

ANNUAL REPORT

2020-2021





Introduction

The CLF Team	3
Letter from the Director	5
Who We Are	6
Theory of Change.....	7

Outcomes

Improve Data and Methods	9
Inform Effective and Just Policy.....	12
Globe-Spanning Network	14
Regional Hubs	15
Online Community.....	16
NGO Roundtable	17
Member Diversity	18
Member Impact.....	19

Organizational information

Funding	21
Sponsors.....	22

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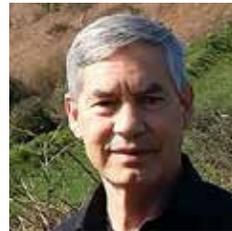
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INTRODUCTION



Letter from the Director

Our Mission is Transformation

Have you noticed that, depending on the circumstances, twelve months can feel like twelve years or twelve minutes? Lately, for so many of us, the past year has felt like both at once. The calendar has been packed with so much change that it feels like we are continually running to keep up with the latest seismic shift. And yet the past year's Covid-induced lockdown has sometimes led to a sense of being embedded in a permanent Groundhog Day – no travel, no physical conferences or meetings, missing the presence of family or friends, social life constrained to a Zoom window.

In the case of the Carbon Leadership Forum, we've been navigating a greater degree of transformation than perhaps at any time in our 11-year history. The CLF staff has doubled in size, and we're now able to engage in some crucial resource development that we would have been stretched to tackle earlier. Our budget in 2020-2021 will more than triple last year's budget. CLF Community members have more than doubled in number, as have visitors to our website and followers on social media. Statistics for press articles on embodied carbon, webinars, conference panels, and policy initiatives on embodied carbon – all the numbers are way up. It feels like a logjam may be beginning to loosen as the building industry slowly, finally, pivots to confront the complete carbon challenge – embodied as well as operational.

Moreover, we've done significant strategic work to guide how we develop our programs and allocate resources over the next several years. In the parlance



of organizational development, this is referred to as a “theory of change,” a kind of roadmap to guide our work. We begin by articulating our long-term goal of decarbonizing the built environments, with a focus on reducing the carbon footprint of materials. We then identify the outcomes necessary to meet that goal – for example, a knowledgeable community of connected collaborators, government and corporate policies in place to help drive change, reliable, transparent, openly accessible data, and powerful tools to help designers lower the carbon footprint of their projects. Finally, we identify the specific work CLF uniquely must do to deliver those outcomes.

This theory of change guides how we prioritize our work and allocate scarce resources. Our focus is on the three programs that you'll read about in this Annual Report:

- Improve Data and Methods
- Inform Effective and Just Policy
- Build Community for Impact

All of this highlights the core identity of CLF as a global community of change-makers – not just a small staff of researchers at a university. As Margaret Mead famously said, “never doubt that a small group of thoughtful committed citizens can change the world; indeed, it's the only thing that ever has.”

We are deeply grateful for your partnership, your leadership, and your deep hearts. Together, we can... You finish the sentence!

A handwritten signature in black ink that reads "Kate". The signature is fluid and cursive.

Kate Simonen

Founding Director
Professor, Architecture & Engineering
University of Washington

Who We Are



Innovation and collective action to solve the embodied carbon challenge

The Carbon Leadership Forum accelerates the transformation of the building sector to eliminate carbon in buildings and infrastructure by inspiring innovation and spurring change through collective action. We pioneer research, create resources, foster cross-collaboration, and incubate member-led initiatives to bring embodied carbon emissions of buildings down to zero. We are architects, engineers, contractors, material suppliers, building owners and policymakers who care about the future and are taking bold steps to decarbonize the built environment, with an ardent focus on eliminating embodied carbon from buildings and infrastructure.

Our vision

We envision a transformed, decarbonized building industry – better buildings for a better planet.

Our mission

To radically reduce the carbon in buildings and infrastructure to enable a just and thriving future.

