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Eco-Conscious Urban Housing: A Resident-Centered Evaluation of Sustainable Condominiums

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Abstract
This study examines resident perceptions of eco-friendly living in a green-certified high-rise, Residensi Novum, Kuala Lumpur. Drawing from 186 survey responses, it highlights enhanced indoor comfort and improved air quality, lighting, and thermal conditions as key benefits. However, residents also reported challenges with the costly and complex maintenance of sustainable technologies. This research addresses a notable gap in post-occupancy evaluations within sustainable residential contexts, offering a behavioral lens into how green features impact user satisfaction. The findings offer evidence-based insights for policymakers and developers seeking to design environmentally responsible and user-responsive housing in urban settings.

Keywords: Green Residential, Post-occupancy Evaluation, Environmental Comfort, Sustainable

DOI:

1.0 Introduction

Construction development is experiencing rapid advancement globally, driven by urbanisation, economic growth, and the need to support community development. The increasing migration of people from rural to urban areas has led to a heightened demand for modern, efficient, and sustainable infrastructure. In fast-developing countries such as China, the construction sector is still largely labor- and capital-intensive, resulting in high resource consumption, pollution, and inefficiency factors that significantly affect the urban environment (Guo & Su, 2013). This situation has sparked a global shift towards more sustainable building practices.

In response to these challenges, the concepts of green construction and green building have gained considerable attention, especially across Asia. Green construction is centred on creating built environments that optimise energy usage, minimise environmental degradation, reduce pollution, and provide healthier spaces for occupants. It integrates principles of sustainability at every stage of a building's life cyclefrom site selection and design to construction, operation, and eventual deconstruction. The aim is to reduce the overall ecological footprint of the built environment.

DOI:

In Malaysia, green building development has become a national priority aligned with sustainable development goals. The establishment of the Green Building Index (GBI) in 2009 marked a significant milestone in the country's commitment to promoting environmentally responsible building practices. The GBI serves as a recognised certification tool that evaluates buildings based on criteria such as energy efficiency, indoor environmental quality, sustainable site planning, water efficiency, and innovation. According to the Malaysian Green Building Council (MGBC), as of 2023 more than 700 buildings in Malaysia have received GBI certification, illustrating a growing awareness and adoption of green design principles in the built environment (MGBC, 2023).

These efforts reflect Malaysia's commitment to reducing the carbon footprint of its urban developments, enhancing environmental quality, and ensuring healthier living spaces for its population. A significant focus within this green transformation has been on the housing sector, which accounts for a substantial portion of energy consumption and greenhouse gas emissions. Green housing developments are being promoted as a key strategy to support sustainable urbanisation and improve residents' well-being. The implementation of green-certified residential projects, such as Residensi Hijauan in Shah Alam and Residensi Novum in Bangsar, demonstrates how sustainable design is being incorporated into high-density living environments.

Government policies, such as the Low Carbon Cities Framework (LCCF) and the National Housing Policy (2018–2025), further reinforce the importance of sustainable housing by encouraging the integration of green features in residential planning and development. These include the use of energy-efficient appliances, rainwater harvesting systems, passive cooling designs, and sustainable construction materials. Moreover, incentives such as tax reliefs and financing schemes for green home upgrades are being introduced to stimulate greater participation from both developers and homeowners.

The growing number of GBI-certified residential buildings is a testament to the rising demand for eco-friendly homes that align with global sustainability goals. These green homes not only reduce operational costs and environmental impact but also enhance indoor environmental quality, thereby promoting healthier lifestyles for residents. As such, green housing development in Malaysia is evolving beyond environmental necessity into a vital component of the nation's broader urban planning and socio-economic strategy, ensuring that future housing meets the needs of both people and the planet.

2.0 Literature Review

According to the Environmental Protection Agency (EPA), living green involves making sustainable choices in areas such as food, travel, consumption, and the responsible use and disposal of resources. By integrating sustainability into building practices, living green contributes to environmentally friendly development. It emphasises the importance of everyday decisions in establishing a sustainable lifestyle that balances the protection of the Earth's natural resources, habitats, and biodiversity with the needs of human communities. Practicing green living means adopting a lifestyle that works in harmony with nature, ensuring that no lasting or irreversible harm is done to the ecosystem. This eco-conscious approach involves reducing one's ecological footprint by prioritizing environmental conservation, resource efficiency, and minimizing planetary impact. Living green extends beyond individual behaviours, fostering a comprehensive mindset that considers the larger effects on ecosystems and the global environment. It requires a commitment to making environmentally responsible choices in all aspects of life, from energy usage to waste management, ultimately promoting a more mindful and sustainable way of living.

