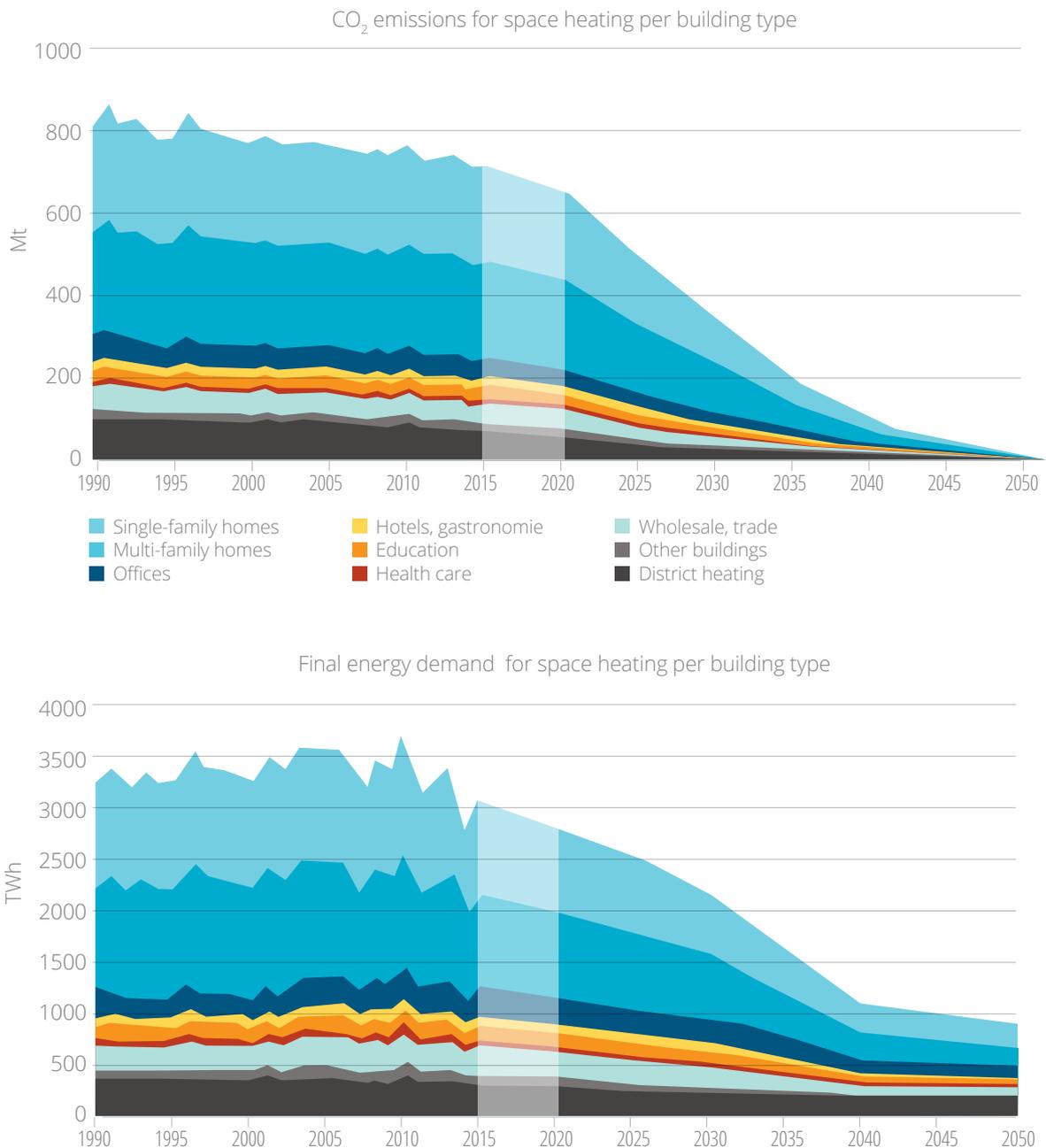


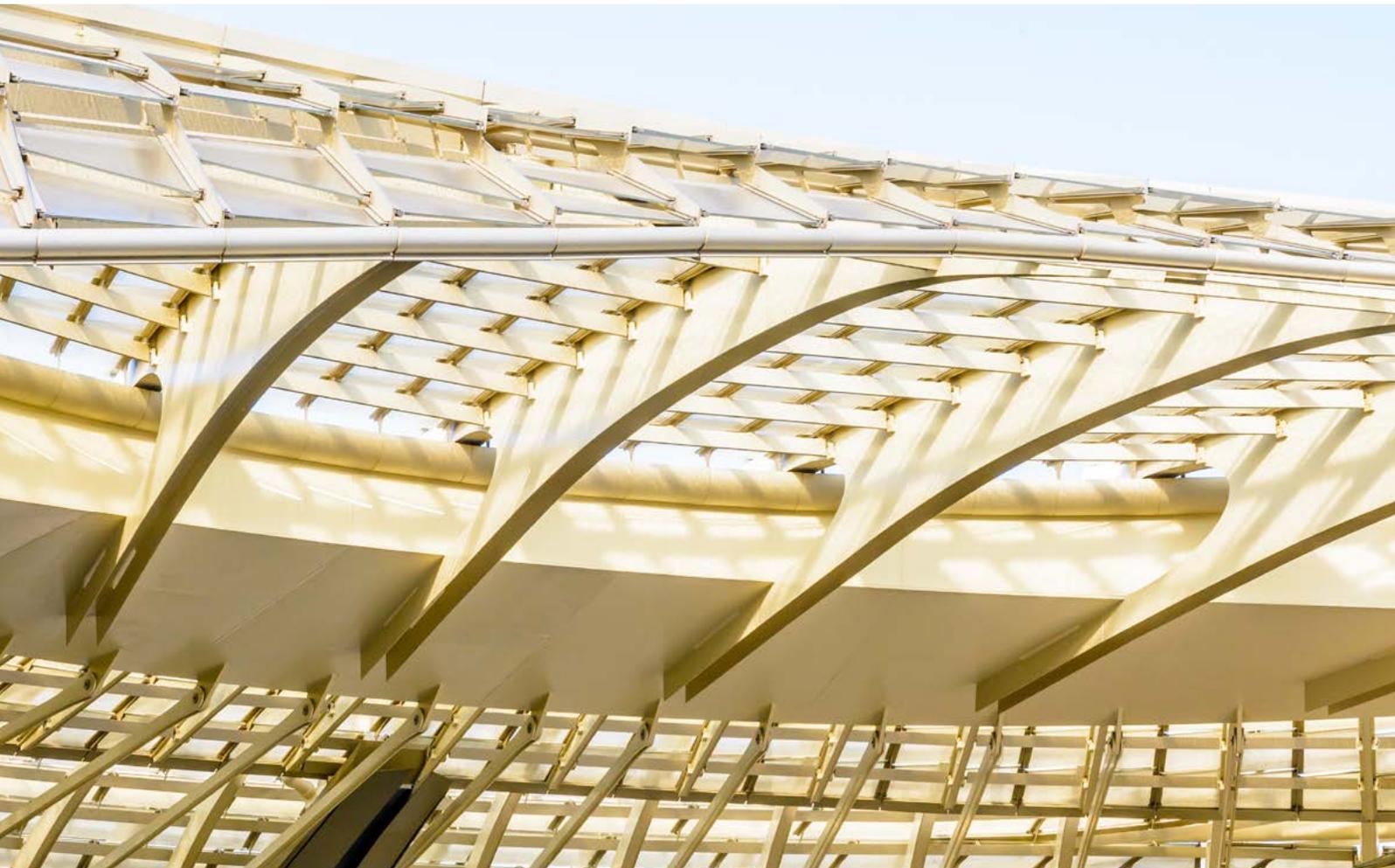
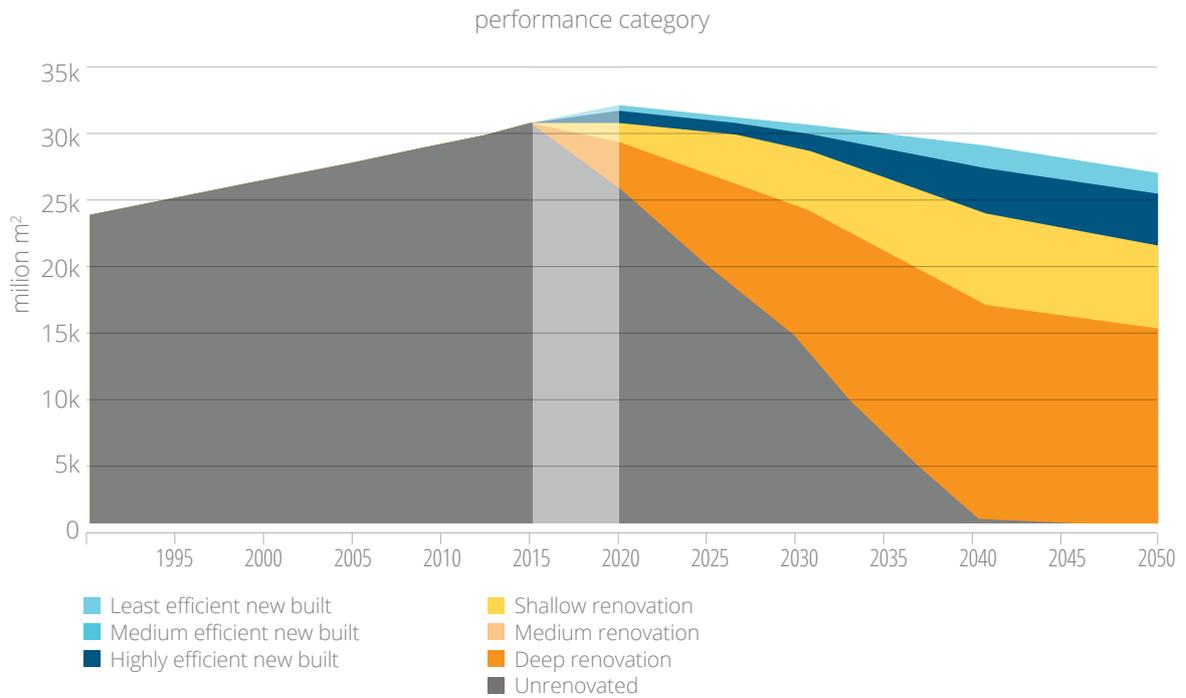
Figure 3 shows the CO₂ emissions and final energy demand of the “wholesale, trade” building type, in which the RRE sector makes up for a large share. The difference between the slopes in CO₂ emissions and final energy demand displays that additional measures (e.g. renewable energy supply) will be needed to make the sector carbon neutral.

Figure 3: CO₂ emissions and final energy demand until 2050 for the wholesale building sector to be aligned with EU climate and energy targets.



Figure 4 shows the magnitude of the EU's unrenovated building stock and the type and share of renovations needed until 2050. Unsurprisingly, it shows that the number and depth of renovations must increase drastically over the coming years.

Figure 4: Type and magnitude of renovation needed by 2050.



Energy renovations not only have significant potential to contribute to climate goals but also constitute an essential economic opportunity. Despite the documented benefits, the renovation rate remains staggeringly low. Figure 5 shows the renovation rate for non-residential buildings in the different EU Member States and highlights the very low rate of deep energy renovations.

Figure 5: Renovation rate in non-residential buildings (source: European Commission, 2019).

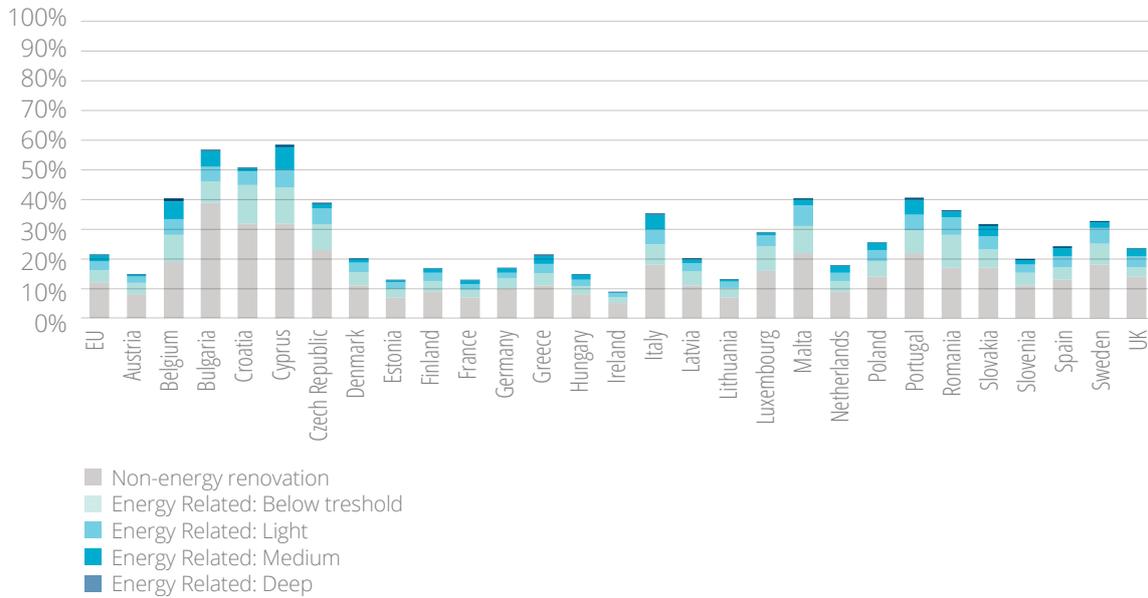
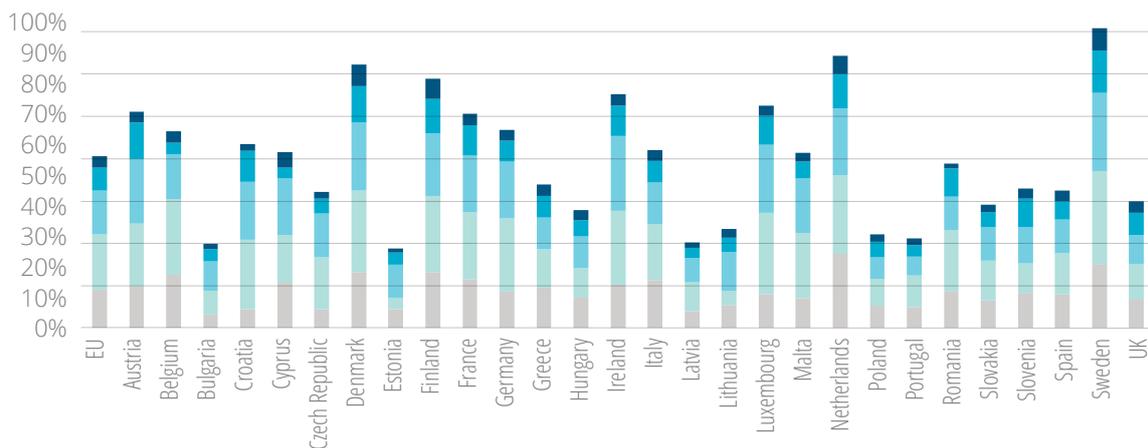


Figure 6 shows the estimated investment cost per different renovation types. It shows that on average more than €73 billion per year was invested in non-residential building renovation in the EU. Investments in energy renovations in non-residential buildings increased slightly between 2012 and 2016.³

Figure 6: Renovation investment in non-residential buildings (source: European Commission, 2019).



