



# EDspaces

Designing the Future of Education  
Charlotte, NC | November 7-9, 2023

## The Reality of Sustainability - Case Studies from The Field

Tuesday 10/7 – 1pm

Carrie Estock, Little  
Diversified Architectural  
Consulting

Joey Shea, Interface

# Learning Objectives

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- Demonstrate why embodied carbon emissions are the most urgent source of emissions in the built environment, and how they relate to carbon accounting
- Establish the opportunity for material selection and specification to have restorative impact
- Provide strategies to communicate progress and improve buy-in from the entire school community
- Examine real examples of holistic, restorative design in practice in the K12 segment

# Speakers

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Carrie Estock  
Senior Interior Designer  
Little Diversified Architectural Consulting



Joey Shea  
Manager, Mission Activation, Key Accounts  
Interface

Little is recognized  
for developing  
exceptional  
design solutions  
that deliver  
**RESULTS BEYOND  
ARCHITECTURE**  
for community  
spaces.

**Full Service:**

Architecture  
Interior Architecture  
Engineering  
Sustainability  
Site Design  
Planning  
Brand Communication + Design  
Digital Visualization  
Smart Building Technologies

**YEAR FOUNDED**

**1964**

**6**

**OFFICE  
LOCATIONS**

**31 LEED  
CERTIFIED  
SCHOOL PROJECTS**

**\$3B+**

**IN SCHOOL  
CONSTRUCTION**



# Framework for Design Excellence

DESIGN FOR COMMUNITY



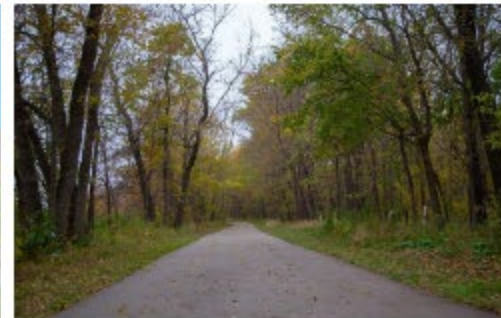
DESIGN FOR DISCOVERY

DESIGN FOR CHANGE



DESIGN FOR INTEGRATION  
DESIGN FOR WELLNESS

DESIGN FOR RESOURCES



DESIGN FOR ECOLOGY  
DESIGN FOR ECONOMY

DESIGN FOR ENERGY



DESIGN FOR WATER

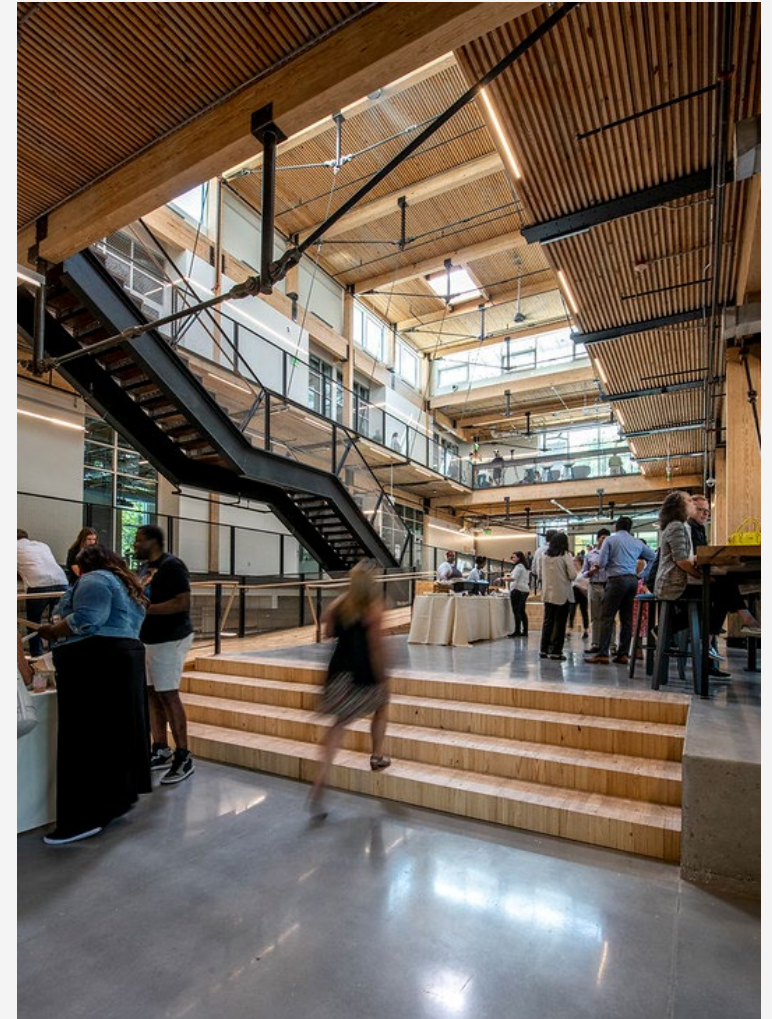
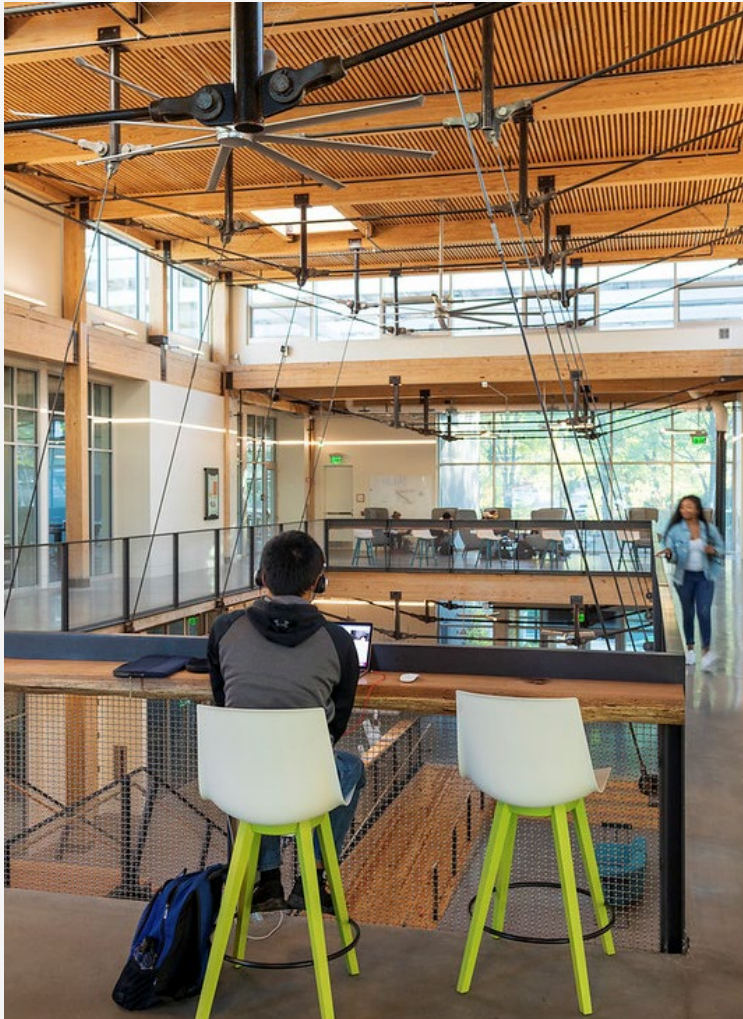


# Restorative Space – People Thriving





## Restorative Space – Reclaiming Material, Creating Character



Images Courtesy of the Living Building at Georgia Tech.  
Available at: <https://livingbuilding.gatech.edu/>



