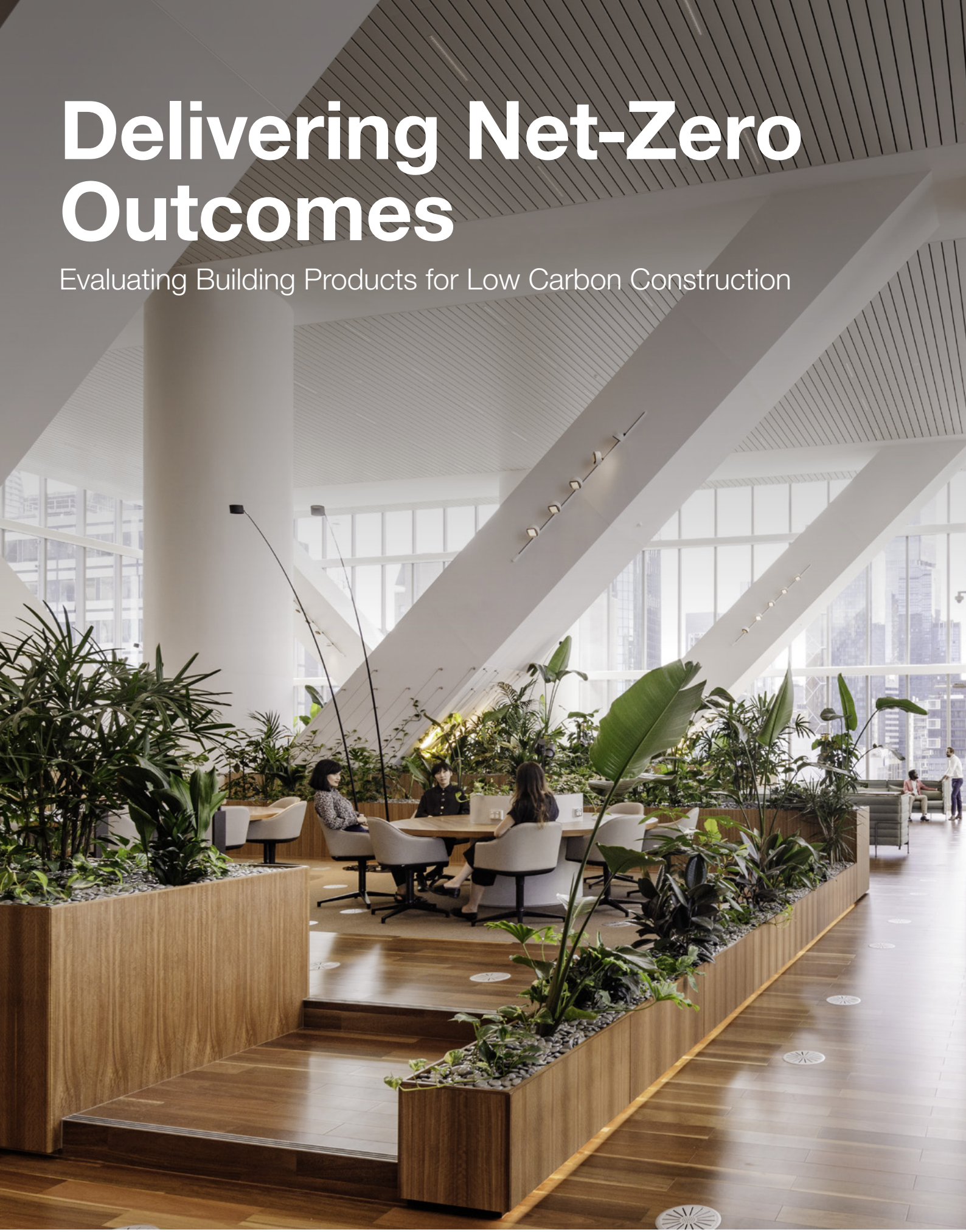
Delivering Net-Zero Outcomes

Evaluating Building Products for Low Carbon Construction



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Introduction

The 2021 Global Status Report for Buildings and Construction predicts that, by 2060, the global building floor area will have doubled.[1] Construction materials and construction activities currently accounts for 11% of worldwide energy-related greenhouse gas emissions,[2] but as the demand for buildings and infrastructure grows, this figure is set to skyrocket.

