



climatepositive
design

2024 Annual Report
BEYOND NEUTRAL

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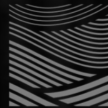
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2024 Year In Review

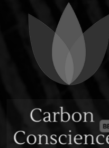
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American Society of
Landscape Architects

BSLA



Many thanks to our sponsors, collaborators and supporters.
Climate Positive Design continues because of you.

Climate Positive Design's mission is to **positively impact the climate and biodiversity crises** in the exterior built and natural environment, through advocacy, education and design.

Why?

According to UN Habitat, the urban built environment is responsible for 75% of global greenhouse gas (GHG) emissions. To prevent irreversible climate impacts to humanity and the planet, we must take action now.

Not only do those responsible for the design, construction, and maintenance of the exterior built environment share the responsibility of reducing those emissions, but through nature-based solutions, we can actively take carbon dioxide out of the atmosphere.

Through thoughtful design and measurement, projects strive to remove more carbon than they emit while providing ecological, social and economic benefits. They can become climate positive—simultaneously advancing resilient, biodiverse, and equitable communities while helping stay within the 1.5°C carbon budget.

Who can contribute?

Landscape architects, engineers, designers, planners, related disciplines, organizations, municipalities, developers, academic institutions, students, property owners, and many more.

All Contributors that log project impacts are listed on the website www.ClimatePositiveDesign.org

Leadership

Climate Positive Design (CPD) is a small, woman-led 501(c)(3) non-profit organization, founded in 2019 as part of a research initiative supported by the Landscape Architecture Foundation Fellowship for Innovation and Leadership. The initiative is grounded in three principles: Advocacy, Education and Design.

Pamela Conrad guides the initiative in collaboration with the following Advisory Partners and team members.



Pamela Conrad
PLA, ASLA, LEED AP
Founder, Executive Director

"I grew up on a farm in the mid-western United States. I loved everything about the trees, plants, animals, and water that was part of our everyday life. That's why I became a landscape architect. Embedded with a deep sense of responsibility for our environment, I am committed to having a positive impact on the climate and biodiversity crises."

Over **40 individuals**
from **30+ organizations**
in **8 different countries**
for **ONE CAUSE**

RESEARCH & DESIGN



Greg Barger
CPD Technical Director



Eustacia Brossart
CPD Research Director



Ed Mazria
Architecture 2030



Vincent Martinez
Architecture 2030



Erin McDade
Architecture 2030



Jamie Jang
Architecture 2030



Deanna Lynn
ASLA



Chris Hardy
ASLA/LAF/Sasaki



Amy Whitesides
Harvard GSD



Prateek Jain
Atelier Ten

ADVISORY PARTNERS / COLLABORATORS



Torey Carter-Conneen
ASLA



Katie Riddle
ASLA



Jared Green
ASLA



Vaughn Rinner
ASLA



Sarah Fitzgerald
ASLA



Diane Jones Allen
ASLA



Jose Alminiana
ASLA



Barbara Deutsch
LAF



Stacy Smedley
Building Transparency



Claudia Dobles Camargo
Harvard Loeb / MIT



Lisa Richmond
Architecture 2030



Bruno Marques
IFLA



Kotchakorn Voraakhom
IFLA



Colleen Mercer Clarke
CSLA / IFLA



Claire Martin
AILA/IFLA



Martin O'Dea
AILA



Hope Parnham
CSLA



Debi Denny
ASCE



Lauren Alger
ASCE / STV



Siddharth Narayan
ASCE/East Carolina University

TECHNOLOGY



Clay Teeter
Maalka, Inc.



Wynne Teeter
Maalka, Inc.



Tyler Maisano
TheMayo



Phil Northcott
C-Change Labs



Cameron Nimmo



Nick Zaytsev



Lauren Peters Lague
Catapult



Kira Gould
Kira Gould CONNECT



Nahal Sohbaty
Topophyla



Eric Ameson
Topophyla

COMMUNICATIONS

Tools. Resources. Guidance.

The **Climate Positive Design Challenge** establishes carbon performance targets for projects to accomplish. The goal is to increase carbon sequestration and reduce and offset emissions within the site as soon as possible, taking more carbon dioxide (CO₂) out of the atmosphere than emitted and becoming climate positive.

Although current “business as usual” practices show emissions greater than sequestration on site design projects, CPD’s tools, guidance and resources support the following:

For all site design projects to:

- **take more CO₂ out of the atmosphere than emitted by 2030** and
- **by 2050 to remove 1 gigaton of CO₂ beyond offset emissions** to support preventing the 1.5°C temperature increase and remaining 340GT carbon budget

Removing 1 gigaton from the atmosphere by 2050 would place this initiative in the top 80 Solutions listed in “Drawdown”, by Paul Hawken. “Project Drawdown” is a comprehensive plan that identifies strategies when combined together by 2050 would reduce GHG concentrations on an annual basis, thus reversing global warming.

Targets are established as follows:

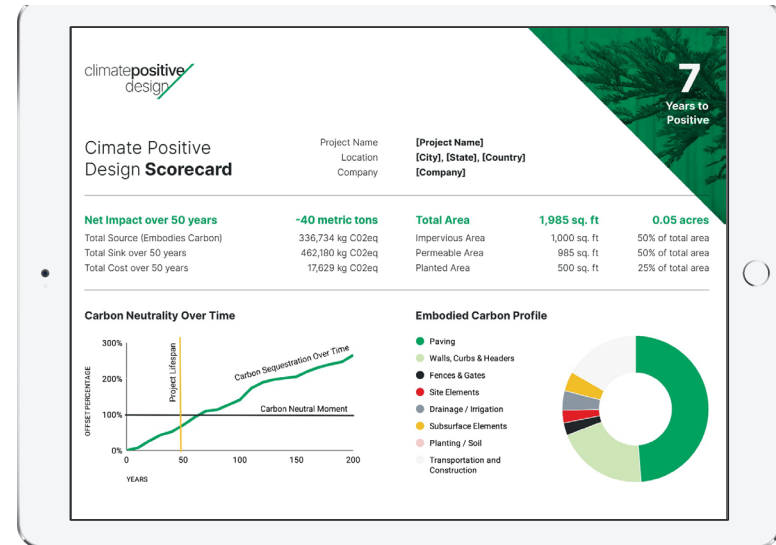
- **5 years to positive** for parks, residential, on-structure, mixed-use or campus developments
- **20 years to positive** for streetscapes or plazas
- **25 years to positive** for infrastructure

