

In Australia, there is an increasing awareness of the importance of reducing upfront embodied carbon in new buildings and major refurbishments. Many asset owners recognise the need to prioritise sustainability and seek innovative solutions that can minimise their buildings' carbon footprint.

According to the GBCA's 2021 report *Embodied Carbon & Embodied Energy in Australia's Buildings*, upfront embodied carbon represents 16% of the lifecycle emissions of buildings and the opportunity to reduce it starts with the design of a building. As reductions in operational carbon come into effect this is predicted to increase to 85% of all emissions by 2050. Embodied carbon refers to the total amount of greenhouse gas emissions generated throughout a building's life cycle, including the extraction of raw materials, manufacturing, transportation, construction, and end-of-life processes. As the construction industry is a significant contributor to global carbon emissions, it is vital to address embodied carbon to mitigate the environmental impact of buildings.

This document was prepared by the NSW Sustainability Committee and is dedicated to exploring the crucial topic of embodied carbon emissions from buildings. It aims to provide valuable resources and information to asset owners and industry professionals who are eager to make a positive impact. Below, you will find a curated list of resources that can assist you in reducing upfront embodied carbon in your next new building or major refurbishment project.

#### Domestic Resources

- Want to know more about what the PCA is advocating for in building sustainability alongside the GBCA? Read Every Building Counts 2023 Edition: [Every-Building-Counts-2023-Edition.pdf \(everybuildingcounts.com.au\)](#) (April 2023)
- Want to take a deep dive into the break-up of embodied and operational carbon in buildings? Read this report, written for the Green Building Council of Australia by ThinkstepANZ: [Embodied Carbon & Embodied Energy in Australia's Buildings](#) (July 2021)
- For case studies on how projects are reducing their upfront embodied carbon, read this report by the Green Building Council of Australia: [A Practical Guide to Upfront Carbon Reductions](#) (May 2023)
- To understand how the Australian construction materials sector can take action to decarbonise, check out the full suite of resources on the Materials & Embodied Carbon Leaders' Alliance (MECLA)'s website: [Resources - mecla.org.au](#)
- To understand what you need to get your building carbon neutral certified for all its upfront embodied carbon, read the [Guideline Upfront Carbon for Buildings](#), Climate Active (October 2022)
- For a Quantity Surveyor's take on quantifying embodied carbon in buildings, read [Slattery Embodied Carbon](#) (June 2022)
- For a Head Contractor's take on quantifying and reducing embodied carbon in buildings, read [Taking Action on Embodied Carbon](#), Built (Sept 2021)

### International Resources

- For another comprehensive source of tools, education, and policy advocacy, see the Carbon Leadership Forum [Embodied Carbon Research](#) (USA)
- This resource provides a structural engineering discipline approach to calculating embodied carbon in building structures: IStructE [How to Calculate Embodied Carbon](#) (UK)
- For a comprehensive understanding of how embodied carbon fits into the greenhouse gas emissions profile of buildings, read the foundational London Energy Transformation Initiative (LETI) [Embodied Carbon Primer](#) (UK)

Note these resources may prescribe inconsistent methodologies for calculating carbon emissions. The Australian sustainability community eagerly awaits the national consistency that the NABERS Embodied Carbon for Buildings tool promises to offer. Public consultation report [here](#).

We hope that these resources empower you to make informed decisions and take meaningful action towards reducing upfront embodied carbon in your building projects.