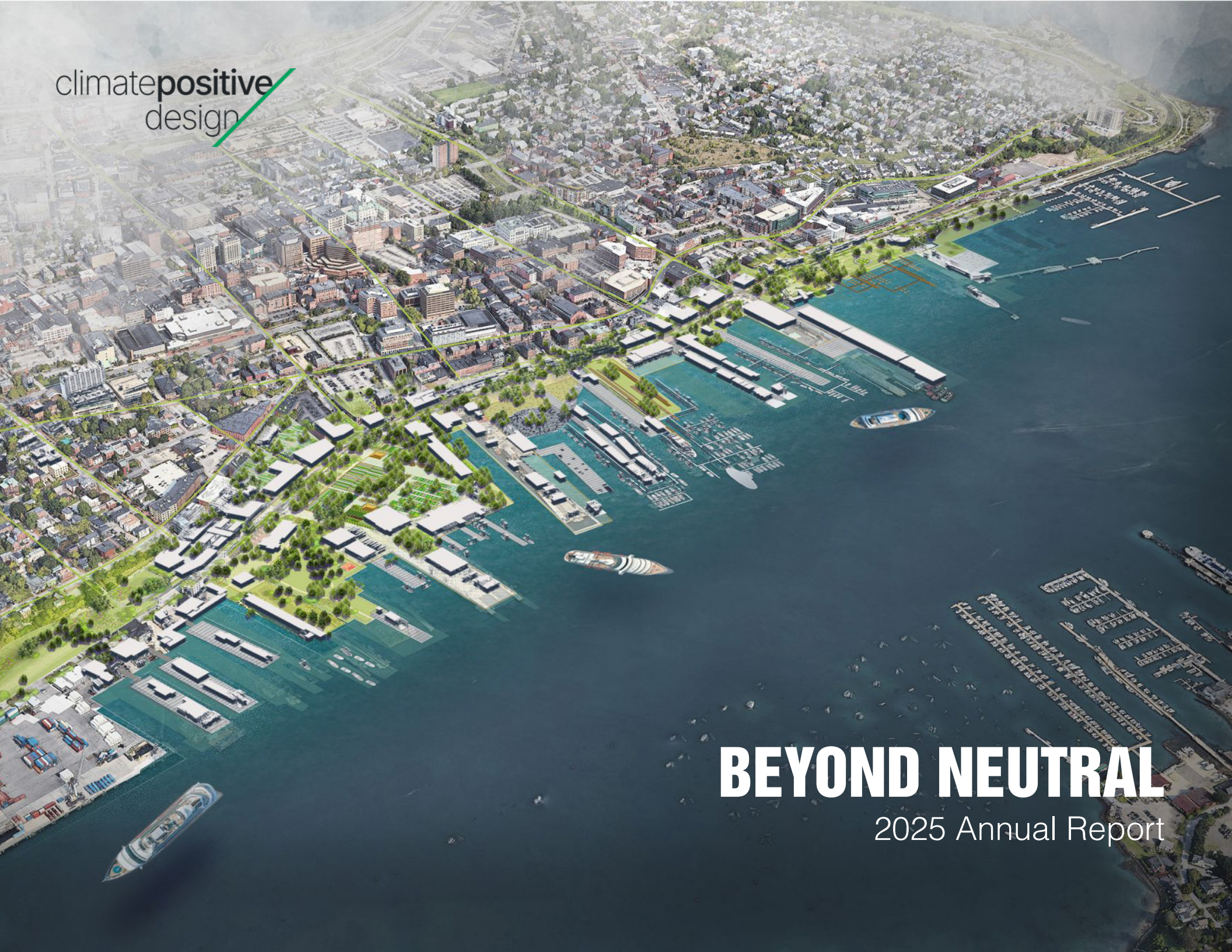
climatepositive design



BEYOND NEUTRAL

2025 Annual Report

Contents

Cover Image: Harvard Graduate School of Design, Envision Resilience Studio, Portland, Maine

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

RESEARCH, EDUCATION + DESIGN


Greg Barger
CPD Tech. Director + Board Member


Eustacia Brossart
CPD Research Director


Ed Mazria
Architecture 2030


Vincent Martinez
Architecture 2030


Erin McDade
Architecture 2030


Lisa Richmond
Architecture 2030


Sarah Fitzgerald
SWA, ASLA


Chris Hardy
ASLA/LAF/Sasaki


Amy Whitesides
Harvard GSD


Claudia Dobles Camargo
Harvard Loeb / MIT


Matt Jones
MKAF


Cleave Pulmano
MKA


Eva Koester
SmithGroup


Paul Desanker
United Nations


Motsomi Maletjane
United Nations


Sonam Khandu
United Nations


Gary Hilderbrand
Harvard GSD


Michael Blier
Harvard GSD


Charles Waldheim
Harvard GSD


Chris Reed
Harvard GSD

ADVISORY PARTNERS / COLLABORATORS


Torey Carter-Conneen
ASLA


Katie Riddle
ASLA


Jared Green
ASLA


Kotchakorn Voraakhom
ASLA, IFLA


Barbara Deutsch
LAF


Martin O'Dea
AILA


Hope Parnham
CSLA


Lauren Alger
ASCE / STV


Stacy Smedley
Building Transparency


Aurora Jensen
Carbon Leadership Forum

TECHNOLOGY


Clay Teeter
Relevé


Wynne Teeter
Relevé


Tyler Maisano
TheMayo


Phil Northcott
C-Change Labs

COMMUNICATIONS


Lauren Peters Lague
CPD Board Member


Kira Gould
Kira Gould CONNECT


Nahal Sohbati
Topophyla


Eric Arneson
Topophyla


Lucas Dobbin
Harvard GSD


Shan He
Harvard GSD

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 (CO_2) 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 CO_2 out of the atmosphere than emitted by 2030** and
- **by 2050 to remove 1 gigaton of CO_2 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.

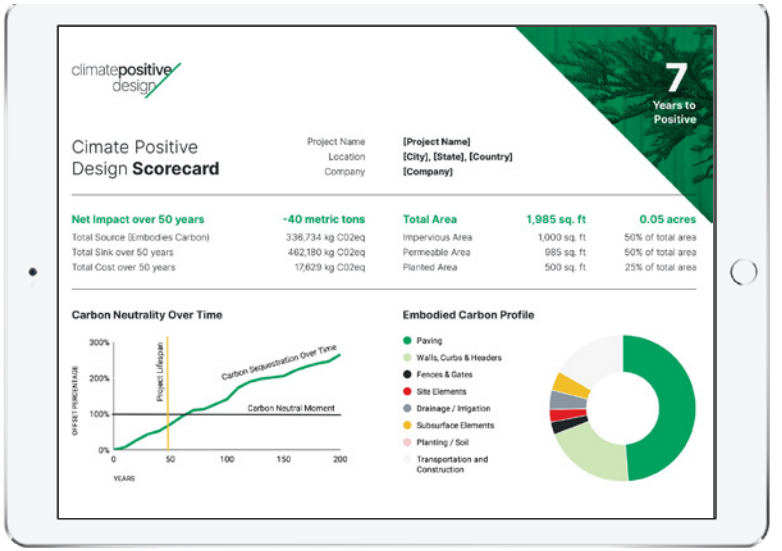
Targets are established as follows:

- **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 it's 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.


