

From Blueprint to Workplace:

Enabling Sustainability in London's Office Buildings

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Undertaken in partnership with the Business and Sustainability MSc at UCL (University College London), this research paper examines the relationship between ‘actors’ over a building’s lifecycle and how they shape sustainability outcomes in the London commercial real estate system.

The principal author of this work is Kate Ma. The work was completed for their Business and Sustainability Capstone Project, which was part of their degree studies on the Business and Sustainability MSc at UCL. The submission title was: ‘Shaping Sustainability: A Systems Perspective of Sustainability Outcomes Across the Office Building Lifecycle in the London Commercial Real Estate System.’

London’s commercial real estate environment has undergone significant transformation in the past century and continues to evolve rapidly.

Office buildings are increasingly seen as a strategic asset that can be leveraged to attract and retain ‘knowledge workers’ and promote employee well-being through sustainable design. To accommodate evolving employee expectations, businesses are increasingly prioritising sustainability as a core design and investment strategy.

Simultaneously, commercial buildings play a critical role in achieving the UK’s climate goals, with the UK Green Building Council estimating that they contribute 23% to overall built environment carbon emissions.

This research, undertaken with UCL, seeks to answer the question:

What actors and relationships constitute the London commercial real estate system and how do these relationships shape sustainability outcomes across the office building lifecycle?

The data for this research was collected through 16 semi-structured interviews with industry professionals (including asset managers, architects, contractors, developers, project managers, and sustainability consultants), five site visits to office buildings in Mayfair and Canary Wharf, and archival data on sustainability credentials and the London commercial real estate market. Please refer to the appendix at the end of this report for an explanation of the theoretical framework that underpins the research.

In answering the research question, this report explores two main dynamics that influence sustainability outcomes:

1. relational dynamics between humans and non-human factors; and
2. dynamics that occur over a building’s lifecycle.

It highlights several barriers to achieving sustainability outcomes in office buildings. Importantly, these barriers are not fixed, and this report offers actionable, practical steps to transform these into enablers.

The recommendations in the report do not require costly technological interventions or major policy shifts, but instead focus on:

- improved information sharing,
- design changes; and
- shifts in mindset across the industry.

**London's commercial
real estate system**

‘human and non-human actors are entangled in a wider network, with sustainability considerations embedded throughout’

A wide array of human and non-human actors contribute to the London commercial real estate system. Non-human actors are important and have influence on decisions and outcomes, but do not have the ability to make choices or act on their own.

Actors can operate at four different levels: micro, meso, macro and meta.

Figure 1 provides examples of human and non-human actors at each level.

However, it is complex and interconnected, and some actors may apply to more than one level. For instance, occupiers (both at corporate level and individual employees) may operate at a micro or meso level, and industry associations may operate at macro or meta level.

Associations between actors

Actors don't act in isolation, but through interdependent interactions. For instance, market data may influence decision-making of human actors through market insights, and green lease clauses can be used by landlords to promote sustainable behaviours in occupiers.

A few of these associations shows how human and non-human actors are entangled in a wider network, with sustainability considerations embedded throughout. The development of a building - spanning plan & design, build, and use - requires the engagement of different actors at each stage.

Figure 1:
Human and non-human actors involved in the London commercial real estate system

Level (smallest to largest)	Relevant scale	Human actor examples	Non-human actor examples
Micro	Single workspace	Contractors; interior designers	Energy sources; leases and green lease clauses
Meso	Building or neighbourhood	Developers; investors; property managers	Planning policy (local); heritage considerations; building materials
Macro	London	Industry associations	Planning policy (city); market data
Meta	UK, Europe, or global	Industry associations	National policy; geopolitics; global economy

A vertical garden system is mounted on a wall with vertical wood slats. The garden consists of several rectangular planters of different sizes, each filled with various green plants, including ferns and leafy greens. The plants are arranged in a way that they appear to be growing out of the wall. The overall scene is a lush, green wall of vegetation.

Sustainability outcomes over an office building's lifecycle



This section identifies the practices that help or hinder sustainability outcomes for an individual office building over its lifecycle.

Relational dynamics

A building's sustainability depends on the dynamic relationship between human and non-human actors. Sustainability outcomes only happen when they both act as enablers, meaning they actively help to achieve, rather than hinder, a sustainable outcome.

The roles of 'enabler' or 'barrier' are not fixed; they can change with adjustments to process, design, and intent. Therefore, identifying these leverage points can transform barriers into enablers for better sustainability outcomes.