2.1 Green Building

The concept of green buildings, which originated in developed nations, has gained traction in Malaysia, driven by the need for more sustainable construction practices. Green buildings, also referred to as eco-friendly or sustainable structures, are designed to minimize their environmental impact throughout their entire lifecycle. These buildings prioritize reducing resource consumption, improving energy efficiency, and incorporating environmentally friendly materials and technologies. According to Kherun (2018), green building practices respond to the construction industry's growing demand for sustainability by focusing on energy and water efficiency, conserving natural resources, and enhancing health and environmental quality. Key features often include energy-saving systems, renewable energy utilization, water conservation methods, waste reduction strategies, and the creation of comfortable indoor environments that promote health. The ultimate goal of green buildings is to mitigate the environmental impact of conventional construction by promoting a more sustainable and adaptable approach to urban development. Additionally, green building practices aim to be both economically viable and environmentally responsible, balancing human needs with environmental preservation to foster a more sustainable built environment (Luay, 2018; Haytham, 2022).

2.2 Eco-friendly Condominium

An eco-friendly condominium is a residential building designed with a strong emphasis on sustainability and environmental responsibility, integrating resource efficiency, comfort, and productivity throughout its entire lifecycle. According to Alawneh (2018), such buildings focus on minimizing their environmental impact from site selection and design through to construction, renovation, and eventual deconstruction. Governments have supported these initiatives, as seen in the Tokyo Green Building Program, where large-scale

condominium projects must disclose green scores to promote transparency and accountability (Jiro, 2010). These condominiums incorporate features like renewable energy sources, smart energy systems, energy-efficient appliances, water-saving technologies, and green spaces such as rooftop or vertical gardens. This not only reduces their environmental footprint but also offers residents a comfortable, nature-connected living experience. Eco-friendly condominiums are increasingly popular, particularly among younger generations moving to urban centers for work and lifestyle convenience. These developments provide ample space, shared amenities, and proximity to business and leisure hubs, while also fostering a sustainable living environment that aligns with broader environmental goals.

2.3 Benefits of Living in Green Buildings

2.3.1 Enhanced Comfort

Living in green buildings enhances comfort through sustainable features and thoughtful design, creating healthier and more enjoyable living spaces. These buildings are designed to maximize natural light, improve indoor air quality, and maintain optimal temperatures, all of which contribute to residents' overall well-being and comfort. Richardson (2010) found that the inclusion of green spaces, commonly integrated into green building designs, can lower mortality rates and offer residents areas for relaxation and recreation, enhancing mental well-being. Additionally, Mitchell et al. (2007) demonstrated that urban areas with more green spaces tend to promote better population health, reinforcing the idea that green environments contribute to both physical and psychological comfort.

2.3.2 Improved Indoor Air Quality

Another benefit of green living is the improvement of indoor air quality. The National Institute for Occupational Safety and Health (2013) defines Indoor Environmental Quality (IEQ) as the overall condition of a building's environment concerning the health and well-being of its occupants. Key components of IEQ include air quality, lighting, and humidity. Inhabitants of green buildings are shielded from various pollutants, such as dust, mold, bacteria, and harmful chemicals that can originate from cleaning products, construction materials, carpets, and furniture. Additionally, factors like indoor temperature, humidity, and ventilation levels play a significant role in shaping residents' responses to their environment. Study by Akande et al (2023) highlights how specific building features influence indoor air quality and disease risk, suggesting that targeted design interventions, such as improved ventilation and green building practices, can significantly enhance occupant health and support the development of simplified health risk assessment tools.

2.3.3 Health Benefits

Green living offers substantial health benefits, particularly through access to green spaces. Mitchell et al. (2007) observed that areas with more green spaces tend to have better overall population health. Similarly, Richardson (2010) found that increased green space in the UK is linked to lower mortality rates. Regular physical activity in green areas can reduce the risk of various chronic diseases, including cardiovascular conditions, respiratory issues, high blood pressure, and diabetes. Moreover, these spaces encourage social interactions and foster community, which is vital for overall health and well-being. Thus, green spaces provide valuable opportunities for outdoor activities, relaxation, and social engagement, benefiting urban residents' health.

