Getting Started: Corporate and Owner Embodied Carbon Policies

This document provides an overview of the opportunity for investors, developers, building owners and tenants to reduce embodied carbon by developing company-wide policies and practices, and provides three paths to getting started. More information about opportunities for addressing embodied carbon with policy can be found in the Carbon Leadership Forum’s Owner Toolkit.

Embodied carbon refers to the greenhouse gas (GHG) emissions associated with the manufacturing, transportation, installation, maintenance, and disposal of building materials. When a building owner or tenant purchases materials to construct a space, these emissions become part of their carbon footprint. Upfront or “cradle-to-gate” GHGs are released during extraction and manufacturing. These emissions are released into the atmosphere before a building is constructed, so the only opportunity to reduce emissions is when the materials are selected or purchased. Unlike operational energy, embodied carbon can’t be reduced over time through retrofits and clean grids; embodied carbon must be addressed immediately before building and tenant space fit-out construction begin. Learn more about the urgency of embodied carbon here.

Companies need to act now or be left behind

Integrating embodied carbon into company sustainability and construction policies now can protect companies from regulatory and reputational risks while providing brand differentiation as customers, employees, investors, and regulations continue to gravitate towards decarbonization. The following list highlights different types of embodied carbon initiatives that companies might encounter:

- Government regulations and incentives, such as legislation that implements embodied carbon reporting requirements and carbon intensity limits (see the CLF Policy Toolkit for a map of existing and proposed policies);
- Financial disclosures, such as the upcoming EU Sustainable Finance Taxonomy and the Task Force on Climate-Related Financial Disclosures;
- Corporate sustainability and reporting initiatives, such as the GRESB reporting index, CDP Supply Chain, Science Based Targets, and business action on the Sustainable Development Goals and the UN Global Compact;
- Green building certifications, such as BREEAM, LEED v4, Zero Carbon, and 105 other voluntary certifications identified by the Embodied Carbon Review; and
- Voluntary commitments, such as the 2030 Challenge for Embodied Carbon, the C40 Clean Construction Declaration, the SE2050 Commitment Program for structural engineering firms, the AIA Materials Pledge, or a self-driven corporate carbon commitment.

The unique role of corporate policies

Corporate policies of investors, developers, and public or private building owners and tenants play an important role in reducing embodied carbon because they impact the entire building value chain. This is important for two reasons:

- **Increased opportunities, reduced cost**: Project-level opportunities to reduce embodied carbon increase in difficulty as a project develops. Prioritizing carbon early in a project reduces cost and increases the range of strategies available for reducing carbon (see Figure 1).
- **Market signaling**: When owners or investors establish embodied carbon policies, they send a demand signal across their value chain that encourages confidence in clean manufacturing and other investments.

Figure 1. Investor, developer, and owner corporate policies are key to reducing embodied carbon because they set requirements for the entire value chain. Many low-cost, high-impact strategies like adaptive reuse or using low-carbon concrete require coordination with site selection or design and performance requirements early in a project. Reducing embodied carbon in manufacturing is important for reaching net-zero embodied carbon long-term, but it requires large investments from manufacturers and a strong market signal throughout the value chain will be required to enable investment and action.
Solutions are affordable and widely available

The good news is that solutions are already available to target supply chain emissions. Getting started can come at little to no cost. Current research indicates that 24-46% of supply chain construction emissions can be reduced with less than a 1% cost premium added to the construction price (RMI to be released May 2021, World Economic Forum). Learn more about the business case for addressing embodied carbon in the Urban Land Institute’s guide here.

What is a corporate embodied carbon policy?

Corporate embodied carbon policies may vary depending on the company and their portfolio. For example, investors can set a policy to only invest in buildings with a certain embodied carbon intensity whereas tenants can set a policy to only rent from buildings below a certain embodied carbon threshold while creating policies for the design and procurement of their fit-outs. These policies can take different forms, such as:

- **Company-wide sustainability commitments**, such as net-zero or supply chain (purchasing) emissions reductions targets and internal carbon pricing initiatives (see Targeting Net-Zero Embodied Carbon to learn more);

- **Company-wide green building policies and initiatives**, such as certification requirements, design standards, or material selection requirements for new construction or tenant fit-outs that apply across a company’s portfolio; and

- **Sustainable procurement policies**, such as minimum sustainability requirements for suppliers.

Companies can think of embodied carbon action at three different scales: product, project, and portfolio (see Figure 2). Within each scale, an organization can take different levels of actions to increase the impact of their organization. Figure 3 outlines six levels of action to reduce emissions. The following sections provide an outline of those levels of action at each scale (Product, Project, and Portfolio).

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**Level 6**  
**Leaders and innovators**  
Lead the development of new reduction strategies, which will spur broader adoption of existing solutions through supplier engagement, use of innovative materials and technologies, and advocacy.

**Level 5**  
**From pilot to policy**  
Scale the effective strategies and requirements from pilot projects by integrating requirements into company-wide action plans, documents, requirements, and trainings.

**Level 4**  
**Building capacity and buy-in**  
Test embodied carbon reduction strategies and best practices on a few projects to identify the highest-impact strategies and build internal capacity to achieve goals.