9:41
path finder
My Projects
PARK
29 years to positive
Biodiversity and Adaptation Project
New project
PARK
20 years to positive
app.climatepositivedesign.com

path finder

Pathfinder 3.1 Expansion: Infrastructure

In 2025 Climate Positive Design launched Pathfinder 3.1.

Updates Include:

- **~100 New Infrastructure and Civil Engineering Materials and Assemblies** along with low carbon alternative recommendations.
- **New EC3 > Pathfinder API Link** to easily add Environmental Product Declaration (EPD) data from the EC3 (Embodied Carbon in Construction Calculator) database.
- **Civil and Infrastructure Project Types** aligned with Institute for Sustainable Infrastructure, American Society of Civil Engineer's Infrastructure 2050, and the ECHO Project, now equipped to support future benchmarking efforts.
- **Updated Biodiversity Metrics** providing more site specific guidance for meeting the minimum 10% net positive impact.
- **Updated Methodology Report** highlighting new data sources, metrics and methods.
- **Updated Pathfinder User Guide** highlighting the new features.
- **Improved Scorecard** for greater project impact understanding.

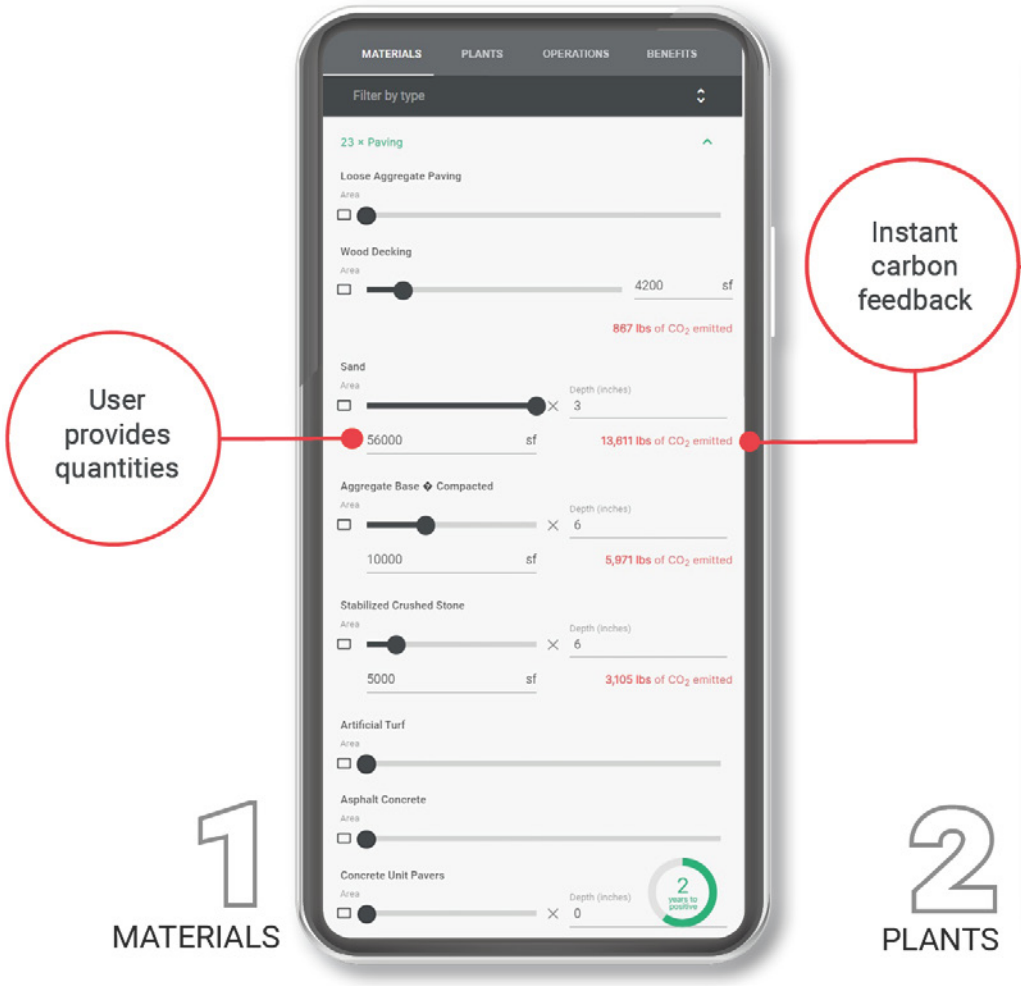
Educational Sessions Provided at:

- Carbon Leadership Forum (CLF) NGO Roundtable
- American Society of Landscape Architects (ASLA)
- Institute for Sustainable Infrastructure
- Living Futures
- Canadian Society of Landscape Architects (CSLA)
- Hong Kong International Landscape Architect Association (HKILA)