³ European Commission (2019) Comprehensive study of building energy renovation activities and the uptake of nearly zero-energy buildings in the EU

While existing properties are clearly in urgent need of mass retrofitting to reduce energy consumption and carbon footprint, the RRE sector should not view decarbonisation only as an environmental goal. Addressing carbon risks and adapting to the threats of climate change is also essential to maintaining a competitive edge and market relevance.

Climate change poses two main types of risks for the RRE sector:

- **Physical climate risks**, i.e. due to physical changes in climate, are expected to lead to both gradual changes in climate patterns and extreme weather events. These are likely to change the supply and demand dynamic of the industry and lead to physical damage to assets. These changes, in turn, may translate into adaptation costs and economic loss of value.
- **Carbon risks**, i.e. as a result of the transition to a low-carbon economy, will alter the financial viability of a part of the capital stock and business models will be affected. The associated financial risks and opportunities may impact the performance of assets and portfolios (e.g. the risk of stranded assets).

The [Global Risk Landscape 2020](#) released by the World Economic Forum lists extreme weather events, natural disasters and failure of climate change mitigation and adaptation among the risks with the highest impact and likelihood – all far exceeding those of fiscal crises or asset bubbles in a major economy, as shown below:

Figure 7: Global Risk Landscape 2020 (source: World Economic Forum).





To date, risk factors resulting from climate change and the transition to a low-carbon economy are not fully integrated into mainstream RRE risk assessment and management frameworks. Some of the reasons include:

- Uncertainty around the decarbonisation trajectory of the sector, including the associated technology, market and legislative developments driving this trajectory.
- The low carbon transition and 1.5°C climate roadmaps are not considered as reliable reference scenarios by asset and portfolio managers.
- Climate change issues are not yet fully integrated into mainstream RRE asset management and investment decision-making processes that traditionally focus on the cyclical trends of the property markets.
- Most of the risks associated with climate change are expected to appear in the medium- to long-term and are thus not being captured by the relatively short-term models used in most of the current risk management practices.
- Data gaps, confusion of metrics and protocols, as well as the particular nature of carbon risks (e.g. to date driven primarily by policy), may give rise to a collective misassessment by real estate markets.
- Awareness and skills gaps.



REGULATORY OVERVIEW

This section indicates the direction of policy development in the area of environmentally sustainable buildings. Policy instruments come in a variety of forms ranging from statutory building codes and minimum performance requirements to fiscal instruments as well as information and support measures. Single policy instruments rarely deliver long-term change, particularly when contending with multiple and complex policy goals and barriers, such as climate change mitigation and decarbonisation of the built environment. The legislative overview will focus on the following three policy categories considered to be most relevant for RRE companies and funds:

1. Direct carbon policies
2. European regulations and minimum energy performance standards
3. Sustainable finance and the EU taxonomy.



There is a clear need for early and rapid investment to prevent locking in carbon-intensive investments.



GLOBAL AND EU TARGETS

The global community came together in 2015 to agree on what became the [Paris Climate Agreement](#). The agreement set out an objective to keep the global temperature increase to “well below 2 degrees Celsius” while trying to keep it below 1.5 degrees Celsius. While the agreement provides very clear answers to why this needs to be done, the question of how this will be achieved remains unanswered. The parties to the agreement are required to put forward *nationally determined contributions*, outlining how their efforts will support the overall climate objective.

The [European Green Deal](#) sets out the overarching aim to become climate neutral by 2050 and makes clear that the built environment is a priority infrastructure in this effort. A key component of the Green Deal is the proposed climate law embedding a legal commitment for the EU to achieve climate neutrality by 2050. The European Commission also aims to raise the EU carbon emission reduction target from 40% to at least 55% as part of the pending European Green Deal.⁴

In the [Renovation Wave strategy](#), which lays out the main policy instruments for the built environment, the European Commission concludes that “the EU must reduce buildings’ greenhouse gas emissions by 60%, their energy consumption by 14%, and the energy consumption of heating and cooling by 18%.” The strategy aims to double the renovation rate within the next decade through enforcing existing measures (e.g. energy performance certificates, long-term renovation strategies, more financial and technical support) and by introducing new instruments. The most notable new instrument is the introduction of a mandatory minimum energy performance standard (MEPS), which most likely will draw from the existing and

planned European MEPS cases (e.g. [MEES](#) in the UK, [Décret Tertiaire](#) in France, and the [Dutch minimum standard](#) for all office buildings).

The Effort Sharing Regulation⁵ is the EU’s main policy tool to mitigate the climate impact of sectors that are not covered by the EU’s emissions trading system. The regulation sets binding national emission reductions targets until 2030 for various sectors, including buildings. The efforts per country depend on their economic capability to contribute: Sweden must reduce emissions in these sectors by 40% and Romania only 2%. The aggregated effort of Member States’ accumulated efforts adds up to the carbon reductions needed to meet the pledged 40%. The performance of buildings is highlighted as one of the main sectors contributing to attaining the envisaged savings.

In the post-Covid environment, investments in building renovation are considered a priority area as they lead to the needed energy savings while creating jobs and stimulating the economy. There is a clear need for early and rapid investment to prevent locking in carbon-intensive investments. Despite substantial efforts and strides, the RRE sector is struggling to quantify and articulate the value of low carbon property investment. The vast majority of investment decisions are still being made based on simple payback or simple return on investment calculations. Most investors, and many tenants, today understand that sustainable properties can generate health and wellbeing benefits, recruiting and retention advantages, and reduce risks, but struggle to account for the multiple benefits. The European Green Deal could mandate a more comprehensive assessment of revenue and risk considerations in property investment decisions.

⁴ The Commission will come forward with the proposals by June 2021. See more: https://ec.europa.eu/clima/policies/strategies/2030_en

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R0842&from=EN>



DIRECT CARBON POLICIES

Direct carbon policies can be either quantity-based (i.e. emissions trading) or price-based (i.e. carbon taxes). The main difference concerns the price setting. When the quantity of emissions is set, the market defines the value of the remaining “emission allowances”. In the case of the carbon tax, the government sets the level.

The EU emissions trading system

The EU emissions trading system (EU ETS) is central to the EU's energy policy. It functions as a “cap and trade” programme incentivising manufacturers to reduce their carbon intensity. In theory, the manufacturers that can cost-effectively cut their emissions will do so and sell their remaining “emission allowances” to manufacturers that have a harder time reducing their emissions. According to the EU, the scheme covers 45% of the region's carbon emissions.

The cement, chemical and steel sectors are responsible for a large share of the emissions covered by the EU ETS. Until now, the impact on the construction industry has been limited as the large emission allowances available pushed down the price of carbon, undermining the system's effectiveness. Discussions are ongoing to extend the EU ETS to cover emissions associated with heating and cooling buildings. This move, however, is being carefully assessed against the existing policy landscape (e.g. Effort Sharing Regulation) as it is clear that the decarbonisation of the building stock requires dedicated policies beyond a carbon price.⁶

Carbon taxes

A carbon tax is a governmental fee on the production, distribution or use of fossil fuels based on how much carbon is being emitted. In other words, “polluters would pay for the negative externality their emissions inflict on the planet.”⁷ According to most economists, carbon taxes are the most effective measure to mitigate carbon emissions. Strong industry interests, however, have hampered their widespread introduction across the EU as well as at Member State level.

According to a study by the World Bank,⁸ 29 countries and regions have carbon taxes in place, including several European countries such as the Nordic countries, Switzerland and France. In addition, the German government will introduce a price on carbon emissions in the transport and building sectors from 2021 as a key instrument to help reach its climate targets.⁹

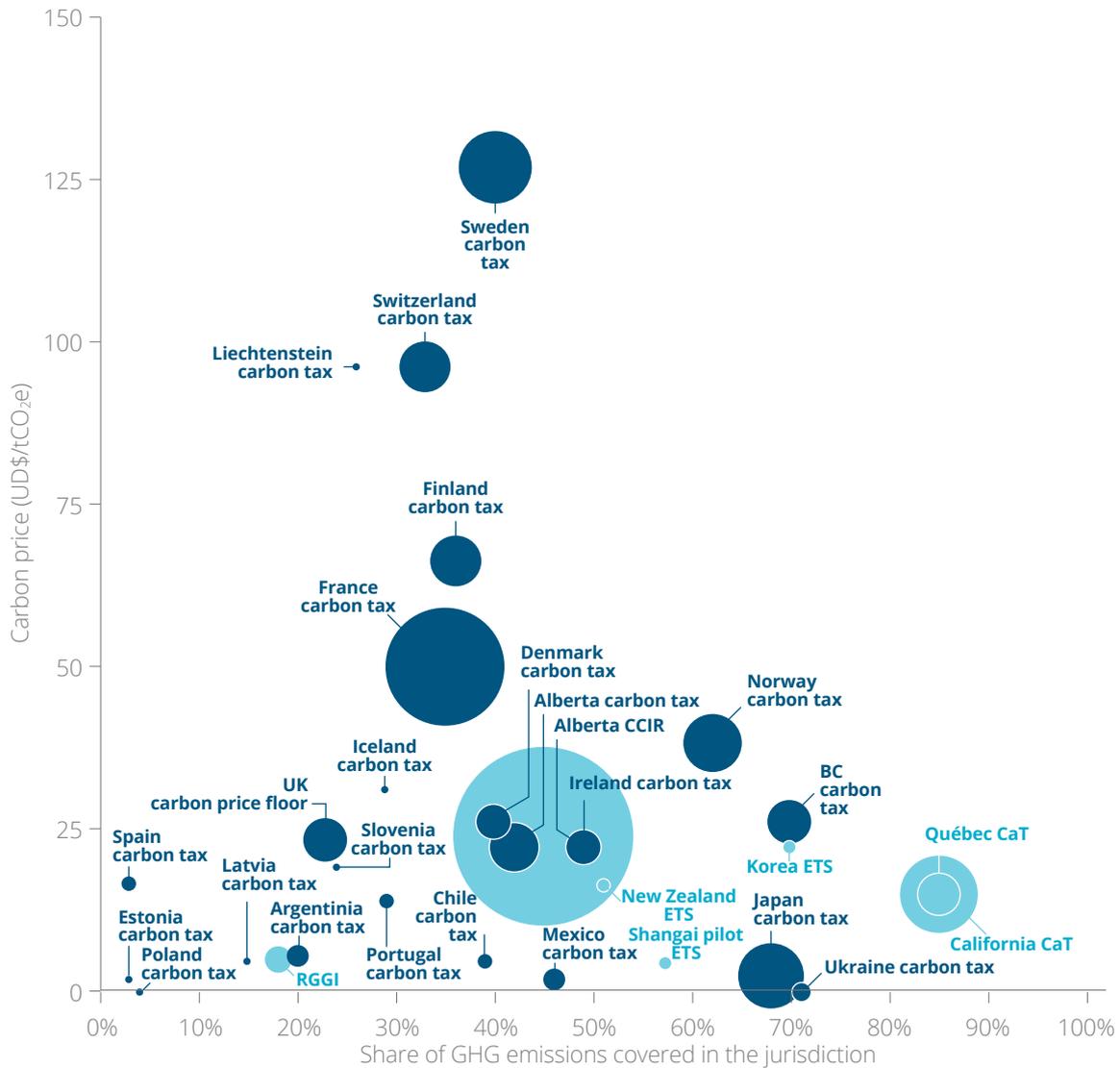
⁶ <https://www.euractiv.com/section/energy-environment/opinion/why-the-eu-ets-wont-deliver-better-buildings-for-all-but-a-green-deal-could/>

⁷ <https://www.economist.com/briefing/2020/05/23/the-world-urgently-needs-to-expand-its-use-of-carbon-prices>

⁸ World Bank (2019) State and Trends of Carbon Pricing

⁹ <https://www.cleanenergywire.org/factsheets/germanys-planned-carbon-pricing-system-transport-and-buildings>

Figure 8: Carbon price, the share of emissions covered and carbon pricing revenues of implemented carbon pricing initiatives (source: World Bank, 2019).



Key takeaways

Higher carbon prices, either through carbon taxation or higher prices for carbon certificates, can significantly affect buildings with poor carbon performance (write-downs and stranded assets).

While policy uncertainty still prevails today, the overall expectation is that EU carbon prices will rise quickly and accelerate the energy transition.



ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE (EPBD) AND MINIMUM PERFORMANCE REQUIREMENTS

Strengthening carbon prices is a key policy but is unlikely to be a sufficient incentive to deliver net zero carbon real estate portfolios by 2050. According to the International Energy Agency, retrofit policies and building performance standards may be stronger decision drivers than the price of energy.¹⁰ The EPBD is the single most important legislation to drive the decarbonisation of the building sector. It requires Member States to set up long-term renovation strategies and comply with minimum energy performance requirements for buildings, which are set to achieve cost-optimal levels using a comparative methodology framework. Also included within the directive is the obligation for European countries to introduce energy performance certificates (EPCs) and the objective of nearly zero-energy levels for all new buildings by January 2021.

Long-term renovation strategies

[Article 2a of the EPBD]

A central building block of the EU's EPBD requirements is the long-term renovation strategies. The EPBD 2018 amendments strengthen the requirement and seek to make these strategies a tool to support the transition to a highly energy-efficient and decarbonised building stock by 2050, facilitating the cost-effective transformation of existing buildings into nearly zero-energy buildings.

Each Member State must prepare comprehensive long-term renovation strategies that include, among other things:

- Milestones (indicative) for 2030, 2040 and 2050
- Explanation of the contribution to the overall EU energy efficiency target for 2030
- Approaches to renovation relevant to the building type and climatic zone, including potentially relevant trigger points
- Policies and actions to stimulate cost-effective deep renovation of buildings, including staged deep renovation, for example by introducing an optional scheme for building renovation passports
- Policies and actions to target the worst-performing segments of the national building stock, split incentives and market failures.

¹⁰ IEA (2016) Energy Efficiency Market Report p.81

Energy performance certificates and building renovation passports

[Articles 10, 19, 19a, 20 of the EPBD]

All EU Member States have now developed and implemented EPC frameworks, including methodologies to calculate regulated carbon emissions. Different implementation approaches have led to a diverse set of instruments, varying in terms of scope and available information, resulting in some cases in limited reliability, compliance, market penetration and acceptance. EPCs in different countries are not comparable.¹¹

The amended EPBD encourages national governments to improve the provision of advice and support to building owners both in terms of raising awareness and understanding of EPCs themselves and on measures and financial instruments to improve the energy performance of their buildings. Also, the European Commission has started to explore the future of the EPC and the evolution of the concept into “building renovation passports”. A building renovation passport is a renovation roadmap for the individual building, including step-by-step renovation advice.

While the EPC has been of relatively minor importance to the RRE sector so far, it is one of EU’s main instruments to improve the building stock. Future legislation, such as mandatory minimum energy performance standards (MEPS), is being linked to EPCs, which raises the relevance of the tool. Some of the countries implementing MEPS are (see also section below):

- In the Netherlands, all office buildings must acquire an EPC label C or above by 2023.¹²
- In Flanders, Belgium, all large non-residential buildings are obliged to have an EPC by 2025. Five years later they also need to reach a minimum EPC label (ambition is yet to be defined).
- In England and Wales, non-domestic buildings must acquire an EPC E label or above.

Nearly zero-energy buildings

[Article 9 of the EPBD]

The EPBD requires that from 2020 all new buildings are nearly zero-energy buildings (NZEBs). EU Member States have been asked to draw up and submit NZEB national plans, describing how they intend to increase the number of NZEBs in their respective country to comply with the EPBD. Most Member States have now introduced an NZEB definition, intending to guide the building stock. However, as in the case of EPCs described above, the definition and implementation of the standard is inconsistent across the EU. Further tightening of NZEB requirements by EU Member States will be needed with the aim of setting the whole building sector on convergence towards net zero energy and carbon targets by 2030.

Mandatory minimum energy performance standard (MEPS) for existing buildings

Article 7 of the EPBD states that “Member States shall take the necessary measures to ensure that when buildings undergo a major renovation, the energy performance of the building or the renovated part thereof is upgraded to meet minimum energy performance requirements set by Article 4 in so far as this is technically, functionally requirements and economically feasible.” There are currently several actions on EU and Member State level exploring the options of going beyond the EPBD requirement (i.e. mandate the lowest-performing buildings to be renovated).

The EPBD [impact assessment](#) found that MEPS for existing buildings could have a significant impact on increasing renovation activity and trigger energy savings across the EU. It was, however, not retained in the preferred options due to concerns regarding practical implementation.

Setting up MEPS for the entire building stocks, or certain parts of it (e.g. leased

¹¹ BPIE (2020) [Energy Performance Certificates in Europe – Assessing their status and potential](#)

¹² <https://www.rijksoverheid.nl/documenten/besluiten/2019/05/22/wijziging-bouwbesluit-2012>



Strengthening carbon prices is a key policy but is unlikely to be a sufficient incentive to deliver net zero carbon real estate portfolios by 2050. The EPBD is the single most important legislation to drive the decarbonisation of the building sector.



commercial properties), is believed to be a very effective instrument to achieve fast emission reductions.¹³ When designed as progressive standards to achieve long-term targets to decarbonise the European building stock, MEPS may also ensure deep renovation. There are several inspiring MEPS cases:

- The best-known approach is the Minimum Energy Efficiency Standard introduced in the UK for domestic and non-domestic properties, which does not allow landlords to rent out their property unless it has an EPC class E or better (discussions are being held on strengthening this to EPC C by 2030 in England and Wales).
- France is planning to introduce a minimum standard based on reduction of energy consumption (in kWh/m²/yr) compared to consumption in a reference year (40% in 2030, 50% in 2040 and 60% in 2050).
- The Netherlands requires all office buildings to meet EPC label C by 2023.
- New York City introduced a requirement for larger buildings to reduce their real measured GHG emissions by 40% by 2030 compared to 2005 levels, and by 80% by 2050.

One plausible approach to implement MEPS is to require larger building owners (such as large retail owners) to upgrade their building portfolio (based on energy consumption, carbon emission or energy efficiency level). Most schemes start with the largest building owners with the intention to expand to smaller buildings over time:

- In Brussels, a pending MEPS scheme aims to reduce the primary energy consumption (kWh/m²/year) of the non-residential building stock. Targeted building owners must propose a three-year action plans to reduce primary energy consumption. The mandated renovations are based on cost-effective measures defined by the local administration, which the building owner refers to in the action plan. The energy reduction in the plan is mandatory and applies to the total building stock owned. The owners decide which measures to apply.
- From 2025 onwards, all Flemish large non-residential buildings are obliged to have an energy label. After 2030, they also need to reach a minimum EPC label (the label is yet to be defined). All non-residential buildings are covered by this MEPS, with additional measures for inefficient large non-residential buildings with heating and cooling installations. The Flanders Energy Agency suggests that this policy is aligned with the long-term goals of carbon neutrality for non-residential buildings.
- In France, “tertiary buildings” are obliged to reduce their energy consumption (kWh/m²/year) compared to a set reference year (a year between 2010 and 2020, chosen by the building manager) by at least 40% by 2030, 50% by 2040 and 60% by 2050.
- In the autonomous province of Bolzano, from 2019, owners of buildings are allowed to expand the surface of their dwelling by up to 20%, or up to 200m², only if the refurbished building achieves an energy need for heating below 70kWh/m²/yr.

¹³ https://www.c40knowledgehub.org/s/article/How-to-set-energy-efficiency-standards-for-existing-buildings?language=en_US

- In Denmark, minimum energy requirements are established for building components in case of a change in building use that would result in significantly higher energy consumption (e.g. conversion of an outbuilding to accommodation, or conversion of usable roof space to accommodation).

in all jurisdictions, proposes well-grounded energy performance procedures that can be used to overcome this barrier.

The overarching standard EN ISO 52000-1 states: “the use of only one requirement, e.g. the numerical indicator of primary energy use, can be misleading. In ISO 52000-1 different requirements are combined to a coherent assessment of nearly Zero-Energy Building.” To avoid this misleading interpretation of the energy performance of a building, the standard explains which indicators should be used. The application of these indicators could promote transparency and facilitate the introduction of common procedures to measure energy performance, as well as, eventually, establish zero-carbon thresholds and trajectories across the Member States (see also section on “*Data gaps and consistency among metrics*” below).

Calculating the energy performance of the building

Member States (and even regions) are using separate national procedures and standards to calculate the energy performance to check compliance or to issue an EPC. This has been identified as a market barrier for energy-saving products, systems technologies and design strategies for new constructions and retrofits. The new set of EN-ISO building-related standards,¹⁴ which are to be implemented

¹⁴ As stated in EPBD Annex I: “Member States shall describe their national calculation methodology following the national annexes of the overarching standards, namely ISO 52000-1, 52003-1, 52010-1, 52016-1, and 52018-1, developed under mandate M/480 given to the European Committee for Standardisation (CEN). This provision shall not constitute a legal codification of those standards.”



Key takeaways

Not all EPCs collect and display emissions data, which is the required metric to demonstrate compliance with low carbon intensity. Many countries have improved, or are planning to improve, their EPC framework but the instrument is still facing reliability and usability issues.

Further tightening of NZEB requirements by EU Member States will be needed with the aim of setting the whole building sector on convergence towards net zero energy and carbon targets by 2050.

Minimum mandatory requirements for existing buildings are increasingly considered as a highly effective policy tool to boost renovation activity and trigger energy/carbon savings across the EU. They are typically linked to the building’s energy/carbon consumption or its EPC label.



SUSTAINABLE FINANCE PACKAGE AND THE EU TAXONOMY

The EU's Sustainable Finance package will play a significant role in shaping business models and investment decisions in the RRE sector in the decades to follow. The set of measures has the potential to act as a catalyst for the EU to mobilise the financial sector to help fund the transition to a zero-carbon built environment. While some investors and asset managers may adopt a wait-and-see approach, instead of massively investing in low-carbon buildings, future adjustments to the legal framework will make it more difficult for the RRE sector to access financing if it doesn't align with Paris Agreement goals.

The [action plan on sustainable finance](#) announced three key measures:

- Regulation on **disclosures relating to sustainable investments and sustainability risks** (published in December 2019) which requires financial market actors to disclose sustainability risks and impacts. Given that RRE has a long tenure and can make up a significant asset class in investment portfolios, the sustainability risks and impacts emerging from these investments will need to be assessed and disclosed according to the new regulation. As a consequence, financial market actors are expected to look much more closely at the activities they are financing and investing in. The need to disclose carbon-related risks could deter investors from considering non-sustainable assets as attractive investment opportunities. This will further contribute to the accelerated value depreciation of assets that have not been improved, as the market will increasingly recognise that inefficient buildings present an economic and regulatory risk.
- Regulation on **climate-related benchmarks** (published in December 2019) introducing two new types of benchmarks: EU climate transition benchmarks and the slightly more ambitious EU Paris-aligned benchmarks enable investors to assess investment activities against low-carbon and Paris-aligned benchmarks; access more information on ESG methodologies of benchmark providers, enabling better comparison and more informed decision-making; and encourage the development of new low-carbon and Paris-aligned investment products.
- **EU taxonomy**¹⁵ is one of the most significant developments in sustainable finance, will have wide-ranging implications for investors active in the EU, and beyond. The taxonomy is essentially an implementation tool that enable investors and companies to identify and assess industry areas and sectors that are consistent with Paris Agreement goals. Through the “do no significant harm” (DNSH) criteria it also includes provisions for achieving a broad set of the Sustainable Development Goals (SDGs). Buildings have been identified as a priority area and a critical cross-cutting issue, given their high contribution to CO₂ emissions in the EU.

¹⁵ The [Taxonomy Regulation](#), published in June 2020, establishes the framework for the EU taxonomy by setting out the conditions that an economic activity has to meet in order to qualify as environmentally sustainable. The actual list of environmentally sustainable activities and technical screening criteria for each environmental objective are defined through delegated acts (draft published for consultation in November 2020). The delegated acts take into consideration the [recommendations of the technical expert group](#) and feedback received from stakeholders. The delegated acts will be accompanied by an impact assessment and will be adopted as soon as possible after the evaluation of the stakeholder feedback. The four environmental objectives, other than climate change mitigation and adaptation, should be established by the end of 2021 and will apply by the end of 2022. The first company reports and investor disclosures using the EU taxonomy are due at the start of 2022, covering the financial year 2021.

The taxonomy is organised around economic activities¹⁶ and building-related activities fall into the following seven groups, each with separate metrics and thresholds: (1) Construction of new buildings; (2) Renovation of existing buildings; (3) Installation, maintenance and repair of energy efficiency equipment; (4) Installation, maintenance and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings); (5) Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings; (6) Installation, maintenance and repair of renewable energy technologies; and (7) Acquisition and ownership of buildings. The screening criteria have three components: principles define basic framework conditions (reduce emissions/do not significant harm), metrics define the eligibility indicators (energy and GHG intensity), and thresholds set specific quantitative limits that have to be fulfilled (specific targets on a year-by-year basis).

The draft taxonomy regulation sets out the following climate change mitigation requirements for buildings:



- **Construction of new buildings:** to be eligible, the design and construction of new buildings needs to ensure a net primary energy demand that is at least 20% lower than NZEB level mandated by national regulations. Additionally, buildings larger than 5000m² are required to undergo airtightness and thermal integrity testing; importantly, their global warming potential will have to be calculated for each lifecycle stage and disclosed to investors and clients on demand.



- **Building renovations:** renovations designed to meet the local national or regional requirements for “major renovation” as defined in the EPBD; this will stimulate the market and encourage building owners undertaking a “conventional” renovation to include energy efficiency. Alternatively, renovations are eligible if undertaken to ensure at least 30% savings in net primary energy demand in comparison to the baseline energy performance of the building before the renovation.



- **Installation, maintenance and repair of energy efficiency equipment;** of charging stations for electric vehicles in building and parking lots; of instruments and devices for measuring, regulation and controlling energy performance of buildings; of renewable energy technologies. These are assessed through technical requirements for individual components and systems.



- **Acquisition and ownership:** buildings built before 31 December 2020 must reach at least EPC class A. Buildings built from 2021 are eligible if they meet the criteria for the construction of new buildings. An additional requirement is applied only to large non-residential buildings (with an effective rated output for heating systems, systems for combined space heating and ventilation, air-conditioning systems or systems for combined air-conditioning and ventilation of over 290 kW) to ensure the system is efficiently operated through energy performance monitoring and assessment.

