



ABSTRACT

This article situates the proposed Urban Redevelopment Act (URA) within the context of national net zero commitments.

The URA intends to streamline laws around urban redevelopment for stratified buildings at the federal level. As this may intensify urban renewal projects, we need to be cautious of its environmental impact.

The article emphasises the importance of adopting sustainable practices in urban renewal by encouraging designs that focus on extending the life cycle of existing infrastructure and considering embodied carbon in construction.

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BUILDING BACK SMARTER: PRIORITISING NET ZERO GOALS IN URBAN RENEWAL

by **Alia Salleh**

Urban renewal has been identified as one of the goals (Goal 6) in the Kuala Lumpur Structure Plan 2040, with the intention of implementing area improvement programmes such as redeveloping selected areas and conserving certain old buildings, to make the city more vibrant and attractive in the long run (DBKL, 2023). A well-known example would be the regeneration of the Battersea Power Station and surrounding areas, which transformed a decommissioned power plant into a commercial area. Previously derelict, such investment opened up the area for both work and play.

The Urban Redevelopment Act (URA), scheduled to be tabled in Parliament as early as November 2024 (The Edge Malaysia, 2024), is expected to improve Malaysia's approach to urban renewal as it intends to streamline the laws governing urban redevelopment for stratified buildings at the federal level. Urban redevelopment is one type of urban renewal that involves a holistic change of the existing physical structure through demolition and rebuilding (PLANMalaysia, 2023). Urban renewal also include efforts like revitalisation and conservation.

The main hurdle for redevelopment in Malaysia is the requirement to obtain 100% agreement from strata title owners, as stipulated under Section 57 of the Strata Titles Act 1985 (Act 318), something considered a monumental task. It has been blamed for causing dilapidated housing complexes in both the public and private sectors, as this

requirement proves too stringent, making redevelopment near impossible. It has also raised issues as another act, the Land Acquisition Act 1960, has been used in several cases to force compulsory acquisitions for urban redevelopments, resulting in legal battles and protests by affected residents. Therefore, the proposed URA is expected to positively impact Malaysia's future development by ensuring a proper process for redeveloping idle sites.

With this impending policy change, urban redevelopment is likely to intensify in the coming years, as the framework simplifies land reacquisition for commercial use. While the proposal is highly anticipated and hotly debated, the discourse has centred on the appropriate consent threshold (previously 100%) and governance-related issues. What this author believes is missing from the discussion, however, is the impact of intensifying redevelopment activities on greenhouse gas (GHG) emissions.

This article attempts to situate Malaysia's urban redevelopment activities within the national ambition to reduce its GHG emissions by 45% by 2030 (Malaysia, 2021) and Kuala Lumpur's aspiration to reduce carbon emission intensity of GDP by up to 70% by 2030 (DBKL, 2018). It emphasises the importance of factoring life cycle costs when making redevelopment decisions in order to ensure sustainability goals are achieved.

Urban Redevelopment is Set to Intensify in Malaysia with A Streamlined Legal Framework

According to *Jabatan Perancangan Bandar dan Desa* (PLANMalaysia)'s guidelines, there are four categories of urban renewal in Malaysia (PLANMalaysia, 2023):

- **Urban redevelopment:** major structural changes through demolition and rebuilding.
- **Urban regeneration:** the recovery of idle and abandoned sites through the construction of new buildings without altering the features of the area.
- **Urban revitalisation:** area rejuvenation through repairs, upgrades, and beautification.
- **Urban conservation:** area conservation for heritage sites that focuses on preserving historical values.

Urban Redevelopment: Redevelopment of Flat Empat Tingkat, Kerinci, into commercial space, and residents rehoused



Photo by the author, June 2022

Urban Regeneration: Regeneration of abandoned Battersea Power Station into a commercial area



Photo by the author, March 2022

Urban Revitalisation: A former post office headquarter in Jakarta converted into a commercial and event space, Post Bloc;



Photo by the author, September 2023

Urban Conservation: Conservation of a traditional Malay house in Kampung Baru;



