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THE RACE TO CARBON ZERO

DECARBONISING REAL ESTATE



“Scientists are clear on climate change: we have 10 years to act. For a real estate company, ten years is one or two project lives; in politics, for a mayor, less than two mandates. We have therefore no time to lose. The built environment sector must change now, quickly and radically”

Hélène Chartier, head of zero carbon development, C40, talking at MIPIM Urban Forum 2020

The message is out. The race is on. The real estate industry has a key role to play given that buildings are among the world’s biggest emitters of carbon dioxide (CO₂), the most harmful of greenhouse gases (GHG).

Decarbonising the built environment is an enormous task, but failing to take this on will result in even greater risks – not least with regards to the wellbeing of future generations and of the planet.

In *The Race to Carbon Zero*, we:

- Look at the issues behind decarbonising the built environment.
- Listen to the voices and approaches of key players across the industry, including **Landsec**, **Prologis** and **City Developments Ltd**.
- Talk with **Nuveen Real Estate**, an industry leader in sustainability, about how they benchmark carbon emissions.

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“In 2020, greening the property portfolio will move from a nice-to-have reputation booster to an imperative in the face of a looming “brown discount” if real estate investors don’t kickstart their journey to zero carbon”

MSCI



Why 2030?

The real estate sector has until 2030 to halve carbon emissions in order to help keep global warming below the 1.5°C tipping point, a level identified by the **Intergovernmental Panel on Climate Change** (IPCC).

Temperatures have already risen by 1.1°C, and, based on current commitments, they can be expected to **rise to 3.2% this century**.

“The higher the temperatures the more we will have physical risk,” said **Sakina Pen Point**, head of climate change adaption at the **Observatoire de l’Immobilier Durable**, at this September’s MIPIM Urban Forum session, *Climate Emergency: Time for Radical Change*.

The effects of global warming are being felt around the world, leading to what *The New York Times* calls ‘**The Great Climate Migration**’.

In the US, for example, the 14 natural disasters in 2019 each resulted in **at least US\$1bn in damages**. In Europe, Moody’s affiliate **Four Twenty Seven**, found that 16% office space and 19% of retail space, looking at their property database, was exposed to risk from flooding and/or rising sea levels. Heat stress was another significant risk.



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Halving carbon emissions by 2030 “will amount to cheap insurance for future generations”

Johan Rockström, director, Potsdam Institute for Climate Impact Research (source: FT)

The UNFCCC (the United Nations Framework Convention on Climate Change) launched the **Race to Zero** global campaign this June to build momentum around the shift to a decarbonised economy ahead of COP26, the 26th United Nations Climate Change Conference, to be held in Glasgow in November 2021.

Building resilience

The built environment accounts for around a third of all carbon emissions. Not only is it about halving emissions to slow climate change, but also about making real estate portfolios more resilient.

“First and foremost resilience is about the interaction of property with nature”

David Hutchins, head of European investment strategy, Cushman & Wakefield

This requires “**unprecedented change**”, together with an agile approach, good leadership and innovative practices. Nature is part of the solution – not a force against which to fight a costly battle.

“There is an urgent need for resilience-building across assets to ensure business continuity and reduce financial losses”

Léonie Chatain, Four Twenty Seven’s Europe manager

For **Hélène Chartier** of **C40**, speaking at the MIP-IM Urban Forum, to tackle climate change the real estate motto should be:

First, **focus on the existing stock** by a massive retrofitting of existing buildings and by reusing buildings as much as possible before demolition.

Second, **reuse existing materials** and administer used materials for the future – the buildings of today offer the resources of tomorrow.

Third, if you need to build new, **build for the future** – to last, to be flexible, to be efficient in resources and energy.

Fourth, **design** for a **sustainable lifestyle**.

Part of a bigger ESG picture

Climate change is part of a wider environmental picture – which also includes biodiversity, air quality, water and waste. In addition, there is no E without the S (social) and the G (governance).

