



**A PARIS-PROOF RETAIL**

**REAL ESTATE SECTOR:**

**A VISION AND ROADMAP FOR  
DECARBONISED RETAIL PROPERTY**

OCTOBER 2021



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# FOREWORD



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Dear reader,

Like virtually every industry, the retail real estate sector has awoken to the impact it has on the climate crisis the planet is facing, and the time for swift and bold industry action is now.

Retail real estate companies are facing increasing pressure from regulators and the investment community to report what they see as their upcoming climate risks. Retail real estate investment and management organisations are beginning to recognise carbon- and climate-related risks, as well as the importance of minimising those risks. But we must also look beyond risk: climate-proof shopping spaces provide increased comfort for tenants and customers, better shopping experiences and overall competitive edge. Simply put, net zero carbon is good business.

However, achieving net zero is far from straightforward. Net zero and carbon neutral have become catchphrases – ones that we hear being thrown around all too easily. Consumers, retailers, and building owners and managers alike are facing a great deal of uncertainty around what it actually means, or what the industry-wide route to net zero actually is.

On the path to carbon neutrality, efforts to contribute to Paris Agreement alignment will need to be articulated, developed, and scaled across the sector – and done so rapidly. As part of the climate alignment efforts, there are plenty of opportunities for the sector to create sustainable places and contribute to maintaining the social fabric.

This document aims to generate a forward momentum and an appreciation of what it will take for the industry to become carbon neutral, and makes a compelling case to act now and avoid pushing the problem into the future. Retail real estate is an important segment of the building stock where adequate action will lead to a significant reduction of energy consumption and carbon emissions.

But the retail real estate sector cannot go it alone. There are many challenges policymakers and industry must address, requiring unprecedented levels of collaboration. Executing any kind of net zero strategy over the long-term requires a supportive policy framework. Currently, EU policymakers are preparing a number of legislative revisions as part of the Renovation Wave strategy, notably the Energy Performance of Buildings Directive (EPBD), which is expected in December 2021.

We are optimistic about the future. This document already demonstrates many excellent sustainability strategies at the company level. There is no shortage of willpower.

At BPIE, we are honoured to have worked together with REDEVCO and various players from retail real estate, brought together under the umbrella of the European Council of Shopping Places (ECSP), to define this vision and strategy to Paris-Proof retail real estate.

And the vision is clear. Retail real estate buildings and portfolios must achieve net zero carbon throughout their lifecycle, including development, refurbishment, and operation.



# ABOUT THIS DOCUMENT

This document establishes a shared vision and roadmap of how the retail real estate (RRE) sector can move towards closer alignment with climate outcomes. The vision is a signal to the market and to policymakers that industry is ready and supports carbon neutrality. The ambition is to align with the Paris Agreement, not only through climate risk management initiatives but through a more explicit and targeted set of actions. Individual efforts and strategies will need to be articulated, developed and scaled across the RRE sector.

The COVID-19 crisis marks a point of transformation for the economy and society: it has demonstrated how remarkably and rapidly systems can change. As the retail sector starts to look past the health emergency, it is viewing carbon reduction as a critical step to mitigating climate change risks, recruiting and retaining tenants, and better serving its customers, shareholders, and stakeholders.

This vision and roadmap has been informed by over one year of consistent engagement with representatives of fourteen leading RRE investment and management companies representing assets in Europe and internationally. The aim of this work is to put the RRE sector on a trajectory towards carbon neutral building portfolios by 2050, in line with the ambition of the Paris Agreement.

In this sense, the vision and roadmap complete, it is now in the hands of the retail property sector, policymakers, retailers, real estate and building sector participants, non-governmental organisations, communities and cities to engage in building consensus and take this strategy forward.

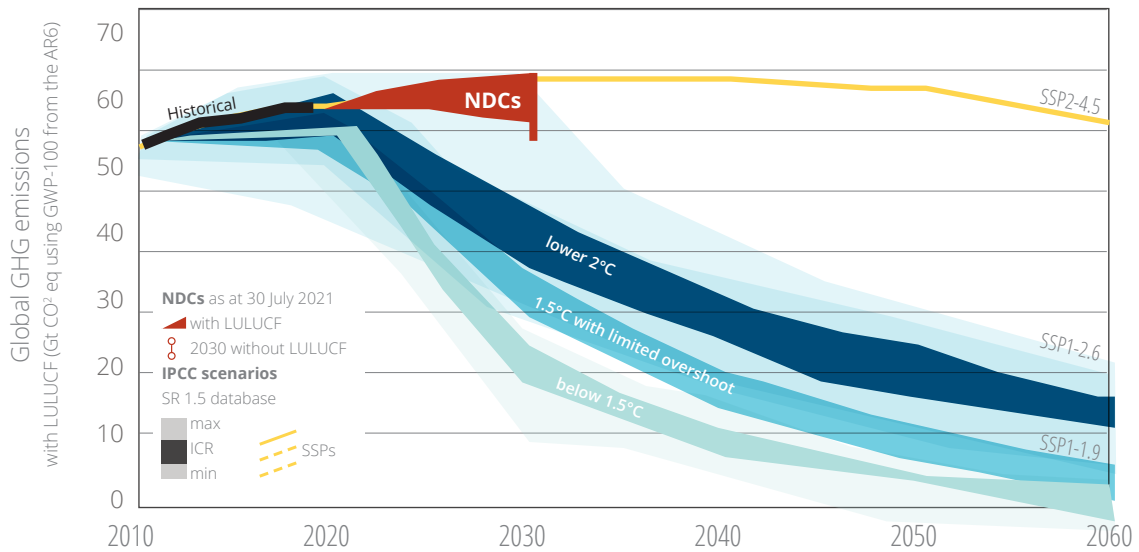


# INTRODUCTION: THE ISSUE AT HAND

The 196 signatory countries of the Paris Agreement committed to a common objective of maintaining the global temperature increase to well below 2°C, and preferably no more than 1.5°C, by the end of the century. Beyond 1.5°C, scientists warn of a range of catastrophic environmental, social and economic impacts.

The latest **IPCC report** delivered a warning of 'code red for humanity' and compelling evidence that the 1.5°C rise will be reached sometime in the 2030s and that temperature will continue rising unless drastic action is taken now. The world needs to reduce global emissions by over 50% by 2030 and work towards carbon neutrality by 2050 to be on track for the 1.5°C target, according to the **2020 UNEP Emissions Gap report**. This implies a dramatic reduction of carbon emissions in every sector, while also capturing, extracting and sequestering carbon<sup>1</sup>. As the buildings and construction sector accounts for 35% of final energy use and 38% of energy- and process-related carbon dioxide (CO<sub>2</sub>) emissions globally<sup>2</sup>, the RRE sector has to play a major part.

The Paris Agreement calls for bold and urgent action and the RRE sector is responding. The industry is changing: carbon footprint and broader sustainability issues are becoming increasingly important for both real estate investors and tenants, and are being incorporated into business strategies and practices. The COVID-19 pandemic and the climate emergency have only accelerated this trend.