Photo by the author, August 2024

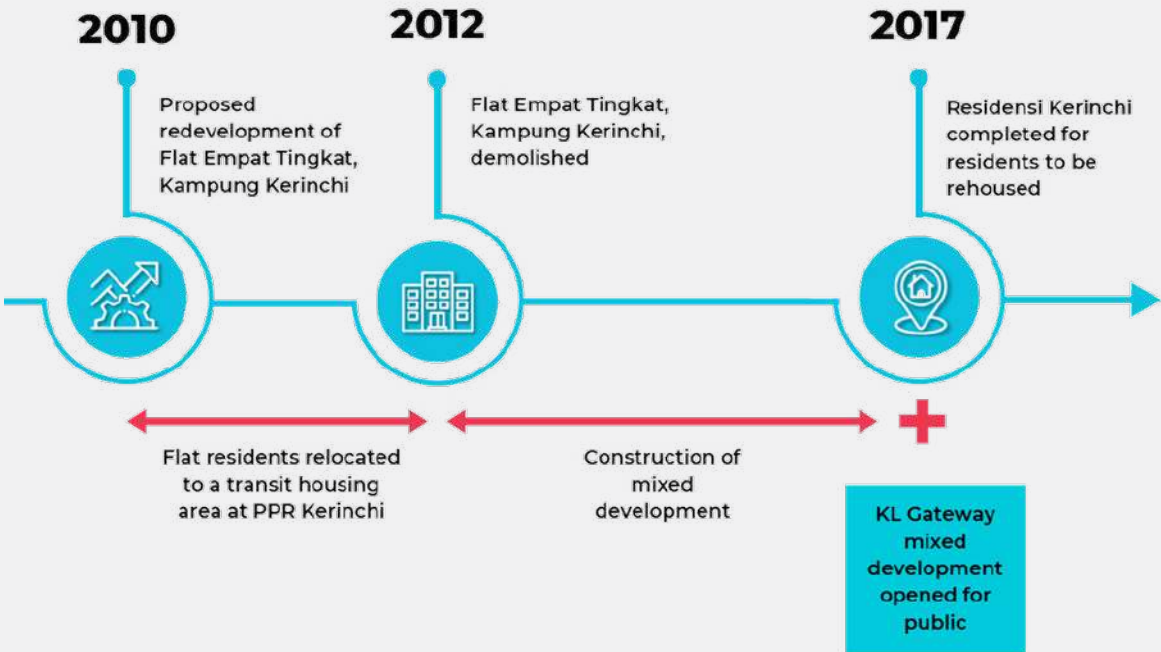
The most common approach to urban renewal in Kuala Lumpur involves demolishing and rebuilding. In this model, a site is first acquired, then the existing buildings on that plot of land are demolished, and replaced with new structures. This process is motivated by the opportunity to increase density on valuable land through a higher plot ratio, thereby unlocking its ground rent potential. It also enables builders to utilise contemporary building techniques and materials, as well as apply designs better suited for the site's new use.

A notable example of urban redevelopment in Kuala Lumpur is the demolition of low-density (typically four-storey) 'walk-up flats' built in the 1970s and 1980s, where their residents are rehoused in apartments with higher density and modern amenities. Examples include the

Kerinci redevelopment (2012-2015), Razak Mansion (2014-2017), and Datum Jelatek (2010-2022). As can be observed, there are significant time gaps between the start and end of these projects as negotiation, rehousing, demolition, and new construction all require time. There are also smaller-scale redevelopments where private residences, such as old bungalows, are demolished and replaced with modern designs. These kinds of redevelopments are relatively easier to carry out because they do not involve multiple owners.

The main proposal by the URA is to lower the consent threshold from 100% to no less than 80% (The Edge Malaysia, 2024). Based on public consultation documents, such a threshold is proposed to be subject to only buildings aged 30 years and older. A possibly lower threshold is

Figure 1: Example of timeline for Kampung Kerinci Redevelopment



Source: PNBRI Analysis

proposed for abandoned projects. As the current Malaysian building standards, namely the *Standard Perumahan Kebangsaan*, do not explicitly specify a required lifespan for new constructions, this may create unintended new 'mental threshold' among developers that allows them to recycle and redevelop land as frequently as every 30 years. This raises a potential moral hazard: if buildings can be renewed every 30 years, would developers be motivated to build longer-lasting structures?