“What the current [covid] crisis has shown... is how interconnected every issue on the planet is today”

Marie Bogataj, head of the AXA Research Fund, part of Europe’s largest real estate investment manager

We need to remember, points out London-based investment boutique **Fore Partnership**, that the ESG acronym was originally an “aide memoire”, and in the real estate world this has led us towards a “language of features and measures”.

“If all we do is stop at ‘Environmental, Social and Governance’, many of us will simply just think about making these three things marginally less bad. We believe there is a better language. One that focuses not on features but on outcomes, the things that you want to see – like “living longer” or “not screwing up the planet for our kids”

Basil Demeroutis, managing partner, Fore partnership

Cities are key

The *Race to Carbon Zero* focuses on buildings and portfolios, but a few words also need to be written about cities.

Half of humanity lives in an urban area. This is due to rise to **60%** by 2030, with an urban area the size of New York City needing to be built every month until 2050 to keep up with urban growth, the audience at the MIPIM Urban Forum was told.

How buildings integrate with their neighbourhood and the wider urban area is key. So far **28 cities**, as well as six states and regions, have signed up to the **Zero Carbon Buildings Commitment** of the World Green Building Council (WorldGBC).

“The ability to connect private property to broader smart city infrastructure is going to be critical in determining whether urban planners can meet their own sustainability goals”

Faisal Butt, founder & CEO, Pi Labs

Regulation

The external pressure for change is growing, from government regulation as well as from institutional investors.

Carbon regulation is accelerating on a city, country and regional level. In Europe, for example, the EU has launched the **European Green Deal** and adopted the **Taxonomy Regulation**.

“This new regulation will require a mentality shift. We will have to change how we consume, travel and how we use products”

Xenia zu Hohenlohe, founder & managing partner, the Considerate Group, a global advisor to the hospitality sector on sustainability

In France, it is already **mandatory** for certain companies to disclose their climate risks. New Zealand has followed suit, with other countries in line to do the same, including the **UK**.

The pressure is also growing from institutional investor groups, such as **Climate Action 100+**.



SOLUTIONS

Design & construction

“There are two ways of drastically reducing carbon: you either stop everything you’re doing, or you turn to technology to help find a solution to the problem”

Roger Bryant, associate director, building & project consultancy, Savills

Carbon emissions for buildings are classified as either operational (during the operation of a building) or embodied (from the construction of the building & the materials used).

Technology plays a key role in reducing both types of emissions; ranging from digital tools and BIM (building information modelling), to the use data and AI.

Early adopters benefit from a competitive advantage, while technological innovation can also operate as a “resource-liberating mechanism: it can make once scarce opportunities abundant,” write Peter H Diamandis & Steven Kotler in their book *Abundance: The Future is Better than You Think*.

Approaches and solutions to cut carbon include:

- The **circular economy**, which considers the use of resources throughout a building’s life cycle.
- **P-DfMA**, a platform approach to design for manufacturing & assembly
- The use of **alternative building materials**, such as **timber**.



Operations

Around 56% of the solution to cutting carbon lies in using **renewable or sustainable energy** sources, says the **IEA**, and 44% in **improving energy efficiency**.

On a country level, Sweden tops the World Economic Forum's **Energy Transition Index**:

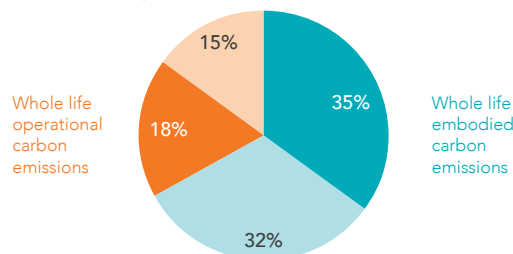
- 54% of Sweden's energy is renewable – to reach 100% by 2040.
- Smart grids are turning energy consumers into prosumers.
- District heating plants use excess heat to warm the majority of homes.

