

Capability Statement

Post-Carbon Research Centre

Transforming
infrastructure
and the built
environment





Overview

The Post-Carbon Research Centre tackles the complex challenges of decarbonising infrastructures and the built environment to transition to a sustainable, equitable and resilient future.

The Centre offers multi-disciplinary research capabilities across the built environment and infrastructure sectors, combining expertise from Design, Planning, Architecture, Engineering, Construction, Computer and Geospatial Science, and the Social Sciences. We co-produce research with industry and societal stakeholders to imagine, design, deliver and manage built environments free of intensive carbon emissions preparing for the post-fossil fuel era. Through design-led collaborations, we anticipate, explore and develop post-carbon solutions in housing, buildings, precincts, and infrastructure and systems. This includes:

- exploring system-wide enablers and constraints in scaling up low-carbon outcomes
- identifying sustainable design approaches and state of the art construction methods for the building industry
- developing industry tools and solutions for minimising carbon emissions
- co-designing sustainable and equitable solutions in housing design, construction and supply
- training the next generation workforce for making our built environment more resilient

The Centre's work is organised around three research themes: transition, design and production.



We proactively co-create projects that further and progress the UN Sustainable Development Goals.





Our Research

Vision

That the Post-Carbon Research Centre is internationally recognised for its industry-applied research to eliminate carbon emissions in the built environment and address sustainable building challenges, catalysing an international research network including partners in Europe and the Asia-Pacific Region to pioneer novel approaches to regenerative built environments.

Research Clusters

Our research is organised within four clusters cross-cutting the Centre's key research themes, providing a collaborative research environment to support cross-disciplinary research. The clusters are interdependent and listed below:

Housing

Key Research Areas:

- Housing policy and market
- Housing quality, performance and health
- Social and affordable housing
- Home retrofitting
- Climate resilient housing
- Construction automation: Prefab, modular and robotics

Precincts

Key Research Areas:

- Placemaking and community experience
- Sustainable urban planning
- Adaptive reuse
- Sustainable mobility
- Urban greenery, air quality, and microclimate

Buildings

Key Research Areas:

- BIM/digital twins
- Fire and facade technologies
- Augmented reality/virtual reality/artificial intelligence
- Indoor environmental quality
- Smart sensor technologies
- Biophilic design
- Energy-efficient lighting, heating, ventilation, and air-conditioning

Infrastructure and Systems

Key Research Areas:

- Intelligent monitoring and maintenance of civil infrastructure
- Smart grids
- Digital twins and big data analytics
- Net zero infrastructure
- Sustainable water and waste systems
- Roads, railways and bridges
- Renewable energy: Solar, wind, hydrogen, biofuels



Industry

Partnerships

The Post-Carbon Research Centre is located at RMIT University's city campus and has strong partnerships with industry, government, and advocacy groups as well as international research networks. We work with a diverse range of partners and collaborators in many different sectors in the built environment to create outcomes that are truly multidisciplinary. These include:

- Sustainability
- Digital technologies
- Design and innovation
- Manufacturing and production
- Governments

Collaborate with us

There are many ways you can collaborate or get involved with us at the Post-Carbon Research Centre. These include:

- Collaborative projects
- Industry partnerships
- Consultation services
- Research engagements and dissemination
- Industry PhD programs

Contact Us

Please get in touch if you'd like to find out more about our research, opportunities to study with our teaching programs or to partner with us.

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