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.

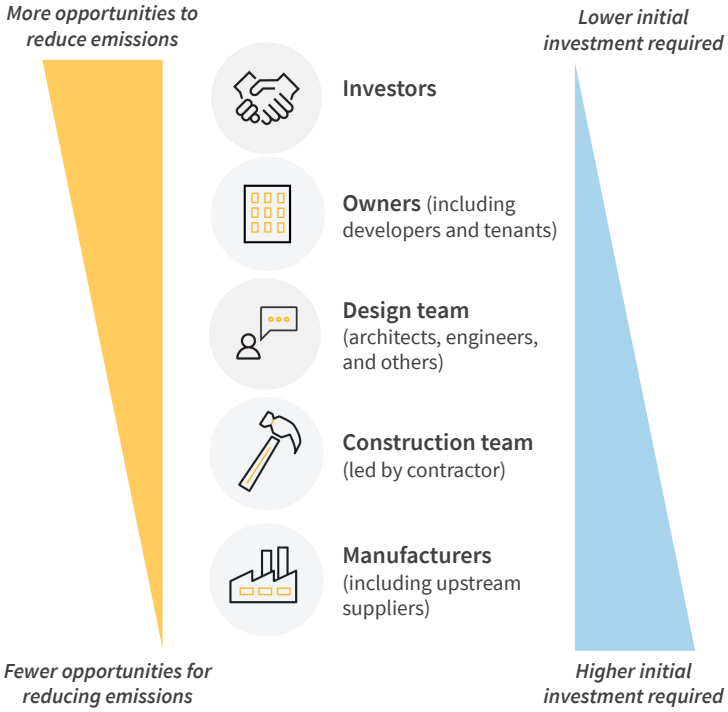

Figure 1. Investor, developer, and owner corporate policies are key to reducing embodied carbon because they set requirements for the entire value chain. Many low-cost, high-impact strategies like adaptive reuse or using low-carbon concrete require coordination with site selection or design and performance 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).

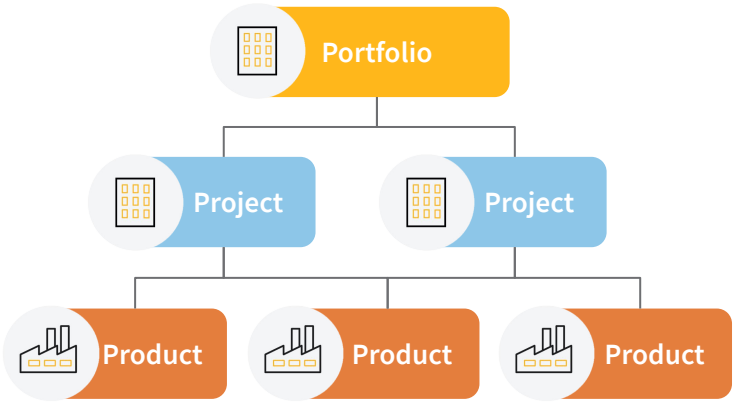

Figure 2. Corporate policies are relevant at three scales: portfolio (e.g., scope 3 emissions), project (e.g., new construction/tenant fit-out), and product (e.g., concrete, insulation). Each of these scales has its own set of strategies, stakeholders, and outcomes. All three are key to decarbonization.