Our values

Determination
Inclusion
Collective Action
Empowerment
Transparency
Justice

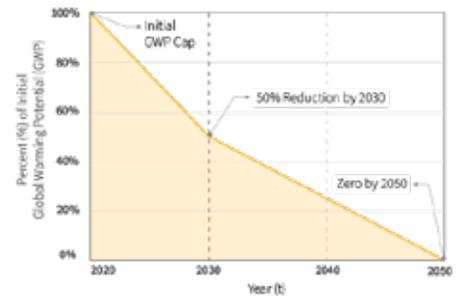
Theory of Change

The strategic goal of the Carbon Leadership Forum is to eliminate carbon in buildings and infrastructure by inspiring innovation and spurring change through collective action. Reducing embodied carbon will require the transformation of significant sectors of the global economy -- not just construction but also manufacturing and transportation. This is clearly a much bigger challenge than any one organization or network can handle. But CLF is uniquely positioned to influence the global building sector in specific ways with a set of highly leveraged initiatives and interventions. This is our theory of change: our assessment of the essential contribution that CLF can provide to help decarbonize the global economy.

Improve Data and Methods



Data is essential for driving effective private and public decarbonization policies and targets. We align, assess and advance embodied carbon data and methodology to increase access and availability of quality embodied carbon data for effective decision-making and support the development of robust standards.



Inform Effective Just Policy



To advance government and corporate policy, tools and resources are required to provide the clarity needed for meaningful action. We develop model embodied carbon policy, act as a technical advisor to inform the development of effective and just policies, provide technical support to agencies implementing embodied carbon policy, and collaborate with NGOs to align and advance embodied carbon policies.



Build Community for Impact



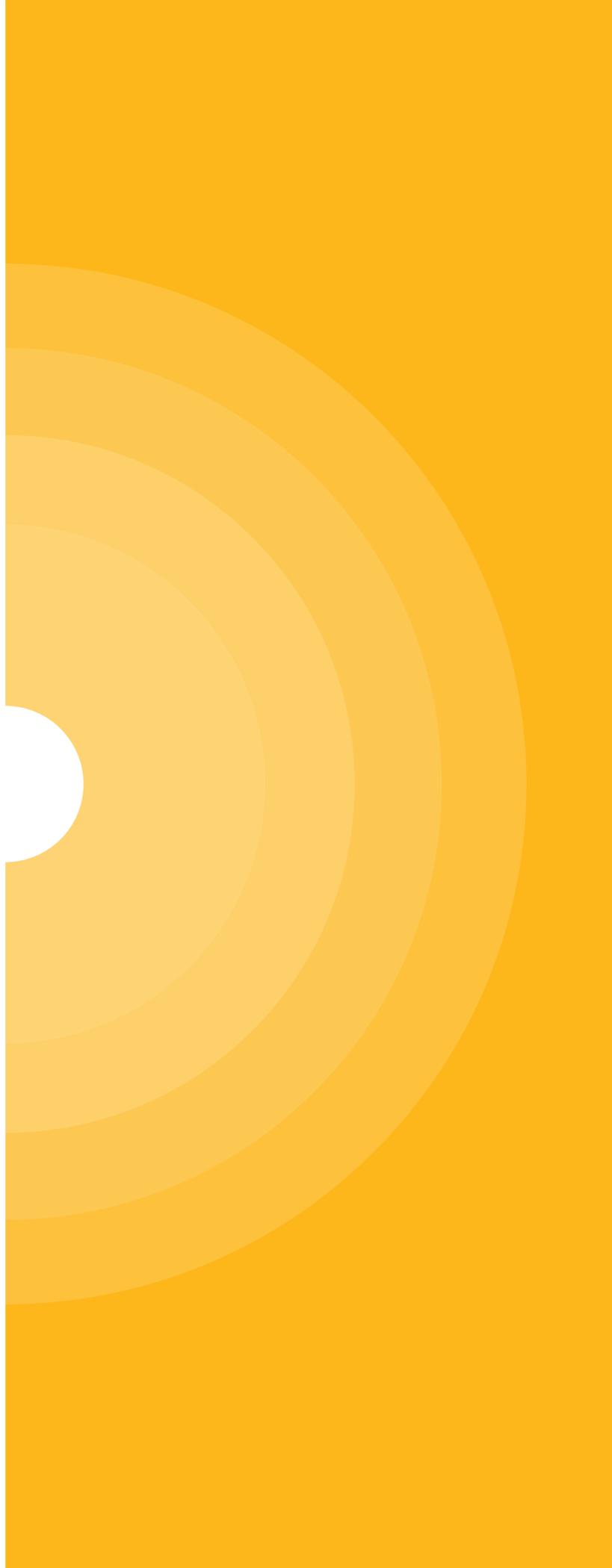
Action must span professions, sectors and geographies. We build, unify, and convene a diverse community of leaders to enable widespread action to reduce embodied carbon. Our network of regional leaders is equipped with resources and educational opportunities that build capacity to advocate for and comply with embodied carbon policies.