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

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

Embodied Carbon

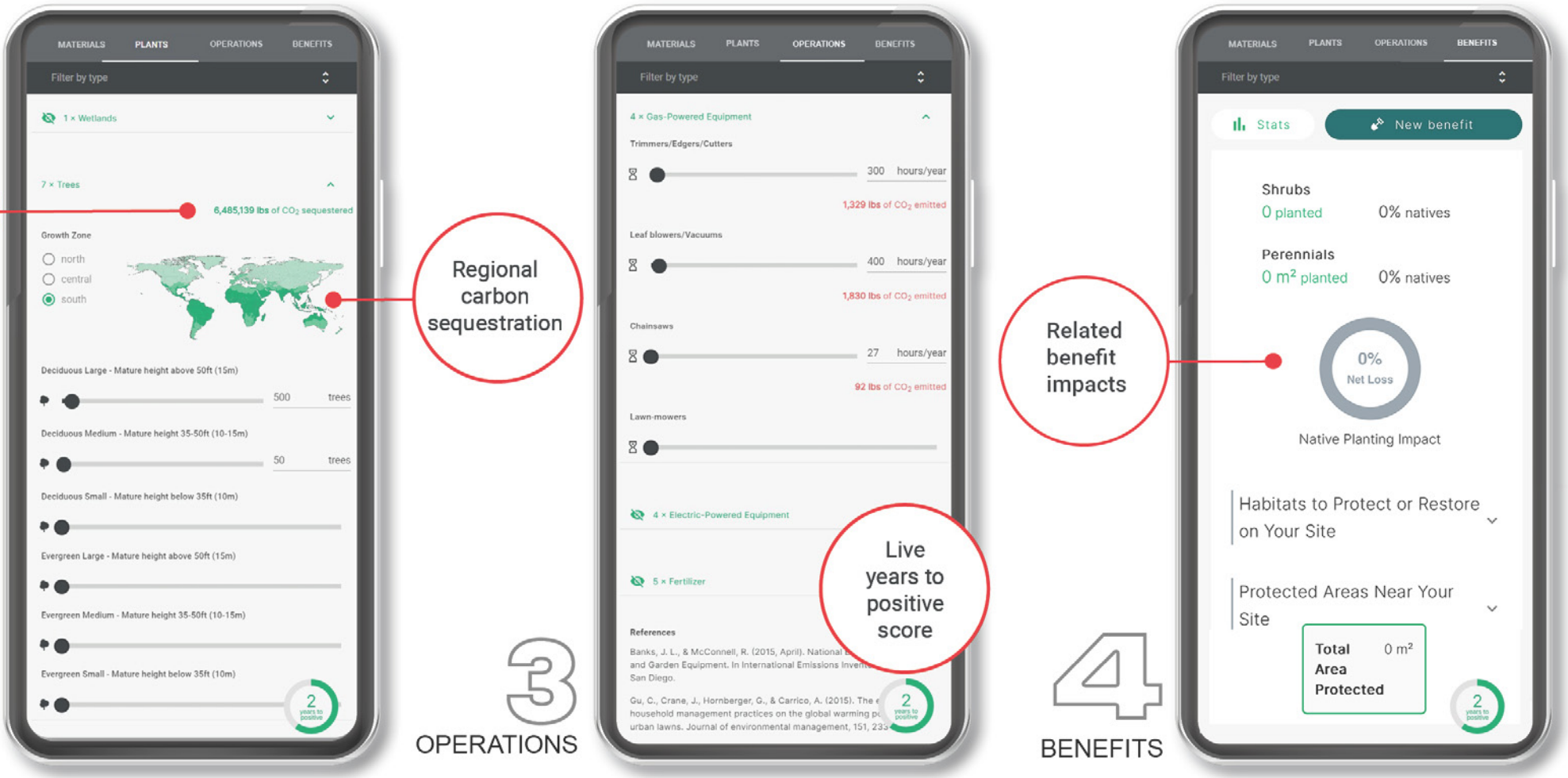


Pathfinder is a free, accessible, life-cycle assessment (L
sequestration, and related benefits associated with exter

Sequestration + Storage

Operational Carbon

Biodiversity, Cooling, Water Conservation + Equity



CA) tool for landscape architects, designers, planners, and engineers to calculate the greenhouse gas emissions, carbon rior 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 August 2025 at the United Nations National Adaptation Planning Conference (NAP Expo) in Lusaka, Zambia, Africa.

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 six years provide a promising glimpse into the potential impact of this initiative. As recorded, the impact of the projects logged within the first six years show:

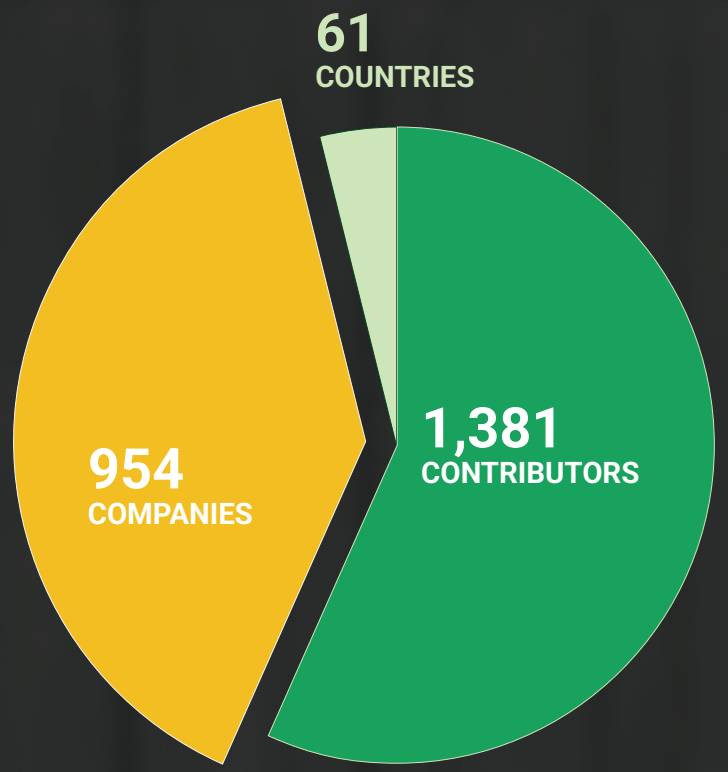
Impact by 2040

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 six years ...



1,490 PROJECTS LOGGED WITH FULL DETAILS
OUT OF 16,389 total

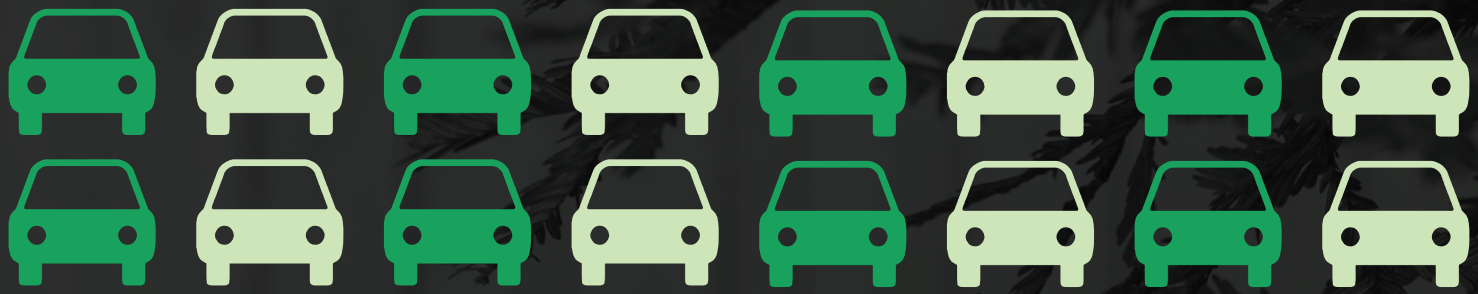
CUMULATIVE CARBON IMPACTS EQUAL

2.1 million

TREES TO BE PLANTED

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 2025, planners, designers, and policymakers across the built environment came together to advance global action against climate change.