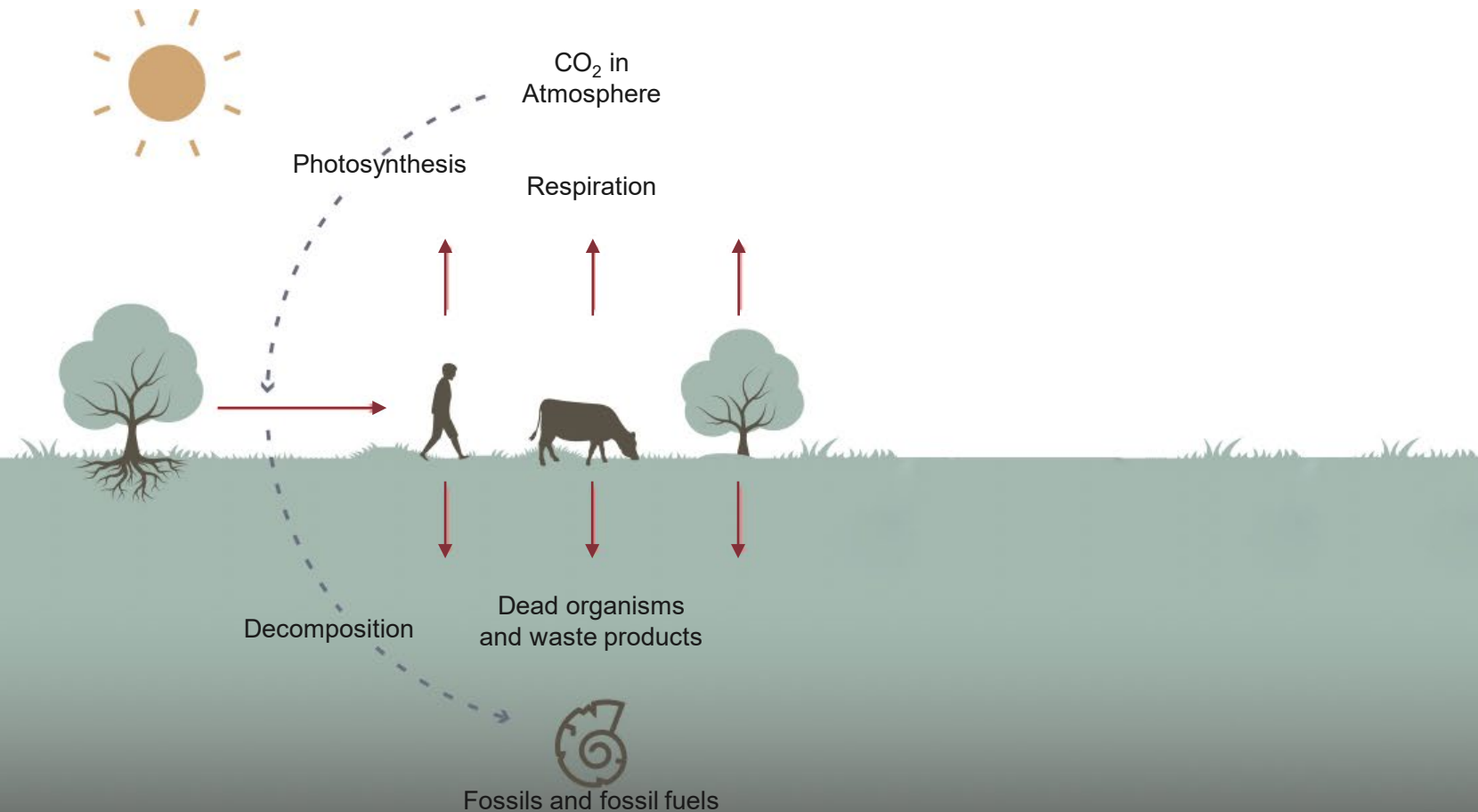


Back to school for a minute...

