WorldGBC
Advancing Net Zero Status Report

2022

ADVANCING NET ZERO

WORLD GREEN BUILDING COUNCIL

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WE MEAN BUSINESS COALITION

Foreword

Cristina Gamboa
CEO, World Green Building Council

Despite the latest IPCC report's warning that current national pledges are still not ambitious enough to stop global warming exceeding 1.5°C, I see signs of hope emerging from our sector.

2022 marks World Green Building Council's (WorldGBC) 20 years anniversary. What started out as six founding Green Building Councils (GBCs) has grown into a network of over 70 and their 36,000 members. And in the past 12 months, I have witnessed new heights of collaboration across our network.

For the first time since COP21 in Paris, COP26 saw a day dedicated to the untapped potential of the built environment on the global climate stage.

Led by WorldGBC and the Building to COP Coalition, we worked with the UN High Level Climate Champions and the UK government to bring together leaders from private and public sectors to strengthen climate ambition at the 'Cities, Regions and Built Environment Day' on 11 November 2021. The day also marked the announcement of 26 climate action initiatives and more than 130 events to accelerate collaboration across the built environment value chain.

WORLD GREEN BUILDING COUNCIL +20

Tackling whole life carbon was brought into the mainstream with the launch of UK Green Building Council's Whole Life Carbon Roadmap, developed through WorldGBC's #BuildingLife project. We also welcomed 44 signatories to WorldGBC's updated Net Zero Carbon Buildings Commitment, which now addresses whole life carbon. And ministers, city mayors and CEOs declared the critical role our sector can play in mitigating and adapting to climate change.

These growing demand signals for more ambitious climate action were also profiled in two major WorldGBC publications: Beyond the Business Case demonstrates seven irrefutable co-benefits for investing in a sustainable built environment, and Beyond Buildings highlights the need to accelerate transformation in global infrastructure as part of a holistic approach to sustainability.

A critical driver for this work is our global programme, Advancing Net Zero (ANZ), and its mission to raise the bar for industry climate action. Alongside the pioneering work of the programme's 30 participating Green Building Councils, partners, and Net Zero Carbon Buildings Commitment signatories, we are making global impact through local action.

As we build on last year's momentum and continue our relentless advocacy efforts ahead of upcoming high-level climate conferences, like COP27 in Egypt, we will continue to strengthen our collaborative efforts with industry, sub-national and national governments to accelerate sustainable built environments for everyone, everywhere.

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ANZ Partners

Mina Hasman
Sustainable Practice Director, Skidmore, Owings & Merrill LLP

The construction industry has made much progress in successfully delivering the decarbonisation message and establishing key roadmaps for action over the last 12 months – all presented at COP26.

I was honoured to be part of the COP26 Cities, Regions and Built Environment Day events to amplify the commitment on net zero, and to demonstrate how we can go further – a vision at the heart of our 'Urban Sequoia' research launched at COP26.

Climate science consistently proves

Bianca Wong
Global Head of Sustainability, Kingspan Group

Climate action, at scale, is urgently needed. The construction sector must address its most material impacts at pace to stay within a chance of limiting global temperature rise to 1.5°C. WorldGBC and the Advancing Net Zero project are a critical part of the cross-industry collaboration driving the decarbonisation of the built environment. As a signatory to the Commitment, and as part of our 10-year Planet Passionate programme, Kingspan is prioritising reducing the embodied carbon in our products. This will enable us to reduce our value chain carbon impact while

Cate Harris
Group Head of Sustainability, Lendlease

Our #MissionZero targets of Net Zero by 2025 and Absolute Zero by 2040 are some of the most ambitious for the real estate sector globally, but we believe that doing so is critical to limiting global warming to no more than 1.5°C.

The work to achieve our targets has already begun, but deeper industry collaboration will be required to radically decarbonise the built environment. There are enough 'green shoots' across our sector to suggest that transformation is underway, but we need change at scale and at pace across new and

Sally Sudworth
Global Head of Sustainability & Climate Change, Mott MacDonald

The latest Intergovernmental Panel for Climate Change report stated that the window to take urgent action is still there but only just. It makes good business sense to act now to mitigate increasing climate related damages. At Mott MacDonald we are proud to be part of a community of engineers and professionals who are taking action, to participate in the Advancing Net Zero global programme and to be signatories to the World Green Building Council's Net Zero Carbon Buildings Commitment. We understand that collaboration and working in partnership with our

Tim Dismond
Chief Responsibility Officer, CBRE

CBRE has committed to Net Zero by 2040 and we're all in. We have a plan, alignment and engaged employees who have embraced our initiatives. Our key priorities include transitioning our operations to 100% renewable energy and our fleet to electric vehicles, helping our clients reduce their carbon footprint at the properties we manage for them, and investing in and deploying the latest technology. Technology will drive the scale and pace of what's possible for decarbonisation, and it will also be a key enabler for evaluating our impact. Collaboration through the WorldGBC's Advancing Net Zero

Xavier Denoly,
Senior Vice President Sustainable Development, Schneider Electric

We all now know that buildings and cities are central in combating climate change. However, it is less widely known that existing technology is a pathway for net zero buildings to not only achieve carbon neutrality, but also to provide significant co-benefits for people and the economy. In other words, investing in decarbonisation technologies combined with digital can maximise value creation for all stakeholders. It is crucial to engage people and communities in real decarbonisation pathways by showing that there is no needed arbitrage between human progress

Contents

About World Green Building Council

The World Green Building Council (WorldGBC) catalyses the uptake of sustainable built environments for everyone, everywhere.

Transforming the building and construction sector across three strategic areas — climate action, health & wellbeing, and resources & circularity — we are a global action network of over 70 Green Building Councils around the world.

As members of the UN Global Compact, we work with businesses, organisations and governments to drive the ambitions of the Paris Agreement and UN Global Goals for Sustainable Development. Through a systems change approach, our network is leading the industry towards a net zero carbon, healthy, equitable and resilient built environment.

Find out more **www.worldgbc.org**

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The world's largest sustainable built environment network advancing net zero solutions for industry and policymakers.

Advancing Net Zero
Whole Life Carbon Emissions

In November 2021, the world came together for one of the most important moments in tackling the climate emergency since the signing of the Paris Agreement — COP26. As party and non-party actors gathered in Glasgow, Scotland, expectations were high for meaningful action to combat climate change.

The 2022 IPCC Sixth Assessment Climate Change Mitigation Report, released in April 2022, states that "It's now or never, if we want to limit global warming to 1.5°C (2.7°F). Without immediate and deep emissions reductions across all sectors, it will be impossible."

The evidence is clear: the time for action is now. We can halve emissions by 2030.

The built environment can be a critical climate solution. "We see examples of zero energy or zero-carbon buildings in almost all climates," said IPCC Working Group III Co-Chair Jim Skea. "Action in this decade is critical to capture the mitigation potential of buildings".

For the first time, wind and solar generated more than 10% of electricity globally in 2021. Fifty countries have crossed the 10% wind and solar landmark, with seven new countries added in 2021. However, power from coal also rose 9% in 2021, to a new record high.[1]

COP26 saw unprecedented coverage on the importance of tackling total emissions from our built environment, with significant actions announced. We must continue to build on this momentum and keep advancing net zero together.

[1] https://climatechampions.unfccc.int/wind-and-solar-generated-10-of-global-electricity-in-2021-a-world-first/

"The need for urgent action is critical. WorldGBC's Net Zero Carbon Buildings Commitment provides a bold approach for businesses looking to be a front runner in decarbonising emissions from buildings by 2030."

Nigel Topping,
High Level Champion for Climate Action COP26

Advancing Net Zero is WorldGBC's global climate action programme working towards total sector decarbonisation by 2050. Working with Green Building Councils across the network to develop tools, programmes and resources to promote the urgency and achievability of net zero carbon buildings, and build industry capacity to deliver them. Together, we can halve emissions by 2030 and in the process, create a healthier, more equitable, and resilient built environment for everyone, everywhere.

2021/22 has seen many GBCs developing industry roadmaps and guidance, facilitating training courses and awareness programmes, and socialising the concepts of whole life carbon to their network. With this, we are shifting focus into how we achieve our goals and supporting industry with implementation.

A milestone on this journey was the update of the Net Zero Carbon Buildings Commitment in September 2021, to accelerate action on addressing emissions from embodied carbon, as well as operational carbon.

Theory of Change: Advancing Net Zero

ADVANCING NET ZERO

Advancing net zero emissions is a journey and an integral part of a wider systemic shift towards a more sustainable built environment.

Signatories to the Net Zero Carbon Buildings Commitment (the Commitment) are advancing net zero by facilitating and accelerating market transformation. In taking action further and faster to decarbonise the built environment, their commitment represents a leadership position within the buildings and construction sector. Through this action, we seek to generate sector transformation to allow mainstream actors to achieve the goals set out within WorldGBC's Sustainable Buildings for Everyone, Everywhere strategy, as part of a holistic approach that also addresses health, water resources, habitat and other vital outcomes.

The Commitment is an example of the Ambition Loop in action — signatories are advancing climate action within their own building portfolios to demonstrate what is possible, and advocate for change through their business activities. Governments of all levels are responding to these signals of readiness by setting policy roadmaps and targets, creating the confidence in investors and supply chains to activate low carbon solutions ahead of mainstream regulation and uptake.

The 2021 update to the Commitment advances net zero whole life carbon emissions for the built environment through introducing requirements to measure, reduce and offset embodied carbon. Signatories are required to take all necessary actions to achieve a maximum reduction in whole life carbon emissions for all new developments or major renovations over which they have direct control by 2030, and compensate for any residual emissions. Through gathering data to inform low carbon choices, relevant benchmarks and targets can be set, best practice methods incorporated, associated costs reduced, and greater uptake enabled — accelerating market transformation and leading to significant sector emissions reductions.

Why energy efficiency matters – Energy efficiency measures could reduce global emissions by 48% by 2030, with 43% of those coming from buildings. They can also support grid decarbonisation and significantly reduce costs while increasing resilience, durability, comfort, productivity. And these measures are available ***now***.

Why embodied carbon reduction matters — Cement manufacture is responsible for 7% of global carbon emissions. Steel contributes a further 7-9%, with around half of these emissions attributed to buildings and construction. More than half of total carbon emissions from new construction between 2020 and 2050 will be due to upfront emissions.

What about residual emissions?

As part of the transition towards total sector decarbonisation, WorldGBC advocates for a holistic approach to sustainability in support of the UN's Sustainable Development Goals (SDGs).

Therefore, WorldGBC recommends that residual operational and/or embodied carbon emissions are compensated for via high-quality, credible offsets that enable tangible environmental and social co-benefits. See Advancing Net Zero: Offsetting Residual Emissions from the Building and Construction Sector for more information.

Signatories driving action, today

Arup has committed to undertaking whole lifecycle carbon assessments for all its buildings projects, new and retrofit, from 2022 onwards. This will significantly reduce the whole life carbon emissions resulting from these projects. Bennetts Associates, in collaboration with Argent and BAM, published LETI Embodied Carbon Ratings for two projects, the culmination of over five years of embodied carbon calculation and reduction. IPUT's pathway to achieve net zero by 2030 also includes launching a transition fund financed by an internal carbon levy on emissions associated with the construction of new developments. This will to support research into low carbon technologies, upskill the supply chain and support initiatives to help occupiers reduce their carbon emissions. Finally, developer Bruntwood has announced their latest project, The Evo Building. It will be their first project to meet the LETI 2020 design targets for upfront carbon, RIBA's 2025 targets for whole life carbon and the UKGBC's Net zero carbon: energy performance targets for offices

The 2021 update to the Commitment advances net zero whole life carbon emissions for the built environment through introducing requirements to measure, reduce and offset embodied carbon.

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Advancing Net Zero Whole Life Carbon

OPERATIONAL CARBON

Leadership: Net Zero Carbon Buildings Commitment (businesses & organisations)

2030

By 2030, existing buildings reduce energy consumption and eliminate emissions from energy and refrigerants.

By 2030, new developments and major renovations to also achieve maximum reduction in embodied carbon.

Where necessary, compensate for residual emissions.

1. **Reduce and optimise energy demand**
2. **Generate balance from renewables**
3. **Compensate for residual emissions**
4. **Plan for deep decarbonisation**

2050

Advocate through business activities for **all buildings to be net zero whole life carbon** by 2050.

EMBODIED CARBON

Mainstream: All buildings globally

2030

By 2030, all new buildings, infrastructure and renovations will have at least **40% less embodied carbon** with significant upfront carbon reduction.

All **new buildings** must be **net zero operational carbon.**

1. **Prevent**
2. **Reduce and optimise**
3. **Plan for the future**
4. **Compensate for residual emissions**

2050

By 2050, all new buildings, infrastructure and renovations will have **net zero embodied carbon**,

All buildings, including existing buildings must be **net zero operational carbon**.

COP26 Glasgow: A Summary

The Cities, Regions and Built Environment Day on 11 November 2021 at COP26 brought together leaders from the private and public sectors to strengthen climate ambition for the built environment, and to showcase the importance of addressing whole life carbon emissions from the sector. On this day, we saw the announcement of 26 climate action initiatives from across the built environment system. The Building to COP Coalition powered more than 130 events across the two-week official and unofficial programmes of COP26, where the built environment featured as a priority theme for the first time since COP21 in 2015.

Together with the UN High Level Climate Champions and the UK Government, the Coalition developed the two Presidency Events — Accelerating Deep Collaboration and Ministers and Mayors on buildings as a critical climate solution — and the MPGCA programming, which brought frontrunner party and non-party actors together to focus on the collaboration needed to advance the sector further and faster.

#BUILDING TO COP26

UN CLIMATE CHANGE CONFERENCE UK 2021

IN PARTNERSHIP WITH ITALY

Participants in the headline events included:

5 Ministers including Chile, Colombia, Finland, Tunisia, and UK.

8 Mayors and City Leaders including Austin, Mexico City, Tshwane, Bristol, Turku, Renca, Oslo, and Istanbul.

6 Regional Leaders including Maharashtra, Hawaii, Scotland, Casablanca, Settat, and Minas Gerais.

9 CEOs and Industry Leaders including Africa Finance Corporation Capital, Arup, City Developments Ltd, Gensler, Hitachi, Lendlease, Macquarie, SACYR, Skanska, and SwissRE.

Plus

Hundreds of leaders from industry, policymakers, civil society, global NGOs and international organisations in more than 130 events across the two weeks of COP26.

Advancing Net Zero through Regional Networks

Africa Regional Network

By 2050, Africa will be home to 1.3 billion more people than it is today (more than half of the world's projected population growth of 2.4 billion people). This means a huge demand for buildings – with 80% of those buildings that will exist in 2050, yet to be built.

But this also means that we have the opportunity to build with net zero and resource efficiency in mind now, and to create jobs, skills and training, and ensure sustainable growth through widespread green building. The 12 Green Building Councils (GBCs) in our Africa Regional Network who represent 700 million people in Africa, across the Southern, East, West, Central and North African geographic regions, are responding to these challenges and opportunities on the ground.

Alongside work that the Africa Regional Network is doing with the African Union and other partners, we are also seeing regional developments from the GBCs:

- Green Building Council Nigeria and Ethiopian Green Building Council became Prospective Members of the World Green Building Council in June 2022. These GBCs represent the two most populous countries in Africa and the GBCs have a commitment towards net zero advocacy within their countries. This will be further encouraged across the network through the launch of the Africa Regional Network Net Zero Collaborators programme during World Green Building Week 2022.
- Green Building Council South Africa have supported the uptake of Energy Performance Certificates in the South African market to increase the efficiency of existing buildings across South Africa in partnership with Carbon Trust.
- Kenya Green Building Society advocated for the first African-based Net Zero Carbon Buildings Commitment signatory, Africa Logistics Properties.
- Egypt Green Building Council has been selected to advise on green affordable housing through the Haya Karima project, a national initiative endorsed by H.E President Abdel Fattah Al-Sisi, President of the Arab Republic of Egypt.