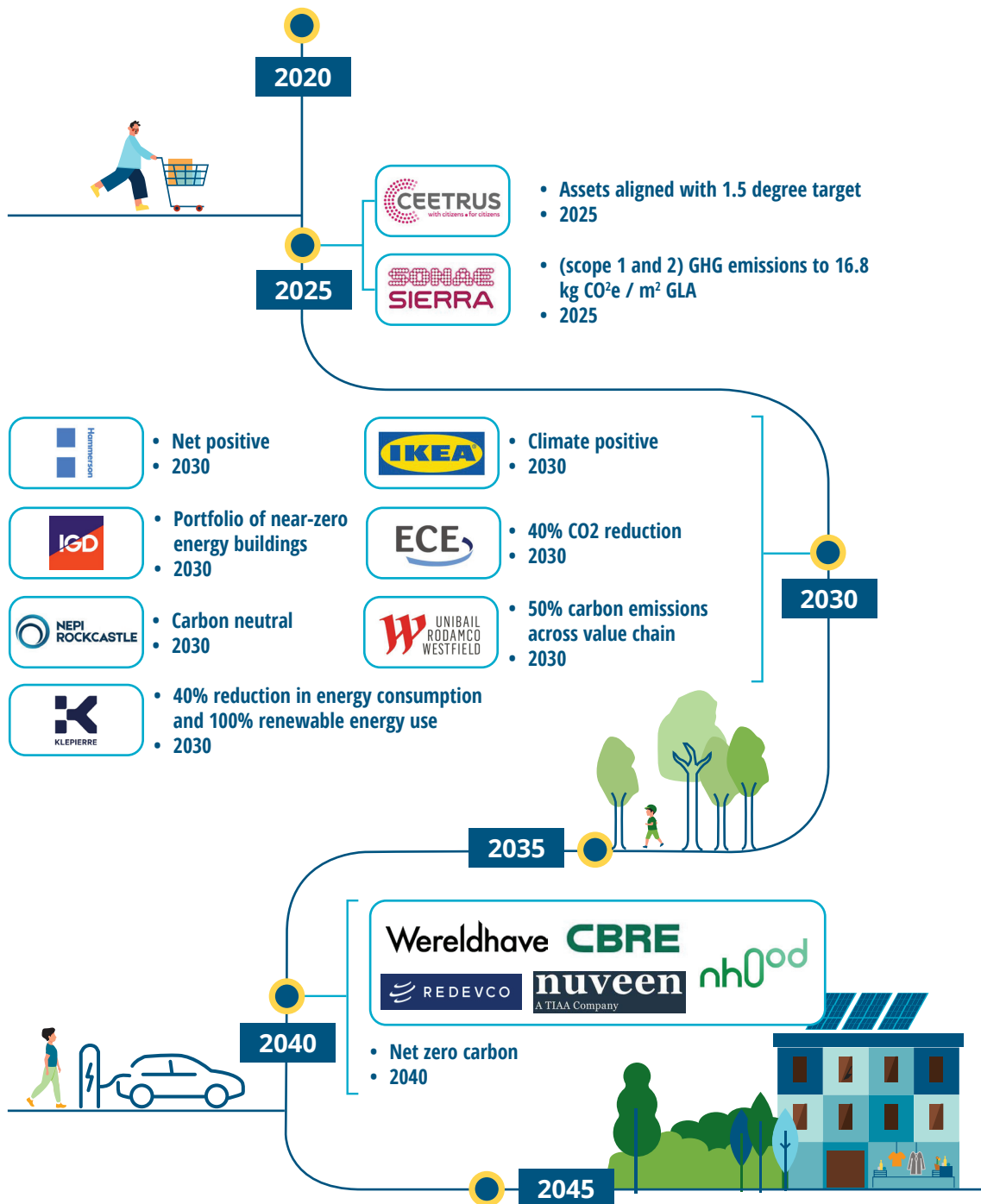
**Figure 1:** Comparison of global emissions under scenarios assessed in the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C with total global emissions according to current pledges and nationally determined contributions, submitted under the Paris Agreement. Source: United Nations Framework Convention on Climate Change (UNFCCC) (2021) Nationally determined contributions under the Paris Agreement - [Synthesis report](#) by the secretariat.

There is a strong business case for “Paris-proofing” the sector, and there is an even stronger case from necessity, given the implications of inaction. Following the Paris Agreement, most RRE actors have introduced ambitious pledges to reduce their carbon emissions (see examples in Table 2) and developed strategies to achieve these goals. These commitments demonstrate engagement to transition to a net zero world, but they also show the diversity of targets and metrics, such as:

- **Broad absolute targets:** **Redevco** aims to make its entire portfolio net zero carbon by 2040. **Hammerson** sets out an ambition to become net positive in carbon emissions, water, resource use and socio-economic impacts by 2030.
- **Broad relative targets:** **Klépierre** sets out to reduce its energy consumption by 40%, use 100% renewable energy and “have a positive carbon impact” at its five largest malls by 2030. **NEPI Rockcastle** aims to become “carbon neutral” and reduce emissions from constructions by 30% by 2030.
- **Technical targets** **Sonae Sierra** aims to reduce (scope 1 and 2) greenhouse gas (GHG) emissions to 16.8 kg CO<sub>2</sub>e/m<sup>2</sup> of gross floor area by 2025 and attain carbon neutrality by 2040.

1. Carbon sequestration is the process of capturing and storing carbon dioxide, e.g. in building materials.  
 2. [https://globalabc.org/sites/default/files/inline-files/2020%20Buildings%20GSR\\_FULL%20REPORT.pdf](https://globalabc.org/sites/default/files/inline-files/2020%20Buildings%20GSR_FULL%20REPORT.pdf)

The graphic below provides a sample of various targets without capturing the full breadth of organisations' climate goals. The targets vary in terms of scope (from the operation of retail buildings to cover the whole value chain), target year (2030 is most common but 2025 and 2040 are also commonly used) and the framing of the target (absolute and relative CO<sup>2</sup> emission savings, energy consumption reductions, increase of % of green buildings, etc.). Due to the difference in scope and metrics, the levels of ambition among various RRE organisations are not comparable.



**Figure 2:** Overview of a selection of current RRE pledges



Despite the efforts of industry leaders, the wider RRE sector is not yet on track to meet the Paris Agreement 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 an annual renovation rate of about 4.4% the opportunities abound: more than 60% of the retail stock will have been upgraded by 2030.