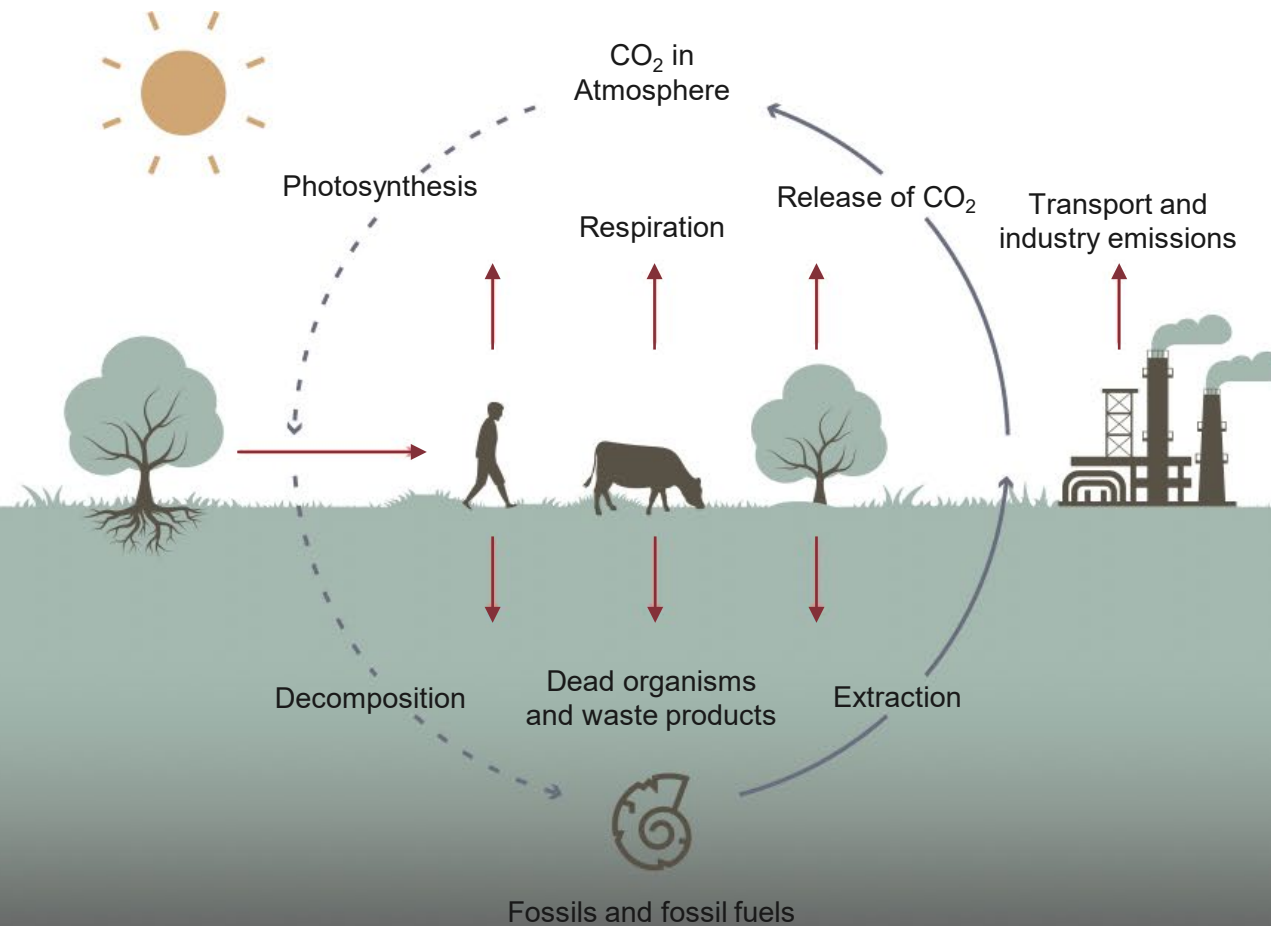


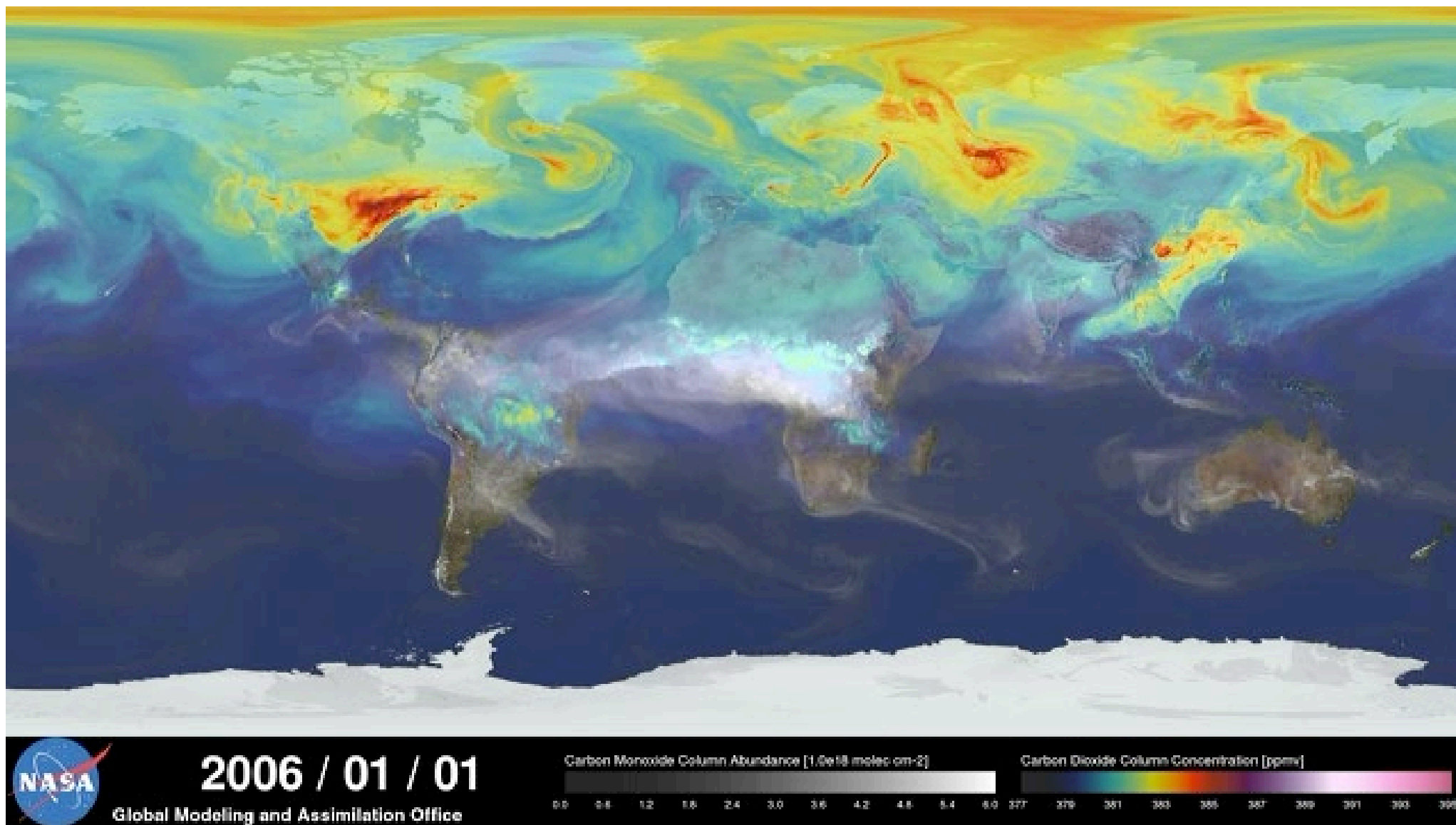
# The Carbon Cycle

Our planet cycles carbon dioxide (CO<sub>2</sub>) from the atmosphere into organisms and the Earth and then back into the atmosphere. It's been working well for... a long time.

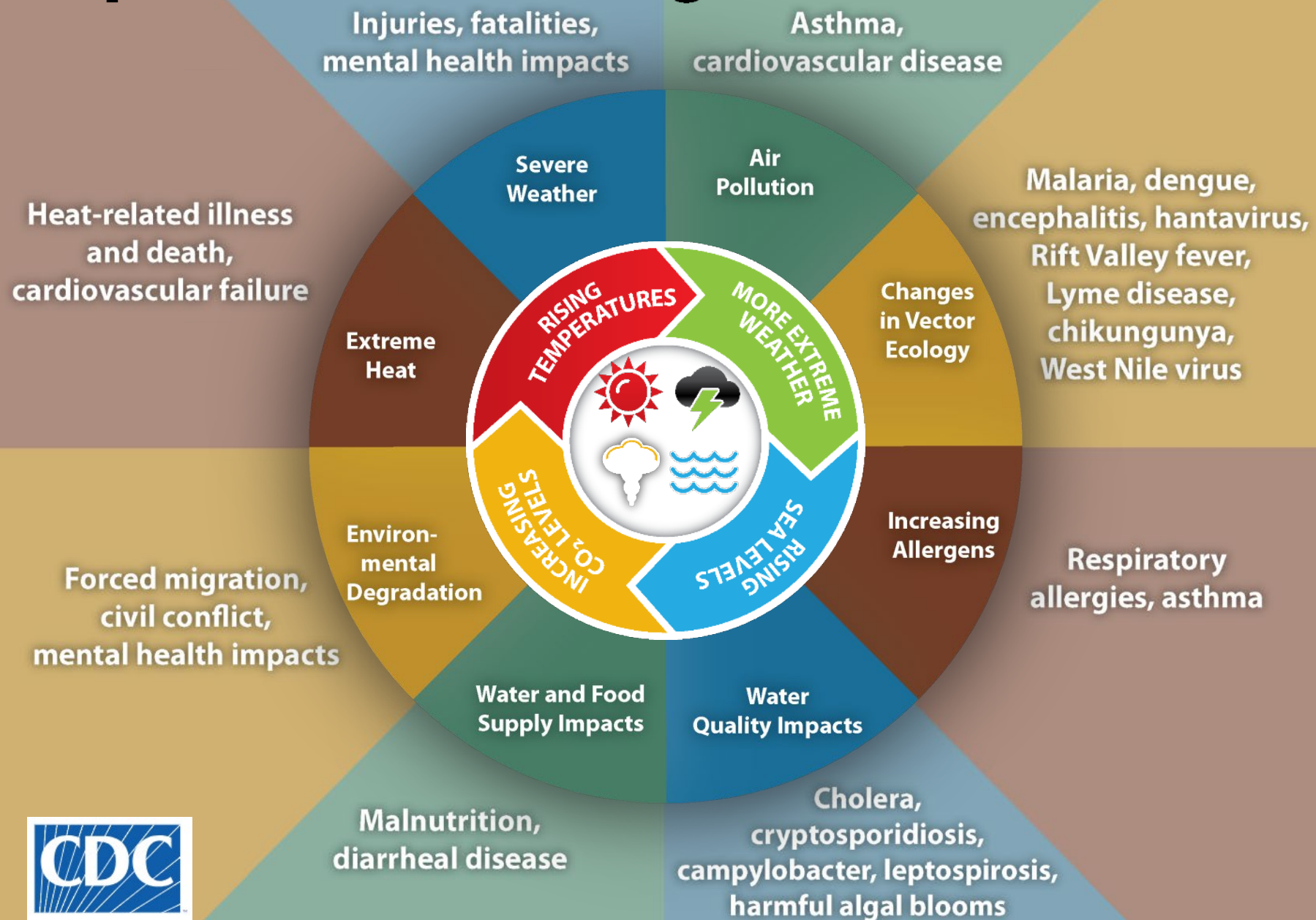


# The Carbon Cycle + Humans





# Impact of Climate Change on Human Health







## HEALTH

We design environments that elevate health and wellness.



## ENERGY

We use a smart, responsible design approach to reduce the energy demand of our projects and practice.



## WATER

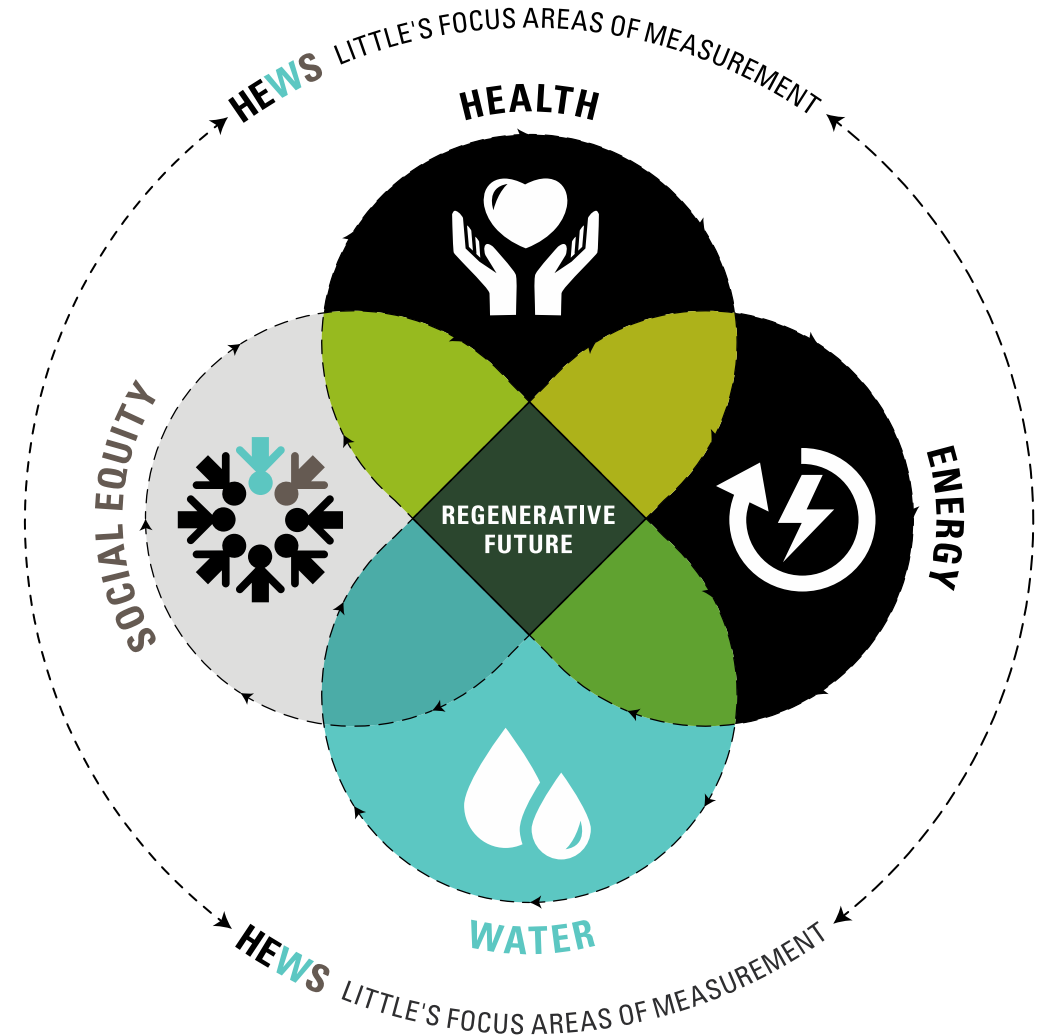
We design for the preservation and conservation of water.