¹⁶ NACE rev.2 - statistical classification of economic activities, <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

The draft regulation introduced a number of significant changes compared to the final recommendation of the technical expert group. These were also highlighted by the responses submitted by stakeholders during the consultation process in December 2020. Key challenges related to the current draft regulation and implementation by the RRE sector are summarised below:

- *Useability and implementation:* proposed criteria should be such that financial institutions and real estate market actors are able to use it right away. If compliance is not feasible, e.g. due to lack of data and robust benchmarks, there is a risk that the means to finance climate mitigation will not be available.
- *Threshold for new buildings:* needs to be more aligned with existing market practices and recognise existing market benchmarks, such as green building rating tools; primary energy demand is not linked to decarbonisation pathways; there is no consistency across national NZEB definitions; the need for a clear timeline for revising and improving technical screening criteria and threshold in line with decarbonisation targets and to build capacity within the market.
- *Threshold for existing buildings:* the 30% threshold will need to be accompanied by a clear roadmap for revising and improving technical screening criteria and thresholds in line with decarbonisation targets, e.g. by increasing the threshold as soon as the market is ready. Criteria should recognise investments which are aligned with the agreed GHG reduction objective and the specified target for the buildings sector of a 60% reduction by 2030.
- *Do no significant harm (DNSH) criteria:* represent an important additional set of criteria, however these need to be designed with proportionality and practicality in mind; the requirements for documentation of the DNSH criteria are not yet an established practice.
- *The rationale guiding the climate change and DNSH criteria* is not clear and the regulation doesn't provide a clear pathway and end goal of how these requirements will evolve over time. Lacking clarity over the pathway could confuse investors, asset managers and owners, as they wouldn't know how to prepare and future proof their assets, keeping in mind the very long holding periods in real estate.

The taxonomy regulation is still a work in progress and even when the delegated acts for the technical screening criteria are adopted, the taxonomy will need to be regularly updated in order to reflect the latest policy and technological developments. This work will be carried out by the Platform on Sustainable Finance, which will advise the EU Commission on the development of a full taxonomy system including environmental and social objectives.

IMPORTANT DATES





Key takeaways

The EU's Sustainable Finance package will play a significant role in shaping business models and investment decisions in the RRE sector – either through preferential financing conditions for better performing assets or limited access to financing if investments don't align with Paris Agreement goals.

Another indirect impact of the taxonomy on the retail real estate sector is that, over time, owners and operators will need to report on environmental performance simply because investors in turn are required to report on their own investments (mandatory disclosures).

Thresholds for real estate will need to be gradually tightened until they reach zero emissions (including scope 3 emission for new builds).

The requirement to disclose carbon-related risks will contribute to the accelerated value differentiation among assets, most likely the depreciation of assets that have not been improved as the market will increasingly recognise that inefficient buildings present an economic and regulatory risk.



The EU's Sustainable Finance package will play a significant role in shaping business models and investment decisions in the RRE sector – either through preferential financing conditions for better performing assets or limited access to financing if investments don't align with Paris Agreement goals.





MARKET INITIATIVES

Legislation alone is not enough to drive the transformation of the RRE sector. The built environment and financial sectors are making strong commitments¹⁷ to adopt “science-based” targets and track performance in order to play their part and assume their fair share of global climate mitigation and adaptation. Investor surveys suggest the decarbonisation agenda is becoming a game-changer in terms of both risk perception and opportunity analysis.¹⁸

Coherent and consistent science-based carbon definitions and benchmarks are fundamental to aligning the RRE sector with Paris Agreement goals. In the absence of a clear and widely accepted definition around what zero-carbon buildings are, investors, owners and tenants will raise concerns about the trustworthiness and robustness of the sustainability performance of buildings. Landlords struggle to demonstrate that buildings are meeting investor, market and regulatory expectations, let alone deliver a rapid and comprehensive low-carbon transition. Overall, the sector faces uncertainty in terms of impact assessment and the development of credible decarbonisation strategies that mitigate climate and financial risk.

This section looks at the science-based metrics and targets, definitions of zero-carbon buildings and other tools available to the RRE community that could provide the critical pointers of “how much is enough” in terms of low-carbon performance. These market initiatives are responses to what is often missing from regulations, policy and current real estate performance tracking.

¹⁷ See for example, the World Green Building Council (WorldGBC) and its Net Zero Carbon Buildings Commitment, as well as the Better Buildings Partnership (BBP) Climate Change Commitment. Both initiatives are pushing signatories towards achieving net zero portfolios by 2050.

¹⁸ CRREM (2020), Carbon risk integration in corporate strategies within the real estate sector



CARBON MEASUREMENT PROTOCOLS AND STANDARDS

Carbon accounting within the real estate sector begins with the clarification of basic definitions and concepts related to carbon measurement and reporting. The Intergovernmental Panel on Climate Change has established a reporting methodology for national accounting; however, these methods are not easily applicable for corporate carbon accounting processes. Below is a review of the most commonly used standards available for companies to monitor and report carbon emissions.

Greenhouse Gas (GHG) protocol

The GHG protocol is the most widely used international accounting tool for businesses and governments to understand their greenhouse gas emissions.¹⁹ It has been developed by World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) to provide a standardised approach to measure and manage GHG emissions from private and public sector operations, value chains and mitigation actions.

The GHG protocol offers a comprehensive set of standards covering national and local mitigation goals, corporate value chains, policy development, product-related lifecycle emissions, and climate change mitigation projects. Relevant for the RRE sector, the Corporate Accounting and Reporting Standard²⁰ provides requirements and guidance for organisations that are preparing a corporate-level GHG emissions inventory.

Similar to financial accounting and reporting, GHG accounting is based on several key principles:

- Relevance — no information required for decision-making should be left out
- Completeness — all relevant emissions sources need to be accounted for
- Consistency — comparability of the GHG emissions (e.g. over time) must be ensured
- Transparency — data should be disclosed clearly and neutrally based on clear archives
- Accuracy — data must be sufficiently precise and with minimum possible uncertainties

Calculation of the GHG emissions is organised in five steps:

- Identifying emission sources — building on direct, indirect and electricity-related emissions
- Selecting the calculation approach — usually, emissions are based either on characteristics of a facility or process or through the application of documented emission factors
- Collecting data — usually quantities of fuels, electricity consumption, and activity data
- Applying calculation tools — by using either cross-sector or sector-specific calculations
- Rolling up — summarising data from different facilities, countries, and business divisions

¹⁹ About 92% of Fortune 500 companies that measure, manage and disclose environmental impacts according to CDP (formerly the Carbon Disclosure Project) used the GHG protocol. At the same time, the GHG Protocol for Cities has been successfully applied to an increasing number of cities around the globe.

²⁰ WBCSD and WRI (2004), *A corporate accounting and reporting standard - revised edition*

The GHG Protocol contains a full range of guidance which should also be followed e.g. on how to design GHG inventories including the disaggregation of emissions by scope,²¹ implement quality management systems and treat uncertainties.

Given the complexity of the RRE sector, there is often confusion about responsibility for CO₂ emissions, e.g. whether the landlord or the tenant should report on emissions associated with the leased asset. Clarifying organisational boundaries and delineating direct and indirect emissions sources (scopes) helps to ensure that two or more companies will not account for the same emissions within the same scope i.e. avoid double counting.

As for reporting GHG emissions, the appropriate level of reporting can be determined by the objectives and intended audience of the report. However, two principal aspects of GHG performance are (1) absolute quantity of GHG emissions released to the atmosphere, and (2) normalised GHG emissions conveyed as a ratio indicator.

Similar to how a business strategy requires setting targets for revenues, sales and other KPIs, effective GHG management involves setting a GHG target. Common drivers for setting a GHG target include minimising GHG risks, achieving cost savings, preparing for future regulations or demonstrating market leadership. Setting a GHG target relies on multiple steps, the most important being obtaining senior management commitment, deciding on the target type and boundary, defining the targeted period, deciding on the target level, and tracking and reporting progress. As guidelines for deciding on the target level, the Standard underlines the need to better articulate the links between GHG emissions and other business metrics, developing different reduction strategies, looking at the future of the company and factoring in relevant growth factors, and finally, benchmarking GHG emissions with similar organisations and industry and market standards.

Science-Based Targets initiative (SBTi)

The Science Based Targets initiative (SBTi) is a collaboration between CDP, the United Nations Global Compact, WRI and WWF. The objective of the initiative is to determine how much and how quickly companies should reduce their GHG emissions in order to secure a clearly defined pathway to future-proof growth.

“Science-based” targets are those in line with what the latest climate science finds necessary to achieve the goals of the Paris Agreement. The initiative highlights significant benefits of science-based targets, such as increased innovation, reduced regulatory risk, enhanced investor confidence and improved profitability.

In setting the targets, the SBTi relies on three main approaches based on sector, absolute and economic methods. These approaches allocate the percentage reduction by focusing on industrial sectors, all companies or the company's share in the global GDP, respectively.

Using SBTi and climate science to align a company's efforts to cut GHG emissions relies on a set of steps: obtaining the commitment, developing the target, target validation, and announcing the target (via the SBTi communication channels).

Target development is prescribed by the SBTi criteria document offering companies two temperature goal options: 1.5 degrees and well below 2 degrees for scope 1 and scope 2 emissions. This document focuses on aspects ranging from target boundary and timeframe to sector-specific guidance and reporting. Some of the most important requirements of the SBTi criteria are:

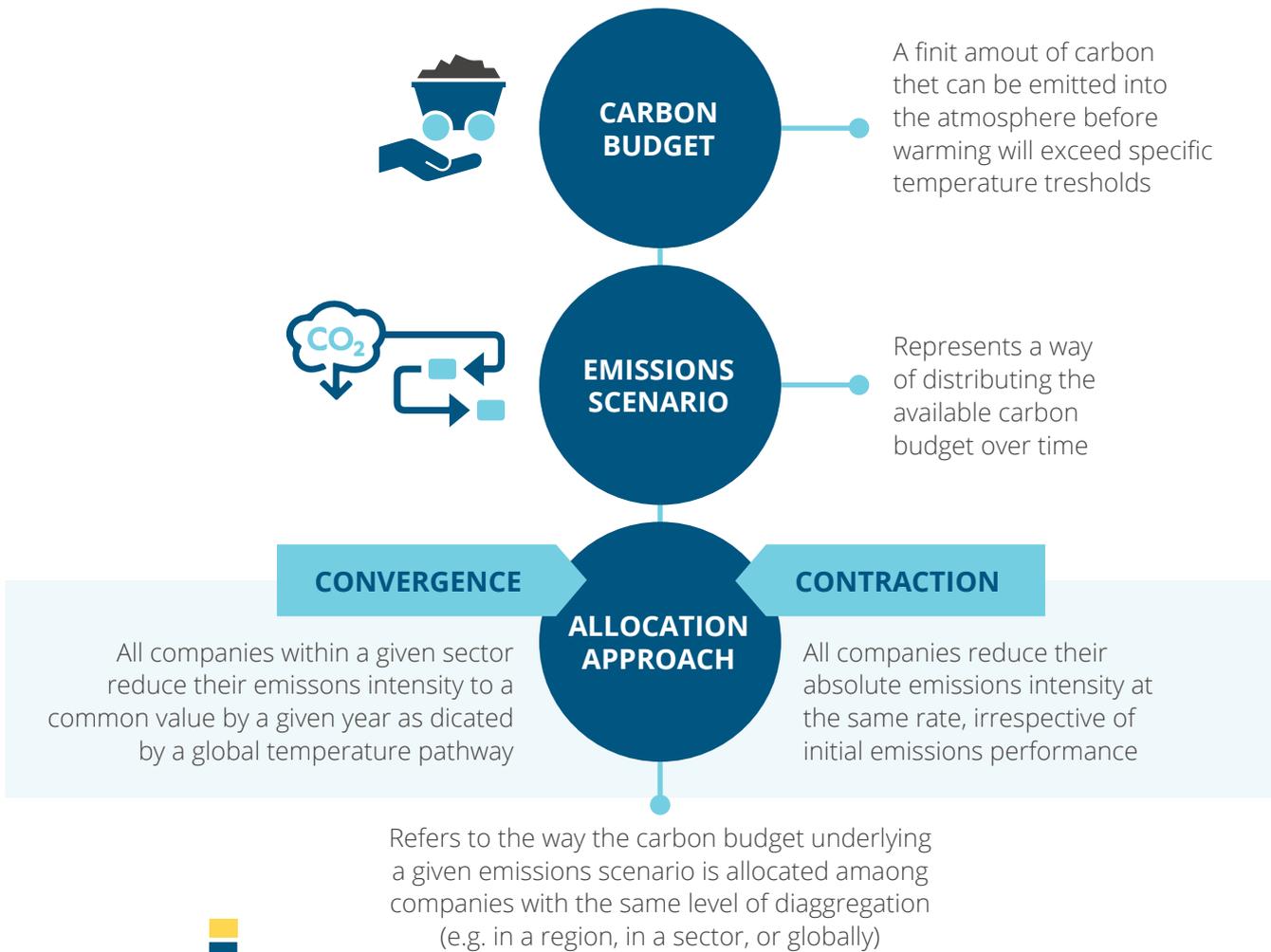
²¹ Chapter 9, GHG Protocol Corporate Standard

- **Target boundary:** Targets must cover all relevant GHG emissions, as required per the GHG Protocol Corporate Standard.
- **Consolidation:** Companies submit targets only at the parent/group level, while parent companies must include the emissions of all subsidiaries in their target submission.
- **Timeframe:** Targets must cover a minimum of 5 years and a maximum of 15 years from the date the target is submitted.
- **Ambition:** Scope 1 and scope 2 targets must be consistent with keeping global temperature increase to well below 2°C, although companies are encouraged to pursue a 1.5°C trajectory.
- **Offsets:** Offsets are only considered to be an option for companies wanting to finance additional emission reductions beyond their science-based targets.
- **Scope 2:** The SBTi has identified 80% renewable electricity procurement by 2025 and 100% by 2030 as thresholds.
- **Scope 3:** If a company's relevant and mandatory scope 3 emissions are 40% or more of total scope 1, 2 and 3 emissions, a scope 3 target is required.
- **Reporting frequency:** The company shall publicly report its companywide GHG emissions inventory and progress against published targets on an annual basis.
- **Target recalculation and validity:** Targets must be reviewed and, if necessary, recalculated and revalidated, at a minimum every five years (the latest year being 2025). Targets should be recalculated to reflect significant changes that could compromise their relevance and consistency, as in case of higher share of scope 3 emissions or significant changes in boundaries, inventories and company structure, to name a few. However, an annual validity check is recommended.