2.3.4 Energy Savings

Green living can also lead to significant energy savings, especially in condominiums. Vinayak Pavate et al. (2024) highlight the importance of energy-efficient buildings, given the growing economic concerns over rising energy demand and limited supply. These buildings help reduce both energy costs and greenhouse gas emissions. For instance, Zollinger (2019) recommends adopting energy-efficient lighting, such as replacing fluorescent bulbs with long-lasting LED lights that require fewer replacements. Furthermore, integrating solar energy systems reduces reliance on non-renewable energy sources, making green buildings even more efficient and sustainable.

3.0 Research Methodology

This study employs a quantitative approach to investigate two primary research objectives. First, it focuses on identifying residents' perceptions of the benefits of living in green condominiums. Second, it analyses the most critical issues residents face in these sustainable living environments.

To achieve these objectives, a freehold serviced condominium was chosen as a case study. The Novum Bangsar comprises 3 blocks with a total of 729 units. A structured questionnaire was designed based on a comprehensive review of the relevant literature. The questionnaire was crafted to capture both quantitative and qualitative data, reflecting the benefits and challenges associated with green condominium living. Key themes from the literature review were used to formulate the questions, ensuring alignment with the research objectives. A non-face-to-face survey method was chosen to reach a diverse group of participants, targeting residents living in green-certified condominiums. The 186 collected data were analysed using descriptive statistics, with the findings presented in frequency tables and mean analyses. Descriptive statistics allowed for the clear visualisation of trends, particularly regarding the benefits perceived by residents and the operational challenges they faced. The results from this analysis provided insight into the comfort improvements and operational and maintenance issues commonly associated with green condominiums.

4.0 Result and Discussion

This data analysis focuses on descriptive statistics for respondents' demographic data as well as identifying residents' perceptions of the benefits of living in green condominiums and analyzing the most critical issues associated with living in such environments.

4.1 Section A: Respondent Demographic

This section shows analysis of frequency of respondent demographics, which are gender, age, working space, and duration staying in the property. The distribution of respondents by gender. Out of 186 respondents, 120 (64.6%) are female, while 66 (35.4%) are male. The majority of residents are aged 31 to 35 years, comprising 75 individuals (40.5%). This group is followed by 62 residents (32.9%) aged 36 to 40 years. Residents aged 41 to 45 years account for 35 individuals (19%), while 12 residents (6.3%) are aged 20 to 25 years. Only 2 residents (1.3%) fall within the 26 to 30-year age range.

The duration of residency among respondents is as follows. The majority, 120 residents (64.6%), have lived in the property for 4 to 5 years, while 64 residents (34.2%) have been there for 2 to 3 years. Only 2 residents (1.3%) have lived in the building less than 1 year. Since Novum began operating in 2019, it has now been operating for 6 years, and the data indicates that most current residents have lived there since the building first opened.

4.2 Section B: Residents Perspective on Living Green Condominium

This section is to identify the resident's perspective regarding living in a green condominium. The section consists of 10 questions and was analysed using descriptive analysis. The findings reflect residents' perceptions toward their eco-friendly condominium, with the items grouped into several key themes that represent their perspectives on sustainability, awareness, comfort, cost efficiency, and environmental responsibility.

Table 1 Summary of Mean

Question	Mean	Std. Deviation
I know the residence that I live in is a green building.	4.38	0.584
I'm aware of the green residential concept when buying the property.	3.89	0.847
I believe that living in green condominium features have contributed to cost savings.	4.23	0.479
I agree that living in green buildings reduces maintenance work.	3.78	0.472
I have experienced a reduction in electricity costs due to energy-efficient appliances and lighting in my green condominium.	4.04	0.192
I have noticed an increased sense of connection to nature while living in the green condominium.	4.70	0.515
I believe embracing green living positively impacts my overall well-being with the community.	3.89	0.816
I'm satisfied with the living environment provided by the green condominium.	3.87	0.607
Implementing environmentally friendly practices in my current residence provides a positive environmental towards the building.	3.71	0.510
I believe that the choices made in housing today will significantly impact the overall environmental health and sustainability for future generations.	4.37	0.485

The findings from the descriptive analysis reveal consistent perspectives among residents regarding their experience living in a green condominium. For **Statement 1**, "I know the residence that I live in is a green building," the mean score is 4.38, indicating a strong awareness among residents of the green-certified nature of their home. This is followed by **Statement 2**, with a mean score of 3.89, reflecting a slightly lower—but still moderate—awareness of the green residential concept at the time of purchase. These results suggest that while residents have become well-informed about green features after moving in, the awareness during the property buying stage was relatively less. This highlights the need for developers and marketers to enhance promotional efforts and educate buyers earlier in the decision-making process to strengthen the appeal and value of green housing.

