

INSIGHTS & INSPIRATIONS



Carbon insets, the role of contractors discussed at WLI's 'Embodied carbon' event

Kicking off ULI New York's Climate Week programming, the Women's Leadership Initiative dug into ways that designers, builders—even contractors—are changing the materials, processes and services used in construction by taking into account their 'embodied carbon' – or the cradle-to-grave carbon dioxide they emit. Featured speakers at the sold-out panel discussion, hosted by **Buro Happold**, included **Kate Ascher**, professor, Columbia's School of Architecture; **Billie Faircloth**, research director and partner at Kieran Timberlake; **Julia Gisewite**, chief sustainability officer at Turner Construction; and **Sonam Velani**, founder, Streetlife Ventures, a firm that invests in sustainable cities. Eight takeaways from discussion follow:

1. Early design phase embodied carbon measurements are the pathway to reducing embodied carbon through the design process

Use whole building life cycle assessments in early design phases to understand where impacts are the greatest, said Billie Faircloth, FAIA, research director and partner at Kieran Timberlake. Find embodied carbon 'hot spots' (materials, services, or processes that generate an outsized amount of carbon dioxide relative to the total embodied carbon). Options for materials, assemblies, and systems can be modeled, benchmarked, and optimized to help with building product selection decisions—and incentivize behavioral changes.

2. Current building stock doubling by 2060 ringing the alarm bell on buildings' carbon emissions

By 2060, the world is projected to add 230 billion m² (2.5 trillion ft²) of buildings, or an area equal to the entire current global building stock*. This is the equivalent of adding an entire New York City to the planet every 34 days for the next 40 years. This, and the fact that the built environment generates 40% all carbon dioxide

emissions** shows the magnitude of carbon emissions from real estate—and the great opportunity to reduce carbon emissions from our industry, even on the margins.

***UN Environment, Global Status Report 2017**

****Why The Building Sector? - Architecture 2030**

3. Contractor influence on reducing embodied carbon emissions growing

Contractors are playing a larger role in materials selection and building design decisions that could help dent carbon emissions from buildings. “Before, we’d do what the client asked,” said Julia Gisewite, chief sustainability officer at Turner Construction. “Now, contractors share their upstream and downstream observations,” she added, noting that the advice they can share for the selection of certain sorts of materials like concrete and steel are low hanging fruit for carbon reduction since these materials’ availability tends to be highly local and fragmented. “Know where your structure is headed and execute through the supply chain. Be very intentional in knowing the local supply chain,” she advised. “This is a long game. We have a lot of ‘have you considered’ conversations. Our role is still very much education. We have to be able to walk and chew gum. There is a bandwidth issue.”

4. Attention growing on adaptive reuse for both mitigation and aesthetic reasons, particularly among the next gen

“How can adaptive reuse help mitigate embodied carbon emissions? How much are you taking out? What are you putting back? Is reuse a form of climate change adaptation? Of mitigation? What is the value of reuse?” asked Ms. Faircloth, noting that many of the materials that remain in the adapted structure are a sunken cost. “They have a huge upfront carbon advantage.” That said, equity and environmental justice need to be top of mind when adapting existing buildings, she cautioned. Added Sonam Velani, founder of Streetlife Ventures, a fund that invests in urban climate solutions: “NYC has a lot of old assets. Young hip companies like exposed beams. It happens the world over. This type of building infrastructure will attract startups, especially for event venues.”

5. New methods, new metrics needed to value reclaimed materials

“Circularity intersects with this idea of care,” Ms. Gisewite said, citing the notion of ‘building passports’ or a DNA-like depository of all the prior and current materials in a building, to properly value and treat its skeleton and additional layers. “This demonstrates how values increase through reclaiming, revaluing, rebuilding” a structure’s portions, she said. Among areas meriting further study are how to reuse and recertify salvaged building materials. “There’s no end value for reused materials. The owner values circularity but ways to keep it a closed loop industry is not there. No one wants to warehouse. Logistical gaps will be solved with local marketplaces. We need to make them synergistic and connected. It is key. It is the next thing we need to talk to our clients about. These are pieces we need to solve for.”

6. Is the future ‘insets’ rather than offsets?

As companies look to reduce their carbon footprints, both in the work they do and how they source their supplies, a new concept called ‘insets’ is gaining traction. It builds on the prior ‘offsets’ notion of reducing the world’s total carbon emissions by investing in carbon mitigation projects such as tree planting or renewable energy projects elsewhere. Insets instead direct these dollars into one’s own supply chain, to speed up the commercialization of what one uses—in this case, building materials with lower embodied carbon. “There are so many green concrete startups,” explained Ms. Gisewite. “How many have scaled? How do we get these hundreds of startups over that hurdle to start to integrate their materials into building construction? If we’re going to invest dollars to get to NetZero, I’d rather invest in concrete startups in our supply chain. We need to invest in programs to get innovators to scale.”

7. More green material case studies needed to fast-track green material research, testing, approvals and production

“These are structural materials. Our buildings can’t fall down. For the majority of our clients, decisions are based on durability and functionality,” said Ms. Gisewite. Comparably lower carbon building materials come with their own questions and complexities. “There are layers. We have to get over that hump. We need more case studies and pilots,” she said.

8. City-backed incubator sites can help speed up green materials innovation

Urban initiatives can help green material makers scale up after pilots pass local muster. NYC is launching pilot sites at the Brooklyn Navy Yard where transit related technology startups can tap resources and space across 300 acres. Governors Island is doing the same with water. That is also true of The Army Terminal for Climate Innovation. “How can cities use their own assets?” asked Ms. Velani. But the associated bureaucracy is also often a hurdle. “One easy thing a city can do is aggregate that demand with a simple application form, with associated case studies,” she said.