Vere Shaba
Africa Programmes Head

Middle East & North Africa Regional Network

The Middle East & North Africa (MENA) is one of the most climate vulnerable regions in the world. Urban areas across the region have recently experienced large-scale damage caused by ongoing conflicts, environmental degradation, extreme temperatures, and water stress.

Reconstruction of these built environments is already taking place but will likely do so without supporting environmental regulations. This will reduce the resilience of buildings to climate shocks, as well as the prospects of social stability and economic recovery. WorldGBC's Sustainable Reconstruction & Recovery Framework is a toolkit for building back better that brings together local and international expertise to create a holistic, inclusive, and resilient approach to reconstruction in regions experiencing natural disasters and conflict.

With the next two UN Climate Conferences (COP) being hosted in Egypt and the UAE, governments and the private sector are doubling down on reducing their greenhouse gas emissions, and turning the Glasgow Climate Pact into action. To help countries mainstream mitigation and adaptation within their growth and development strategies, a systemic shift is required. We need to acknowledge sustainable traditions and heritage to find local solutions, while seizing transformational opportunities through technology and innovative tools at the same time.

Our MENA Regional Network recently launched the Net Zero Collaborator commitment, showcasing companies in the region with net zero solutions and supporting their journey to join the Whole Life Carbon Commitment.

Also, our MENA Green Building Councils are delivering awareness and educational programmes for their local communities to shift the market, disclose more emissions data, and accelerate net zero carbon buildings. We believe that this is a step towards the powerful potential of local and regional collaboration to drive global progress.

Amira Ayoub
Middle East & North Africa (MENA) Programmes Head

Asia Pacific Regional Network

Asia contributes to around 60% of CO_2 emissions! The next 10 years for the Asia Pacific region are critical, as we will see rapid growth in the built environment. The region must implement a sustainable whole life carbon approach, so cities accelerate the transition towards net zero carbon buildings and ultimately, net zero emissions by 2050. Stakeholders are coming together to collaborate and put forward a collective voice, joining together to advance net zero.

With the Net Zero Readiness Framework, we are exploring the opportunities of government leadership, technical solutions and approaches, finance, data and mindset, to address all we know so far about net zero.

The Framework was developed with GBCs in the Asia Pacific Regional Network (APN), regional partner AGC, and our net zero collaborators. We have conducted six workshops with seven GBCs, and engaged more than 400 industry experts to verify and further enhance the Framework at a regional level.

We must implement the necessary choices to ensure cities will grow towards net zero carbon, net zero emissions by 2050

We are also seeing regional developments from the GBCs:

- **Newly Launched tools:** Malaysia GBC's carbon score, Philippine GBC's The Advancing Net Zero energy 1.0.0.
- Design and ideas competition: Hong Kong GBC's 1st International conference on Advancing Net Zero and design competition; GBC Indonesia's ideas competition.
- Progress in embodied carbon: Singapore GBC's embodied carbon pledge and have released an Embodied Carbon Calculator tool.

Joy Esther Gai Jiazi,
Asia Pacific Programmes Head

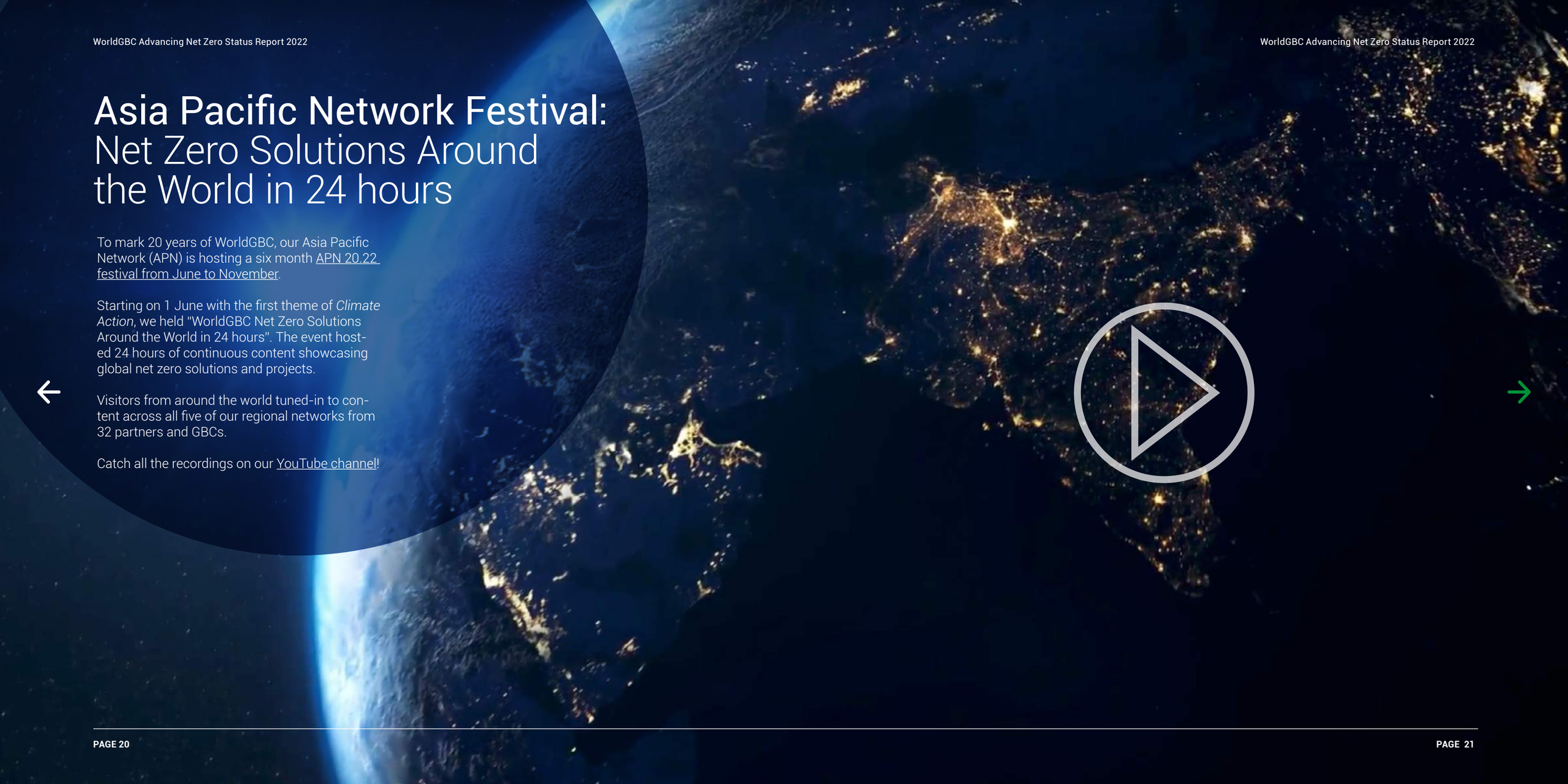
Asia Pacific Network Festival: Net Zero Solutions Around the World in 24 hours

To mark 20 years of WorldGBC, our Asia Pacific Network (APN) is hosting a six month APN 20.22 festival from June to November.

Starting on 1 June with the first theme of *Climate Action*, we held "WorldGBC Net Zero Solutions Around the World in 24 hours". The event hosted 24 hours of continuous content showcasing global net zero solutions and projects.

Visitors from around the world tuned-in to content across all five of our regional networks from 32 partners and GBCs.

Catch all the recordings on our YouTube channel!



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Americas Regional Network

Since 2019, GBCs in Latin America have been accelerating much needed change in the built environment through WorldGBC's Cities Climate Action project. The project extends the proven framework of the Building Efficiency Accelerator (BEA) to help city governments, private companies and NGOs work together to deliver resource and energy efficiency in buildings at scale.

More than 25 cities/states across Latin America have signed public commitments with the BEA to achieve targets on energy efficiency and net zero and we are supporting them in delivering on those commitments. This progress includes four new and improved building energy efficiency policies. In the cities of Bogotá and Montería in Colombia, two of those policies are projected to reduce emissions by improving the performance of 2.5 million new homes over the next thirty years.

At the state level in Campeche (Mexico), the new leading Energy Management System of the Government Palace is expected to avoid emitting nearly 23 tons CO_2 emissions annually. In Yucatán, Mexico, the *Technical Standard: Energy Efficiency and Comfort Criteria for Public Buildings* will impact the operation, construction, purchase and lease of more than 2,900 public buildings. Another ten policies are in development in countries like Chile, Costa Rica, El Salvador and Guatemala, enabling savings in energy for different building typologies, new systems for monitoring performance, access to data, and the application of new solutions and practices.

Currently, this initiative focuses on advocacy and policy engagement to scale ambition, improve technical capacities and technical expertise of the BEA cities and partners. Together we are advancing local and regional awareness, knowledge and capacity for net zero carbon buildings and support the development of roadmaps to decarbonise the built environment in the region, whilst aligning with WorldGBC's whole life carbon vision and the Advancing Net Zero programme.

Juanita Alvarez
Head of Engagement & Networks

Read: Cities Climate Action Project - Impact Report

European Regional Network

Europe was a focal point of global climate action in 2021 with Italy and the UK jointly hosting the COP26 climate negotiations. The Europe Regional Network (ERN) used this opportunity to profile two of our major climate action projects, #BuildingLife and BUILD UPON².

The #BuildingLife project has been designed around the insights and conclusions from the groundbreaking 2019 Bringing Embodied Carbon Upfront report.

Ten GBCs have each convened leaders from across the sector to develop national decarbonisation roadmaps. And WorldGBC has led a coalition at the European level to prepare an EU Policy Roadmap for whole life carbon. These roadmaps will guide political and industry decision-making over the coming years to ensure the building and construction sector is fully contributing to Europe's goal to be climate neutral by 2050.

In its first year, the project has reached over 10 million people with a major communications campaign that is supported by over 150 campaign ambassadors, including members of the European and national parliaments, CEOs and civil society leaders. The project has helped put whole life carbon firmly on the European political agenda with new proposals to address it in key buildings legislation.

BUILD UPON² is ERN's flagship project on building renovation. The latest phase was coordinated by GBC España and targeted the role of cities as climate action catalysts. With 97% of Europe's building stock not performing at the level needed to meet climate goals, this work is of critical importance to advance net zero. Eight GBCs have worked with pilot cities to develop and test the BUILD UPON Framework: a set of impact metrics to help cities capture and report the progress of renovation programmes.

Both #BuildingLife and BUILD UPON² have helped shape the ERN's work on the EU Taxonomy — a new classification scheme for sustainable finance. The Taxonomy has the potential to significantly re-align capital flows in Europe towards more sustainable investments. WorldGBC is a member of the expert group convened by the European Commission to advise on how to set the Taxonomy criteria for the built environment. This work will be a catalyst for a forthcoming global workstream on sustainable finance.

Stephen Richardson
Director of European Regional Network

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Whole Life Carbon **Roadmaps**

EUROPE REGIONAL NETWORK

The implementation of WorldGBC's Whole Life Carbon (WLC) approach continues apace, with Green Building Councils developing critical national roadmaps to guide the decarbonisation of the buildings and construction sector in their respective countries.

Many of these roadmaps have been developed as part of the #BuildingLife project, accelerating the ambitions of the European Green Deal in the building sector, and creating the first region-wide response to the vision of a net zero embodied carbon built environment set out in WorldGBC's Bringing Embodied Carbon Upfront report. But the focus on whole life carbon is not restricted to Europe, other GBCs including CCCS (Consejo Colombiano de Construcción Sostenible) and ChileGBC are developing national roadmaps of their own, adding to those already in use!

EU Policy Whole Life Carbon Roadmap

GBC España - Spain:
Whole Life Carbon Roadmap for a decarbonised built environment

DGBC - The Netherlands:
Whole Life Carbon Roadmap

UKGBC - United Kingdom:
Net Zero Whole Life Carbon Roadmap for the Built Environment

FiGBC - Finland:
Action Plan for a Carbon Neutral Built Environment

PLGBC - Poland:
How to Decarbonise the Built Environment by 2050 : Whole Life Carbon Roadmap

l'Alliance HQE - France:
A pathway to decarbonisation (2050)

#BUILDING LIFE

United Kingdom:
Net Zero Whole Life Carbon Roadmap for the Built Environment

The Net Zero Whole Life Carbon Roadmap for the Built Environment (The Roadmap) provides a shared vision and set of actions for achieving a net zero carbon UK built environment by 2050, in relation to the construction, operation, and demolition of buildings and infrastructure.

The Roadmap highlights and provides focus to the emissions footprint specific to the UK built environment (which makes up 25% of the UK's total emissions), and presents a view of the specific actions and steps needed throughout the sector to reduce emissions through the lens of whole life carbon (i.e. construction, operation, end-of-life stages).

The proposals have been co-created with hundreds of industry stakeholders via the project Task Group and Steering Group, a public consultation, and further engagement with government, local authorities, key industry stakeholders and the Climate Change Committee (CCC).

Read the Roadmap **here.**

The Roadmap is published in an initial series of four reports:

- **A Pathway for the UK Built Environment** – provides context for why the Roadmap exercise is critical to delivering the UK net zero goal, while also detailing the necessary technological shifts, policies and industry actions that can help deliver decarbonisation.
- **Technical Report** - provides detail on the project structure, the process for data collection, the key features of the calculation methodology and concludes with a description of the net zero scenario definition and results.
- **Summary for Policy-Makers** - provides an overview of the relevant Roadmap findings and policy recommendations for central government to deliver a net zero built environment by 2050.
- **Stakeholder Action Plans** - sets out specific recommended actions for 14 key industry stakeholders, enabling them to play their part in achieving the Roadmap's goals.

UKGBC is continuing to engage with Government and other key industry stakeholders to deliver the Roadmap's recommendations and accelerate a net zero built environment.

Poland: How to Decarbonise the Built Environment by 2050: Whole Life Carbon Roadmap

Polish Green Building Council (PLGBC), as part of the #BuildingLife project and in cooperation with the European Bank for Reconstruction and Development (EBRD), developed a whole life carbon roadmap that details a path towards achieving climate neutrality within the Polish buildings and construction sector.

The roadmap illustrates the complex challenge Poland faces to decarbonise the construction sector by 2050. It outlines concrete actions within a specific timeframe that stakeholders can use to navigate their decarbonisation journey. The decarbonisation of buildings across the entire lifecycle requires continuous engagement and cooperation of many parties.

The roadmap proposes actions for nine stakeholder groups and will help organisations across the whole value chain develop effective decarbonisation strategies. It contains specific, time-bound goals to 2050, divided by stakeholder groups. These can be referred to whenever plans and decisions affecting decarbonisation efforts are being made.

"The path towards the decarbonisation of Poland's building stock and construction sector presented in the report is undoubtedly very ambitious. However, without such bold visions, it is impossible to achieve climate neutrality. Secondly, ambitious visions must be translated into ambitious strategies, as only decisive, intensified and long-term action will allow the goals of the Paris Agreement and the European Green Deal to be met. We count on this report to be the pivot for all the action we need to take."

Alicja Kuczera
CEO of PLGBC

Read the Roadmap **here.**

The Netherlands:
Whole Life Carbon Roadmap

Under the #BuildingLife project, Dutch Green Building Council (DGBC) focused on embodied carbon for the development of a Whole Life Carbon roadmap, since operational energy use is already the focus of their Paris Proof Programme.

DGBC has set targets to build in the Netherlands within a science based 1.5°C aligned embodied carbon budget (67% probability, budget derived from IPCC). Target values are ambitious, but not unachievable. With sufficient effort, we believe it should be possible to meet these values for any construction target, which can be shown in our scenarios.

Businesses that achieve this can then proudly call themselves Paris Proof and show that they have successfully completed their part of this global challenge. This budget approach has sparked the building sector to think and calculate not only their Scope 2 emissions, but also their Scope 3 emissions and has been adopted by many developers, builders and architects with a Letter of Intent.