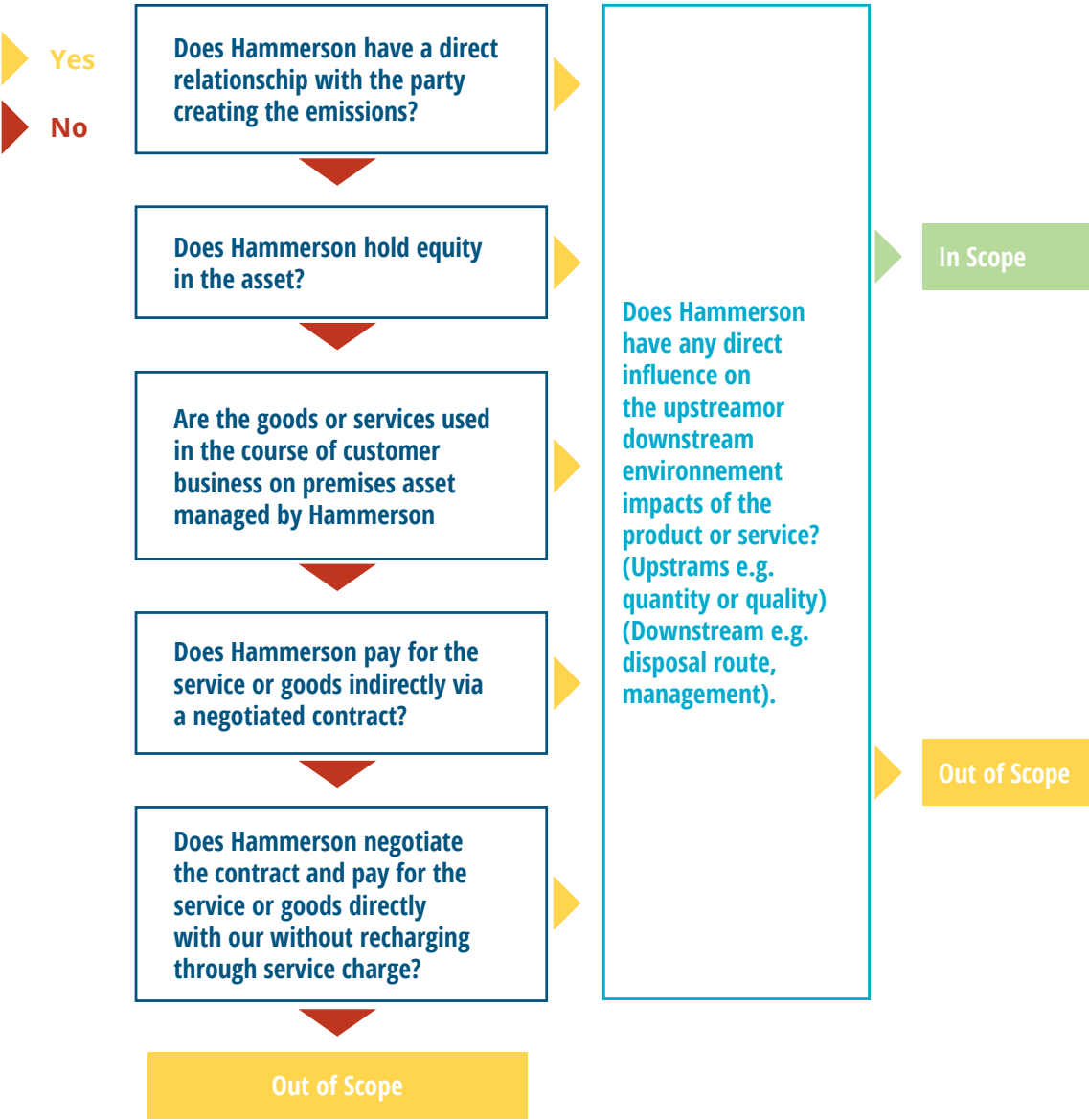
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**Renovation is a unique trigger point to introduce sustainable solutions and apply the best available clean technology and low-carbon materials. A common understanding of the targets, such as the term net zero carbon, and a shared vision should incentivise consistent and long-term action, as well as send a clear and credible signal to investors, policymakers and the public.**

”

# HAMMERSON SHOWS HOW TO SET CLEAR BOUNDARIES FOR WHAT IS IN AND OUT OF THE SCOPE OF A CARBON TARGET.

Defining a net zero target, or as in Hammerson’s case a “net positive target”, the boundaries for the emissions play an important role. They developed this decision tree as a tool that can be applied to any impact source to inform them whether a specific emission is in or out of scope.





# A COMMON VISION FOR A DECARBONISED RRE SECTOR

The Paris Agreement aims to keep the global temperature rise to “well below 2°C above pre-industrial levels” and preferably no more than 1.5°C by the end of the century. For this to happen, net carbon emissions need to be reduced to zero as soon as possible<sup>3</sup>. The longer we delay achieving net zero, the more likely we are to breach different warming thresholds.

Aligning the RRE sector with climate-neutrality goals means that assets, portfolios and the entire sector must reduce absolute emissions at a rate commensurate with achieving net zero emissions by mid-century. The zero carbon roadmap, however, is not static: the pathway changes as the carbon budget shrinks. Climate-proofing requires proper measurement, tracking and targeting of positive climate outcomes, taking into account not only today's emissions but the sum of all future emissions. Targets should be aligned with what the latest climate science deems necessary to meet the goals of the Paris Agreement.

The vision for a decarbonised RRE sector means buildings and portfolios must achieve zero carbon throughout their lifecycle, including development, refurbishment and operation. The construction of new buildings and renovation of existing assets will need to happen without further depleting our carbon budget. Leadership in climate mitigation is an opportunity to (re)build a greener and a more resilient RRE sector. As part of its climate alignment efforts, the sector will create sustainable places and contribute to maintaining the social fabric by providing environmental and social infrastructure.

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3. Net zero carbon usually means that any unavoidable carbon emissions are balanced by actions to remove an equivalent amount of carbon dioxide from the atmosphere. A net zero carbon building is highly energy efficient with all remaining energy from on-site and/or off-site renewable sources (WGBC, **Whole Life Carbon Vision**).



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**Leadership in climate mitigation is an opportunity to (re) build a greener and a more resilient RRE sector. As part of its climate alignment efforts, the sector will create sustainable places and contribute to maintaining the social fabric by providing environmental and social infrastructure.**

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## THE SCOPE OF THE NET ZERO COMMITMENT

The RRE sector recognises that it has a key role to play in reducing all emissions related to its activities, which includes the operational and embodied impacts of buildings, the supply chain as well as customers. The boundaries of the sector's net zero commitment therefore include direct emissions (scope 1 emissions), indirect emissions (scope 2) and all emissions indirectly associated with its business activities (scope 3 emissions), such as the carbon emissions embodied in construction materials and the energy used by retailers and customers (e.g. charging electric vehicles).