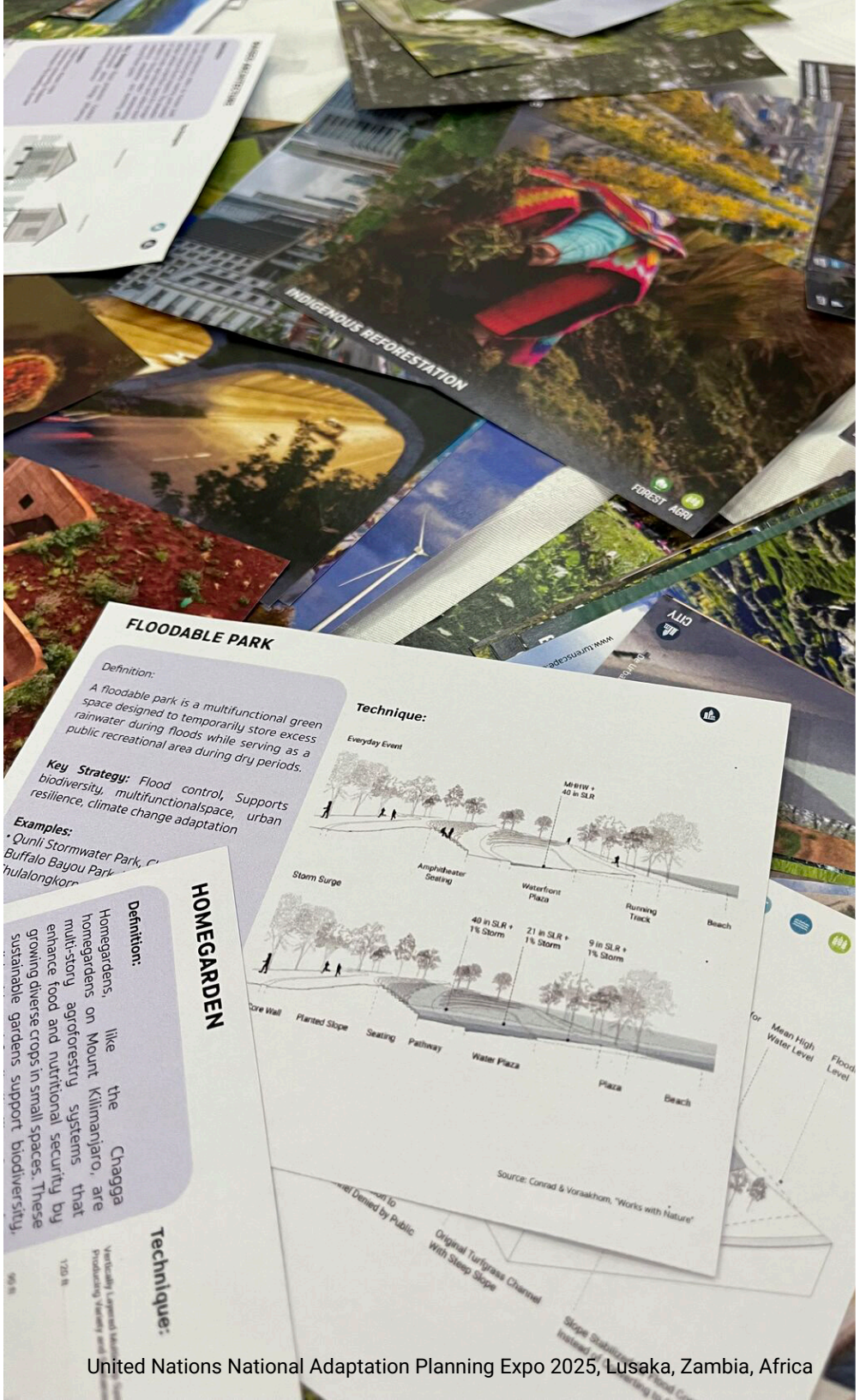
As part of Pamela Conrad's 2024-2025 ASLA Fellowship, Climate Positive Design launched the "**WORKS with Nature**" guide in collaboration with the United Nations. The guide presents **100 low-carbon, nature-based adaptations to inspire countries and communities worldwide**. To further the 2025 ASLA award winning effort, Conrad and Kotchakorn Voraakhom were invited to keynote and lead a workshop in Zambia, Africa at the UN National Adaptation Planning Expo in August 2025.

To inform UN mandated National Adaptation Plans (NAPs), the pair shared insights with national representatives from the guide and key outcomes including strategies for overcoming barriers to adaptation implementation and identifying the support needed to scale Nature-based Solutions (NbS).

Supporting the workshop included the "WORKS with Nature" engagement activity, an interactive conversation to facilitate deep learning and sharing between people from around the world.

Additional advancement of the organization's mission, Climate Positive Design consulted on the development of:

- **SWA's Climate Action Plan**: a groundbreaking roadmap for professional landscape architecture practices
- **Washington State Carbon Emissions for 2025-2050:** in collaboration with the Carbon Leadership Forum
- **World Economic Forum "Nature Positive: Financing the Transition in Cities" report**