Cutting operational carbon is also about:

- **Wind & solar PVs**: costs are now **lower** than for new coal and gas plants in two-thirds of the world.
- **Waste-to-energy plants**: check out **Sierra Energy** and **Climeon**, and, for skiers, **CopenHill** in Copenhagen.
- **Building automated systems**: smart buildings help make better decisions.

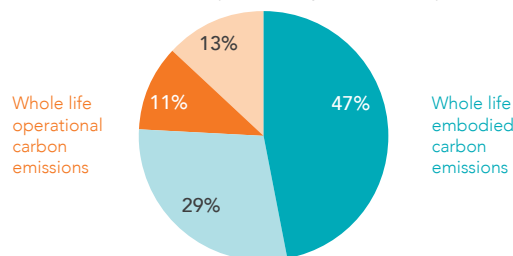
Office

Speculative office building with Cat A fit out; central London



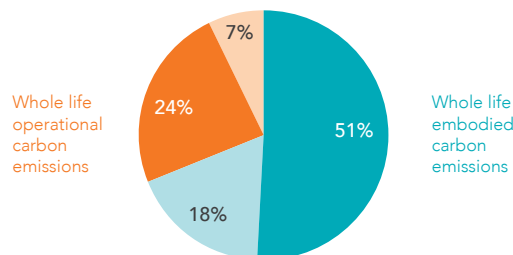
Warehouse

Typical warehouse shed with office space (15% by area); London perimeter, UK



Residential

Residential block with basic internal fit-out; Oxford, UK



© RICS; Sturgis Carbon Profiling

“The pandemic taught us to avoid saturation by ‘flattening the curve’ and it taught us to be flexible. If we are a bit flexible, we can use this same approach towards how our cities consume resources. In some cases, if you reduce the peaks [of energy consumption] by 10%, you can slash capacity by 50%”

Carlo Ratti, founder of Carlo Ratti Associati & director of MIT's Senseable City Lab

Carbon can also be removed from the air. However the **IPCC** warns that such techniques still need to be proved at scale and that “some may carry significant risks for sustainable development”.

Planting native tree species is one way, writes Professor Tom Crowther of **ETH Zurich** – with the emphasis on the native.

Staying in Switzerland, **Climeworks**, one of the World Economic Forum's **100 Technology Pioneers** for 2020, is behind the first commercial air capture plant.



REAL ESTATE CASE STUDIES

Landsec – 5 steps to becoming net zero

The FTSE-100 UK property developer, Landsec, was the world's first property company (in 2016) to have its carbon reduction target approved by the **Science-Based Targets initiative** (SBTi – a collaboration between CDP, the UN Global Compact, the World Resources Institute and the World Wide Fund for Nature).

Landsec met its SBTi carbon reduction target in November 2019, 11 years early, having reduced its emissions by over 40% against a 2013/14 baseline.

Since then, the developer has launched a **five-step plan** to become a net zero carbon business by 2030 to:

- Step 1: Reduce operational energy use.
- Step 2: Invest in renewable energy
- Step 3: Use an internal shadow price for carbon
- Step 4: Reduce the impact of construction
- Step 5: Offset remaining carbon

In summer 2020, Landsec announced that all future developments will be built to and operate in line with the UK Green Building Council's **net zero carbon buildings framework**.

Project spotlight – The Forge, London

The Forge, a 139,000 sq ft/12,900 m² office development in Southwark, is set to become the UK's first commercial net zero carbon building.

Funding is coming from Innovate UK to develop “the world's first ever” office building using a plat-

form approach to design and construction, a system known as P-DfMA (platform for design, manufacture and assembly).

“The result is a structure that uses less material, creates less waste and has an almost 20 per cent reduction in carbon impact,” says Landsec.

THE FORGE



Prologis – the “world’s most sustainable real estate company”

A global name in logistics, Prologis – headquartered in San Francisco – is the first **S&P 100** real estate company to achieve operational carbon neutrality. In 2019, Prologis launched the 3Cs model: Customer Centricity, Change Through Innovation & Operational Excellence, and Culture & Talent. Customer-centric initiatives include the launch of the **Prologis Customer Sustainability Advisory Council** to identify ways for Prologis and their customers to collectively reduce their carbon impact.

Prologis has also adopted five of the **Sustainable Development Goals (SDGs)**, set by the UN, of which three relate to the environment. Targets set by Prologis include:

- **SDG No. 7 – Affordable & Clean Energy:** to produce 400MW of solar energy by 2025.
- **SDG No. 9 – Industry Innovation & Infrastructure:** 100% designed to sustainable building certification standards; 100% LED lighting by 2025; cool roofs on all new developments and property improvements.
- **SDG No. 13 – GHG Emissions Reduction:** a **21% reduction** in Scopes 1 & 2, and a **15% reduction** in **Scope 3** by 2025.

(GHG emissions are categorised into three groups or ‘scopes’ the **GHG Protocol**.)

CARBON NEUTRALITY AT L’ORÉAL IN MUGGENSTURM

Simply wonderful for the environment.
L’Oréal’s logistics centre in Muggensturm is carbon-neutral* – due to PROLOGIS’ innovative work.

- Awarded for excellence**
The building will be certified with DGNB Gold.
- Solar power**
7,400 modules have a capacity of 2.0 megawatt peak.
- Heated efficiently**
Radiant tube heaters ensure energy savings of up to 50%.
- Sustainable water use**
Watering the green areas, hall cleaning and toilets – everything with rainwater!
- Quality insulation**
The inbuilt thermal insulation exceeds the requirements of the Energy Ordinance in that it loses less energy (winter) and provides better insulation from heat (summer).
- Energy saving control system**
The central system of the building technology manages the energy use and recognises opportunities to save energy.
- Lighting efficiency: the best!**
Efficient LED lighting to minimize electricity use.
- Green energy**
Additional electricity comes from environmentally friendly renewable energy sources.
- Green roof**
30,000 sqm green roof area with native plants offers the skylark a new habitat.

*Carbon neutrality in this project: In order to achieve carbon-neutral operation of the facility, the overall difference between emissions and carbon offsets must equal zero. This can be achieved by various measures such as photovoltaic systems, efficient lighting, and increased insulation.

PROLOGIS®

Project spotlight – L’Oréal in Muggensturm

Prologis helped its customer L’Oréal achieve carbon neutrality, both embedded and operational, at its 101,000m² build-to-suit logistics facility in **Muggensturm, Germany**.

The building is L’Oréal’s largest distribution centre in the world, with carbon-reducing features including: a 2MW solar installation, a 30,000m² green roof, low-emission building materials and LED lighting.

City Developments Limited – leader in Asia

Singapore-listed multinational real estate organisation **City Developments Ltd** (CDL) has had a dedicated sustainability department since 1995. The organisation’s value creation business model – founded on the ethos of “Conserving as We Construct” – is aligned with 14 of the 17 **SDGs** set by the UN.

CDL is:

- The first property company in Singapore to have its carbon-reduction targets validated by the Science **Based Targets initiative** (SBTi), and among

the first companies worldwide to pledge support to the **Business Ambition for 1.5°C campaign**.

- The only company in Southeast Asia and Hong Kong to be recognised on both the 2019 **CDP A List** for **corporate climate action** and **water security**.
- Working closely with the **National University of Singapore’s School of Design & Environment, Solar Energy Research Institute of Singapore (SERIS), SP Group** and **Sunseap**.

Also, the Singapore company has:

- Raised its **carbon emissions intensity reduction target** from 38% to **59%**, across its Singapore operations **by 2030** from the base year of 2007.
- Committed to using sustainable building materials **to reduce embodied carbon by 24% by 2030** for its development projects.
- Embarked last year on: its **second climate change scenario planning exercise**, with a more stringent 1.5°C warmer scenario and covering the **financial impact of both physical and transition risks**; and a **supply chain study** to identify and assess the environmental and social risks of its top suppliers and frequently used building materials.

CDL SUSTAINABILITY GOVERNANCE STRUCTURE



Project spotlight – Singapore Sustainability Academy

Designed and built by CDL in 2017, the Singapore Sustainability Academy (SSA) is the first **ground-up initiative** and **zero-energy facility in Singapore** dedicated to climate action and the environment.

The academy embraces the SDGs through an extensive **partnership involving six government agencies, and 15 industry and NGO partners**, including its operating partner, Sustainable Energy Association of Singapore.

A **BCA Green Mark Platinum building**, the SSA is the first building in Singapore to have its construc-

tion materials verified by **Nature's Barcode™** as coming from responsible sources. It has over 3,200 sq ft/300m2 of PV panels that generate an annual **energy surplus of 10,000 kWh.**

BENCHMARKING

One of the advantages of benchmarking is that it allows the shift from 'What are we going to achieve?' to 'How are we going to achieve it?'

GRESB, the leading ESG benchmark for real estate investors, announced this April that the **Net Zero Carbon Buildings Commitment** of the WorldGBC would be recognised within its reporting system.

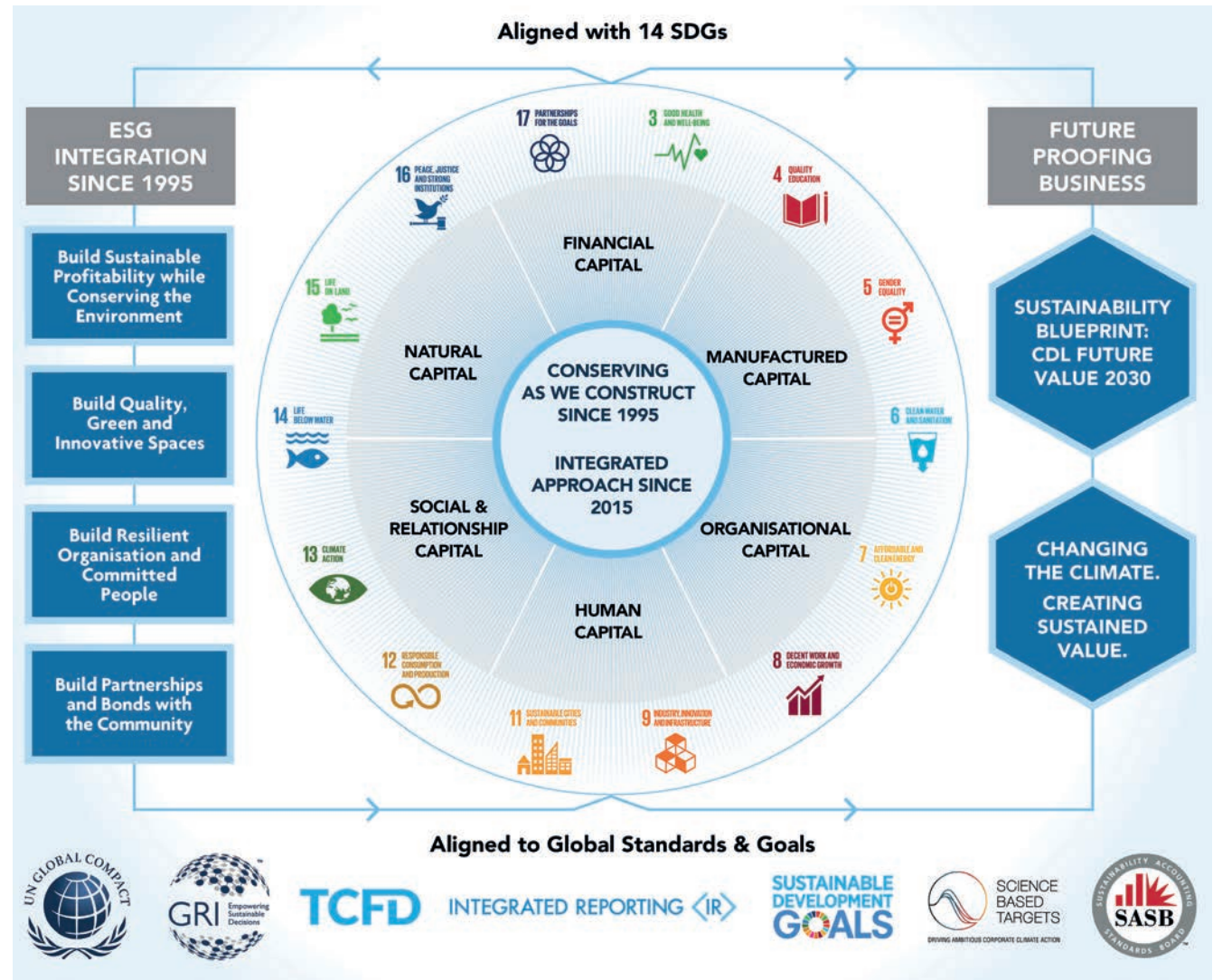
The commitment's **signatories**, which include nearly 80 businesses and organisations, agree to achieve net zero operating emissions for their new and existing buildings by 2030, and advocate for a net zero carbon built environment by 2050.

"The investor community is increasingly allocating their capital and lending to assets that are mitigating and adapting to the climate crisis. Therefore it had become increasingly logical that being a signatory to the Net Zero Carbon Buildings Commitment was reflected in the GRESB benchmark"

Alastair Mant, head of business transformation, UKGBC

Building rating systems for environmental assessment include **BREEAM** and **LEED.**

CDL VALUE CREATION MODEL



□ Nuveen Real Estate – case study

Nuveen Real Estate, one of the largest investment managers globally with US\$128bn of assets under management worldwide, has committed to reducing the energy usage of its equity portfolio by 30% by 2030, taking a 2015 baseline.

We talked with **Richard Hamilton-Gray, director of sustainability**, Nuveen Real Estate Europe:

What tools do you use to measure how funds are performing with regards to decarbonisation and climate change?

“Regarding **transitioning risk**, we assesses the energy performance of all acquisitions against the latest definitions of net zero carbon, such as those released by the Carbon Risk Real Estate Monitor (CRREM) project.

CRREM offers two platforms, with strategy-specific net zero carbon targets and which involve the bottom-up development of asset-level technical pathways.

To create these technical pathways, we leveraged our relationships with third-party consultants who have worked on pioneering government projects and have access to unique databases regarding benchmark performance of assets.

For **physical risk**, we use a range of tools including a climate change vulnerability index from **Verisk Mapelcroft**, and the **Climanomics** platform from **The Climate Service**, which provides a detailed assessment of climate-related value at risk across our global equity portfolio.”

What are the main challenges at present to measuring carbon neutral real estate strategies?

“There is currently **no common low carbon economy transition risk assessment tool** available to real estate asset owners and managers for the purposes of risk analysis and to aid in portfolio construction.

Such a tool would be very valuable in enabling investors to better understand their risk exposure and to make investment decisions accordingly. We are therefore very supportive of the work that CRREM is doing to set out the different global decarbonisation pathways for a range of real estate types.

Asset level certification (BREEAM, LEED, etc.) does not yet adequately capture transition risk vis-à-vis net zero carbon. Therefore, greater integration of such risk into these certifications would make them more meaningful.” ■

Georgina Power

is a freelance Communications Consultant and Editor. Her previous positions include: Head of Corporate Communications at McArthurGlen Group, European PR Manager at Cushman & Wakefield and a freelance journalist for EuroProperty.



Join the discussion at MIPIM 2021
– now is the time to act.

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