Despite current standards, subpar building quality has already led to dissatisfaction among buyers in a number of cases. According to the Malaysian Institute of Architects, most buildings have a lifespan of 50 years or longer with strict maintenance (PAM, 2024). However, maintenance is

frequently overlooked in Malaysia. Setting a lower standard for redevelopment, such as the proposed reduction in residential consent thresholds, may perpetuate this culture of lack of maintenance among dwellers and building managers in Malaysia. Ley & Teo (2014) observe a similar parallel in Hong Kong, where buildings are designed to last 50 years, but poor construction and maintenance often lead to accelerated deterioration, making a 20-year-old building appear old and requiring redevelopment or extensive refurbishment.

Redevelopment in the Context of Malaysia's Net Zero Ambitions

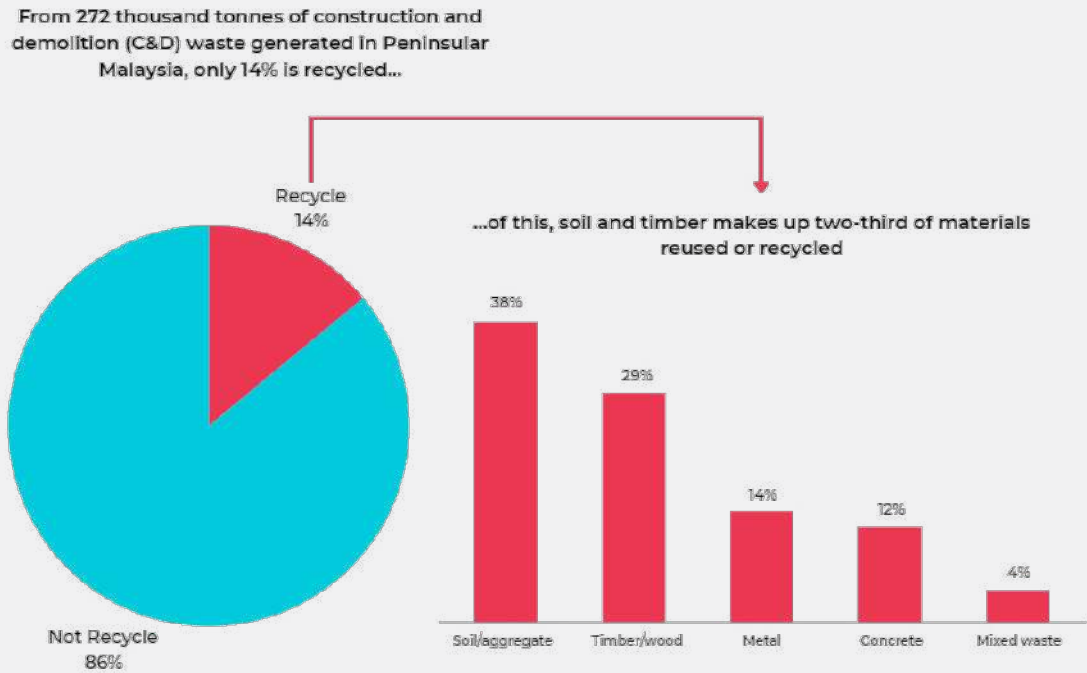
Our net-zero ambition compels us to be more stringent in our approach to urban renewal. The construction sector contributes 4% to Malaysia's GDP (MoE, 2024) and a significant 24% to the national GHG emissions (CIDB, 2020). The average GHG emissions calculated include "cradle-to-site" emissions from material production, transportation, and construction site activities. It addresses energy consumption in the construction industry, industrial processes for construction materials, and the building's electricity consumption during the operational phase.

The calculation of GHG emissions in construction needs to include both embodied carbon and embodied energy to reflect its true carbon and energy footprint. *Embodied carbon*, or emissions associated with the extraction and manufacture of building materials, accounts for approximately 90% of GHG emissions in construction (CIDB, 2020). The remaining emissions stem from construction site activities (7%) and logistics (3%). The production of bricks and steel generates massive amounts of carbon dioxide, with cement alone responsible for 8% of global emissions.

Furthermore, energy-saving efforts in existing buildings only consider stationary energy use, such as electricity and gas consumption while the building is in operation. Little attention is given to *embodied energy*, namely the energy used to produce the building materials used for construction and maintenance, leading to project costing that do not fully account for the carbon emissions and energy use involved.