## SOCIAL EQUITY

We address universal design and social inequities through empathetic and intentional planning.

Focus Areas of Measurement



Pathway to a Regenerative Future



# Breaking Down Organizational Carbon Footprint

Three categories of emissions:

## Scope 1

- Direct, on-site emissions (usually due to burning fuels)

## Scope 2

- Emissions associated with energy/utility purchases to operate the business (includes electricity and steam)

## Scope 3

- Emissions related to all other company activities (not directly controlled by the company itself)

## What Counts as Scope 1 or 2?

### Scope 1

On-site emissions including:

- Natural gas combustion (for heating, manufacturing, etc.)
- Vehicle emissions
- Process emissions  
(e.g., chemical reactions in cement or steel production)

### Scope 2

Emissions from purchased energy

- Carbon emissions from utilities



# FLORIDA'S FIRST **NET-ZERO** PUBLIC SCHOOL

**76%**

less energy  
than a typical  
public school

**\$3.2M**

in savings over  
20 years

- Reduced EUI by 72%.
- Reduced Air Infiltration by 80%.
- 202 KW Solar Photovoltaic array.
- 12-year payback investment, to make the project reach Zero-Energy.
- Super tight building skin with an air leakage rate of .027cfm reducing the required cooling system by 62 tons.
- All LED lighting which uses at least 75% less energy than a typical lighting system.

**\$287**  
COST PER SF

## NEOCITY ACADEMY STEM HIGH SCHOOL





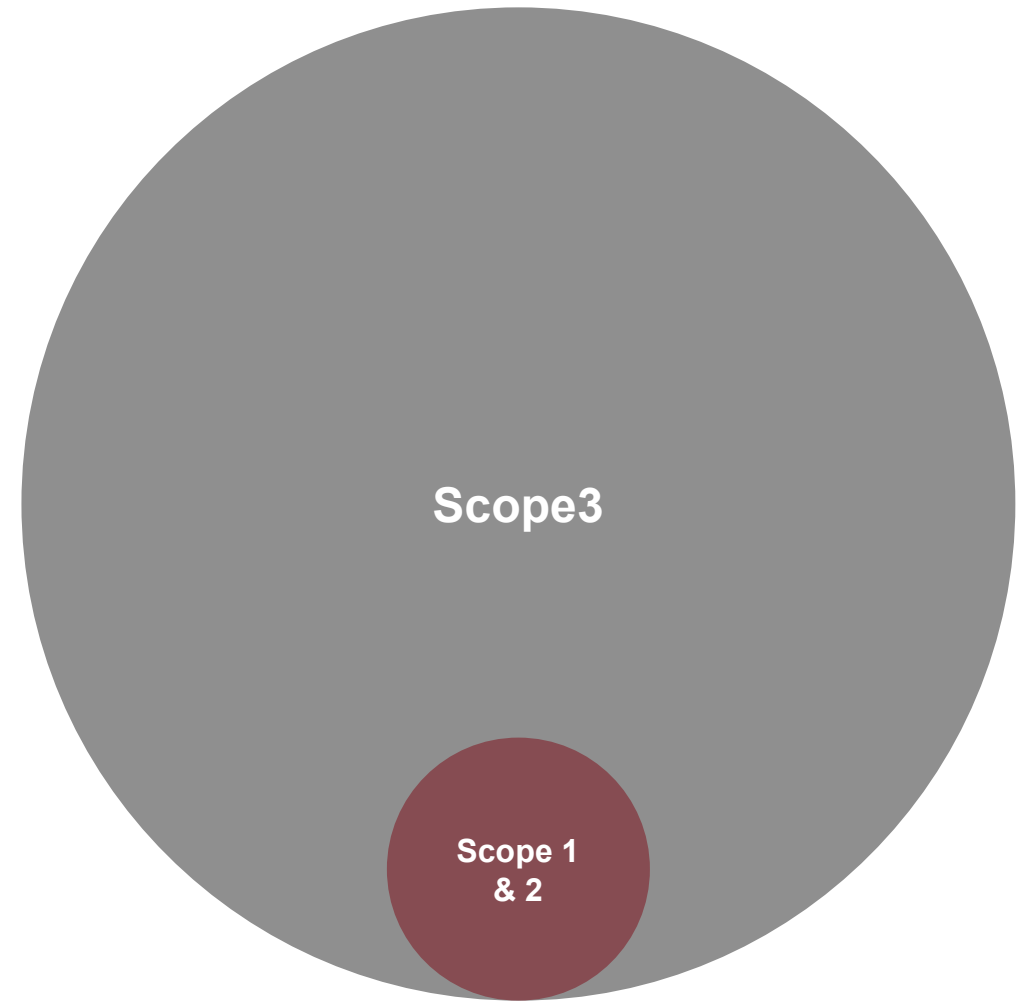




## Prioritizing Impact – Scope 3

Scope 3 emissions almost always account for the vast majority of a company's footprint, though it varies by certain factors like:

- Industry/sector
- Type of business (i.e., retail, manufacturing, professional services)

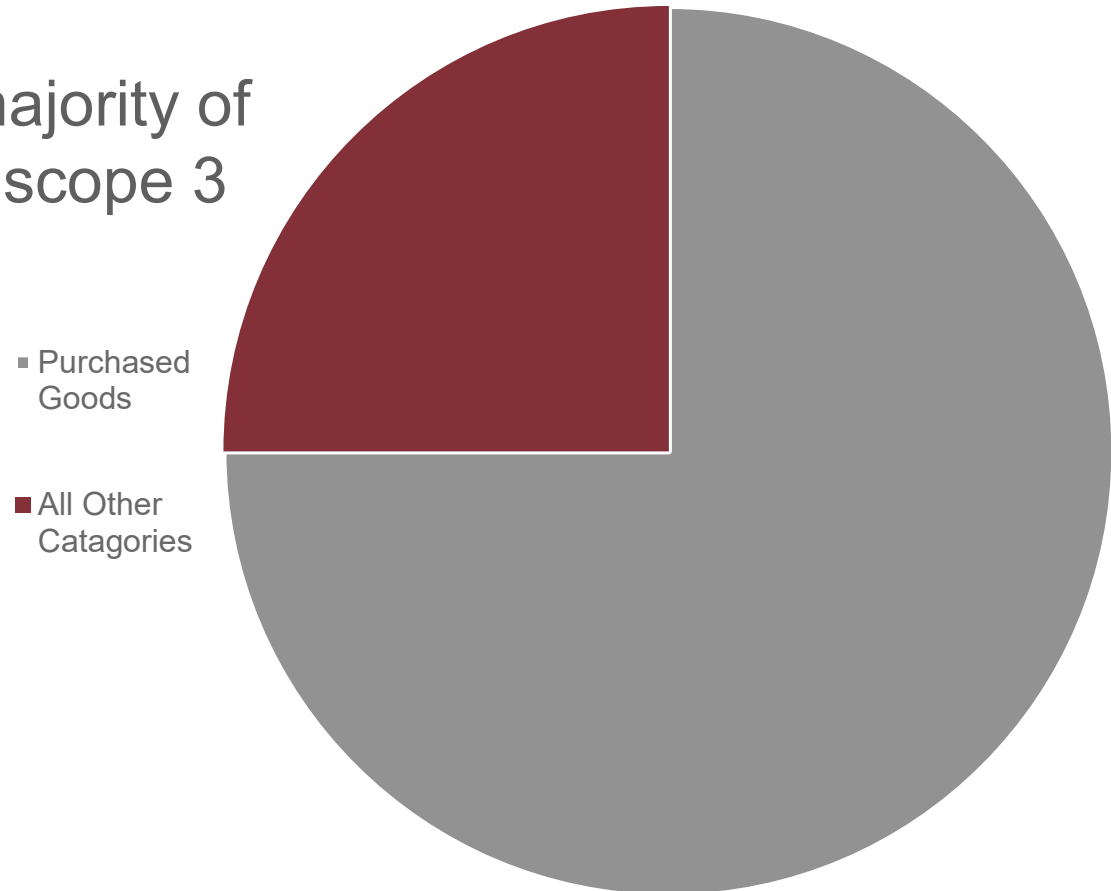


### Where to Focus Within Scope 3

Scope 3 emissions account for the majority of your district's footprint; but not every scope 3 category has equal impact:

#### **Purchased goods and services**

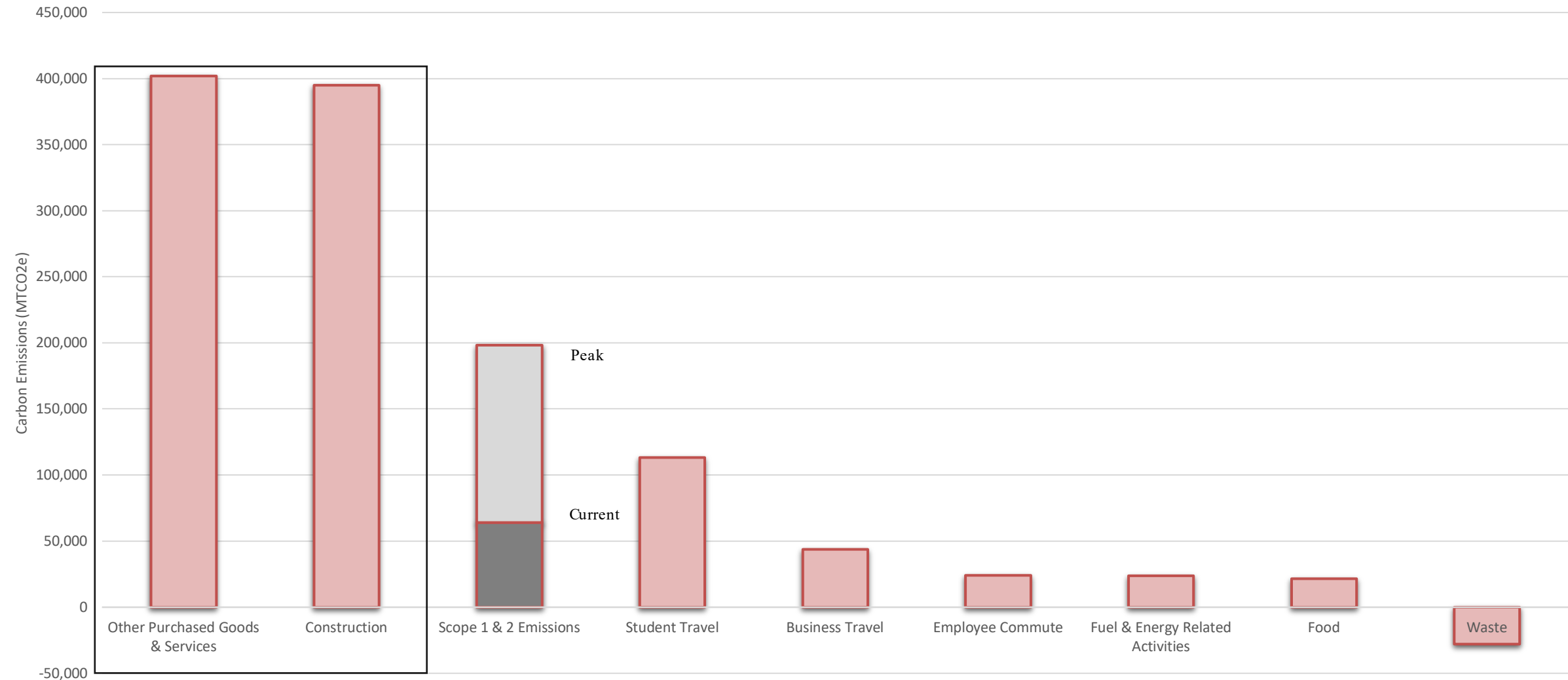
- MasterCard – 88%
- UT Austin – 66%
- Interface – 57%
- Target – 53%



# Scope 3 Emissions Results to Date

## Stanford University CY19 Emissions

8 of 9 total relevant scope 3 categories, compared to scope 1 & 2 emissions

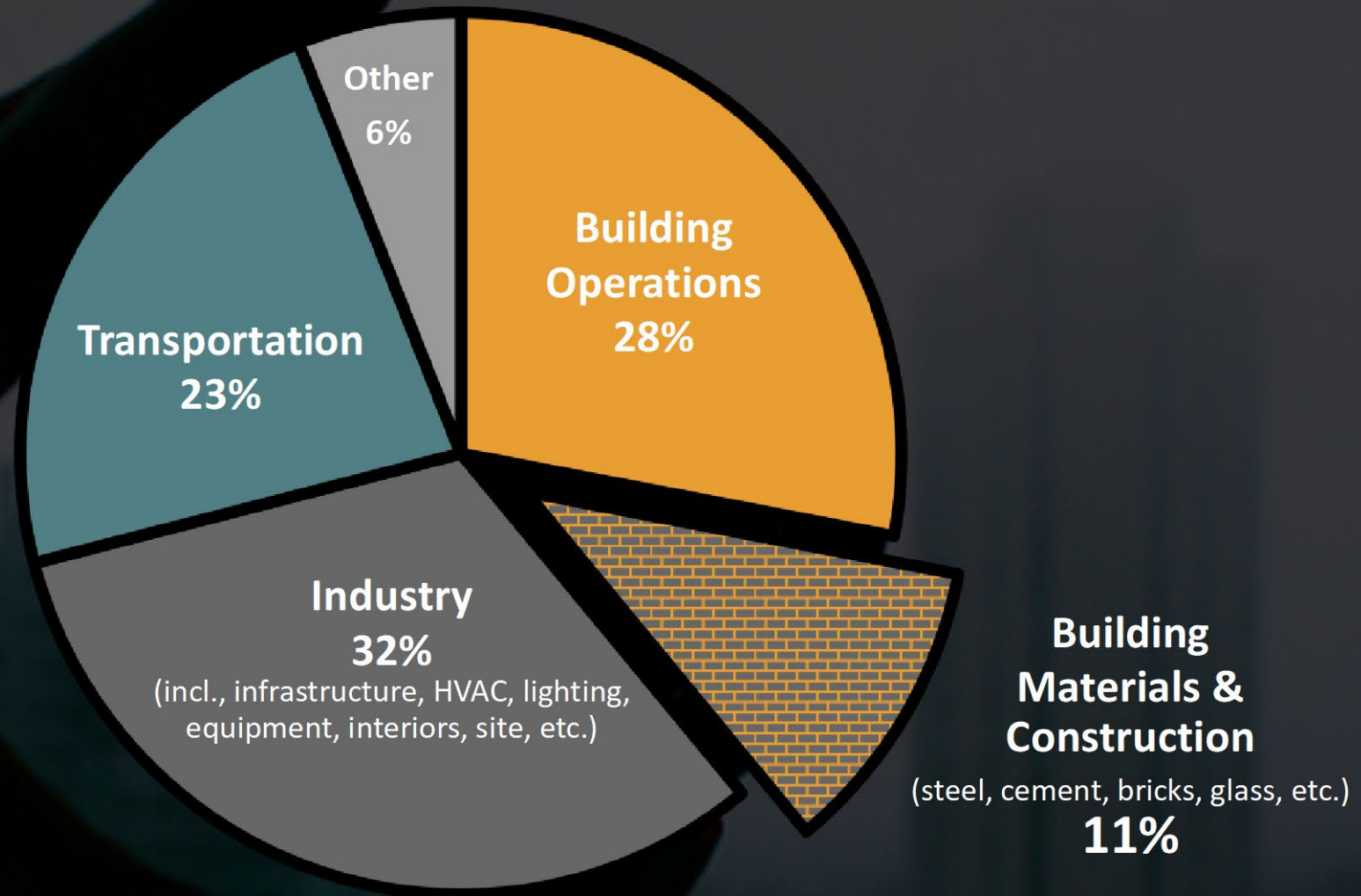




# Toward Restorative Materials

Can we take supply chains from major sources of emissions to the basis for climate-restoring architecture?