SBTi has been implemented by 895 companies around the world, located mostly in Europe and Asia, in various sectors. Real estate companies currently represent 5% of the organisations setting their emissions reduction targets in line with SBTi.



Figure 9: Main elements of methods for setting SBTs (source: SBTi).



Key takeaways

Carbon accounting and reporting raise a number of questions for the RRE sector, e.g. what parts of the building are considered and who is responsible for emissions?; what are the particular needs and perspectives of different actors (tenants, owners, investors) when reporting on the same building?; what are the operational boundaries and how to avoid double-counting?; etc.

Setting carbon budgets and science-based decarbonisation targets will need to be downscaled from global and European levels to the different markets within the real estate sector in order to facilitate uptake and a more practical approach.

The RRE sector requires clear targets and defined timelines of future carbon performance targets at property and portfolio levels.



SCENARIO-BASED CLIMATE RISK ANALYSES AND METHODOLOGIES FOR THE RRE SECTOR

RRE investors and owners will need to know whether their asset or portfolio is aligned with global targets, such as a 2 degree or 1.5 degree scenario. Establishing the carbon emissions intensity is an important first step, but this should be assessed against a warming curve valid for the property type and country in which the property is located. This approach usually poses two difficulties. Firstly, it implies an extremely advanced level of climate literacy to understand what carbon values mean and where they sit in the context of global decarbonisation needs. Secondly, each country has different reduction requirements depending on its regional climate and the country's distribution of reduction efforts.

A number of tools have been developed over the last couple of years to help RRE investment and management companies to fully integrate climate change-related risk in the mainstream RRE risk assessment and management frameworks. Two of these tools are discussed below.

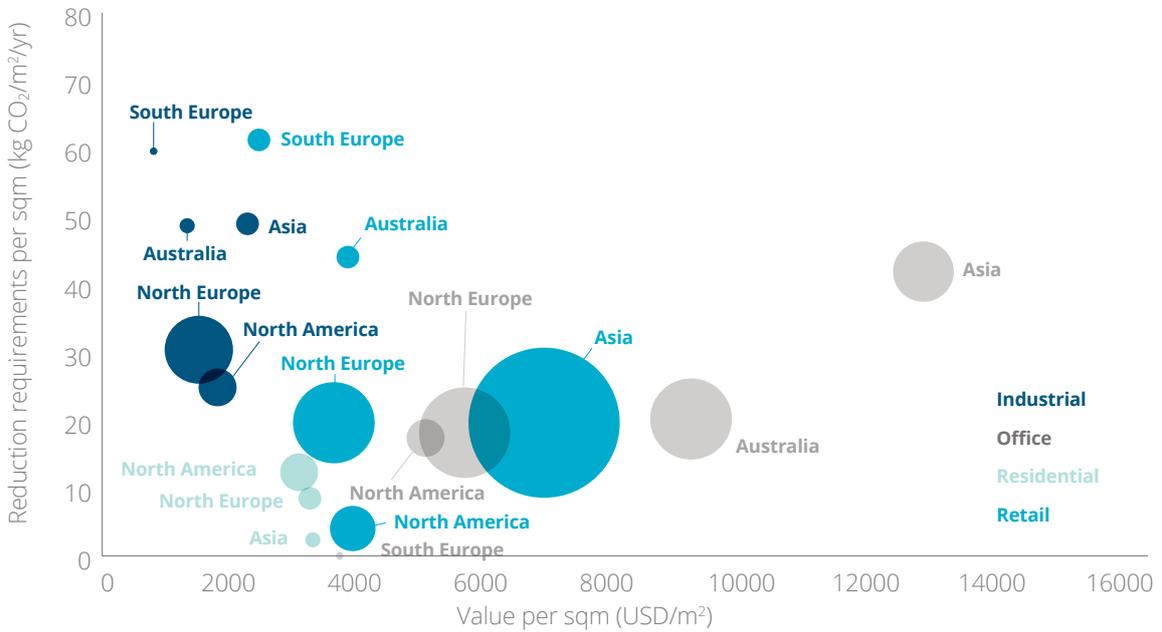
Carbon Delta pilot – climate-value at risk²²

The UN Environment Programme Finance Initiative (UNEP FI) and Carbon Delta pilot project is aimed at real estate owners and managers to support identifying long-term climate change trends and take adequate risk mitigation measures to maintain and enhance value. The pilot focused on three asset types, also including RRE investments.

The methodology codeveloped with participating asset owners and investment managers is suitable to both an asset-level and portfolio analysis and can assess the aggregated impact of climate change-related transition and physical risks on property market value. Results from the transition analysis were mapped by region and property type against the asset value and the carbon emission reduction requirements. The findings suggest that properties which have high reduction requirements and a low value per m² may be considered high risk: these properties could face high retrofitting costs that may be difficult to absorb considering the lower property value.

²² UNEP FI (2019), Changing Course – Real Estate TCFD pilot project report and investor guide to scenario-based climate risk assessment in real estate portfolios

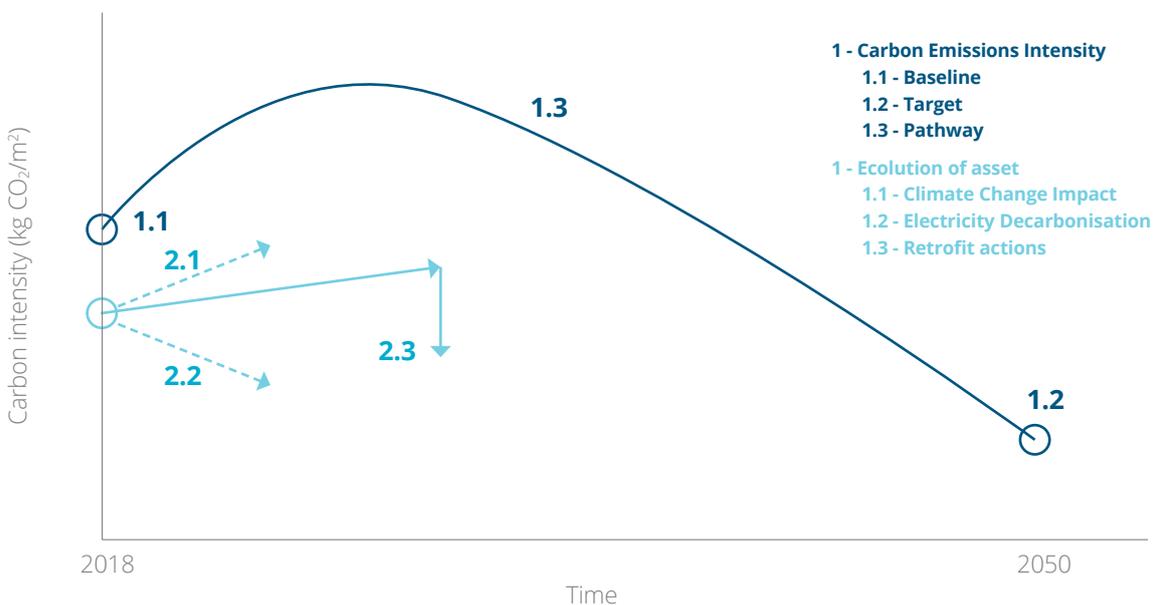
Figure 10: Reduction requirement per m² as a function of average value property per geographic region and its building type, where the size of the bubble represents the market size (source: UNEP FI).



Carbon Risk Real Estate Monitor (CRREM)

The EU-supported CRREM project is developing decarbonisation pathways for the global real estate sector, including retail. It does so by converting global carbon budgets to EU level and assigning country-specific commercial real estate targets based on EU targets, then calculating carbon reduction targets for each building type based on the country target.

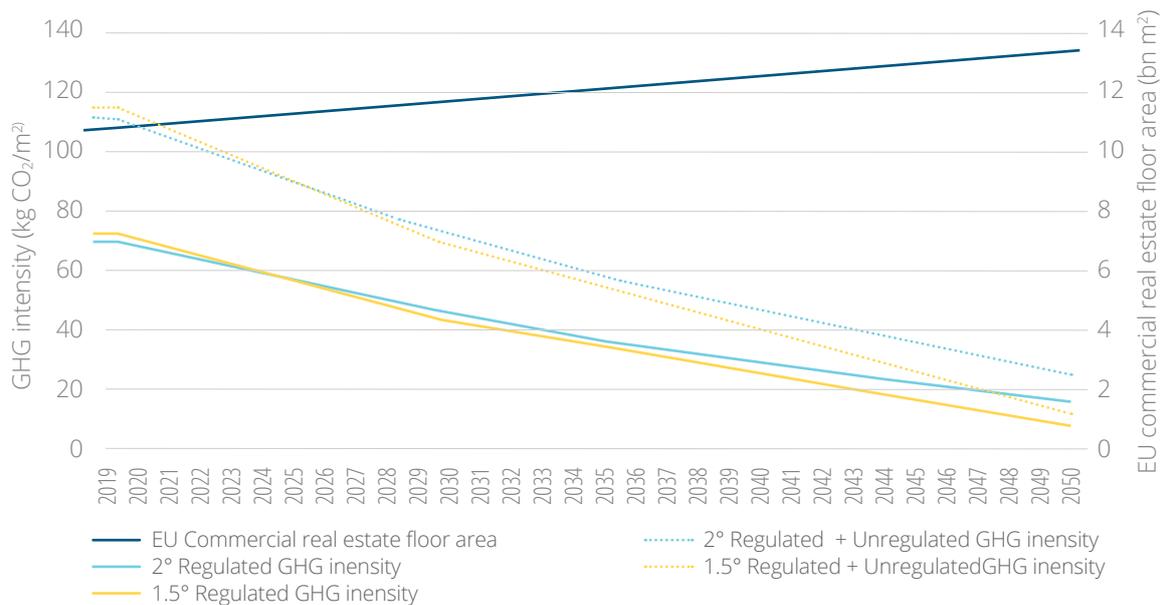
Figure 11: Carbon intensity of the asset (including climate change impacts, retrofit measures and decarbonisation of the grid) against the carbon emission pathway of the sector (source: CREEM).



At the core of the project is a tool to assess the risks associated with the carbon mitigation strategies. The CRREM tool helps identify and manage transition risks for individual assets. The tool allows the user to insert information about their real estate portfolio. Based on a few set parameters (country, climate target and sector) it shows the inherent risk of the portfolio and gives an indication of when the assets will become stranded. The tool is available here.

The CRREM assessment is a wake-up call for the industry as it is 14 years behind schedule: at the current level of emissions, the carbon budget available for 2050 will be consumed by 2036.

Figure 12: EU commercial real estate carbon intensity pathway and floor area (2°C and 1.5°C scenario) (source: CRREM, Enerdata, Rockström et al., European Climate Foundation).



Key takeaways

GHG emission targets are well defined on an EU level for 2020, 2030 and 2050, but these are not yet transposed into meaningful guidance for individual countries and industry sectors.

Precise steps needed to reach the target year objectives are also not yet clearly specified, i.e. whether it will be a linear reduction with the same amount of annual emission savings until the next target year.

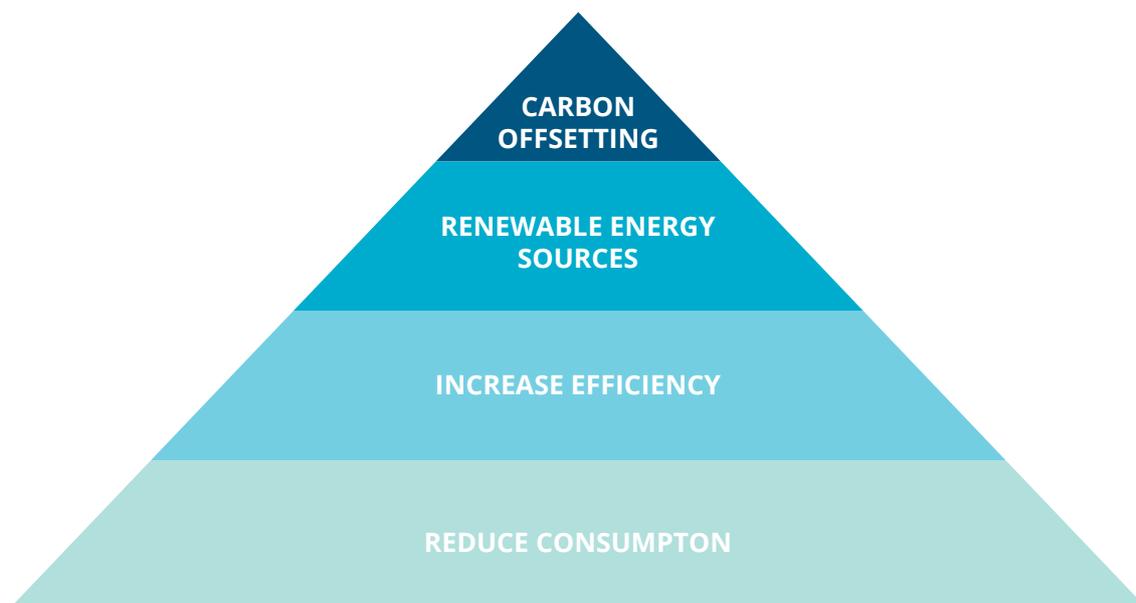
Implications and targets for individual real estate sectors will need to be clearly disaggregated from general EU targets.