Targets were informed by case studies and a design toolkit that outlines strategies, available online at: www.ClimatePositiveDesign.org



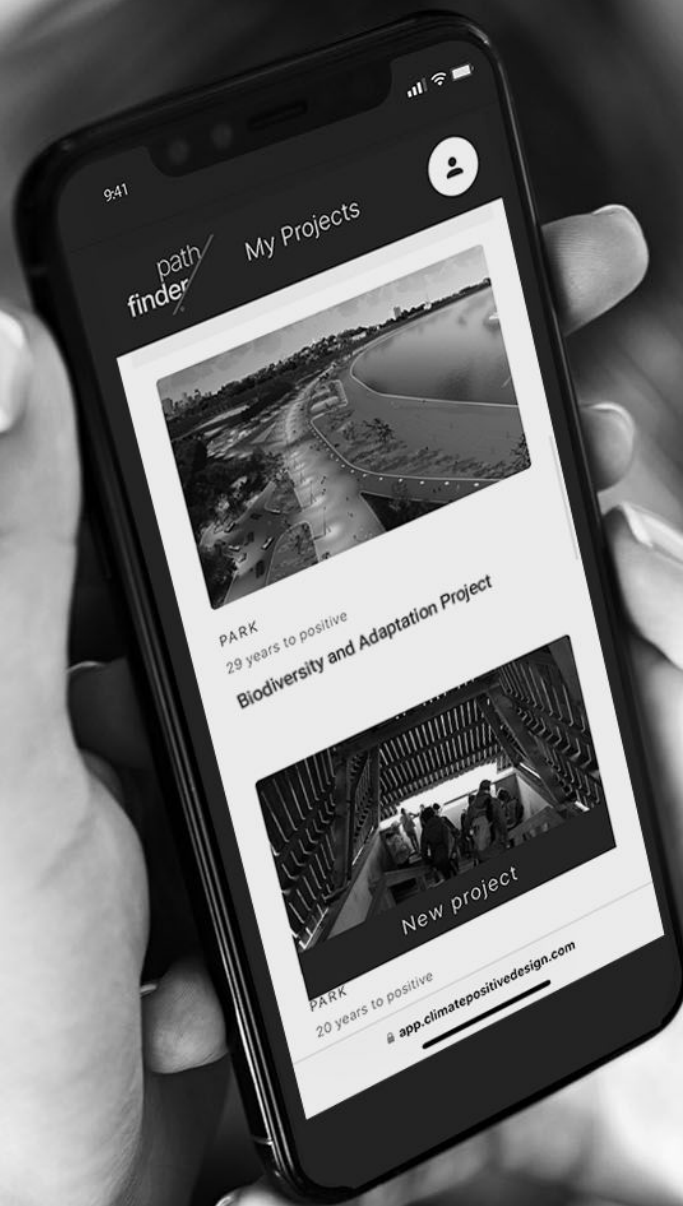
To meet the goals of the Challenge users log projects into the free, web-based application called **Pathfinder**. By inputting basic material and plant quantities along with maintenance plans, it calculates embodied and operational carbon emissions along with carbon sequestration and storage. The time it would take for the project to offset its emissions is calculated giving a “climate positive” score. Pathfinder then provides guidance on ways to reduce emissions and increase sequestration to improve the score and meet the goals of the Challenge.

A scorecard is provided that can be shared with others and projects can be updated at any point in time.



The methodology and metrics have been evaluated to align with industry standards, including CLF’s Embodied Carbon Harmonization and Optimization (ECHO) project. The full [Methodology Report](#) is available online as well as a [User Guide](#).

[Sign-up](#) to receive notice of Pathfinder updates.



path
finder

Patfinder 3.0 Expansion: Beyond Carbon

In fall 2024 Climate Positive Design launched Pathfinder 3.0.

Updates Include:

- Expanded Materials Emissions Data Set including Infrastructure
- Distance and Transportation Emissions Modifiers
- Protected and Restored Ecosystem Sequestration
- Biodiversity, Water, Cooling, and Equity Impact Tracking
- Advanced Scorecard with Baseline Metrics
- New Pathfinder 3.0 User Guide and Methodology Report
- ... and many more!

