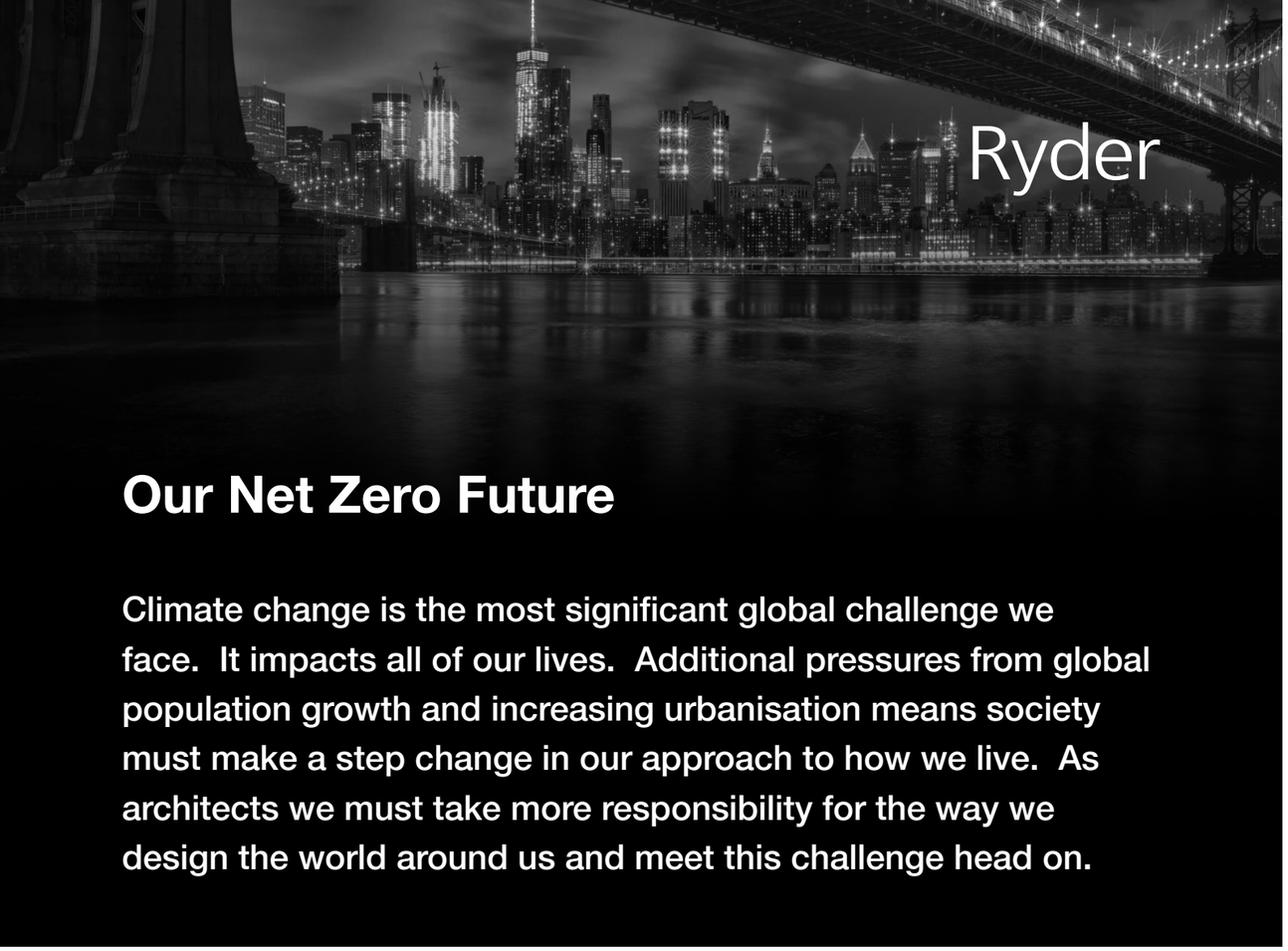


Our Net Zero Future

Climate change is the most significant global challenge we face. It impacts all of our lives. Additional pressures from global population growth and increasing urbanisation means society must make a step change in our approach to how we live. As architects we must take more responsibility for the way we design the world around us and meet this challenge head on.

What is net zero carbon?

A commonly used term referring to the elimination of all greenhouse gases (GHGs). In construction, this refers to emissions throughout the whole lifecycle of a building.

Why is it important?

