

Implications of megatrends in the built environment

Climate action

Buildings are responsible for
39% of global carbon
emissions

Energy demand will increase by
50% by 2050

Resource efficiency

Buildings are responsible for
50% of global material use
42.4bn tonnes of
materials consumed annually

Health and wellbeing

91% of people live where air
pollution levels exceed
World Health Organization limits

People are **40%** more likely to
have asthma due to living in
a home with damp or mould

How will this change into the future?

By **2060**, global population is projected to will increase 27% to **9.8bn**
and global floor area will increase by **100%**

**We are becoming more collaborative
and flexible in response to climate
change**

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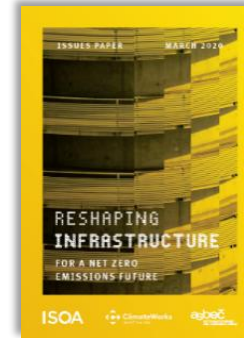
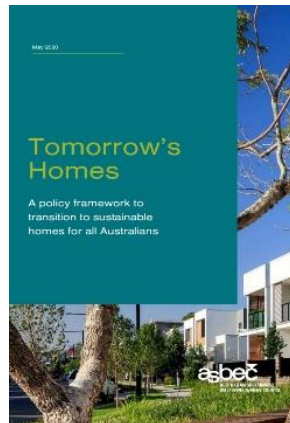
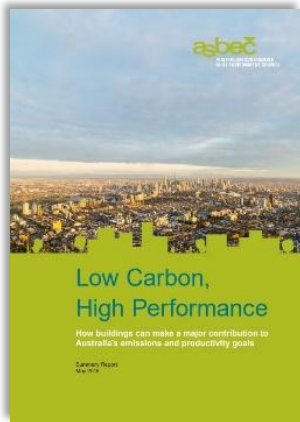
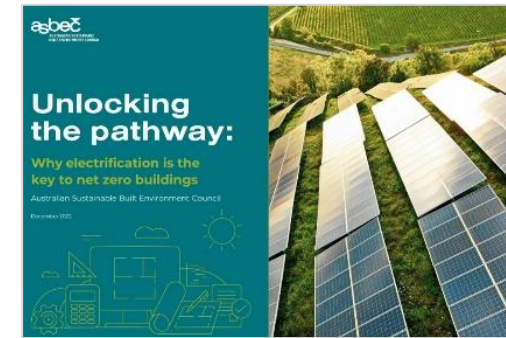
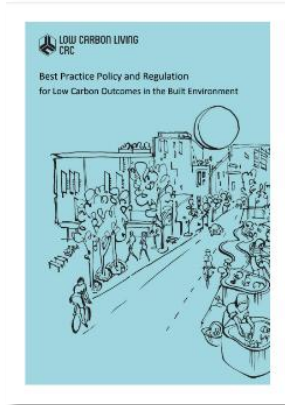
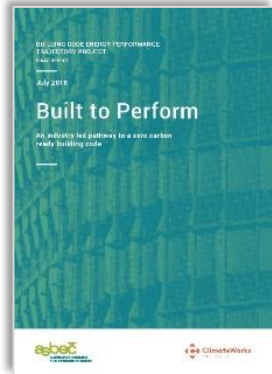
AUSTRALIAN SUSTAINABLE BUILT ENVIRONMENT COUNCIL



A collection of logos for various Australian industry associations and organizations, including:

- ACRS
- Australasian Railway Association
- Australian Constructors Association
- AGWA
- Australian Glass & Window Association
- Australian Institute of Architects
- Australian Institute of Landscape Architects
- AIRAH
- Concrete Institute of Australia
- Australian Passive House Association
- Steel Stewardship Forum Responsible Steel
- BDAA Building Designers Association of Australia
- CIOB Australasia
- CIBSE
- Consult Australia
- Design Matters National
- Energy Efficiency Council
- Engineers Australia
- FMA
- GECA
- Green Building Council Australia
- Infrastructure Partnerships Australia
- Infrastructure Sustainability Council
- ICANZ The Right Insulation Matters
- Insulation Australasia
- prefabAUS
- Living Future Institute Australia
- Master Builders Australia
- PIA Planning Institute Australia
- renew.
- Property Council of Australia
- Rainwater Harvesting Australia
- Roads Australia
- Window Shading Association of Australia
- Vinyl Council Australia
- RICS
- Standards Australia
- REIA
- WWF