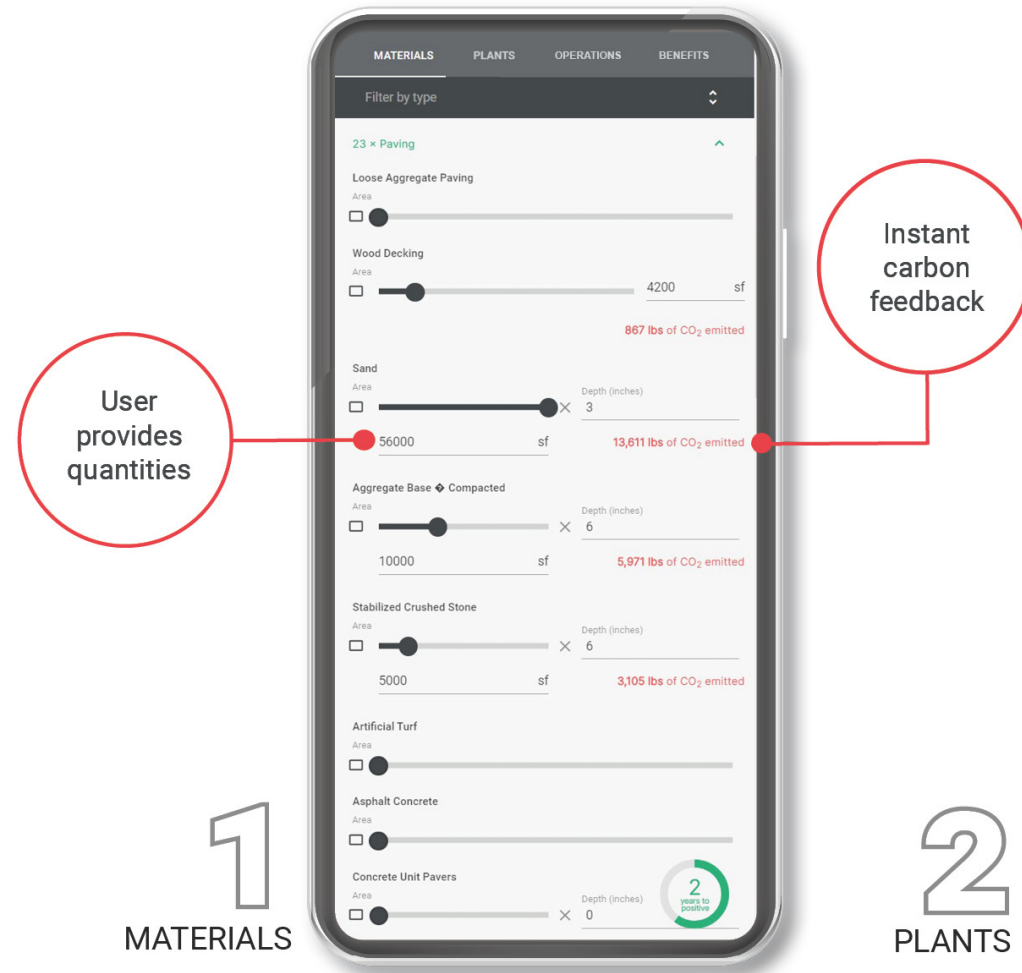
Expanded Site Metrics Include:

- Biodiversity: 30% ecosystem preservation by 2030 and 10% net positive impact established by the UN, IUCN, and the UK
- 30% water use reduction established by EPA baselines
- 15-60% urban tree canopy based on site broad biome and American Forest recommendations
- Increasing engagement for underserved and overburdened communities defined by the US Justice 40 Initiative

We gratefully acknowledge financial support from ClimateWorks Foundation, MKA Foundation, STV Engineering, SmithGroup, and the Autodesk Foundation that supported these updates.

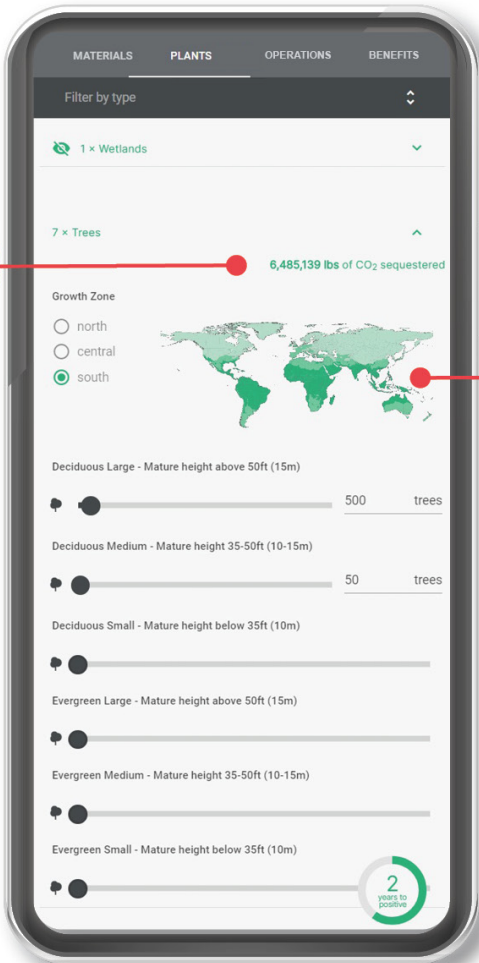
Many thanks to Architecture 2030, Maalka Inc., Sasaki, Building Transparency, C-Change Labs, USGBC, GBCI, ECHO, Biohabitats, and many others for their ongoing contributions!

Embodied Carbon



Pathfinder is a free, accessible, life-cycle assessment (LCA) tool that calculates embodied carbon, ecosystem sequestration, and related benefits associated with exterior

