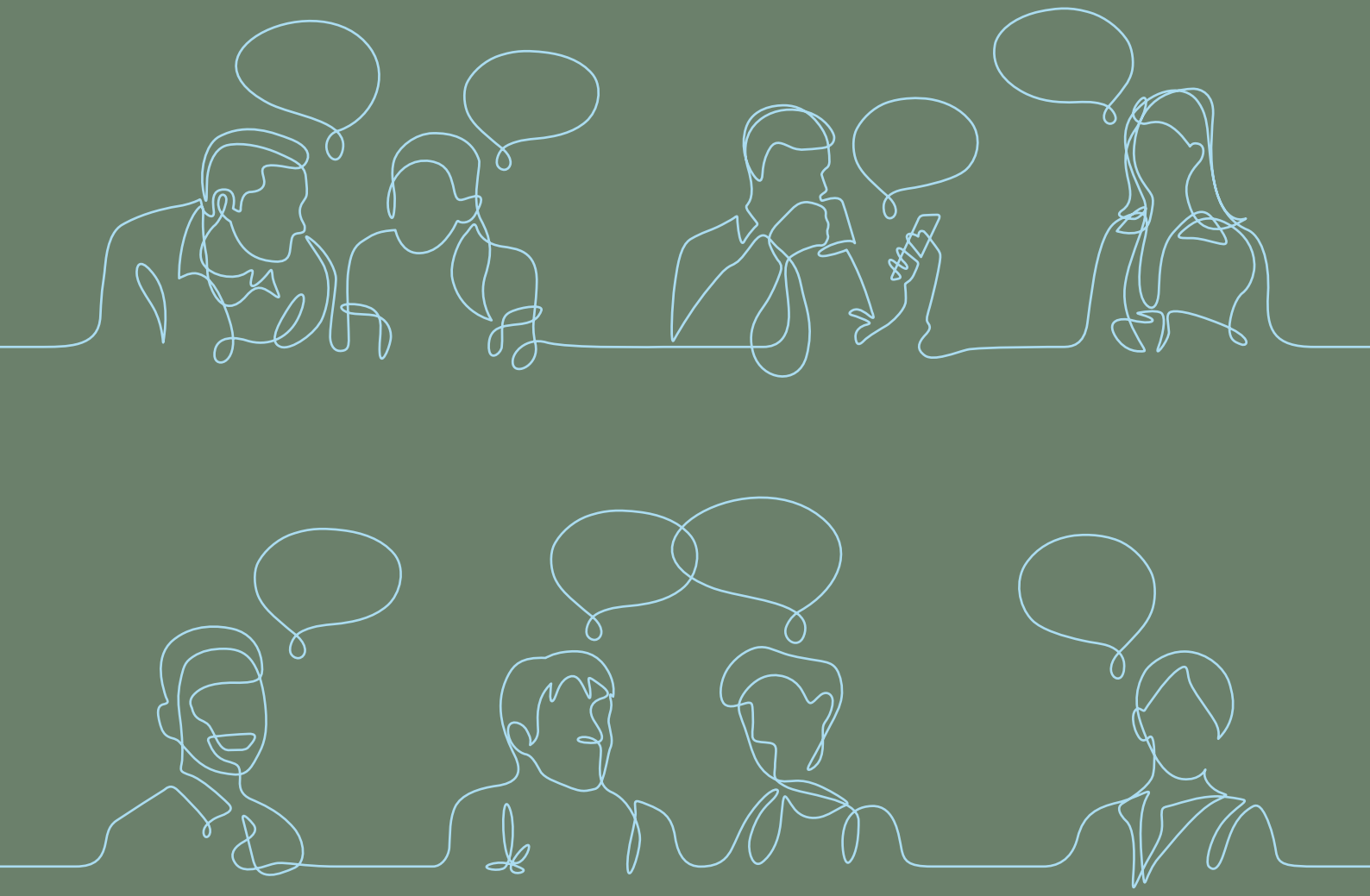

# Embodied Carbon in the Design Process

## Perspectives from Smaller Practices

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The views summarised in this document were part of research undertaken for a Master's degree. The research focussed on how smaller architectural Practices are considering embodied carbon within their design processes, so as to better understand the aspirations and challenges that smaller Practices are facing with the topic.

A number of virtual workshops were held. Participants included RIBA Members from across the regions.

The researcher, Jess Haines, works at the Royal Borough of Kingston as the AD of Property, Development & Investment.. The research was conducted as part of her Masters in Housing & City Planning the Bartlett, UCL 2021.