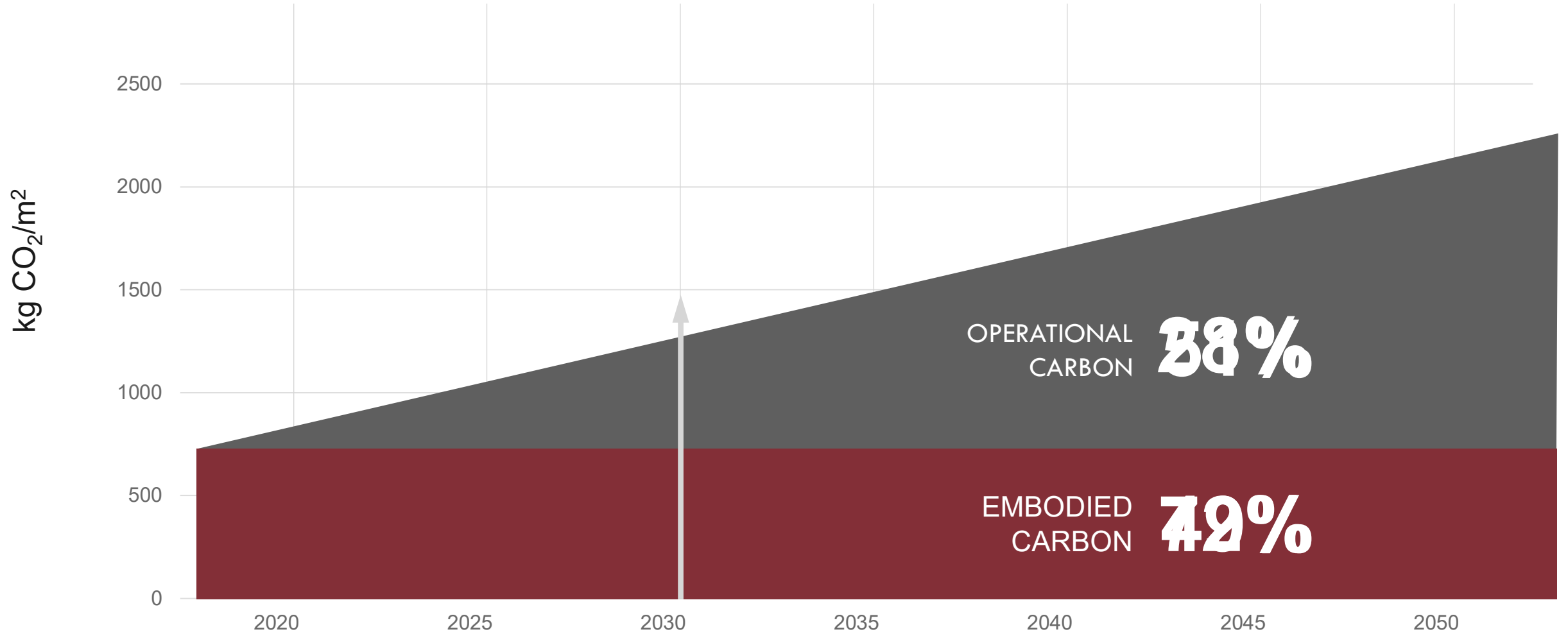


### Global CO<sub>2</sub> Emissions by Sector

Source: IEA, Global ABC

# Carbon Footprint of a **Single Building**

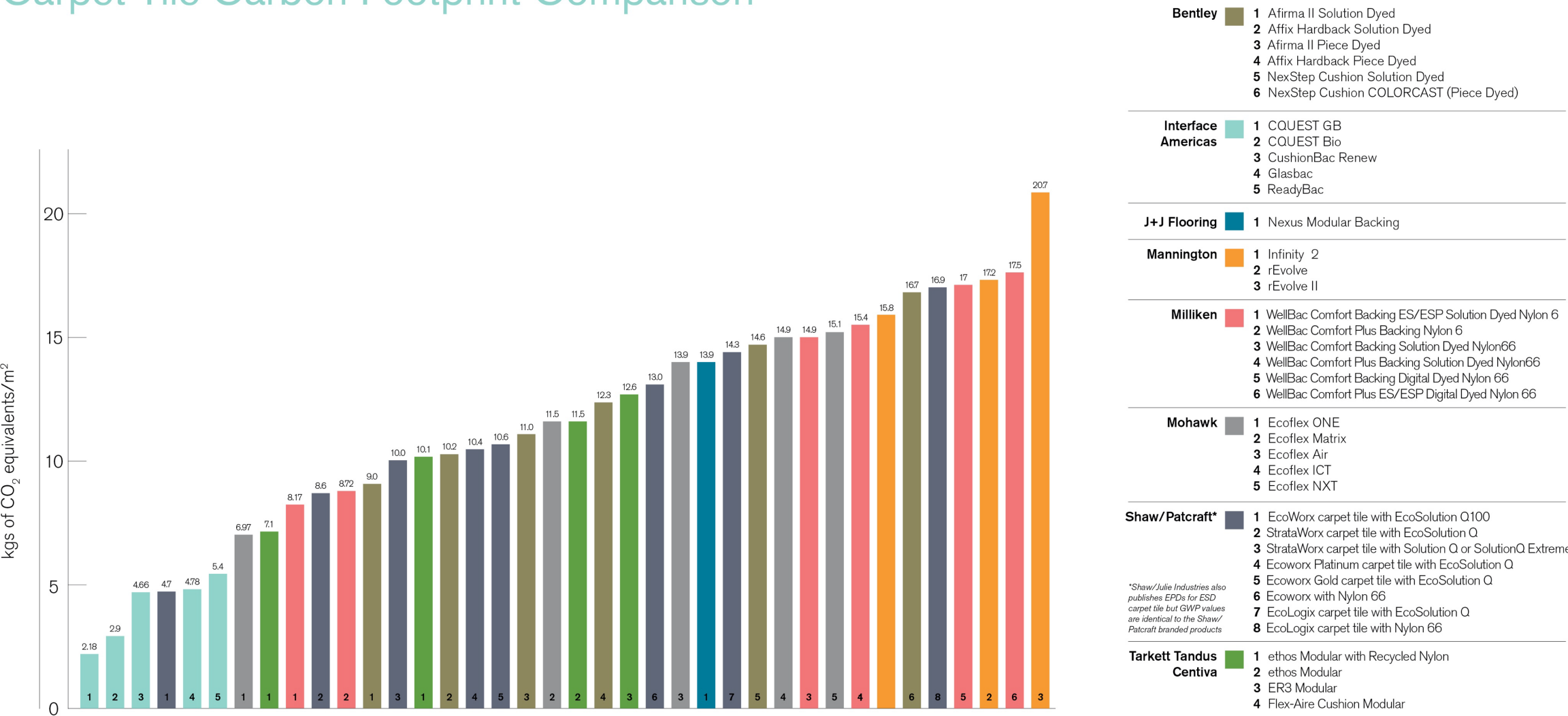
*Global Average (business as usual)*





# CRADLE-TO-GATE, FROM RAW MATERIAL EXTRACTION THROUGH MANUFACTURING

## Carpet Tile Carbon Footprint Comparison



The carbon footprint values are taken from publicly available third party verified Environmental Product Declarations. Although Environmental Product Declarations generally have limited comparability, the characterization factor for each product's carbon footprint is the same across all of these Environmental Product Declarations. This data is geographically limited to United States manufacturing and the above metrics do not compare any product outside of the United States. Updated May 2022





*Live Zero*

UR101 - 103505 Flax/Grass, UR102 - 102995 Flax, UR103 - 100641 Grass



*Love Carbon*



# Proof Positive Tile

The World's First Carbon Negative Carpet Tile





PUTTING THE PIECES TOGETHER

## The carbon negative carpet tile

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The carbon negative materials in the CQuest™BioX backing, in combination with specialty yarns and tufting processes, result in a carbon negative carpet tile. The finished product brings together durability, industry-leading design, and a negative carbon footprint that ultimately benefits the planet and shows that the pursuits of great design and sustainability are inseparable.