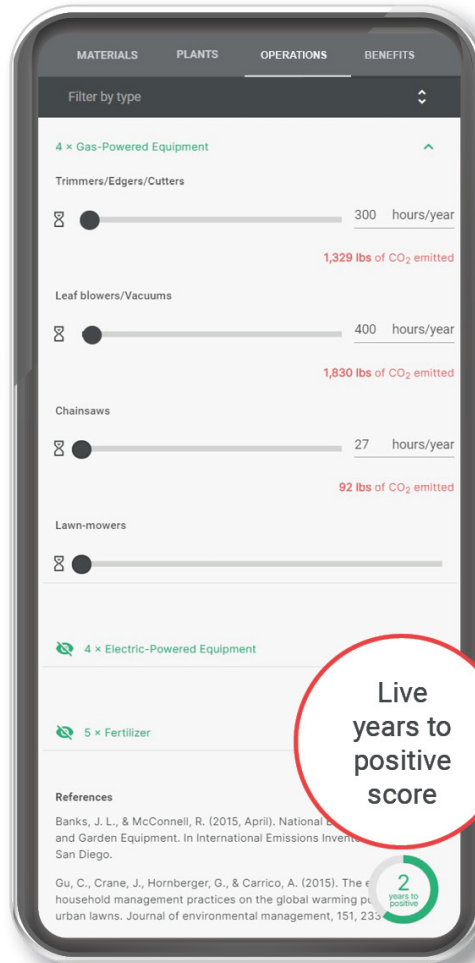
Sequestration + Storage



Regional
carbon
sequestration

3
OPERATIONS

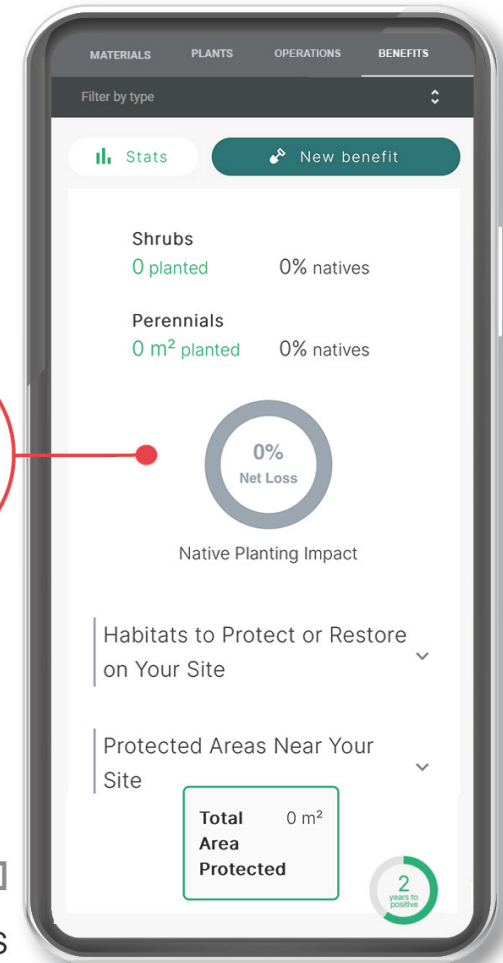
Operational Carbon



Live
years to
positive
score

4
BENEFITS

Biodiversity, Cooling, Water Conservation + Equity



Related
benefit
impacts

CA) tool for landscape architects, designers, planners, and engineers to calculate the greenhouse gas emissions, carbon
for built environment projects.

Impact

The **Climate Positive Design Challenge** was initiated on September 30, 2019, marking the conclusion of a month filled with the largest climate activism events in history. Most recently the statistics collected to date were shared in November 2024 at the United Nations Climate Conference (COP29) in Baku, Azerbaijan.

Active tracking, recording, and analysis by data analytic experts allows for understanding a comprehensive global impact of the initiative's impact on climate change—a contribution that has been relatively unknown to date.

The Advisory Partners review the data collected on an annual basis and advise on whether the targets should be modified based on how well contributors are meeting the goals.

Although the data collected in the early stages of any initiative carry the highest level of uncertainty possible, the statistics from the first five years provide a promising glimpse into the potential impact of this initiative. As recorded, the impact of the projects logged within the first five years show:

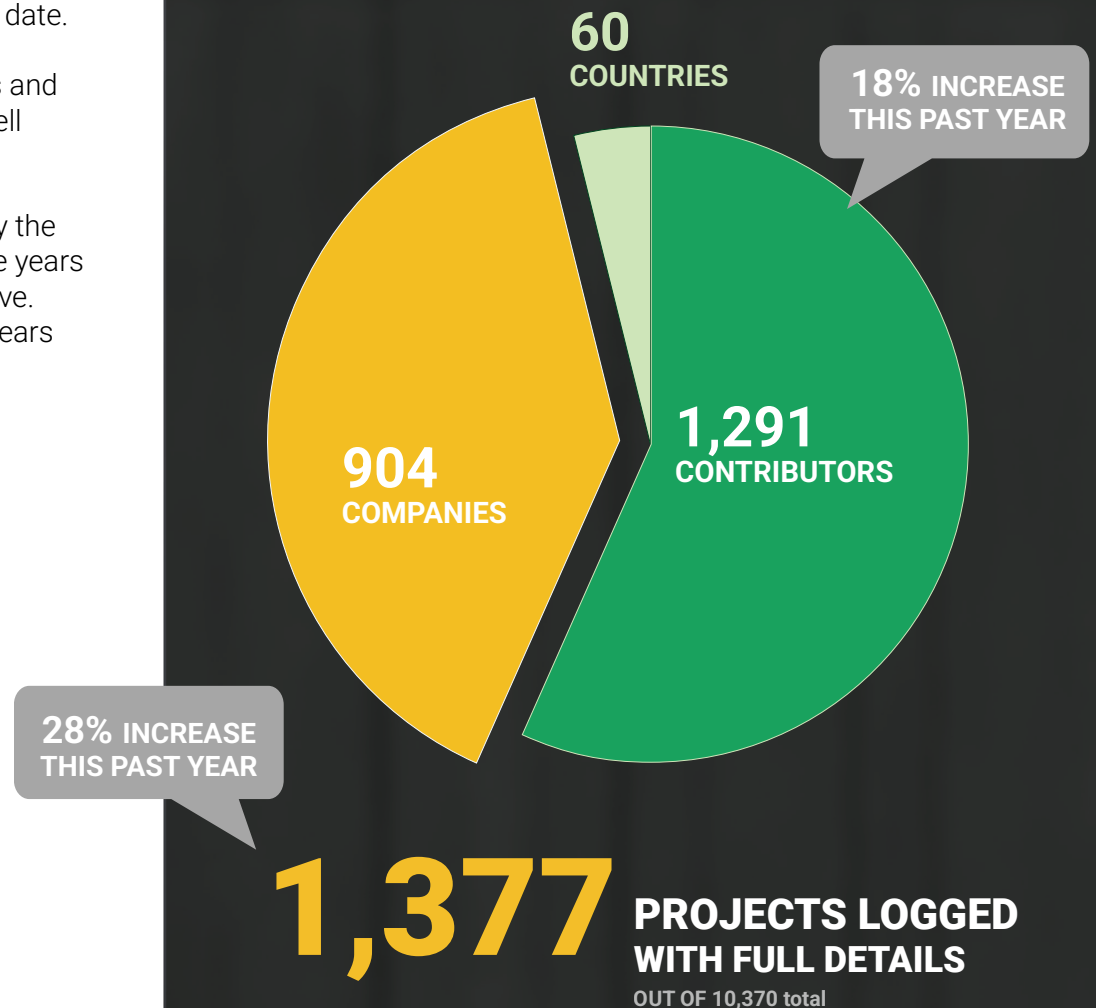
Impact by 2040

2.6 million tonnes of CO₂
sequestered beyond offsetting project emissions

Impact by 2050

6.8 million tonnes of CO₂
sequestered beyond offsetting project emissions

OFFICIAL PROJECTS LOGGED IN PATHFINDER from the first five years ...



CUMULATIVE CARBON IMPACTS EQUAL

2 million
TREES TO BE
PLANTED



46% INCREASE
THIS PAST YEAR

2.6 million tonnes of CO2 removed by 2040
6.8 million tonnes of CO2 removed by 2050
BEYOND EMISSIONS OFFSETS

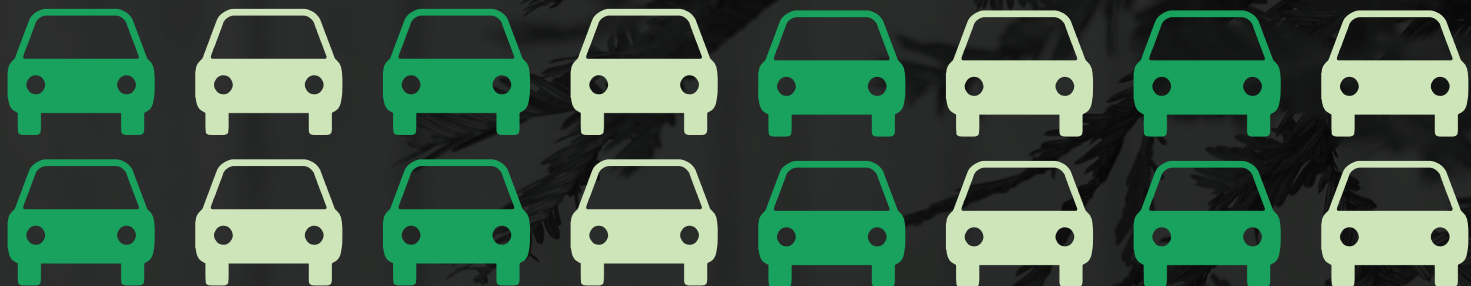


CO2 SEQUESTRATION
BEYOND EMISSIONS
EQUIVALENT TO

> **571,739**
1,473,913

> *CARS REMOVED
FROM THE ROAD BY

> **2040**
2050



* Based on 2020 EPA Average car emits 4.6 metric tons per year. US EPA 2020: <https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle>

Advocacy

In 2024, planners, designers, and policymakers across the built environment came together to advance global action against climate change.

As part of Pamela Conrad's ASLA Fellowship, Climate Positive Design launched the "[WORKS with Nature](#)" guide in collaboration with the United Nations at COP29 in Baku, Azerbaijan. The guide presents **100 low-carbon, nature-based adaptations to inspire countries and communities worldwide**. During the conference, national representatives shared progress on their required National Adaptation Plans (NAPs), while Pamela Conrad and Kotchakorn Voraakhom presented insights from the guide and led a hands-on workshop. Key outcomes included strategies for overcoming barriers to adaptation implementation and identifying the support needed to scale nature-based solutions (NbS).

Supporting events included panels with UN-Habitat's Executive Director and the Laudes Foundation at the Buildings and Cooling Pavilion at COP29, New York Climate Week, and a concrete decarbonization convening in Washington, D.C., hosted by the ClimateWorks Foundation, Climate Imperative, and Breakthrough Energy.

Linking the climate and biodiversity crises, CPD's Research Director, Eustacia Brossart, delivered a **keynote presentation at the UN Biodiversity Conference** (COP16) in Cali, Colombia, and was featured on national broadcast media.

Advancing CPD's mission, the **City of Dallas, Texas**, unanimously approved directing all \$1.25 billion from its 2024 Bond Program toward projects that support its [Comprehensive Environmental and Climate Action Plan](#) (CECAP) goals—including **encouraging Climate Positive Design for sites and infrastructure**.

Pamela Conrad / Kotchakorn Voraakhom, ASLA

WORKS With Nature

Low Carbon
Adaptation
Techniques
for a Changing World



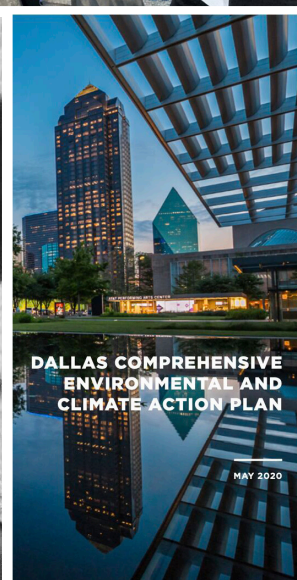
United Nations Climate Conference (COP29), Baku, Azerbaijan



United Nations Biodiversity Conference (COP16), Cali, Colombia



NY Times Climate Week Event



Global Concrete Decarbonization Convening, Washington D.C.

Education and Awareness

While the underlying intent of the initiative is to reduce greenhouse gas emissions and increase carbon sequestration while providing significant environmental and social benefits, **providing accessible educational information is the engine behind that impact.**


Data from academic studies or test case projects is not incorporated into the comprehensive carbon impact summary on pages 10 and 11. However, the statistics displayed on the right emphasize the collective effort in enhancing education and raising awareness worldwide.