We invite you to join our coalition of architects, engineers, contractors, materials suppliers, building owners, policymakers and associations committed to radically decarbonize buildings and building materials.

- Become a member
- Join or start a focus group
- Learn more about our NGO Roundtable
- Join or start a regional hub
- Become a sponsor
- Propose an Initiative

OUTCOMES



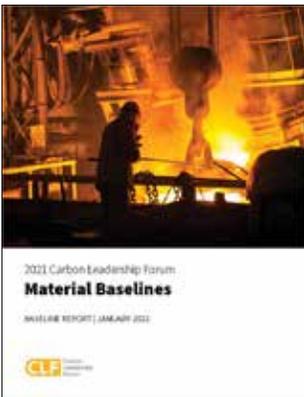


Improve Data and Methods

The Carbon Leadership Forum recognizes that decarbonizing building materials and construction depends on extensive, reliable, and comparable data on the carbon footprint of a wide range of building materials and products; on rigorous and transparent methodologies for evaluating those materials; and on the availability of robust tools designed to help calculate the carbon footprint of building components, assemblies, and systems.

Our research this past year has focused on strengthening access to high-quality LCA data and broadening the questions that the design community can ask through the process of LCA. **The following projects helped advance the goal of building trust, accuracy and accessibility to carbon accounting across the building sector.**

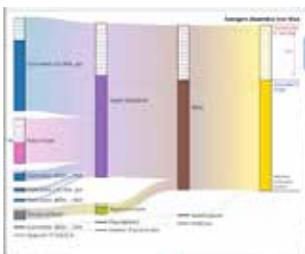
Research: 2021 Material Baselines



A baseline is a static reference against which to compare progress towards a goal. Baseline data enables the tracking of changes or improvements over time and across projects. Globally, the availability of embodied carbon data for materials and products is growing as more and more manufacturers produce EPDs and make the environmental impacts of their supply chains known. Due to the dynamic nature of these datasets, users have identified the need for a static baseline against which they can set measurable targets and compare products. Baselines give a typical value for a material type, and also express the significant variability of product manufacturing and uncertainty of LCA data across a material category.

CLF baselines are based on publicly-available, peer-reviewed documentation on embodied carbon of building materials, and are intended to give a rough order of magnitude of embodied carbon impacts for each category of materials reflecting the significant variability of product manufacturing and uncertainty of LCA data available, and can form the basis of carbon assessments in various LCA tools and calculators. To transform the building industry and decarbonize the supply chains for materials, we'll need to know what we are measuring against. CLF Baselines are essential for measuring progress and making accurate comparisons.

Research: Supporting the Growth of EC3, Tally, and OpenEPD



The Embodied Carbon in Construction Calculator (EC3) tool was incubated by CLF in 2019 as a freely available tool for building industry professionals who use its open-access database of digital EPDs to evaluate and reduce the embodied carbon of materials by selecting lower-carbon products. Now owned and managed by Building Transparency (BT), an independent nonprofit organization, the EC3 tool is developed alongside other LCA tool and data projects including Tally (a whole-building LCA tool) and OpenEPD (an open data format for passing digital third-party verified Environmental Product Declarations (EPDs)). CLF's ongoing role is to provide critical third-party review of BT's work in order to support the development of a next generation of open-source, collaborative LCA tools for the design and planning community, and the underlying data to support these projects.



Improve Data & Methods

Collaboration: Leadership Summit on Wood, Climate and Forests



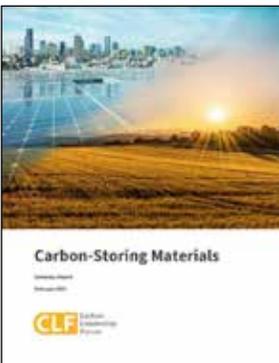
Collaboration Project: The Summit gathered over 100 thought and practice leaders in green building, embodied carbon, mass timber, forestry, forest science and advocacy for a participative workshop held virtually on April 14-15, 2021. The Summit was co-convened by Carbon Leadership Forum, World Wildlife Fund, Architecture 2030, Washington Environmental Council, and Ecotrust. Leading up to the Summit, the CLF convened a working group to suss out some of the thornier problems associated with evaluating the climate benefits of mass timber, wood products, and forest management. The Measuring Progress Working Group concentrated on the current limitations and future potential of methods for quantifying and reporting the true carbon footprint of wood products. This group brought together diverse stakeholders including designers, LCA practitioners, wood product manufacturers, forest landowners, land managers, and forest ecologists to talk about the different ways in which they measure and evaluate forest carbon and wood products. In order to identify gaps and opportunities for future research and collaboration.