Three key anecdotal assumptions that had been shared with the researcher in the year leading up to her Master's programme were tested and the key feedback points from the discussions are shown below.

Jess Hrivnak, RIBA Sustainable Development Adviser supported the creation of this document.

## Context

| Assumption | Feedback |
|---|---|
| Architects, and particularly those in smaller Practices face an uphill challenge to meet the necessary 'complete system change' thinking demanded by the climate crisis and are unsure if they can adopt suitable new design processes to match the challenge. | Discussions showed that smaller Practices can adopt the required changes but that adequate industry support in terms of guidance and skills training is fundamental to enable the shift. The challenges that smaller practices face are very real. |
| Knowledge and policy leverage on embodied carbon within Local Planning Authorities is very limited. | The discussions confirmed that the Planning system is not providing the influence that it could. |
| Design Professionals (particularly those in smaller Practices) are concerned that there is a lack of systems thinking in regulation, causing unintended consequences across different aspects of sustainability. | Workshop participants expressed increasing concern of the disconnect and conflict within existing and emerging policies, particularly around embodied carbon. |

# Perspectives

## Policy - What smaller Practices want to see from regulators and policy influencers

1) A greater understanding of embodied carbon and a more coordinated approach across Government departments.
2) Embedding embodied carbon requirements in regulations and working with industry to ensure supply chains have the investment and skills required to deliver these standards.
3) Strengthening sustainability and emission reductions through the planning system.
4) Greater consideration by local authorities of how to reduce embodied carbon through the prioritisation of retrofit over demolition.
5) Incentives for clients to prioritise retrofit over demolition.

### What's needed

- Clarity of leadership from RIBA as a key influencer on embodied carbon issues
- The Professional Membership network is valued, and the integrity of the Institution is respected above Government intervention
- A roadmap of how embodied carbon policy applies on a practical level to architects

> "[Embodied carbon] should be something that planning authorities are behind but,to them, it's someone else's problem."

**Case Study**

The recent refusal of The Tulip and the reference to embodied carbon in could mark a shift in the planning system. https://www.dezeen.com/2021/11/11/tulip-tower-rejected-foster-partners/

## Skills, Education & Training - The needs and challenges faced by smaller Practices

1) Guidance and information can be overwhelming. Attendees reported a sense of confusion around the topic, particularly when terminology differs, or basic datasets are presented differently. This undermines confidence.
2) There is a knowledge gap between the high-level principles and confidence with carbon calculations across the sector. This needs to be tackled to build up overall confidence.
3) There are concerns about the ability of Local Planning Authorities to develop their skills and critical knowledge to interrogate embodied carbon calculations coming forward in Planning applications. Concern that this opens the door for applicants to provide their own narrative.
4) A 'bottom up and top down' approach is needed, with traditional design Practices needing more support.
5) Time and resource capacity in smaller Practices is very real. Smaller Practices feel they are missing out on training and guidance as often entry point assumes an existing high level of technical embodied carbon knowledge.
6) The number of guides, forms of collection and analysis for carbon calculations are helpful and are often being used – but – many architects are on the starting blocks in the journey on embodied carbon considerations, and need to take a step back to first principles.
7) RIBA is respected. Smaller Practices are seeking RIBA to take a bold approach to embodied carbon and are looking to the Institute to take a leading role in upskilling.
8) More emphasis on learning about embodied carbon capitalising on younger or more junior architects coming through the system but also mandated CPD for senior and qualified architects.

### What's needed

- Clear and concise basic guidance covering first principles and frequent signposting
- Regular embodied carbon seminars
- Embodied carbon issues strengthened and embedded throughout architectural Education Institutions and Professional CPD
- Educational institutions need to ensure they have architectural educators with 'technical ability' in addition to theoretical knowledge of carbon

> "A rating system is from zero to Simon Sturgis and I would describe myself as at around one and a half."

## Case Study

The best form of learning can be through collaboration.

Offering to volunteer to get involved with groups such as LETI and ACAN can bring significant benefits to individuals and their Practices. The network and 'hive mind' of such groups are particularly valuable for sole practitioners and those working in smaller Practices for whom opportunities for peer-to-peer discussion may be more limited. Investing volunteer time will return significant benefits from the groups' open knowledge sharing.