The consideration of embodied carbon is especially important in Malaysia's "demolish-then-reconstruct" approach, which involves two rounds of waste generation and subsequent carbon emissions, namely demolition and reconstruction. As high as 74% of construction and demolition (C&D) waste generated in Peninsular Malaysia is mixed waste, which is harder to recycle. Only 14% of C&D waste is recycled, with soil, aggregates, and timber accounting for 67% of the total, while mixed waste accounts for only 4% of recyclable waste (Figure 2). This significant loss of materials through waste suggests that demolition is highly wasteful and contributes to high emissions.

Figure 2: Construction and demolition (C&D) waste in Peninsular Malaysia (CIDB, 2018, as cited in Kathiravale et al., 2020)



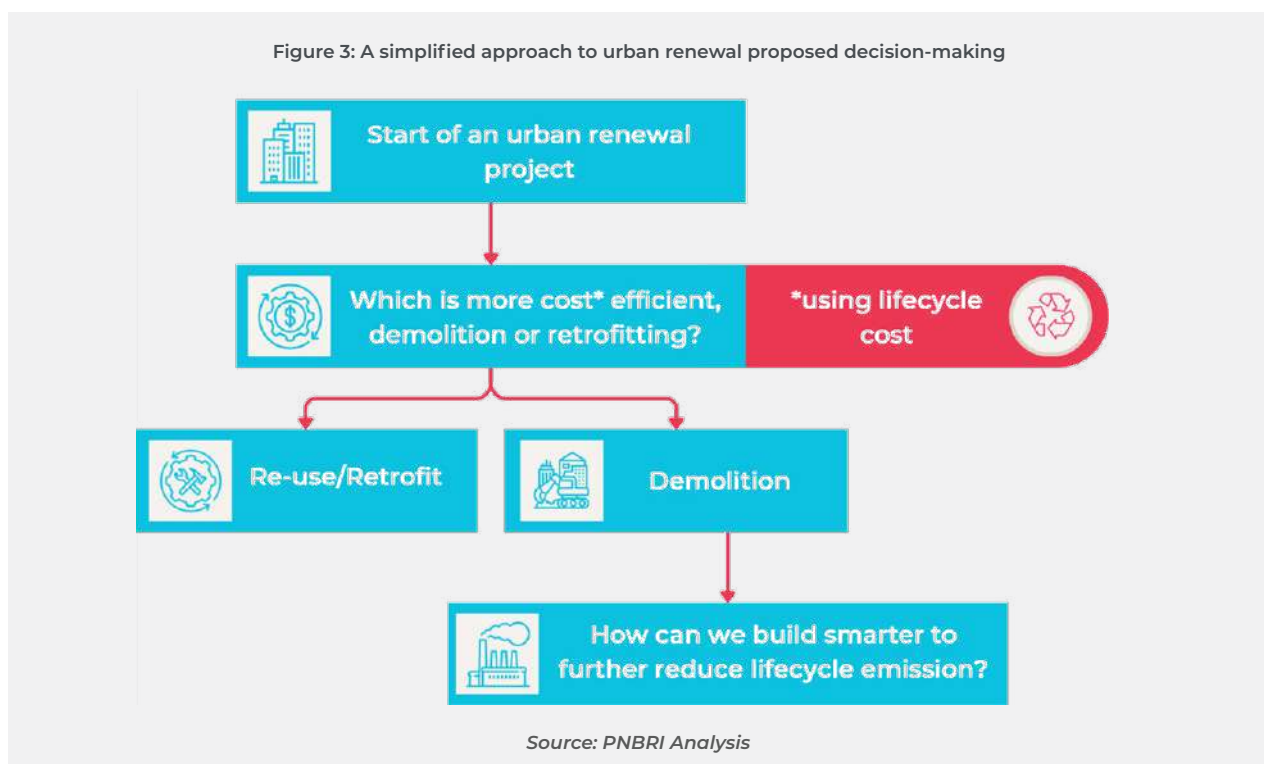
Source: Kathiravale et al., 2020

Sustainable Approach to Urban Renewal

At the outset of an urban renewal project, the main question will be: Which approach is more cost effective?

Admittedly, demolition and reconstruction may seem more straightforward, offering opportunities to maximise land use, employ modern materials, and meet current market demands. However, not all cost components accurately reflect the total costs incurred during the building's entire life cycle. Currently, the "demolition-and-reconstruction" costing includes only the direct costs of real estate acquisition, demolition, and rebuilding.

