

How to Reduce Embodied Carbon in the Built Environment

Following on from our article on [how the built environment is impacting climate change](#) – with ‘code red for humanity’, we are digging further into this topic with high priority.

Winning the challenge of reducing carbon emissions from the built environment could be the difference between human survival and the age of human extinction.

This is because a whopping **40% of global carbon emissions come from the built environment** alone.

Let’s break it down further...

- 60% of the built environment carbon emissions are from **operational** carbon.
- 40% of the built environment carbon emission are from **embodied** carbon.

What is operational carbon?

Operational carbon is the Co2 emissions produced to power, light, heat, ventilate, and cool buildings during their operational lifetime. It is currently the dominant polluter of the built environment. Measuring operational carbon is best to be done alongside embodied carbon assessments.

What is embodied carbon?

Embodied carbon is the Co2 emissions produced by construction, demolition, transportation and material production of buildings and structures. Measuring the annual embodied carbon impact is done with detailed assessments.

Why more efforts are needed to reduce embodied carbon

A lot of embodied carbon is required to mine the materials, produce products and construct that new operational carbon-efficient structure. Even on a multi-decade horizon, the structure may release more embodied carbon into the atmosphere than what can be made up with operational carbon efficiency.

With the decarbonization of electrical grids, efficient heating, cooling and insulation systems and other initiatives, we are directionally on the correct path to reduce operational carbon to NET ZERO. However, it’s still way too slow and with a long way to go.

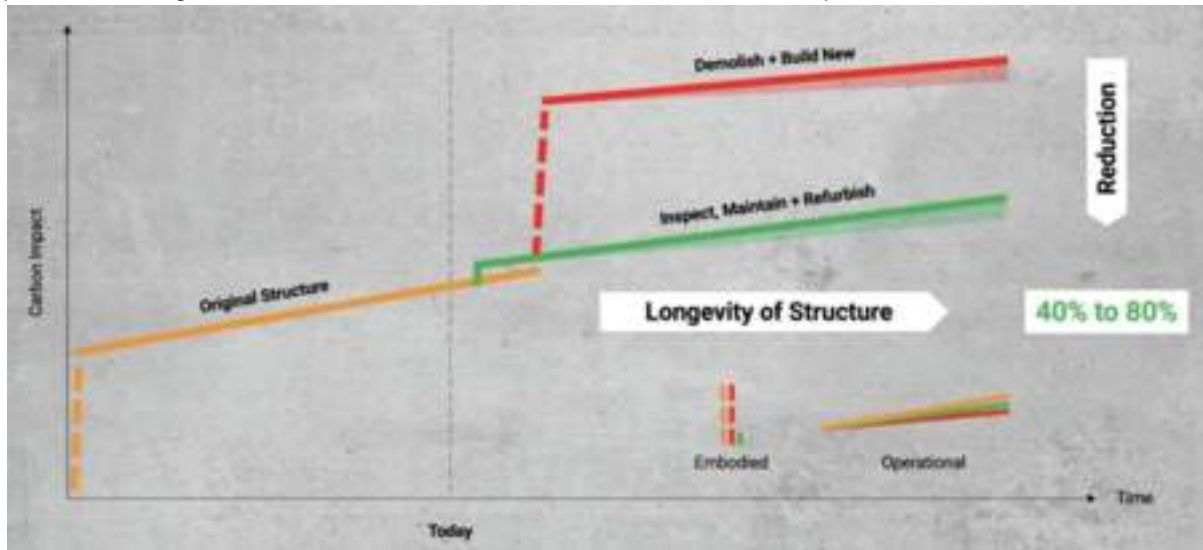
If we don’t act together now, the equation will flip and embodied carbon will be the dominant polluter of the built world.

How to reduce embodied carbon in the built environment

Take a typical scenario... A large building has aged significantly, and the decision has made for it to be demolished. The embodied carbon from building materials would be released back into the atmosphere, then more embodied carbon would be required for manufacturing new materials, transporting them and finally for new construction. Then cycle begins all over again with the next structure...

Therefore, the 'greenest' structures may be the ones that already exist and are (lightly) refurbished to become more operational carbon efficient. This is true according to a detailed report, [The Greenest Building: Quantifying the Environmental Value of Building Reuse](#), by Preservation Green Lab – National Trust for Historic Preservation.

At Screening Eagle, we see the primary solution in ensuring longevity of structures. Generally speaking, the longer we can operate our buildings and structures, the smaller the annualized embodied carbon impact.



Inspect

Is there one silver bullet that does it all for embodied carbon assessments? Certainly not. However, the one common denominator is to have holistic and accurate data to derive actionable insights. Only a holistic 'cradle-to-grave' embodied AND operational carbon reporting is meaningful.

Maintain

Insightful data gives us the capability of preventive maintenance. Using data from the embodied carbon assessments and structural inspections, it's then possible to prioritize maintenance plans in importance of what needs doing right away, and what can wait. This helps to avoid situations such as structural failure, thus increasing the longevity of structures.

Refurbish

With a holistic view, structural refurbishment can be completed successfully to ensure durability. Making the decision to refurbish rather than demolish can only be made with complete, clear and actionable data. Avoiding demolition and making the best of what is already there, significantly reduces global embodied carbon impact.

The secondary solution is the move towards high quality carbon-friendly materials, products and processes during design and construction.

Our contribution is helping you to efficiently collect the deep built world data on the grade, health and condition of structures to secure quality materials and longevity of the built world.

Let's work together to jointly avoid the Age Of Human Extinction.



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