

# Letters

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## New-builds can compete with retrofit homes in carbon stakes

In reference to your article, "The carbon conundrum" (House & Home, July 22), we understand the need to raise the importance of evaluating whether to refurbish buildings or build new in terms of carbon emissions generated as a result of construction work (embodied carbon).

As architects, we work with clients on this issue regularly. However, often the devil is in the detail and the received wisdom at present is that retrofit is a better option compared with new-build in terms of embodied

carbon performance (ie, less carbon is released generally in the form of carbon dioxide). We decided to test this and compared, using a detailed 3D digital model, several of our recently completed residential projects (retrofit and new-build). This was fed into One Click LCA, the industry-leading embodied energy analysis software suite. The key to this exercise was to ensure that every element of each project was correctly modelled, and the correct information added for each material that was actually used.

The outcome of our research was that a high-quality, low-embodied carbon new-build design is largely similar when compared with a significant retrofit in terms of embodied carbon on a unit area basis (values for embodied carbon in construction of 559 KgCO<sub>2</sub>e/m<sup>2</sup> for the new housing and 460-560 KgCO<sub>2</sub>e/m<sup>2</sup> for the refurbishment projects). This was a surprising result to us given the received wisdom and raises important questions when considering future development.

One lesson is that different projects in different locations require careful thought and analysis to determine the best way forward; refurbishment of existing may not always be best in terms of minimising embodied carbon. A second lesson is that only very good sustainable contemporary design can compete with retrofit. Also, when refurbishing housing stock, we cannot be complacent about carbon emissions.

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