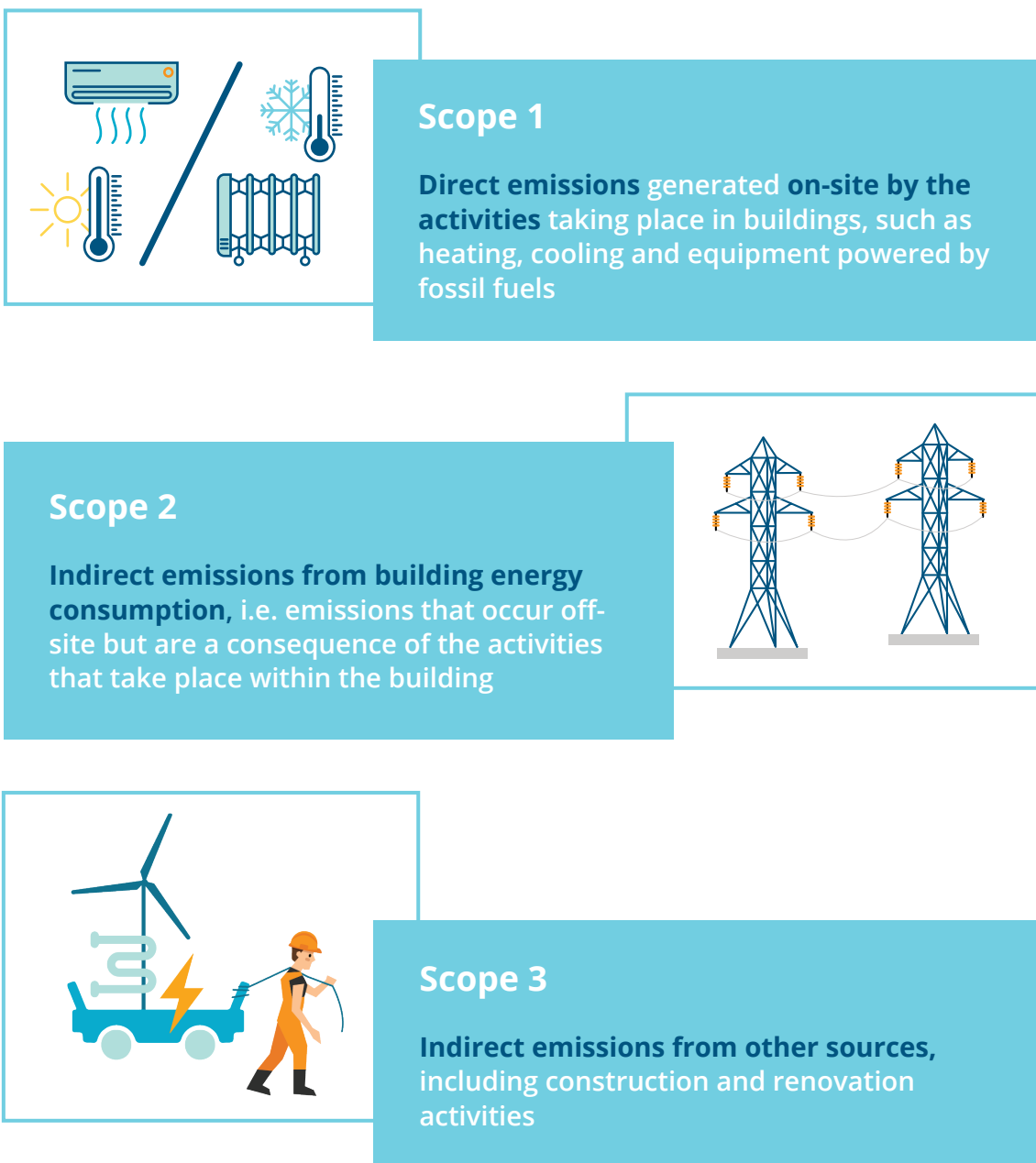


Figure 3: The different types of carbon emissions

## ZERO CARBON PRIORITY LIST

### 1. Setting the baseline – accounting carbon emissions released through business activities (scope 1,2 and 3)

Establishing the baseline for an ambitious transition plan starts with a review of the known emissions performance, reduction potential and expected economic lifespan of individual assets in a portfolio. This should create a robust understanding of which assets are already consistent with net zero, which may be necessary for a fixed time at the best available performance, before further performance improvements are required. Measuring values for individual assets is important, as portfolio averages could compensate for or conceal certain assets that could become stranded or undermine the transition.

### 2. Reducing emissions wherever possible through increased efficiencies (energy and materials)

Target values for carbon neutral buildings will vary according to market conditions, construction and building type as well as availability of solutions. Nonetheless, the first and most important step to becoming a net zero carbon business is to reduce operational carbon emissions. While operational carbon can be reduced through improvements in energy usage and efficiency over time, embodied carbon is locked in during the construction, renovation and maintenance stages. This means that taking action to reduce embodied carbon needs to be a priority to avoid significant carbon costs further down the line. Investing in on-site renewables can provide a low-carbon energy supply.



4. The vision of a decarbonised RRE sector is aligned with the World Green Building Council's definition of Net Zero Carbon and **Whole Life Carbon Vision**.

### 3. Balance residual emissions through on-site renewable energy and, as a last resort, recognised, long-term carbon offsets

Once carbon emissions have been minimised as far as possible, remaining emissions can be balanced by means of renewable energy supplies, on-site if possible. Carbon offsetting should be viewed as a last resort option. Where carbon offsets are used, they should be from long-term and third-party validated carbon sequestration programmes, and preferably local – for example, by ensuring sufficient green spaces around the building site. Offsetting should only be necessary to compensate embodied emissions – the aim should be to reduce operational carbon as close to absolute zero as possible.

### 4. Improve monitoring, verification and accuracy

Ongoing monitoring and measuring of performance outcomes is required to make sure that the building is achieving net zero carbon goals based on actual building operation.

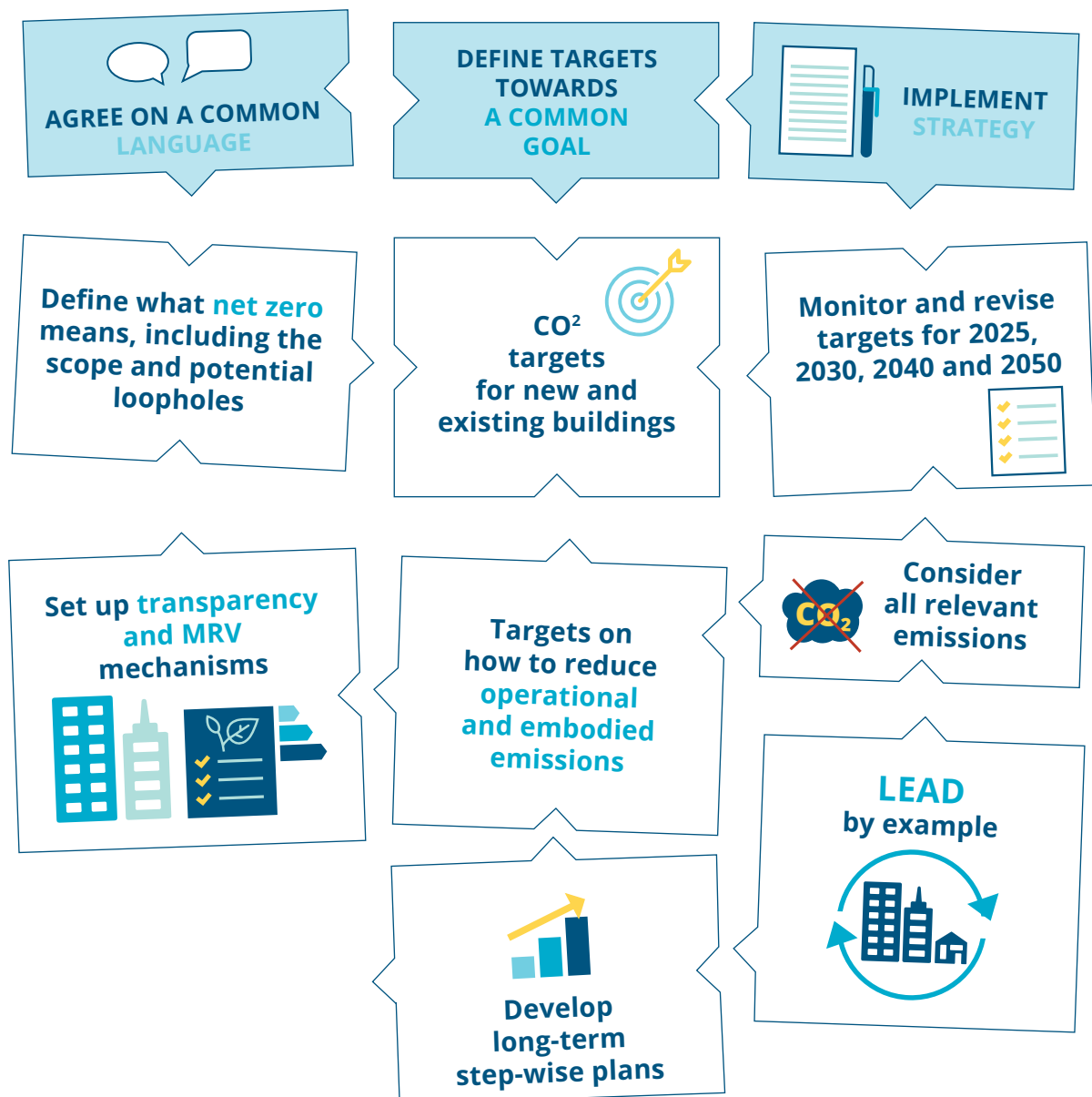


Figure 4: The zero carbon priority list

# DEFINING THE ROADMAP TO ZERO CARBON



## OVERVIEW OF POTENTIAL ROUTES AND SCENARIOS

Carbon accounting and reporting raise a number of questions for the RRE sector. 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 emissions related to the same assets? What are the operational boundaries and how can double-counting be avoided? 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 at property and portfolio levels.