We also want to give an answer on how to steer efforts towards Whole Life Carbon, meaning an integrated target for the combination of embodied and operational carbon. This is now under development in collaboration with an expert group.

The upcoming months will be used to assemble results of calculated projects and work towards a Paris Proof commitment that not only focuses on operational energy use, but also embodied carbon. This means that DGBC is integrating #BuildingLife in their Paris Proof programme and commitment. They are doing this by focusing on one commitment group (six total) every three months, and have clear goals to grow the group of commitment signatories. DGBC has combined this with a follow up plan to ensure impact is achieved. See a list of Paris Proof signatories here.

Read more from DGBC **here.**

Read the Roadmap **here.**

Read the Paris Proof operational energy protocol **here.**

Finland: Action Plan for a Carbon Neutral Built Environment

The Finland GBC (FiGBC) Whole Life Carbon Roadmap consists of four parts. The first part sets an ambitious goal for the entire building sector to be carbon neutral by 2035. This objective is in line with Finland's National Targets. If we aren't measuring our impact, we can't make the necessary changes, and that also applies to greenhouse gas emissions. The common targets make it possible to motivate the joint efforts of the sector. In climate work, collaboration is essential.

The second part sets out changes from outside the sector that will affect emissions within the sector. These megatrends have been collected in the project workshops from experts, analysed with literature reviews, and enriched with thematic interviews. It is essential to focus on strengthening positive change and adapting to negative change.

The third part presents sector specific Action Charts. Each business is different and so their emission reduction measures will be different. The Action Charts provide guidelines for developing your own processes, but do not provide specific guidance on how to change your business. This decision can only be taken by the business leaders themselves. For a functioning business environment it is essential that the subcontractors and supply chains have low carbon services available and measures are taken to enable this.

In the fourth section, we present the businesses with their own action programmes. The organisational action programmes are intended to serve as examples of the application of the Carbon Neutral Built Environment Program.

Read the Roadmap **here.**

Spain: Whole Life Carbon Roadmap for a decarbonised built environment

Projections based on growth trends suggest that embodied carbon will account for more than 50% of the sector's cumulative emissions in Spain over the next 30 years. Therefore long-term planning concerning these emissions needs to be just as ambitious as operational carbon planning.

Moreover, we must take urgent action as postponing key measures for the complete decarbonisation of buildings represents a missed opportunity and delays the path to net zero emissions.

To leverage the carbon investment that has already been made, renovation needs to be the sector's priority to meet the targets set since the majority of energy inefficient buildings in the current building stock will still be operating in 2050.

The Roadmap

The starting point for the preparation of the Spanish roadmap is a shared vision:

In 2050, every single person in Spain will live in a built environment, rural or urban, in socially acceptable living conditions, and the building sector will provide and maintain this service without emitting greenhouse gas emissions (GHGs), using a resilient building model that uses resources in a circular way.

Without emitting GHGs: Renovations and new buildings will have zero embodied GHG emissions and all buildings, including existing ones, will have zero GHG emissions in their operation and maintenance

Circular: A built environment with net zero resource exhaustion, contributing to the restoration of natural resources and systems within a prosperous economy

Resilient: A built environmental, rural or urban, adapted to the consequences of climate

A set of eight main milestones have been defined across the roadmap to decarbonising the building sector. Each milestone has various levels of progression (2025, 2030, 2040) that enable us to assess the fulfilment of the targets set out in the roadmap.

The roadmap has been structured around four frameworks of action, which address the need to promote comprehensive and coordinated action on all the fronts involved in decarbonisation of the building sector; the strategic framework, the operational framework, the financial framework and the social framework.

Each of these frameworks is linked to reaching the decarbonisation milestones in the building sector and deploys specific actions, defines deadlines and holds stakeholders accountable.

Read more **here.**

Alliance HQE GBC FRANCE

France: A pathway to decarbonisation (2050)

The two main objectives of the French National Low-Carbon Strategy (NLCS) in the building sector are to (1) reduce emissions by 49% by 2030 compared to 2015, and (2) total decarbonisation of the building sector by 2050.

To achieve them, there are 4 steps:

1. A radical renovation of the existing stock by 2050
2. An eradication of fuel poverty by 1st January 2028
3. In-depth renovation of the public housing stock
4. Increasing energy and climate performance in new buildings

To achieve those goals buildings must:

GOAL 1: consume less and use less carbon-based energy

- 30% reduction of energy demand
- A fossil fuel exit strategy
- Systematise the use of renewable heat

GOAL 2: a gradual transition to low-carbon buildings, relying on the diversity of building methods and a mix of materials must happen

- Encouraging carbon storage through dynamic life cycle assessment
- An increased use of wood and biobased materials
- More mixed materials: a transformation of the way we build
- A gradual transition, to reduce emissions from the construction sector by over 30%

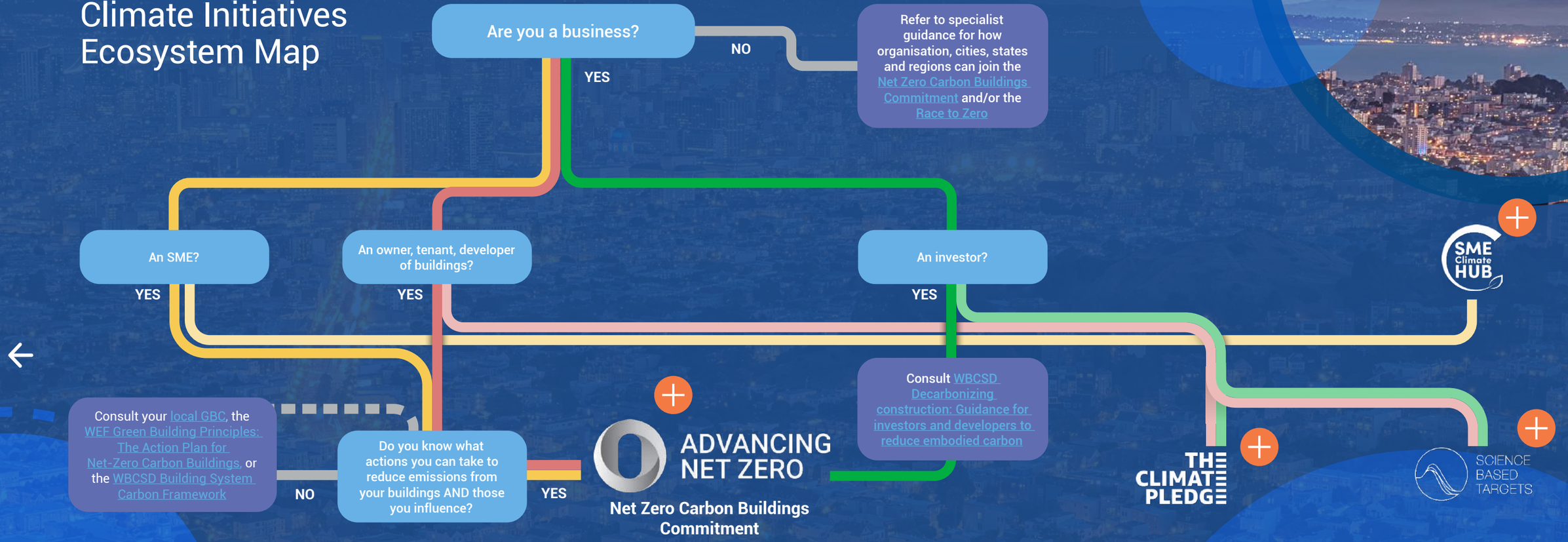
GOAL 3: construction of more comfortable buildings in case of hot weather must be generalised.

The outline of this document builds on existing low carbon French policy and underlines the need for a holistic approach. The pathway to building decarbonisation requires a multi-criteria and global approach, ensuring two critical levers for sector decarbonisation are activated: circular economy and renovation.

Read more **here.**

WorldGBC Advancing Net Zero Status Report 2022

Climate Initiatives Ecosystem Map



WorldGBC Advancing Net Zero Status Report 2022

GBC: Action Timeline

June 2021

GBC Indonesia release
Guidelines of Net Zero Healthy School Building

July 2021

Polish GBC release
Virtual guide: Less Waste Office

August 2021

Singapore GBC launch
Embodied Carbon Pledge

September 2021

EmiratesGBC release
Embodied Carbon Assessment Study

Colombia GBC (CCCS) release
Net Zero Carbon Buildings Accelerator Project: Baseline of GHG emissions from buildings

NZGBC release
Is the New Zealand government doing enough to deliver zero carbon buildings?

Dutch GBC release
Paris Proof Embodied Carbon Protocol, Background Report, and Whole Life Carbon Position Paper

WorldGBC announce
the updated Net Zero Carbon Buildings Commitment

October 2021

UKGBC release
The Commercial New-Build Policy Playbook

Net Zero Carbon Buildings Verification – Market Analysis

NZGBC release
Making the performance of buildings transparent: A low hanging policy option to save energy and carbon

November 2021

HKGBC announce
ANZ Ideas Competition winners

HKGBC event
International Conference on ANZ

Indonesia GBC host
GBCIdeas Bootcamp: Net Zero Healthy Buildings

Irish GBC launch
Carbon Designer tool

DGNB release
Benchmarks for Greenhouse Gas Emissions from Building Construction

UKGBC release
Whole life carbon roadmap for the UK built environment

SwedenGBC announce
First NollCO_2 award to Sköndalsvillan

WorldGBC release
Beyond the Business Case

Malaysia GBC release
Carbon Score

Indian GBC release
IGBC Net Zero Waste Rating System for Buildings & Built-Environment

December 2021

CAGBC release
Decarbonizing Canada's Large Buildings

January 2022

IrishGBC update
Home Performance Index for net zero

Alliance HQE-GBC
Optimisation and NZC scenarios of selected generic cases

Low carbon levers in renovation

February 2022

FiGBC announce
Eight developers to pilot the Carbon Neutral Building Guide

UKGBC release
Building the Case for Net Zero: A case study for low-rise residential developments

Dutch GBC release
Whole Life Carbon Roadmap and Letter of Intent for Embodied Carbon

FiGBC release
Guide to responsible procurement of voluntary emissions compensation in the real estate and construction sector

March 2022

ColombiaGBC (CCCS) release
Recommendations Report Net Zero Carbon Building Accelerator Project

FiGBC release
Piloting our carbon neutral building definition guide

April 2022

USGBC event
Equity, Net-zero and ESG Solutions as Championed by Hillcrest LEED for Communities

China Academy of Building Research support
China's first Net-zero Carbon Certification for Residential and Commercial Buildings

May 2022

UKGBC release
Building the Case for Net Zero: Key Considerations when Delivering Net Zero Carbon Commercial Retrofits

Irish GBC release
Net Zero Whole Life Carbon Roadmap for the Built Environment in Ireland & Whole Life Carbon in Construction and the Built Environment in Ireland

Alliance HQE-GBC release
ROADMAP
A pathway to decarbonisation (2050)

UKGBC part of
Industrywide UK Net Zero Carbon Buildings Standard to be developed

WorldGBC release
EU Policy Whole Life Carbon Roadmap

USGBC announce
Issue Briefs #1 Decarbonization and #2 Beneficial Electrification

June 2022

Canada GBC release
Canadian Green Retrofit Economy Study

Zero Carbon Building Standard - Design Version 3

ColombiaGBC (CCCS) release
Colombia's Roadmap to Net Zero Carbon Buildings

USGBC announce
Nearly 100 LEED Zero certifications earned representing more than 23 million square feet of space

Net Zero Trends & Innovations

Embedding Retrofit & Renovation Policy

Across Europe, we are seeing increased ambition and action on embedding retrofit and renovation policies to decarbonise existing building stock. This will help reduce operational emissions through improved energy efficiency and limit embodied carbon incurred through new developments. As part of Italy's post-pandemic recovery strategy, the government introduced a superbonus 110% scheme to encourage green home renovations through tax credit, covering interventions such as renewable installation, insulation systems and heat pumps. Over 122,000 applications were approved and approximately €21bn spent as of March 2022.

In April 2022, the Dutch Government started the Energy Saving Campaign, 'Zet ook de knop om (Flick the switch)', to stimulate households and entrepreneurs with practical energy saving tips. The National Insulation Programme was also launched to tackle poorly insulated homes with a goal of improving 2.5 million homes by 2030 at the latest. In Denmark, Prime Minister Mette Frederiksen, stated that all private households that have a gas boiler must switch to another energy source between the next five to seven years. According to Dansk Fjernvarme, the industry organisation for district heating companies, out of the 400,000 households with a gas boiler, two thirds will be offered district heating.

Embodied Carbon Tools, Targets & Benchmarks

Industry is reacting to increased calls to action to tackle embodied carbon as part of a whole life carbon approach to decarbonising the built environment. In order to take effective action, stakeholders need measurement tools, constructive benchmarks and targets, as well as supportive policy and regulation from all levels of government. Industry organisations such as The Institution of Structural Engineers have created The Structural Carbon Tool. Developed from the 'How to calculate embodied carbon' guidance, the tool helps structural engineers estimate carbon amounts, identify opportunities for reduction and communicate impacts with design teams. Other tools include One Click LCA and Building Transparency's Embodied Carbon in Construction Calculator (EC3).

Ramboll's 'Towards embodied carbon benchmarks for buildings in Europe' series aims to incentivise EU policymakers and industry actors to tackle embodied carbon through the establishment of science-based aligned baselines, targets and benchmarks. LETI's industry guidance and benchmarks seeks to help establish clear industry benchmarks and guidelines for the UK market. WBCSD and Arup's 'Net-zero buildings: Where do we stand?' and Carbon Leadership Forum's Embodied Carbon Policy Toolkit provides further guidance. The World Economic Forum introduced the Net Zero Carbon Cities Building Value Framework, which proposes a more holistic decision-making approach, recognising the importance of social and environmental outcomes, as well as system performance.

We are also seeing GBCs provide crucial interventions from a locally relevant perspective. Singapore GBC has developed a unified Embodied Carbon Calculator to help inform decision makers on the carbon intensity of materials and products chosen. USGBC has launched a materials finder called Better Materials. Kenya GBC have launched the Jenga Green Library, a directory of Green Building Materials and Services developed, in partnership with FSD Kenya. It aspires to be a one-stop-shop for displaying the entire supply chain of sustainable building materials and services, to assist developers, buyers, homeowners and urban planners to efficiently identify green products and service providers who drive towards sustainability within the built environment.

Materials and Technology

Approximately 11% of a building's total emissions are derived from building or construction materials. Therefore it is crucial we decarbonise material production and innovate construction processes as part of the transition to net zero. We are seeing real progress with key materials such as steel, with SSAB producing and delivering the world's first fossil-free steel and Cambridge engineers inventing the world's first zero emissions cement. We are also seeing innovative developments with carbon capture and storage in concrete production, leading to low embodied carbon alternatives from industry leaders such as Heidelberg Cement and Holcim. Nexii, a Net Zero Carbon Buildings Commitment signatory, champions a modular, circular construction process and invented a "concrete alternative" that enables its panels to be strong, lightweight and low-carbon, producing approximately 35% less emissions than conventional concrete, and ensuring minimal waste and circularity throughout their projects.

The three-year Automating Concrete Construction Project (ACORN), which works towards decarbonising construction by rethinking the way concrete is used in buildings, finished in April 2022. The Universities of Bath, Cambridge and Dundee, alongside industry partners collaborated to help design concrete out of construction through offsite manufacturing processes, affordable robotics and solid automation. The results were stark – a saving of 60% in embodied carbon emissions compared to a traditional flat-slab equivalent by using 75% less concrete.

Saint-Gobain has become the first company in the world to achieve zero carbon production of flat glass by using 100% recycled glass and 100% green energy from biogas and electricity. The focus of this project was placed on circularity and used 100% cullet from end-of-life glass that came from renovation and demolition sites and production offcuts.