Preparing the built environment for a sustainable future is a shared responsibility



Unlocking the pathway:

**Why electrification is the
key to net zero buildings**

Australian Sustainable Built Environment Council

December 2022





EVERY BUILDING COUNTS

2023 EDITION

**Innovating for a greener, healthier,
and more equitable built environment**

FOR THE FEDERAL GOVERNMENT

ZERO-CARBON-READY BUILDINGS

Zero-carbon-ready buildings are buildings that can operate in a low emissions economy.

The International Energy Agency defines them as:

“A ZERO-CARBON-READY BUILDING IS HIGHLY ENERGY-EFFICIENT AND EITHER USES RENEWABLE ENERGY DIRECTLY, OR USES AN ENERGY SUPPLY (E.G. ELECTRICITY OR DISTRICT HEATING) THAT WILL BE FULLY DECARBONISED BY 2050.”

Together with a decarbonised grid, zero-carbon-ready buildings deliver the end goal of a decarbonised built environment and feature a number of characteristics:

- High efficiency, high performance
- Fossil fuel free and fully electric
- Powered by renewable electricity
- Grid responsive
- Offset with nature
- Low embodied carbon

REDUCE



Built with lower upfront emissions

Built using materials with significantly lower embodied carbon. Emissions are reduced during construction.



Highly efficient

All buildings and infrastructure are energy efficient. Reduces stresses in the grid.



Walkable and livable

Transport emissions are reduced by good urban design, promotion of active transport, and low carbon options.



Grid responsive

Buildings that interact with the grid, including demand response and allowance for electric vehicles.

ELIMINATE



Fossil fuel-free

Buildings do not use fossil fuels for heating, hot water, cooking and onsite energy generation.



Powered by renewables

All energy used in buildings comes from 100% onsite or offsite renewable sources.

COMPENSATE



Offset with nature

The balance of emissions are compensated or neutralised through investments in high-integrity, nature-based carbon offsets.

