



Carbon
Leadership
Forum
Bengaluru

Decarbonising the Built Environment

CLF Parent Body - Who we are

The Carbon Leadership Forum is a program of the College of Built Environments, University of Washington. CLF connects its members through its robust online Community Platform, active Focus Groups, burgeoning Regional Hubs and NGO Roundtable. In 2020, our network includes over 5400 individuals from 2650 companies and organizations, spanning the construction industry from both the private sector and public sector. Network members span the globe from 45 US states and territories plus 79 countries.

The Carbon Leadership Forum accelerates the transformation of the building sector to radically reduce the embodied carbon in building materials and construction 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, tractors, material suppliers, building owners, and policymakers who care about the future and are taking bold steps to decarbonize the built environment, with a keen focus on eliminating embodied carbon from buildings and infrastructure.

Newsletter

Issue No. 1



Mission & Vision

Our mission is to eliminate embodied carbon in buildings and infrastructure by inspiring innovation and spurring change through collective action. We envision a transformed, decarbonized building industry – better buildings for a better planet.

Take Action to Decarbonize Buildings and Materials through



Research

We investigate the pathways for maximizing carbon reductions and lead collaborative research with many stakeholders.



Resources

We accelerate learning by crowdsourcing and disseminating knowledge.



Network

Connecting inspired advocates to achieve greater action.

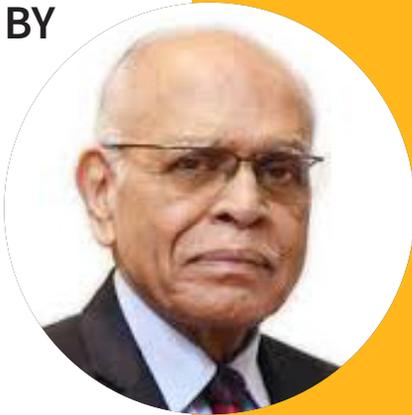


Initiatives

Accelerating market transformation by inspiring and fostering action.

VIRTUAL LAUNCH

BY



Mr V. Suresh
Chairman - IGBC

DISTINGUISHED PANEL



Mr V. Suresh
Chairman - IGBC



Ar Habeeb Khan
President, CoA



Mr Sanjay Seth
CEO-GRIHA Council



Ms Mili Majumdar
MD - GBCI India



Ar Mohan B R
Chairman-IIA KC



Ar Dinesh Verma
Chairman-IIID-BC



Ar Sujit Kumar
Principal Architect - KlimArt

MODERATOR

CLF Bengaluru Launch

May 29th 2021

CLF Bengaluru is a local hub of the CLF and is connected to the larger global network of CLF. Our launch as the first CLF local hub of India aims to motivate change and create a movement among various stakeholders to move towards decarbonization.

COMMANDING KEY-NOTES



Mr Anthony Pak
CLF - Vancouver



Mr Chungha Cha
Cofounder, Reimagining Cities



Dr Rajesh Singh
Managing Director Sphera



Mr Alessandro Bisagni
Founder-President Bee Inc

SPECIAL GUESTS



Mr Kishore Jain
President CREDAI
Bengaluru



Dr Asif Iqbal
President - Indian Economic
Trade Organisation

YOUTH TALK



Mr Swapnil Talukdar
President Awardee - Young
Innovator and Entrepreneur

DECARBONISING BUILDINGS

THE AUTOMATION WAY

Buildings use diverse systems to operate multiple facilities and consume energy every minute of every day. Approximately 40 % of the energy consumption in the world is by buildings. Few examples are HVAC, Power, Lighting, Water, Waste management, Access control etc.

Building automation systems (BAS) use distributed control systems to continuously monitor and control key building facilities to achieve high efficiency and reliability. New and older buildings can both incorporate BAS, optimizing energy demand and carbon emissions while improving indoor air quality and occupant comfort and productivity.

With the use of latest technologies like IoT, Data connectivity and management, AI etc, BAS has made tremendous progress in efficient management of building services with predictive maintenance reducing the cost of building ownership.

Building automation ranks as one of the top contenders in the list of climate control solutions, and carbon foot print management. Moving the buildings and construction sector onto a low-carbon pathway will slow climate change and deserves the right priority for all stakeholders working on carbon footprint reduction.

I wish the CLF Bangalore chapter a good start & successful years ahead in their journey to facilitate carbon footprint reduction . We are obliged to support them in the interest of the future generation of this world.



Rathan Bala is a world-renowned expert in Automation Projects & Building Automation Systems. He has worked in top management positions in small & large business units and has been leading Satellite & Defence, R&D projects. He is currently Founder & Chief Consultant at RS BIZ consultant, LLC, a business consulting firm in CT, USA specialized in manufacturing, technology services, technology adaptations & growth strategy.

He has senior membership in many international professional organizations like ISA, ASHRAE, ISoBL, etc. He is currently Director of BASDIV (Building Automation Systems Division), Technical Division of ISA (International Society of Automation).

Contact : rathan@rsbizconsultant.com

Member Led Initiatives - Inviting Contributors

This is a knowledge-sharing platform open to all the members of CLF-Bengaluru. This quarterly newsletter of CLF Bengaluru invites contributions from all its members on member led initiatives for Carbon Reduction.

Contributions can be anything relevant to the member's individual or organization contribution to carbon reduction and sustainable practices followed by them. It can be in any form like photos, stories, news, achievements, product / technology information, etc. Your contribution should be original, authentic, relevant, most recent, copyright free and non controversial.

Due credits will be given to the contributors while publishing the same. However editorial team reserves the right to reject, edit or defer the contributions. Kindly share your contributions at editorial@clfbengaluru.org.

GROUND REPORT

For the growth of the industry and the guidance in the right direction it is imperative that we learn from key examples that have accomplished major milestones. This section of zero carbon case studies aims to highlight unique traits and focus on the breakthroughs in the industry.

IEA report on Net Zero by 2050

International Energy Agency (IEA) has recently released its special report "Net Zero by 2050 - A Roadmap for Global Energy Sector". This report is the world's first comprehensive study of how to transition to a net zero energy system by 2050 while ensuring stable and affordable energy supplies, providing universal energy access, and enabling robust economic growth.

It sets out a cost-effective and economically productive pathway, resulting in a clean, dynamic and resilient energy economy dominated by renewables like solar and wind instead of fossil fuels. The report also examines key uncertainties, such as the roles of bioenergy, carbon capture and behavioural changes in reaching net zero.

The Roadmap provided a pathway to reach this formidable and critical goal, setting out more than 400 milestones for what needs to be done, and when to decarbonise the global economy in just three decades.

For full report visit - <https://www.iea.org/reports/net-zero-by-2050>

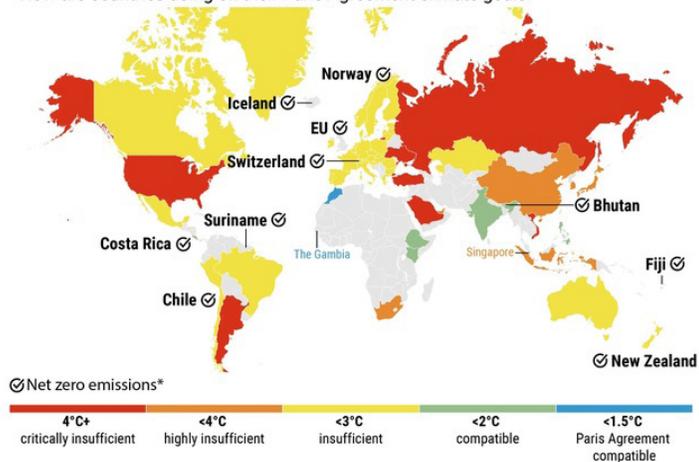
Desi Air-conditioner at just Rs.1800/-

A school Girl from Jhansi has Invented EcoFrenal Air Conditioner at an expense of just Rs 1800. Kalyani, an student of class 11 in Lokmanya Tilak Inter College, Jhansi has done this. The AC does not cause any pollution and doesn't need any external power source as it works on a sun oriented cell. This simple and low cost device helps bring down temperature by 4-5 degrees when used for an hour.

Read more at <https://merabharat-mahan.com/kalyani-srivastava-the-inventor-of-desi-air-conditioner/>



How are countries doing on their Paris Agreement climate goals?



Tracking National Climate Action

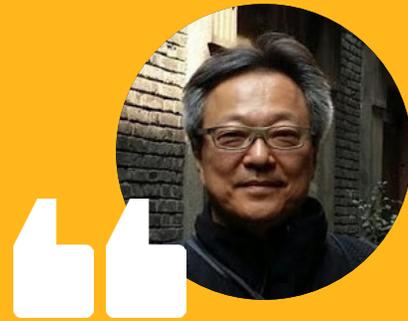
Under the terms of the 2015 Paris Agreement, signatory countries agreed to make their own commitments to curb greenhouse gas emissions. Only a handful of countries are on pace to limit warming to 2°C above pre-industrial levels — let alone to meet the 1.5°C target that most scientists believe will help us avoid heaviest climate impact. A small group of intrepid governments aim to achieve "net zero" emissions in coming decades. India, the world's third largest emitter of carbon dioxide, is one of the countries worst affected by climate change. The country is one of the few currently on track to meet its emissions reduction target in the 2015 Paris Climate Accord, and is very close to achieving its objective of using 40 percent of renewable energy sources by the end of the decade.

Source: GZERO Media

<https://www.gzeromedia.com/indias-push-for-climate-justice>

DECARBONISING THE BUILT ENVIRONMENT

In the building industry, embodied carbon refers to the greenhouse gas emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building materials. In contrast, operational carbon refers to the greenhouse gas emissions due to building energy consumption. Embodied carbon is a significant percentage of global emissions and requires urgent action to address it. In order to quantify the greenhouse gas emissions and their potential effects on climate change, the Life Cycle Assessment (LCA) method is used to track the emissions produced over the full life cycle of a product or a process. These emissions are converted to metrics like Global Warming Potential (GWP) which is quantified as kilograms of CO2 equivalent (kg CO2e). The majority of a building's total embodied carbon is released upfront in the product stage at the beginning of a building's life. Unlike with operational carbon, there is no chance to decrease embodied carbon with updates in efficiency after the building is constructed. There is an urgent need to address embodied carbon now to meet short-term and long-term climate targets. It is possible with shifting the manufacturing industry to lower-carbon products. Public and private policy can play a key role in creating this demand. Read more at <https://carbonleadershipforum.org/embodied-carbon-101/>



Decarbonization of the built environment is NOT only about carbon reductions! It's about building smart, healthy, resilient communities all over the world with a low carbon impact on our planet.

- Mr Chungha Cha
Cofounder, Reimagining Cities



Circularity

In the recent years, the climate policy has been the single biggest driver towards sustainability in the built environment. Plans to move towards a circular economy are in full swing. Circular economy is a restorative and a regenerative economic system in which resources are retained and reused as opposed to our current linear economy of take, make and dispose.

ZERO CARBON CASE STUDIES

International:

Google and Fervo collaboration for next-generation geothermal power project

Google and clean-energy startup Fervo have signed the world's first corporate agreement to develop a next-generation geothermal power project, which will provide an "always-on" carbon-free resource that can reduce our hourly reliance on fossil fuels.

Next-generation geothermal technology-

Traditional geothermal already provides carbon-free baseload energy to a number of power grids. But because of cost and location constraints, it accounts for a very small percentage of global clean energy production.

By using advanced drilling, fiber-optic sensing, and analytics techniques, next-generation geothermal can unlock an entirely new class of resource. Google is partnering with Fervo to develop AI and machine learning that could boost the productivity of next-generation geothermal and make it more effective at responding to demand, while also filling in the gaps left by variable renewable energy sources.

Read full article at - <https://cloud.google.com/blog/products/infrastructure/google-fervo-geothermal-project-creates-carbon-free-energy>



Using fiber-optic cables inside wells, Fervo can gather real-time data on flow, temperature, and performance of the geothermal resource. This data allows Fervo to identify precisely where the best resources exist, making it possible to control flow at various depths. Coupled with the AI and machine learning development outlined above, these capabilities can increase productivity and unlock flexible geothermal power in a range of new places.

This collaboration also sets the stage for next-generation geothermal to play a role as a firm and flexible carbon-free energy source that can increasingly replace carbon-emitting fossil fuels—especially when aided by policies that expand and improve electricity markets; incentivize deployment of innovative technologies; and increase investments in clean energy research, development, and demonstration (RD&D).



Presently 7.8 billion people are using 1.75 times the bio- capacity of this planet, yet 20% are living in inadequate or no shelter. Choice is either to de-carbonize building technology or destroy life as we know it.

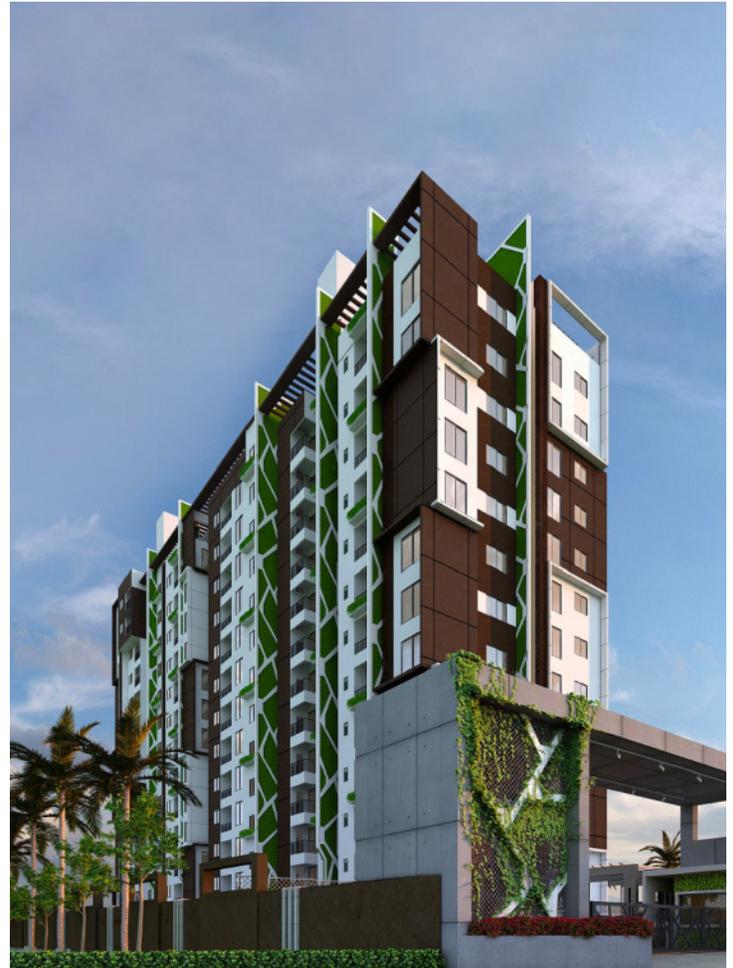
- Suhasini Ayer
Principal Architect - Auroville Design Consultants

ZERO CARBON CASE STUDIES

India:

CoEVOLVE Northern Star, Bengaluru

- Most Sustainable residential community in the Asia Pacific Region - awarded by World Green Building Council
- IGBC Platinum rated green building
- One of India's most sustainable project and Karnataka's greenest residential project
- With a site area of 1.5 acres, the project is a B+G+13 storeyed tower having 130 nos. Of housing units in 1,2,3 BHK configuration
- The project's embodied carbon reductio is 1738 tons and its annual operational carbon reduction is estimated to be 242 tons.
- CNS saves more than 3 Lakh kWh units annually by using gearless elevators, solar panels and windmills,
- The project has achieved 65% reduction in potable water consumption by providing efficient plumbing fixtures, rainwater harvesting, grey water treatment and reuse of treated waste water
- The project has a robust waste management system including waste segregation and onsite organic waste convertor



For more details visit:

<https://www.coevolvenorthernstar.com/>



Decarbonization in the built environment starts from quantifying your performance. Leverage third-party certifications and data management and analytics platforms to optimize supply chain and benchmark progress.

- **Mr. Alessandro Bisagni**
Founder & President - Bee Inc

GREEN SOLUTIONS

Carbon Embedded Concrete

CarbonCure manufactures a technology for the concrete industry that introduces recycled CO₂ into fresh concrete to reduce its carbon footprint without compromising performance. In the process called CO₂ mineralization, once injected into the concrete mix, the CO₂ reacts with calcium ions from cement to form a nano-sized mineral, Calcium Carbonate, which becomes permanently embedded in the concrete. This makes the concrete stronger, enabling mix optimization while eliminating the CO₂. This results in economic and climate benefits for concrete producers—truly a win-win.

This technology can be used for ready mix concrete, precast concrete as well as masonry blocks. CarbonCure's equipment is retrofitted into concrete plants in just one visit. The CarbonCure Valve Box is connected to the CO₂ tank stored onsite, and automatically injects a precise dosage of CO₂ into the concrete during mixing. The CarbonCure Control Box syncs with the plant's batching software, so adding CO₂ to a mix is as easy and quick as flipping a switch. Learn more at <https://www.carboncure.com/>

25 lbs CO₂

saved per cubic yard



25 - 40 lbs CO₂

saved per cubic yard



1 lb CO₂

sequestered per 30 standard blocks



Irony is in the number and Pairing: A little too much CO₂ is fatal, C-C forms the strongest bonds and O₂ is what we are missing gradually. I am afraid the time is near for the **Point of No-Return**.

- Mr. Swapnanil Talukdar
aka Social Engineer



THE CARBON CHAMPION QUIZ

Take our short quiz to see if you are a Carbon Champion ..find the correct answers on the last page of this newsletter!

1. Net-zero carbon and carbon-neutral - are they the same?

- A - Yes they are the same
- B - No, they are different

2. Net-zero carbon requires carbon reduction aligned with the 1.5°C Paris Agreement Target.

- A - False
- B - True

3. Carbon Offsets

- A - Completely remove the emitted CO2 from the atmosphere
- B - Are purchased credits from other entities that have no or low emissions



Decarbonizing the building sector would look vastly different in advanced and developing countries – in developed nations, decarbonisation requires extensive retrofitting of existing buildings whereas in developing economies like India, the majority of buildings expected to exist in the near future are yet to be built. Our focus therefore, needs to be firmly on design and construction with footprint reduction in mind.

- Mr. Sanjay Seth
CEO - GRIHA Council

Answers to The Carbon Champion Quiz

- 1.** The correct answer is B “No, they are different”. While the two terms are often used interchangeably, net-zero carbon and carbon-neutrality have different goals and levels of ambitions.
- 2.** The correct answer is B “True”. The Paris Agreement aims to limit increase to 1.5°C, since this would significantly reduce risks and impacts of climate change. Companies can become net-zero for example by following the implementation of the science based targets initiative.
- 3.** The correct answer is B “Purchased credits from other entities that have no or low emissions.” Carbon offsets use funds to pay for emissions that are reduced elsewhere. Example (a gas fired power plant buys “credits” from a solar plant or wind farm elsewhere. Carbon removals are strategies to remove GHG emissions (converted in CO₂e) from the atmosphere and store it through various means, such as nature-based solutions - soils, forestry, underground reservoirs and rock formations or the ocean. The different natural and technological approaches to carbon removals come with very different risks and benefits.



FROM THE EDITOR'S DESK

Dear Reader,

Greetings from the editorial team of the quarterly newsletter of CLF Bengaluru Hub. Today is a great day as our long awaited and much anticipated 'Issue No. 1' of the newsletter is published.

We at CLF Bengaluru have got together and founded the CLF Bengaluru Hub. We have committed ourselves to understand embodied carbon impacts and improve data and methods used to calculate carbon footprints at the product and building scale. We have set out to build a deep body of research and resources to propel knowledge, a robust network to foster collaboration to empower our members to advance new ideas and meaningful initiatives. With the successful launch of the CLF-B hub on 29th May 2021, we are looking forward to take our vision to new heights with collective action.

We are optimistic and excited about what this decade will bring and developing resources to empower industry action that radically reduces embodied carbon through collaboration and partnerships. This newsletter is one such initiative to reach more individuals and organizations who share an urgency for action, increased focus on embodied carbon and commitment to help meet carbon targets. We look forward to working with you to help foster cross-sector collaboration that enables a more informed community and accelerates impact.

Much efforts and time have gone in making this e-newsletter that brings you the latest news, views, initiatives, achievements related to sustainability in buildings. Your participation, suggestions and contributions are most welcome. We can go further and faster if we work together. Get in touch with us at editorial@clfbengaluru.org.

Best Regards,
Editorial Team

Cofounding Team

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