Achieving 1.5°C compliance requires net zero emissions globally and across all sectors. Setting the decarbonisation pathway for the RRE sector needs to take into account carbon lock-in associated with current and planned assets, as well as the interactions between the stock of carbon in the atmosphere and the annual emissions. Whether certain assets are compatible with a given carbon budget depends on how much of the global budget is left and how much of this is allocated to the RRE sector. It also depends on the building's carbon efficiency and on anticipated building use.



# CARBON RISK REAL ESTATE MONITOR

The Carbon Risk Real Estate Monitor (CRREM) methodology uses a global carbon budget as specified by global warming scenarios defined by the IPCC. The total global carbon budget is broken down across regions and economic sectors using socio-economic models that reflect future energy demands and renewable energy generation capacities, sector growth expectations, and carbon reduction opportunities. CRREM uses a GHG/floor area metric to determine a portfolio's intensity-based transition pathway. The final step is to detail how specific assets need to become more efficient to comply with the overall decarbonisation pathway.



**Figure 5:** EU commercial real estate carbon intensity pathway and floor area (source: CRREM, Enerdata, Rockström et al., European Climate Foundation).

CRREM is a relevant and useful tool because it is based on decarbonisation pathways specific to the country and property type that help owners, managers and investors identify and manage carbon risks in their portfolios. The example illustrates the multiple factors that need to be considered: the size of the carbon budget and what remains for a given warming threshold, how much of this carbon budget is allocated to different sectors, and the anticipated cumulative carbon emissions or 'carbon lock-in' of RRE assets to see if there is 'space' for them within a carbon budget.

# PRINCIPLES AND REQUIREMENTS FOR ACHIEVING CLIMATE OUTCOMES



## Target setting

RRE companies need to set targets and strategies to achieve alignment with net zero over time. Targets could be absolute and/or relative, e.g. the percentage of assets that will be net zero carbon for every five-year period up to 2050 for a given confidence level. Interim targets for 2030 should be consistent with the 50% global reduction in CO<sub>2</sub> identified as a requirement by the **IPCC** and **Net Zero Asset Managers Initiative**. Targets and strategies will have to take into consideration the carbon budget implication (i.e. carbon lock-ins) of current and planned new constructions and renovations, as well as the end of life of buildings.

## Consistency and comprehensiveness

The retail property sector is under increasing pressure to convincingly demonstrate that it is managing its carbon risk. This assumes a bold and comprehensive definition of scope, including all direct, indirect and value chain emissions that the sector has the ability to influence. Strategies should outline key actions, including respective capital spending plans and quantifiable GHG emission reductions from all main sources.



## Accountability and disclosure

Regular reporting of carbon emissions plays a vital foundation for action and stakeholder engagement. RRE owners and managers should establish independent and transparent verification processes and disclose progress made towards targets. Roles and responsibilities for implementation and monitoring within companies should be clearly assigned, including board-level oversight of climate-related strategies.



## Ownership

Realising climate outcomes requires much deeper engagement and collaboration among asset owners, occupiers, investors, and policymakers. Expectations, plans and commitments to net zero objectives should be closely aligned, for example between investors and investees, or asset owners and retailers. Where appropriate, this should include sharing of data, agreeing performance targets and collectively implementing the required changes.

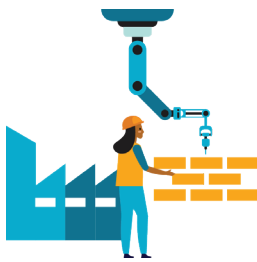


## Financing



Meeting climate-neutrality targets will require substantially more financing and investment through dedicated policy and market instruments. Both public finances and private capital will have an important role to play in funding the transition to a net zero pathway. The impact of COVID-19 makes these efforts more difficult and increases the need for a dramatic scaling up of public financing for the capital-intensive and longer-term transition.

## Capacity building



Paris alignment requires novel skills and knowledge. Awareness and engagement are continuously improving, but the sector needs more consistent guidance and the details of a comprehensive roadmap for change are still missing. Capacity building and competency on climate issues need to include all levels of decision-making in both small and large organisations to reduce the gap between stakeholders of different sizes.

## Looking beyond carbon: environmental and social sustainability

The conversation should not stop at energy efficiency and carbon. By placing greater emphasis on environmental, social and governance (ESG) criteria and investments, the ongoing health and climate emergency can become an opportunity to rebuild a greener and more resilient RRE sector. As a consequence, the zero carbon strategy shouldn't only comprise technical solutions but should also focus on good quality and healthy buildings that meet evolving user needs and stimulate a more equitable and sustainable consumer culture.



A street scene with historic buildings and a white text box containing a quote. The buildings are made of light-colored stone or brick with large windows and classical architectural details. The sky is overcast. The text box is semi-transparent and contains a quote in blue text. The quote is enclosed in large yellow quotation marks.

“

**Developing a zero carbon roadmap for the retail real estate sector requires acknowledgement and understanding of interdependencies between sectors and markets. Without close collaboration and coordination with other sectors, there is a real risk of displacing carbon between industries.**

”



# THE RRE PATHWAY TO ZERO CARBON

Decarbonisation of the RRE sector cannot, and should not, be looked at in isolation from the much wider built environment value chain. Rather, it must be positioned relative to 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 requires acknowledgement and understanding of these interdependencies between sectors and markets. Without close collaboration and coordination with other sectors, there is a real risk of displacing carbon between industries. Furthermore, the zero carbon roadmap should align with EU-wide 2030 and 2050 targets and provide meaningful guidance for individual countries, industry sectors and subsectors (and potentially building types), including clear milestones and target year objectives.

# By 2025



## Retail real estate

- Define short-, medium-, and long-term science-based targets to reduce the carbon footprint of RRE assets and portfolios.
- Provide a plausible climate strategy based on scenario and carbon pricing modelling in line with IPCC 1.5°C degrees.
- Develop zero carbon roadmaps including concrete mitigation actions, milestones, and respective capital spending plans.
- Work on the harmonisation and consistency of KPIs, metrics and assessment frameworks.
- Make the carbon related risks and benefits more tangible by robust and detailed analysis of the impacts of intervention strategies and retrofit solutions.
- Improve the collection, disclosure and sharing of GHG 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.
- Align incentives between retail building owners and tenants in terms of data sharing and sustainability goals, including knowledge sharing and training.
- Promote green lease clauses that foster a collaborative occupier-landlord relationship, supporting better access to energy data, smart metering, the procurement of renewable electricity, improved waste and delivery services.



## Policymakers

- Further tighten building codes, including whole life carbon limits (building one-ment of the existing NZEB regulation).
- Introduce policy roadmaps to a carbon neutral building stock, including specific requirements for different sectors.
- Mandate lifecycle assessments LCA for new constructions and major renovations, to identify ways to minimize all carbon emissions.
- Introduce mandatory minimum carbon performance standards to oblige the worst-performing buildings to be renovated – this can be facilitated through an updated and improved energy performance certificate (EPC) framework that discloses carbon emissions in a reliable way.
- Introduce a robust measurement, reporting and compliance mechanism to monitor and guarantee carbon reduction in the building sector.
- Encourage harmonisation and standardisation of building performance assessment methodologies and complement energy metrics with carbon-related metrics and thresholds.

- Introduce a net zero carbon clause in all public procurement processes.
- Lead by example by ensuring all public buildings are built and renovated to a net zero level.



## Financial institutions

- Institutional investors: commit to shift investments in RRE portfolios to net zero carbon by 2040.
- Incentivise investments in energy efficiency and low-carbon solutions.
- EU and national banks: support the sector's roadmap to net zero through targeted subsidies and loans.



