Irish Green Building Council - Opening statement to Oireachtas Joint Committee on Environment and Climate Action – 2nd July 2024

1.0 Introduction

1.1 Thank you for the invitation to present at this committee meeting. The Irish Green Building Council (IGBC) is a registered charity with over 400 members drawn from all parts of the construction value chain.

1.2 Our role is to provide leadership for a sustainable built environment, through advocacy, education, and the development of practical tools.

1.3 In 2022, we launched a roadmap to decarbonise Ireland's built environment across its whole life cycle. Building a Zero Carbon Ireland has already been endorsed by almost 200 organisations.

1.4 We are working with SEAI to develop a national methodology to report on the global warming potential of buildings across their life cycle[1].

1.5 We have also developed the Home Performance Index – A national residential sustainability certification, with over 20,000 homes registered.

1.6 We are developing a National Circular Built Environment Roadmap to 2040 through extensive engagement with industry and key stakeholders[2].

2.0 Context

2.1 While there are inspiring examples of circularity in the Irish construction sector, such as the conversion of office buildings into new homes in Dublin and the Opera Square regeneration scheme in Limerick, Ireland has one of the lowest rates of circular material use in Europe.

2.2 The construction industry is responsible for over 50% of all the waste generated nationally (EPA, 2021). Many construction materials are technically reusable, but less than 2% of building elements are currently reused. This represents a significant waste of resources.

2.3 The circular economy can be described as "an economic system whereby the value of products, materials and other resources in the economy is maintained for as long as possible; Enhancing their efficient use in production and consumption, thereby reducing the environmental impact of their use, minimising waste, and the release of hazardous substances at all stages of their life cycle" (Regulation (EU) 2020/852).

2.4 Circularity is not just about recycling. It requires a fundamental shift from the current linear economic model of take, make, use, and dispose.

2.5 A circular approach to construction can reduce carbon emissions while preserving natural resources and creating economic value.

2.6 Embodied carbon emissions[3] account for 14% of Ireland's national emissions (Kinnane, O., O'Hegarty, R., Wall, S., 2022). There is no decarbonisation without a circular economy.

[1] This work is being completed as part of the INDICATE project.
[2] This work is being completed as part of CircularBuild, an EPA-funded project.
[3] The emissions associated with the production of construction materials and construction of buildings.

2.7 Competition will intensify as demand grows for finite natural resources, leading to further increases in the price of construction materials. Circularity is key to improving resilience in the supply chain, which is particularly important for an island nation like Ireland.

2.8 90% of biodiversity loss is due to extraction and processing of natural resources (UNEP, 2019). There can be no biodiversity protection without responsible resource use.

2.9 Buildings and construction materials can be circular if they are designed to be easily shared, maintained, repaired, reused, remanufactured, and the least favourable option recycled.

For instance, it is better to reuse a steel beam, as it is, as opposed to melting it down and recycling it into a new beam, as this process requires a significant amount of energy.

2.10 Building designers can increase circularity by:

- Reusing existing buildings
- Designing out waste
- Designing buildings for adaptability and deconstruction
- Selecting materials that are circular or durable

2.11 New business models will be required to bring about the changes needed to reduce resource consumption.

3.0 Re-using existing buildings

3.1 Renovation and repurposing are almost always lower impact than new builds. For instance, the embodied carbon emissions of a deep residential retrofit are approximately a quarter of a new build (Kinnane, O., O'Hegarty, R., Wall, S., 2022).

3.2 Extending the useful life of buildings, and more specifically the elements with a high environmental cost, such as structures and facades[4], is critical.

4.0 Designing out waste at all stages of a building life cycle

4.1 When we do build new, we must design out waste at all stages of the building life cycle.

4.2 As the structural elements have the highest carbon footprint, buildings must be designed so that they remain in use for as long as possible.

4.3 Leaner designs are key in addressing carbon emissions and waste. For instance, off-site prefabrication can reduce waste during production and construction.

4.4 Elements and spaces that may not be essential for the functioning or efficiency of a building must also be assessed. For example, underground car parks may be unnecessary in a walkable area, well-served by public transport.

[4] The early results of the Indicate study allowed us to identify the carbon hotspot elements of a building. These include structures and substructures, as well as facades up to completion, and energy systems over the lifetime of the building.
Based on 20 assessments carried out independently by BDP, Cluid Housing, ECR, Grangegorman Development Agency, Helena McElmeel Architects, Henry J Lyons, MMC, Meehan Green, MMP, PM Group, Scott Tallon Walkers, Wain Morehead Architects and Walls, using the draft national methodology to measure the global warming potential of buildings across their life-cycle developed by the IGBC in partnership with SEAI.