The economic perspective is reflected in **Statements 3, 4, and 5**, which have mean scores of 4.23, 3.78, and 4.04, respectively. These figures suggest that residents generally agree that green condominiums contribute to cost savings and energy efficiency. The slightly

lower score for **Statement 4** indicates that while many believe green living may reduce maintenance work, this perception is not as strongly held, potentially due to varied experiences with green building management or unfamiliarity with the technical aspects. Meanwhile, residents report noticeable reductions in electricity usage, reinforcing the value of energy-saving features such as efficient appliances and lighting. These cost-related benefits contribute to the overall satisfaction with green living and play an important role in motivating acceptance of sustainable housing.

The strongest agreement among all responses comes from **Statement 6**, with a mean score of 4.70, highlighting a heightened sense of connection to nature. This finding supports the effectiveness of biophilic design in promoting well-being and comfort in green residential environments. **Statements 7 and 8**, with mean scores of 3.89 and 3.87 respectively, reflect moderate satisfaction with the green lifestyle and its impact on community well-being. However, these scores also point to areas where further improvement or resident engagement could enhance the overall living experience.

Regarding environmental responsibility, **Statement 9** received a mean score of 3.71, indicating moderate agreement on the positive impact of environmentally friendly practices within their residence. Finally, **Statement 10**, with a high mean of 4.37, shows that residents strongly believe that housing choices made today will significantly influence environmental health and sustainability in the future. This perspective reflects a forward-thinking mindset and a commitment to sustainable living principles.

Overall, the mean scores range from 3.71 to 4.70, indicating a generally high level of agreement across all statements. These results suggest that residents share a common positive perception of their green condominium living experience. Their responses, shaped by real-life experiences, reflect both the strengths and areas for enhancement in green residential developments.

4.3 Section C: Respondent Opinion on Advantages and Issues Living in Green Condominium

This section is to investigate the resident's opinion on the advantages and issue living in green condominium. The section consists of 2 questions and were analyse using descriptive analysis.

The figure below reflects respondents' selections regarding the perceived advantages of living in green buildings based on personal experience. The majority, 130 respondents (69.9%), identified enhanced comfort as the primary advantage of green building living. Among the respondents, 71 respondents (38.2%) acknowledged health benefits, 12 (6.5%) agreed with energy savings as a benefit, while 82 (44.3%) selected improved indoor air quality. Additionally, 9 respondents (4.8%) cited reduced environmental impact less advantages as a key benefit.

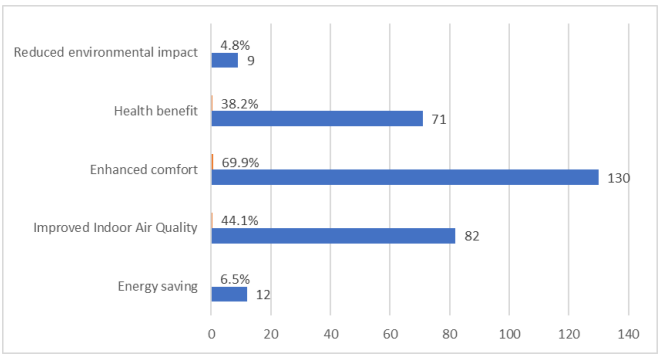

Figure 1 : The Advantages of Living in Green condominium

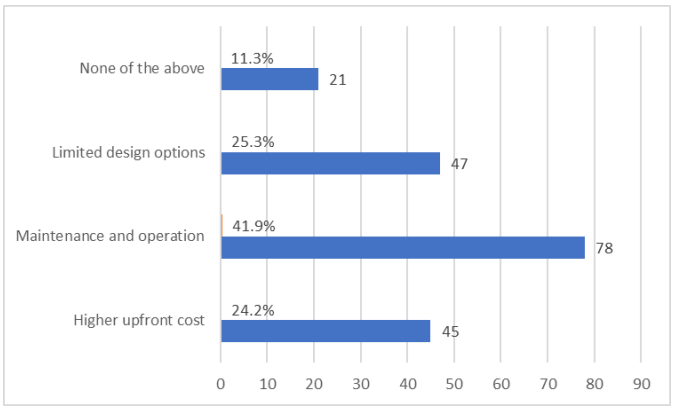

Figure 2 : Issue pertaining living in green condominium

The chart in Figure 2 presents residents' responses regarding issues encountered while living in a green building, based on their experiences. A total of 45 respondents (24.2%) identified higher upfront costs as a concern, while the most common issue, cited by 78 respondents (41.9%), was related to maintenance and operation. Additionally, 47 respondents (25.3%) highlighted the limited availability of design options as a challenge. Meanwhile, 21 respondents (11.3%) indicated that none of these issues were relevant to their experiences living in a green building.

5.0 Conclusion

This study explored residents' perceptions of the benefits and challenges associated with living in green-certified condominiums. Findings underscore the strong appreciation for sustainable design features, particularly in terms of enhanced comfort, improved indoor air quality, health advantages, and energy savings. These elements not only contribute to individual well-being but also promote broader ecological benefits. However, residents identified maintenance and operational complexity and stemming from the technical nature of green systems as the most significant drawback. Issues like limited design flexibility and high initial costs further constrain the accessibility and scalability of eco-friendly housing models.

To enhance the viability and appeal of green condominiums, developers and building managers should focus on simplifying maintenance procedures by investing in standardized, user-friendly systems and offering targeted training to service personnel. Architectural teams are encouraged to incorporate adaptable and flexible design solutions that accommodate resident preferences while maintaining sustainability standards. Policymakers can play a vital role by introducing financial incentives such as subsidies or tax relief to offset the high upfront costs associated with green technologies, thereby improving accessibility for a wider demographic. Moreover, fostering ongoing engagement with residents through regular post-occupancy evaluations will help align technological features with user expectations, creating a more responsive and livable green environment.

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Paper Contribution to Related Field of Study

This study contributes to the field by offering a behavioral perspective on post-occupancy experiences in green residential buildings and often overlooked in sustainability research that focuses primarily on design and performance metrics. It provides actionable insights for developers and policymakers to better align green building systems with residents' comfort and maintenance expectations, enhancing the practicality and appeal of eco-friendly urban housing.

References (Max 1 page) RM200 per page surcharge for additional pages)

Alawneh, R. (2018). *Assessing the contribution of water and energy efficiency in green buildings to achieve United Nations Sustainable Development Goals in Jordan*. *Building and Environment, 146*, 119–132. https://doi.org/10.1016/j.buildenv.2018.09.043

Akande, O. K., Yusuf, A., & Sham, R. (2023). Effects of Indoor Environmental Quality in Urban Housing on Residents' Health and Wellbeing in Nigeria. *Environment-Behaviour Proceedings Journal*, *8*(23), 157–165. https://doi.org/10.21834/ebpj.v8i23.4505

Guo, H., & Su, M. (2013) Act of residential real estate dent on green construction. Applied Mechanics and Materials, 275–277, 2756–2760.

Haytham, H. (2022). *Green buildings and maintenance planning practices in Malaysia*. *Journal of Enterprise Information Management, 37*(3), 851–874. https://doi.org/10.1108/JEIM-05-2022-0168

Jiro, Y., & Sugiura, A. (2010). *Which "Greenness" is Valued? Evidence from Green Condominiums in Tokyo*. *MPRA Paper No. 23124*. https://mpra.ub.uni-muenchen.de/23124/

Kherun, N. (2018). *The economic benefits of a green building – Evidence from Malaysia*. *Journal of Building Engineering, 18*, 448–453. https://doi.org/10.1016/j.jobe.2018.04.017

Mitchell, R., & Popham, F. (2007). *Effect of exposure to natural environment on health inequalities: An observational population study*. *The Lancet, 372*(9650), 1655–1660. https://doi.org/10.1016/S0140-6736(08)61689-X

National Institute for Occupational Safety and Health. (2013). *Indoor Environmental Quality (IEQ)*. Retrieved from https://www.cdc.gov/niosh/topics/indoorenv/

Richardson, E., Pearce, J., Mitchell, R., Day, P., & Kingham, S. (2010). *The association between green space and cause-specific mortality in urban New Zealand: An ecological analysis of green space utility*. *BMC Public Health, 10*, 240. https://doi.org/10.1186/1471-2458-10-240

Vinayak Pavate, Deshmukh, V. D. ., Arghya Kolekar, Ami Mendapara, Shreyas Patil, & Amrutatti, S. . (2024). Green Building and Energy-Efficient Design. *Journal of Environmental Engineering and Studies*, 33–52. Retrieved from https://matjournals.net/engineering/index.php/JoEES/article/view/664