## Retailers and tenants

- Integrate the carbon performance of the building into business strategies.
- Increase demand for high-performing and low-carbon buildings.
- Implement green lease clauses with building owners.
- Train personnel to change behaviour and implement a low-carbon workplace.
- Develop a strategy to nudge customers towards low-carbon behaviour.



## Construction sector and real estate service providers

- Define short-, medium- and long-term science-based targets.
- Set up new ways to collaborate across the construction value chain.
- Develop strategies to meet the increasing demand for low-carbon solutions.
- Develop digital solutions to measure and track emissions over the whole lifecycle.
- Develop/demand information about the environmental impact of construction products.
- Invest in training to enable the transition to net zero carbon.
- Develop new business models based on serial/modular renovation techniques, including industrial-scale manufacturing and innovative solutions (robotics, 3D printing).



## Retail real estate

- Adapt strategies based on the remaining carbon budget and how the sector/organisation is performing against the set targets.
- Evaluate the impact of implemented mitigation actions.
- Ensure all new constructions are net zero carbon over the whole lifecycle.
- Measure and report all carbon emissions according to agreed framework.
- Pursue building assessment in line with best practice standards, such as the EU's Level(s) guidelines, and identify the retrofit measures that have to be implemented to achieve the net zero carbon goal.
- Showcase best practices to inspire other actors and sectors to take further actions.
- Ensure that most buildings offer clean transport options, including electric vehicle charging points, safe bicycle paths and public transport.



## Policymakers

- Introduce requirements that all new constructions are net zero carbon over the whole lifecycle.
- Outline net zero carbon strategies for their building stock, building on, for example, the existing long-term renovation strategies that the EU Member States are obliged to develop. This applies to all EU Member States, regions and cities.
- Update whole-life carbon benchmarks based on the collected data and use the information to calibrate building regulations and financial instruments.
- Ensure that the renovation rates and depths for all buildings, and all various sectors, are greathigh enough to achieve the net zero target (most research mentions a renovation rate of 3%, most of should be whereof the majority are deep renovations).
- Strengthen the mandatory minimum carbon performance standards to EPC level E.
- Mandate all worst-performing buildings to get a building renovation passport (i.e. an individual renovation roadmap for the individual property) to ensure the right carbon-saving measures are implemented.





## Financial institutions

- Only finance new buildings that are net zero across their whole lifecycle.
- Disclose performance and progress against targets.
- Calibrate financial support instruments based on collected data and progress towards the set targets.
- Introduce a finance mechanism to fund large-scale renovation programmes.



## Retailers and tenants

- Require all new buildings to be net zero over the whole lifecycle.



## Construction sector and real estate service providers

- Transparently disclose performance and progress against targets.
- For all projects, disclose embodied carbon data at the end of the construction/renovation stage based on a common reporting framework.
- Research and develop low-carbon local alternatives.
- Roll out large-scale renovation solutions that can increase the renovation rate and depth.
- Ensure environmental impact data of construction products is reliable and easily accessible.





## Retail real estate

- Adapt strategies based on the remaining carbon budget and how the sector/organisation are performing against the set targets.
- Ensure all new constructions are net zero or positive carbon over the whole lifecycle.
- Identify the remaining retrofit measures that have to be implemented to achieve the net zero carbon goal across the portfolio.
- Ensure that all buildings offer clean transport options, including electric vehicle charging points, safe bicycle paths and public transport.
- Showcase how RRE is leading by example.



## Policymakers

- For all EU Member States /regions, ensure building codes are aligned with net zero carbon over the whole lifecycle.
- For all EU Member States, regions and cities, review and revise their net zero carbon strategies to ensure carbon reductions are implemented as planned.
- Ensure that the renovation rate and depth for all buildings, and all various sectors, are high enough to achieve the net zero target.
- Strengthen the mandatory minimum carbon performance standards.



## Financial institutions

- Increase ambition to accelerate the transition of entire portfolios towards whole-life zero emissions by 2050.



## Construction sector and real estate service providers

- Transparently disclose performance and progress against targets.
- Ensure that all countries in Europe have access to low-carbon solutions and business models.

## REDEVCO: DISCONNECTING A FOUR-STOREY C&A BUILDING FROM THE NATURAL GAS GRID AND INSTALLING PV PANELS

In 2020, Redevco redeveloped its own 9,000m<sup>2</sup> four-storey historic building in Eindhoven, the Netherlands. The renovation included upgrading the protected façade by adding four glass boxes 5.5 metres wide by 7 metres high which sought to restore the building’s original character. The renovation of the old department store was also an opportunity to add several additional commercial units and to implement sustainability measures that target a BREEAM Excellent certification.

### Key improvements:

Highly insulated envelope	Increased percentage of insulated glass	All window frames changed to insulated frames
126 solar PV panels installed on the roof (approx. 40 kWp)	Energy-efficient escalators and elevators	LED lighting (by tenants)

By significantly improving the energy efficiency of the asset, disconnecting it from natural gas and adding solar panels to the roof for on-site generation, this case study demonstrates the necessary steps in the process to prepare an asset to be net zero carbon in operation. Given this is now an all-electric building, it could already be zero carbon in operation if all occupiers choose to procure certified green electricity. An essential requirement to realise this goal is early and continuous engagement with tenants.



# DELIVERING THE AMBITION

## BEYOND RISK MANAGEMENT: THE INVESTMENT CASE FOR ZERO CARBON, CHALLENGES AND SOLUTIONS

RRE companies are under increasing pressure from regulators and the investment community to report what they see as their upcoming climate risks. RRE investment and management organisations are beginning to recognise carbon- and climate-related risks, as well as the importance of minimising those risks. Importantly, however, they also need to move beyond climate risk management towards much closer alignment with climate outcomes. The efforts to contribute to Paris alignment need to be articulated, developed and scaled across the sector rapidly.

## CLIMATE RISK MITIGATION OR EFFECTIVELY TARGETING CLIMATE OUTCOMES?

Over the last decade, climate related risks have been one of the main entry points to engage the financial and real estate sectors in the need to align assets and portfolios with Paris Agreement goals.



### 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 real estate market and lead to physical damage to assets. These changes, in turn, may translate into adaptation costs, insurance claims 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 affect business models. The associated financial risks and opportunities may impact the performance of assets and portfolios (e.g. the risk of stranded assets).

The threat of climate-related risks eroding property values and stranding assets has prompted both responsible investors and financial supervisors to take action. The European Commission has introduced **regulations** requiring the disclosure of sustainability risks and impacts. The G20 Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) has created a **framework** to help companies and financial institutions consistently measure, manage and report their climate-related risk exposures. In addition, an exponentially growing number of voluntary initiatives, reporting frameworks, benchmarks and services have been made available on the market to help real estate actors measure and manage climate-related risks<sup>5</sup>.

Climate risk management remains a relevant and established approach to contribute to positive climate outcomes, but in itself is not enough to ensure alignment with carbon-neutrality goals<sup>6</sup>. Managing carbon risks and Paris alignment are often mentioned together, but they have different objectives and can have different outcomes. For example, divesting from assets which face high carbon or regulatory risks may reduce the exposure of the portfolio, but this in itself will make no contribution to reducing carbon emissions.

This means that efforts should not only focus on climate risk mitigation. The RRE sector should embrace both carbon risk management and explicit targeting of climate outcomes by maximising opportunities and exploiting their positive relationship. Deploying zero carbon strategies requires, as explained above, setting absolute emission reduction targets at a rate required to achieve net zero emissions by 2050. Properly measuring alignment with carbon budgets and reporting progress will not only help to mitigate the carbon risk but also create better quality and better performing real estate assets.