The “embodied carbon” in buildings comes from the use of energy-intensive building materials and products. The manufacture of cement, steel, aluminum, glass and insulation materials contributes to the depletion of natural resources and the release of greenhouse gases.

To avoid locking carbon into the built environment for decades, the design and construction sector needs to focus on reducing the upfront carbon footprint of buildings and developments. Specifying building materials and products with a minimal carbon footprint or that are carbon neutral can contribute to addressing climate change.

Choosing the right building products for sustainable buildings involves considering various factors. In this whitepaper, we examine what carbon-conscious specification means in today’s landscape and discuss the key factors that contribute to informed product decisions.

Embodied carbon and why we need to reduce it

Embodied carbon describes the carbon dioxide emissions generated throughout the life cycle of building materials, including production, transportation, construction, maintenance, and end-of-life processes. This constitutes one of the two primary contributors to a building's overall lifecycle carbon footprint, the other being operational carbon.

Over recent decades, the focus of sustainable design has been on reducing operational carbon. Airtightness, insulation and other design features have been incorporated in modern buildings to reduce the heating and cooling load and thus the dependency on energy-intensive air conditioning systems.

As new and existing buildings become more energy efficient, there is greater awareness of the long-term impacts of embodied carbon. While it is possible to reduce a building's operational carbon throughout its life cycle, the embodied carbon that is locked into the structure stays the same. This means that, over time, embodied carbon will take up a greater proportion of the building sector's total carbon footprint.

The World Green Building Council notes that embodied carbon currently accounts for 11% of the built environment's approximately 39% annual global energy-related carbon emissions, but that embodied carbon will be responsible for half of the entire carbon footprint of new construction between now and 2050.[3]

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What is carbon-conscious specification?

Carbon-conscious specification refers to a methodical and informed approach to selecting building products and materials with the aim of minimising the carbon footprint associated with those decisions. This entails taking into account the emissions produced during the production, transportation, building, maintenance, and final disposal of building materials and partnering with brands with strong and verifiable sustainability practices.

Architects, designers and specifiers bear the responsibility of identifying and incorporating low carbon products into their specifications. Flooring is of particular interest as it has a wide-ranging climate impact; there is an estimated 250 billion square meters of buildings in the world today, and another 250 billion square meters expected to be built over the next 40 years.[4] The efficient utilisation of floor space stands out as a key factor fueling the growth of the sector, with the adoption of raised access flooring technology on the rise.[5]

The increasing popularity of green building rating systems, such as Green Star, LEED, the WELL Building Standard, and the Living Building Challenge is also contributing to the demand for low carbon or carbon neutral products. Forward-thinking owners and tenants understand that sustainability is important, not only to reduce their environmental footprint but also to create healthy working environments and reduce operational costs.

These developments coincide with the increased availability of environmental and health-related material data, providing stakeholders the opportunity to assess and improve the "green" characteristics of building products and materials. Importantly, these tools also help stakeholders identify instances of "greenwashing" or "carbon washing".

Seeing through the carbon wash

The concept of carbon washing or greenwashing refers to companies that claim to be eco-friendly or sustainable without taking the necessary measures to reduce their environmental or carbon footprint in reality. With the recent focus on reducing carbon emissions, the use of vague or misleading terms such as "carbon neutral" and "low carbon", without any evidence to back up such claims, has become a common form of carbon washing.

Architects, designers and specifiers can combat carbon washing through education and informed specification. Through education about sustainability practices, the environmental impact of products, and developments in environmental regulation and certification, practitioners can be more discerning about the products they specify.

Another way to ensure the product you are selecting is sustainable is to look for items that have been assessed and certified under recognised environmental certification schemes. These schemes are managed by groups or associations that verify a company's sustainability claims and assess the life cycle impact of products to ensure they are genuinely eco-friendly. Businesses have to provide evidence for their environmental claims and quantifiable data that shows they have improved the efficiency and footprint of their operations. Some examples of internationally recognised schemes are Environmental Product Declarations (EPDs), Good Environmental Choice Australia (GECA) and Global GreenTag's GreenRate.

