Curtin is recognised nationally and internationally for research that focuses on real-world problems. This is achieved through rigorous academic analysis and publication and through the regular undertaking of applied contract research for government, industry and community groups.

Curtin’s expertise across sustainable and affordable housing is extensive. It encompasses architects, urban, urban planners and designers, sustainability experts, materials scientists, economists and public policy experts. This multidisciplinary body of expertise offers the skills needed to tackle sustainable housing issues from a range of perspectives; individuals or teams utilise an array of research approaches and tools to identify pathways and barriers to achieving change, to turn data analysis into effective policy, and to develop new approaches to planning, design and construction. This is enhanced by the use of sophisticated 3-D spatial modelling and visualisation tools that can integrate different housing data and other considerations and promote greater collaboration between stakeholders.

Curtin’s research history in built environment and design is strong — especially in the discipline of urban and regional planning. The Environment Research for Australia 2012 National Report — which rigorously measured Australia’s research achievements against its peers around the world — ranked Curtin’s research in this area as ‘above world standard’.

Contributing to the University’s built environment and design capabilities are the following research centres and institutes, hosted by Curtin:

- Sustainable Built Environment National Research Centre
- Centre for Materials Research
- Curtin University Sustainability Policy Institute
- John Curtin Institute of Public Policy

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These centres and institutes all contribute research expertise to the sustainable and affordable housing domain. The expertise of individuals or teams can be accessed on a consultancy basis to provide advice and direction for general planning purposes, or to help direct particular housing projects.

Research services
We are interested in collaborating with other researchers interested in sustainable and affordable housing, and in undertaking research commissioned by government, industry and community groups.

Consultancy services
The expertise of individuals or teams can be accessed on a consultancy basis to provide advice and direction for general planning purposes, or to help direct particular housing projects.

Advocacy services
We are happy to offer advice on specific developments, reviews, policy development (national, state or local), or on emerging issues.

Training and education services
We are able to draw on both practical experience and academic expertise to offer high quality education and training to different stakeholder groups associated with the housing industry.

Curtin offers a range of services to those interested in exploring and promoting better housing options. The diverse sustainable and affordable housing expertise within the University can be drawn on to provide the following:

- Sustainable Built Environment National Research Centre
- Centre for Materials Research
- Curtin University Sustainability Policy Institute
- John Curtin Institute of Public Policy

In countries around the world, there is growing awareness of the need for new approaches to the way we design, build and live within our residential spaces. Limited resources, growing populations and climate change are driving the need for houses that are not only more energy efficient, but are also more environmentally friendly in their construction and more adaptable to changing population densities and demographics. At the same time, they need to be affordable to build and to maintain.

Balancing these environmental, social and economic needs is a complex task for the many stakeholders involved.

A collaborative research effort in sustainable and affordable housing – facilitated by Curtin University’s Australian Sustainable Development Institute – aims to engage in knowledge-sharing to deliver outcomes of significant value to communities locally, nationally and globally. This collaboration draws together a wide range of housing-related expertise from across the University to help government, industry, community groups and other researchers address the many challenges and opportunities presented by our changing housing needs.

Curtin is also a participant in the Australian Housing and Urban Research Institute.

For research that focuses on real-world problems.

Curtin University
Limited resources, growing populations and climate change are driving the need for houses that are not only more energy efficient, but are also more environmentally friendly in their construction and more adaptable to changing population densities and demographics.

**Policy and Planning**

- **Good** – and comprehensive – information is needed to plan effectively for the housing needs of growing and diverse populations, especially within the context of depleting or fragile natural resources. Curtin has significant experience in understanding social and cultural analyses to better inform policy-making and has access to a range of sophisticated planning tools that give physical shape to critical decision-making data.

**Housing Design and Construction**

- There are many aspects to designing and building houses that will meet long-term environmental, social and economic needs. These include reimagining the amount and type of building materials used, designing for energy efficiency in understanding social and cultural analyses to better inform policy-making and has access to a range of sophisticated planning tools that give physical shape to critical decision-making data.

**Alternative Materials**

- With ordinary cements demanding vast supplies of raw materials and emitting almost one tonne of CO₂ for every tonne used, Curtin’s materials scientists are working on greener building products such as geopolymer – an alternative, strong performing concrete binder that is made from industry residue, such as fly ash from coal-fired power stations, and which has a much lower CO₂ footprint than cement. With prototypes developed demonstrating that the material is durable and has excellent insulating properties, this research is attracting international interest and is now ready for commercial application.

**Research Strengths**

- **Notable areas of research include:**
  - the relationship between housing stress and household wellbeing.
  - links between labour markets and housing.
  - drivers of housing supply and demand in rural and regional centres.
  - analysis of housing affordability.
  - the effects of demographic change on demand for and use of houses.

**School of Economics and Finance**

- Researchers within the school possess considerable expertise in statistical data analysis and modelling, including longitudinal and time series modelling, and have conducted research both locally and internationally for governments and not-for-profits. They are interested in ensuring that housing design responds effectively to the diverse needs and behaviours of the people who occupy them – through understanding different cultural and social expectations of living spaces, and the needs that arise from shifting demographics. How will Australia’s suburbs, for example, respond to a scalable baby boomer generation that wants to retain its independence as it ages? And how can our public housing accommodate the needs of different users and different ethnic groups?

**Design and Housing**

- This is further assisted by geographic information system tools that overlay critical data, such as demographics, location of amenities and economic activity, land values, and accessibility of transport and other infrastructure, to identify optimum locations and provide 3-D visualisation of how development will affect the existing urban profile. As well as bringing a much stronger science and technology base to planning, these visualisation tools enable greater collaboration between stakeholders – such as governments, developers and community groups – at critical decision-making stages.

**Contributing Areas**

- Curtin University Sustainability Policy Institute
- Centre for Materials Research
- School of Economics and Finance
- Curtin University Sustainability Policy Institute
- Centre for Materials Research
- School of Built Environment
- Curtin University Sustainability Policy Institute
- Centre for Materials Research
- School of Built Environment

**Progressing The Sustainability Agenda**

- There is strong recognition at Curtin about the areas that contribute to sustainable and affordable housing that smarter and more sustainable housing options need to be understood and embraced by a wide range of stakeholders before any significant level of change can occur.

**Contribution Areas**

- Curtin University Sustainability Policy Institute
- John Curtin Institute of Public Policy
- School of Built Environment

**Benefits of sustainable design**

- How can planners, designers, builders, developers, the real estate industry and public all live in a large, vibrant and green homes that are strong performers in terms of energy efficiency?
- How can we use the right tools at the right time to get the right results?
- How can we ensure that energy efficient design is both energy efficient and energy efficient design, and doesn’t just become ‘windshield dressing’?

**Members of the group are already working to:**

- use available technologies (for example, simulation and visualisation tools) to promote more informed discussion between different stakeholders, such as urban planners, developers and community groups.
- involve the community more in the design process through scenario-based round tables and ‘enquiry by design’ workshops.
- facilitate better communication with the property industry about the benefits of green building design and environmental sustainability.
- identify how occupant behaviour can limit or maximise the effectiveness of environmental design.

- Researchers at the Curtin University Sustainability Policy Institute have worked directly with the property industry to help communicate the benefits of environmentally sustainable design and development to consumers. The active public affairs program of the John Curtin Institute of Public Policy also provides opportunities to promote public discussion and debate on the way forward.

**Contributing Areas**

- Curtin University Sustainability Policy Institute
- John Curtin Institute of Public Policy
- School of Built Environment