Making the investment case for climate alignment requires placing low carbon and ESG considerations alongside location, occupier, building size and building quality as key drivers of real estate value and performance. Paris-proofing is not just about getting ahead of the climate crisis and more ambitious environmental legislation, but also about adding value and acting in a socially responsible manner. Responsible ownership strategies and practices will drive improved customer experience, higher occupancy and better rental income, as well as enhanced returns for investors.

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5. For an overview of the most relevant sustainability reporting and disclosure frameworks, see BPIE (2021) **Paris-proof Retail Real Estate: Taking Stock of Regulatory and Market Developments**

6. EIT Climate-KIC (2020) *Achieving Alignment in Finance*.

## MULTIPLE BENEFITS

Done well, sustainability and climate-driven initiatives — improving energy and material efficiency, extending 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 all the more relevant in the context of the recovery from the current health crisis.

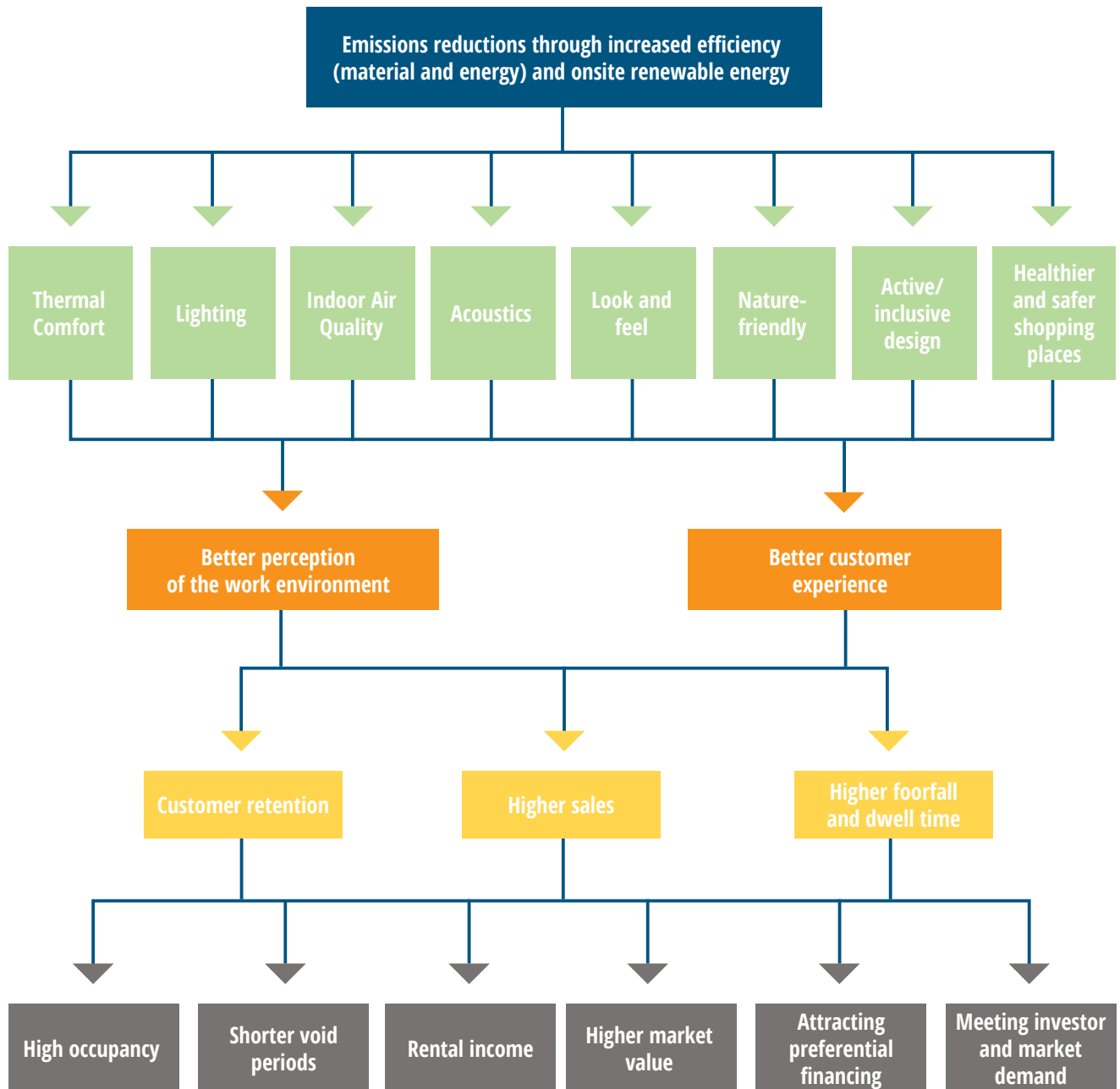
Delivering the ambition of a zero carbon RRE sector will entail realising the full extent of these gains. The sector will need a better understanding of how low-carbon initiatives can be translated into different types of business value, and how they can measure the return on sustainability-driven investments 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-related initiatives into business strategy and operations. These can also provide a common language to engage both landlord and retailer in improving environmental performance in retail spaces.



### MULTIPLE BENEFITS ASSOCIATED WITH LOW CARBON RRE BUILDINGS

- Competitive advantage and first-mover advantage
- Reduced costs of energy and carbon for landlords and occupiers
- Reduced carbon and regulatory risk
- Meeting investor and market demand
- Shorter void periods and potentially higher rents
- Healthier and safer shopping places
- Better indoor environmental quality and customer experience

# MULTIPLE BENEFITS



**Figure 6:** The multiple benefits of renovating retail real estate





## FINANCING THE TRANSITION TO LOW CARBON

Financing for the zero carbon transition has reached record levels, but still falls short of what is needed to stay on track for 1.5°C<sup>7</sup>. The EU Commission estimates that the additional investment needed in buildings to reach EU 2030 energy and climate targets is around €325 billion annually. A similar magnitude of annual investment will then be needed in subsequent years in order to reach climate neutrality by 2050 (EU Commission, 2020).

Private finance will account for the bulk of investment; however, public finance is becoming available in the form of funds dedicated to economic recovery (e.g. the EU Recovery and Resilience Facility) and climate action at both EU and Member State levels. Governments will have a key role to play in providing regulatory stability, co-investing with the private sector and setting up first loss guarantees to mitigate the risks. Reorienting capital flows will mean integrating climate in everyday financial decision-making practices. This will require developing common and transparent methodologies and alignment of metrics and low-carbon indices.

## COLLABORATION WITH THE RETAIL AND BUILDING SECTORS

No one can avoid taking responsibility: landlords, big and small, will increasingly have to work together with tenants. Closer cooperation will be required to co-develop and share targets, goals and objectives as well as to ensure assets are being run in the best possible way. When both owners and tenants are aligned on climate goals they can work together to set key milestones and plan where resources should be focused.

The zero carbon transition requires massive investments and the RRE sector is notorious for split incentives and cost-benefits misalignment. Beyond aligning upfront costs with economic benefits, realising the zero carbon commitment extends to aligning the interests and objectives among stakeholders in achieving zero carbon goals. Low-carbon upgrades and renovations can only go so far: without tenant cooperation and user behaviour change, the benefits cannot be fully realised.

One of the most direct ways of addressing the traditional split incentive ubiquitous in retail is through changes to lease agreements. (Green) leases should specify a clear distribution of responsibilities between landlords and retailers in terms of energy 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.

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7. Climate Policy Initiative (2019) **Global Landscape of Climate Finance 2019**



## DIGITAL TOOLS AND DATA TO INFORM CARBON MANAGEMENT

Measuring and tracking carbon performance is critical to demonstrate alignment with climate objectives. Without reliable operational performance data, it is difficult to identify a baseline and plan improvements for carbon reduction. Existing investors, potential buyers, lenders and other real estate stakeholders need validated performance data communicated in a way that they can understand so they can properly assess the risks and implement effective low-carbon strategies.

