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Subsidized Housing Development Strategy in a Green and Sustainable Indonesia

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Abstract

The development of green and sustainable housing is the main goal in preserving the environment and nature. The number of subsidized housing developments that increase from year to year will have a significant impact on sustainability. For this reason, the awareness of all stakeholders to make it happen is very important. A precise strategy is needed in stimulating and forcing developers to carry out sustainable housing development by ranking them according to their capital capacity and the availability of skilled workers.

Keywords
strategy; awareness; sustainability

I. Introduction

Housing development is one way to meet the community's need for housing in big cities due to urbanization, in 2020 56.7% of Indonesia's population lives in urban areas and is increasing from year to year and in 2035 it is expected to reach 66.6 % percent (Central Bureau of Statistics (BPS)). It is estimated by the World Bank that by 2045, as many as 220 million Indonesians will live in urban areas. Along with the increase in urbanization, it will lead to an increase in the need for housing in urban areas, this also causes an increase in housing development which in turn will also increase the need for the availability of natural material sources. With this situation, sustainability must be made the main goal in every housing development project (Özkaynak, B., Devine, P., & Rigby, 2014) this is needed to ensure that the use of natural resources can still be used effectively to achieve sustainable housing development and serves as the main catalyst for achieving economic sustainability.

According to the World Bank, the projected increase in population in big cities in Indonesia will result in an increase in housing needs, in order to meet the needs of new households which reach 780 thousand houses per year until 2045 (World Bank, 2020) . With the number of housing needs from year to year which is always increasing, this will require an increase in natural resources as well, so that the use of natural resources must be managed effectively so that it can actually fulfill the principle of maximum benefit without compromising sustainability.

The housing development process is a complicated job, which takes a long time, and requires no small amount of capital, involving many parties, both the government, developers and the user community as well as the community around the housing being built and multi-disciplinary. This condition causes the development of sustainable housing to be full of challenges. Sustainable housing does not mean just building “green buildings” but more than that, because sustainability cannot be separated from 3 aspects, namely the environment, social culture and economy. The process of sustainable development is strongly influenced by the involvement of people, their activities affect the environment and social injustice (Brundtland, 1987)

Kohlhepp & Kohlhepp, (2018) with their 7 x 8 matrix theory try to describe how complex housing development starts from the planning and construction stages such as: land banking, land packaging, land development, building development, building operations, building renovation and redevelopment stage , and from the economic and social stages, namely: acquisition, financing, market analysis and marketing strategies, environmental issues, approvals and permits, physical improvements, transportation/accessibility and sales and disposition . Kohlhepp defines the real estate development process as the process of adding economic value to a real estate company, going through various stages of development. With the addition of "green" the concept of Kohlhepp's 7 x 8 matrix will become more complicated, so with the addition of the concept of "green" in housing development, borrowing Kohlhepp's theory, this definition changes to: "Real estate development is the process of adding sustainable economic value to development companies through various stages of environmentally friendly development".

Development Matrix	1. Land Banking	2. Land Packaging	3. Land Development	4. Building Development	5. Building Operation	6. Building Renovation	7. Property Redevelopment
I. Acquisition	I.1	I.2	I.3	I.4	I.5	I.6	I.7
II. Financing	II.1	II.2	II.3	II.4	II.5	II.6	II.7
III. Market analysis and marketing strategies	III.1	III.2	III.3	III.4	III.5	III.6	III.7
IV. Environmental issues	IV.1	IV.2	IV.3	IV.4	IV.5	IV.6	IV.7
V. Approvals and permits	V.1	V.2	V.3	V.4	V.5	V.6	V.7
VI. Physical Improvements	VI.1	VI.2	VI.3	VI.4	VI.5	VI.6	VI.7
VII. Transportation/Accessibility	VII.1	VII.2	VII.3	VII.4	VII.5	VII.6	VII.7
VIII. Sales and Disposition	VIII.1	VIII.2	VIII.3	VIII.4	VIII.5	VIII.6	VIII.7

Figure 1. *Housing Development Matrix (Kohlhepp & Kohlhepp, 2018)*

James, (2015) defines development as social change with all its impacts, good or bad, by bringing about significant and patterned changes in technology, engineering, infrastructure, and/or related forms of life of a place or person. In this definition James assumes that not all development has a positive impact, even James does not guarantee that good development must be sustainable.