TOTAL PROJECTS INCLUDING ACADEMIC/STUDY



13,827
PROJECTS LOGGED

33% INCREASE
THIS PAST YEAR



140 COUNTRIES
4,072 STUDENTS/UNIVERSITIES
3,797 COMPANIES
7,869 CONTRIBUTORS

38% INCREASE
THIS PAST YEAR

INCREASING AWARENESS



252,653
PAGE VIEWS



73,505
PEOPLE REACHED
VIA WEB RESOURCES



204
LECTURES

COUNTRIES WITH MOST USE OF WEBSITE RESOURCES



187 COUNTRIES REACHED
OUT OF **195** IN THE WORLD

Education

Climate Positive Design advances climate and biodiversity education through a range of online and in-person engagements.

Pamela Conrad continued to support climate education at the Harvard Graduate School of Design, contributing to the required course “**Climate by Design**” with Amy Whitesides and leading the “**Climate Positive Design Lab**” seminar. In fall 2023, more than 80 interdisciplinary students participated in a hands-on Pathfinder hackathon led by Conrad. Following an introductory lecture, students redesigned an outdoor space on Harvard’s campus and evaluated its performance using Pathfinder. Greg Barger, CPD’s technical director, served on the final review jury for the seminar, offering valuable feedback on the students’ work.

Beyond the academic setting, Conrad contributed to the **Cities Alive Conference in Toronto**, held in collaboration with the City of Toronto and Arup. Climate Positive Design led a half-day workshop for landscape architecture, engineering, and planning professionals to explore and apply climate- and biodiversity-positive design strategies in an underserved Toronto community using Pathfinder. Even experienced practitioners noted gaining new insights and practical strategies applicable to their projects.

As a member of the **World Economic Forum’s Nature-Positive Cities Task Force**, Conrad also contributed to the publication [Nature Positive: Guidelines for the Transition in Cities](#) (Insight Report, May 2024).



Cities Alive Workshop, Toronto



Cities Alive Workshop, Toronto



Harvard GSD Climate by Design Pathfinder Hackathon



Harvard GSD Climate Positive Design Lab



Design

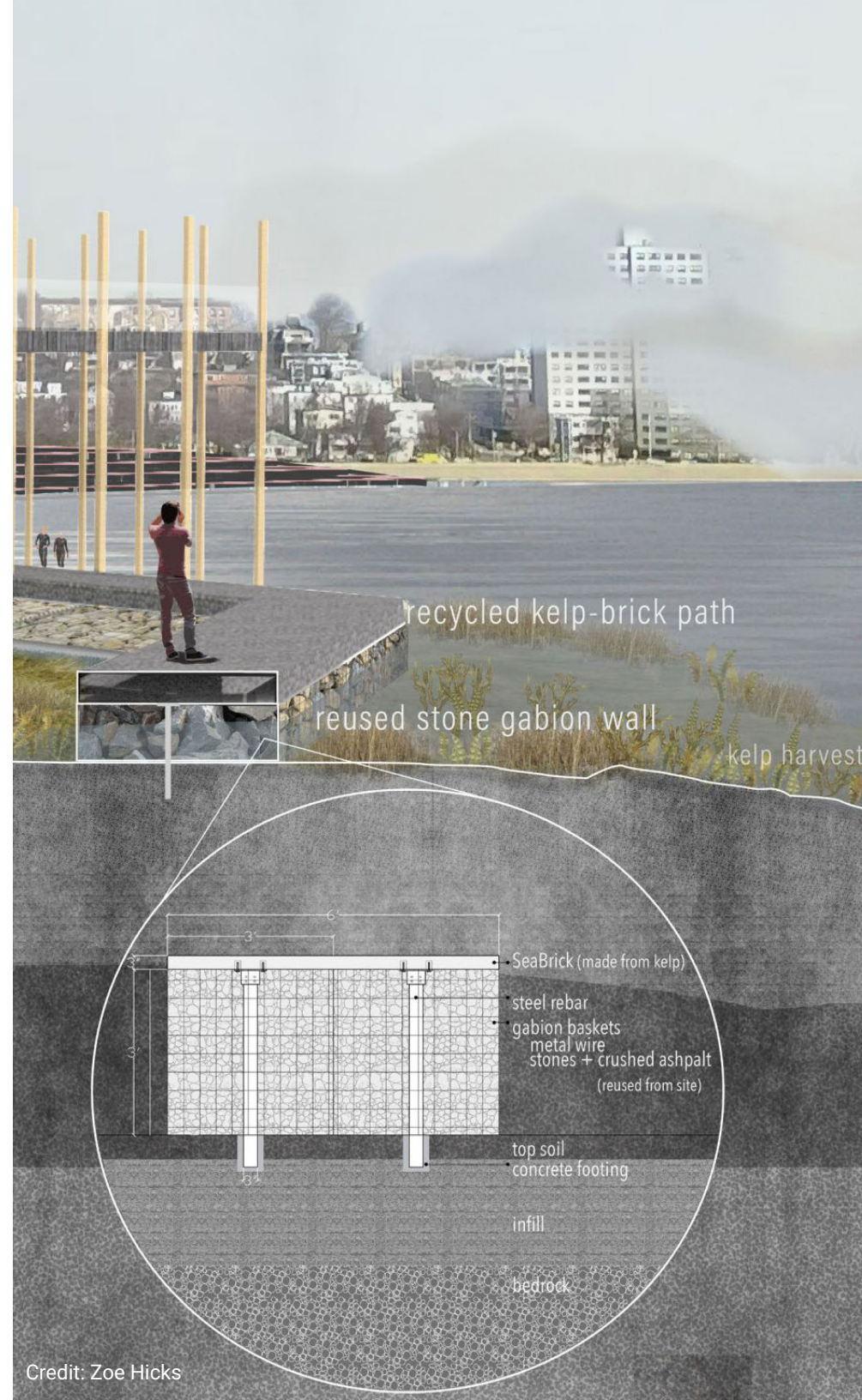
Climate Positive Design supports the advancement of design thinking to proactively respond to the climate and biodiversity crises.

