

Building Green, Living Green: Assessing the Economic Viability of Sustainable Housing Initiatives in Australian Cities

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Abstract

Addressing the current climate crisis has been an important concern for many countries, and the housing industry has made a significant contribution to global carbon emissions, introducing sustainable housing has the potential of reducing these problems. Urban economic sustainability can be understood as an approach through which benefits lower housing costs can be achieved. The present study has closely observed two of Australia's sustainable housing initiatives and how they can be successful in improving the biodiversity of the region. The country has been seen to struggle with making sustainable options affordable for the people as green technology is generally more expensive. Sustainable houses have been considered to be economically viable because they have introduced many passive energy designs such as solar and wind designs. While the cost of these green initiatives continues to remain high, the study has shown the potential it holds and the need for government support to make these projects more successful.

Keywords: *Climate crisis, sustainable housing, green initiative, urban renewal initiative, economic viability.*

1. Introduction

In the modern era, people have become more environmentally conscious, the present study has shown how the construction and housing industry in Australia has stepped up by the adoption of sustainable practices. As the emphasis on reducing carbon emissions among the different industries becomes more prominent, energy efficiency in the housing industry has started getting more attention. The study has discussed the potential that natural lighting, ventilation and energy-efficient products in the house can be beneficial in the long run. The use of solar and wind panels can significantly reduce the operational costs of these houses and increase the sustainability aspect. The sustainable construction projects in Australia also make use of reusable materials thereby reducing the carbon production during the development stage of the buildings. The present research has shared that since the housing industry has increased its carbon footprint by almost 30%, sustainable changes need to take place within this industry. Tube studies have shown that people generally want sustainable housing but the high pricing of making houses sustainable and the lack of knowledge regarding the issue prevents many people from readily adopting these aspects.

2. Sustainable Housing Development in Australia

Studies show that prioritising the energy efficiency of buildings has been the priority of the Australian government for many years, back in 2019 the energy ministers from the government committed to a "Trajectory for Low Energy Buildings", a national plan that would encourage construction workers to build houses that require zero energy during the developmental stage. The country supports this new wave of change and estimates to invest over half a billion dollars in the construction industry and increase its overall efficiency. The energy efficient buildings are also meant to create over 7000 new jobs and save Australians millions of dollars on their energy bills (Sustainability Victoria, 2019). It has been seen that the primary focus of these new houses has been to reduce the greenhouse emissions of the houses, at present the housing industry is responsible for around 13% of the country's greenhouse gas emissions, which needs to be reduced as the population of the country continues to increase.

Another research carried out on the construction industry of Australia has shown that since housing accounts for almost 80% of the cost, sustainable construction needs to be realised. Overall it can be seen that people generally have a preference for sustainable housing when they are explained the benefits which sustainable housing provides. It is however important for the stakeholders to evaluate the moral obligations which they have towards society and the challenges which sustainability can bring to their businesses. The research carried out by Heffernan et al. (2021) has shown that the efforts which the construction industry in Australia has taken so far have focused on reducing the carbon footprint of the new houses that are being constructed. However, as the study points out the new housing that is being built only accounts for a small percentage and the majority of housing stocks pre-date from 2003, before the energy efficiency legislation was introduced. Other than the environmental issues, the tenants that are living in these houses

usually belong to low-income houses and are therefore vulnerable to climate change. With the increase in housing, the price of electricity has also increased. The research therefore highlights the importance of energy-efficient houses and their ability to reduce negative impacts on the occupants.

In the research conducted by Abidoeye et al. (2023), the researcher suggested the potential of rental housing as a way to provide people with flexible housing. The housing crisis in Australia has been a major issue, to cater to the growing needs of the younger generations rental housing can provide affordable options. The research by Moghayedi et al. (2021) states as the demand for housing rises, the built environment of the houses has become one of the important sectors. Making urban spaces more sustainable will help in improving energy independence and resilience aspects while also addressing the issue of the affordability of the houses. The study finds problems with land and market-related barriers, lack of incentives and other forms of problems which prevent the successful implementation of sustainable housing. The housing industry can become more sustainable through the adoption of green roofs and improving indoor thermal comfort so that people would not use air conditioners as often, which will result in a 12% saving in cooling energy.

With a growing emphasis on green practices, construction agencies in Australia have started using different energy-efficient materials and renewable energy sources to raise housing standards and make them more competent for the changing times. Sustainable architecture has been a central part of the construction sector of the country. The green building standards set out by the government help people understand the range of sustainable options to increase their efficiency (Constructive Voices, 2023). The use of solar panels and wind turbines further contributes to the sustainability movement and lowers the greenhouse gas emissions in these new residential areas. The Design for manufacture and assembly (DfMA) in Australia plays a major role in making the construction process more sustainable in the country. Langston & Zhang (2021) have shared how the DfMA prioritizes lean construction in the country which minimises the quantity of construction waste, while simultaneously also reducing the cost of rework during the construction process. Adopting these aspects can help with increasing the efficiency of the construction groups.

