

## Strengthening Green Building Regulation in the UAE

Prepared by: Ruta Ozolina, Caitlin Fuge

### Summary

The regulatory structure for green buildings and sustainable procurement in the UAE is a multi-tiered system combining federal policy direction with emirate-level implementation. At the national level, the Ministry of Climate Change and Environment (MoCCAE) oversees the UAE's environmental and climate agenda, including green procurement frameworks and alignment with the UAE Net Zero by 2050 Strategy (Ministry of Climate Change and Environment, 2022). Locally, emirates have developed their own sustainability codes and rating systems tailored to their urban contexts—Abu Dhabi mandates the [Estidama Pearl Rating System](#), while Dubai enforces the [Al Sa'fat Green Building Rating System](#), both of which integrate green building standards into construction approvals as both are mandatory (Dubai Municipality, 2023).

Globally, there is also a broad range of green building certifications which are currently more extensive and ambitious than regulation. The most globally recognised certifications are: [LEED](#) (Leadership in Energy and Environmental Design), [BREEAM](#) (Building Research Establishment Environmental Assessment Method), and [WELL Building Standard](#) (Archiroots, n.d.). As of June 2024 there are around 6,400 LEED-participating projects in the MENA region (GBCI, n.d.). In the UAE specifically there are around [1300 certified buildings](#) (Green Building Information Gateway, n.d.).

IDAIC has conducted research on green building policies and regulations around the world and compiled findings in a traffic light matrix (see appendix). The analysis revealed three recurring weaknesses commonly observed in current green building policies: regulation of [embodied carbon](#), [environmental product declarations](#) as well as [lifecycle scope](#) of the regulation. To align with global best practices and meet its Net Zero by 2050 targets, the UAE must strengthen regulations and be prepared to navigate the challenges that might come with it.

### Embodied Carbon

Green building policies can be designed to address *operational carbon* by promoting energy efficiency and the use of renewable energy throughout a building's lifespan. They can also target *embodied carbon* by regulating material selection and construction practices to reduce emissions from production and assembly. Green building policies in the UAE address operational carbon more thoroughly than embodied carbon. For instance, Abu Dhabi's Estidama Pearl Rating System awards buildings "pearls" based on their performance across seven categories. The "Resourceful Energy" category includes several mandatory requirements for operational carbon, such as meeting baseline energy efficiency standards (Department of Municipalities and Transport, n.d.). However, while the "Stewarding Materials" category promotes lower embodied carbon, by, for instance, incentivising the use of recycled materials, these measures are optional to gain a higher pearl rating rather than mandatory. This structure allows embodied carbon-related measures to be bypassed, unless the design team intentionally pursues those credits. A stronger focus on operational emissions is a common theme internationally as the New York Local Law 97 also places legally binding emissions caps on large buildings which only apply to operational carbon (City of New York, n.d.). Because embodied carbon can account for up to 50% of a building's lifetime emissions this is an important gap to address (Lützkendorf and Balouktsi, 2022).

This gap can be addressed with stronger incentives to reduce buildings' embodied carbon like financial benefits. As an example, the city of Toronto introduced the Toronto Green Building Standard that offers development charge refunds when developers conduct upfront embodied emissions assessments using BEAM or MCE2 that show  $<250 \text{ kgCO}_2\text{e/m}^2$  (City of Toronto, n.d.).

In other regions, buildings' embedded carbon has been tackled by mandatory limits. In the Netherlands, under the Environmental Performance of Buildings regulations, all new residential buildings are required to calculate life-cycle assessments which cannot breach a maximum "MPG" (environmental impact) score (Government of the Netherlands, 2020).

### Environmental Product Declarations (EPDs)

EPD type III is a standardized, third-party verified document regulated by the ISO 14025 that provides transparent data about the environmental impact of a product across its life cycle (based on LCA data) (Environdec, n.d.). An EPD includes information on the global warming potential, energy use, water use, resource depletion, as well as toxicity & emissions which are very crucial data points for environmental protection (Bovea, Ibáñez-Forés and Agustí-Juan, 2014).