Collaboration: Advancing LCA Tool Development



CLF supports a community of tool developers and researchers across industry, practice, and academia by encouraging the development and harmonization of free and open-access LCA tools for building designers. This year we've worked with nearly a dozen tool developers and LCA researchers seeking to increase the accessibility and reliability of LCA tools. We initiated a CLF Incubation program to offer a range of services to tool developers, including technical and strategic advice, cultivating collaborations, and help with tool marketing and hosting. Tools we currently incubate include **2Build or Not 2Build**, a simple calculator to aid designers in advocating building reuse rather than demolition and new construction, and the **UpStream Forestry Carbon + LCA Tool**, enabling a user to quickly compare different and custom biogenic carbon scenarios for products while adding the carbon impacts at the forest level.

Research: Carbon-Storing Materials



CLF recently completed a four-month research project with a major US tech company to understand the potential of using low-carbon and carbon-storing materials in new construction. The project focused on carbon-intensive hotspot materials (e.g., concrete foundations and slab floors, insulated roof and wall panels, and structural framing) in light industrial buildings. The study found that a sizable reduction (~60%) in embodied carbon is possible in two to three years by bringing readily-available low-carbon materials into wider use. Furthermore, fostering a carbon-storing material supply system by investing in the development and manufacturing of nascent carbon-storing materials industries could make a carbon-positive future for individual projects possible in three to five years.



Inform Effective & Just Policy

Policy is an essential step towards creating the scale of action required to rapidly reduce embodied carbon in construction. We are at a critical moment globally where embodied carbon policy is expanding rapidly at the federal, state, and city level, and corporate policies are emerging to help companies meet their embodied carbon and Scope 3 emissions reductions goals.

One of the largest challenges for policymakers is the technical challenges associated with understanding, communicating, and measuring embodied carbon. The Carbon Leadership Forum addresses these challenges through our research and resources, tracking and developing policy language, and importantly through being available to provide guidance and training to legislators, advocacy organizations, and agencies at the federal, state, and city level.

Hands-On Technical Guidance and Model Policy Language



As global action and policies targeting reduced embodied carbon and industrial decarbonization expand rapidly, our expertise is increasingly called on to provide hands-on technical guidance and expertise. In the first few months of 2021 alone, low-carbon procurement bills like Buy Clean were introduced to initiate or expand efforts to measure and reduce the embodied carbon associated with public procurement at the federal level and in eight states.



In 2021, the Carbon Leadership Forum was called on to provide technical expertise and guidance related to a proposed General Services Administration (GSA) embodied carbon program, federal legislative action, and state bills in California, Colorado, Connecticut, Minnesota, New York, Oregon, and Washington.



In May 2021, the CLF also joined the embodied carbon technical advisory committee for Boston's Zero Net Carbon Building Zoning initiative, providing recommendations and presentations.

RMI-CLF City Policy Roundtable Series



In summer 2021, the CLF partnered with RMI to host a roundtable series for city agency representatives focused on developing embodied carbon municipal procurement policies, codes, and climate action plans. Over 15 cities across the US participated in the roundtable across three events.

Education and Outreach



In FY 2021, the Carbon Leadership Forum provided over 30 presentations related to policy and participated in 8 workshops supporting policy development, for a combined audience of over 6,000 policy-makers, advocates, and professional staff from hundreds of firms.



Inform Effective & Just Policy

Policy is an essential step towards creating the scale of action required to rapidly reduce embodied carbon in construction. The CLF policy primer series begins with an introduction to procurement policies, also known as Buy Clean. Key forms of embodied carbon policies that CLF is tracking in 2021-22 include: a) public procurement policies such as Buy Clean; b) climate action plans; c) building codes; d) city zoning, land use, and building regulations and incentives, including building and material reuse policies; and e) executive orders addressing the embodied carbon of building and industrial sector emissions.