3. Affordable Green Housing through Urban Renewal Projects in Australia

While introducing sustainable housing to the market, the government needs to make sure that they are affordable, MacAskill et al. (2021) state that the investment towards green building has emerged as part of a larger social movement with a focus on economic sustainability. While the concept of green housing is used interchangeably with sustainable building, it generally refers to a building which has high performance and has the potential to reduce environmental impacts. The Green Square project developed in the city of Sydney is one of the largest redesigning projects in the country, to provide affordable green housing to the people. The project has an estimated \$13 billion for the renewal, across the 3.5-kilometre business district of the city (Morris, 2021). This project in particular puts into perspective how sustainable housing practices can be introduced to society through green roofs, rainwater harvesting and solar panels to make the buildings more efficient and reduce the reliance on external energy sources problemsen focus on social sustainability has been done in order to have a positive impact on the people and the communities. The relationship which exists between the residents and social sustainability has been a new emerging concept which has received more attention in recent times, the increased focus is known to decrease social segregation and inequality among the people (Easthope & McNamara, 2013). However, the study also notes that a poor understanding of the different concepts can hinder policy development and the implementation of these things in society. The success of the Green Square project can be credited to the passive design of the housing facility, as it utilizes all-natural elements such as sunlight, wind and shading to increase the efficiency of the houses. The passive design strategies are highly efficient in reducing greenhouse gas emissions and reducing the overall carbon levels. The Green Building Council of Australia (GBCA) is another official body in the country which observes passive design-making and sustainable housing (Hyper Space, 2023). The Green Star rating system studies the design strategies implemented by the organisation and enhances the comfort level of the people living in the buildings. The use of green roofs keeps the building cool while providing other environmental, social and economic benefits.

Another sustainable residential project in Australia is “The Cape”, the project has been highly innovative because it makes use of waterways and wetlands. The project is also sustainable because it includes multiple wild species of Australia such as kangaroos, koalas, echidnas, wombats and different species of wild birds. The establishment stands as a litmus test for the environmental standards that construction agencies need to put in place to combat the existing climate crisis (The Guardian, 2023). For other construction agencies in Australia that are aspiring to improve their business, The

Cape stands as an example for creating comfortable housing complexes, that and environment friendly. The approaches that have been implemented in The Cape, show the opportunity which Australian houses have and the way they can improve their performance by eliminating fossil fuel usage. The success of urban renewable projects is essentially due to the use of renewable energy sources such as natural lighting and ventilation. The effective use of recycling and reusing of materials within the buildings also makes the buildings more sustainable.

In the research carried out by Newton, Meyer & Glackin (2017) the researcher has mentioned that achieving sustainable urban development in Australia is not possible under the current strategic planning. More radical approaches are needed to make the practices more sustainable, despite ranking high among other cities that are livable in the world, Australia continues to have their problem with sustainability. The present research has discussed some of the urban development models in Australia that are already in practice, poor land use and planning need to be regulated to increase the growth aspect and make business practices more efficient and socially equitable. The study has recognized that it will be hard for liberal democratic cities to have sustainable changes in their housing practices, planning regenerative retrofits therefore provides the opportunity to shrink the urban and ecological footprints.

4. Barriers and Opportunities for Sustainable Housing Initiatives in Australia

The sustainable housing initiative in Australia has faced many barriers in recent years, some of the common barriers include problems with affordability, accessibility and other forms of qualitative issues. The governance issue is perhaps the most important, without proper legal frameworks, sustainable housing initiatives cannot be brought to life, the private investors are not likely to make their practices environment friendly without there being proper rules and regulations set in place. Poor governance within the country can also fail in many other aspects and thus is one of the most important barriers which has been affecting green and sustainable initiatives in Australia. Public awareness has also been ranked as equally important for encouraging people to adopt green housing practices (Oyebanji, Akintoye & Liyanage, 2013). Funding is also an integral part of the success of such an initiative, even with having government support, the construction agencies also require proper investments within the sector to deliver the projects on time.

Along with these existing barriers, studies have suggested that many of the construction agencies do not always possess the right skillsets which are needed for social housing practices. Poor workmanship and maintenance can lead to recyclable problems. Access to technology is also not uniform across multiple platforms. Urban areas are likely to use high levels of energy, therefore reducing carbon emissions is a top priority, the use of alternative energy sources needs to be practised to make the projects more sustainable in the long run. Many parts of the country do not possess proper public monitoring institutions which analyse the frameworks and performance indicators (Oyebanji, Akintoye & Liyanage, 2013). Without proper incentives, private developers are unlikely to be influenced by sustainable practices within the organisations, having green strategies is essential for increasing their morals and involvement with the process.