United Nations National Adaptation Planning Expo 2025, Lusaka, Zambia, Africa

COP 29 UN NbS Workshop

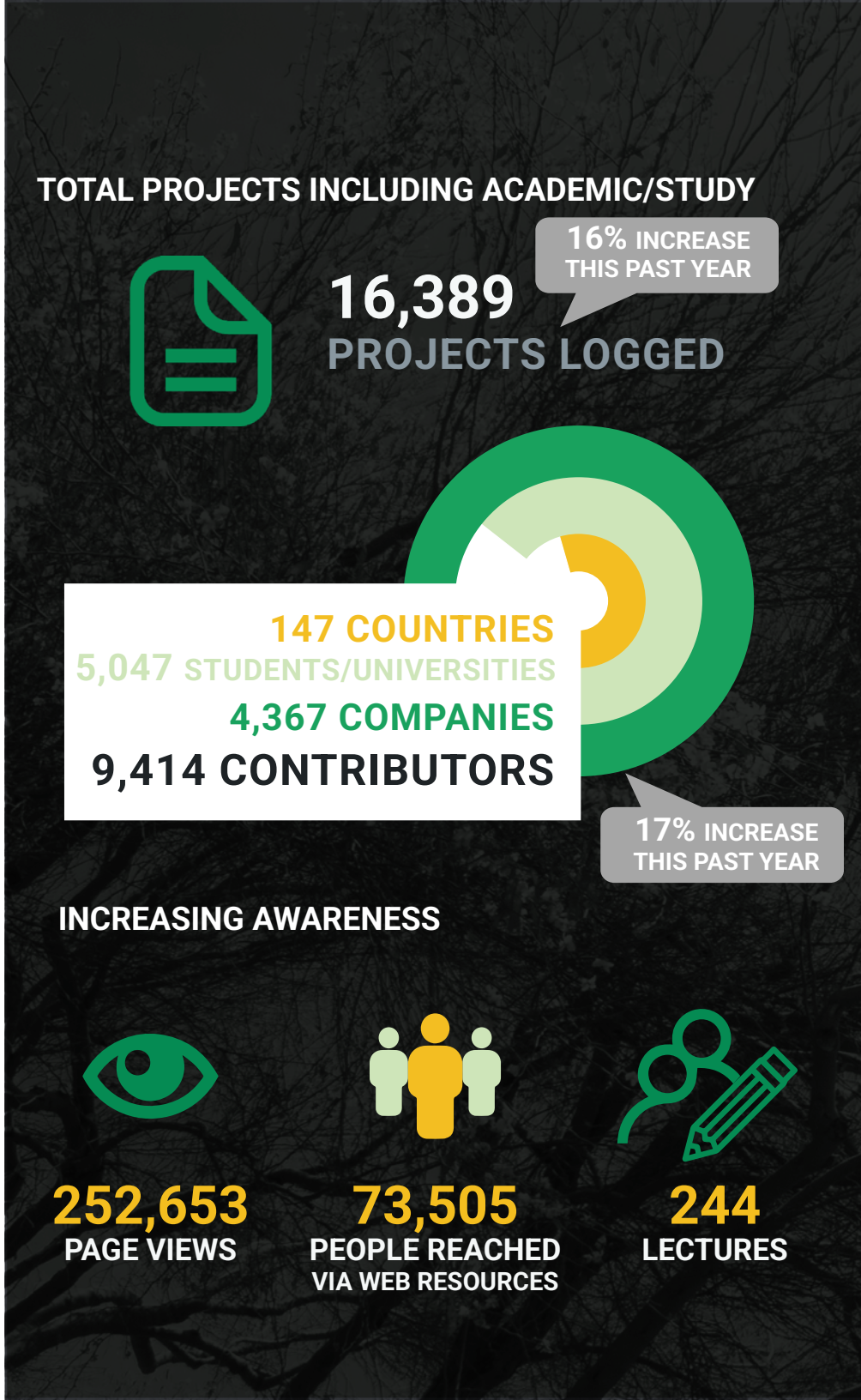
Education and Awareness

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.**

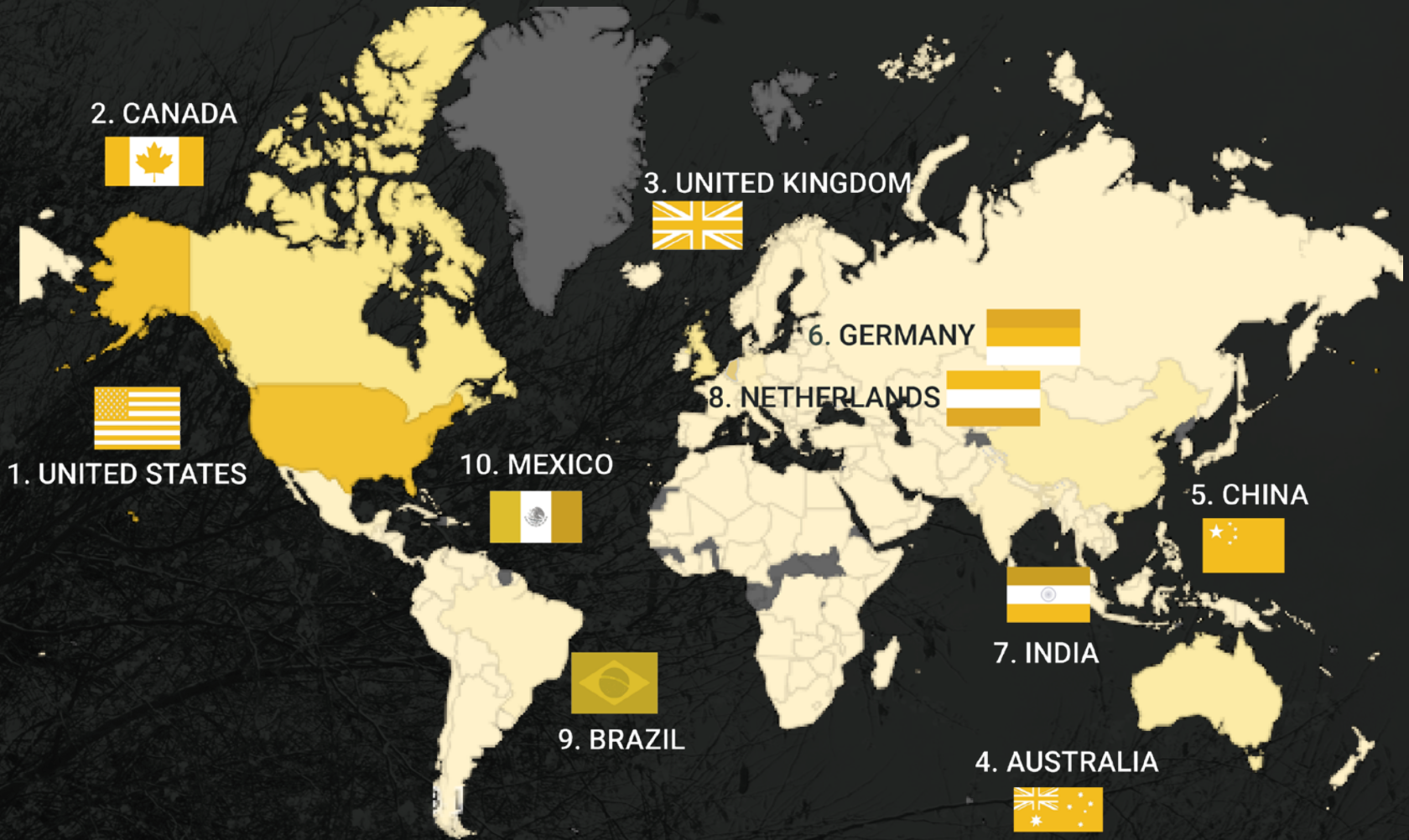
Data from academic studies or test case projects is not incorporated into the comprehensive carbon impact summary on pages 10 and 11. However, the statistics displayed on the right emphasize the collective effort in enhancing education and raising awareness worldwide.

This past year alone yields:

- **2,562 New Projects**
- **570 New Companies**
- **975 New Students/Universities**
- **1,545 New Contributors**
- **73,085 New Website Page Views**