CLF Embodied Carbon Policy Toolkit



In January 2021, the CLF launched a policy toolkit starting with a policy primer series focused on procurement policies and a curated external resource library. The toolkit also includes a map for tracking policies across the US, such as a) climate action plans; b) building codes; c) city zoning, land use, and incentives; d) building and material reuse and deconstruction policies; e) executive orders; and f) public procurement policies. The toolkit received over 2,000 unique visitors in its first 3 months and has been referenced in many articles and roadmaps since then, from the EPA’s new “Buy Clean Procurement and Energy Star” page to Clean Energy Canada’s “Buy Clean Roadmap for Canada.” We have continued to add resources throughout 2021 and look forward to adding whole building focused resources in 2022.



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CLF Embodied Carbon Toolkit for Building Owners



Investors, developers, and public or private building owners and tenants are essential to reducing embodied carbon because they play an important role in spurring new projects and setting project requirements. The toolkit provides an overview of the opportunity for investors, developers, building owners and tenants. It suggests ways to target net zero embodied carbon, and also suggests procurement policies for corporate adoption. The toolkit also includes a tracker on corporate Scope 3 and embodied carbon reduction commitments. The CLF also provides education and training related to corporate embodied carbon policy development through events hosted by our partners, such as the Renewable Energy Buyers Alliance (REBA), CREtech, Urban Land Institute (ULI), and RMI’s Carbon-Free Buildings program.



Build Community for Impact

► Globe-Spanning Network of Connected Members

The Carbon Leadership Forum connects its members – from architects, engineers, contractors, material suppliers, building owners, policymakers, and associations – through its robust online Community Platform, active Focus Groups, burgeoning Regional Hubs, and NGO Roundtable. Together they contribute to and access our research projects and resource library, connect at vibrant, interactive events and webinars and actively engage in member-led Initiatives. This network is dedicated to accelerating the transformation of the building sector to radically decarbonize buildings and building materials through collective action.

The Network brings together thousands of professionals from across the building industry, from 45 US states and territories, 82 countries, and 1190 cities around the world.

Often described as “collaboration at its best”, the Carbon Leadership Community Platform is a key tool in accomplishing our mission to decarbonize the built environment. The Community is characterized by its determination to make a difference; a welcoming and inclusive environment; encouragement and empowerment of its fellow members; along with the integrity and transparency of the information exchanged.

The result: The CLF Community, rooted in a collective action model and positive, productive collaborations is constantly inspiring innovation and spurring change.

In 2021, 6,845 Members on Six Continents





Build Community for Impact

Regional Hubs: Changing the World One City at a Time

Since the first CLF Regional Hub launched in Vancouver, Canada the fall of 2019, new Hubs have flowered around the world. Hubs are convened by groups of CLF Community members to help interested professionals share best practices, discuss solutions, and spread the word about embodied carbon. By the spring of 2021, Regional Hubs had been initiated in 29 cities across the globe.

“We have ambitious plans to make embodied carbon a prominent concern for builders in India. We can popularize the economic benefits of carbon neutral buildings, promote green funds as investment opportunity, and work with manufacturers. Our ambition is to help Bengaluru live up to our nickname, ‘The Garden City.’”

-- Abhinav Sujit, CLF Bengaluru



Anthony Pak, Vancouver Steering Committee Chair



Phoenix



Caitlin Hart, Boston Steering Committee



Philly, PA



Martin Torres, Austin Steering Committee



Capetown, South Africa



Lisa Conway Co-leader, Philly



Bengaluru, India



Eslam Mohamed Co-leader, Ottawa



Seattle



Alex Co Co-leader, Pittsburgh



Ottawa



Johanna Collins Co-leader, Phoenix



Pittsburgh



Katie Poss Co-leader, Nashville

Hub Co-leaders Cultivate Local Communities for Global Impact

“We can see several compelling opportunities to nurture with this group: commercial and residential renovations, material reuse, and specifying lower embodied carbon products in renovations and new commercial projects, among others.” — Alex Co, CLF Pittsburgh



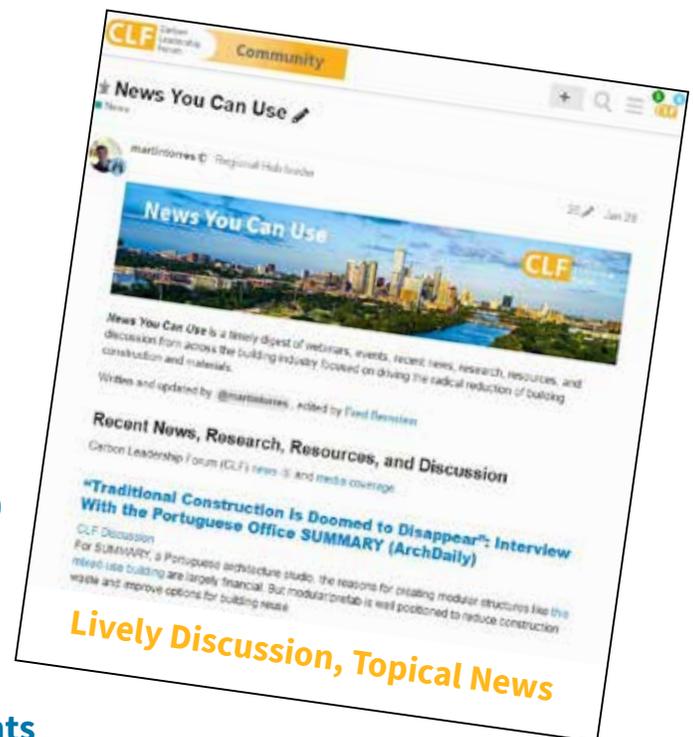
Build Community for Impact

Online: Engagement, Depth, Exploration

In spring 2020 we launched a new online communication platform for members to join discussions, engage with others and share news. Members use this shared learning laboratory to seek advice and feedback, propose initiatives, share resources, and launch animated discussions on diverse topics, including how to advance the discipline and practice of life cycle assessment (LCA), how to specify low-carbon materials, how to decide whether to reuse and retrofit existing buildings or demolish and build new, how to ensure that the use of mass timber helps build permanent carbon storage both in buildings and forests, and how to use tools such as EC3, Tally, and Revit to reduce carbon in construction.

In 12 months...

- **CLF online members doubled to over 2300**
- **CLF members created over 1,000 topics**
- **CLF members posted over 10,000 comments**
- **CLF members logged in over 100,000 times**



CLF Members

- Connect with others interested in reducing carbon emissions associated with buildings.
- Learn how to reduce embodied carbon in projects, using tools, data, and other resources.
- Engage in discussions to advance embodied carbon understanding and action.
- Create, share, and utilize educational resources that aid in reducing embodied carbon.
- Act with others to advance public and organizational policies to reduce embodied carbon.
- Connect their firms, companies, and organizations to CLF's mission as partners and sponsors.



Build Community for Impact

NGO Roundtable: Collaboration to Build Resources and Strategy

The Carbon Leadership Forum has assembled a Roundtable of over 30 non-governmental organizations collaborating to advance common goals and spur accelerated outcomes.

NGO Roundtable meetings feature timely updates from a variety of organizations on new initiatives, programs, events, and resources focused on reducing embodied carbon emissions in built environments.

Organizations participating in CLF's NGO Roundtable share news, strategic plans, resources, and tools related to embodied carbon.

CLF's purpose is to inspire and facilitate ongoing communication and conversation among key leaders related to embodied carbon. Encourage convergence on shared embodied carbon terminology, data standards, benchmarks, and targets for embodied carbon reduction.





Build Community for Impact

Member Diversity

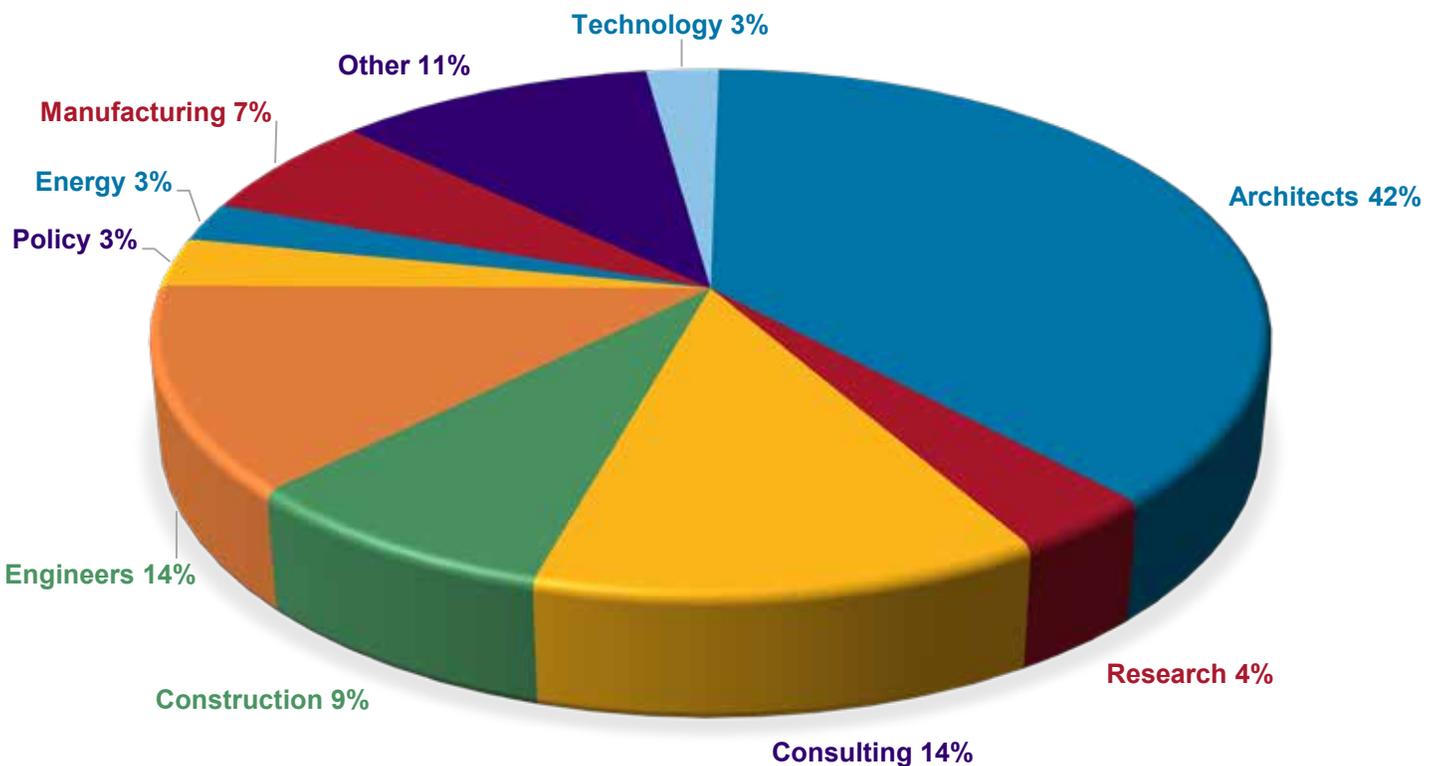
The CLF network includes over 6845 individuals from 3554 companies and organizations, spanning the construction industry from both the private sector and public sector, including companies, nonprofits, educational and research institutions, government agencies and policy groups, consultants, and foundations.

Core Insight:

Further, faster, together.

Innovation and transformation are the product of collective action by diverse individuals and organizations.

PROFESSIONS OF CLF MEMBERS





Build Community for Impact

Member Impact

Carbon Leadership Forum members are architects, engineers, contractors, material suppliers, building owners, policymakers, and researchers working in 1020 cities, 45 US states, and 79 countries around the world.

[Visit Member Impact on the CLF website](#)

What are you and your company doing to help reduce embodied carbon?

Barbara Rodriguez Droguett *Whole Building LCA Lead, Ministry of Energy, Chile*

I am working to create a roadmap towards Net Zero Carbon Buildings in Chile with their Buildings and Cities team. The Chilean Government has made a commitment to achieve carbon neutrality by 2050, more efficient buildings play a key role as these can help achieve a substantial reduction of GHG emissions.



Mark D. Webster *Senior Consulting Engineer, Simpson, Gumpertz & Heger*



As a structural engineer, most of my activity around embodied carbon centers on the Sustainability Committee of the Structural Engineering Institute, which I co-chair with Megan Stringer. Having spent about 25 years studying and publicizing the embodied impacts of structural materials without much headway in the industry, I am grateful and relieved that the collective efforts of a small group of committed adherents has finally resulted in the “hallelujah” moment we now find ourselves in, and for the rise of the CLF to spread the good word to the masses.

Marnese Jackson *Leadership Team, Midwest Building Decarbonization Coalition*

The mission of the Midwest Building Decarbonization Coalition is to inspire and educate Midwesterners to end new installations of fossil fuel equipment in residential and commercial buildings by 2030, and to achieve zero emissions from these buildings by 2050, with intentional and consistent integration of equity and labor justice across all facets of our work. The Coalition’s work is Equity First, incorporating equity concerns and prioritization into all other work streams.



Vasilis Kalfountzos *Civil Engineer and Business Developer at One Click LCA*



By joining One Click LCA I was given the opportunity and the tools to help promote concept and schematic design LCAs and embodied carbon studies in North America. I work with designers to help them reduce embodied carbon and save materials using a combination of early phase and detailed design LCA to guide their work. Introducing carbon as a function in parametric design allows for a simultaneous approach to embodied carbon efficiency, building morphology and material choice.

ORGANIZATIONAL INFORMATION



Funding

History

CLF launched in 2010
44 sponsors in 2020-21
CLF Community launched in 2017
now with 2400 members

Staff

9 core staff
1 engaged students
Many volunteers

Advisory Board

10 members meet monthly

2020-21 Publications

3 journal articles published
1 conference proceedings, 1 published
8 professional reports
27 press and web articles

2020-21 Event Stats

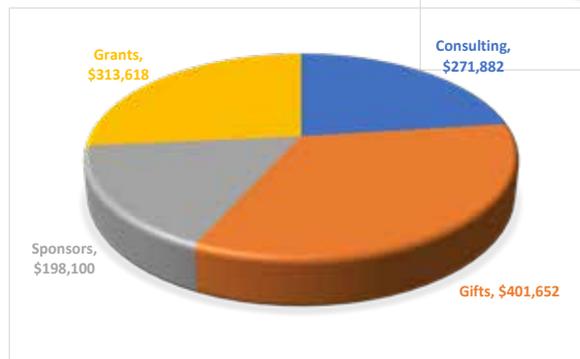
6 hosted events
24 webinars
42 presentations
6 panels hosted
12 sponsor-only meetings
12 sponsor-only updates

Resource Stats

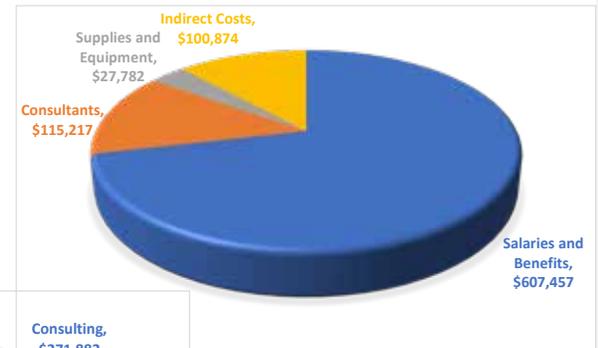
42 total publications

Income/Expense

2020-21 CLF ACTUAL INCOME \$1,185,352



2020-21 CLF ACTUAL EXPENSES \$853,337



In 2021 the Carbon Leadership Forum grew significantly and is projecting continued growth in the coming years. A significant portion of carry-over funds from 2021 will help CLF expand its capacity in the upcoming years while also supporting the organization's first significant reserve fund.

Funding Summary

As noted above, sponsorship and gifts provide over 25% of the Carbon Leadership Forum's operating budget.

Sponsor gift funds provide a highly flexible funding stream to advance the mission of the Carbon Leadership Forum.

In 2020-21, CLF invested in creating a new website, launched a new CLF Community online platform, developed new Toolkits to support action by policy makers, activists, and owners, developed new material base-lines for the EC3 tool, released a major white paper on carbon-storing building materials, released a monthly newsletter, expanded the CLF Resource Library, and upped our social media engagement (LinkedIn and YouTube).

The Carbon Leadership Forum is dedicated to developing the resources, tools and platforms you need in order to take meaningful action.

But WE NEED YOUR HELP to execute these exciting plans!
Interested in supporting? Contact hickling@uw.edu.

Sponsors



AIA Seattle | Ambient Energy | Arkin Tilt Architects | Brightworks | Coughlin Porter Lundeen
 LMN Architects | MDH Partners | Meyer Borgman Johnson | Miller Hull | National Ready Mixed Concrete Co.
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