

Pathways to more sustainable apartments, both old and new

Based on AHURI Final Report No. 400: Delivering sustainable apartment housing: new build and retrofit



What this research is about

This research investigates how Australia can supply more new sustainable apartments, as well as retrofit older apartments so that they are more sustainable too. It defines a ‘sustainable’ apartment as one that is comfortable; costs householders less to live in and maintain while minimising consumption and waste; and that maximises energy efficiencies and energy management. It considers sustainability during the construction phase, as well as throughout the apartments’ lifecycle (including through the adoption of renewable energy technologies). In this study, apartments are defined as dwellings located in buildings with two or more floors and featuring horizontal sub-division of cubic airspace.

The context of this research

To identify how a mainstream supply of sustainable apartments can be achieved, it is necessary to understand how and why the apartment industry resists change.

The key findings

There is demand from residents for more sustainable apartments, but speculative strata titled development means that what gets built is not necessarily what consumers want.

Sustainability is rarely embedded in project feasibility. Changes are often made during construction to reduce costs, and performance is not adequately reflected in property valuation.

Shared services and the inter-dependence of apartment properties offer opportunities for improved sustainability. However, these opportunities are often missed due to the focus on profit maximisation during development and the challenges of shared management.

Current market for sustainable apartments is a niche product

The supply of new sustainable apartments in Australia has been described as a niche market largely geared towards luxury product. Sustainable new developments are offered at a price premium, excluding lower and mid-market buyers and renters. There is evidence that upgrades to existing apartment properties are concentrated in more expensive property markets, with widespread adoption impeded by the complexities of strata governance.

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Few sustainable buildings in Sydney and Melbourne

Analysis of apartment development and upgrades in metropolitan and regional areas of NSW and Victoria indicates that less than 5 per cent of building projects exceed minimum standards for sustainability. Sustainable developments that exceed minimum standards are primarily concentrated in higher value areas.

The analysis identified 85 sustainable new build and 11 sustainable major upgrade projects in Greater Sydney, and 186 sustainable new build and three sustainable major upgrade projects in Greater Melbourne. Notably, there were no sustainable new or major upgrade developments identified in the regional areas of Geelong or Illawarra.

Problems with speculative development and sustainability

The dominant speculative development sector, widely known as 'Build-to-Sell' (BTS), presents multiple challenges to the mainstreaming of sustainable apartment development. One challenge is the perception of apartments as investment commodities rather than as homes. BTS buildings are most often designed and built to only meet minimum standards. Where developments exceed minimum standards, they tend to do so as a means of differentiation at the high-end of the market.

Another is the separation of stakeholders between the development and use phases of the building lifecycle. Design and construction decisions impacting sustainability are made by the speculative developer whose priorities for short-term project success differ from those of long-term residents. Previous research has found very few industry stakeholders identify climate change risk as relevant to property development and, consequently, perceive sustainability features as value-add items rather than essential attributes of apartment buildings.

The reliance of the BTS model on investor demand means speculative development is especially vulnerable to economic cycles, and this works against innovation. BTS developers were seen as driven by the need to build and sell as quickly as possible, rejecting 'anything that gets in the way of making it more expensive'.

BTS investors and landlords also seek to reduce their capital costs as much as possible. They are typically not interested in higher performing appliances and materials if they cost more, and they receive no financial benefit from the additional performance. This split incentive results in tenants paying for the financial cost of poorer performing infrastructure.

Developers often settle for minimum standards rather than pursuing best practice sustainable design

One consultant noted 'Developers are in the business of selling apartments, not managing energy supplies.' While design codes such as SEPP65 have a generally positive impact on design outcomes, they nonetheless allow a focus on minimum standard compliance and fail to incentivise innovations that might produce more sustainable apartments. Several architects reported that where local councils enforced higher standards, this eliminated the architects' need to 'convince' their clients to pursue sustainable design.

Securing sustainable design outcomes is strongly contingent on a client's 'will and passion'. In government projects, state actors were cited as important potential innovators, with the potential to push for better design outcomes.

Community housing providers are a key driver for sustainable apartments

There is considerable uptake of sustainability by community housing providers (CHPs) who can access green funders and the National Housing Finance and Investment Corporation (NHFIC). Much of this appears to be driven by conviction, however CHPs also want to reduce their tenants' living costs, which may necessitate greater capital investment and foregoing return on that investment. The entry of financiers interested in impact and seeking low-risk, long-term investment provides encouragement to CHPs. CHPs are increasingly accruing long term debt, resulting in their lenders having long-term exposure to the assets, and driving improved asset management practices.

Build-to-Rent (BTR) may improve sustainability

The BTR model presents opportunities to i) embed sustainability in project feasibility, budgeting and briefing; and ii) to create an integrated design process where developers have stronger financial imperatives to ensure operational efficiencies and end-user experiences. BTR additionally benefits from access to 'green' capital, such as through NHFIC funding. BTR building ownership may further alleviate challenges associated with collective management in individually owned strata apartments.

A planning consultant suggested BTR could become a driver for sustainable apartments across all development models as it could provide the scale of development to 'push' the whole apartment sector forward.

Sustainability opportunities exist at individual apartment and whole of building scales

The energy efficiency of an apartment property should be considered at two scales: the individual apartment and the building. Services and systems are initially installed to the specifications set by the development team, and as with all building components, profit and cost inform decision-making.

