

Media release

Friday 20 August 2021

Behind our hidden emissions lies a huge opportunity

Without action, embodied carbon will be responsible for 85 per cent of Australia's built environment emissions by 2050, according to a new report from the Green Building Council of Australia and thinkstep-anz.

If Australia reduced the embodied emissions in new commercial and residential buildings by just 10 per cent between now and 2050, this would eliminate at least 63.5 megatonnes of emissions – the equivalent to taking 13.8 million cars from the roads for a year. ¹

Embodied Carbon & Embodied Energy in Australia's Buildings was developed by GBCA and thinkstep-anz with support from the Australian Government's Department of Industry, Science, Energy and Resources.

The report finds embodied carbon – the emissions generated during the manufacture, construction, maintenance and demolition of buildings – made up 16 per cent of Australia's built environment emissions in 2019. Without intervention this share will balloon to 85 per cent at a time when Australia must achieve net zero emissions in line with the Paris Agreement.

"The challenge of decarbonising our built environment never been more urgent," says the GBCA's Chief Executive Officer, Davina Rooney.

"Last week, the IPCC sounded the global alarm, with a report which finds temperatures are likely to rise by more than 1.5°C above pre-industrial levels within just two decades, bringing with it widespread devastation and extreme weather.

"We are on a journey to decarbonise our buildings, but up until now we haven't quantified the hidden emissions in Australia's built environment – our embodied carbon," Ms Rooney adds.

"While we are making great strides forward in our work to tackle operational carbon in buildings, embodied carbon is largely locked in before a building is occupied. The decisions we make today will have implications and impacts for decades to come."

"As Australia's electricity grid decarbonises, and as more buildings are powered by renewable energy, embodied carbon from the built environment will make up a greater proportion of Australia's total carbon footprint – increasing by 50 per cent from 2019 to 2050," says Dr Barbara Nebel, Chief Executive Officer of thinkstep-anz.

"The project provides a robust baseline for embodied emissions at a national level – emissions that have been largely overlooked to date. This allows the building and construction industry to track progress over time in reducing its emissions," Dr Nebel notes.

¹ US EPA Greenhouse Gas Equivalences Calculator

Embodied carbon is hard to solve and requires systemic change along the length of the supply chain. This study involved contributions from all major construction material categories as well as from large construction companies, as specifiers of these materials.

A significant share of embodied emissions in buildings come from common building products, like concrete and steel, that are manufactured through process heat and chemical reactions. This means their embodied emissions will not decrease by decarbonising the electricity grid alone.

“On the supply side, we need manufacturers to innovate – to experiment with design, process substitution, carbon capture and storage and green hydrogen, for example. On the demand side, we need constructors to ask for low-carbon products, to reuse existing materials and to refurbish, where they can, rather than rebuild.” Ms Rooney explains.

The Green Star rating system rewards projects that use materials with low embodied carbon, Ms Rooney notes.

“Industry and governments must also step up their game. The report makes this clear: there is a clear need for governments to support suppliers as they decarbonise and for investment in research and development of new materials and practices.

“Tackling embodied carbon is an enormous challenge, but by doing so we will not only drive down emissions in our building stock. We will also help to future-proof Australia’s energy-intensive industries and ensure we can maintain our global competitiveness in a low-carbon world,” Ms Rooney concludes.

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About the GBCA

Established in 2002, the Green Building Council of Australia is leading the sustainable transformation of the built environment. The GBCA represents 550-plus members with a collective annual turnover of \$46 billion. Members reflect the diversity of Australian business, from small-to-medium enterprises through to 30 ASX200-listed companies with a combined market capitalisation of \$608 billion. The GBCA works with industry, government and the community to advocate policy, to promote green building education, and to rate the sustainability of buildings, fitouts and communities through Green Star. Australia’s largest national, voluntary, holistic rating system, Green Star has influenced the design and delivery of more than 3,000 projects around Australia. www.gbca.org.au

About thinkstep-anz

The team at thinkstep-anz combines corporate and product sustainability, underpinned by leading software solutions and data. Always looking to push the boundaries of sustainability by working towards circular economies, cradle-to-cradle, and regenerative practices, thinkstep-anz provides lifecycle assessment studies, circular economy projects, materiality assessments, and supports organisations to calculate and manage their carbon emissions. With a target approved by the Science Based Targets initiative (SBTi), thinkstep-anz is locally owned, a certified B Corporation and a signatory to the UN Global Compact. www.thinkstep-anz.com