



The Strategic Role of Developers in Integrating Sustainability into Housing Projects in Bali, Indonesia

Enny Harini¹, I Dewa Gede Agung Diasana Putra², Ngakan Ketut Acwin Dwijendra^{3*}

Master Study Program in Sustainable Development and Finance, Postgraduate, Udayana University, Denpasar, Bali, Indonesia

Corresponding Author: Ngakan Ketut Acwin Dwijendra acwin@unud.ac.id

ARTICLE INFO

Keywords: Sustainable Housing, Green Development, Developer Decision-Making, Urban Policy, Bali

Received : 20, January

Revised : 21, February

Accepted: 30, March

©2025 Harini, Putra, Dwijendra:
This is an open-access article distributed under the terms of the [Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).



ABSTRACT

This study investigates the strategic role of real estate developers in integrating sustainability into housing development in Bali, a region facing rapid urbanization and environmental degradation. Employing a mixed-methods approach, the research combines quantitative surveys of 50 developers with in-depth interviews and field observations conducted between January and December 2024. The study explores developers' adoption of green building materials, renewable technologies, and ecological design principles while assessing the enabling or inhibiting effects of local policy frameworks. Findings indicate that only 18.4% of housing projects applied sustainable practices, with financial constraints, insufficient regulatory incentives, and low public awareness identified as significant barriers to adoption. This study contributes to the advancement of stakeholder and sustainable development theories by contextualizing the decision-making logic of developers in a tourism-driven, tropical urban setting. The study recommends regulatory reform, fiscal incentives, and multi-stakeholder collaboration to accelerate the transformation to sustainable housing in emerging economies.

INTRODUCTION

The island of Bali is one of the regions experiencing rapid growth in the housing sector, in line with the increasing demand for housing and the expansion of tourism. Over the last five years, housing development in Bali has increased significantly, particularly in the Badung, Denpasar, and Gianyar areas, which are centers of economic growth and highly urbanized regions – according to data from the Central Statistics Agency (BPS, 2023), the property and construction sectors' contribution to Bali Province's Gross Regional Domestic Product (GDP) exceeded 15% in 2023. This growth was primarily driven by increased demand for housing for locals and migrants, as well as the development of tourist areas that require additional accommodation facilities.

However, the uncontrolled expansion of the housing sector also has various negative impacts on the environment. The conversion of agricultural land into residential and commercial areas, environmental degradation, increased carbon emissions, and reduced green open space are some of the consequences that are increasingly worrying (Greenpeace Indonesia, 2023). Research conducted by Widiastuti et al. (2021) indicates that more than 60% of productive land in several areas of Bali has undergone a functional shift over the last two decades. In addition, challenges to ecological sustainability are becoming increasingly complex due to weak spatial oversight, an imbalance between development and environmental conservation, and a lack of awareness among property industry players regarding sustainability issues (Dwijendra, 2020).

Globally, the principle of sustainable development has become the norm in residential area planning. This concept emphasizes the importance of integrating social, economic, and environmental aspects in the development cycle (Brundtland Commission, 1987). In Indonesia, regulations on green buildings have been developed, including the Minister of PUPR Regulation No. 21 of 2021 concerning the Performance Assessment of Green Buildings. However, in practice, the implementation of sustainability standards in the housing sector remains limited, particularly in the context of development by the private sector. A study by Santosa et al. (2022) indicates that most housing projects in Bali continue to prioritize aesthetic and commercial aspects over ecological approaches and long-term sustainability.

In this context, the developer's role becomes highly strategic. As the leading actor in the planning, designing, and implementation process of housing development, developers can determine the direction of development towards sustainability. Their decision regarding materials, technology, design, and socio-ecological approaches significantly impacts the environmental and social aspects of the project (Kibert, 2016). However, the reality on the ground shows that most developers in Bali have not fully adopted the principles of green building or sustainable building practices as a whole. Several factors, including budget limitations, a lack of regulatory incentives, and low market demand for environmentally friendly homes, are the primary challenges faced (Januarti & Supriyadi, 2020).

This research aims to examine the strategic role of developers in integrating sustainability into housing projects in Bali in depth. With a

contextual approach that considers the local characteristics of Bali, including its culture, policies, and property market structure, this study contributes to the development of sustainable development theory and practice. This research also fills a gap in the literature regarding strategies, motivations, and obstacles faced by developers in driving the transformation towards sustainable housing in tropical tourist and urban areas, such as Bali.

LITERATURE REVIEW

This research is grounded in a theoretical framework that facilitates an understanding of sustainability in the development of housing projects, particularly in the context of the strategic role of developers. Several key theories are used to frame the analysis, including Sustainable Development Theory, Stakeholder Theory, Rational Choice Theory, and Green Technology Model. These four approaches complement each other in explaining the dynamics of decisions, challenges, and opportunities in sustainability integration by property developers.

Sustainable Development Theory

The theory of sustainable development has its roots in the Brundtland Report (1987), which defines sustainable development as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. This definition emphasizes a balance between three main pillars: the environment, economic growth, and social welfare (United Nations, 1987). In the context of housing development, this approach entails the planning and implementation of projects that prioritize energy efficiency, natural resource conservation, and social integration through the provision of affordable and decent housing. Sustainability is not only viewed from an environmental perspective but also from the economic sustainability of the developer and the social impact it has. Therefore, this theory serves as the primary foundation for evaluating how developer decisions contribute to achieving sustainable development goals (Kibert, 2016).

Stakeholder Theory

The stakeholder theory, developed by Freeman (1984), emphasizes that the involvement and interests of stakeholders significantly influence the success of an organization or project. In the context of sustainable housing projects, stakeholders encompass not only developers and consumers but also local governments, local communities, environmental non-governmental organizations (NGOs), financial institutions, and academics. The active involvement of stakeholders in the decision-making process can increase the social legitimacy of the project, strengthen community support, and encourage the broader application of sustainability principles (Mitchell et al., 1997). This theory is relevant in explaining the need for multi-stakeholder collaboration in realizing housing projects that are not only economical but also environmentally and socially responsible. When stakeholders have effective communication and participation channels, the risk of social conflict and project rejection can be minimized (Reed et al., 2009).

Rational Choice Theory

Rational Choice Theory posits that individuals or organizations act based on rational considerations aimed at maximizing profits and minimizing losses (Becker, 1976). In the context of housing developers, decisions regarding the use of green technology or environmentally friendly materials are often influenced by considerations of cost, technology availability, and market preferences. Although sustainability offers long-term benefits, many developers are reluctant to implement it due to the higher initial investment burden associated with conventional construction (Zuo et al., 2012). This theory helps to understand the economic motives behind the low adoption of sustainability principles by most developers. However, this theory also opens up space for policy strategies, such as fiscal incentives or regulations, that can alter the cost-benefit calculation, making sustainability an economically rational choice (Gibberd, 2008).

Green Technology Model

The green technology model was introduced by Newman and Kenworthy (1999) in the context of sustainable urban development. This model proposes the integration of environmentally friendly technologies into the design, construction, and management processes of buildings. In residential development, green technology can include the use of solar panels, rainwater recycling systems, natural lighting, sustainable local materials, and domestic waste treatment systems. The use of this technology not only reduces the carbon footprint of buildings but also enhances energy efficiency and lowers long-term operational costs (Williams & Dair, 2007). The model also emphasizes the importance of behavioral change and environmental awareness from all parties, including consumers and developers. In the context of Bali, the adoption of green technology also needs to be adapted to tropical climatic conditions and local culture to make it more relevant and acceptable to the community.

METHODOLOGY

Research Approach

This study employs a mixed-methods approach, enabling the complementary integration of quantitative and qualitative data to provide a deeper understanding of the strategic role of developers in integrating sustainability into housing projects. This approach is considered relevant because it is able to capture phenomena holistically, from both statistical and narrative perspectives, and also bridge the weaknesses of each method when used separately (Creswell & Plano Clark, 2018).

Quantitatively, data were collected through a survey with a closed questionnaire distributed to 50 developers active in three strategic areas in Bali: Badung Regency, Denpasar City, and Gianyar Regency. The selection of the area is based on the high concentration of housing projects and the dynamics of development influenced by the tourism and urbanization sectors. Respondents were selected using purposive sampling techniques, with the primary criterion being that they were developers with active housing projects between 2018 and 2023.

Qualitatively, data were obtained through in-depth interviews conducted with three main groups of informants: (1) property developers, (2) local government officials from the licensing and environmental agencies, and (3) representatives of local communities affected by the construction of housing projects. The interview was conducted in a semi-structured manner, using open-ended questions that explored participants' perceptions, motivations, challenges, and strategies for integrating sustainability. In addition, direct field observations were conducted in five housing projects selected as case studies to assess the actual application of sustainability concepts in aspects of design, materials, and green infrastructure.

This mixed-methods approach not only strengthens the validity of the data but also enables triangulation between quantitative and qualitative findings, making the interpretation of the results more contextual and reliable (Tashakkori & Teddlie, 2010).

Data Analysis Techniques

Data analysis is conducted in two primary stages: quantitative analysis and qualitative analysis. For quantitative data, survey results were analyzed using simple and multiple linear regression, with the assistance of the Statistical Package for the Social Sciences (SPSS) software, version 25. This analysis aims to examine the relationship between independent variables, such as the level of green technology use, financial resources, and incentive policies, and the dependent variable, namely the level of sustainability integration in housing projects. Descriptive analysis was also employed to describe the characteristics of respondents, including the type of company, the location of the project, and the developer's experience in applying sustainability principles.

For qualitative data, interview transcripts and observation notes were analyzed using thematic analysis, aided by NVivo 12 software. The analysis process includes the open coding stage, categorization of the main theme, and narrative interpretation of the patterns that emerge. This analysis focuses on issues such as sustainability perceptions, structural barriers, the impact of local policies, and innovations implemented by developers. Thematic analysis techniques were chosen for their ability to extract meaning from complex and diverse qualitative data (Braun & Clarke, 2006).

The entire analysis process is supported by the data triangulation technique, which compares and confirms the results from various data sources, including surveys, interviews, and observations, to enhance the validity and reliability of the research results (Patton, 1999). With this approach, the findings obtained are not only statistical but also able to capture the social, cultural, and policy nuances that affect sustainability practices in the housing sector in Bali.

RESULT AND DISCUSSION

Growth of Housing Projects in Bali (2018–2023)

Between 2018 and 2023, the growth of housing projects in Bali Province exhibited an upward trend, with an average annual growth rate of 9.2%. This data reflects the increasing demand for housing, particularly in areas experiencing rapid growth, such as Badung Regency, Denpasar City, and

Gianyar Regency. However, only 18.4% of the total projects are categorized as sustainable housing, i.e. projects that have implemented the principles of energy efficiency, the use of environmentally friendly materials, and ecological water and waste management (Green Building Council Indonesia [GBCI], 2024).

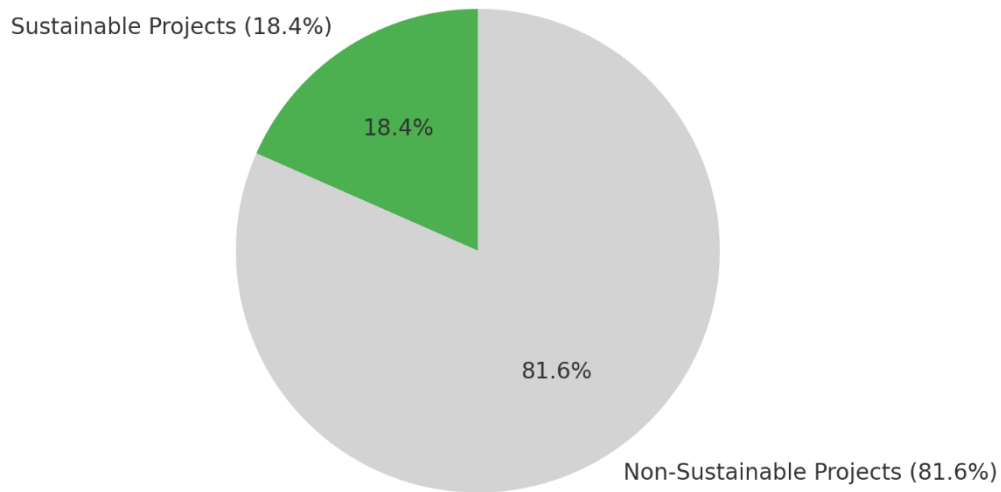


Figure 1. Proportion of Sustainable Housing Projects in Bali (2018–2023)

Figure 1 presents the proportions between housing projects that apply sustainability principles and those that do not. Sustainable projects account for less than a fifth of the total development, indicating a large gap between concept awareness and its implementation on the ground.

Use of Environmentally Friendly Materials and Green Technology

One of the key indicators of housing development sustainability is the use of environmentally friendly materials and green technology. The survey results indicate that 45% of developers have utilized certified and environmentally friendly materials, including FSC-certified wood, local natural stones, and recycled materials with a low carbon footprint. This material is designed to reduce carbon emissions while preserving the regional character of Bali.

Meanwhile, the application of green technology is still relatively limited. As many as 35% of projects have installed solar panels to support the electrical energy needs of homes, especially in areas with high sunlight intensity. Additionally, 30% of projects have implemented rainwater recycling systems, which are utilized in water gardens or as alternative non-consumptive water sources. This technology also supports the principle of water conservation, which is crucial in the midst of the clean water crisis that threatens Bali (Wicaksono & Adyatma, 2022).

Obstacles in the Implementation of Sustainable Housing

While some developers have demonstrated initiative in implementing the concept of sustainable housing, the study also identified several key barriers that hinder its widespread implementation. Based on the results of the survey and in-depth interviews:

1. Sixty percent of developers state that high initial construction costs are the primary obstacle. Investments in green technologies, green building

- certification, and the use of premium materials are considered to burden project capital, especially for small and medium-sized developers.
2. 45% of developers complain about weak fiscal incentives and supporting regulations. Local government policies have not provided enough tax incentives, levy cuts, or licensing facilities to encourage sustainable adoption.
 3. 40% mentioned the low awareness and demand of the public for sustainable housing. Consumers tend to focus on price and location, so the sustainability aspect has not yet become the main selling point in the housing market (Santosa et al., 2022).

These facts highlight the need for more structured policy interventions and market education to promote the widespread adoption of sustainability principles among developers and consumers.

The Strategic Role of Developers in Sustainability Implementation

Developers play a strategic role in sustainable housing development, as they are the primary determinants of the design, building materials, and technologies used in projects. This decision has a direct impact on the project's carbon footprint, energy efficiency, and residential environmental quality (Kibert, 2016). In this study, it was found that 45% of developers have utilized environmentally friendly materials, including FSC-certified wood and local natural stone. Additionally, green technologies such as solar panels (35%) and rainwater recycling systems (30%) have been implemented in several housing projects (Green Building Council Indonesia [GBCI], 2024).

However, the majority of projects built during the 2018-2023 period – around 81.6% – still employ conventional approaches that have not adequately considered sustainability aspects as a whole. This is due to considerations of economic rationality, where developers tend to prioritize initial cost efficiency and evaluate market demand, especially competitive selling prices (Becker, 1976). In this context, the Rational Choice Theory suggests that developers tend to prefer development strategies that are profitable in the short term, particularly in regions with high levels of competition, such as Bali, where consumers are more inclined to prioritize price and location over sustainability aspects (Zuo et al., 2012).

Regulatory Gaps and Institutional Challenges

Although the Indonesian government has issued several regulations related to green development, such as the Minister of PUPR Regulation No. 21 of 2021 concerning the Performance Assessment of Green Buildings, implementation at the regional level, especially in Bali, still faces numerous obstacles. Based on the survey results, as many as 45% of developers reported that there were no concrete incentives, such as tax cuts, accelerated licensing processes, or levy relief, that could encourage them to adopt sustainable development practices.

Furthermore, spatial planning documents and technical regulations at the district/city level often do not explicitly include the obligation to implement green design principles, green infrastructure, or sustainability assessments as a

condition for project approval. This condition causes a lack of institutional motivation for developers to innovate ecologically (Santosa et al., 2022).

This regulatory gap also indicates that the application of a collaborative approach across stakeholders is not optimal, as mandated by Stakeholder Theory (Freeman, 1984). In this theory, the success of public policy implementation is greatly influenced by the extent to which key actors— including governments, developers, communities, academics, and NGOs— are actively and equally involved in the decision-making process. However, in practice, the development governance structure in Bali has not entirely created an inclusive and transparent space for collaboration among all stakeholders.

Theoretical and Practical Implications

The findings of this study reinforce the relevance of the Theory of Sustainable Development (Brundtland Commission, 1987) and the Stakeholder Theory, especially in the context of urban development in developing regions such as Bali. The proportion of sustainable projects, which reaches only 18.4%, indicates that awareness of the importance of sustainability is not strong enough to be implemented without systemic structural interventions.

Theoretically, this research confirms that sustainability must be contextualized within local social, economic, and cultural frameworks. Developers in Bali not only face technical challenges but also operate in a policy and cultural environment that influences their choices. This enriches the literature on sustainable urban development, particularly in the context of developing countries with diverse institutional capacities.

In practical terms, the study shows the need for local policy reforms, especially in spatial regulations, fiscal incentives, and building codes. For example, providing a Building Floor Coefficient (KLB) bonus for green-certified projects or tax reductions for developers who integrate energy-efficient technologies can be effective concrete steps. In addition, strengthening institutional capacity through technical training for apparatus and developers is also crucial for increasing understanding and consistency in the implementation of sustainable development policies.

CONCLUSIONS AND RECOMMENDATIONS

This research confirms that developers play a central role in efforts to realize sustainable housing development in Bali. As the primary actors in the planning, design, and physical development process of the project, developers have a direct influence on the selection of materials, the application of environmentally friendly technologies, and design strategies that impact environmental quality and long-term sustainability. Their contribution to the transformation of the housing sector is significant, especially in the context of Bali, which faces ecological pressures due to land conversion and uncontrolled settlement growth.

However, the adoption of sustainability principles is still limited. The three main barriers found in this study are: (1) the high initial costs of implementing environmentally friendly technologies and materials, (2) weak regulatory support and lack of fiscal incentives that encourage changes in developer behavior, and (3) lack of consumer awareness and education on the

importance of choosing sustainable housing. Most projects are still oriented towards cost efficiency and conventional market preferences, with only 18.4% of projects meeting the criteria for green housing. This shows that sustainability has not yet become mainstream in the housing industry in Bali.

Local policies that have been in effect to date have not been sufficiently effective in mainstreaming sustainability into the licensing and development control process. Regulations are still general and do not require the systematic application of green building standards. The absence of concrete incentives also weakens developers' motivation to innovate ecologically. Therefore, sustainability efforts require more substantial institutional support, multi-stakeholder engagement, and a measurable incentive-based approach.

Based on the above findings, many practical recommendations were prepared aimed at key stakeholders, namely:

First, for developers, it is recommended to start integrating a long-term cost-benefit analysis into each project, focusing not only on initial costs but also on operational efficiency and long-term environmental impact. Developers also need to actively involve the community in the planning process, either through public consultations, consumer preference surveys, and local partnerships, so that housing design is not only environmentally friendly but also to the sociocultural needs of the surrounding community.

Second, for the local and central governments, it is necessary to formulate incentive-based policies to accelerate the adoption of green building principles. Incentives that can be provided include building tax reductions, Building Floor Coefficient (BFC) bonus policies for environmentally friendly projects, and expedited licensing processes. Additionally, the government should provide technical training and implementation guidance to enhance the capacity of developers and technical officials in implementing green technologies and sustainability principles.

Third, for academics and civil society organizations (NGOs), it is crucial to enhance their role in policy advocacy and expand collaborative research related to technological innovation, green financing models, and market acceptance strategies for sustainable housing. Research, training, and mentoring activities at the local level can serve as a crucial bridge between sustainability concepts and the realities of the field while also fostering a more inclusive innovation ecosystem in the housing sector.

FURTHER STUDY

This study has limitations in its geographical scope, and the number of actors studied. The main focus is limited to the Bali Province area, particularly in the three districts/cities of Badung, Denpasar, and Gianyar, which are the centres of property and tourism growth. In addition, the main actors studied in this study are developers, who play a role as decision-makers in the housing planning and construction process. While this provides an in-depth understanding of the strategies and challenges from the developer's side, it does not include the perspectives of other stakeholders that also influence the success of integrating sustainability principles in housing development.

For this reason, follow-up studies are highly recommended, as they can expand the scope of actors and research areas. Future research may involve consumers or prospective residents to evaluate their level of awareness, preferences, and willingness to pay for sustainable housing. Additionally, the involvement of local and central governments requires further exploration, particularly in terms of their policy roles, incentive mechanisms, and governance of green building licensing. Longitudinal studies are also urgently needed to evaluate the long-term impact of green housing projects on the environment, society, and local economy. Comparisons with other tourist areas, such as Lombok, Yogyakarta, or Labuan Bajo, can also provide comparative insights into the dynamics of sustainability in different cultural and governance contexts.

ACKNOWLEDGMENT

The author expresses his gratitude to Dewa Gede Agung Diasana Putra and Ngakan Ketut Acwin Dwijendra for their guidance, scientific direction, and invaluable input during the process of preparing this research. Without his guidance, this research would not have achieved the depth and analytical sharpness that were expected.

The author also expressed his gratitude to all housing developers in the Bali region, particularly those in Badung Regency, Denpasar City, and Gianyar Regency, who took the time to complete questionnaires and participate in live interviews. Awards were also presented to local government agencies that have provided access to data and administrative support, as well as to all field informants and local communities that have provided contextual information, enriching the analysis in this study. All of this support is highly meaningful in uncovering the dynamics of the strategic role of developers in integrating sustainability into the housing sector in Bali. Hopefully, the results of this research can make a real contribution to the development of more sustainable development policies and practices in the future.

REFERENCES

- Central Statistics Agency. (2023). Gross Regional Domestic Product of Bali Province by Business Field 2018–2023. BPS Bali Province.
- Barton, H. (2000). *Sustainable Communities*. Earthscan.
- Becker, G. S. (1976). *The economic approach to human behavior*. University of Chicago Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
- Brundtland, G.H. (1987). *Our Common Future*. Oxford University Press.
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.

- Deakin, M., et al. (2007). *Sustainable Urban Development*. Routledge.
- Dwijendra, N. K. A. (2020). Spatial transformation of tourism accommodation in Ubud area, Bali, Indonesia. *International Journal of Built Environment and Scientific Research*, 4(1), 11–20.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Gibberd, J. (2008). Making the development of sustainable buildings in South Africa easier. *Journal of Public Administration*, 43(3.1), 37–49.
- Green Building Council Indonesia. (2024). *Annual Report of Green Building Indonesia 2023–2024*. <https://www.gbcindonesia.org>
- Greenpeace Indonesia. (2023). *Reports on Environmental Damage Due to Land Conversion in Bali*. Greenpeace Southeast Asia.
- Januarti, I., & Supriyadi, T. (2020). Factors that affect the implementation of green building by developers in Indonesia. *Journal of Civil Engineering*, 27(3), 195–204.
- Joss, S. (2011). *Eco-cities: The Mainstreaming of Urban Sustainability*. *Cities*, 29(4).
- Kibert, C. J. (2008). *Sustainable Construction: Green Building Design and Delivery*.
- Kibert, C. J. (2016). *Sustainable Construction: Green Building Design and Delivery* (4th ed.). Wiley.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience. *Academy of Management Review*, 22(4), 853–886. <https://doi.org/10.5465/amr.1997.9711022105>
- Newman, P., & Kenworthy, J. (1999). *Sustainability and Cities: Overcoming Automobile Dependence*.
- Patton, M. Q. (1999). Enhancing the quality and credibility of qualitative analysis. *Health Services Research*, 34(5 Pt 2), 1189–1208.
- Reed, M. S., Graves, A., Dandy, N., Posthumus, H., Hubacek, K., Morris, J., ... & Stringer, L. C. (2009). Who's in and why? A typology of stakeholder analysis methods for natural resource management. *Journal of Environmental Management*, 90(5), 1933–1949.

- Santosa, H. D., Wibowo, A., & Nugroho, S. P. (2022). Barriers to sustainable housing in Indonesian urban development: A stakeholder analysis. *Sustainable Cities and Society*, 76, 103415.
- Tashakkori, A., & Teddlie, C. (2010). *Mixed methodology: Combining qualitative and quantitative approaches*. SAGE Publications.
- Widiastuti, N. K., Sutawa, G. K., & Putra, D. A. P. (2021). Land conversion and environmental sustainability in Bali: A spatial and policy analysis. *Journal of Sustainable Earth*, 21(2), 115–126.
- Williams, K., & Dair, C. (2007). What is stopping sustainable building in England? Barriers experienced by stakeholders in delivering sustainable developments. *Sustainable Development*, 15(3), 135–147. <https://doi.org/10.1002/sd.308>
- Zuo, J., Zhao, Z. Y., & Glass, J. (2012). Benefits of sustainable construction: A case study. *Engineering, Construction and Architectural Management*, 19(5), 435–452. <https://doi.org/10.1108/09699981211259689>