

Building a Greener Future: Accelerating Sustainable Construction through Policy and Innovation

Riham Fakhouri, Architect Team Lead and LEED Green Associate-UAE, Poul Lindqvist, Co-Founder & CEO-Environmental Impacts Academy-Finland and Lorine Mogre - Sustainable Inclusive Business-Kenya.

Executive Summary

The global construction sector is a primary driver of climate change, contributing approximately 38% of all worldwide carbon emissions and generating substantial landfill waste. To meet global net-zero targets (e.g., achieving 100% net-zero emissions building by 2050 is possible), the industry must rapidly transition to Green Construction Business practices³³³³.

This brief recommends three key policy actions to accelerate this transition: (1) Mandatory adoption of rigorous Green Building Legislation, (2) Strong government incentives for Modern Methods of Construction (MMC) like modular building, and (3) The integration of Life Cycle Assessment (LCA) and circular economy principles to ensure genuine environmental and social benefits.

The Challenge: Construction's Environmental Footprint

The built environment has a profound and negative impact on the planet, contributing to:

- Carbon Emissions: 38% of all carbon emissions in the world.
- Resource Use: 40% of raw material use and 40% of worldwide energy usage.
- Waste: 50% of landfill waste.
- Local Impact: In some regions, like the UAE, construction and demolition waste account for 70% of the total solid waste generated.

Immediate mobilization and changes in processes, practices, policies, and legislation are necessary to preserve future generations and the earth's resources.

Policy Recommendations

To drive the necessary systemic change, policymakers should focus on regulatory frameworks, technological adoption, and financial mechanisms.

1. Strengthen and Mandate Green Building Legislation

All construction projects should be required to comply with up-to-date, rigorous green building codes and pursue certification to international standards.

- Adopt International Green Codes: Ensure all municipalities and construction companies follow updated green building codes, such as those found in Dubai's building code or Abu Dhabi's *Estidama* rating system.

- **Mandate Certification:** Require all major projects to obtain or register for leading green building certifications like LEED (Leadership in Energy and Environmental Design).
- **Prioritize Passive Design:** Legislation must enforce passive design principles from the initial design phase, focusing on orientation, wind, and sun to minimize energy dependence before using renewable sources.

2. Incentivize Modern Methods of Construction (MMC)

The adoption of industrialized, off-site construction methods, like modular construction, offers a powerful path to sustainability and efficiency¹⁴¹⁴¹⁴¹⁴.

- **Support for Modular Construction:** Policy should provide tax breaks, expedited permitting, or direct subsidies for projects utilizing modular and prefabricated units. Modular construction units are fabricated in controlled factory environments, following stringent standards, and demonstrate significant benefits:
 - ✓ **Speed:** Up to 55% faster construction speed.
 - ✓ **Sustainability:** Up to 20% improvement in achieving overall sustainability.
 - ✓ **Efficiency:** 23% higher energy efficiency and 21% improved quality of the building.
- **Investment in 3D Printing:** Support the continued development and scaling of 3D printing construction technologies, as demonstrated in successful large-scale projects²⁰.

3. Integrate Life Cycle Assessment (LCA) and Circularity

Policymakers must shift from a cradle-to-grave mindset to a Circular Economy approach, requiring systems that track and minimize the environmental impact of materials across the entire life cycle.

- **Mandate Life Cycle Thinking:** Integrate Environmental Life Cycle Assessment (LCA) into project approval processes to identify a product's or system's comprehensive environmental impacts across all stages, from material extraction to end-of-life. This ensures a fair comparison of environmental performance based on the project's functional unit.
- **Promote Eco-Friendly Materials:** Mandate the use of sustainable and eco-friendly materials, enhancing the circular economy through strategies like the 5 Rs (Reduce, Reuse, Recycle, Refuse, Repurpose) and the cradle-to-cradle approach.
- **Leverage Sustainable Finance:** Financial institutions should be encouraged, potentially through regulatory frameworks, to offer Green Loans and Sustainability-Linked Bonds that incentivize borrowers to transition to a low-carbon economy. Financial products should systematically integrate Environmental, Social, and Governance (ESG) factors.

Conclusion

Green Construction supports the broader objective of green businesses by creating healthier communities and reducing the environmental impact on Earth. The current moment demands

immediate action. By strategically implementing and enforcing robust green codes, incentivizing innovative construction methods like modularity, and adopting sophisticated assessment tools like LCA, governments can ensure the construction sector is a vital component of a successful, sustainable, and economically viable future.