Observation 1:

Both human and non-human actors need to enable sustainability outcomes

A common example is the installation of cycle storage, showers, and lockers (non-human actors) to enable occupants (human actors) to choose healthy and sustainable commute options to work.

These features can deliver their intended benefit if they are well-maintained by facilities management and utilised frequently by tenants, and underscore the need to view sustainability as an ongoing practice.

Observation 2:

Physical and material constraints as barriers

There is a growing trend to refurbish underperforming office buildings. Existing non-human elements such as facades, windows, ventilation systems, and risers can sometimes pose constraints on intervention.

Heritage restrictions are a prime example. For instance, most of Mayfair is in a conservation area and buildings in that neighbourhood are subject to restrictions, even if a specific building itself is not listed. A common issue is that heritage restrictions often prevent the replacement of original, single glazed windows with new triple glazed alternatives, despite

the poor performance of single-pane glass for thermal comfort and noise reduction. Additionally, retrofitting heating and cooling systems from high-temperature gas to low-temperature heat pumps requires both physical space and detailed technical strategies.

Point(s) of leverage: Rather than thinking of physical and material constraints as immovable roadblocks, a point of leverage would be to change mindsets by reframing these as 'healthy constraints', e.g. using creativity and resourcefulness to retain original materials wherever possible.



Observation 3:

Green lease clauses as barriers

Barriers can arise from disputes over green lease clauses. Intended to align landlord-tenant interests around sustainability, these clauses often become points of negotiation. The question is often around cost and who pays for what. For example, one source of tension might be around energy sources, as tenants may not want to commit to using purely green energy if it is going to be more expensive.

Another sticking point might be around control. One landlord noted in an interview that:

‘any lease that has green lease clauses in it, a tenant’s going to negotiate...because it puts an **obligation on them to do things that they might not want to do.**’

Green lease clauses might also raise questions about trust and whether if what is included is done so in good faith, as exemplified by the following quote from a tenant representative:

‘there is a suspicion that the landlord might be using the green clauses as a way of upgrading the building, carrying out **improvements to the building and charging the tenant for the benefit of those improvements through the service charge.**’

Point(s) of leverage: The efficacy of green lease clauses depends on cooperation, open communication, and trust. Currently, it appears that negotiations are centred on how to reduce or shift financial obligations.

If the goals were reframed such that the stakeholders saw the building’s performance as a source of shared value to be optimised, there could be greater alignment on how to share the benefits of improved sustainability performance.



Observation 4:

Recycled materials as barriers

Recycled products and the perception of their quality or worth is currently a barrier to sustainability outcomes. An asset manager noted, 'if we tell certain people... that the products are recycled, that doesn't scream quality to them. It screams savings'. Supply is also irregular, described by a fit-out contractor as 'serendipitous'.

Point(s) of leverage: Three key leverage points could include:

- Promoting the use of modular components to facilitate disassembly and reuse
- Developing digital marketplaces to match supply and demand for 'second-life' materials
- Expanding educational initiatives on circular economy principles to drive broader adoption

Temporal dynamics

Buildings take years to design and construct, but design choices made early in a project can have lasting consequences. When sustainability is embedded from the outset, it is far easier to integrate cost-effective and technically robust solutions.

There are two key issues at play: the delay between a project's design phase and its operational performance, and the point at which different stakeholders are brought into the conversation.

Observation 5:

Gap between designed and operational performance

Sustainability outcomes span all phases of a building's lifecycle. Developers, designers, and consultants primarily drive decisions in the design and construction phases. The building is then handed over to occupants and facility managers, who primarily drive decisions when it is operational. Effective coordination between these stages is crucial to ensure the building operates as designed and achieves its sustainability potential.

Sustainability consultants refer to a 'performance gap' between expectations and reality. This is evidenced by the comments of a project manager who stated that

how occupants behave during occupation may differ from the assumptions that consultants and contractors made during the design phase.

Points of leverage:

- First, at the design phase, building systems should be kept simple and intuitive for occupants to operate and maintain.
- Second, ensuring that information is documented and shared properly is critical.
- Third, feedback loops can be used more effectively to identify why intended performance is not achieved in practice.

- Finally, from a cultural change perspective, a solution lies in redefining roles and responsibilities of facilities managers and landlords from operators of a building to optimisers.

'Sustainability consultants refer to a "performance gap" between expectations and reality'

Observation 6:

Timing of when actors enter into the conversation matters

The timing of tenant engagement plays a role in shaping sustainability outcomes. One example of redevelopment involved a tenant signing a lease early in the process and asking the developer to 'omit a lot of work because they wanted to do it themselves'. This approach avoided installing systems or finishes that would later be removed, reducing both cost and material waste.

When a space is not pre-let and no tenant input is available, developers often complete a Cat A fit-out to make the space marketable. This involves basic infrastructure and finishes. Several interviews criticised

this practice as tenants often undo this work, resulting in unnecessary waste.

Point(s) of leverage: The timing of tenant engagement is crucial for sustainability because it bridges the design and use phases. Early collaboration allows tenants to influence a building's design, ensuring it performs efficiently in practice and minimising waste.

Since pre-letting is not always possible, a key leverage point is to change industry norms. Rethinking the standard Cat A fit-out to favour more minimal, shell-and-core spaces would reset market expectations and significantly reduce waste.



Recommendations

The following recommendations are based on the current barriers to sustainability identified in this research, and the corresponding points of leverage to turn them into enablers of sustainability outcomes.

Recommendation 1:

Leverage process changes

Process changes include updating feedback loops so that stakeholders can learn from previous actions. This would help close the gap between designed and operational performance. Conducting more post-occupancy studies to observe how occupants interact with building systems would allow sustainability consultants, designers, and project managers to identify why intended performance is not achieved in practice.

Lessons from these studies could inform subsequent projects and be shared with landlords, facility managers, and occupiers, enabling the industry to convert recurring barriers into enablers of better building performance.

Recommendation 2:

Leverage design changes

Design changes are not about physical building design, but about redesigning the London commercial real estate system itself with updated organisational goals and industry norms. For example, reducing or rethinking standard CAT A fit-outs could help minimise material waste when tenants later fit out spaces to their own specifications.

Establishing industry norms that favour minimal fit-out, either by delivering shell-and-core space or only fitting out a small portion of the building, would help reset market expectations and reduce unnecessary demolition and waste.

Other design changes could enhance collaboration and information sharing between actors who are currently siloed, for example, tenants and landlords, developers and contractors, and facilities managers. Bringing these stakeholders together on the same side of the table can strengthen mutual commitment to sustainability and enhance building performance.



Recommendation 3:

Leverage intent changes

Finally, intent changes offer the greatest potential for systemic impact. These involve shifting mindsets, such as viewing physical and material constraints as healthy constraints rather than insurmountable barriers.

A major component is redefining the roles and responsibilities of landlords and facilities managers from simply operators of a building to optimisers of sustainability outcomes.

By shifting mindsets, stakeholders become more willing to embrace collaboration, prioritise long-term sustainability over short-term convenience, and invest in the knowledge, skills, and practices necessary to achieve consistent, high-performing outcomes across the building lifecycle.



Conclusion

Sustainability in London's commercial office buildings is shaped by complex interactions among diverse human and non-human actors across multiple levels, from individual workspaces to global influences.

This study reinforces the importance of thinking about sustainability over a building's lifecycle and the need to consider both environmental and social elements. Instead of sustainability being purely a design outcome, sustainability outcomes are the result of the entanglement of varied actors with various levels of agency to drive change over time, reduce core challenges and close the performance gap.

The identified barriers are changeable, offering a path for the London commercial real estate industry to achieve its ambitious sustainability goals.

By focusing on practical, actionable changes in process, design, and intent, London's commercial real estate sector can transform barriers into opportunities and make meaningful progress towards its sustainability goals.

The path forward requires collaboration, transparency, and a willingness to challenge established practices, ensuring that sustainability becomes an integral part of every office building's story.



Appendix

Theoretical framework

This research incorporates systems perspectives and sociological theory.

Approaching research from a systems perspective means thinking holistically, looking at the entire network of relationships rather than isolated parts. This is critical for complex issues like sustainability, which involves interconnected economic, social, and environmental factors.

To better understand these systems, the research also uses the Actor-Network Theory (ANT) which views human and non-human actors (like building materials and technology) as equally

important, tracing their associations to understand how networks form and create outcomes.

Similarly, sociomateriality focuses on how the social and material are intertwined. This can be applied to environments such as office buildings, where both social and material elements must be considered together to fully understand how sustainability outcomes are produced.

By using these theories, the research can fully explore the complexities of sustainability in the built environment across a building's entire lifecycle.

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If you have any questions or comments about the information in this report, please get in touch.

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