MARCH 2025

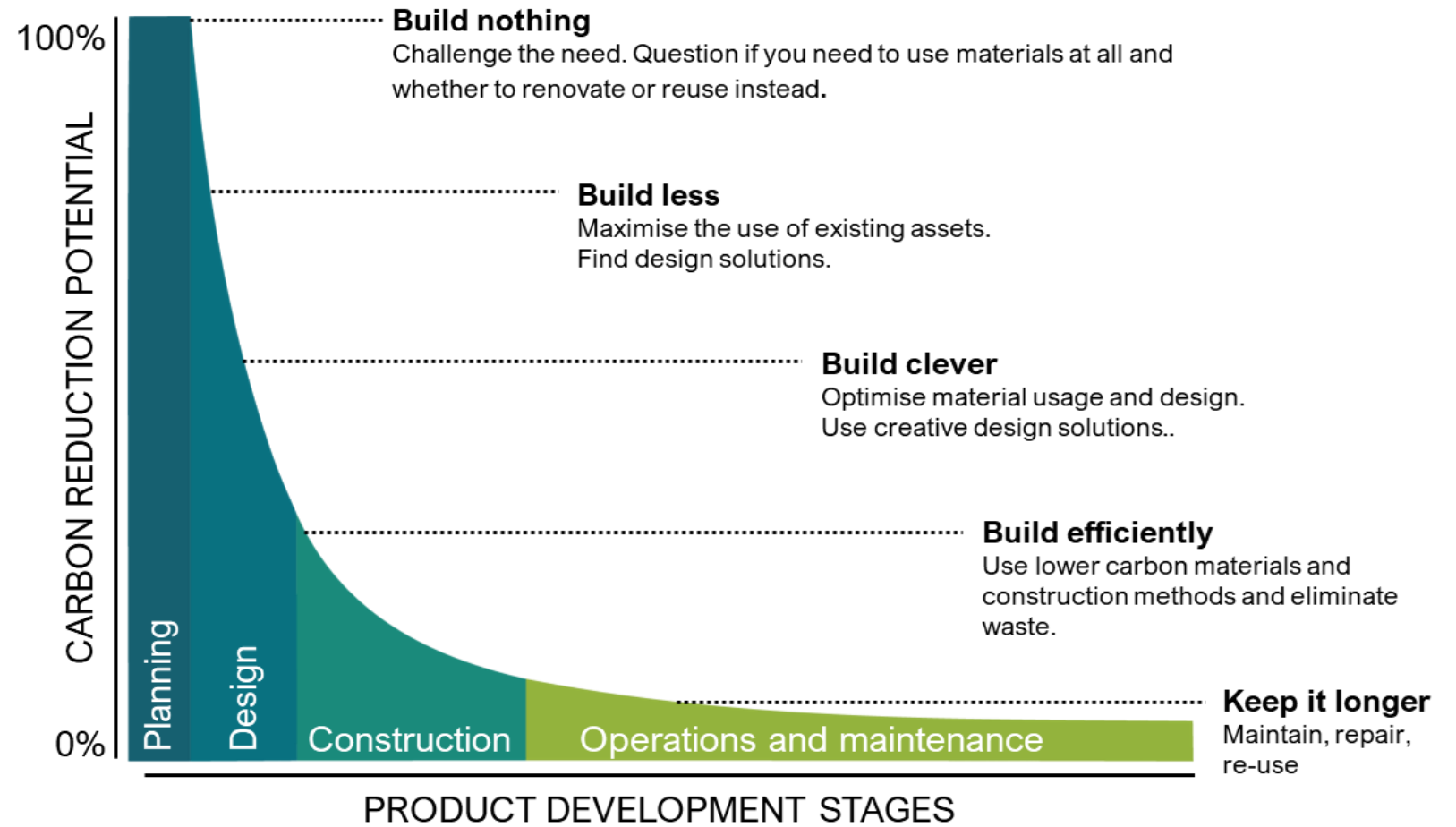
OUR UPFRONT OPPORTUNITY:

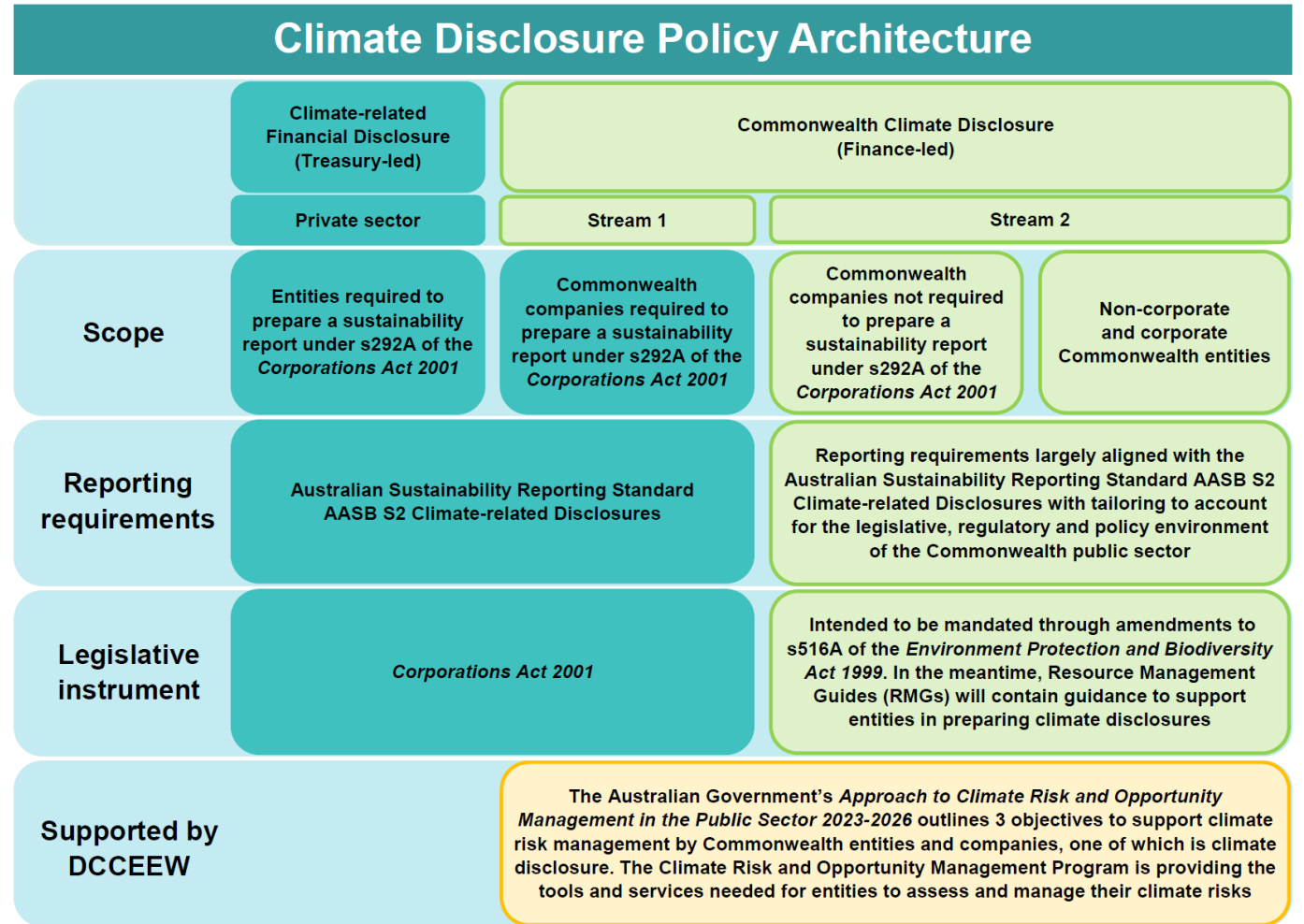
Australia's policy roadmap to reduce
upfront embodied carbon in the built
environment