**Level 3**  
**Net-zero targets**  
Set actionable embodied carbon reduction targets and use the data collection requirements established in Level 2 to verify progress towards reductions.

**Level 2**  
**Internal data tracking**  
Require internal tracking by integrating disclosure and measurement requirements into internal processes and documents to track embodied carbon data.

**Level 1**  
**Know your footprint**  
Calculate your baseline and identify your embodied carbon hotspots by analyzing data from past projects and spending.

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Figure 2. Corporate policies are relevant at three scales: portfolio (e.g., scope 3 emissions), project (e.g., new construction/tenant fit-out), and product (e.g., concrete, insulation). Each of these scales has its own set of strategies, stakeholders, and outcomes. All three are key to decarbonization.

Figure 3. Summary of six levels of corporate action to reduce embodied carbon increasing from beginner (light blue) to advanced (dark blue).
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**Material/Product**

**Product Level 1: Know your footprint**
Use material quantity and cost data from previous projects to identify your embodied carbon hotspots. Calculate your baseline using supplier- and/or product-specific embodied carbon data or reference the [2021 CLF Material Baselines](https://www.carbonleadershipforum.org).

**Product Level 2: Internal data tracking**
Establish a system for tracking product embodied carbon data by asking your key suppliers for EPDs and integrating EPD requirements into your specifications, starting with your embodied carbon hotspots. Read more about EPDs in [Guidance on Embodied Carbon Disclosure](https://www.carbonleadershipforum.org).

**Product Level 3: Net-zero targets**
Establish embodied carbon intensity goals or % reduction targets for future projects using the baseline established in Level 1. Use EPDs to track and verify progress. Learn more in [Procurement Policies to Reduce Embodied Carbon](https://www.carbonleadershipforum.org).

**Product Level 4: Build capacity and buy-in**
Test low-carbon procurement strategies, such as setting GWP limits, bid incentives, and collaborating with suppliers. Identify the highest-impact strategies to scale. Learn more about rules of thumb for selecting and procuring lower-carbon materials in Architecture 2030’s [Carbon Smart Materials Palette](https://www.carbonleadershipforum.org).

**Product Level 5: From pilot to policy**
Integrate successful strategies into company-wide documents and templates. Provide internal training opportunities and ensure that embodied carbon performance is included in supplier engagement.

**Product Level 6: Leaders in innovation**
Collaborate with suppliers to decarbonize their supply chains. When possible, provide direct financial or technical support (for example, to small suppliers or to those who support an organization’s supplier diversity targets).

- **Key opportunities**: Identifying lowest-carbon option (i.e., which concrete is lowest carbon, not concrete vs. wood); supplier engagement
- **Key actors**: Developer/owner/user, contractor, manufacturers
- **Key tools**: Environmental product declarations (EPDs); Embodied Carbon in Construction Calculator (EC3)

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**Project**

**Project Level 1: Know your footprint**
Analyze your portfolio to identify representative project types and use life cycle assessment (LCA) to establish a baseline for each project type and identify typical hotspots. To see an example of how LCA can be used to understand the carbon hotspots of tenant improvements (TI) and mechanical, electrical, and plumbing (MEP), see the CLF’s case studies, [LCA of a WeWork TI Project](https://www.carbonleadershipforum.org) and [LCA of MEP and TI Systems](https://www.carbonleadershipforum.org).

**Project Level 2: Internal data tracking**
Track project-level embodied carbon by requiring new projects to use whole building life cycle assessment (WBLCA) tools throughout design. Read more about using WBLCA tools in the design process in [Life Cycle Assessment of Buildings: A Practice Guide](https://www.carbonleadershipforum.org). Also see the the [UBC Embodied Carbon Pilot](https://www.carbonleadershipforum.org) to see a building owner approach.

**Project Level 3: Net-zero targets**
Set project emissions reduction goals using the baseline established in Level 1 and verify using the WBLCA tools. To find case studies, look for buildings that are certified as Zero Carbon or have received LEED points for the [building life cycle-impact reduction](https://www.carbonleadershipforum.org) credit.

**Project Level 4: Building capacity and buy-in**
Collaborate with project teams to test project-level strategies, such as material efficiency and specifying carbon-storing materials and systems.

**Project Level 5: From pilot to policy**
Identify the highest-impact strategies from Level 4 and ensure they are integrated into company-wide action plans and project documents. Share success stories externally.

**Project Level 6: Leaders in innovation**
Pilot innovative materials and technologies, and (when relevant) support development of standards and testing pathways to expand opportunities for others to adopt.

- **Key opportunities**: Selection of systems and material types (i.e., concrete vs. mass timber structure, etc.); design for material efficiency; design for disassembly,
- **Key actors**: Developer/owner/user, architect, engineer, consultants, contractor/construction manager
- **Key tools**: Whole building LCA tools (Tally, OneClickLCA, Athena, etc.)
The Carbon Leadership Forum is accelerating the transformation of the building sector to radically reduce the embodied carbon in building materials and construction through collective action.

We pioneer research, create resources, foster cross-collaboration, and incubate member-led initiatives to bring embodied carbon emissions of buildings down to zero.

Join the movement: carbonleadershipforum.org