



EC3 Tool

Frequently Asked Questions

Q. What is the Embodied Carbon in Construction Calculator?

The Embodied Carbon in Construction Calculator (EC3) tool, is a free and easy to use tool that allows benchmarking, assessment and reductions in embodied carbon, focused on the upfront supply chain emissions of construction materials. The EC3 tool utilizes building material quantities from construction estimates and/or BIM models and a robust database of digital, third-party verified Environmental Product Declarations (EPDs). Powered by this data, the EC3 tool can be implemented in both the design and procurement phases of a construction project to look at a project's overall embodied carbon emissions, enabling the specification and procurement of the low carbon options.

The EC3 tool also allows owners, green building certification programs and policymakers to assess supply chain data in order to create EPD requirements, and set embodied carbon limits and reductions, at the construction material and project scale.

The tool and its subsequent effect on the industry is driving demand for low-carbon solutions and incentivizing construction materials manufacturers and suppliers to invest in disclosure, transparency and material innovations that reduce the carbon emissions of their products.

Q. Why is this tool important? What problem is it addressing?

The building and construction sector have a vital role to play in eliminating carbon, as it is responsible for nearly 40% of global greenhouse gas emissions.

Architecture 2030 reports that between now and 2060 the world's population will be doubling the amount of building floor-space, equivalent to building an entire New York City every month for 40 years. Much of the carbon footprint of these new buildings will take the form of embodied carbon — the emissions associated with material production and building construction.

In fact, Architecture 2030 reports that embodied carbon will be responsible for almost half of total new construction emissions between now and 2050. Unlike operational carbon emissions, which can be reduced over time with building energy efficiency renovations and the use of renewable energy, embodied carbon emissions are locked in place as soon as a building is built.

For more facts and figures and source data view *Embodied Carbon Facts and Figures* produced by the Carbon Leadership Forum.

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Q. Why has it taken so long for the building industry to focus on embodied carbon?

The modern green building movement is only a few decades old, and during that time the movement's laser-like focus has been on reducing operational energy – the carbon emissions that occur when a building is in operation – from energy used to heat, cool and power them. The highly visible nature of these operations, and the ease of measuring progress has led to many successes.

Understanding the carbon footprint of the entire supply chain for materials and construction is not only less obvious and visible, but it has been much more difficult to calculate. The result is that millions of people know something about the US Green Building Council's LEED standard for energy efficiency; however, until recently, few had ever heard of embodied carbon, even inside the building industry. That has now changed significantly.

Q. How does the EC3 tool represent a breakthrough?

You can't manage what you can't measure, and until now, material suppliers have found it challenging and expensive to publish Environmental Product Declarations (EPDs) – technical documents reporting on the carbon footprint of a product – which are required in order to analyze the embodied carbon emissions associated with a new building. Moreover, the relatively small numbers of EPDs that were published could only be found in a variety of several different EPD databases, some of them proprietary and competitive with each other. Finally, virtually all EPDs have been unstructured and print-only PDF files -- documents that could not be easily evaluated or compared digitally.

With the launch of the EC3 tool, for the first time, thousands of digital EPDs are now available in a free, open source database. As a result, building designers, construction companies, and material suppliers will be able to directly measure, compare and reduce the embodied carbon in specific new buildings.

Experience using the EC3 tool on major pilot projects throughout 2019, such as the Microsoft campus refresh in Redmond, WA, has demonstrated that simply being able to compare products with the EC3 tool can reduce embodied carbon significantly, at no additional cost for materials.

Q. What support materials are available?

The Carbon Leadership has produced the following documents: *EC3 Tool Product Brief*, *EC3 Tool User Benefits*, *EC3 Key Features*, *EC3 Tool Primer for AEC Professionals* and *Embodied Carbon Facts and Figures* document.



The EC3 Tool FAQ has been brought to you by the Carbon Leadership Forum. The Carbon Leadership Forum incubated the EC3 tool project to accelerate its development and provide optimal industry collaboration.

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