Harvard University Graduate School of Design | Spring 2024
SCI 6489: Climate Positive Design Lab
Course Instructor: Pamela Conrad

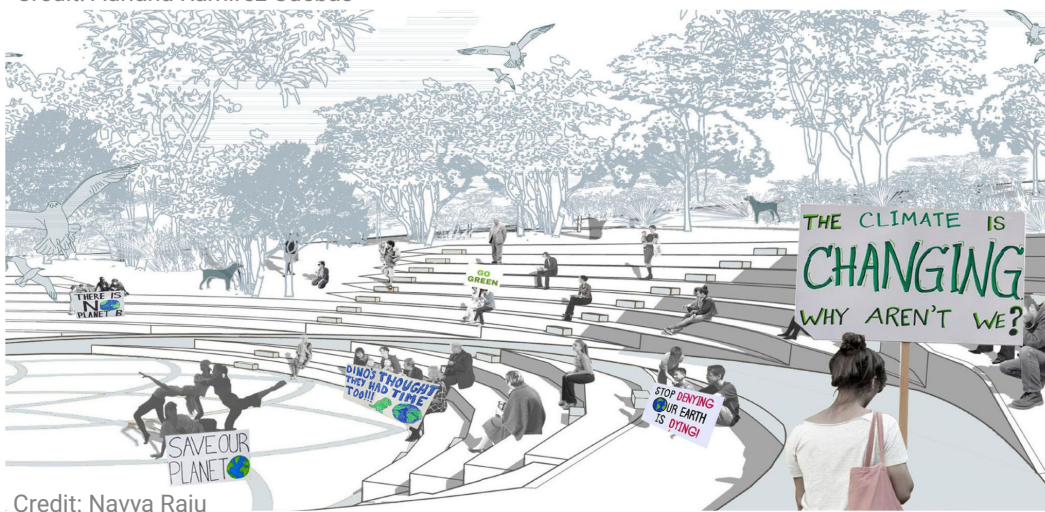
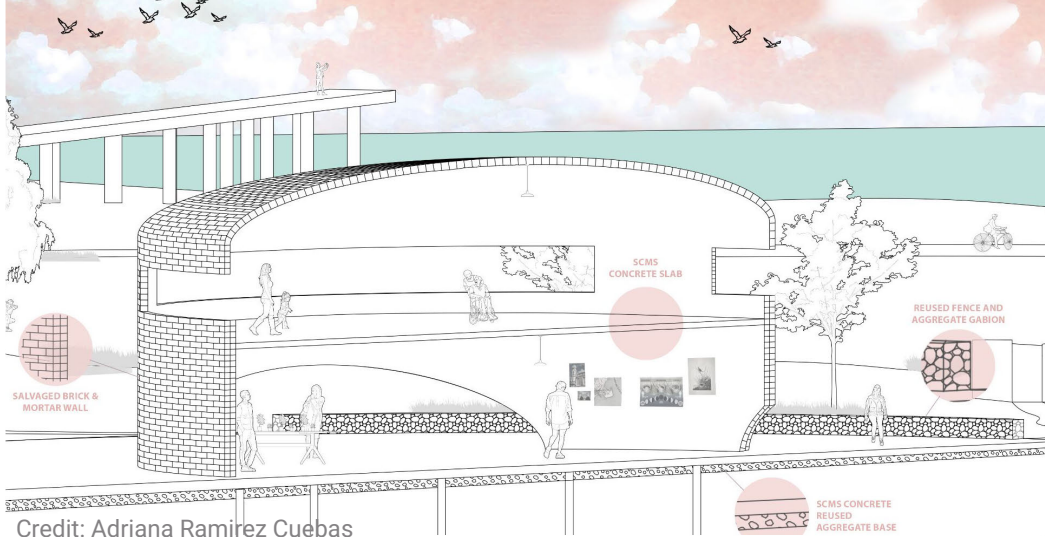
An interdisciplinary group of 15 students from architecture, engineering, design ecologies, landscape architecture, and urban design programs at Harvard and Massachusetts Institute of Technology (MIT) spent the semester applying low-carbon, resilient design principles to the Dorchester Bayside Expo site south of Boston, MA.

Currently dominated by surface parking and jointly owned by UMass and the City of Boston, the site faces significant flooding and heat risks and lies within a diverse, underserved community under development pressure. Students examined critical questions: Should the site be developed—and if so, how? **How can design balance community and economic needs while enhancing biodiversity and resilience?**

Their proposals explored **integrating kelp ecosystems for carbon sequestration and material innovation, creating wetlands to improve biodiversity and mitigate wave intensity, and reusing local materials to increase public access in a low-carbon manner**—all while quantifying the performance using Climate Positive Design's Pathfinder app.



Credit: Zoe Hicks



CARBON DESIGN STRATEGIES



843 MT CO2E EMITTED

8.4 KGCO₂E/M²

*CF = CARBON FOOTPRINT | **FOR AN ESTIMATED 50 YR LIFESPAN

11 YRS TO CARBON SINK

-3K MT CO2E NET SEQ**



Statistics

PROJECT QUANTITY FROM 2019-2024

- Total projects that submitted full details = 1,377

IMPACTS BY 2050

- Total embodied emissions = 4.6 million tonnes
- Total operational emissions = 741,000 tonnes
- Total emissions = 5.17 million tonnes
- Total sequestration = 10.3 million tonnes
- Total net positive = 6.78 million tonnes (seq. beyond emissions)
- **Sequester 2x more carbon than emitted by 2050**