5.0 Designing buildings for adaptability

5.1 Buildings must be designed for optimum use by facilitating alternative uses at different times[5] and over their life spans while retaining their value.

5.2 It can be as simple as allowing enough leeway within the building design so that when occupants' needs change, the building can be easily adapted. We can re-imagine how our homes can be designed for life, by using a modular approach to easily transition from a one-bed property to a three-bed home (and vice-versa)[6]. It also means considering if a building can be easily adapted to a new use. E.g., Can an office building be easily converted for accommodation?

5.3 Designing homes for adaptability would allow us to respond more quickly and efficiently to demographic changes, such as the trend toward smaller households. This in turn will support vibrant communities and neighbourhoods.

6.0 Designing buildings for deconstruction

6.1 Just like structures fitting together like Lego, products, services, and entire buildings must be designed to be deconstructed and their components used again.

6.2 Reducing waste and supplying high-value secondary materials suitable for reuse and recycling at a later stage, requires designs that support ease of deconstruction and disassembly.

6.3 For example, standard sizes can be specified instead of bespoke, and screws and fixings used rather than adhesives, to create a greater likelihood of a deconstruction process that supports recovery and reuse.

6.4 Digitalisation and material passports can further support this process. They provide a structure to collect information on a product, its safety, environmental impact, and reusability.

7.0 Selecting materials that are circular or durable

7.1 Finally, transitioning to a more circular construction industry requires using less carbon-intensive materials, and replacing them – where possible, with biobased[7] and reusable materials.

8.0 Conclusion

8.1 We can't tackle the 3 environmental crises we are facing without transitioning to a more circular construction industry. By keeping assets at their highest value for longer and by minimising waste, this transition can also improve the resilience of Ireland's supply chain and add value to our society and economy.

8.2 To support this transition, circular approaches must be integrated into public procurement.

8.3 We need more pilot projects, with the additional initial costs of circular innovation being supported through capital funding, in the same way the SEAI's EXEED programme works.

8.4 The circularity principles must be integrated into planning. This could be through a requirement for larger projects to demonstrate how adaptability has been considered in the design, and through pre-demolition audits as a condition for demolition.

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[5] A good example is a new university building in Amsterdam designed to be used as a cinema theatre in the evenings and weekends.
[6] See the Urban Village case study for further information.
[7] Bio-based materials generally have lower embodied carbon than more conventional construction materials. They also fix biogenic carbon taken up during plant growth for the full building's life. At the end of the building's life, this carbon is released if the materials go to landfill or incineration. Where buildings are designed with circularity in mind, biogenic carbon can remain fixed for longer.

8.5 The re-certification systems must be streamlined to increase the credibility and widespread use of pre-used products and materials, and the EPA need to continue to streamline the 'end-of-waste' licensing process to ensure this is not a barrier to the reuse of materials.

8.6 Finally, upskilling in circularity must be further encouraged and incentivised.

We thank you once again for the invitation to inform your work.

Additional resources

- Building a Zero Carbon Ireland – A Roadmap to Decarbonise Ireland's Built Environment across its Whole Life Cycle

- IGBC's initiatives on Circularity in the Built Environment: Circularity in the Built Environment
    - We piloted the Construction Materials Exchange Platform (CMEx) – a digital platform that enables construction materials to be reused at their highest value. A white paper on the Construction Materials Exchange Pilot in Ireland was published in 2023 and is available here.
    - The IGBC is also working on a template to make it easier for home builders to report on how they integrate circularity principles in projects.

- The Environmental Product Declaration Ireland (EPD Ireland) programme provides transparent information on the environmental impact of construction products.

- National Upskilling Roadmap 2030 – For the Built Environment

References

EPA. (2021). *Circular Economy and Waste Statistics Highlights Report 2021*. Dublin, Ireland: EPA Circular Economy Programme.

Kinnane, O., O'Hegarty, R., Wall, S. (2022). *Whole Life Carbon in Construction and the Built Environment in Ireland - Today, 2030, 2050*. Dublin: Building in a Climate Emergency (BIACE) Research Lab, UCD School of Architecture, Planning and Environmental Policy.

UNEP. (2019). *Global Resources Outlook 2019: Natural Resources for the Future We Want*. Nairobi, Kenya: United Nations Environment Programme.