Accelerating Decarbonisation: Policy & Legislation

Policy is showing signs of ratcheting up in line with industry potential, embracing the energy transition and introducing codes to improve building performance. In Montreal, Canada, a "zero-emission" threshold will come into effect as early as 2024 for buildings of less than 2,000 square metres, and as early as 2025 for building permit applications of 2,000 square metres and more.

In April 2022, The Washington State Building Code Council voted to adopt a new energy code that will require new commercial buildings to be built with high-efficiency electric heat pumps for water and space heating from July 2023. The code will save energy for building users through improvements to building envelopes and efficiency. The code is projected to slash eight million tonnes of carbon dioxide by 2050.

A coalition of 33 US states and local governments was announced by President Joe Biden in January 2022, with aims to reduce building emissions within their respective jurisdictions through roadmaps, policy creation and forming a community of practice. This is a significant announcement as the coalition members account for approximately 20% of the nation's building stock. And more than 50 cities and counties across the state of California are considering policies to support all-electric new construction.

As part of the "Executive Order on Catalysing Clean Energy Industries and Jobs Through Federal Sustainability" signed by President Biden in December 2021, the Buy Clean Task Force was established. This taskforce focuses on recommendations for reducing carbon emissions of the construction phases of federal buildings. This is the first federal-level recognition of the significance of reducing carbon at other life-stages of a building.

In China, the city of Qingdao, a member of C40 Cities Climate Leadership Group, is taking actions to reduce emissions from buildings, and between 2008 and 2021 has implemented energy saving measures across more than 38 million square metres of property, benefitting around 470,000 households and reducing carbon emissions by 510,000 tonnes CO_2e per year.

Increased energy prices combined with the uncertainty on supply, in light of Russia's invasion of Ukraine, has prompted The European Commission to develop a plan to make Europe independent from Russian fossil fuels before 2030, a particular focus on reducing energy demand and accelerating a transition away from fossil fuels to renewable energy.

The RePowerEU plan released in May 2022 announced measures including an increase of the EU's energy efficiency target to 13% by 2030, an increase of the EU's renewables share target to 45% by 2030, a requirement for all new residential buildings to have solar panels installed by 2029, and a commitment to deploying 10 million heat pumps in the next five years.

Sustainable Finance

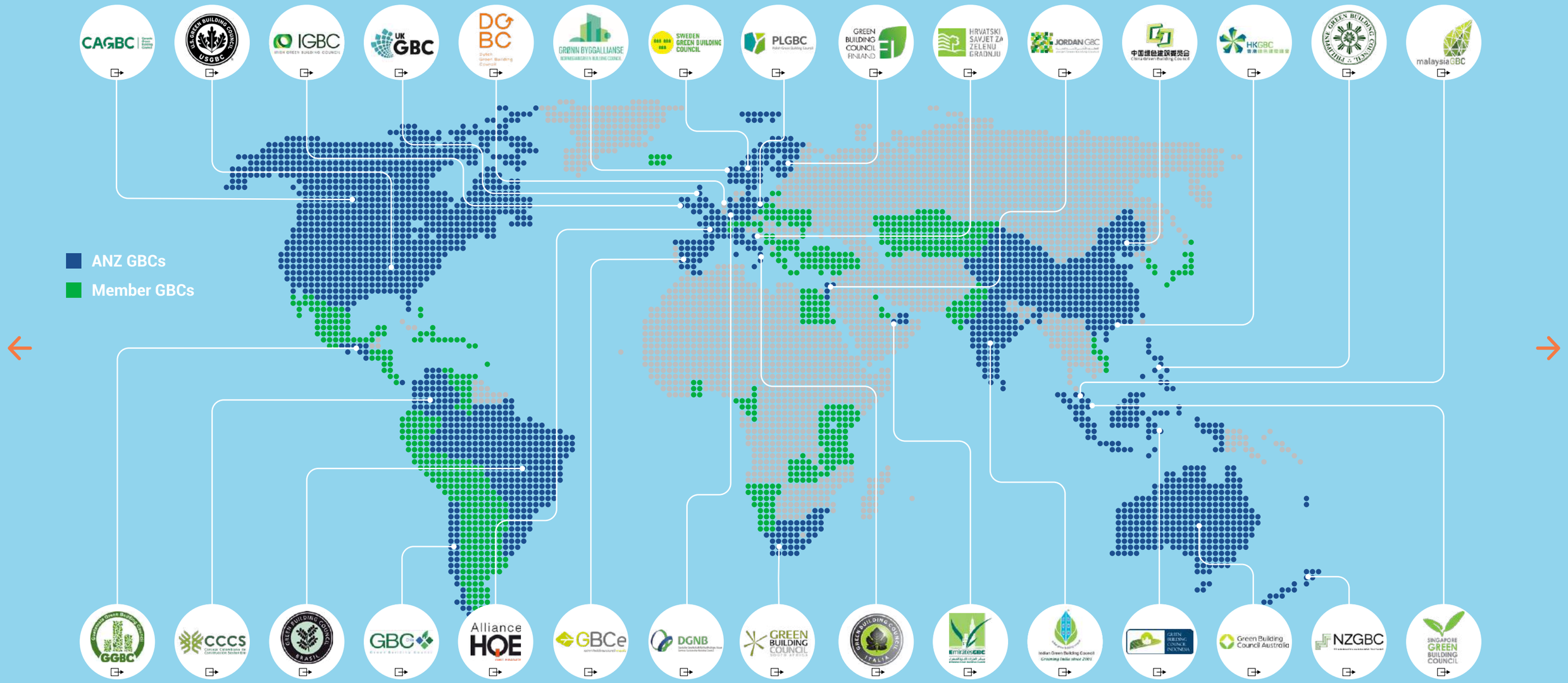
In 2019, a report by the International Finance Corporation (IFC), a member of the World Bank Group, highlighted the enormous potential of green buildings, which represents an investment opportunity of US$24.7 trillion in emerging markets alone. In the past few years, the link between building performance and sustainable finance has grown stronger. And green building rating tools present a mechanism for measuring and verifying performance against established criteria for accessing finance.

In December 2021, Green Star achieved recognition as an international pathway to net zero emission buildings after the Climate Bonds Initiative (CBI) approved two of the Green Building Council of Australia's rating tools as compliant with green bonds certification. All Green Star rated buildings that follow the climate positive requirements – fossil fuel free, highly efficient and powered by renewables – will automatically comply with Climate Bonds Standard's Commercial Buildings Criteria. Commonwealth Bank has announced the Green Home Offer, linking loans to GBCA's Green Star Home certification or other suitable sustainability criteria. And in March 2022, AIB (Allied Irish Banks) announced that it will offer discounted loans to developers who adhere to Home Performance Index, the rating system for homes from Irish Green Building Council.

ColombiaGBC (CCCS) and CBI also announced that projects achieving CBI criteria within the Proxy CBI CASA Colombia certification, will automatically be eligible for access to additional green mortgages and financial instruments.

Recognising our network's leadership in this area, WorldGBC was accepted into the EU Platform on Sustainable Finance in 2020 where we have been steering the development of the EU Taxonomy criteria for the built environment. Working with members and partners in our Europe Regional Network, we have supported the development of proposed criteria for circularity of buildings and renovations which, if implemented, would make life cycle assessment mandatory for all buildings that seek to comply with this standard. As part of the Platform's mandate we expect to report on which existing Taxonomy criteria need updating to keep pace with science. Ensuring climate mitigation criteria are aligned to net zero goals will be a priority.

WorldGBC Advancing Net Zero Status Report 2022



Radical Collaboration: **NZCB Commitment in Action**

Whilst the scope of the Commitment is primarily focused on an entities' emissions from their own real estate portfolios, it also captures the enormous potential of signatories to influence wider emission reductions through their business activities. This can be through the materials they produce, the buildings they commission, and the whole life carbon design approaches they champion. And when several signatories come together on a project, all working towards the same goals, it can stimulate the radical collaboration, innovation and solutions necessary for high performance buildings and demonstrate what the industry can achieve.

Here we take a look at some examples of such projects underway today.

1 Triton Square, London

A circular approach to decarbonisation

Client: British Land
Contractor: Lendlease
Architect: Arup

Refurbishment of 1 Triton Square, a 1990s office building in London owned by British Land (BL), in collaboration with Lendlease and Arup, is a lesson in the power of searching for every possible source of carbon savings. The project has saved approximately 40,000 tCO_2e over the course of a 20-year lease term — the equivalent carbon to heat and power approximately 9,900 average UK houses for a year, and a 48% reduction compared to BL's office benchmark.

The project had a strong commitment to embodied carbon from the start, which was brought to life during design and construction by a team of like-minded professionals working together towards the project's sustainability vision.

Innovative circular economy principles were applied to retain and reuse as much of the existing frame and façade as possible. This resulted in a saving of 3,300m^2 of limestone, 33,400 tonnes of concrete and 1,843 tonnes of steel despite the net area of the building doubling in size.

The following interventions stem from collaborative efforts between British Land, Arup and Lendlease. By working together at all stages of the project they were able to maximise the reduction of emissions, waste and recycling of materials, to deliver each aspect of the building and overall environment.

- Pioneering one of the UK's first large-scale circular façades – 3500m^2 of panels were removed and then transported to a pop-up facility less than 30 miles away for refurbishment. The result is Arup, Lendlease and British Land's first true circular economy façade that saved over 19,000 tonnes of carbon and represents a 66% cost saving when compared to the construction of a new façade.
- The team also sourced materials from other demolished buildings, including 2,800 sqm of paving and other roof coverings
- Low energy lighting, heat recovery systems, upcycling redundant plant
- Carbon fibre column strengthening allows up to 40% increase in axial load capacity with no impact on area
- 30% reduction in piling using piled raft compared with piles and pile caps
- The stair cores are positioned outside of the building's thermal line
- Conducted lifecycle carbon analysis on several different products and materials in-house
- 59% cement replacement with 41% less carbon than standard concrete
- Over 99% of construction waste was diverted from landfills
- BREEAM 'Outstanding' score of 92.3%, beyond contractual obligation rating of 'Excellent'

To support the project's whole life carbon and sustainability assessments, Lendlease Sustainability Manager, Anastasios Skitzis, worked with commercial and package managers to engage with the supply chain during procurement to identify whether suppliers had sufficient responsible sourcing certification and Environmental Product Declarations (EPDs) for their products. Most importantly, when EPDs for products they wished to use weren't available, as was the case for some SMEs (Small and Medium-sized Enterprises), the Triton Team supported these suppliers to create them.

Read more **here.**

Decarbonising Development: British Land

British Land (BL) is a recognised market leader in sustainable development and has committed to achieving a net zero carbon portfolio by 2030. The company was awarded a GRESB 5-star rating in the latest annual assessment, ranking in the top 20% of global participants and retaining a Green Star rating for the eleventh consecutive year. In 2021, BL also achieved five stars in Development for two projects. It's the first time GRESB has distinguished this area and the award confirms BL as one of the UK's most sustainable developers.

BL's approach to development requires carbon intelligent decision making that considers the merits of retaining or re-using viable, existing building elements. 100 Liverpool Street (100LPS), one of the projects recognised in this year's GRESB assessment, sets a new benchmark for offices that are designed and managed to the highest ESG standards. The mixed-use scheme represents BL's first net zero development and reflects the company's long-standing commitment to sustainable design and delivery.

Working with the entire project team to harness pioneering design and construction techniques, 100LPS has boosted its sustainability performance and achieved exceptional environmental improvements in line with BL's commitment to re-use wherever feasible:

- Retaining around 50% of the structure to minimise embodied carbon
- Retain and reuse materials: 32% of the steel frame that saved 3,435 tonnes of carbon compared to new steel, which is enough to offset energy consumption in around 1,000 homes for a year
- At least 49% of all concrete used in the project was retained, saving 4,086 tonnes of carbon vs new
- Where new materials were needed, lower carbon choices included 51% recycled aggregates
- 99.8% of waste was diverted from landfill

Read more about our 2030 sustainability vision - Places People Prefer.

"At 100LPS, embodied carbon is 389kg per m^2, surpassing the industry average of 1,000kg per m^2 and achieving a 61% reduction a decade ahead of the 40% reduction target for 2030."

Matt Webster
Head of Environmental Sustainability, British Land

Greening Our Portfolio: IPUT Real Estate Dublin

Read more about Net Zero IPUT

IPUT Real Estate, the largest owner of offices and logistics assets in Dublin, signed the World Green Building Council's (WorldGBC) Net Zero Carbon Buildings Commitment in September 2020 As a member of the Irish Green Building Council, IPUT continues to support impactful policymaking to help the transition to a low carbon economy. The business is committed to owning assets that operate at net zero carbon within areas of their direct control by 2030. The aim is to develop assets that reduce the amount of embodied carbon in construction and that operate at net zero carbon by 2030.

IPUT understands that the area where they have the greatest influence and impact is in reducing carbon emissions from its directly managed portfolio and its development pipeline. Over the past number of years, they have been focused on measuring the annual energy demand and carbon emissions of their property portfolio. More recently, in line with the WorldGBC's updated Commitment, IPUT added refrigerant and process load data to the scope and continue to undertake life cycle assessments for their developments to measure whole life carbon.

In September 2021, IPUT published its pathway to net zero carbon. The business recognises the importance of advocacy and collective action in the transition to net zero carbon and this pathway focuses on engagement with suppliers and occupiers to deliver on the key pillars of the strategy. IPUT is aiming for a 40% reduction in emissions from 2019 to 2030.

In 2022, IPUT is focused on delivery of their objectives and enabling change and has launched its transition fund that is financed from the proceeds of an internal carbon levy on developments. This incentivises reduction measures and advocates for innovation and sustainable practices across the supply chain. IPUT is applying their net zero pathway pillars to its directly managed assets with a retrofit project currently underway at one of their multi-let offices, Riverside Two. Meanwhile, across the river Liffey the redevelopment of 25 North Wall Quay (NWQ) is due to commence this year and will be IPUT's first net zero carbon office development.

Ellen McKinney
Sustainability Manager, IPUT

25 North Wall Quay (NWQ)

NWQ will set the benchmark for sustainability, designed to deliver a world leading standard as IPUT's first Net Zero Carbon (NZC) office building. The building is low carbon in design and will be highly energy efficient in operation. The transformation of this building is consistent with IPUT's responsible investment strategy and aligns with their 2030 pathway to net zero carbon.

Upfront embodied carbon: **<500kgCO_2e/m^2** Energy use intensity: **<55kWh/m^2/year**


NWQ
REIMAGINED

Using Data to Decarbonise: **Arup**

In 2021 Arup made a commitment unlike anything it had announced previously in its 75-year history. During the COP26 international climate change conference, Arup announced it was moving beyond addressing its own carbon footprint to become a net zero business by 2030 and onto the greater challenge of decarbonising the work Arup does with and for clients. In November 2021 Arup committed to applying a whole lifecycle carbon approach to its building design and approach, referring to it as decarbonising its 'handprint'.

This is an ambitious multi-year project with the potential to contribute significantly to industry knowledge about the true source and scale of carbon emissions across the lifespan of buildings. Arup's goal with the work is to pinpoint for owners and developers the most effective interventions building designers, operators and occupiers can use to cut emissions. This is essential work if the global property sector is to make its contribution to limit global warming to 1.5°C and halve emissions from the built environment by 2030 as set out in the Paris Agreement.

Since Arup made its whole lifecycle carbon commitment the business has been developing Zero, its data collection and analysis platform. This allows Arup to derive whole lifecycle carbon (WLC) estimates from live buildings projects, at any stage of the design phase. These are the data that will provide Arup with the detailed insights needed.

"There is a powerful, concerted effort underway involving hundreds of people across Arup, from digital specialists and energy modellers to design leaders around the world.

Our whole lifecycle carbon commitment is one of the ways we are taking action to move the global built environment sector toward net zero by 2050.