IMPACTS BY 2040

- Total embodied emissions = 4.6 million tonnes
- Total operational emissions = 492,000 tonnes
- Total emissions = 4.9 million tonnes
- Total sequestration = 5.1 million tonnes
- Total net positive = 2.6 million tonnes (seq. beyond emissions)
- **Sequester 1.1x more carbon than emitted by 2040**

CHALLENGE PERFORMANCE

- Median years to positive (YTP) for all projects = 19 years
- Median YTP for Parks = 12 years
- Median YTP for Plazas/Streets = 44 years

Trends from 2024



28% MORE PROJECTS
logged with full details from 2023



Net Positive
by 2040

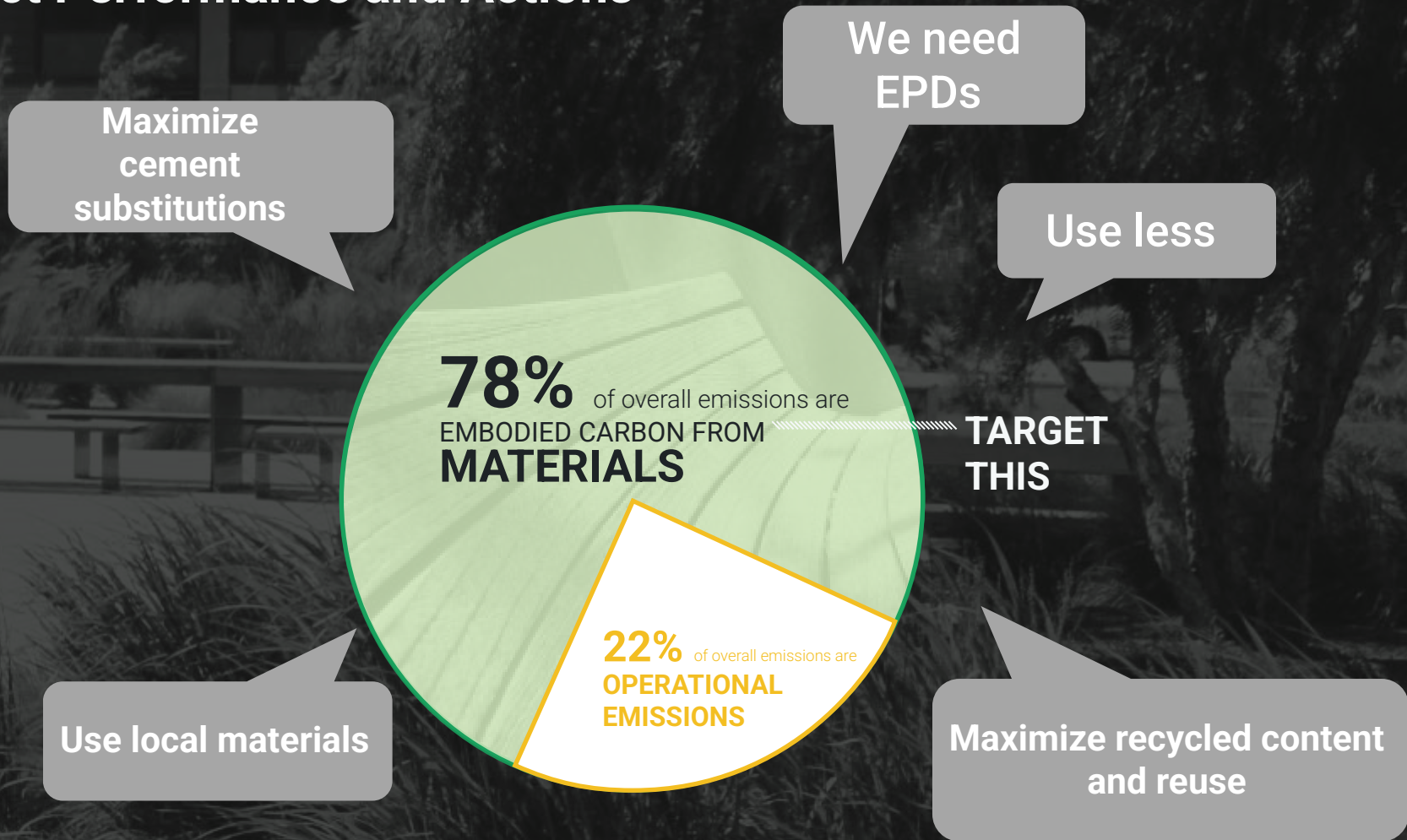


19 YEARS TO POSITIVE
median for professional projects



18% INCREASE IN
professional contributors

Project Performance and Actions



19% of projects
ARE MEETING CHALLENGE TARGETS

Support

To advance the resources developed to date, CPD is seeking donations to support the following in 2025:

1. RESEARCH

- Expand research for metric setting knowledge of co-benefits including water conservation, biodiversity, equity, community health and resilience
- Collect EPDs to expand embodied carbon of materials and operations

2. TOOLS

- Pathfinder Advancements
 - Incorporate more materials, plants and operations
 - Expand to include co-benefits such as biodiversity, equity, water conservation, community health and resilience
 - Expand products and Environmental Product Declarations
 - Integrate with 3D multi-disciplinary tools and integrate/align with other tools in related disciplines

3. RESOURCES/GUIDANCE

- Evaluate Climate Positive Design Challenge Industry Impact Data
- Develop Climate and Biodiversity Positive Commitment program, including a Framework Report and Benchmarking Study
- Support the expansion of the EC3 EPD Library

4. EDUCATION/COMMUNICATIONS

- Give lectures and workshops at universities, schools, conferences, firms and organizations
- Create educational and thought leadership editorials and media
- Collaborate with manufacturers and interdisciplinary organizations
- Integrate with certification programs, codes, and standards



To make a fully deductible donation online, visit:

<https://climatepositivedesign.org/support-climate-positive-design/>

With inquiries, please contact:

info@ClimatePositiveDesign.com

www.ClimatePositiveDesign.com

climate**positive**
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