Sustainable housing initiatives have the potential to create more green job opportunities for the people living in the communities through renewable energy and sustainable designs. Sustainable housing leads to the creation of green spaces and roofs which provide new recreation opportunities (Hyper Space, 2023). The increase in green spaces within the communities can potentially improve the air quality and offer habitat for the natural animal species of the region. The rain and storm waters can be stored and reused to reduce the pressure on the waterlines, the increased green spaces also lead to an increase in social and community e engagements, and with rooftop gardening a sense of community and ownership can be practised. Sustainable housing practices can also increase collaboration among the different stakeholders that are involved with the business process. The increase in collaboration can increase the level of innovative solutions and knowledge sharing.

The green housing initiative can also increase community engagement and participation, creating an engaging environment for sustainable housing initiatives and empowering the residents to participate in the projects. As running these green technologies requires skilled employees, skilled labour is required that can open new opportunities for the people. Sustainable housing initiatives are also known to influence the local economies with an increased demand for green products that can attract investments. As it can be seen promoting sustainability through green housing practices can attract more people, create jobs and positively impact the economy. The study has shown how sustainable housing has been gaining popularity in Australia, the people of Australia have been found to have a strong preference for sustainable practices (Statista, 2023). Identifying the benefits that are involved with affordable housing has been considered to be important for improving housing practices and making the economy more curricular in practice.

5. Economic Viability of Sustainable Housing in Australia

Sustainable housing in Australia is economically viable due to the potential it has to create more jobs and technological viability. While there are limitations such as high investment costs, unclear future benefits and lack of incentives, with the use of policies the trust among people for green housing practices can be increased (Yang & Yang, 2015). The stakeholders that are involved with the process generally have different perceptions of sustainable housing, in order to promote sustainability, the economic viability that the practices provide needs to be highlighted. The high amount of carbon emissions from the housing industry has led to industry practitioners delivering housing products for the general market. While the housing industry in Australia has potential, it is still in its developmental stage and requires voluntary support of people. Sustainability is generally seen as a positive concept which allows people to improve their quality of life and negate any negative impacts from industrial growth. Housing sustainability however does not just incorporate the green aspects but also the resource usage and the economic demands of the people.

The Australian government introduced the “National Affordability Housing Arrangement (NAHA) and the National Partnership Agreement” as a response to higher prices of housing within the market. All Australians who have accessible, safe and sustainable housing are likely to contribute to the economy, increasing the financial returns of the different projects while remaining flexible. Many Australian houses are old and do not have sustainable options for energy usage and thus innovation will be an important step towards achieving economic sustainability, as it is not possible to demolish the establishments, the renovation will provide the people with the alternative of having more control over their houses while still making them eco-friendly (Conteh et al. 2020). The economic viability of the project can be achieved through renovation as it will meet the requirements and ensure the viability of the property. Renovation of the buildings will be making them more environmentally viable while reducing the energy and water costs for facilitating. As social expectations continue to change, being more socially aligned will make the housing sector more economical and provide more chances to expand.

Karuppappan & Sivam (2009) share that part of the goal of creating sustainable housing is community building and helping them achieve social justice and economic viability. Sustainability remains one of the main principles for designing. The locations of the projects that are being constructed are important for achieving economic sustainability, while affordable housing is generally considered to be one particular sector, there are multiple factors that countries to the development of the house. Without achieving success in the housing industry as a whole, it is not possible to become sustainable. The ideal housing solutions for families that are low income will have a low initial cost, the operating costs generally benefit from building regulations. Through the use of effective policies, greenhouse gas emissions can be reduced by improving building practices, optimization and sustainability.

6. Conclusion

As concluding remarks for the present research, it can be seen that sustainability has emerged as a way to embrace renewable energy and reduce the emissions of the different industries. The different challenges that Australia faces in implementing sustainable housing practices has been critically highlighted within the research. Overall the study has shown the support of the Australian government towards this initiative, and how sustainable housing can lead to the creation of new jobs and reduce the energy bills of the country. The potential of green roofs has been shown, how they can improve the thermal comfort of people and cool the houses without the use of air conditioners. The Green Square project and The Cape have been studied within the research to show how these housing initiatives have been successful in creating new opportunities and paving the way for other housing industries in Australia to make their practices more sustainable. The opportunities with green housing have been shown within the study and the economic potential it has in making the economy more curricular in practice.

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