COUNTRIES WITH MOST USE OF WEBSITE RESOURCES



187 COUNTRIES REACHED

OUT OF 195 IN THE WORLD

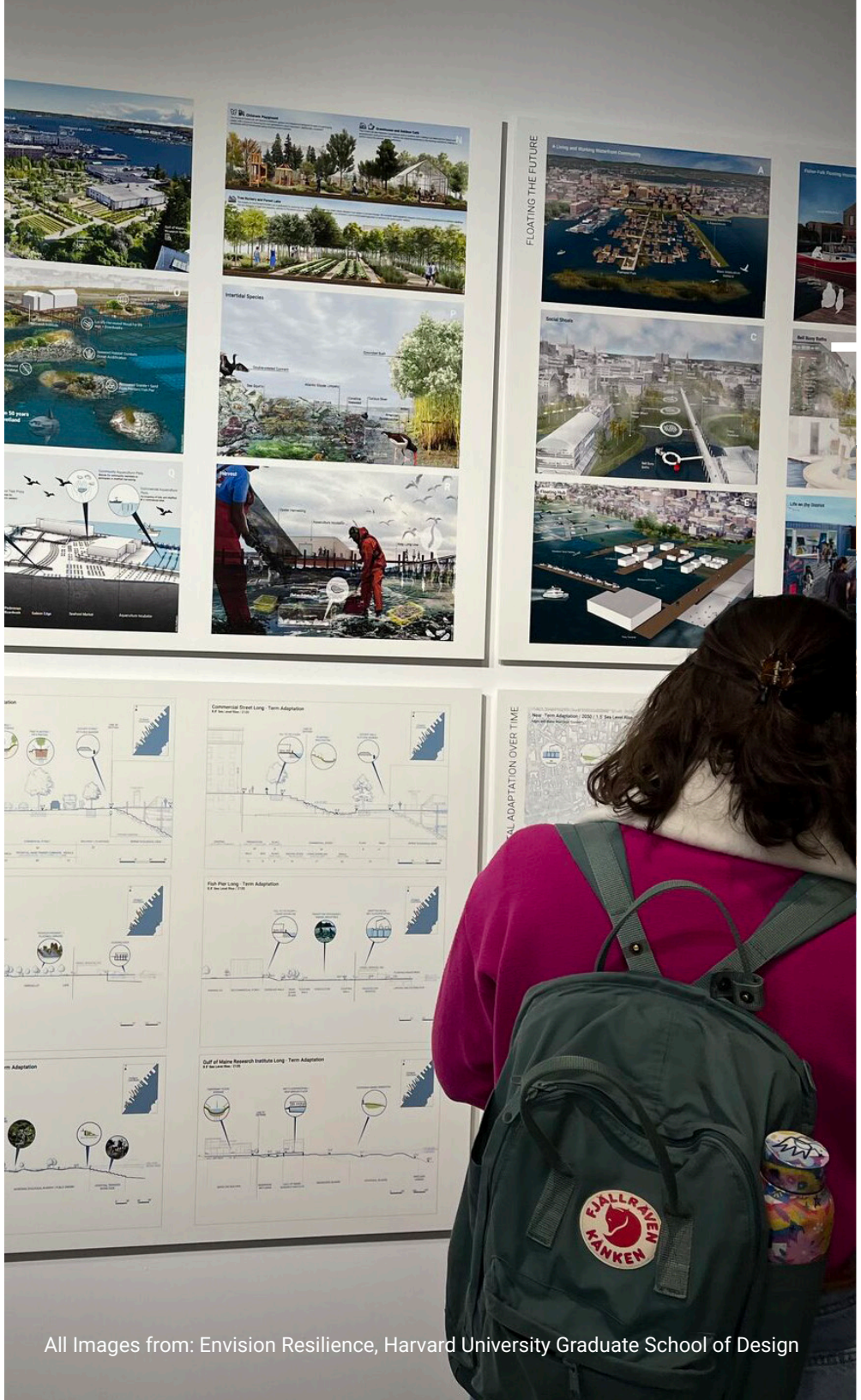
Education

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 University Graduate School of Design, contributing to the required course "**Climate by Design**" with Amy Whitesides, leading the **"Envision Resilience" Studio in Portland, Maine** and the "**Climate Positive Design Lab**" seminar.

In fall 2024, **more than 80 interdisciplinary students participated in a hands-on Pathfinder hackathon for "Climate by Design" led by Conrad.** Following an introductory lecture, students redesigned an outdoor space on Harvard's campus and evaluated its performance using Pathfinder.

The "Envision Resilience" studio and project-based seminar began in fall 2024 and continued through spring 2025, engaging with the Portland, Maine community. **The students explored, examined, and formulated adaptation proposals for the working waterfront which culminated in a final exhibition and presentation in Portland**.



All Images from: Envision Resilience, Harvard University Graduate School of Design


ENVISION RESILIENCE
PORTLAND AND SOUTH PORTLAND


NE STATE PIER
40 COMMERCIAL ST.

Design

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

Envision Resilience: Imagining a Future Waterfront for Portland, Maine
Harvard University Graduate School of Design | Fall 2024
Course Instructor: Pamela Conrad. Co-Instructor: Michael Blier

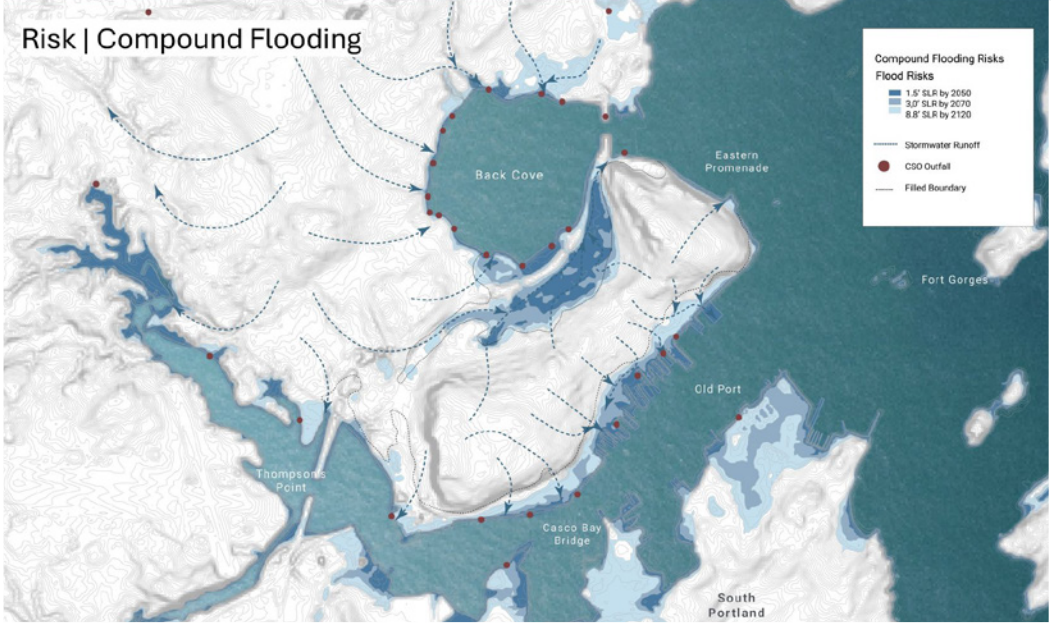
Envision Resilience is a semester-long multi-university design studio that calls on students to reimagine coastal communities and propose imaginative solutions to the current and future impact of sea level rise. In Fall 2024, Pamela Conrad led the Harvard GSD studio in the Envision Resilience Challenge developed by Remain, which connects academia, local leadership and community members, while inspiring coastal communities to envision innovative approaches to the impacts of climate change.

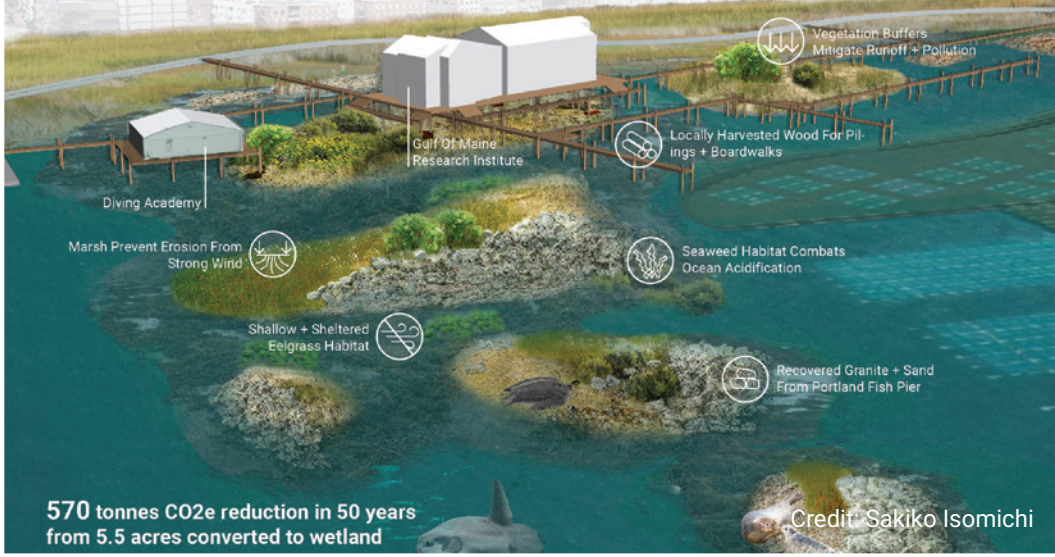
The GSD studio was composed of **landscape architecture, architecture, and urban planning** graduate students who focused on developing coastal adaptation strategies for Portland, Maine's working waterfront. The outcomes were informed by assessing existing conditions, demographics, infrastructure, ecology and future risks due to increasing flooding, temperature increases, and immigration. In addition to meeting with various stakeholders, the students curated a pop-up event at the Gulf of Maine Research Institute in October 2024 to hear from the community directly.