Arup is truly intent on decarbonising the built environment and needs far more data than the industry currently generates and shares."

Nigel Tonks
Director, Net Zero Carbon Buildings Working Group, Arup

WorldGBC Advancing Net Zero Status Report 2022

Arup is laser focused on gathering data from building projects where it has influence. With no suitable alternative product in the market to carry out this assessment, Arup's digital teams are working closely with its engineers from across the globe to gather, organise and analyse this specific type of data via an international assessment platform, which is suitable for use in any location. It is simple and draws on data embedded within energy models, BIM models or early optioneering estimates of material quantities.

Undertaking comprehensive adoption of WLC assessment across all Arup's building works necessitates an approach that allows the business to gather data at scale. Arup's multidisciplinary architecture and engineering expertise enables the business to derive data for each of the systems that comprise a building, yielding useful levels of granularity. Structuring data in this way will allow Arup to draw standardised conclusions about the carbon contribution of different systems.

During 2022, Arup's WLC work is about discovery and building a strong dataset which will be continuously improved. By autumn 2022, Arup expects to have a solid evidence base for understanding a metric and will be in a position to begin sharing insights that are central to solving the net zero buildings challenge.

Over the coming years, the business plans to develop the assessment platform to draw data from building information modelling and analysis platforms, advancing the granularity, accuracy and precision of output to increase and improve industry insights.

Saving carbon and cultural heritage

The "Haus Neumarkt" office building in Cologne, one of Germany's largest cities, has a special significance. Many of Cologne's post-war buildings have been demolished and this loss has recently prompted the city to protect what remains of its modernist architectural heritage. A decision to retain and renew 4,000m² Haus Neumarkt, rather than demolish and build new, allowed Arup's team to create a better, greener, and healthier building. By retaining the reinforced concrete structure alone, it was possible to save approximately 2,500 tonnes of CO_2 during the building's renovation, and the design also delivered a 10dB reduction in indoor noise from outside traffic.

Learn more **here.**

Certifying to Net Zero: **NEO**

As a leading owner, developer, and manager of sustainable buildings in the Philippines, NEO is deeply committed to decarbonisation and actively advocating for health at both the human and planetary levels.

Well ahead of its initial commitment target of Net Zero by 2030, in 2021 NEO achieved Net Zero Carbon for its entire portfolio of seven office buildings as the first portfolio in the world to secure certification according to the International Finance Corporation's (IFC) EDGE Zero Carbon programme.

NEO's action to decarbonise started in 2013 by harnessing renewable geothermal energy for the power requirements of its buildings. Since the open-access regime commenced in the Philippines, NEO was the first developer to fully commit to sourcing renewable energy for 100% of its portfolio. This move has resulted in the portfolio's decrease of annual carbon footprint by 95% compared to conventional fuel energy sources.

The journey towards net zero carbon was naturally aligned with NEO's commitment to green building certification. In 2018, all seven buildings became certified with the maximum 5 stars under BERDE (Building for Ecologically Responsive Design Excellence), the nationally recognised voluntary green building rating system by the Philippine Green Building Council. NEO's implementation of energy efficiency strategies led to multiple Outstanding Awards in the Large Building Category of the Department of Energy 2020 Energy Efficiency Awards.

With these achievements under NEO's belt, three of the buildings, One/NEO, Four/NEO, and Six/NEO, went on to become the pilot projects of the Philippine Green Building Council's Advancing Net Zero Philippines (ANZ/PH) programme which supports the global Advancing Net Zero programme of WorldGBC. After successfully securing certifications for the pilot projects in early 2021, NEO proceeded with its remaining four buildings and completed 5 Star ANZ/PH certifications for all buildings in the portfolio the same year.

NEO's Net Zero certifications are key to demonstrating that existing buildings (even if they are built and operated within emerging markets under tropical climates) can achieve net zero operational emissions much sooner than the many 2030 targets of real estate companies.

NEO also acknowledges the need for and importance of reductions in embodied carbon as part of the whole life carbon cycle of buildings. This is a huge challenge for existing buildings and NEO is eager to explore avenues to achieve this.

The real estate industry is one of the biggest energy consumers and contributors to greenhouse gases. Acknowledging its role and responsibility as part of the industry, NEO pledged and signed to reduce its carbon footprint under the World Green Building Council's Net Zero Carbon Buildings Commitment. NEO continues to be a proponent of sustainable and green buildings for a greener and brighter future. It hopes to encourage other real estate owners, developers, and managers to join the global decarbonising effort.

WorldGBC Advancing Net Zero Status Report 2022

"The imminent climate catastrophe can only be averted through substantial commitment and action. We at NEO would like to invite all businesses, big or small, to join us on the journey to net zero. Make that commitment today and take the first step!"

Raymond Rufino
Chief Executive Officer,
NEO

Net Zero Carbon Buildings Commitment Signatories - **2022**

Black = Original Commitment (2019 version)
Blue = Updated Commitment (2021 version)

BUSINESSES / ORGANISATIONS

Active Super — Sydney, Australia
ADP Consulting — Melbourne, Australia
Adventist Education Southern Brazilian Union — Curitiba, Brazil
AECOM (UK & Ireland) — London, UK
AESG — Dubai, UAE
Africa Logistics Properties (ALP) — Nairobi, Kenya
AMP Capital Wholesale Office Fund — Sydney, Australia
Antilooppi — Helsinki, Finland
ARA Asset Management Limited — Singapore, Singapore
Argent Services LLP — London, UK
Armstrong Fluid Technology — Toronto, Canada
Arthaland Corporation — Manila, Philippines
Arup — London, UK
Assura — Warrington, UK
Atelier Ten — Sydney, Australia
Avison Young UK — Birmingham, UK
B+H Architect — Toronto, Canada
BAM Construct — Hemel Hempstead, UK
Bennetts Associates — London, UK
Berkeley Group — London, UK
Bioconstrucción y Energía Alternativa — San Pedro Garza García, Mexico
Bioregional — London, UK
Brandix — Colombo, Sri Lanka
British Land — London, UK
Brunswick Property Partners — Leeds, UK
Bruntwood — Manchester, UK
Built — Sydney, Australia
BuroHappold Engineering — Bath, UK
CannonDesign — New York, New York, USA
Carbon Intelligence — London, UK
Cbus Property — Melbourne, Australia
Charter Hall — Sydney, Australia
City Developments Limited — Singapore, Singapore
Citycon — Espoo, Finland
Commonwealth Bank of Australia — Sydney, Australia
Cundall — Newcastle, UK
Currie & Brown (UK and Europe) — London, UK
Dar Group — Beirut, Lebanon
Deerns — The Hague, Netherlands
Deloitte — Toronto, Canada
Deutsche Bank — Frankfurt, Germany
Dexus — Sydney, Australia
EcoReal — Helsinki, Finland
Evora Global — London, UK
ExCool — Bromsgrove, UK
FORE Partnership — London, UK
Foster + Partners — London, UK
Frasers Property Australia — Sydney, Australia
GI Quo Vadis Inc — Montreal, Canada
Goldman Sachs — New York, New York, USA
GPT Wholesale Office Fund — Sydney, Australia
Grab — Singapore, Singapore
Grainger Plc — Newcastle upon Tyne, UK
Granlund Group — Helsinki, Finland
Greengage Environmental — London, UK
Grimshaw — London, UK
Grosvenor — London, UK
Hesperia — Subiaco, Australia
Hibernia REIT plc — Dublin, Ireland
Hilson Moran — Farnborough, UK
Hoare Lea LLP — Bristol, UK
Hudson Pacific Properties — Los Angeles, California, USA
Integral Group — Oakland, California, USA
Investa — Sydney, Australia
IPUT Property Fund — Dublin, Ireland
ISPT — Melbourne, Australia
JLL Global — Chicago, Illinois, USA

JLL UK — London, UK
Joseph Homes — London, UK
Keva — Helsinki, Finland
Kilroy Realty Corporation — Los Angeles, California, USA
King's Cross Central Limited Partner — London, UK
Kingspan — Dublin, Ireland
Kojamo — Helsinki, Finland
LähiTapiola Kiinteistövarainhoito — Espoo, Finland
Lamington Group — London, UK
Lemay — Montreal, Canada
Lendlease Australian Prime Property Fund (APPF) Commercial — Sydney, Australia
Lendlease Australian Prime Property Fund (APPF) Industrial — Sydney, Australia
Lendlease Europe — London, UK
Lendlease International Towers Sydney Trust — Sydney, Australia
Lendlease One International Towers Sydney Trust — Sydney, Australia
Lloyds Banking Group — London, UK
MACE — London, UK
Majid Al Futtaim — Dubai, UAE
Make Architects — London, UK
Max Fordham — London, UK
Modomo — London, UK
Monash University — Melbourne, Australia
Mott MacDonald — Croydon, UK
Multiplex — London, UK
Natural Resource Defense Council — New York, New York, USA
NatWest Group — Edinburgh, UK
NEO — Taguig, Philippines
Newsec Finland — Helsinki, Finland
Nexii Building Solutions Inc — Vancouver, Canada
Nightingale Housing — Melbourne, Australia
One Click LCA — Helsinki, Finland
OP Real Estate Asset Management — Helsinki, Finland
Perkins&Will — Chicago, Illinois, United States
Petinelli — Curitiba, Brazil
QIC Office Fund (QOF) — Brisbane, Australia
QIC Real Estate (QICRE) — Brisbane, Australia
Redevco B.V. — Amsterdam, The Netherlands
Rest Direct Property Holding Trust — Sydney, Australia
Robert Bird Group — Brisbane, Australia
Salesforce — San Francisco, California, USA
Savills (UK) Limited — London, UK
Schneider Electric — Paris, France
Shaw Contract — Dalton, Georgia, USA
Siemens AG — Munich, Germany
Signify — Eindhoven, The Netherlands
SOM — Chicago, Illinois, USA
Stanhope — London, UK
Stockland — Sydney, Australia
Surbana Jurong — Singapore, Singapore
Sydney Opera House — Sydney, Australia
Tandem Property Asset Management — London, UK
Technopolis — Espoo, Finland
The Crown Estate — London, UK
THREE Consultoría Medioambiental — Monterrey, Mexico
Trevian Funds AIFM — Helsinki, Finland
Tritax Big Box — London, UK
Tritax EuroBox — London, UK
Troup Bywaters + Anders — London, UK
UMC — Dubai, UAE
Varma — Helsinki, Finland
Varming Consulting Engineers Ltd — Dublin, Ireland
Veev — San Mateo, California, USA
Walsh Structural and Civil Engineers — London, UK
Watkins Payne — London, UK
Wereldhave — Haarlemmermeer, The Netherlands
Willmott Dixon — Letchworth Garden City, UK
WSP UK Limited — London, UK
YLVA — Helsinki, Finland

GREEN BUILDING COUNCILS

UKGBC — London, UK
FiGBC — Helsinki, Finland

CITIES

Copenhagen, Denmark
Cape Town, Durban, eThekwini, Johannesburg & Tshwane, South Africa
Heidelberg, Germany
Helsinki, Finland
London, UK
Los Angeles, New York City, Newburyport, Portland, San Francisco, San Jose, Santa Monica, Seattle & Washington DC, USA
Medellín, Colombia
Melbourne & Sydney, Australia
Montreal, Toronto & Vancouver, Canada
Oslo, Norway
Paris, France
Stockholm, Sweden
Tokyo, Japan
Vallalodid, Spain

STATES & REGIONS

Baden-Württemberg, Germany
California, USA
Navarra & Catalonia, Spain
Scotland, UK
Yucatan, Mexico

COP27: The Africa COP

The 27th session of the Conference of the Parties (COP27) to the United Nations Framework Convention on Climate Change (UNFCCC) will take place in Sharm El-Sheikh in Egypt in November 2022, and is expected to build on progress made at COP26 in Glasgow.

Annual COP sessions serve as an opportunity to assess the effectiveness of measures and commitments introduced, or planned to be introduced, by national governments (Parties) to limit climate change, which is critical to climate vulnerable regions across the world. The Paris Agreement requires each Party to prepare, communicate and maintain successive Nationally Determined Contributions (NDCs) to declare intentions by each country to reduce national greenhouse gas emissions and adapt to the impacts of climate change. Since the Paris Agreement at COP21 in 2015, a legally binding international treaty on climate change, countries across all continents have committed to keeping global warming at 1.5°C - 2°C, in accordance with the recommendations of the Intergovernmental Panel on Climate Change (IPCC).

Africa:
The status of net zero in the region

Africa's journey towards net zero emissions is a critical part of this global transition to limiting global warming to 1.5°C - 2°C by 2050. Unlike other regions and more industrialised continents, Africa has had a negligible contribution to historical emissions and currently accounts for only 4% of the world's CO_2 emissions from energy and industrial sources, according to the UN. However, Africa is home to 1.3 billion people and this number is projected to grow to 3 billion by 2060, with Africa's carbon output per person growing exponentially faster than its population. This is to be expected as increases in income and urbanisation leads to higher per capita fuel and electricity consumption. This projected increase in carbon emissions from Africa is one of the drivers towards a net zero carbon development pathway by governments, cities and private sector across the continent.

While the Paris Agreement recognises that those nations who have contributed the most historical emissions and benefited from the burning of fossil fuels should reduce emissions and decarbonise faster than those who have not, carbon budgets still continue to be rapidly used up and the 1.5°C scenario is increasingly under threat.

Africa is one of the world's regions most vulnerable to and disproportionately affected by climate change according to the UN, already experiencing average temperature increases of 0.7°C over much of the continent, and facing a wide range of impacts, including more frequent droughts and floods.

Africa's net zero transition is an opportunity to leapfrog old technology and implement low carbon and net zero carbon renewable energy systems to power a growing population. African Development Bank (AfDB) has committed $2.8 billion to South Africa over the next five years to support the drive towards achieving net zero emissions.

Africa must industrialise and needs reliable and clean energy in order to drive economic growth and reduce poverty. Any net zero transition must also accelerate and support a just transition.

In order to ease this transition from fossil fuels to renewable energy, and the future burden on energy grids, sustainable built environments must play a key role as a critical climate solution. By maximising the energy efficiency of new buildings, retrofitting and renovating existing buildings and ensuring both are supplied by renewable energy, this will minimise the demand needed.

Beyond the immediate contributions towards a reduction of energy demand and operational emissions, net zero and sustainable built environments can provide wider holistic benefits and resilience against the impacts of climate change.

GBC Profile:
Green Building Council Nigeria

Nigeria is the most populous country in Africa, with a population of 206 million people which, with a current growth rate of about 2.8–3.0% a year, will double in the next two decades. Green Building Council Nigeria (GBCN) was formed to catalyse the uptake of sustainable built environments for everyone, everywhere across Nigeria.

GBCN is working towards a significant contribution to the global reduction in carbon emissions by advocating for net zero buildings and developments in the cities of Lagos, Abuja and Port Harcourt through the advocacy of green building policies in alignment with the Building Energy Efficiency Code (BEEC) in Nigeria as well as training, certifications and events to ensure that no one is left behind.

Nigeria is projected to have about 25,000 new constructions before 2030 to tackle the current housing deficit. GBCN has mapped out plans to achieve net zero carbon constructions in Nigeria, and to advocate for new constructions and existing structures to be built or retrofitted to sustainable standards.

GBCN´s advocacy and awareness campaigns are targeted at major stakeholders in the built environment, encouraging collaboration between private organisations and governing bodies towards achieving net zero construction.

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At an educational level, GBCN is facilitating green building related training and seminars for high schools, tertiary institutions and professional bodies. They will kickstart competitions focused on innovative ideas to improve sustainable construction practices locally, and continue to collaborate with academic research on sustainable design constructions.

GBCN is developing a local green building standard and rating system that will provide context-based guidance and criteria to professionals, developers, and construction companies, to scale up the number of green certified buildings in Nigeria.