The current adoption of EPDs in the UAE and GCC region is medium-to-low in comparison to other regions like Europe or Australia. According to the Third Nationally Determined Contribution, MoIAT has been working on the inclusion of EDPs in building and construction regulations (Ministry of Climate Change and Environment, 2024). Multinational suppliers that deliver to these regions are more likely to have EDPs. Currently the adoption of EDPs is more incentivised by the adoption of green building standards rather than regulatory pushes. The main barriers for a larger adoption seem to be the cost, awareness and supply chain fragmentation.

This might however change as the UAE has signed a statement of intent towards the Green Public Procurement Pledge under the Industrial Deep Decarbonisation Initiative (IDDI) (Ministry of Climate Change and Environment, 2024). This pledge asks member governments to start (no later than 2030) requiring that steel, cement and concrete used in all public construction projects are low-emission which might impact both embodied carbon and EDP requirements (Clean Energy Ministerial, n.d.).

### Lifecycle Scope

Lifecycle scope is another important factor in green building regulations. UAE sustainability frameworks like Al Sa'fat and the Pearl Rating System primarily address the design and construction phases, ensuring buildings meet climate-adapted efficiency and performance standards before occupancy. In contrast, international certifications such as LEED extend into the full building lifecycle, tracking operational performance, energy and water use, and occupant well-being through post-occupancy tools like LEED for Operations and Maintenance (LEED O+M) (USGBC, n.d.).

This lifecycle approach is crucial because buildings sometimes perform differently than intended. By including the operational phase within the lifecycle scope, green building standards recognize that the majority of a building's

environmental impacts—such as energy consumption, water use, emissions, and occupant health—occur during its use, not just at the point of construction (Firstgreen, n.d.).

### Conclusion & Recommendation

The UAE has made significant strides in sustainable building through its dual-level regulatory framework, with national guidance and emirate-specific codes like Estidama and Al Sa'fat. The methods for enforcing a transition towards a greener built environment vary. Strategies such as linking compliance to financial incentives, permitting advantages, or mandatory carbon performance thresholds are already in place. However, the effectiveness of these efforts is limited by three main regulatory gaps:

1. Lack of mandatory regulation on **embodied carbon**, which is often treated as optional rather than enforced.
2. Limited adoption of **Environmental Product Declarations** (EPDs), largely due to cost, low awareness, and fragmented supply chains.
3. **Narrow lifecycle scope**, as current regulations mainly focus on design and construction phases, with less attention to actual operational performance.

To align with global best practices and meet its Net Zero by 2050 targets, the UAE must strengthen regulations in these areas—particularly by: mandating embodied carbon limits, promoting broader use of EPDs, and expanding green building policies to cover the full building lifecycle, including post-occupancy performance.

Strengthening these regulations may cause further challenges and risks for example:

- A. Mandating embodied carbon limits could face **resistance from developers** due to higher upfront costs and disruption to established practices or lack of knowledge.
- B. Limited availability of reliable EPDs and **lack of standardized data** could hinder consistent implementation and benchmarking.
- C. Fragmented and **underprepared supply chains** may struggle to meet stricter material sourcing and documentation requirements.
- D. Expanding the regulatory scope to cover full lifecycle performance, especially post-occupancy, **demands robust monitoring** frameworks

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## APPENDIX

Region	Policy Name	Operational Carbon	Embodied Carbon	LCA	Lifecycle Scope	Compliance Monitoring	Penalties
Dubai	Al Sa'fat Green Building System						
Abu Dhabi	Etidama: Pearl Rating System						
Netherlands	Environmental Performance of Buildings (MPG)						
	BENG (Nearly Energy-Neutral Buildings, 2021)						
France	Environmental Regulation 2020 (RE2020)						
	Climate & Resilience Law 2021 - ban on renting worst-efficient homes						
Germany	Climate-Friendly Building Subsidy (QNG & KFN) - 2023						
	National Circular Economy Strategy (NCES)						
	Building Energy Act (GEG)						
Sweden	Climate Declaration for Buildings (Klimatdeklaration)						
	Boverket Building Regulations (BBR)						
New York	Local Law 97						
Washington	Washington State Energy Code (WSEC)						
California	Title 24, Part 6 of the California Building Standards Code						
Tokyo	Tokyo Cap-and-Trade						
Singapore	Green Mark & EB Mandate						
Toronto	Toronto's green building standard (Version 4)						
China	GB/T 50378-2019: Assessment Standard for Green Buildings						
	GB/T 55015-2021: General Specification for Building Energy Efficiency and Renewable Energy Utilization						