NET ZERO CARBON BUILDING DEFINITIONS²³

The real estate sector is faced today with an ever shifting and increasing number of definitions, concepts and voluntary standards for highly energy-efficient and climate-neutral buildings. Terms such as zero-energy, net zero, nearly zero, zero-carbon, net zero carbon, etc. are already being integrated into public policy and industry practices, but with a great deal of uncertainty around what they mean. In addition, these definitions refer to different boundaries: site energy, source energy, cost or emissions. Moreover, there may be further variations in the requirements of the above standards depending on whether new or existing, office, retail or other types of buildings are under consideration.

Typically, carbon-neutral buildings or sites involve the (1) reduction of the carbon-based energy demand, (2) efficient production of energy, and (3) choosing on-site and offsite renewable energy sources. CO₂ target values for carbon-neutral buildings will vary according to market conditions, construction and building types as well as availability of solutions.

Figure 13: Overall strategies in the design and operation of low-carbon buildings.



The general trend is a move towards performance-based metrics directly measuring outcomes without prescribing particular methods to reach them. This ensures a flexible approach that can be tailored to solutions across different markets, building types and technical feasibility. Energy efficiency remains an important metric across the industry as it ensures that energy is not wasted. As the focus of policymakers and industry is increasingly on carbon, net zero carbon is often referred to in relation to net zero energy, although the two concepts are not interchangeable. Net zero energy buildings will certainly deliver significant carbon emissions reductions, but not necessarily zero emissions. Moreover, future growth of renewable energy to buildings will further muddle the present correlations between energy efficiency and resulting carbon mitigation.

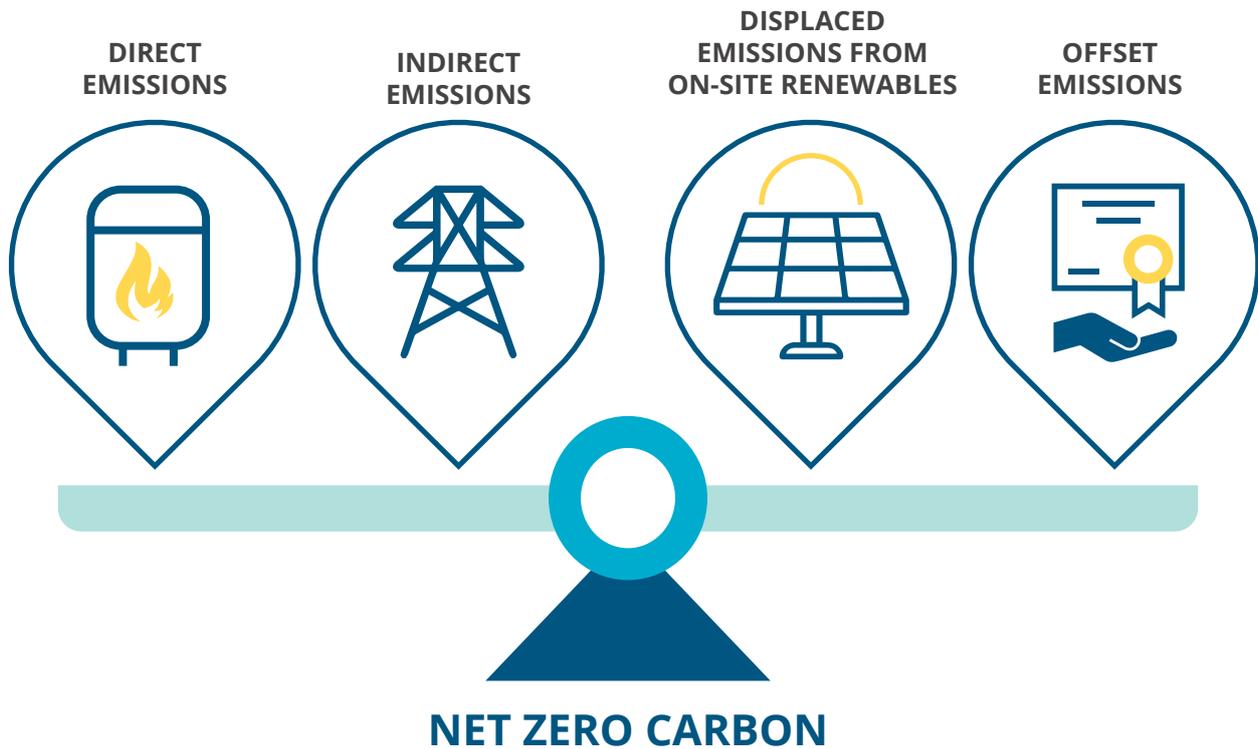
²³ Terms like zero carbon and net zero carbon are often used interchangeably; however, these terms often have distinct meanings. Zero carbon usually means zero emissions from the use of buildings. It only refers to operational emissions rather than lifecycle emissions (i.e. embodied emissions). Net zero carbon means that emissions are balanced by the use of on-site/off-site renewables and carbon offsetting (e.g. by planting trees).

The [Advancing Net Zero Campaign](#) was established by the World Green Building Council (WorldGBC) in 2016 with the aim to develop high-level principles for net zero carbon buildings in operation and set targets for new buildings to meet this standard by 2030 and for all buildings by 2050. By May 2020,²⁴ 418 buildings were certified net zero through WorldGBC schemes and 95 organisations signed the [Net Zero Carbon Buildings Commitment](#), making it one of the most significant initiatives in this area.

The WorldGBC defines a net zero carbon building as “highly energy efficient with all remaining energy from onsite and/or offsite renewable sources”. The definition is accompanied by the following guiding principles:²⁵

- *Measure and disclose carbon* — Carbon is the ultimate metric to track, and buildings must achieve an annual operational net zero carbon emissions balance based on metered data.
- *Reduce energy demand* — Prioritise energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy.
- *Generate balance from renewables* — Supply remaining demand from renewable energy sources, preferably on-site followed by off-site, or from offsets.
- *Improve verification and rigour* — Over time, progress to include embodied carbon and other impact areas such as zero water and zero waste.

Figure 14: Framework definition for net zero carbon buildings (source: UKGBC).



²⁴ WorldGBC (2020), Advancing net zero status report 2020

²⁵ WorldGBC (2019), Whole-life carbon vision.

The net zero carbon building definition refers to operational, in-use performance which may not provide a comprehensive indication of the whole-life carbon footprint of a building. In addition to net zero operation carbon, the UKGBC has recently released guidance on scope 3 reporting in commercial real estate. The German Sustainable Building Council (DGNB) has also set out requirements for accounting embodied emissions (accounting level 2 “operation and material”) which provides the necessary transparency in case of e.g. deciding whether to renovate or demolish and build new. Accounting for whole life emissions enables huge potential for reductions in early stages of project development. Although awareness of embodied emissions is steadily growing within the RRE sector and methods and tools for embodied carbon assessment are becoming more widespread, limited understanding and data availability are a significant barrier to whole life carbon assessments.

Country examples

To bring the high-level commitment closer to the market, local GBC are translating these principles into credible Net Zero pathways through national-level frameworks and directives, e.g. by linking the intensity targets to the local policy context and the state of the building stock. Example country definitions are reproduced below:

FRANCE:

A net zero carbon building is a cost effective positive energy building (E+) with low GHG emissions on life cycle approach included embodied carbon (C-)

GERMANY:

Carbon neutral operation is achieved if the annual sum of indirect carbon emissions from supplied energy and direct carbon emissions from energy production is smaller than the avoided carbon emissions from energy exported from the site of the building.

UK:

Net zero for operational energy is achieved when the amount of carbon emissions associated with the building’s operational energy on an annual basis is zero or negative. A net zero carbon building is highly energy efficient and powered from on-site and/or off-site renewable energy sources, with any remaining carbon balance offset.



Key takeaways

Energy efficiency remains an important metric across the industry as it ensures that energy is not wasted. In contrast to the accounting methodology for providing proof of legal minimum requirements by means of an EPC, the target figure is moving towards CO₂ emissions instead of primary energy demand.

“Carbon-neutral buildings” are becoming recognised by green building rating/certification schemes. The objective of zero-carbon definition frameworks is to become established among financial institutions as an eligibility criteria for green finance.

There is currently a limited understanding on the scale of scope 3 emissions in the commercial real estate sector and their materiality due to lack of sector-specific guidance and patchy embodied carbon data.



GREEN BUILDING CERTIFICATION SCHEMES

Despite a relatively short history of about 30 years, today there are over 600 certification systems and rating tools for products and buildings in place around the world. The certifications are in general voluntary and most commonly used to help asset owners distinguish their building from others in the market, often in order to increase lease and/or rental value, real estate value or brand image. These voluntary certifications often coexist with mandatory EPCs, given their common purposes to reduce the carbon footprint of buildings and improve their overall sustainability performance.

In contrast to EPCs, green building certificates take into account a wide scope of building features, including health, wellbeing, waste and water management, recycling, chemicals and other environmental aspects. Most green building certificates are therefore more comprehensive but also often more complex to grasp for the building owners and investors.

Given the impressive number of building certifications in use globally, it is far from easy to understand their similarities and differences. The various systems have not been developed with a uniform focus and weighting of attributes in mind: some focus on a single criterion such as health and wellbeing, others on environmental factors and others again on sustainability from a broader perspective. Without having an in-depth understanding of all the criteria within a certification scheme, as well as understanding how they are evaluated, it remains difficult to understand its value for specific building projects.

The relevance of the green building rating tools to the decarbonisation of the RRE sector

Green building rating tools provide a strong market signal that the building is meeting a certain environmental performance standard. To assess the relevance and usefulness of rating tools for the decarbonisation agenda, the main questions RRE stakeholders have to establish are:

- Are these transparent and robust enough to establish a zero-carbon trajectory?
- Do they provide a consistent way to measure and track operational building-related emissions?
- Is there a direct correlation between the rating and emissions performance?
- Can they inform decisions on which operational or retrofit measures are the right ones to move the building towards carbon neutrality?
- Can they feed portfolio and company-level ESG disclosure and carbon risk assessments?
- Are they accepted as a proxy for regulatory compliance e.g. minimum performance requirements or sustainable finance taxonomy?

Market trends

In north-western Europe, certification of new buildings is almost mandatory for commercial buildings.²⁶ While the market is younger and less developed in southern and eastern Europe, the market penetration of green labels is growing rapidly.

²⁶ WorldGBC (2018), *World green building trends 2018 smart market report*

Country examples

THE BRITISH BREEM AND THE GERMAN DGNB ARE THE TWO MOST COMMON CERTIFICATIONS FOR RRE IN EUROPE.

 Building Research Establishment Environmental Assessment Method (BREEAM) was created in 1990 and has evolved into one of the leading private sustainability certifications for buildings. The BREEAM certification has always included carbon emissions but the focus has matured and evolved. In the beginning, it was simple recommendations on how to reduce energy consumption, while it today takes into account the carbon emission over the building's lifecycle stages. Following the pending introduction of nearly zero-energy building requirements, BREEAM is emphasising the need to assess "unregulated" energy, whole lifecycle impacts including embodied carbon, and the need to improve the accuracy and verification of predicted operational energy consumption and associated CO₂ emissions.

 The DGNB certification system is a planning and optimisation tool that covers all of the six key aspects of sustainable building: environmental, economic, sociocultural and functional aspects, technology, processes and site. As a standardised system it can be adapted precisely in order to match a wide range of use types and country-specific requirements, so it is also used internationally. DGNB has also introduced a standard for a carbon-neutral building.

Initially, sustainability labels and rating systems were pure asset ratings based on prescriptive requirements, focusing mainly on new builds. Subsequently, rating systems operators have also started introducing in-use ratings. Today, the industry is witnessing a shift toward operational performance as one of the primary motives for pursuing green building certification. The main reason RRE owners, managers and investors are certifying their assets today is because they want to know how their buildings and assets are performing after they are constructed and occupied, how operational performance can be further improved and how their assets perform against the rest of the market. A performance-based approach increases confidence in actual outcomes and streamlines certification, as well as enabling RRE assets to quantify the impact they are making.

This shift means that green buildings will be increasingly defined based on operational performance and use real-world performance metrics as the documentation for certification. In addition, leading rating providers (see text box below) are increasingly considering including "unregulated" energy, whole lifecycle impacts and embodied carbon in their overall assessment.

Key takeaways

Green building certification systems have been extremely successful in raising awareness of wider sustainability issues in the built environment.

Difficulties remain over how to assess the correlation between their rating and emissions performance.

Rating tools have only recently begun to move towards better alignment with meeting rapid decarbonisation goals.

Certification schemes should more consistently and transparently weight energy and emissions intensity performance in their multi-criteria assessment approach. This will ensure the awarded ranking will more accurately reflect and incentivise emissions performance.

ESG FRAMEWORKS AND REPORTING STANDARDS

Reporting and disclosure requirements are an important driver to reduce the carbon footprint of buildings. Over the last two decades, climate-risk and sustainability reporting has become increasingly important, especially for large institutional investors and real estate companies (notably real estate investment trusts and publicly traded real estate). To date, the majority of ESG reporting by companies has been voluntary, centred around companies' annual sustainability or "corporate social responsibility" (CSR) reports. Annual financial reports are another vehicle for ESG reporting, and companies are under increasing pressure to integrate their sustainability and financial reporting, thereby treating ESG issues as a core part of business strategy.

While voluntary until now, some reporting schemes are becoming mandatory, such as Task Force on Climate-related Financial Disclosures (TCFD) reporting as of 2020 for all asset owners and managers signed on to the UN Principles for Responsible Investment. Companies that are obliged to report under the Non-Financial Reporting Directive will be required to disclose the share of their business/capex/assets that is EU taxonomy aligned. Furthermore, companies are also under increasing pressure from the investment community to report what they see as their upcoming climate risks.

What are the most relevant ESG frameworks for the RRE sector?