The interior of the Meta Regional office in Lagos was designed and built combining LEED and WELL building standards with 22.6% energy savings, 48% natural daylighting and 85% construction waste haulage. Peridot Parkland Estate in Lagos is another green certified housing development of 250 units with EDGE certification.

The movement for greener construction in Nigeria is one that will have a ripple effect on other African nations in years to come as we are looking forward to what the future holds.

Arc Emmanuel Falude
GBCN Director of Training and Certification

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COP27 Sharm El-Sheikh: **The Opportunity**

COP27 provides an opportunity to continue showcasing the built environment as a critical climate solution. It will provide a platform to advance a major moment for enhanced action and ambition and recognise both party and non-party leadership action. This collaboration is necessary to facilitate sector transformation, accelerate reductions, a just transition, access to finance, and enhanced resilience. This is especially relevant and significant in the context of the Egypt COP Presidency's priorities of mitigation, adaptation, finance and collaboration.

Buildings and infrastructure offer a significant opportunity to build back better for an effective economic recovery, green job creation and social progress. This can be done through deep renovation, improving existing homes and assets, reducing energy consumption, designing for future climate scenarios, leveraging public procurement and critical policies such as performance-based mandatory building energy codes.

Ambassador Mohamed Ibrahim Nasr of Egypt on some of the priorities for the UN Climate Change Conference #COP27 in November:

EGYPT GBC
EGYPT GREEN BUILDING COUNCIL

"This year, COP27 will take place in Sharm El-Sheikh, Egypt. And Egypt Green Building Council recognises the powerful potential of stakeholders' collaboration from governments, cities, private sector leaders, financial institutions, and civil society to discuss opportunities for the built environment through resilience and the transition to net zero emissions. We need to protect communities and economies against the worst impacts of climate change, address social inequalities in Egypt and invest in economic development that is good for humanity and nature."

Professor Salah El Haggar
President, Egypt Green Building Council

UNDP

"UNDP will start a new project with the Ministry of Environment, funded by the Global Environment Facility (GEF) aiming to support the transformation of Sharm El-Sheikh into a green city over a duration of six years. The project will address aspects of energy efficiency, renewable energy, solid waste management, and water conservation in the hotel sector and public buildings and facilities. The project will also promote concepts of sustainable transport and enhance the conservation of biodiversity in particular the coral reef system and mangroves in the three protected areas close to Sharm namely, Ras Mohamed, Nabq, and Abu Galoum. Activities in Sharm have already started through the UNDP-GEF Egypt PV project in collaboration with Industrial Modernisation Center to promote the installation of rooftop PV solar power stations in at least 20 hotels ahead of COP27 and in partnership with the Ministry of Tourism and Antiquities and Egyptian Tourism Federation."

Mohamed Bayoumi
Assistant Resident Representative, UNDP Egypt

Sharm El-Sheikh

Sharm El-Sheikh is an Egyptian resort town situated on the southern tip of the Sinai Peninsula on the coastal strip along the Red Sea. Internationally recognised as the city of peace by UNESCO in 2000 and renowned for its ecotourism and protected diverse natural habits, Sharm El-Sheikh was chosen to host COP27. The Egyptian government is working on a plan to transform Sharm El-Sheikh into a green, environmentally friendly city. The ministries of Environment and Tourism are collaborating to implement a sustainable tourism strategy, instructing all hotels and tourist facilities to obtain a green certificate to show they are using green practices within their operations.

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In Focus:
GBC Leadership Action

Advancing Net Zero in the United Arab Emirates: **Driving Progress**

EmiratesGBC
مجلس الامارات للابنية الخضراء
Emirates Green Building Council

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In 2017, Emirates Green Building Council (EmiratesGBC) launched the UAE's first Nearly Zero Energy Buildings (nZEBs) report, which defined the concept of nZEBs and served as a referral point to support the strategy for developing nZEBs in the UAE. This publication was the catalyst for introducing the concept of Net Zero to the UAE market and was followed by the launch of the Net Zero Centre of Excellence (NZCE) in 2018 as a think tank and accelerator to advance net zero carbon buildings in the UAE. This is part of EmiratesGBC's commitment to World Green Building Council's global Advancing Net Zero (ANZ) programme.

The NZCE was the first platform of its kind to bring together government, academia, civil society, and the private sector to learn and share knowledge on net zero buildings. It supports future building regulations and the industry towards decarbonising the building sector and offers tools and resources to advance the net zero movement in the UAE. In October of 2021, only three years after the launch of the NZCE, the United Arab Emirates announced its new Net Zero by 2050 strategic initiative, making it the first country in the Middle East & North Africa (MENA) region to set decarbonisation as a goal.

EmiratesGBC will be working closely with the Ministry Of Climate Change and Environment (MOCCAE), who will be leading the efforts to achieve Net Zero by 2050, and the public and private sectors to catalyse fulfilment of the net zero agenda in the construction sector, in a country where buildings account for 70-80% of the nation's total energy consumption.

In 2019, EmiratesGBC signed a memorandum of understanding (MOU) with the International Living Future Institute (ILFI) on raising awareness of ILFI's Zero Energy (ZE) and Zero Carbon (ZC) Certifications. The MOU was an important strategic step towards eliminating operational carbon emissions from new building portfolios by 2030 and advocating for all existing buildings to be net zero by 2050. In 2021, Majid Al Futtaim's Tilal al Ghaf Sales and Experience Centre became the first building in the United Arab Emirates to hold the ILFI Zero Energy certification.

EmiratesGBC marked WorldGBC's 2021 World Green Building Week with the launch of the first embodied carbon (EC) case study in the UAE for a shopping mall. The embodied carbon assessment study for Majid Al Futtaim's My City Centre Masdar in Abu Dhabi, was conducted under the patronage of the Royal Danish Consulate General in Dubai, with Majid Al Futtaim as the Net Zero Centre of Excellence Champion and Ramboll as Consultant.

The study evaluated the impact of sustainable material procurement compared to legacy practices in terms of embodied carbon emissions. The study showed that tangible reductions in embodied carbon emissions are possible with current building construction practices by ensuring appropriate steps are taken at the earliest stages of the project.

Most recently, EmiratesGBC created an expert Working Group made up of its members and partners to raise awareness of embodied carbon in the UAE through publishing guidance. The publications cover points such as regionally specific issues related to embodied carbon and importance for reducing, an overview process for calculating impacts, carbon data sources, and regional case studies.

Heba Karmany
Senior Technical Engineer, Emirates Green Building Council

Jinan El Hajjar
Technical Engineer, Emirates Green Building Council

Roa Daher
Program Coordinator, Emirates Green Building Council

Advancing Net Zero in Ireland: **Whole Life Carbon Homes**

IGBC
IRISH GREEN BUILDING COUNCIL

Over the next two decades, half a million homes will need to be built in Ireland. This represents a fourth of the existing stock. In addition to this, the Irish Government has an extremely ambitious energy renovation programme, with 500,000 homes to be deep retrofitted by 2030.

To date the impact of the built environment and the construction sector on our national carbon emissions has been poorly quantified. To address this lack of data, the Irish Green Building Council (IGBC) commissioned a report from University College Dublin. The initial findings indicate that 37% of Ireland's emissions relate to the built environment, making it the most carbon intensive sector on par with agriculture (37%). The report also shows that unless whole life carbon is urgently addressed in the built environment, the sector will exceed its carbon budget by 2030.

Against this background, the IGBC is working in close cooperation with the industry and other key stakeholders to develop a roadmap to decarbonise Ireland's built environment across its whole life cycle. The roadmap, developed as part of the #BuildingLife project, will include policy recommendations as well as actions directly implementable by the industry to tackle both operational and embodied emissions. 21 ambassadors, including four members of the Irish Parliament and two Irish members of the European Parliament, fully support the campaign.

Our work on the roadmap builds on IGBC's work to address whole life carbon (WLC) over the years.

In 2016, the IGBC launched the Home Performance Index (HPI), Ireland's first national certification for quality and sustainability in new residential

development. The HPI includes a zero carbon standard for new homes. The standard requires home builders to measure how the homes perform after it has been lived in before it can be awarded. It also requires measurement of the upfront carbon emissions associated with the construction of the homes and that they are below a certain threshold. One of the largest Irish banks, AIB, and the state home building finance agency HBFI now offer discounted loans to developers who are willing to go beyond the building regulations and adopt the Home Performance Index.

Embodied carbon accounts for up to 14% of Ireland's emissions. To support a reduction in these emissions, the IGBC runs whole life carbon training on a regular basis and operates the EPD Ireland programme. This is supported by our EPD Campaign, which encourages specifiers to commit to requesting EPDs for their projects. The campaign has resulted in a tripling in the number of EPD produced over the past two years.

As tackling WLC requires a more circular approach to construction, the IGBC is also involved in two innovative projects to better support the reuse of construction materials.

Finally, making energy renovation more desirable, accessible, and affordable remains at the core of IGBC's activities. This is key to reduce operational emissions and to support a greater reuse of the existing stock. Ensuring we have the right skills is critical to reach our retrofit targets, and to ensure these are delivered to a high-quality standard, hence contributing to an increase in trust in the process. This is why the IGBC is currently working on a number of projects to facilitate and incentivise upskilling and on the development of a one-stop-shop.

Despite our broad range of activities far more must be done to decarbonise Ireland's built environment. A key priority of the IGBC is to develop a net zero carbon definition for non-residential buildings. We also want to do more to support members in this transition and have just set up a community of practice for members to learn from each other and inspire each other. We are also very much looking forward to working with our members and other key stakeholders to deliver on the #BuildingLife roadmap over the next few years.

Marion Jammet
Head of Policy & Advocacy, Irish Green Building Council

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Advancing Net Zero in Colombia:
Roadmap to net zero

CCCS
Consejo Colombiano de Construcción Sostenible
Colombia Green Building Council

Bogotá, the capital of Colombia, joined the Building Efficiency Accelerator (BEA) network in 2016 and started a programme to improve the city's energy efficiency. Through a Global Environment Facility (GEF) grant, World Resources Institute (WRI) was selected as a global implementing partner and Colombia GBC as a local implementing partner.

The city received technical and financial assistance to develop an energy code that it adopted as a regulation in 2019, followed by a measurement, reporting and verification system to track progress. In 2018 Cali and Montería also joined the BEA network and received assistance from Partnering for Green Growth (P4G) to expand the work from Bogotá to these cities that resulted in local energy codes.

In 2020 Colombia GBC joined the WorldGBC's global Advancing Net Zero programme and made a commitment to guide the construction industry in a road to net zero, advocating not only at the private level, but the public sector too. As a result of the work of the BEA programme in the country and based on the commitment of the national government to advance to net zero, the country was selected to receive assistance from the Zero Carbon Building Accelerator.

In April 2021, Colombia GBC launched its project with its main objective to develop a national level net zero carbon roadmap for Colombia. The outlined objectives at a subnational level supported developing Bogotá and Cali with specific action plans for zero carbon buildings.

In order to enhance the governance of the project, a national advisory committee was formed. It is led by the Ministry of Environment, the Ministry of Housing, the Ministry of Energy, the Department of National Planning (national government), the Departments of Planning of Bogotá and Cali (local governments), and CAMACOL (Construction Colombian Chamber) and Colombia GBC (private sector). In addition to the advisory committee, an expert group was formed to bring together the knowledge and experience of the entire value chain and stakeholders from the building industry of the country. With over 300 participants and more than 60 workshops conducted, this group was key in starting a national dialogue about:

- **Understanding the different actions in terms of policy, technology, capacity building and finance to make the transition of the construction sector to zero carbon buildings.**
- **Identifying the stakeholders that should be involved.**
- **Bringing together the different policies and commitments made from different ministries.**

All the recommendations made by the experts are included in the national level zero carbon building roadmap, launched in June 2022. As part of the implementation process an action plan will be developed with each Ministry and trade association involved. We aim to gather industry insight and advocate for change and bring together the private and the public sector so we can truly make the transformation needed in our sector.

Angélica Ospina
Technical Director, El Consejo Colombiano de Construcción Sostenible (CCCS)

WorldGBC Advancing Net Zero Status Report 2022

Overcoming Barriers: **Renovating to Net Zero**

As the industry begins to adopt a whole life carbon approach to decarbonising the built environment, it is increasingly clear that renovation and retrofitting of existing assets must play a critical role in this transformation.

The easiest way to reduce or avoid embodied carbon, is to prevent it being incurred in the first place.

The sector must prioritise renovation and retrofitting that allows for the reuse of existing buildings, extending the lifecycle and minimising the embodied carbon incurred compared to a new development.

Where reuse is not possible, then all stakeholders involved in a new development should reduce and optimise. This means applying whole life cycle thinking, evaluating each design and construction choice using a whole lifecycle approach to minimise the impact of upfront embodied carbon, including embodied carbon at later lifecycle stages such as refurbishment and maintenance. Implementing this approach will give us the best chance of staying on track to a 1.5°C scenario and within allotted carbon budgets.

We asked our Advancing Net Zero Global Programme Partners to share what they are doing to reduce emissions from existing buildings.

WorldGBC Advancing Net Zero Status Report 2022

Unlocking decarbonisation with technology

The science is clear. So, too, is the strategy. Over 120 countries are now committing to Net Zero 2050 goals. It is no longer a "nice to have" but a "must-have" to remain compliant and competitive. In its 2020 Survey of Sustainability Reporting, KPMG found that 80% of companies worldwide now report on sustainability.

During that time, Schneider Electric established itself as a leading expert in sustainability and decarbonisation. We ourselves are recognised for our best practices in sustainability, earning the #1 position from Corporate Knights in 2021.

As a company, we have committed to be carbon neutral by 2025 and net zero in our operations by 2030, far surpassing 2050 targets. We believe buildings of the future need to be sustainable, resilient, hyper efficient, and people centric.

In 2021, Schneider Electric launched its Sustainability Research Institute to look at innovations that can be implemented today that both come at "negative green premiums" (i.e., better economics) with practical pathways to scale. In the same year, Schneider Electric published 'Back to 2050', setting out scenarios for accelerating the modernisation of the economy to get to net zero. In June 2022, the Sustainability Research Institute will have published two key reports:

1. 'Toward Net-Zero Buildings, a practical pathway': presenting a Framework Towards Net-Zero Buildings developed in conjunction with the World Economic Forum to accelerate the investment needed to deliver a greener urban built environment.

2. 'Toward Net-Zero Buildings, a quantitative study': developing a different path to contribute to the decarbonisation of buildings while yielding positive outcomes for consumers.

These studies take a new and innovative approach: where previous literature and research generally focuses only on one element of the transition, this research combines various decarbonisation options to focus on the implementation of such energy efficiency, electrification, and onsite solar solutions.

Buildings are an important part of the global decarbonisation effort as they account for around 28% of energy related operational emissions (excluding embodied emissions). Despite this, attempts to modernise buildings using existing and modern solutions have not been widely adopted. This is partly due to the general consensus being that implementing these solutions will become an extra cost and a significant political burden. However, Schneider Electric's report shows that this consensus stems from the fact that solutions are often studied in isolation – when, in reality, their benefits are magnified when combined.

What have we discovered? There's no need to wait, existing technology can already cut 70% of the carbon emissions TODAY.

1) Invest in decarbonising technologies and combine them to optimise impact:
   - Electrify what you can
   - Make use of distributed power generation and solar
   - Install active and passive energy efficiency technology

2) Invest in digitalisation to maximise the benefits of decarbonising technologies:
   - Monitor energy consumption
   - Design for the connectivity and interoperability of deployed assets
   - Optimise energy use with building management systems
   - Optimise life cycle efficiency with building information modelling

3) Investing in city ecosystem services and equipping buildings with distributed renewable power generation, storage and smart energy management solutions can enhance local resilience and accelerate decarbonisation across cities without the need for disruptive grid upgrades:
   - Design to support the grid and local energy communities
   - Contribute to clean mobility by installing smart electric vehicle charging

Technology delivers results now

Schneider Electric's Regional HQ in Singapore's building retrofit Kallang Pulse has been running on 100% renewable electricity (80 solar panels on site + off site solar through PPA) since April 2021. The chiller plant acts as a centralised cooling system, providing a portion of air conditioning in the building's HVAC systems. Ultra-efficiency is reached thanks to a magnetic bearing chiller incorporating variable speed drives regulating air flow speed according to demand, helping to achieve higher efficiency rating. This results in a carbon and energy neutral building, with 100% of energy demand met by solar, up to 28% less energy consumption per year and optimised comfort.