Assessing the carbon impact of building products

As a first step, those specifying low carbon building materials should look for documents, labels or certifications that are trusted, transparent, and verified by internationally recognised third-party organisations using standardised and broadly accepted rules for calculating carbon and environmental impacts.

Comprehensive product transparency data is becoming the standard in the design and construction sector. Practitioners should familiarise themselves with Life Cycle Assessments (LCAs) and EPDs, which are popular for construction-based products. This information allows practitioners to identify differences between products and select the right ones based on the sustainability objectives of the project.

Life Cycle Assessment

LCAs enable the determination of a product or service's environmental impact from the time of its production to the conclusion of its life. This determination is conducted according to a set of standardised procedures that have been developed to accurately assess a product's footprint on the planet.

Broadly speaking, an LCA covers the following steps:

1. objectives and scope of the study;
2. analysis of incoming and outgoing material flows;
3. evaluation of environmental impacts, including greenhouse gas emissions, resource emissions, human toxicity and ocean and soil acidification; and
4. analysis of all data according to scope and objectives.

In order to guarantee the consistency of LCAs, the International Organization for Standardization has formulated two interrelated standards: ISO 14040 outlines the principles and framework of life cycle assessments, while ISO 14044 specifies the actual requirements.

Environmental Product Declarations

An EPD is an independently verified and registered document that communicates life cycle environmental information about a product that enables comparison and evaluation of the environmental performance of different products. EPDs are recognised by international bodies and can go towards credits under environmental certification schemes and sustainable building rating systems.

Every EPD is based on an LCA, thus covering all aspects of a product, from sourcing its raw material through to its final disposal. They are developed based on the requirements of ISO 14025 (Environmental labels and declarations – Type III environmental declarations) or EN 15804 for construction products.

A valid EPD should be:

- product specific;
- verified by approved verifiers;
- publicly available through libraries under the International EPD System, such as EPD Australia.

Manufacturers in the construction sector can take an environmental leadership role by adopting EPDs for their products. Trusted organisations such as GECA can help companies obtain relevant eco labels and EPDs for their products. Third-party verification is a critical factor that ensures EPDs provide objective, standardised and comparable information. As the rise for EPDs grows, be wary of companies presenting EPDs or other eco-labels without third-party verification.

ASP Access Floors:
Certified Sustainability

ASP Access Floors are a leading global company in the access flooring industry, revolutionising access flooring systems and installation. ASP Access Floors specialises in the manufacture, distribution and installation of access flooring solutions worldwide.

With over 20 years of experience, ASP Access Floors has developed and patented multiple unique access floor designs that have been used in some of the most iconic projects around the world. Ongoing research and development allows ASP Access Floors to produce innovative solutions that offer the market quality, versatility and infinite support.

Environmental commitment

As a member of the Green Building Council of Australia (GBCA) and the US Green Building Council (USGBC), ASP Access Floors' Environmental Policy will ensure ASP:

- considers sustainability in all relevant decision making;
- reduces their greenhouse gas emissions; and
- produces less waste and increases recycling.

ASP Access Floors is committed to reducing the impact of their access flooring on the climate by reducing carbon emissions through their **Walk Carbon Neutral** program. With this commitment, ASP is able to offer their clients the option to upgrade their access floor system to a fully Certified Carbon Neutral System.

ASP's access floor products in the Icon and Urban series have verified LCA's and EPD's. Based on your project's access floor quantities, the carbon emissions for your access floor system are calculated and then offset through the purchase of certified carbon credits. You are then provided with certification of your Zero Carbon or Climate Positive access floor system.

These certified carbon credits are sourced from projects that grow and protect forests in Aotearoa and the Pacific Islands and help to deliver climate resilience, waterways protection, erosion control, biodiversity conservation and community economic development.

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References

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All information provided correct as of December 2023.

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