If we were to adopt a life cycle assessment (LCA), less explicit costs become more evident as the LCA considers the full lifecycle of an urban renewal, from its raw materials manufacturing to end-life disposal, to reflect its true impact on the environment and society. This allows for a fairer and more objective cost comparison between the "demolish-then-reconstruct" approach and the retrofitting approaches (Figure 3).



The direct alternative to the demolition-then-rebuilding approach is the retrofitting approach, in which existing structures are upgraded or modified to overcome shortcomings. While reusing and retrofitting may appear more expensive upfront, they can lead to significant long-term savings. This is a more popular measure in the UK and the EU, which are facing the challenge of improving the energy efficiency of their homes. While the "demolition-then-reconstruct" approach may be justified by prospects of reducing long-term emissions through newly built energy-efficient buildings, it is not the favoured approach.

The UK's biggest grassroots movement, Insulate Britain, has put significant pressure on the government to support retrofitting social housing rather than rebuilding them, as part of the Net Zero transition plan (The Guardian, 2022). In an important House of Commons Environmental Audit Committee report presented to the UK Parliament, among the key recommendations are (i) greater monitoring and

controlling of *embodied carbon* in construction, and (ii) prioritisation of "retrofit-and-reuse" approaches on existing buildings, where practicable (House of Commons, 2022). On the other hand, the EU has embarked on an approach termed "Deep Renovation" to improve energy efficiency of buildings and lower emissions by renovating rather than rebuilding. "Deep renovation" refers to major building renovations that can achieve substantial energy savings.

If demolition is still the best choice, developers should at least be guided by life cycle costs. This encourages more careful thinking about design, material selection, and construction technologies that maximise material recycling at the end of the building's life cycle. This circular approach has become common in manufacturing of goods, with the product's end-of-life stage being considered during product development stage. Making waste reduction a mandatory part of the design process in urban redevelopment projects could drive more sustainable practices.

Benefits of a Life Cycle Approach in Urban Redevelopment

The life cycle of a building should be considered at the start of an urban redevelopment project, even if the “demolish-then-reconstruct” approach is preferred. **Firstly, thinking in terms of the life cycle of a building could potentially force decision makers to minimise waste and maximise recycling potential of building materials, as discussed earlier.**

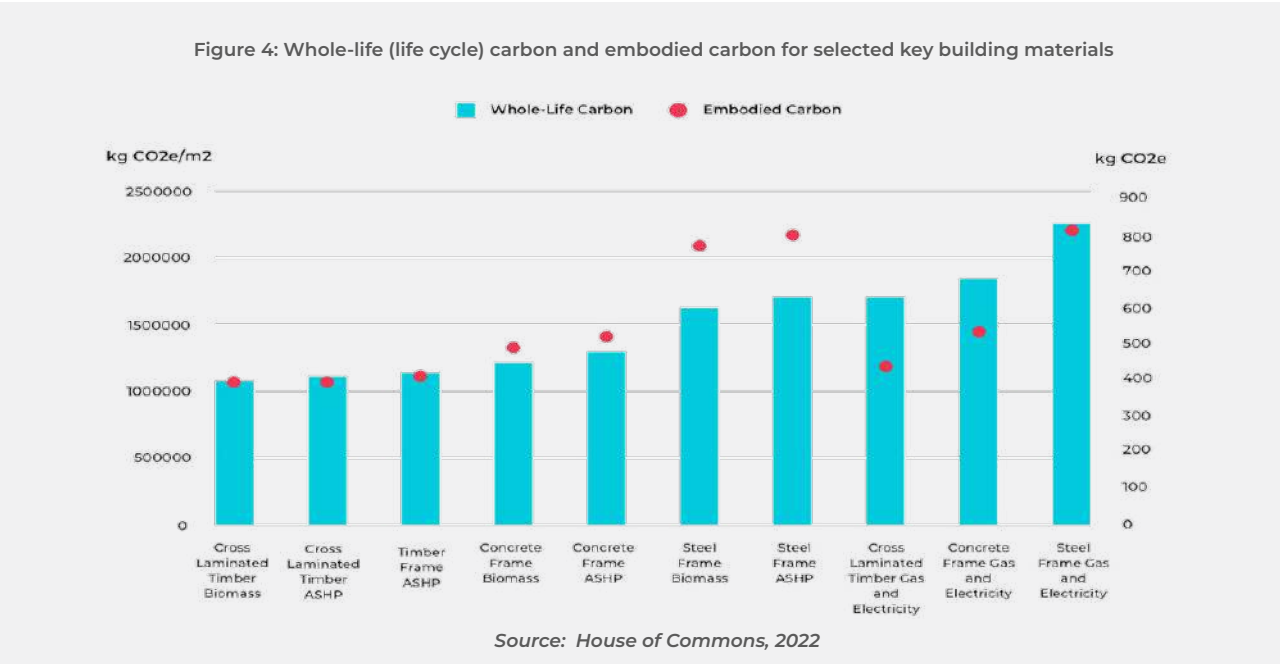
Secondly, the goal of lowering a building's life cycle emissions may encourage the use of renewable building materials. Renewable materials, such as timber, are gaining popularity due to their lower life cycle costs than steel and concrete. A notable example is the Japan National Stadium by Kengo Kuma, which was built for the 2020 Tokyo Olympics. Completed in 2019, it features cedar wood louvres on its façade as well as steel-and-laminated wood roof structure (KKAA, 2019). However, while timber as a material is renewable – trees regrow – the increased use of this material needs to be accompanied by improved timber industry practices, which are currently under fire due to issues such as land encroachment and poor labour practices (Ratnasingam et al., 2022).