With more than a dozen ESG reporting, disclosure, and ranking platforms used by investors, understanding the universe of ESG frameworks is critical to effectively meeting stakeholder expectations. However, the proliferation and diversification of these frameworks makes it increasingly challenging and onerous for managers and practitioners to meet ESG disclosure requirements. The table below²⁷ reviews the eight most relevant and widely used ESG frameworks according to market recognition, relevance and use, as well as availability, quality and granularity of disclosure requirements.

Voluntary disclosure frameworks are frameworks through which a company might actively disclose its sustainability related policies, practices, and performance data and information. These may take the form of questionnaires used for evaluation and ranking.

Guidance frameworks are those that provide recommended methodologies and guidance as to how organisations might identify, manage and report on sustainability performance.

²⁷ Adapted from NAREIT (2019) guide to ESG reporting frameworks and TCFD (2018) recommendations

VOLUNTARY DISCLOSURE FRAMEWORKS

FRAMEWORKS	DESCRIPTION	TARGET AUDIENCE & REPORTER	INFORMATION SOURCES	ENVIRONMENTAL KPIS	THIRD-PARTY VALIDATION
 <p>CDP</p>	<p>Global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts. Over 8,400 companies, 800 cities and 120 states and regions have reported through CDP on climate change, water security and deforestation.</p>	<p>Investors</p> <p>Financial and non-financial firms</p>	<p>Each year, CDP takes the information obtained through its annual reporting process and benchmarks companies and cities on their environmental performance against peers. Results are public.</p>	<p>GHG emissions</p> <p>Energy</p> <p>Climate change risks and opportunities</p> <p>Environmental policy</p> <p>Environmental management system</p>	<p>Encouraged; information requested on third-party verification or assurance process</p>
 <p>G R E S B</p>	<p>Validates, scores, and benchmarks ESG performance data.</p> <p>Particular focus on real estate funds and property companies.</p>	<p>Investors</p> <p>Real estate asset/portfolio owners</p>	<p>Voluntary disclosure of building-related ESG data, assets, and real estate portfolios.</p> <p>Data collected through the assessment disclosed to participants themselves and GRESB Investor Members.</p>	<p>GHG emissions is based on: GHG protocol, GRI GRESS (G4-EN15, G4-EN16, G4-EN17,), ISO 14064 and CDP.</p> <p>GHG emission absolute and like-for-like.</p>	<p>Not required, but disclose whether external assurance was provided.</p>



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GUIDANCE FRAMEWORKS

FRAMEWORKS	DESCRIPTION	TARGET AUDIENCE & REPORTER	INFORMATION SOURCES	ENVIRONMENTAL KPIS	THIRD-PARTY VALIDATION	
	<p>GRI G4²⁸ (Global Reporting Initiative Construction and Real Estate Sector Disclosures)</p>	<p>Formed in 1997, developed the first and most widely adopted global standards for sustainability reporting.</p> <p>The GRI standards are broader in scope than some of the other frameworks. The standards are modular and can be used in a selective fashion to meet the desired compliance level and disclosure needs.</p>	<p>All stakeholders</p>	<p>Voluntary disclosure through a formal digital or printed sustainability report, including all ESG topics deemed to be relevant to the organisation and all related management approach components.</p>	<p>GHG emissions</p> <p>Energy</p> <p>Environmental compliance</p> <p>Supplier environmental assessment</p>	<p>Not required, but advised</p>
	<p>EPRA SBPr (European Public Real Estate Association – Sustainability Best Practice recommendations)</p>	<p>EPRA SBPr are largely based on the GRI standards (2016 edition) and Construction and Real Estate Sector Supplement Disclosure.</p>	<p>Investors</p> <p>Listed real estate asset/ portfolio owners</p>	<p>Voluntary guidelines covering companies' investment activities and own occupation (e.g. environmental impacts from a company's headquarters), and corporate-level policies and practices.</p>	<p>Direct and indirect GHG emissions</p> <p>GHG intensity</p> <p>Electricity and heating/cooling (building & district) consumption</p> <p>Fuel consumption</p>	<p>Not required, but disclose whether external assurance was provided.</p>
	<p>SASB (Sustainability Accounting Standards Board)</p>	<p>Set of standards for 77 different industries, which identify the minimum set of financially material sustainability topics and their associated metrics for a typical company in a given industry.</p> <p>More granular in scope than some of the other frameworks.</p>	<p>Investors and companies</p>	<p>Voluntary disclosure of relevant sustainability metrics in company financial disclosures, segmented by industry.</p>	<p>Energy consumption, total and like-for-like (IF0402)</p>	<p>Not required, but designed to serve as suitable criteria if a company chooses to seek third-party assurance.</p>
	<p>TCFD (Task Force on Climate-related Financial Disclosures)</p>	<p>Set up in 2015 by the G20 Financial Stability Board to develop voluntary guidelines for companies, banks and investors to use when disclosing climate-related financial risks and opportunities to their stakeholders.</p> <p>Comparable and consistent disclosures used to demonstrate corporate climate change risk assessment, scenario planning and resilience. Unlike other environmental reporting initiatives, TCFD requires organisations to report on their response to environmental pressures, rather than their impact on the environment.</p>	<p>Investors</p> <p>Financial and non-financial firms</p>	<p>Voluntary disclosure within mainstream annual financial filings of the identification, assessment, management and oversight policies and practices affiliated with climate-related risks and opportunities in the areas of governance, strategy, risk management, and metrics and targets.</p> <p>While voluntary until now, TCFD-based reporting becomes mandatory in 2020 for all asset owners and managers signed on to the UN PRI.</p>	<p>Physical climate risk</p> <p>Carbon pricing risk</p> <p>Scenario analysis</p>	<p>Not specified</p>

²⁸ Global Reporting Initiative Construction and Real Estate Sector Disclosures. see: <https://www.globalreporting.org/Documents/ResourceArchives/GRI-G4-Construction-and-Real-Estate-Sector-Disclosures.pdf>

GUIDANCE FRAMEWORKS

FRAMEWORKS	DESCRIPTION	TARGET AUDIENCE & REPORTER	INFORMATION SOURCES	ENVIRONMENTAL KPIS	THIRD-PARTY VALIDATION
 <p>CDSB (Climate Disclosure Standards Board)</p>	<p>International consortium of business and environmental NGOs that has set forth a framework for companies to report environmental and climate change-related information in their corporate financial reporting, such as the annual report.</p>	<p>Investors Financial and non-financial firms</p>	<p>Voluntary disclosure of environmental information with the same rigour as financial information in order to provide investors with decision-useful information to ensure resilient capital markets.</p>	<p>Environmental results Environmental risks and opportunities Environmental policies, the outcome of policies, and associated strategies Performance against environmental targets</p>	<p>Not required, but where an assurance opinion is provided for environmental information, disclose the environmental information.</p>
 <p>UN SDGs (United Nations Sustainable Development Goals)</p>	<p>In 2015, the 2030 Agenda for Sustainable Development set out 17 broad goals with 169 targets. Carbon and energy, in SDG13 (Climate Action) and SDG7 (Affordable and Clean Energy), are the most common areas for actions relating to the operation of real estate assets.</p>	<p>All stakeholders</p>	<p>Reporting on the SDGs leverages the GRI standards and the 10 principles of the UN Global Compact.</p>	<p>SDGs do not delineate specific metrics and KPIS for disclosure</p>	<p>Not specified</p>
 <p>UN PRI (United Nations - Principles for Responsible Investment)</p>	<p>The international network of investor signatories has grown from 100 to over 2,300, representing over US\$80 trillion in assets under management. The six voluntary principles are supported by 35 possible actions that investors can use to integrate ESG into investment practice.</p>	<p>Investors</p>	<p>Voluntary and mandatory disclosure as the PRI has specifically aligned its work with the UN SDGs and made TCFD-based reporting mandatory for its signatories in 2020.</p>	<p>Scenario analysis Weighted average carbon intensity Carbon footprint (scope 1 and 2) Portfolio carbon footprint Total carbon emissions Carbon intensity Exposure to carbon-related assets</p>	<p>Not specified</p>



Key takeaways

WBCSD and CDSB identified over 1750 sustainability reporting provisions across the world coupled with an almost tenfold increase in the number of reporting requirements since the introduction of the first frameworks about 25 years ago. The most significant increase in the number of new requirements has taken place in the past five years.

Compared to all the other regions, Europe implemented the largest number of provisions requiring the disclosure of environmental impacts, climate-related risks and good governance practices. Increased regulatory emphasis on disclosures may make ESG risks and opportunities a more widespread factor for decision-making in the RRE sector.

While ESG reporting has undoubtedly benefited the zero-carbon agenda, including greater transparency in carbon accounting and easier access to better quality information, this rapid growth in the number of reporting provisions has also led to confusion, repetition and multiplicity, making these less effective.

As with green building rating and certification tools, ESG reporting frameworks will need to work towards better alignment and harmonisation on both national and international levels as well as among the various governmental and industry-led initiatives.



KEY ISSUES AND CHALLENGES

RELATED TO CARBON MEASUREMENT, SETTING TARGETS, AND DEVELOPING AND IMPLEMENTING MITIGATION STRATEGIES

The green building discourse of the past 30 years has mainly focused on offices and the multiple benefits such as energy efficiency, increased productivity and employee wellbeing. The growing evidence base demonstrating the economic benefits of green buildings is also dominated by the office sector. The retail sector still lags behind other property types, owing largely to the structure of the owner/tenant relationship. However, while green building and the low-carbon agenda may not be as widely adopted in the retail sector as in other sectors, retail owners and developers do have a number of reasons to adopt zero-carbon strategies.

DRIVERS: RISKS AND OPPORTUNITIES

Identifying risks is likely to be a key starting point for RRE companies and investors. Risks to consider include:

REPUTATIONAL RISK	Potential loss of profitability due to business actions or inactions that the public or markets consider harmful.
REGULATORY REQUIREMENT	Government action that could encourage or formally require climate-related disclosure or impose mandatory minimum requirements linked to certain EPC levels.
LITIGATION RISK	Landlords and investors may face legal liability exposure in the event that they fail to manage or report material financial risks.
CHANGING ECONOMICS OF THE ENERGY SECTOR	The energy transition (both market and policy driven) from conventional technologies to renewable sources can impact the economics of the retail sector.
EXPOSURE OF RETAIL ASSETS AND PORTFOLIOS TO PHYSICAL DAMAGE FROM CLIMATE CHANGE	In the near term, climate change is changing the intensity and frequency of extreme weather, which could disrupt trade and damage real estate assets and infrastructure.
VALUE EROSION AND STRANDED ASSETS	As market expectations rise and as standards of code compliance are adjusted and increased, assets that have not been improved may suffer accelerated value depreciation. This essentially means that outdated, inefficient buildings may start to present an economic risk for owners, investors and lenders – being more expensive to run and likely to become increasingly less attractive to environmentally aware retailers. A stranded asset is normally regarded as one in which the level of obsolescence is such that the cost of bringing it up to standard significantly outweighs any potential value through refurbishment or profitability by redevelopment.



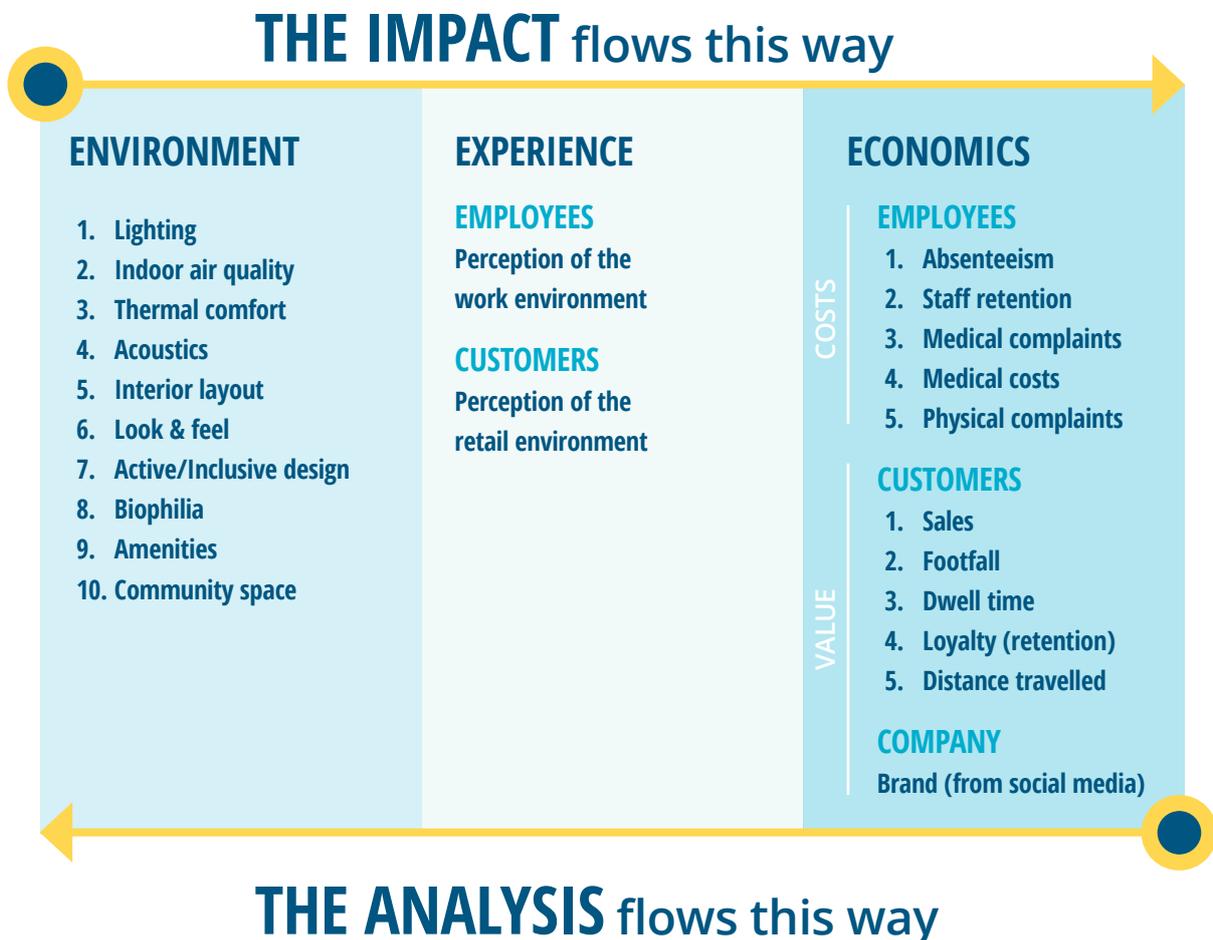
While RRE investment and management organisations are beginning to recognise carbon- and climate-related risks, as well as the importance of minimising those risks, importantly they also need to understand that improving environmental performance is about much more than mitigating risks.