Based on this feedback, the studio developed potential adaptation strategies and a toolkit of various techniques that can be implemented over time. 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.

The studio proudly received a **Boston Society of Landscape Architects Student Honor Award** in 2025.

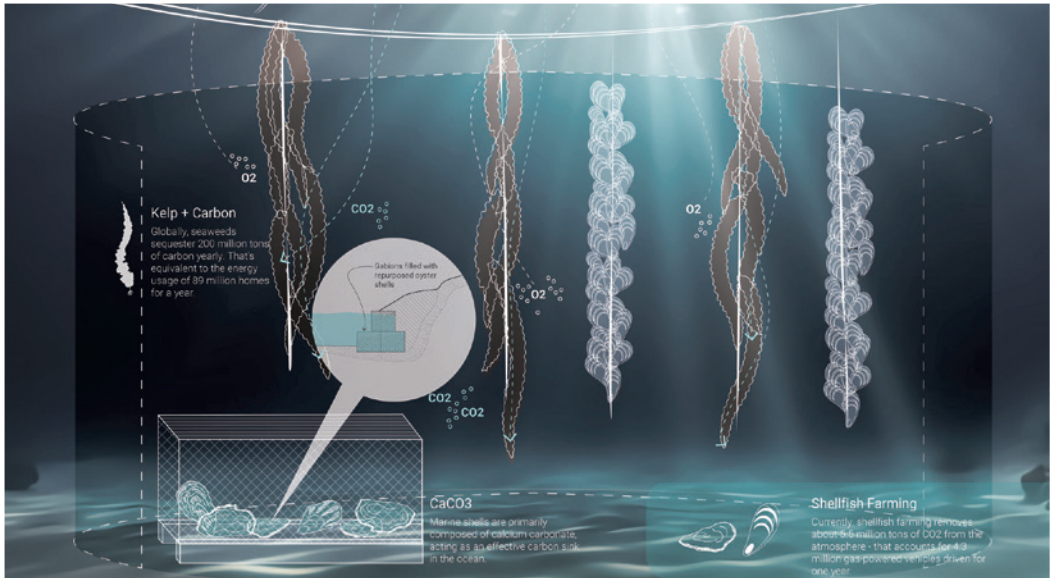
Credit (here and right): Willa DeBoom

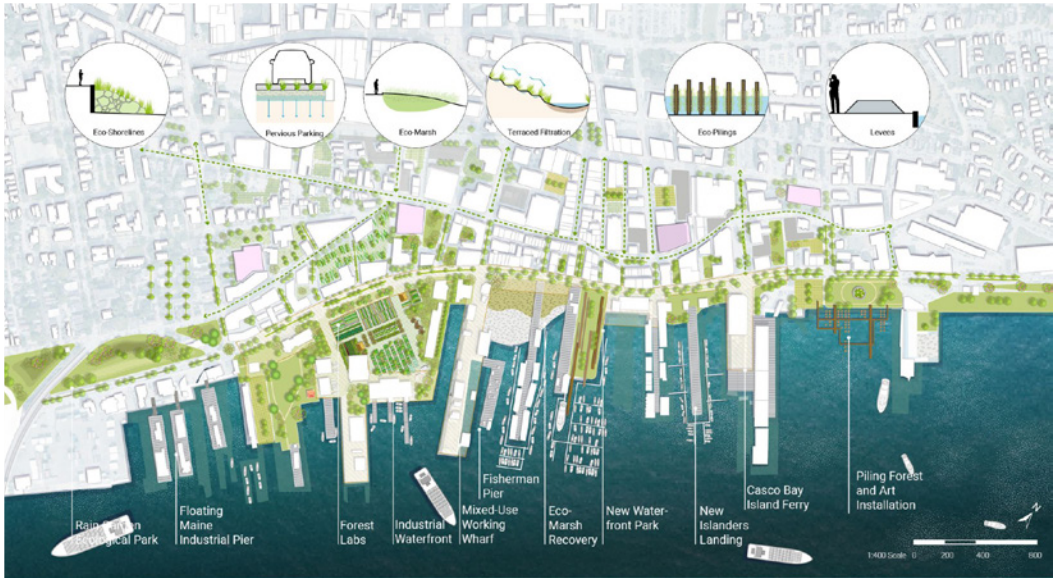

Risk | Compound Flooding
Compound Flooding Risks
Flood Risks
1.5' SLR by 2050
3.0' SLR by 2070
8.8' SLR by 2120
Stormwater Runoff
CSO Outfall
Filled Boundary
Back Cove
Eastern Promenade
Fort Gorges
Old Port
Thompsons Point
Casco Bay Bridge
South Portland


Vegetation Buffers Mitigate Runoff + Pollution
Gulf Of Maine Research Institute
Locally Harvested Wood For Pilings + Boardwalks
Diving Academy
Marsh Prevent Erosion From Strong Wind
Seaweed Habitat Combats Ocean Acidification
Shallow + Sheltered Eelgrass Habitat
Recovered Granite + Sand From Portland Fish Pier
570 tonnes CO2e reduction in 50 years from 5.5 acres converted to wetland
Credit: Sakiko Isomichi


12.5'
14.5'
10'
15.6'
STORMWATER RUNOFF COLLECTION
EXISTING CONDITION
EXISTING
WALKWAY + BIOSWALE
16'
BIKE TRAIL
12'
COMMERCIAL STREET
50'
VEHICLE
10'
POTENTIAL MASS TRANSIT CORRIDOR
30'
VEHICLE
10'
WALKWAY + PLANTINGS
22'
RIPRAP ECOLOGICAL EDGE
0'
10'
20'
30'


Coastal Forestry Lab
Children's Playground
Greenhouse and Café
Ecological Pollinator Lab
Event Space
Welcome Center
Community Garden
Woodcraft of Portland Workshop
Adaptive Tree Nursery
Gulf of Maine Research Institute
Community Garden
Credit: Shan He


O2
CO2
Kelp + Carbon
Globally, seaweeds sequester 200 million tons of carbon yearly. That's equivalent to the energy usage of 89 million homes for a year.
Gabions filled with repurposed oyster shells
CaCO3
Marine shells are primarily composed of calcium carbonate, acting as an effective carbon sink in the ocean.
Shellfish Farming
Currently, shellfish farming removes about 0.6 million tons of CO2 from the atmosphere - that accounts for 4.3 million gas powered vehicles driven for one year


Eco-Shorelines
Pervious Parking
Eco-Marsh
Terraced Filtration
Eco-Pilings
Levees
Floating Maine Industrial Pier
Forest Labs
Industrial Waterfront
Fisherman Pier
Mixed-Use Working Wharf
Eco-Marsh Recovery
New Water-front Park
New Islanders Landing
Casco Bay Island Ferry
Piling Forest and Art Installation