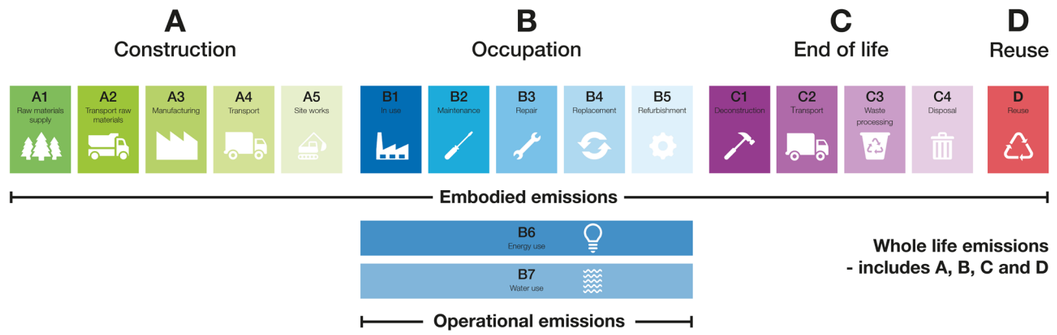
To halt further climate change the world needs to reach net zero by 2050. The built environment is a significant contributor to GHG emissions, with the construction and operation of new and existing buildings contributing close to 40 percent of global emissions.[1] Our cities produce the most emissions, they are responsible for 66 percent of total global energy consumption and more than 70 percent of energy related carbon emissions.[2] These net zero targets are based on the world as it currently stands, however a growing population means an increase in construction while trying to meet these ambitious targets.

To accommodate predicted population growth, by 2060 the world is projected to add 2.5bn sqm of buildings. This area is equal to the existing global building stock.[3]

It is the equivalent of adding a new New York City to the planet every 34 days for the next 40 years.[3]

What are we doing about it?

We continue to push boundaries on projects and work with local and national governments, and agencies, to develop net zero strategies that enable them to meet their goals.



We refined our approach to delivering net zero buildings through advising local authorities and governments on net zero policy and strategy development. Most notably working with the Scottish Futures Trust, to develop the Net Zero Carbon in the Public Sector Buildings Standard in Scotland.

Net zero carbon building

Our approach to the Scottish standard follows guidance from the UK Green Building Council (UKGBC) Advancing Net Zero and the London Energy Transformation Initiative (LETI). Our understanding of net zero follows the whole life approach and aligns with BS EN15978 Sustainability of Construction Works — Assessment of Environmental Performance of Buildings; as well as aligning with approaches adopted in the UK and Canada, including the Royal Institute of British Architects (RIBA) and the UK Royal Institute of Chartered Surveyors (RICS). We focus on reducing emissions across the four stages of a building's lifecycle.

A focus on whole life emissions

This accurately reflects the emissions of a building over its full lifecycle. From the emissions generated in sourcing and transporting materials during the construction phase, to those generated during the operation of the building, through to the building's end of life and the carbon used in the dismantling, demolition or reuse of the building. The diagram above has been adapted from BS EN15978 and the RICS Whole Life Carbon Assessment for the Built Environment.[4]

Construction

A1 Raw materials supply
Location and traceability of raw materials

A2 Transport raw materials
Reducing emissions from the transport of raw materials

A3 Manufacturing
Efficient manufacturing and fabrication of components

A4 Transport
Reducing emissions during transport of components

A5 Site works
Increasing efficiency of building site operations

Occupation

B1 In use
Reducing emissions generated during use

B2 Maintenance
Planning and optimising building maintenance

B3 Repair
Developing a whole lifecycle plan for repairs

B4 Replacement
Reducing emissions when replacing components

B5 Refurbishment
Environmental impact assessment of refurbishment

B6 Energy use
Increasing renewable supply, reducing energy demand

B7 Water use
Building and site water management plan to reduce the impact of all water use (pre and post construction)

End of life

C1 Deconstruction
Planning to recover materials and building elements

C2 Transport
Reducing emissions incurred during disposal

C3 Waste processing
Modelling material flows and energy recovery

C4 Disposal
Reducing environmental load from disposal of materials

Reuse

D Reuse
Increasing net environmental benefits from reuse, recycling or energy recovery

References

1 Architecture 2030. (2018) Why the building sector? Retrieved from https://architecture2030.org/buildings_problem_why/

2 C40 Cities. (2020) Why cities? Retrieved from https://www.c40.org/why_cities

3 Global Alliance for Buildings and Construction. (2017) The Global Status Report. Retrieved from https://www.worldgbc.org/sites/default/files/UNEP%20188_GABC_en%20%28web%29.pdf

4 RICS. (2017) Whole life carbon assessment for the built environment. Retrieved from https://www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf

Images

Banner image by Jeffrey Blum on Unsplash. Retrieved from https://unsplash.com/photos/EoB4yuOJCII

Ryder Architecture Limited
Newcastle
London
Glasgow
Liverpool
Hong Kong
Vancouver
Amsterdam

info@ryderarchitecture.com
www.ryderarchitecture.com

Ryder Alliance
Melbourne
Sydney
Perth
Barcelona
Durban
Johannesburg
Cape Town
Bangkok
Shanghai
Seoul
Tokyo

www.ryderalliance.com