Done well, sustainability and low carbon-driven initiatives — improving energy efficiency and renewable capacities, rethinking supply chains and even transforming business models — have the potential to create competitive advantage, attract preferential financing and investment, attract better retail tenants, improve cash flows, and drive innovation and revenue growth.

Investing in low-carbon solutions and improving building performance often have multiple wider associated benefits. Key non-energy/carbon gains, such as an improved indoor climate, can affect staff, customers and consumer experience. Greener, healthier retail stores – those which typically have good levels of daylight, fresh air and greenery – are not only more attractive to consumers but could also improve footfall and sales. These quality aspects are significantly more relevant in the context of the recovery from the current health crisis.

Few organisations in the RRE sector are realising the full extent of these gains today. The majority of retailers will need a better understanding of how low-carbon initiatives can be translated into different types of business value, and how they can measure the return on sustainability-driven investments in a more guided and considered way. Linking low carbon with wider sustainability considerations and benefits, such as sustainable store design and the health of staff and customers, can help to accelerate and deepen the integration of carbon risks into business strategy and operations. These can also provide a common language to engage both landlord and retailer in driving environmental performance in retail spaces.

Figure 16: Retail metrics framework suggesting how better environments lead to better experiences that lead to better economics for retailers (source: WorldGBC).



LINKING CARBON PERFORMANCE TO FINANCIAL VALUE/RISK

Investing in energy efficiency and demand reduction not only helps in achieving carbon neutrality, but also impacts asset values. The extent to which this is adequately captured and translated in property valuations is an ongoing debate. A growing list of studies and body of evidence seem to suggest that certain energy efficiency-related benefits are beginning to filter through to market pricing.²⁹ In other markets, the evidence is far less apparent. Due to the constrained amount of data in the market, it is likely that it will be some time before sufficient information exists to empirically support financial decisions and the more robust quantification of carbon-related benefits/risk.

A key issue is that the energy efficiency and carbon footprint of buildings are often “hidden characteristics” which are not easily observable to market participants. The conversion of building performance and related benefits into actionable and meaningful financial information depends on the ability to assess and communicate these benefits through clear evidence from reliable sources. As has been discussed throughout this report, the consistency and transparency of carbon-related performance metrics is far from being an established industry practice. Moreover, the impact of carbon on the asset’s market value and/or investment worth will vary significantly not only between different markets, regions and types of property, but also according to the purpose of valuation, as well as the ESG commitments of market players and regulatory requirements. The unique nature of retail properties, such as cost-benefit misalignments between tenants and landlords, may make a direct quantitative link between sustainability improvements and property value even more difficult to identify.³⁰

Studies using transaction data seem to point at a value differentiation whereby, at the high end, there is a slightly enhanced value for green buildings and a rather larger discounting of those which have poor environmental performance. Very few studies have actually looked at carbon performance as an individual value driver affecting the market price of the asset, so it has not yet been fully ascertained whether the green premium observed in the market is indeed due to environmental performance and not just a proxy for prime real estate assets.

Despite growing awareness of climate change issues, it remains difficult for valuers to assess the individual impact of carbon-related risks in the overall valuation process. The main reasons include patchy market evidence and insufficient reliable carbon performance data, lack of skills and very few real estate actors explicitly requiring the assessment of carbon-related risks in valuation instructions.

The introduction of minimum energy performance standards for the RRE sector is expected to send out a strong signal which can result in price differentiation. Properties in prime locations are less likely to be affected negatively in value terms, but all properties of poor specification and energy/carbon performance, which are expensive to upgrade, may reduce in value.



The energy efficiency and carbon footprint of buildings are often “hidden characteristics” which are not easily observable to market participants....
The consistency and transparency of carbon-related performance metrics is far from being an established industry practice



²⁹ For a recent review of empirical research concerning “green value”, see Leskinen, N., Vimpari, J. & Junnila, S. (2020), A review of the impact of green building certification on the cash flows and values of commercial properties, *Sustainability*, 12, 2729.

³⁰ Runde, T.P. & Thoyre, S.L. (2015) Linking sustainable improvements to retail real estate value – A first step: A framework for analysing property value impacts

SKILLS NEEDS, BUSINESS CASE AND SPLIT INCENTIVES

Some of the drivers and barriers to the implementation of zero-carbon solutions are specific to the RRE sector and are guided primarily by retail and customer requirements. Retail developers build the core and shell structures of shopping centres, while tenants usually build out their leased spaces independently with separate mechanical systems and material specifications. This makes it difficult to design fully integrated buildings with maximum carbon performance, given the current low energy/carbon prices and incongruent government intervention which delay financial benefits accruing for both tenants and owners.

The main barriers (and solutions) are usually not technological in nature. Shopping centres aim to provide customer satisfaction, so the low-carbon agenda should be considered against the background of changing shopping habits and user expectations. With a generation of more eco-conscious consumers, a low-carbon strategy can distinguish retailers and developments in a competitive market. To position themselves as responsible stewards of the environment, large shopping centres have been fast to adopt green building measures, such as use of daylight harvesting systems, high-efficiency refrigeration units and lighting sensors. Thus, successful low energy and carbon refurbishment need to be coupled closely with non-energy related retrofitting activity.

Retailers are increasingly requested to provide not only goods but, more importantly, authentic experiences. Consumers now want community, social interaction and entertainment integrated into their shopping experience. That means that the biggest opportunities for incorporating social and environmental benefit occurs when retail owners and developers implement urban design and a liveable communities approach. It also means that customers', retailers' and landlords' interests need to be aligned.

Interviews carried out with industry experts have consistently pointed out the need for awareness raising and engagement with tenants about carbon issues. The [CommONEnergy](#) project has identified two main reasons: (1) tenants are the major energy users in shopping centres (and implicitly sources of carbon emissions), and (2) tenants have a high degree of independent control over their in-store energy use. By educating tenants about how lighting, ventilation and in-store design affect their carbon emissions, energy use and bills, asset owners and managers can encourage tenants to instigate actions to reduce their carbon footprint. Without this knowledge, tenants will remain unengaged.



The biggest opportunities for incorporating social and environmental benefit occurs when retail owners and developers implement urban design and a liveable communities approach.



DATA GAPS AND CONSISTENCY OF METRICS

Data gaps and consistency of metrics have been a recurring theme in both interviews and literature review. A lack of reliable and comparable data to assess the sustainability performance of property holdings has been identified as a significant constraint facing the industry in integrating climate considerations into investment and management strategies.

Relevant for real estate investment and management organisations is the question of whether the EPC label can be used as a proxy for carbon-neutral or “future proof” buildings, demonstrating that the asset comes with lower risk. In countries where EPC datasets are publicly available and include emissions intensity data, these can be an extremely useful resource to derive emissions intensity benchmarks (e.g. according to the carbon performance of the existing stock) and zero-carbon trajectories.³¹ Once performance thresholds and trajectories are established, the EPC rating can serve as a market-accessible compliance tool.

Though EPCs present a potentially effective tool to identify carbon-neutral buildings and to track incremental improvements against a trajectory, there exist some challenges. In particular, the reliability of EPCs as a reasonable indicator of relative carbon performance seems to vary widely, depending on the nature of design and application in individual Member States. EPCs rely on measurement or estimation of energy use intensity, most often reported as kWh/m²/year. Due to the different national (even regional) implementation, EPCs cover different scopes, some measuring energy use and others tracking building components and theoretical energy efficiency rates. The collected emissions data is diverse and rarely comparable, which is the required metric to demonstrate compliance with low carbon intensity. While operational energy

use is typically measured through utility bills, some EPCs (e.g. Sweden) are based on real energy consumption taking into account smart meter data (for heating and electricity). Green building rating tools face similar difficulties as award labels do not always correlate directly with emissions performance.

The acquisition of timely and good quality utility data is also critical for better managing assets as without reliable operational performance data, it is difficult to identify and plan improvements for carbon reduction. For many investors and real estate companies who report against voluntary and mandatory schemes, collecting emissions data continues to be a costly and time-consuming matter. Technological solutions (smart meters, connected devices, Internet of Things) are certainly contributing to data availability. Filling the existing data gaps, however, also involves clear distribution of responsibilities between landlords and retailers in terms of data collection as well as greater collaboration. The latter requires the rationale, reasoning and associated benefits of such data sharing frameworks to be clearly articulated for all stakeholders involved, e.g. in lease contracts.



A lack of reliable and comparable data to assess the sustainability performance of property holdings has been identified as a significant constraint facing the industry in integrating climate considerations into investment and management strategies.



³¹ The Climate Bonds Initiative uses a similar practical, best-in-class approach to derive thresholds by benchmarking against local market emissions performance. See CBI, Low carbon buildings criteria – background paper



CONCLUSIONS AND RECOMMENDATIONS



Conclusions

Aligning with the Paris Agreement goals is becoming an established part of the overall ESG and sustainability narrative, but also of occupier and investor demand due to the Covid-19 pandemic acting as a catalyst of change. However, the concept of zero carbon remains poorly defined despite laudable efforts in specific areas. Moreover, the different potential approaches and methodologies that can be used to support alignment of RRE assets and portfolios are not well understood by developers, landlords and investors, nor are they fully tested on a larger scale. In this context, the development of zero-carbon strategies and concrete mitigation actions requires creativity and collaboration among landlords, tenants, investors and regulators.

There are a number of emerging market tools to inform delivery of Paris Agreement goals, including a vast range of zero-carbon definitions, carbon accounting protocols, ESG reporting frameworks, carbon risk assessment tools as well as green building rating and certification tools. The proliferation and diversification of these frameworks and methodologies means that these initiatives will need to work towards better alignment and harmonisation on both national and international levels as well as among the various governmental and industry-led programmes. While the lack of certainty around metrics makes it difficult to draw up carbon budgets and identify reliable targets and actions, RRE managers and practitioners cannot wait until consensus is reached among these frameworks. Adopting carbon disclosure early on could, over time, increase transparency and reliability, data availability and consistency, as well as trust in communicating and demonstrating compliance with targets.



Calls for action

A number of concrete industry and policy actions can mobilise stakeholders and facilitate achieving the zero carbon objective.



POLICYMAKERS AT EU AND MEMBER STATE LEVELS

- Follow up enforcement of EPC and NZEB regulations by EU Member States with the clear objective of converging towards net zero energy and net zero carbon targets.
- Encourage harmonisation and standardisation of building performance assessment methodologies and complement energy metrics with carbon-related metrics and thresholds.
- Support data collection efforts by clarifying data collection and sharing obligations among retail stakeholders (e.g. landlord-retailer).
- Introduce minimum mandatory requirements and building codes based on carbon performance in addition to those based on operational energy.



INDUSTRY

- Make the carbon-related risks and benefits more tangible by robust and detailed analysis of the impacts of intervention strategies and retrofit solutions. Make sure that wider multiple benefits of investing in low-carbon solutions, including to indoor climate, comfort and health, are also accounted for, since these are increasingly relevant to meet customers' expectations as they return to shopping centres.
- Improve the collection, disclosure and sharing of data; integrate energy, carbon and financial performance datasets to develop more strategic foresight and communicate the impacts of different retrofit measures across the RRE sector. Better data management and analytics can also help retail spaces to move from transactional to customer experience and owners to improve their understanding of how their retail space is generating value for tenants and customers.
- Align incentives between retail building owners and tenants in terms of data sharing and sustainability goals. This is especially relevant in the context of Covid recovery, as rent defaults and lease renegotiations have often resulted in a breakdown of trust between landlords and tenants.
- Align maintenance and renovation cycles with investment cycles.
- Work on the harmonisation and consistency of KPIs, metrics and assessment frameworks; make sure these are fully in line with meeting rapid decarbonisation goals.
- Build capacity by empowering asset managers to have conversations with tenants about the opportunities of carbon reductions and developing common retrofit solutions. Capacity building will need to include both smallest and larger players to reduce the gap between stakeholders of different sizes.
- Identify and disseminate best practice and exemplar projects.
- Understand and address future skills and knowledge requirements.

Next steps



The decarbonisation of the RRE sector cannot, and should not, be looked at in isolation from the much wider value chain of related activities across the built environment. Rather, it must be positioned relative to transitional change and decarbonisation activity within interrelated sectors and industries such as construction, energy and transport. Invariably, there will be many interdependencies, overlaps and common themes among the connected sectors and individual mitigation measures.

Developing a zero-carbon roadmap for the RRE sector will require acknowledgement and understanding of these interdependencies between sectors and different markets. Without close collaboration and integration with other sectors (e.g. energy market, transport and retail), there is a real risk of displacing carbon between industries. Furthermore, the zero-carbon roadmap should translate the EU-wide 2030 and 2050 targets into meaningful guidance for individual countries, industry sectors and subsectors (and potentially building types), including clear milestones and target year objectives. The roadmap will build on the ongoing work carried out by similar market initiatives such as the WorldGBC Net Zero Buildings Commitment and the CRREM tool to apply the general real estate recommendations to the retail sector specifically.

As the next step, the project will develop and promote a high level roadmap (vision document) for the RRE sector with tailored recommendations for industry players and policymakers respectively. The roadmap will also identify data and ambition gaps that need to be addressed to achieve the decarbonisation goals. The vision document will be developed in close collaboration with RRE sector leaders as well representatives of the relevant market initiatives.

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