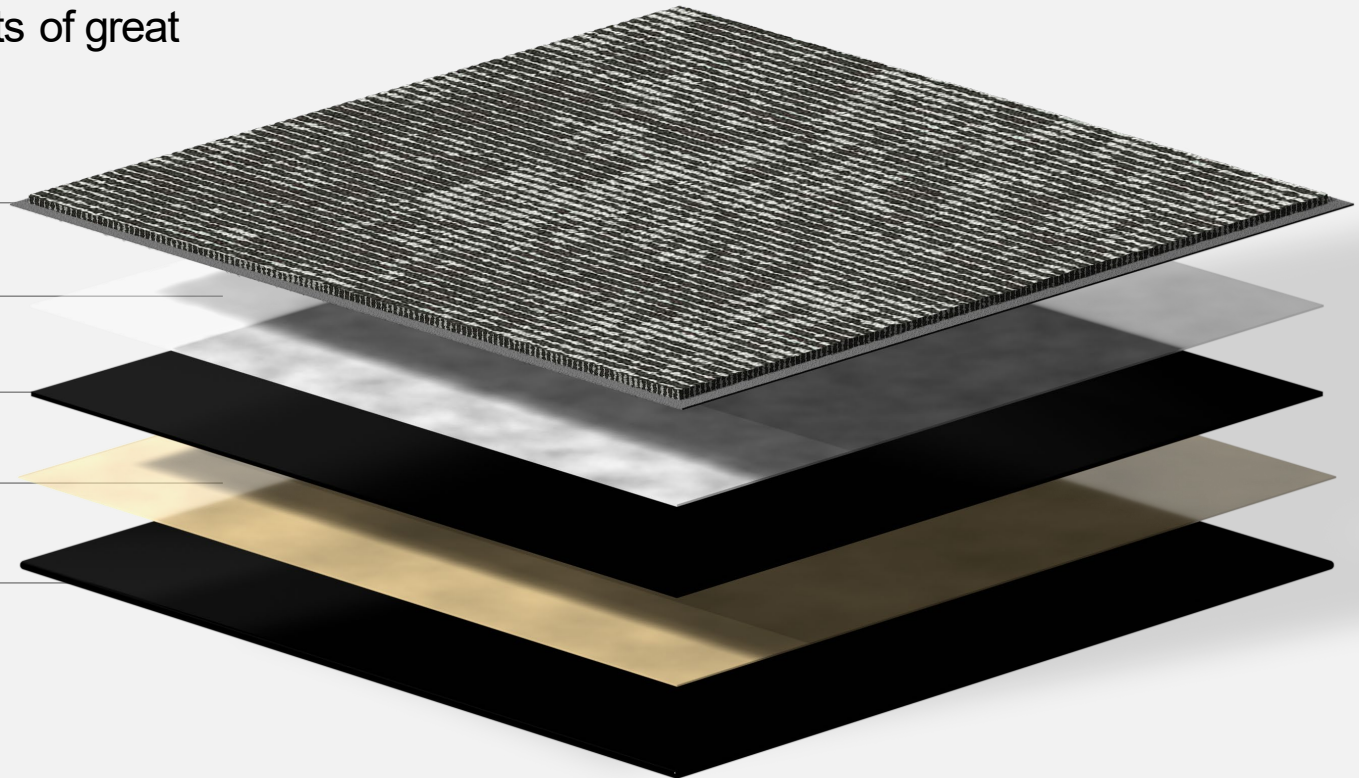
Tufted Carpet into the Primary Backing

Pre-Coat

Backing Compound

Stabilizing Glass Tissue

Backing Compound



One final case study –  
ambition for impact  
beyond carbon and  
building performance!



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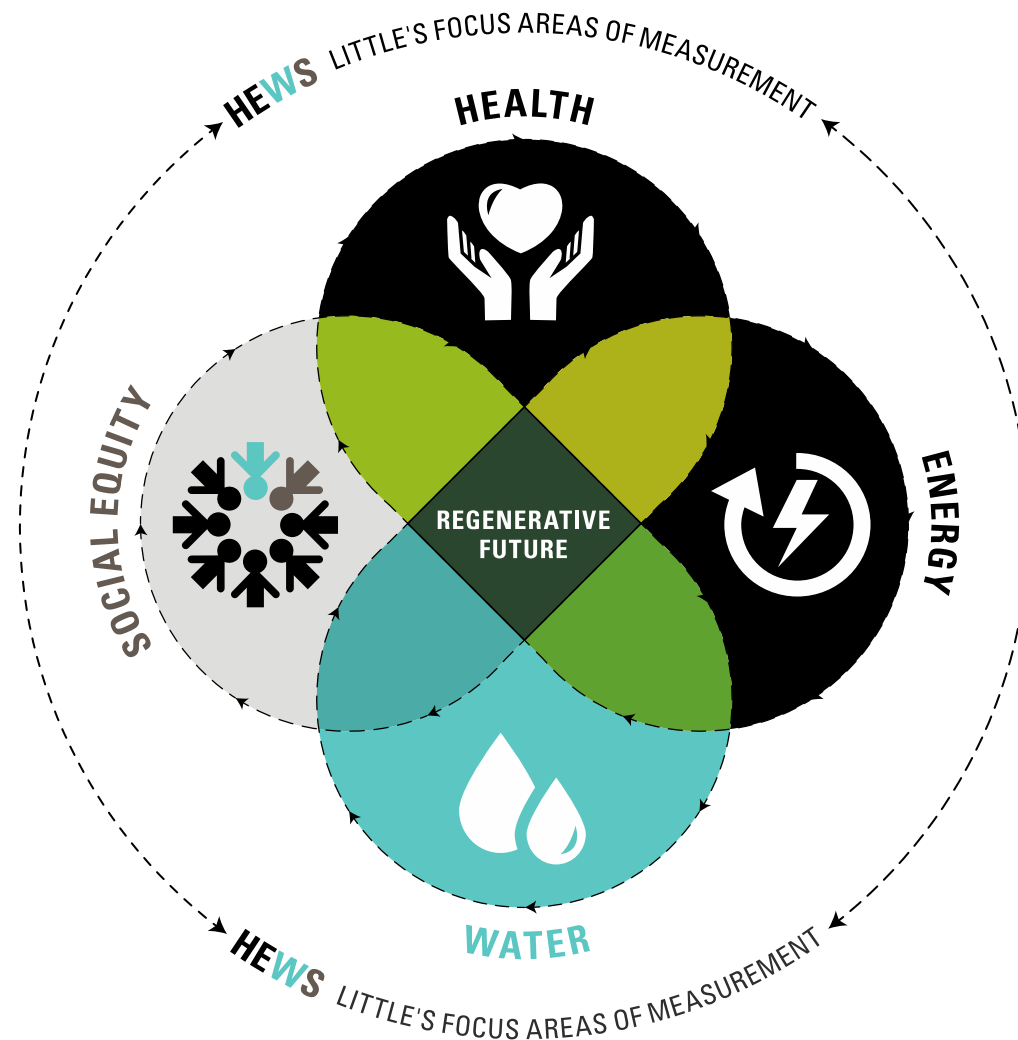


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Focus Areas of Measurement



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Pathway to a Regenerative Future





**\$203**  
COST PER SF

# RENAISSANCE WEST STEAM ACADEMY

# LEED

## SILVER CERTIFIED

**59%**  
Recycled  
Building  
Materials

**42%**  
Water  
Use  
Reduction

- Final Cost \$26.3 M
- Students achieved academic progress of 92% — up from 58% in its first year
- Optimized energy performance at 24%
- Construction waste management at 88%
- Net greenhouse gas emissions at 417
- 22% of building materials were regionally sourced
- Breaking the cycle of intergenerational poverty by providing high-quality educational options for all, regardless of income

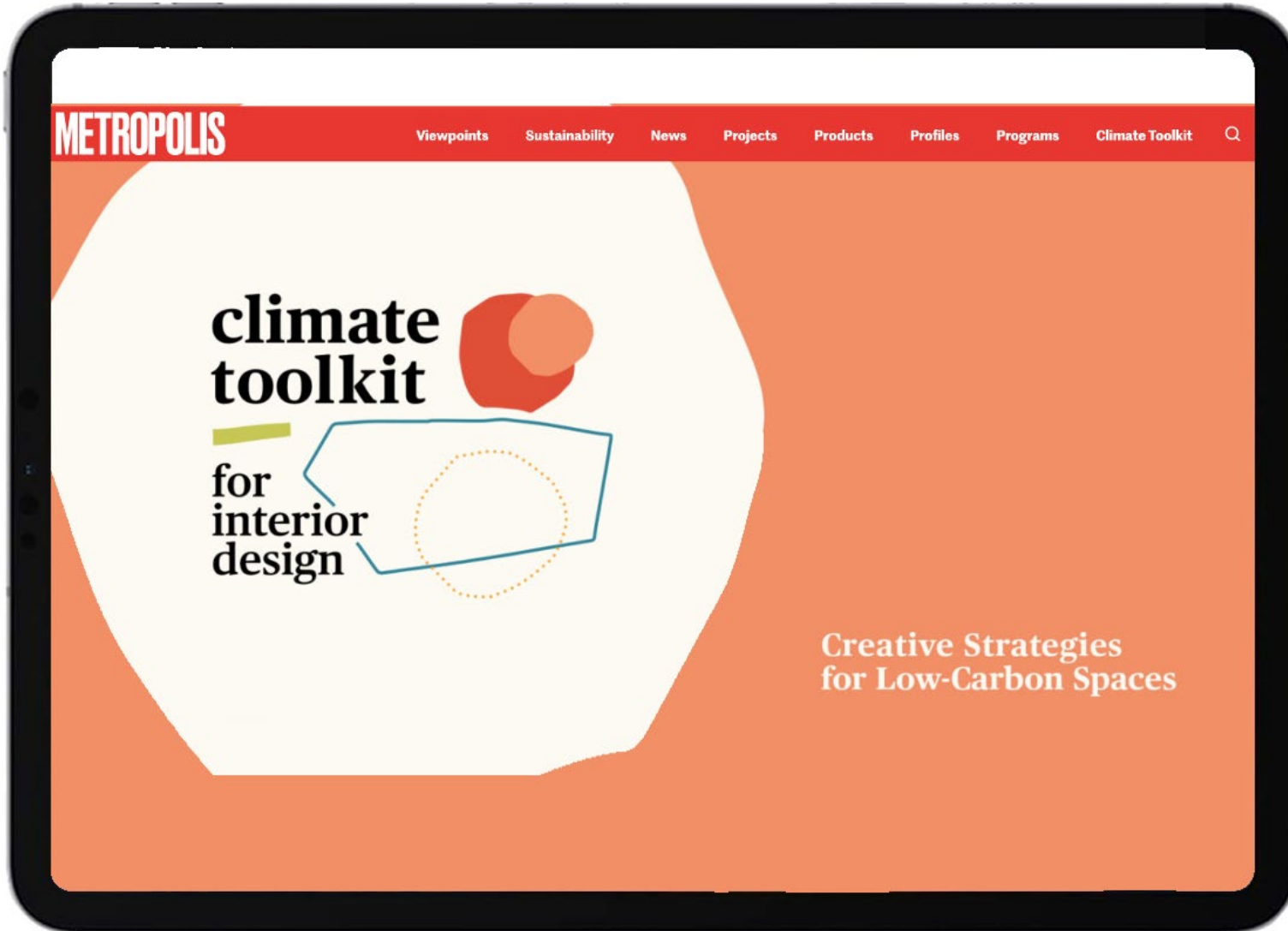






What tools and  
resources are out there  
to help us get started?