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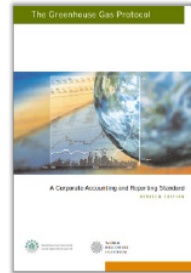
The decarbonisation hierarchy can help us make better decisions







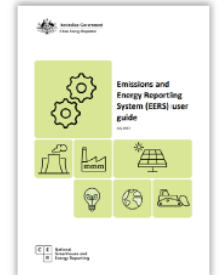
Achieving net zero in infrastructure requires a shared understanding of what net zero means and the infrastructure sector's role in managing and reducing carbon emissions.



Greenhouse Gas (GHG) Protocol



PAS 2080



NGERS

The GHG Protocol standards¹ and PAS 2080² complement each other, providing tools to manage infrastructure related carbon. The GHG Protocol helps organisations to understand their specific sphere of control, while PAS 2080 helps manage emissions related to a whole asset, network or sector (system).

	Organisational based frameworks e.g. GHG Protocol	Building and infrastructure specific frameworks, e.g. PAS 2080
Outcome	Carbon emissions inventory for reporting. Clear delineation between organisation/entity control and responsibility.	A strategy to design, build, and operate low-carbon infrastructure.
Key users	Organisations or entities needing GHG accounting for compliance, reporting, or sustainability goals.	Asset owners, engineers, designers, contractors, and suppliers aiming to reduce carbon footprints in projects.
Purpose	Provides a standardised framework for measuring and reporting greenhouse gas (GHG) emissions.	Focuses on actively reducing whole life carbon in infrastructure projects. More appropriate for funding investment decisions and policy making decisions at the economy level.
Application	Used for carbon accounting and disclosure in infrastructure organisations/entities (e.g., reporting corporate emissions from projects).	Used for carbon management and reduction in the design, procurement, and delivery of infrastructure. Also used for investment appraisals, government policy, sector wide decarbonisation strategies
Scope	Corporate, product, and value chain (Scope 1, 2, and optionally 3) emissions across all sectors.	Buildings and infrastructure specific – covering planning, design, construction, and operation.
Methodology	Defines accounting rules for direct (Scope 1), indirect (Scope 2), and value chain (Scope 3) emissions.	Promotes a systems-based approach to reduce emissions across the project lifecycle and with consideration of the project's impact on emissions at the network and system level.