Apart from this, understanding the true cost of redevelopment from a life cycle standpoint encourages developers and estate managers to prioritise upkeep and maintenance from the beginning. Decision makers tend to make different decisions when considering between a structure that is designed to last 100 years compared to one that can be torn down in 30 years, such as material choices, ease of maintenance, and the overall construction approach.

Finally, a life cycle approach would also encourage designers to take into account building designs that adapt to our tropical climate and reduce our reliance on air conditioning

throughout the building's life cycle. In our Malaysian tropical climate, the challenge we face is not heating buildings, but cooling them down. In addition, with more extreme weather that may cause disasters such as flash floods, buildings must be adequately waterproofed to avoid dampness, which accelerates deterioration. This includes both (i) physical upgrades such as ventilation improvements, the application of motion sensors for lighting, the installation of rainwater harvesting systems and solar panels, and fire safety upgrades, and (ii) managerial upgrades to improve the way the building is used and maintained, which involves behavioural changes (Mohd-Rahim et al., 2017; Tang, 2024).

There is already substantial research on the cost of building materials and their embedded carbon, along with tools that enable developers to incorporate life cycle costs into project budgeting. Malaysia has developed expertise in quantifying life cycle emissions in construction through the Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST). This tool provides a comprehensive assessment of building emissions, including embodied carbon, and assigns a rating. However, its implementation is voluntary and lacks enforcement power to ensure emissions are reduced (Abdullah, 2017). Integrating this tool into the URA could help us strike a balance between developmental goals and our sustainability commitments. Additionally, the exploration of carbon pricing and carbon taxes in Malaysia would establish clear mechanisms to correctly measure life cycle costs at market rates. us strike a balance between developmental goals and sustainability commitments. Additionally, the exploration of carbon pricing and carbon taxes in Malaysia would establish clear mechanisms for accurately measuring life cycle costs at market rates.



Reflecting on Our Way Forward

Redevelopment projects are frequently undertaken on a case-by-case basis, as and when opportunities arise to match the demand for such buildings. However, the government does take a strategic interest in managing redevelopment efforts. The Kuala Lumpur Strategic Plan 2040, for example, identified 139 sites for urban rejuvenation and renewal (DBKL, 2023). However, a clear guideline for emissions reduction is missing, and is much needed to supplement this strategic vision. Stricter regulations over demolition permits are also necessary to encourage consideration of the total life cycle costs of buildings.

Lowering the consent threshold for redevelopment will expedite urban renewal, allowing long-idle sites to see a new breath of life. However, we should be cognisant of the environmental challenges in redevelopment, as not to undermine our national and city-level sustainability commitments. If developers are incentivised to recycle land every 30 years and are easily permitted to do so, this could lead to a pattern of continuous demolition and reconstruction, increasing embodied carbon and thus overall emissions. This myopic approach will undermine efforts to achieve net-zero goals by prioritising immediate redevelopment over the construction of long-lasting, energy- and resource-efficient buildings.

Integrating stricter sustainability requirements and life cycle assessments into the URA's framework is crucial to mitigating this issue and ensuring that urban redevelopment is consistent with long-term environmental and social goals.

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