Rémi Paccou
Director of Sustainability Research, Schneider Electric Sustainability Research Institute

We won't build our way to net zero, **we will manage our way there.**

CBRE manages seven billion square feet of buildings around the world. That puts us at the forefront of identifying opportunities that enable real estate portfolios to perform in line with science-based targets and realise net zero obligations.

Reducing energy demand, combined with a standardised and consistent approach to managing properties will yield optimal efficiencies and performance. Environmental, Social and Governance (ESG) strategies must be fully integrated into building operations rather than offered only as an adjacent service.

CBRE takes a structured approach when advising clients on how to achieve net zero emissions. First, we ask whether all the energy used is really needed. A net zero strategy that skips this fundamental question will more than likely fail.

Data is essential. You can't manage what you don't measure. A comprehensive approach to data collection empowers managers to know how buildings are performing and helps identify the biggest opportunities for improvement.

To support this, CBRE has developed Asset IQ, a cutting-edge sustainability performance tool to inform decisions about occupying and managing space. The online tool connects to a building management system, capturing live data on power, lighting, ventilation and air-conditioning systems usage, and ranks performance of spaces against key environmental and social performance metrics

Implemented across CBRE-managed properties, Asset IQ has helped clients reduce energy use by 10% while delivering a 234% return on investment.

After reducing demand, we look to switch to fossil-fuel free technology and improve the efficiency of building systems in alignment with replacement cycles to reduce embodied carbon and costs. For one redevelopment project in Manchester, UK, the property had only received minimal energy upgrades over the previous 15 years. We prioritised low and zero carbon technologies and installed an energy efficient air-source heat pump (ASHP), among other improvements, which will deliver payback during its lifecycle. This technology is increasingly viable when reviewing building heat provision, ensuring affordability and ease to retrofit into standing assets.

In Chicago, Illinois, we helped one client achieve nine sustainable property certifications, recognitions and awards through a comprehensive property management strategy. This includes an energy recovery system, LED lighting retrofits and monitoring based commissioning (MBCx) – as well as other sustainable initiatives like electric vehicle charging stations, a green roof, an urban beekeeping facility and a robust recycling programme.

The need to reduce emissions from buildings is one of several factors shifting the relationship between owners and occupiers. As we all work toward net zero goals, prioritising occupier needs and fostering a collaborative relationship will be critical in managing occupancy costs and creating healthy workplace environments. Not only will it help boost productivity and build trust, it will improve data sharing, performance management and shared owner-occupier efficiency initiatives such as on-site renewable infrastructure. This will help better address the more elusive scope 3 emissions and other data.

Whether it is lack of data, inefficient equipment, inadequate assessment methodologies or differing goals between owners and occupiers, it is essential to get to the underlying causes of a building's performance gap to identify net zero strategies that actually deliver. That is why in the UK, CBRE is spearheading the "Managing for Performance" group, a collaboration between the Better Buildings Partnership and Managing Agents Partnership. The aim is to publish findings that will be fully transferable for the industry.

Helen Newman
CBRE Head of Sustainable Finance, Capital Advisors

Carl Brooks
CBRE Head of ESG, Property Management

Accelerating towards **Absolute Zero Carbon**

As a global developer, builder, and investor, Lendlease's carbon footprint spans the industry's entire value chain. We have committed to being a 1.5°C aligned company, Net Zero Carbon by 2025 for scopes 1 & 2, and Absolute Zero Carbon, with no excuses and no offsets, by 2040 for all scopes. We call this our Mission Zero and in order for us to reach this goal, we must transform the way we build and the materials that we build with as they account for around 90% of our carbon footprint.

Just as with the challenge of waste reduction – reduce, reuse, and recycle are also effective principles in our efforts to decarbonise our sector. Reduction and elimination of carbon are the true objectives, through smart, efficient design, use of low or zero carbon materials, new technologies and innovations. In the case of reuse, we can do this via retrofit and reusing elements such as structural steel and concrete and glass façades rather than requiring new virgin materials with high embodied carbon content.

For example, at Elephant Park's upcoming residential building, Park & Sayer, we are installing a low carbon façade made from 75% recycled aluminium. This saves approximately 2,100 tCO_2e, compared with using primary aluminium powered by coal-fired electricity.

Another way of reducing embodied carbon is to repurpose whole buildings through retrofitting. For example, at Silvertown Quays, a 27-hectare urban regeneration in the Royal Docks Enterprise Zone in East London, we are refurbishing two existing iconic heritage buildings. These are the locally listed Millennium Mills building, a former flour mill that dates from 1906 and Silo D, a Grade II listed 1920s reinforced concrete grain silo. These are fundamental parts of the masterplan that not only support embodied carbon reduction but also help retain the area's rich industrial heritage and unique identity.

We must optimise opportunities to repurpose materials from existing buildings and buildings must be designed to be more adaptable to change and made with material components that are easily disassembled and reusable. We are addressing this by incorporating circular economy principles within our designs and developing our Design for Manufacture and Assembly (DfMA) product.

Finally, decarbonising the manufacture of building materials like cement and steel is a challenge that will require whole industry collaboration. That is why Lendlease has joined forces with industry groups like SteelZero, a global initiative aimed at driving market demand for net zero carbon steel and the Materials & Embodied Carbon Leaders' Alliance (MECLA) in Australia, aimed at activating the supply of net zero-aligned construction materials. We are also accelerating the use of low carbon materials like mass timber on our projects through a global partnership with sustainable wood supplier, Stora Enso, and joined Built by Nature to help the industry overcome barriers to timber construction.

To incentivise design teams to bring forward the industry's best solutions and to change the 'business as usual', we set ourselves carbon budgets and recycled content requirement for key projects.

"With embodied carbon emissions expected to account for half of the entire carbon footprint of new construction between now and 2050, as operational emissions reduce, developers can't tackle this alone. It is critical governments step in with ambitious building regulation to help prioritise repurposing of buildings, and accelerate emissions reduction across the entire industry."

Cate Harris
Group Head of Sustainability, Lendlease

Renovating to Net Zero - **Corso Italia 23**

SOM's reinvention of the 1960s Corso Italia 23 complex opens up a formerly insular headquarters to provide an innovative, highly collaborative campus that retains much of the existing building fabric. In a rethink of the future workplace as a sustainable and adaptable building, the project introduces advanced environmental, well-being and smart building concepts, while maintaining a dialogue with the original architecture.

Originally designed in the early 1960s by architects Gio Ponti, Piero Portaluppi, and Antonio Fornaroli as the Milan headquarters of Allianz S.p.A., the 45,000-square-metre complex is being transformed from a single-tenant headquarters into a dynamic, low-carbon office campus.

The design team rediscovered Gio Ponti's original intention to create a sense of connection with the city and within the complex. A key challenge was how to stay true to the original design intent, whilst also updating the building's performance to meet or exceed current sustainability targets. There is no single silver bullet and our strategy is a layered approach that uses many active and passive solutions that combine to make a highly sustainable and energy-efficient retrofit project in the heart of Milan.

Sustainability is not only about resource efficiency and operational costs, but also encompasses proactive design solutions that support health and wellbeing. Embracing all facets of sustainability—environment, resource management, and people.

Inspirational outdoor spaces are also key. A redesigned courtyard forms the heart of the campus and the roof is transformed to provide further amenities, including executive office terraces and green spaces with views above Milan. Wherever feasible we have upcycled existing materials and facades are removed to meet higher performance and user requirements. The material is upcycled to create new seating, paving and sculpture pieces, and the grounds feature a herb garden.

SOM's integrated design considers climate, region-specific, and passive and active strategies to enhance the building's performance. The primary goal of the retrofit is to reduce the core demand of the operational energy and water use and to retain as much of the existing building as possible, minimising the use of raw materials. We employed passive strategies of daylighting, solar heat control and climate adaptive plants. We also incorporated enhanced systems such as photovoltaic panels, high performing façades and low water demanding fixtures, fittings and equipment. The building also integrates smart technologies to create adaptable and intelligent work spaces. We continuously measure building occupancy, movement, active chilled-beams, lighting levels, humidity, temperature and green cooling systems to ensure that they are energy efficient

The smart façade design, flexible interior layouts, healthy materials, and appropriate colour quality collectively address occupant wellbeing indoors. The scheme uses an efficient building fabric with integrated solar shading and cooler finishes to overcome the issue of internal overheating that is predicted as the global temperature rises in the coming years. The building uses daylighting, Circadian Lighting Design and biophilia through indoor greening in accordance with the WELL Building Standard's aspirations.

At a district scale, ground-source heating serves the campus and low-energy systems are used throughout. Efficiency is aided by trees and plants being incorporated as part of its design strategy to create a microclimate with effective ventilation. It assists in maintaining temperature levels at a more comfortable range and improves air quality.

The project preempts future changes to working patterns with flexible internal layouts and optimised core areas, the use of demountable partitions and an open plan layout. The long-term aim of the proposal is to offer ease of operation, maintenance and monitoring for continual optimised performance, enhanced occupant health and wellbeing, and minimise environmental impact.

Mina Hasman,
Sustainable Practice Director, SOM

We invite you to join us!

2022 is another important year for accelerating climate action.

WorldGBC invites all stakeholders within the built environment, whether an investor, developer, owner, manufacturer, architect, designer or consultant, and representatives of national government, states and cities, to work with our global network, powered by our Green Building Councils, us and our partners to ensure that all our buildings, everywhere, are net zero carbon before 2050.

We encourage everyone to join the Race to Zero and become a frontrunner in the race by signing the Net Zero Carbon Building Commitment, to go further and faster in taking action to tackle the emissions from the built environment.

Join us and participate in our #BuildingToCOP27 campaign, running throughout the year in the lead up to the conference, and contact your local GBC to find out how you can be #AdvancingNetZero.

Find out more **here.**

RACE TO ZERO

#AdvancingNetZero

WorldGBC Advancing Net Zero Status Report 2022

2022 WORLD GREEN BUILDING WEEK 12-16 SEPT

#BUILDING TO COP27

WORLD GREEN BUILDING COUNCIL

Mina Hasman
Sustainable Practice Director,
Skidmore, Owings & Merrill LLP

The construction industry has made much progress in successfully delivering the decarbonisation message and establishing key roadmaps for action over the last 12 months – all presented at COP26.

I was honoured to be part of the COP26 Cities, Regions and Built Environment Day events to amplify the commitment on net zero, and to demonstrate how we can go further – a vision at the heart of our 'Urban Sequoia' research launched at COP26.

Climate science consistently proves that we need revolutionary thinking and actions for the evolution of our sector, and this can only happen if we collaborate within and beyond it. I hope that by the end of 2022, our industry can progressively embrace this mindset and work to radically transform the built environment beyond net zero towards net-negative solutions.

Bianca Wong
Global Head of Sustainability,
Kingspan Group

Climate action, at scale, is urgently needed. The construction sector must address its most material impacts at pace to stay within a chance of limiting global temperature rise to 1.5°C. WorldGBC and the Advancing Net Zero project are a critical part of the cross-industry collaboration driving the decarbonisation of the built environment. As a signatory to the Commitment, and as part of our 10-year Planet Passionate programme, Kingspan is prioritising reducing the embodied carbon in our products. This will enable us to reduce our value chain carbon impact while also supporting our customer's decarbonisation journeys.

Cate Harris
Group Head of
Sustainability, Lendlease

Our #MissionZero targets of Net Zero by 2025 and Absolute Zero by 2040 are some of the most ambitious for the real estate sector globally, but we believe that doing so is critical to limiting global warming to no more than 1.5°C.

The work to achieve our targets has already begun, but deeper industry collaboration will be required to radically decarbonise the built environment. There are enough 'green shoots' across our sector to suggest that transformation is underway, but we need change at scale and at pace across new and existing assets. That's why we are supporting important industry initiatives like Advancing Net Zero by the World Green Building Council. We believe clear targets are a uniting force — when we are all pulling in the same direction, great things can happen.
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Sally Sudworth
Global Head of Sustainability & Climate Change,
Mott MacDonald

The latest Intergovernmental Panel for Climate Change report stated that the window to take urgent action is still there but only just. It makes good business sense to act now to mitigate increasing climate related damages. At Mott MacDonald we are proud to be part of a community of engineers and professionals who are taking action, to participate in the Advancing Net Zero global programme and to be signatories to the World Green Building Council's Net Zero Carbon Buildings Commitment. We understand that collaboration and working in partnership with our clients and partners is a must if we are to achieve the sustainable and climate resilient world that future generations deserve.

Tim Dismond
Chief Responsibility Officer, CBRE

CBRE has committed to Net Zero by 2040 and we're all in. We have a plan, alignment and engaged employees who have embraced our initiatives. Our key priorities include transitioning our operations to 100% renewable energy and our fleet to electric vehicles, helping our clients reduce their carbon footprint at the properties we manage for them, and investing in and deploying the latest technology. Technology will drive the scale and pace of what's possible for decarbonisation, and it will also be a key enabler for evaluating our impact. Collaboration through the WorldGBC's Advancing Net Zero programme and other GBCs around the world is critical to achieve our ambitious goals.

Xavier Denoly
Senior Vice President Sustainable Development,
Schneider Electric

We all now know that buildings and cities are central in combating climate change. However, it is less widely known that existing technology is a pathway for net zero buildings to not only achieve carbon neutrality, but also to provide significant co-benefits for people and the economy. In other words, investing in decarbonisation technologies combined with digital can maximise value creation for all stakeholders. It is crucial to engage people and communities in real decarbonisation pathways by showing that there is no needed arbitrage between human progress and climate change mitigation. In fact, there will be no climate change mitigation if it does not build on human progress.

Schneider Electric supports WorldGBC and the Advancing Net Zero programme's vision, which is a powerful catalyst for embracing the transformation towards a net zero carbon building and construction industry. Its unique global network of over 70 Green Building Councils around the globe is a major asset to act practically on the ground.

Let's take action now, together.

WorldGBC Advancing Net Zero Status Report 2022

Leadership: Net Zero Carbon Buildings Commitment (businesses & organisations)

By 2030, existing buildings reduce energy consumption and eliminate emissions from energy and refrigerants.

By 2030, new developments and major renovations to also achieve maximum reduction in embodied carbon.

Where necessary, compensate for r… missions.

1. **Reduce and optimise demand**
2. **Generate from ren…**
3. **Compen… for residual emissions**
4. **Plan for deep decarbonisation**

Operational Carbon

1. Reduce and optimise energy demand

Prioritise consumption reduction and energy efficiency to ensure that buildings are performing as efficiently as possible, and not wasting energy.

Advocate through business activities for **all buildings to be net zero whole life carbon** by 2050.

Advancing Net Zero Whole Life Carbon

Mainstream: All buildings globally

2030

By 2030, all new buildings, infrastructure and renovations will have at least **40% less embodied carbon** with significant upfront carbon reduction.

All **new buildings** must be **net zero operational carbon.**

EMBODIED CARBON

1. **Prevent**
2. **Reduce and optimise**
3. **Plan for the future**

2050

By 2050, all new buildings, infrastructure and renovations will have **net zero embodied carbon**,

All buildings, including existing buildings must be **net zero operational carbon**.

4. **Compensate for residual emissions**

WorldGBC Advancing Net Zero Status Report 2022

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Operational Carbon

2. Generate balance from renewables

Supply remaining demand from renewable energy sources, either on-site or off-site.