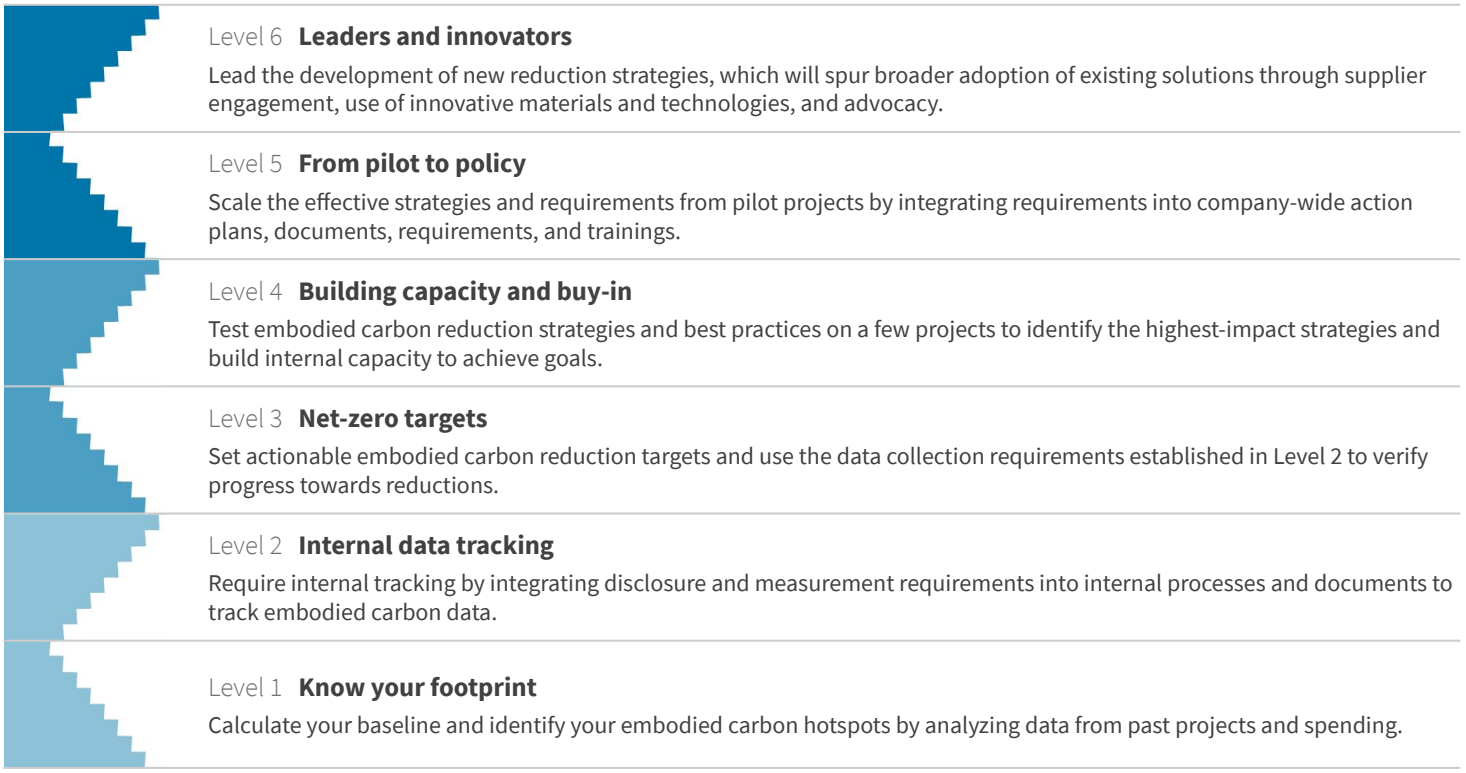

Figure 3. Summary of six levels of corporate action to reduce embodied carbon increasing from beginner (light blue) to advanced (dark blue).

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.

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.*

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.*

Product Level 4: Build capacity and buy-in

Test low-carbon procurement strategies, such as setting product 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.

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)

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 and LCA of MEP and TI Systems.

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. Also see the the UBC Embodied Carbon Pilot to see a building owner approach.*

Project Level 3: Net-zero targets

Set project emissions reductions goal 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 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.)

Portfolio/Company

Portfolio Level 1: Know your footprint

Work with your greenhouse gas accounting teams to inventory your purchasing emissions and get an initial estimate of scope 3 emissions. This scope varies depending on whether you're an investor, developer, or owner. *Learn more about scope 3 emissions accounting in WRI's Corporate Value Chain (Scope 3) Standard and the UKGBC's Guide to Scope 3 Reporting in Commercial Real Estate.*

Portfolio Level 2: Internal data tracking

Collaborate across your company to create a system for categorizing and tracking your spending data to track your scope 3 emissions.