Statistics

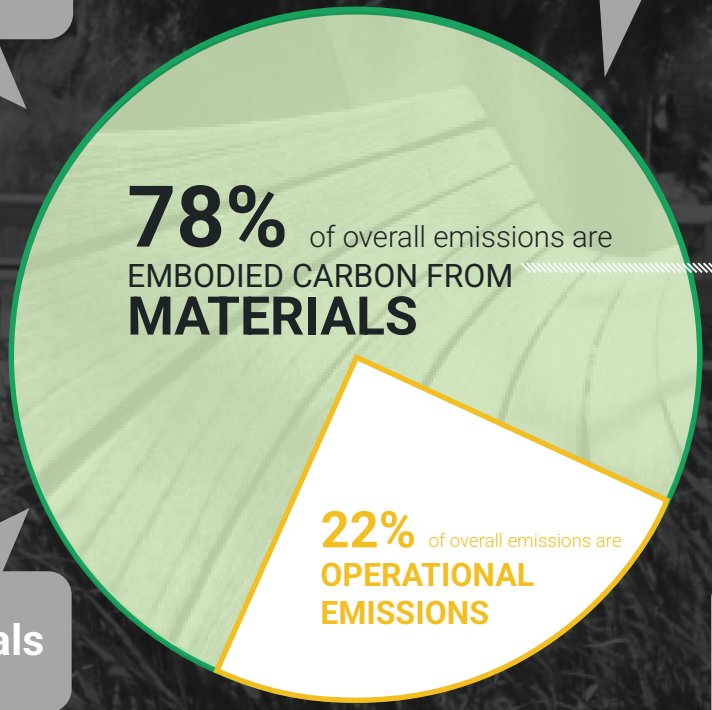
PROJECT QUANTITY FROM 2019-2025
- Total projects that submitted full details = 1,490

IMPACTS BY 2050
- Total embodied emissions = 4.2 million tonnes
- Total operational emissions = 702,000 tonnes
- Total emissions = 4.87 million tonnes
- Total sequestration = 11.6 million tonnes
- Total net positive = 6.73 million tonnes (seq. beyond emissions)
- **Sequester 2.4x more carbon than emitted by 2050**

IMPACTS BY 2040
- Total embodied emissions = 4.17 million tonnes
- Total operational emissions = 453,000 tonnes
- Total emissions = 4.6 million tonnes
- Total sequestration = 7.2 million tonnes
- Total net positive = 2.6 million tonnes (seq. beyond emissions)
- **Sequester 1.6x more carbon than emitted by 2040**

CHALLENGE PERFORMANCE
- Median years to positive (YTP) for all projects = 15 years
- Median YTP for Parks = 15 years
- Median YTP for Plazas/Streets = 62 years

Project Performance and Actions



We need EPDs

Use less

TARGET THIS

Maximize cement substitutions

Use local materials

Maximize recycled content and reuse

24% of projects
ARE MEETING CHALLENGE TARGETS

Support

To advance the resources developed to date, CPD is seeking donations to support the following in 2026:

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

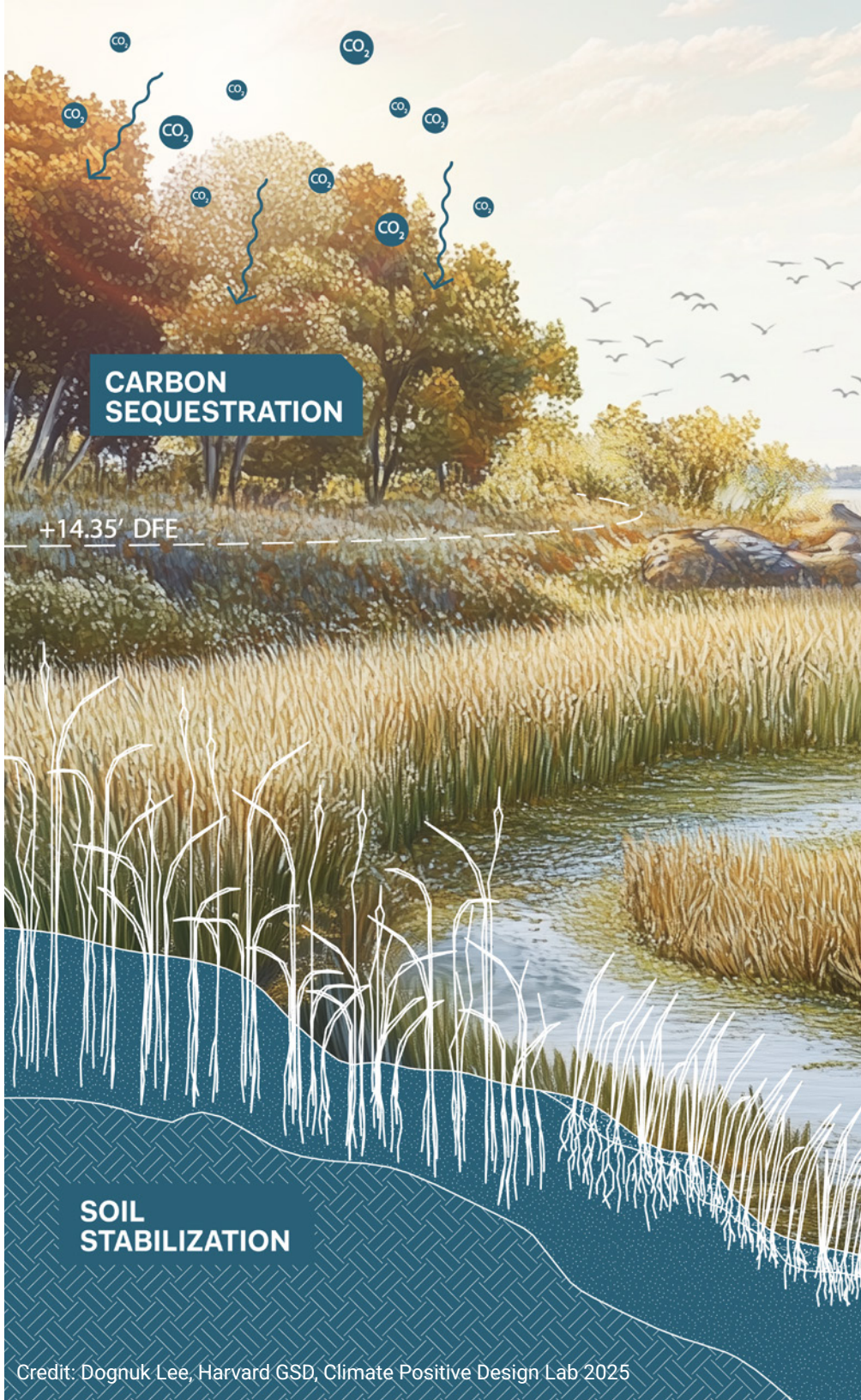
- Pathfinder Advancements
  - Incorporate more materials, plants and operations
  - Expand co-benefits metrics including biodiversity, equity, water conservation, community health and resilience
  - Expand products and Environmental Product Declarations
  - Integrate with 3D multi-disciplinary tools 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



Credit: Dognuk Lee, Harvard GSD, Climate Positive Design Lab 2025

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