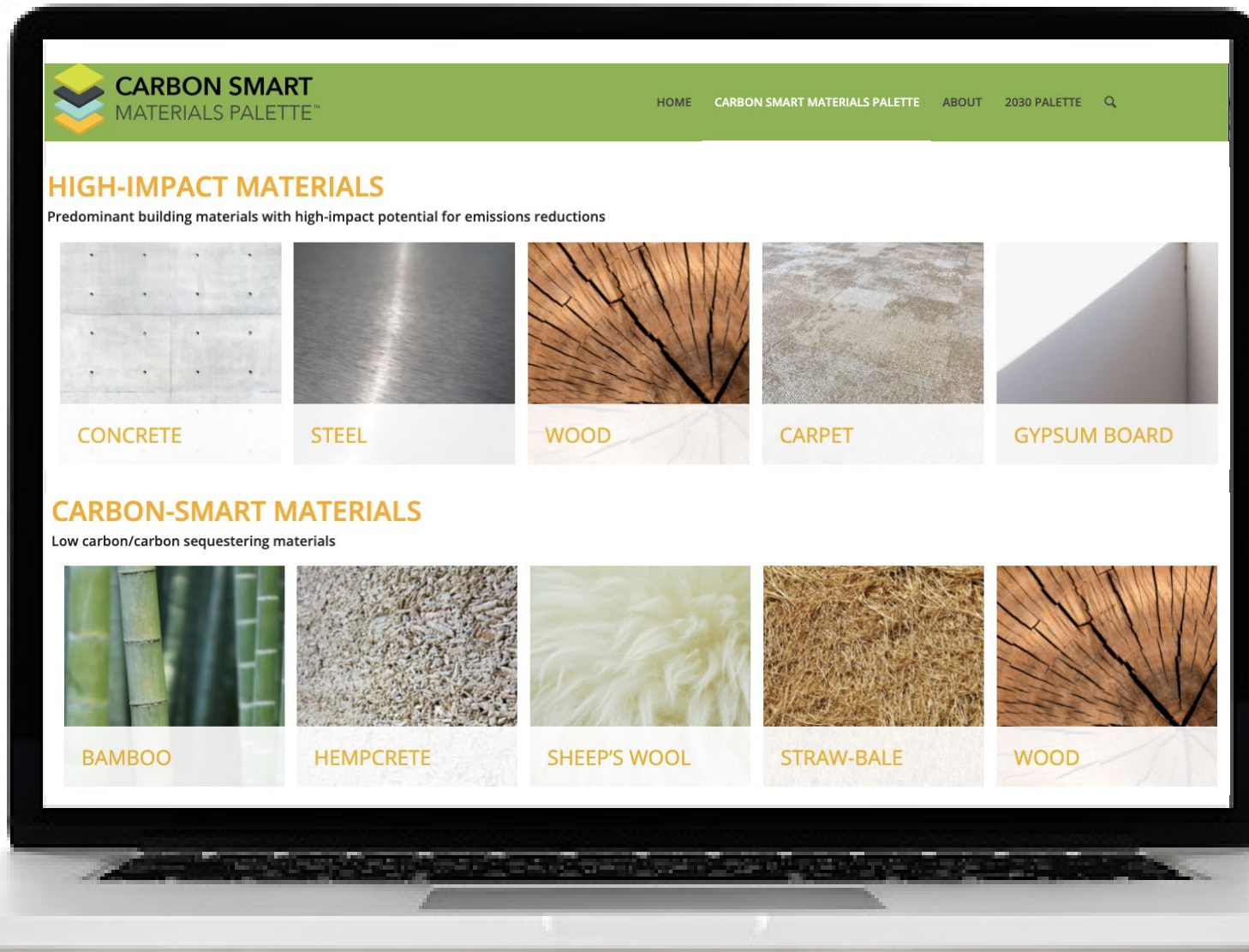
# Climate Toolkit for Interiors



- Designer-oriented
- Advice at every stage of projects
- From material reuse to material selection

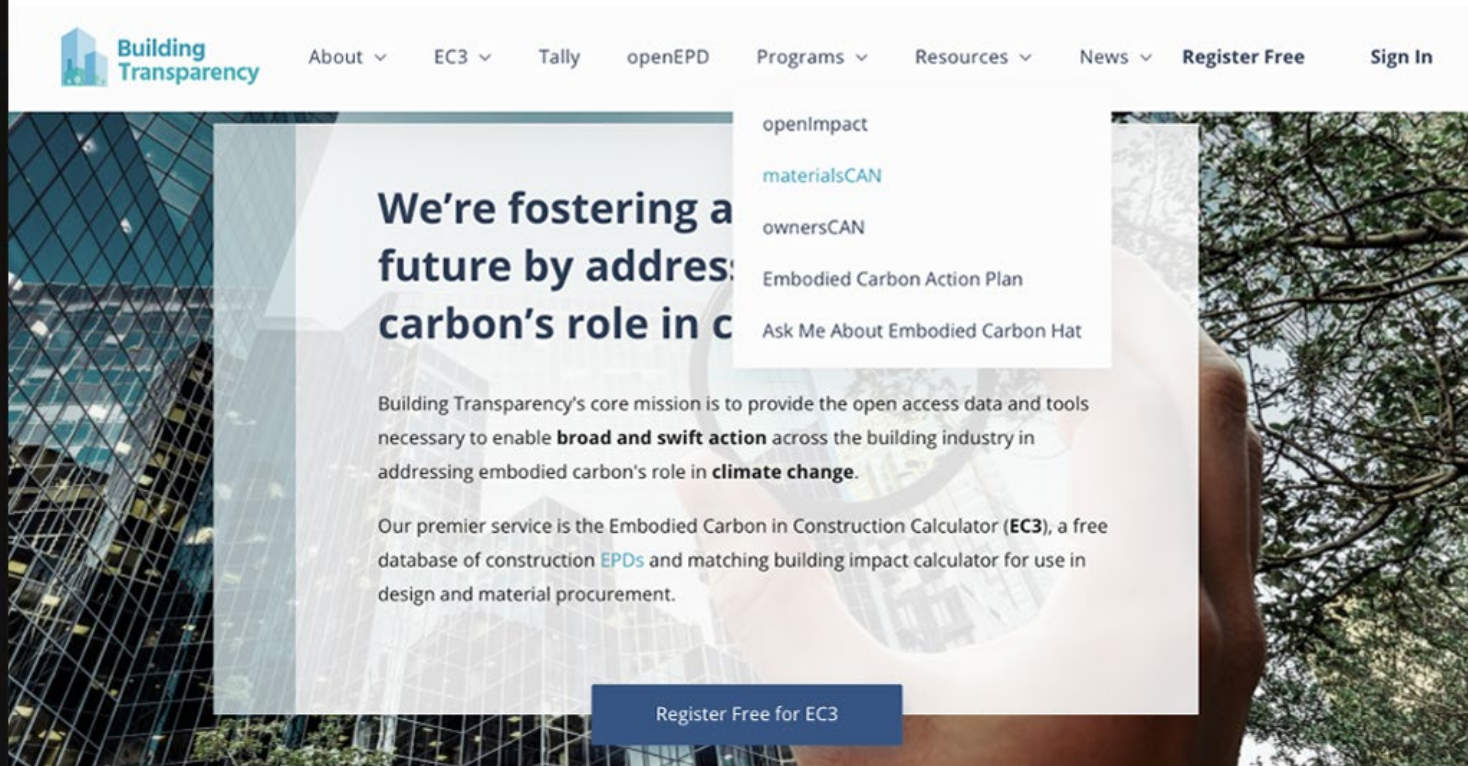
[metropolismag.com/climatetoolkit](https://metropolismag.com/climatetoolkit)

# Carbon Smart Materials Palette





# Building Transparency



- The EC3 Tool – Free Embodied Carbon Calculator
- materialsCAN
- ownersCAN
- Embodied Carbon Action Plan

[buildingtransparency.org](https://buildingtransparency.org)

## Questions and Discussion

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Carrie Estock | Senior Interior Designer  
Carrie.Estock@littleonline.com  
Joey Shea | Manager, Mission Activation  
Joey.Shea@interface.com

Thank you

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# Thank You!

Please scan the QR code to  
provide session feedback.



SCAN ME