

Written evidence submission by Mark Edwards MEng(Hons) CEnv MIEMA CEng MIMechE

Responses

- *To what extent have the Climate Change Committee's recommendations on decarbonising the structural fabric of new homes been met?*

Not at all. The Government's response and development of policy to address embodied carbon in the built environment has been, and continues to be, woefully lacking.

On the wider agenda of addressing embodied carbon in the built environment, there has been a complete lack of leadership shown by the UK Government. In order to make meaningful progress towards the 2050 target, the UK Government needs to take accountability, take action and drive progress across the sector.

- *How can materials be employed to reduce the carbon impact of new buildings, including efficient heating and cooling, and which materials are most effective at reducing embodied carbon?*

The opportunities are too numerous and varied to provide a suitable response within the limitations of this written response.

In the short-term, activity should be prioritised on reducing/replacing the materials that have the greatest carbon impact. In the built environment, this is concrete and steel.

The opportunities to reduce the impact of both these materials are made more complicated due to the international sourcing and the impact of Brexit. This is particularly true for current low-cost sources of cement replacement materials. This should be a priority for Government intervention on the grounds of resource scarcity.

There are significant opportunities to export low-carbon expertise, including innovation in low-carbon construction materials, for the benefit of UK plc.

- *What role can nature-based materials play in achieving the Government's net zero ambition?*

There is certainly a role for nature-based materials. However, their development and large-scale deployment needs support from the Government in order to get the market to respond. Current economic forces are not sufficient to incentivise a move away from "business as usual".

- *What role can the planning system, permitted development and building regulations play in delivering a sustainable built environment? How can these policies incentivise developers to use low carbon materials and sustainable design?*

Planning can play a crucial role in ensuring a more sustainable built environment. However, more stringent monitoring of planning conditions is required including the exploitation of "loop-holes".

There are examples of localised good practice, such as the GLA's S12 policy. However, on the whole, embodied carbon is not considered which represents a significant deficit in the ability of the UK Government to meet the 2050 net zero target.

- *What methods account for embodied carbon in buildings and how can this be consistently applied across the sector?*

There are sufficient standards and guidance available for the calculation of embodied carbon. The gap that needs to be addressed is the consistent application of the guidance, and the lack of prescriptive assessment boundaries and defaults that are typically prescribed within a national methodology. This gap makes it difficult to compare different buildings. Additionally, given the project-based nature of the industry, this represents a barrier to continual improvement.

An appropriate regime of measurement, monitoring and reporting at an industry level is also required so that industry and government understand its performance. This would also provide the industry a consistent focal point around which to coalesce and allow individual projects and organisations to better understand their role in decarbonising the sector.

- *Should the embodied carbon impact of alternative building materials take into account the carbon cost of manufacture and delivery to site, enabling customers to assess the relative impact of imported versus domestically sourced materials?*

Yes.

- *How well is green infrastructure being incorporated into building design and developments to achieve climate resilience and other benefits?*

No comment.

- *How should we take into account the use of materials to minimise carbon footprint, such as use of water harvesting from the roof, grey water circulation, porous surfaces for hardstanding, energy generation systems such as solar panels?*

The carbon impact of installing and the subsequent operation of these systems can be considered by undertaking whole-life carbon assessment.

- *How should re-use and refurbishment of buildings be balanced with new developments?*

Reuse and refurbishment provide opportunities for circular economy principles to be applied to decrease carbon impact.

- *What can the Government do to incentivise more repair, maintenance and retrofit of existing buildings?*

This requires government intervention as the construction industry's economic model is based on new build: the constant cycle of demolition and building. By breaking this cycle, the benefits of carbon reduction and resource security mitigation will be realised. However, the development and large-scale adoption of a more circular approach needs support from the government in order to get the market to respond. Current economic forces are not sufficient to incentivise a move away from "business as usual".

Furthermore, policy needs to move away from concentrating on end-of-pipe waste solutions and considering the sustainable use of materials in the first place.

[Reason for submitting response](#)

I have over 15 years' experience working in the built environment with over 10 years' spent focussing on resource efficiency, circular economy and carbon reduction in the built-environment. I have significant experience in overcoming the challenges of practical implementation of carbon reduction in the complex context of the built environment.

I have worked for third-sector industry organisations, including WRAP and UKGBC, contributing to improving the industry. I am currently a member of several industry working groups, including:

- [ICE's Carbon Project](#)
- Whole Life Carbon Network
- [LETI](#)

I have contributed to the industry standards/guidance related to resource efficiency and carbon reduction, including:

- The ongoing [UKGBC Net Zero Whole Life Carbon Roadmap](#)
- [Embodied carbon: Developing a Client Brief](#)
- [Delivering Low Carbon Infrastructure](#)
- [UKGBC's circular economy guidance for clients](#)
- The last three [MI-ROG white papers](#)

Climate change is the most significant crisis that mankind is facing. The UK has taken a world-leading stance, but it is crucial that further action is taken now to ensure the 2050 net-zero target is met. Progress has been made on the low-hanging fruit, however, significant change is required across the entire economy, including in the built environment, to deliver the reduction indicated by the CCC in the 6th Carbon budget. By taking action the UK can not only reduce the carbon impact but also realise significant economic benefits.

I believe this inquiry is timely and I would be happy to provide further support to aid the UK Government in tackling the sustainability of the built environment.

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