Portfolio Level 3: Net-zero targets

Adjust your net-zero goals and timelines to include scope 3 emissions instead of just scope 1 and 2 operational emissions. *To learn more and see examples of corporate public commitments including scope 3, see the Targeting Net-Zero Embodied Carbon primer.*

Portfolio Level 4: Building capacity and buy-in

Assess opportunities for portfolio-level strategies, such as site selection and investment criteria, reduced floor area (through flexible work policies, etc.), circularity initiatives such as building and material reuse or donation programs, or adopting an internal carbon price. *Learn more about the the impact of adaptive reuse in The Greenest Building: Quantifying the Environmental Value of Building Reuse.*

Portfolio Level 5: From pilot to policy

Enact highest-impact strategies identified in Level 4, and announce goals and strategies alongside other public sustainability commitments. Figure 4 provides an overview of how embodied carbon requirements can be integrated into company-wide documents to become business-as-usual. *See Georgia Tech's Yellow Book for a case study of embodied carbon can be integrated in an owner's requirements.*

Portfolio Level 6: Leaders in innovation

Broaden adoption of best practices by supporting corporate real estate sustainability initiatives and advocating for effective policy adoption.

- *Key opportunities:* Building reuse; reduced floor area, optimizing building massing for embodied carbon
- *Key actors:* Investor, developer, owner/user, consultants or advisors
- *Key tools:* Greenhouse gas (GHG) accounting tools; portfolio sustainability management tracking tools

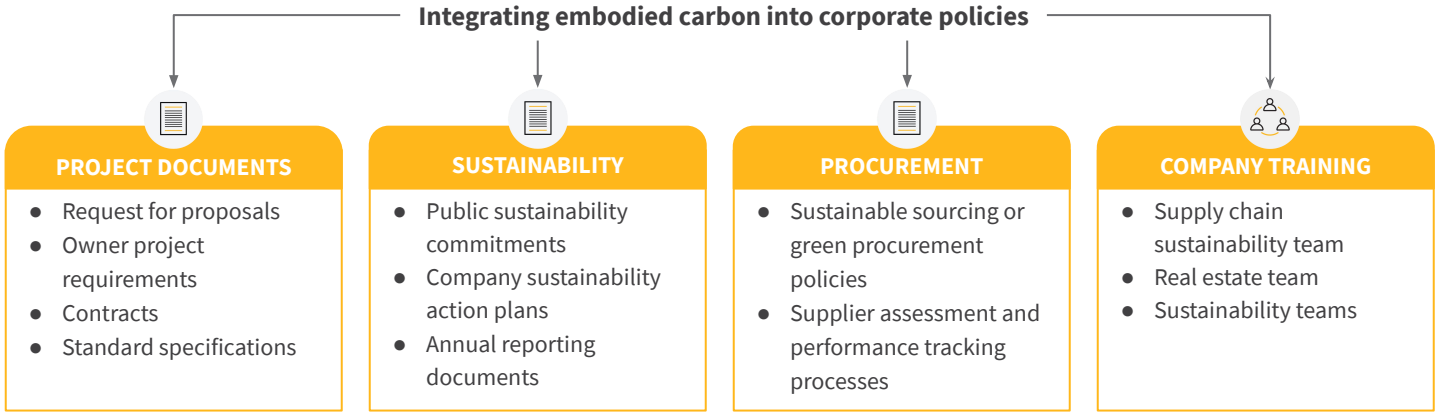

Figure 4. Integrating policies into organization-wide documents provides clear and consistent communication on priorities and ensures that reducing emissions becomes a part of business-as-usual. This diagram highlights documents to consider when integrating embodied carbon policies.