

# Visualizing Carbon in 3D Repo: From BIM to ZERO

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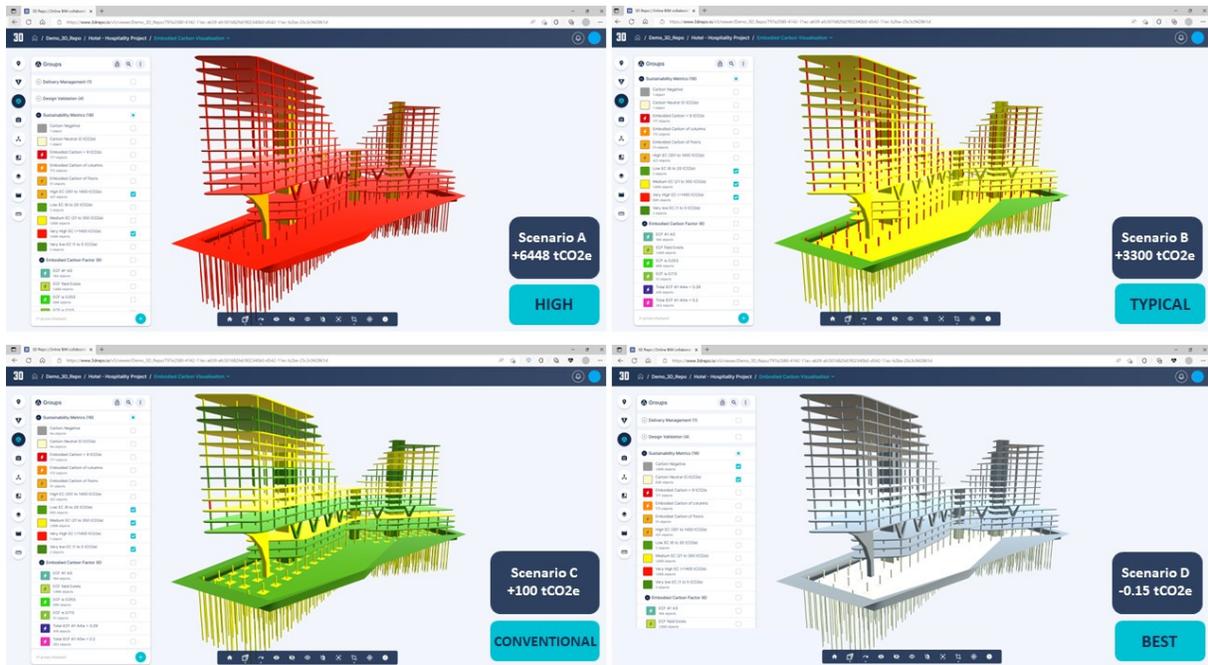


Figure 1: Comparative dashboards in the web browser tracking Embodied Carbon changes over time in the same 3D model. This visualisation helps leverage design decision making across various architecture, engineering and construction (AEC) disciplines.

## ABSTRACT

The AEC sector is facing one of the biggest global challenges to reduce overall carbon emissions on projects, which come with great environmental responsibility towards the built environment. To address and facilitate the achievement of such sustainability goals while encouraging collaboration across AEC professionals, the 3D Repo platform enables novel data-driven approaches to quickly visualise estimated carbon metrics in 3D, on the web and in real time. It is possible to combine 3D model data with Life Cycle Assessment (LCA) data for embodied carbon measurements to create comparative dashboards and optioneer the most eco-friendly way to build.

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## CCS CONCEPTS

• Computing methodologies → Graphics file formats.

## KEYWORDS

Net Zero, Embodied Carbon, BIM, 3D Repo

### ACM Reference Format:

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## 1 OVERVIEW

In 2020, the UN Environment Programme (UNEP) highlighted that the construction industry alone accounts for c.38% of total energy related CO<sub>2</sub> emissions globally, thereby calling for a governmental urge to aggressively prioritize and implement material strategies that reduce lifecycle carbon emissions [UNEP 2020]. In the UK, an industry initiative ZERO was assembled to place great importance on carbon efficiency and to continuously measure and manage carbon through all construction and infrastructure project stages<sup>1</sup>. Since its inception, platforms such as 3D Repo [Doboš et al. 2018]

<sup>1</sup><https://www.zeroconstruct.com/about>