Apartment properties are inter-dependent, such that the structural integrity, safety, energy efficiency, sustainability and other attributes of an apartment are influenced by adjacent apartments, communal spaces and shared services. This inter-dependency has implications for their design and construction, maintenance and retrofitting.

The inter-dependent nature of apartments also provides opportunity for the uptake of innovative, sustainable materials due to economies of scale. Replacing the dominant resource intensive materials used for apartment construction (steel and concrete) with an economically sound, low embodied energy material such as Cross Laminated Timber (CLT) demonstrates there are significant opportunities to increase uptake of sustainability and circular economy practices.

Retrofit of shared and centralised facilities for apartment buildings offer opportunities

Many common retrofit practices centre on the shared and centralised systems such as lighting, embedded networks, gas networks, solar infrastructure, water metering and EV charging stations. One retrofit consultant said the biggest opportunities for effective upgrades was to shared mechanical services, including cooling towers, car park fans, pool heating, lobby and common area air-conditioning systems.

Strata title ownership creates challenges for building retrofits

To improve their environmental sustainability, owners of apartments in strata titled buildings have to contend with challenges such as lack of knowledge about their building and utility costs; the need to make decisions collectively about how to proceed with works affecting common property; the practicalities of rolling out a plan for retrofitting in a building with multiple ownership; and differential access to government schemes and subsidies.

Research informants discussed a range of challenges associated with collective ownership and management in strata properties when it comes to undertaking retrofit projects. The first is that many strata committees only prioritise immediate issues (such as repairs and maintenance) and do not have the capacity to allocate time to forward planning, including planning for sustainability retrofits.

Because of the work involved, some informants stated that successful sustainable retrofits projects in strata buildings need to be driven either by an individual owner champion or a sustainability sub-committee made up of interested owners. Important drivers for owners beyond sustainability included reduced utilities bills, improved indoor comfort, improved property values and building reputation.

Grants for retrofits were considered important because they can help overcome some of the financial costs of retrofitting, change perceptions about the value of sustainability and are a key tool in educating 'on long-term costs of unsustainable buildings'. The Smart Green Apartments (SGA) program run by the City of Sydney was identified by multiple informants as an example of a successful grant and education program.

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What this research means for policy makers

Six key changes are needed to improve apartment sustainability

The research identified six key shifts that are needed in how the design, construction and adaptation of apartments occurs to produce more sustainable apartments:

- development teams need to embed sustainability priorities in project feasibility
- the construction of delivered apartment buildings needs to reflect what was designed and approved
- property valuation needs to reflect building performance
- the potential benefits of physical inter-dependence and shared services need to be better realised
- consumers need better access to adequate information about building performance
- sustainability initiatives need to take into account that the common areas of buildings are owned jointly by different apartment owners who will need to work together to make decisions about those common areas.

Government input should drive apartment sustainability

There is a need for whole-of-government mandates that are proactively translated into meaningful evaluation metrics, with resources to enable performance and ensure adequate monitoring of outcomes. Failure to implement sustainability approaches consistently across government sends the message that sustainability is not a core value, which makes it more difficult for the government to expect sustainable practices from industry.

Planning incentives and regulations can play a role in improving sustainability

Planning incentives could encourage more sustainable development, while some research informants supported financial incentives such as tax breaks for projects that could demonstrate high performance.

Informants noted the need to better ensure that what was designed and mandated was ultimately what got built, possibly with independent oversight of construction work.

Deliberative Development gives residents participation in development

Non-speculative and non-profit apartment projects provide housing at a cost to the owners and can realise significant savings in comparison to market prices. Deliberative Development enables residents to become key actors in the development of their own homes with the assistance of specialist industry professionals. Member households building together are the developer, the owners, and the future residents, eliminating split incentives and freeing the group to stretch sustainability targets as far as they desire within their budget constraints.

There is a role for government guarantees to increase the participation in Deliberative Development apartment projects to provide both quality housing and promote sustainability. Provision of a guarantee equivalent to that for the construction of low-density dwellings would attract financiers and participants. In time growth would mean there is a viable alternative to current BTS practices.

Consumer information and public awareness may reduce barriers

Lack of information, knowledge and understanding is a barrier to transitioning to sustainable apartments. Consumers need to be educated on the full range of through-life benefits that buying green delivers, such as lower running costs and a more comfortable and healthier home.

Simply promoting developments as 'sustainable' was viewed as too amorphous (and risky, if cynical consumers assume this is greenwashing). Instead, a focus on the comfort improvements and long-term cost savings of sustainable building approaches is more likely to succeed.

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Methodology

This research reviewed existing academic literature, policy and practice materials about sustainable apartment construction and retrofit in Australia; analysed property databases to identify key actors in apartment production and retrofits; and conducted interviews and workshops with professionals working in apartment development or retrofit in Victoria and New South Wales.

To cite the AHURI research, please refer to:

Easthope, H., Palmer, J., Sharam, A., Nethercote, M., Pignatta, G. and Crommelin, L. (2023) *Delivering sustainable apartment housing: new build and retrofit*, AHURI Final Report No. 400, Australian Housing and Urban Research Institute Limited, Melbourne.

Available from the AHURI website at ahuri.edu.au/research/final-reports/400