WorldGBC Advancing Net Zero Status Report 2022

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2030

2050

Operational Carbon

3. Compensate for residual emissions

Offset residual operational emissions, such as from refrigerants or the use of unavoidable fossil fuels in buildings with high quality, credible compensation activities.

Advancing Net Zero Whole Life Carbon

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Operational Carbon

4. Plan for deep decarbonisation

Set up action plans to remove any remaining sources of fossil fuels in buildings as soon as possible.

Advancing Net Zero Whole Life Carbon

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Embodied Carbon

1. Prevent

Avoid embodied carbon from the outset by considering alternative strategies to deliver the desired function (e.g. renovation of existing buildings rather than new development etc.)

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Advancing Net Zero Whole Life Carbon

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Embodied Carbon

2. Reduce and optimise

Evaluate each design choice using a whole lifecycle approach and seek to minimise upfront carbon impacts (e.g. lean construction, low carbon materials and construction processes etc.)

Leadership: Net Zero Carbon Buildings Commitment (businesses & organisations)

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Embodied Carbon

3. Plan for the future

Take steps to avoid future embodied carbon during and at end of life (e.g. maximise potential for renovation, future adaptation, circularity etc.)

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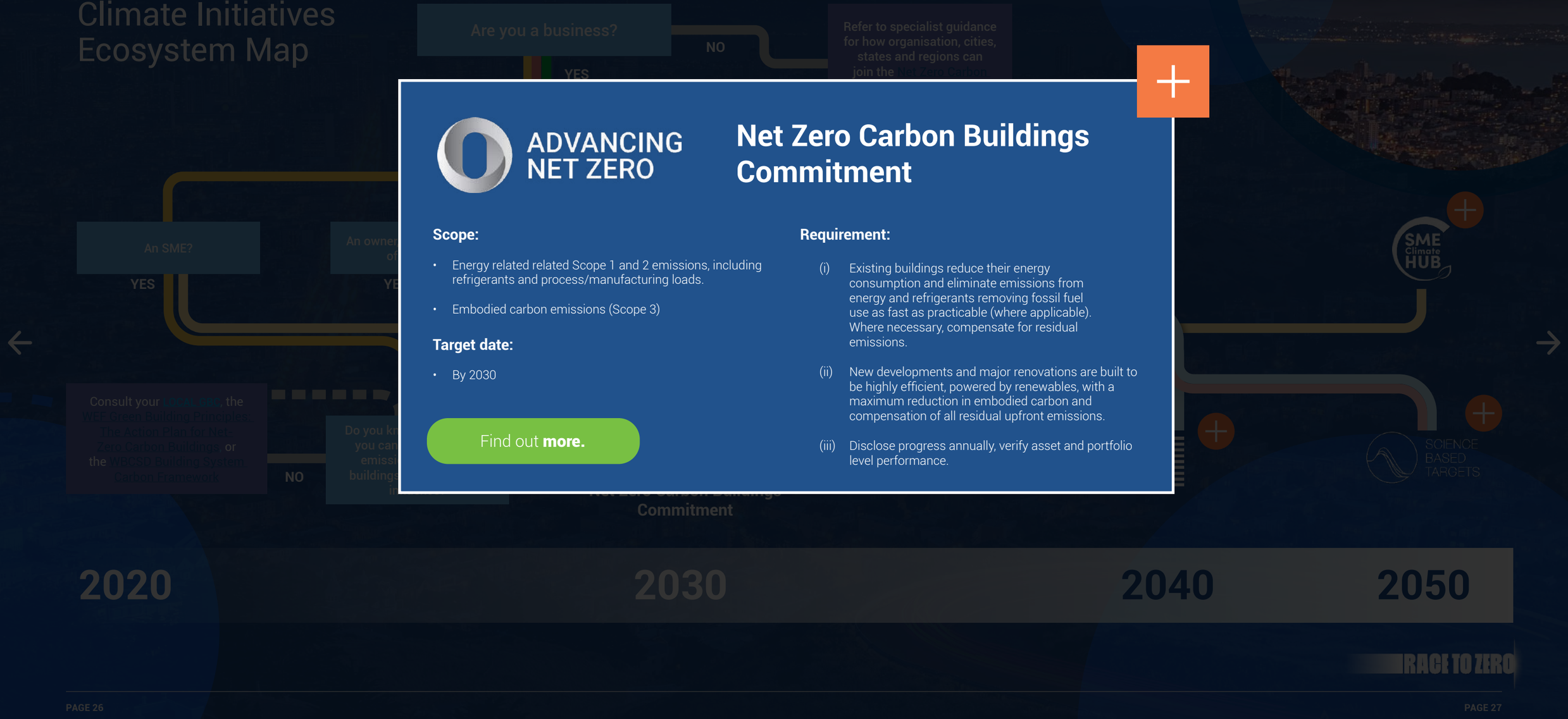
Embodied Carbon

4. Compensate for residual emissions

Offset residual upfront embodied carbon emissions with high quality, credible compensation activities.

WorldGBC Advancing Net Zero Status Report 2022

Climate Initiatives Ecosystem Map



ADVANCING NET ZERO

Net Zero Carbon Buildings Commitment

Scope:

- Energy related related Scope 1 and 2 emissions, including refrigerants and process/manufacturing loads.
- Embodied carbon emissions (Scope 3)

Target date:

- By 2030

Find out **more.**

Requirement:

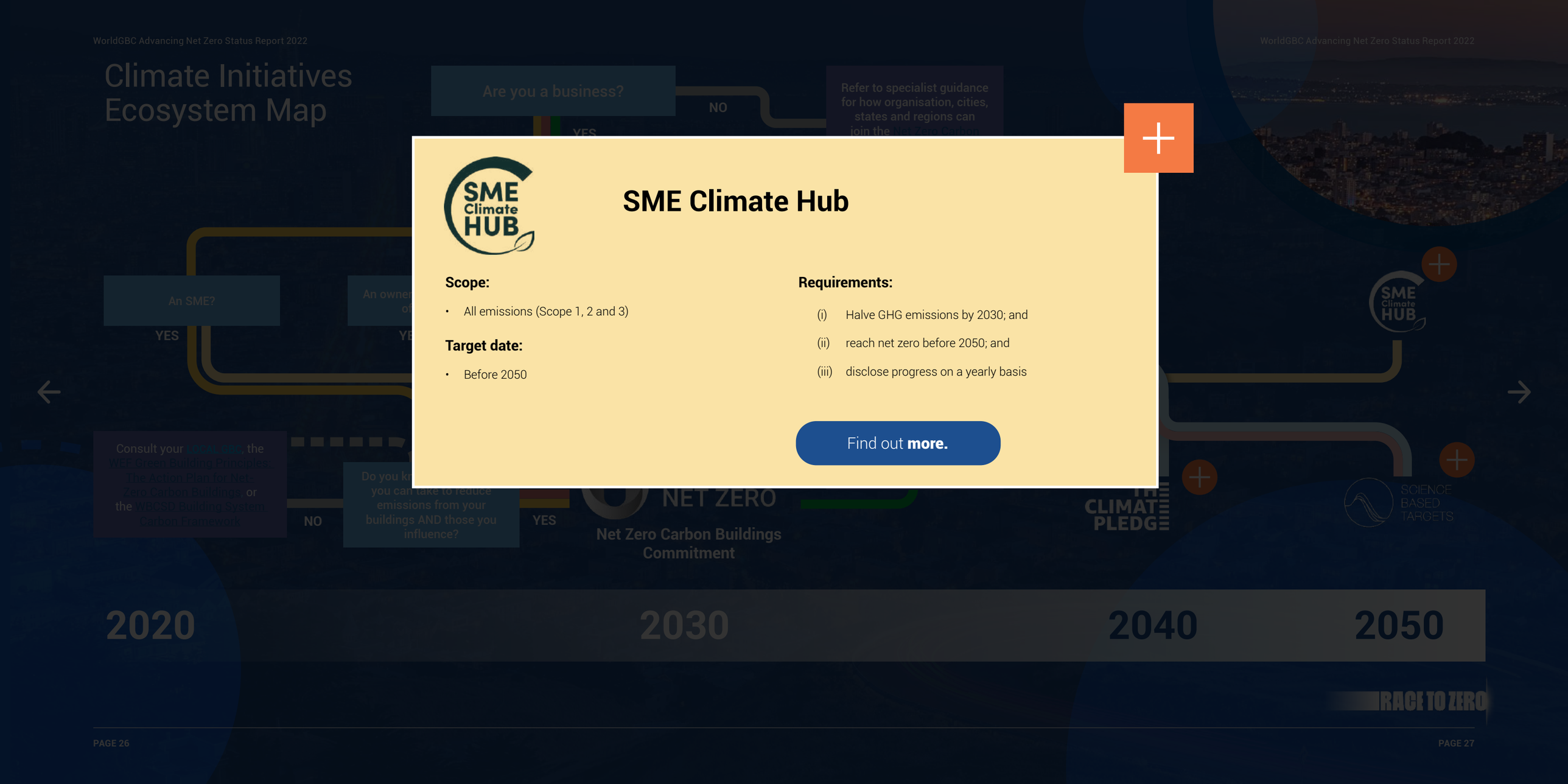
(i) Existing buildings reduce their energy consumption and eliminate emissions from energy and refrigerants removing fossil fuel use as fast as practicable (where applicable). Where necessary, compensate for residual emissions.

(ii) New developments and major renovations are built to be highly efficient, powered by renewables, with a maximum reduction in embodied carbon and compensation of all residual upfront emissions.

(iii) Disclose progress annually, verify asset and portfolio level performance.

WorldGBC Advancing Net Zero Status Report 2022

Climate Initiatives Ecosystem Map



SME Climate Hub

Scope:

- All emissions (Scope 1, 2 and 3)

Target date:

- Before 2050

Requirements:

(i) Halve GHG emissions by 2030; and

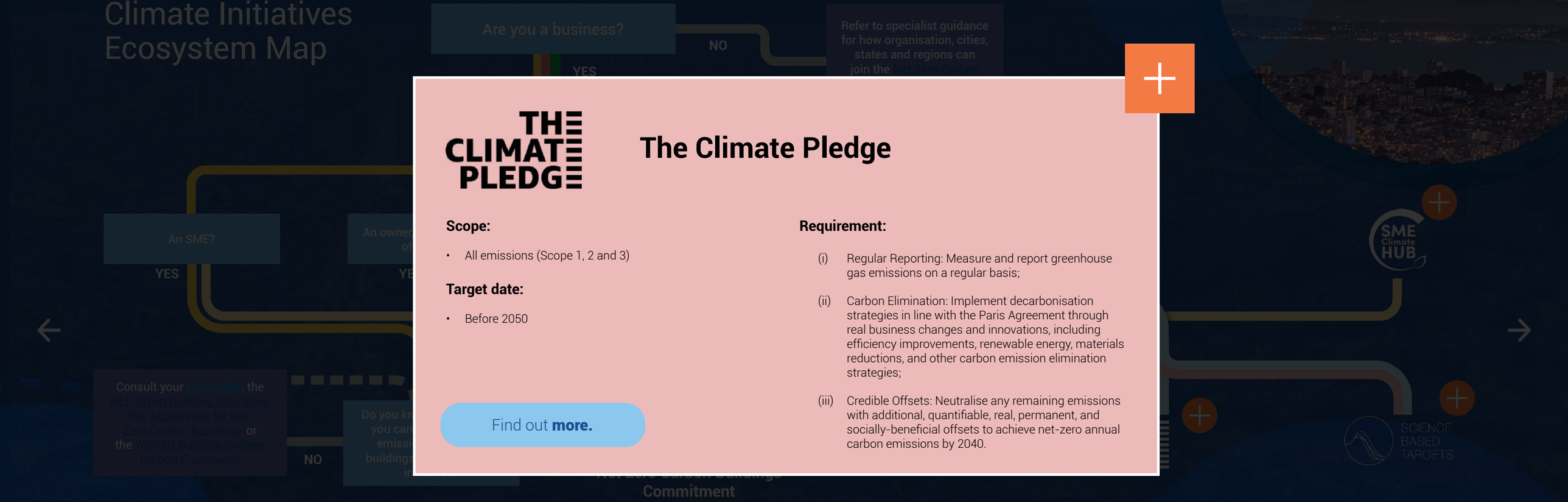
(ii) reach net zero before 2050; and

(iii) disclose progress on a yearly basis

Find out **more.**

WorldGBC Advancing Net Zero Status Report 2022

Climate Initiatives Ecosystem Map



The Climate Pledge

Scope:

- All emissions (Scope 1, 2 and 3)

Target date:

- Before 2050

Find out **more.**

Requirement:

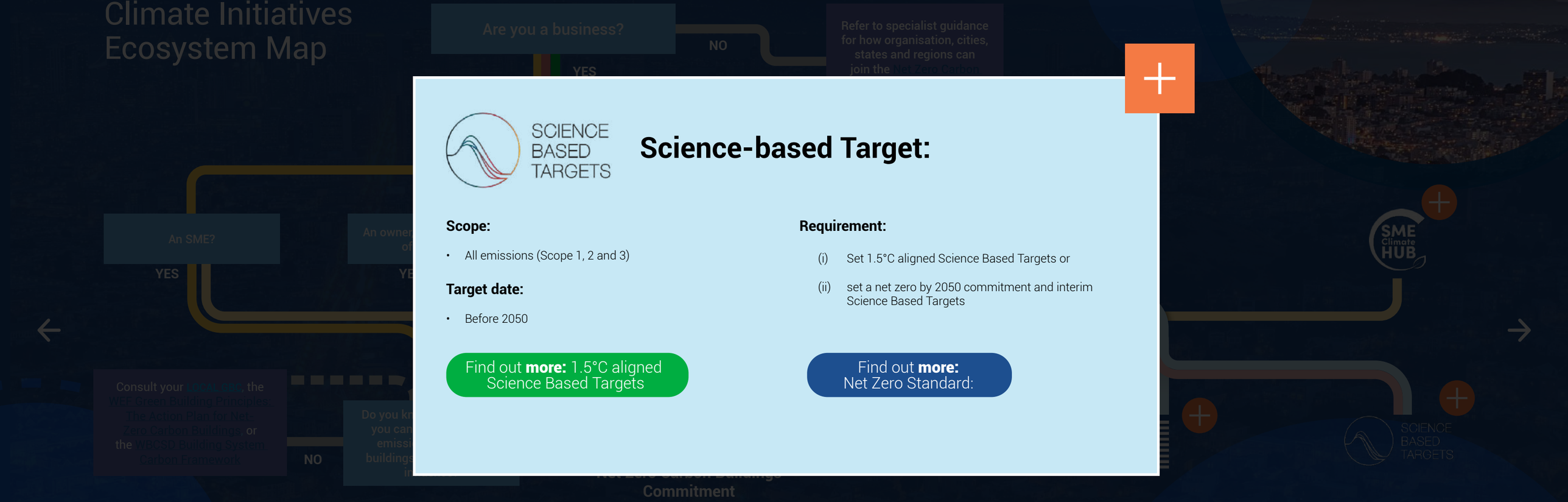
(i) Regular Reporting: Measure and report greenhouse gas emissions on a regular basis;

(ii) Carbon Elimination: Implement decarbonisation strategies in line with the Paris Agreement through real business changes and innovations, including efficiency improvements, renewable energy, materials reductions, and other carbon emission elimination strategies;

(iii) Credible Offsets: Neutralise any remaining emissions with additional, quantifiable, real, permanent, and socially-beneficial offsets to achieve net-zero annual carbon emissions by 2040.

WorldGBC Advancing Net Zero Status Report 2022

Climate Initiatives Ecosystem Map



Science-based Target:

SCIENCE BASED TARGETS

Scope:

- All emissions (Scope 1, 2 and 3)

Target date:

- Before 2050

Requirement:

(i) Set 1.5°C aligned Science Based Targets or

(ii) set a net zero by 2050 commitment and interim Science Based Targets

Find out **more:** 1.5°C aligned Science Based Targets

Find out **more:** Net Zero Standard: