Pursuing a Net Zero future for all: challenges for commercial real estate

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Summary
The commercial real estate industry faces both opportunities and challenges in reaching Net Zero carbon emissions, with adoption of low-carbon strategies dependent primarily on organisational decision-making, including active engagement and cooperation between diverse owners and occupiers, tenants and landlords. Landlords are often unable or unwilling to change their building portfolios for a net zero transition

Energy use in buildings contributes approximately 30% of carbon emissions worldwide, and this amount is still climbing[1]. This sector is generally considered to be one of the most promising sectors for emissions reductions[2] due to a long list of cost-effective energy-efficient building materials, design strategies, and technologies. Industry groups like the World Green Building Council and Architecture 2030 have called for all new buildings to be Net Zero by 2030 and 100% of existing buildings to be Net Zero by 2050[1]. Even if all new buildings successfully meet this challenge, however, retrofitting all existing housing and commercial buildings to achieve Net Zero is a massive and essential undertaking.

The property industry, which provides commercial real estate (CRE) for almost all forms of work—including offices, shops, hotels, and laboratories—is a key player worldwide in achieving Net Zero. In the UK, for example, buildings are responsible for 23% of all carbon emissions (direct and indirect emissions totalling 118 $MtCO_2$/year)[3]. 30% of these emissions come from non-domestic buildings and these comprise of approximately 70% from commercial buildings and 30% from public buildings. The five largest sub-sectors in terms of energy consumption accounted for 72% of the non-domestic energy consumption. These were offices (27,620 GWh, 17%), retail (27,340 GWh, 17%), industrial (25,740 GWh, 16%), hospitality (16,980 GWh, 11%) and health (17,380 GWh, 11%)[4]. Average energy end uses differ by building type, although heating plays a significant role and is currently usually delivered by gas. The CRE industry owns, operates, and leases out the majority of these buildings and they are a fundamental building block of the economy. In the UK, CRE is responsible for 2.4 million direct and indirect jobs (1 in every 13 jobs), with an economic output of £116 billion[5].

This industry, however, has a tricky balancing act given that it needs to optimise co-benefits and minimise trade-offs across a variety of different stakeholders. It must reduce greenhouse gas emissions whilst maintaining productivity and profitability and navigating changes in regulation and stakeholder requirements. This challenge is made more complex by the need to adapt existing building systems and working practices to become more resilient to the impacts of climate change, such as how to provide low-carbon comfort inside when it is getting hotter outside. Indeed, achieving a just transition to Net Zero will require coordination, collaboration, and communication between property owners, facilities managers, occupiers, investors, and stakeholders within a variety of networks, supply chains and other relationships, often stretching beyond national borders. Making the property industry more resilient and sustainable will, however, contribute to environmental goals, economic prosperity, and social equity.

Challenges beyond low-carbon technologies

Despite the importance of the sector and the significance of its emissions, CRE has been under-researched by comparison to the domestic building sector[6]. In the UK, as elsewhere, little progress has been made in decarbonising this sector beyond the fortuitous gains of lower carbon emissions from an electricity supply which is increasingly powered by renewable energy technologies. Worldwide, only about 2000 residences and 500 commercial buildings are deemed to be Net Zero, which is less than 1% of the existing building stock[1].

There are many reasons for this lack of progress, but two stand out. Firstly, CRE buildings are extremely diverse in ownership, size, type, age and users. The UK has over 1.8 million non-residential premises, half of which were constructed before 1985[4]. There are many different types of buildings, ranging from abattoirs to zoos. Government statistics tend to break it into nine subsectors: industry, storage, offices, retail, education, community arts and leisure, health, hospitality, and emergency services. In characterising the sector, it is important to note that there are many different types of ownership and therefore decision-making structures as well as geographical coverage. CRE companies can be local, regional, national, international (several countries), or even global (many countries).

This heterogeneity makes it difficult to undertake ‘representative’ research, the results of which can be directly applied to many thousands of similar buildings. That said, many of the technologies that could be deployed to decarbonise these buildings have been studied for decades, and their application is not beyond the technical expertise that exists within the sector and its service providers. So why hasn’t more progress been made?

This leads to the second major reason, the division between owners, occupiers, and other stakeholders. Commercial buildings usually contain complex aggregations of organisations. Retrofitting existing buildings in real time and space becomes quite difficult when you need to account for diverse groups of owners, tenants, facility managers, and customers working within different decision-making regimes. Some will have the technical ability, business interest, and organisational capacity to make change; others will have less or none of these traits. Then there is the principal/agent problem: put simply, owners are reluctant to invest in measures that save energy and money for their tenants and tenants are unwilling to invest when they may not stay long enough to reap the rewards.

Potential net-zero pathways

Opportunities for reaching Net Zero in the CRE sector are both simple and complex. On the one hand, the technical options are simple: reduce energy use, predominantly by increasing energy efficiency, and displace fossil fuels with carbon-free sources. There are opportunities in digitalisation and data analysis that can help companies measure and manage their portfolios more effectively. There is also new thinking in lease language, such as 'green leases' that have the goal of helping landlords and tenants cooperate for environmental benefits[7,8]. But cooperation will be easiest where like-minded groups are working together.

Drivers for Net Zero include UNFCCC commitments to the Paris Agreement in 2015, and the UK has made a binding commitment to reach Net Zero by 2050. Although legislation has not yet been developed for the CRE industry, the UK Department for Business, Energy, and Industrial Strategy (BEIS) and property industry groups are preparing for the challenge that is to come, building on existing legislation such as Energy Performance Certificates and Minimum Energy Efficiency Standards[9,10]. Energy benchmarking for operational energy use to encourage both energy management opportunities and efficiency improvements is extremely likely to come into force in the UK, first for offices and then for other sectors. Together, these policies set the scene for regulating building design, retrofitting, and use.

Many companies are already taking action on Net Zero. Signatories to the World Green Building Council's Net Zero Carbon Building Commitment include 109 companies and organisations, 26 cities, and 6 states or regions[11], A recent report for HSBC on Net Zero in CRE, on which this commentary is based, does a deep dive into the work of three UK CRE companies and synthesises a set of 10 guidelines for companies starting their Net Zero journey[12] (see Figure 1).

These guidelines are developed for companies in the CRE industry who are 'willing and able' – i.e. organisations that have sufficient access to energy and buildings data as well as resources (both financial and human) to make Net-Zero commitments and changes. There are, however, many organisations that do not these benefits access data and resources, we need to identify additional barriers to facilitate a just net-zero transition for the CRE industry.

Pursuing Net Zero in CRE for all

Previous research into energy management in organisations[13,14] developed several frameworks for thinking about what non-domestic buildings look like on the ground, including some of the organisational and ownership characteristics that influence decision-making with respect to energy consumption and carbon emissions. Two market segmentation models, one focused on ownership and informational infrastructure (Figure 2A), the other on collaboration opportunities (Figure 2B) are proposed to help government and the property industry take the necessary and critical next steps to help the sector as a whole move toward Net Zero.

Understanding ownership, usership, and informational infrastructure. Policies are often based on technical models of the building stock. Such models assume perfect information and do not recognise the difference between owner-occupied and leased space. Within leased space, there are tenants and landlords. There are therefore (at least) three kinds of stakeholder types in the market: owner-occupiers, landlords, and tenants, each of which is subject to a different kind of legal infrastructure, which can affect the flow of information between them. Figure 2A conceptualises the market by these different forms of ownership and uses the concepts of "data rich" and "data poor" to identify and map energy-related information infrastructure, as well as barriers to and opportunities for change[13,14].

An ideal "data rich" organisation, i.e. a member of the "capable" group of CRE businesses, is able to gather, analyse, and use energy consumption data in real time to manage its premises in perfect harmony with its core strategy and central concerns. The reality is somewhat messier than the ideal. Real organisations fitting this category will have lots of data but are still learning how best to organise and analyse it. Most of the companies active in Net Zero conversations are, for example, data rich owner-occupiers (e.g., Google) and data rich building landlords.

In contrast, a "data poor" organisation is one without access to real-time energy consumption data and lacking the in-house analytical capacity to measure, map, and understand energy issues. Many CRE businesses currently fall into this "less capable" group, i.e. they are still in the very early stages of grappling with their energy, environmental, and building data.

Together, these dimensions show that there is not just one kind of CRE company operating in the market, rather, there are at least six. The data rich categories are the easiest to imagine changing in positive ways; the data poor face greater challenges.

Collaboration Opportunities. For the CRE industry, it may also be useful to consider the extent to which landlords and tenants have high or low motivation to pursue Net Zero at the current time (see **Error! Reference source not found.**). Previous research has explored these quadrants in the UK, Sweden, and Australia[15]. A 'collective action' scenario will only exist where *both* tenants and landlords are looking for Net Zero opportunities. A 'collective inaction' or 'business as usual' scenario will persist if neither the tenant and nor the landlord seek Net Zero opportunities. If one party has low motivation to engage in environmental change and the other has high motivation, there will be either 'landlord-led green leasing' or 'tenant-led green leasing'.

To reap the full carbon reduction benefits of Net Zero opportunities in the non-domestic building stock, Net Zero practices need to reach a broader group of stakeholders, particularly the data poor (usually smaller scale owners and occupiers) and also the businesses—both tenants and landlords—who have yet to embrace Net Zero.

Basic typologies such as those presented in Figure 2 could help Government further understand, define and categorise policy assumptions about the nature and distribution of CRE firms and organisations with respect to energy and carbon issues. Realistically, moving the CRE market as a whole toward Net Zero goals will neither be cheap nor easy. But the social, environmental, and financial risk benefits of mitigating the volatile impacts of climate change are increasingly important to investors, occupiers, government, and the CRE industry itself.

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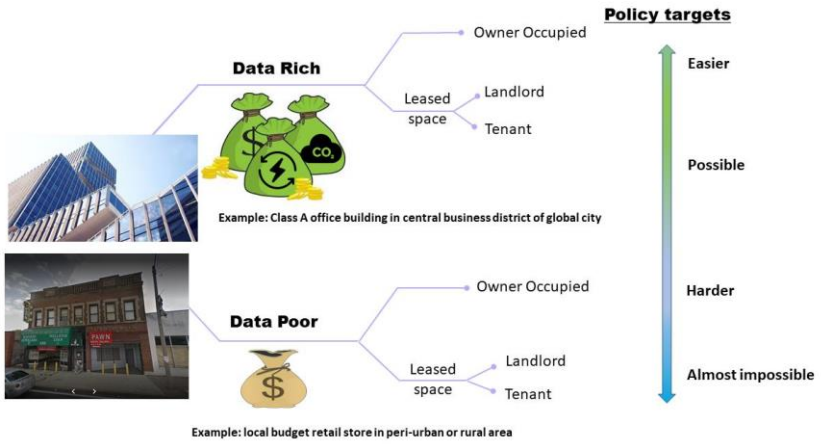
Figure 1. **Top 10 guidelines for 'willing and able' companies to tailor a Net Zero future**. Source: HSBC (2021)[12]

Figure 2. **Segmentation models to visualise diversity in CRE: beyond the willing and able.** (A) Policy implications of diversity in ownership and informational infrastructure. Source: Janda et al.[13,14]. (B) Effects of Landlord/Tenant Environmental Alignment. Source: Janda et al.[15]

A. Diversity in informational infrastructure and ownership: policy implications



B. Effects of Landlord/Tenant Environmental Alignment