Traditionally, collecting emissions data has been costly and time-consuming. However, technological solutions (smart meters, connected devices, Internet of Things) are contributing to data availability and new and unconventional data sources are becoming increasingly relevant. Big data and data analytics can be harnessed to improve understanding of energy consumption and emission sources in retail stores and property portfolios, leading to potentially better informed decisions to deliver carbon emissions reductions.

## SONAE SIERRA: DEVELOPING A MODELLING TOOL TO BETTER IDENTIFY ENERGY-SAVING OPPORTUNITIES

Sonae Sierra has more than 30 years of experience in developing, investing in and managing real estate assets across more than 30 countries on four continents. The organisation wanted to find an explanation for the variation between a building asset's expected energy consumption and its actual consumption. Sonae Sierra developed Bright®, a modelling tool which allows the validation of the energy consumption against the theoretical simulation and can help in identifying technical improvements and improving management practices.

**Benchmarking:** The tool compares and evaluates optimal energy use with the real energy use and allows comparison of assets within a portfolio.

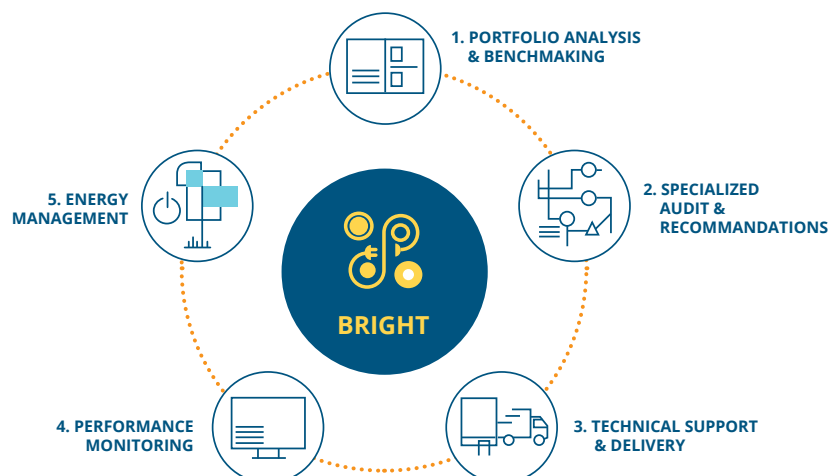
**Better recommendations:** Specialised energy audits are performed and recommendations are then made for ways to improve energy usage.

**Technical support:** Detailed specifications for energy efficiency upgrades are compiled to procure the best solutions for energy efficiency upgrades identified through the benchmarking and/or the specialised audit.

**Monitoring:** The ability to track energy use and the performance of energy efficiency measures on an ongoing basis forms a vital part of the Bright® program.

**Energy management:** Enabling the early detection of inefficiencies and alerting teams so they can be quickly rectified is a key objective of Bright®. An innovative model has been developed leading to a quick detection of inefficiencies, optimising the operation by minimising staff effort and false alarms.

**Highlights and results:** Between 2013 and 2019, the tool identified 292 energy optimisation measures across 28 assets. The implementation of 218 of these measures avoided annually 21,400,000 kWh of electricity, equivalent to €2.8 million in costs and around 5,700 tonnes of CO<sub>2</sub>e. These measures required a total investment of €2.7 million. 51% of the actions implemented were quick wins. €0.22 million invested on these quick-wins generated €1.05 million, 38% of all potential savings of the project.



## SKILLS AND CAPACITY BUILDING

The RRE sector will need to understand and address future skills and knowledge requirements to enable a transformation to a net zero carbon future. The existing knowledge gap includes:

- **A net zero carbon emission roadmap** for future mitigation actions and a framework to monitor and keep track of the progress towards 2050. While most RRE actors have ambitious climate targets in place and regularly report on their carbon emissions, there is limited alignment on scopes and boundaries. The roadmaps ought to be developed based on a common standard and include specific details of how the net zero targets will be met.
- **Whole-life carbon accounting** to make sure all carbon emissions are accounted for. This, for example, allows RRE actors to identify and prioritise the key emissions hotspots and outline a realistic net zero carbon emission roadmap.
- **Internal carbon pricing analysis** to clearly communicate climate-related risks and opportunities in investment decisions.
- **Materiality assessment and ESG risk management** to identify, map and accurately report on ESG-related current and emerging risks. An appropriate governance model is needed to prepare and manage the long-term climate objectives.

Larger organisations are more likely to have access to data and in-house expertise on managing the low-carbon transition. Capacity building will need to include both the smallest and large players to reduce the gap between stakeholders of different sizes. Capacity building should also target and empower asset managers to have conversations with tenants about the opportunities of carbon reductions and developing common retrofit solutions.



## WHAT NEXT?

As highlighted above, aligning the sector with a zero carbon goal doesn't follow a static and fixed pathway. The strategy will have to be regularly reviewed and updated to ensure that goals and thresholds are as robust and relevant as possible and reflect the state of the markets and progress on climate outcomes. In this sense, this document is an invitation to policymakers, retailers, real estate and building sectors, non-governmental organisations, communities and cities to participate in the debate, to shape the common vision and to ensure the implementation of a long-term strategy.

This document has also identified policy, financing, data and skills gaps that need to be addressed collectively to achieve the decarbonisation goals. This means further engagement and work to deploy supporting policies and a comprehensive set of actions to ensure that the RRE sector has the knowledge and capacity to deliver on these policy ambitions. Given the long lifetime of most RRE sector investments, action should be taken now. Missing this opportunity creates the threat of higher overall costs for both businesses and society. As this vision document convincingly communicates, the industry is ready to play its part in meeting the climate challenge and delivering a net zero carbon future.

# REFERENCES

- > BPIE (2021) [Paris-proof Retail Real Estate: Taking Stock of Regulatory and Market Developments](#)
- > BRC (2020) [Climate Action Roadmap](#)
- > CommONEnergy (2017) [Guidelines on retrofitting of shopping malls](#)
- > CRREM (2019) [Stranding risk and carbon](#)
- > CRREM (2020) [Carbon risk integration in corporate strategies within the real estate sector](#)
- > CRREM (2020) [Retrofit harmonisation roadmap](#)
- > EIT Climate-KIC (2020) [Achieving Alignment in Finance](#)
- > European Commission (2019) [Going Climate Neutral by 2050](#)
- > European Commission (2019) [A European Green Deal](#)
- > European Commission (2020) [Consultation on the Renovation Wave](#)
- > IEA (2021) [Net Zero by 2050: A Roadmap for the Global Energy Sector](#)
- > IPCC (2018) [Special Report on Global Warming of 1.5 °C](#)
- > IPCC (2021) [6th Assessment Report \(AR6\): The Physical Science Basis](#)
- > Landsec (2020) [Net Zero Carbon Pathway](#)
- > LGIM Real Assets (2020) [Real Estate: Net Zero Carbon Roadmap](#)
- > Platform on Sustainable Finance (2021) [Transition Finance Report](#)
- > REDEVCO (2020) [Responsible Investment Report 2020](#)
- > SBTi (2020) [Science-Based Target Setting Manual](#)
- > ShareAction (2020) [Decarbonising Real Estate: Foundations for Success](#)
- > UKGBC (2020) [Building the Case for Net Zero](#)
- > UNEP (2020) [Emissions Gap Report](#)
- > UNFCCC (2021) [Race to Zero Criteria](#)
- > UNFCCC (2021) [NDC Synthesis Report](#)
- > WGBC (2020) [Whole Life Carbon Vision](#)



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