- LETI
- ACAN (Architects Climate Action Network)
- Architects Declare
- ASBP (Alliance for Sustainable Building Materials)
- AECB (Association for Environment Conscious Buildings)
- Passivhaus Trust

## Data, Access & Tools - Concerns from smaller Practices

1) The time and financial investment needed to explore the 'myriad' of different software and carbon calculation tools is of significance to smaller Practices. This impacts on their ability to explore the best 'fit' and adopting its use across their work. Some tools have higher licence fees which can be prohibitive.
2) Inconsistency and gaps in data are major challenges. Particularly the lack of consistency of Environmental Product Declarations (EPD)'s is seen as significant issue. Concerns are that some materials that may be the best option but are disregarded because they lack data.
3) Lack of understanding of the significance of data gaps within calculations is a concern.
4) Standardised methodologies for data and tools are seen as critical, and workshop attendees were concerned that this standardisation still needs to be resolved.
5) Widely understood and robust standards leave space for alternative narratives to be created in place of calculations, which is a concern in the regulatory review process, particularly when Local Planning Authorities (LPAs) do not have the expertise to critically challenge alternative narrative presented.

### What's needed

- Education and demonstration seminars to explain tools, data and relative importance of various construction elements
- Regular signposting to knowledge sharing platforms and training opportunities

> "Whilst embodied calculations maintain an aura of mystique we won't ever move forward. Current challenges are: unreliable data which is time and costly to gather, and which ultimately may not the right data in the first place."

## Case Study

LETI, CIBSE, RIBA, IStructE, the GLA and the Whole Life Carbon Network have been collaborating to align definitions, scopes, measurement methodologies and targets. See:

- LETI/RIBA/WLCN: Defining and Aligning: Whole Life Carbon & Embodied Carbon

**Some free tools available include the following:**

- FCBS carbon: free downloadable excel based tool
- H/B:ERT: free downloadable Revit plug-in
- ICE data base: free downloadable embodied carbon database

## Culture - Smaller Practices' attitudes on embodied carbon

1) Feeling overwhelmed by the breadth of issues of the sustainability challenge and where embodied carbon fits within the bigger picture.
2) Uncertainty on how they can change design approaches if they do not understand what to change to.
3) Effort levels with regards to embodied carbon are perceived to be hugely variable across the industry with some going above and beyond. This makes it difficult to be competitive.
4) Societal attitudes equating 'green ideas' to costly or innovative solutions, was felt to be a hinderance to architects working with clients on sustainable designs for similar competitive reasons.
5) Equity to accessing training was a concern. Differences raised were not just about size of architectural Practice but also location. It was felt that city/ London Practices have better access to information and CPD sessions over regional, smaller Practices.
6) The lobbying work of groups such as LETI and ACAN is hugely supported. Architects Climate Action Network ACAN work on Part Z was recognised and celebrated by participants as a great way of initiating change.
7) The approach of having Design Review Panels and open discussion as part of the planning process is valued and welcomed.
8) It was felt important to not lose sight of the unintended consequences and embodied carbon's interaction with operational energy, and the need to therefore take a whole life carbon approach.
9) Need to be honest that as an Industry there are still struggles with the performance gap between predicted and in-use operational energy.
10) The not-for-profit organisation Public Practice, is well received and could be used as a way of meeting whole life carbon expertise within Local Authorities and the regulatory system.

### What's needed

- Recognition that currently smaller Practices feel disadvantaged
- Recognition of the need to build capacity in both public and private Practice in terms of skills, training, guidance and policy on whole life carbon
- A shift towards a level playing field for access to CPDs and information on embodied carbon
- A shift towards whole life systems thinking rather than black and white approach towards material types (e.g. pitting concrete and steel automatically against timber)

> ‘Those who are writing policy think embodied carbon is done and dusted, and that practioners know what to do, the reality is we don't’

### Case Study

‘Climate literacy is about understanding what climate change and the current climate emergency means for us as architects in terms of our work. We need to learn how to ‘read’ climate change and resource use and respond appropriately as designers. It is a ‘re-framing’ of design theory, which helps us to understand the impact that our designs have on the planet.’

Professor Fionn Stevenson

Climate Framework, a cross-industry initiative with a curated library of resources: https://www.climateframework.com/library-intro

# Next Steps

This document summarises the views from smaller Practices and sets out recommendations to address the concerns raised.

There is opportunity to investigate whether these concerns are reflected in larger Practices, and scope to broaden participation with other professions to open up the discussion between Architects and Planners on embodied and whole life carbon.

There is opportunity to collaborate and investigate how the recommendations might be best addressed.

If you would be interested and have capacity to be involved in further discussions, please feel free to reach out to either:


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