Our Common Future Report, better known as the Brundtland Report, defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987) . This definition is still valid and applied for various purposes. To ensure that future generations can continue to meet their own "needs" cannot be separated from what the current generation is doing for sustainability. Arbitrary actions by the current generation on natural, socio-cultural and economic resources will clearly have a negative impact on sustainability.

Healey, (2007) formulated that in the process of sustainable housing development starting from identifying development opportunities, land preparation and planning, site

clearing, financial acquisitions, organizing construction, organizing infrastructure, marketing and managing housing, this is in accordance with his 7x8 housing development matrix theory. Kohlhepp. However , the current phenomenon in Indonesia in housing development, especially subsidized housing carried out by private developers, does not reflect the existence of sustainable development. This can be seen from the beginning of the developer doing housing development. The average developer who builds subsidized housing starts not by conducting a survey to find suitable, feasible and affordable land locations, and based on the results of a survey of the level of consumer needs in the area, but subsidized housing developers with small capital. start developing housing based on an invitation to develop housing by land owners with a profit sharing system, so it does not require large capital in the development process. Site selection in this way will certainly not consider sustainability as the main goal. Sometimes the land that is collaborated is not feasible when viewed from the feasibility of the location, spatial plan, contours and drainage, but in various ways, both technically and administratively, so that what was originally not feasible becomes "appropriate", this process involves several stakeholders, both from the consumer side and from the government side.

There are at least 3 main stakeholders, including the Government, development companies and the community as consumers and communities around the development area who are involved in the housing development process. The process of land preparation and planning which is usually carried out in the housing development process is carried out by first selecting and appointing a qualified planning consultant. ask for help from officers who process permits, while for building planning drawings they sometimes follow the standard drawings of subsidized house buildings according to Kepmenkimpraswil 403/KPTS/M/2002 or use pictures from other housing by modifying the appearance. In addition, the house standards set in the Kimpraswil regulations when viewed in more depth, have not shown a sustainable and environmentally friendly design, this can be seen from the use of natural materials that are quite a lot and not green. The use of wood materials in subsidized housing without clear specifications/standards tends to use low-quality wood, obtained by felling trees from nature, and without considering sustainability. In addition, the wood used is on average young and without a logging process that follows standard tree felling techniques, without drying and preservation processes, so the wood produced is not feasible. In addition, the use of other natural materials such as stone and sand is also mined illegally, so that the impact of environmental destruction is very large. The next process of housing development is in accordance with Healey's theory, namely site cleaning, financial acquisition, organizing construction, organizing infrastructure, marketing and managing housing. For this process, the development of subsidized housing is not much different from the process of building real estate housing, which is very different in terms of marketing and managing housing. In subsidized housing, housing marketing is mostly done by group sales through cooperation with cooperatives and direct retail sales to consumers. What is most different is in the process of managing the final product, in real estate housing housing management is usually carried out continuously throughout its useful life, namely by way of the developer or resident community forming an environmental management agency, while in subsidized housing the formation of an environmental management agency is almost rarely done. If the environmental management in subsidized housing is carried out by the Rukun Tetangga (RT) and the Rukun Warga (RW) and on average only functions to manage environmental waste collection, while supervision of building development is not carried out at all. Supervision of the building is left entirely to the local government. This is different from real estate, which is very strict in supervising building changes/developments. The lack of supervision over the development of buildings is one of the contributing factors to the poor environmental conditions in subsidized housing, which seem congested and slum.

With the above phenomena, this study aims to discuss the 3 stakeholders involved in the construction of subsidized housing, namely the government, developers and consumers or the community, examine the perceptions of each party towards subsidized housing and their behavior in realizing sustainable and environmentally friendly subsidized housing. . The study was conducted on several literatures that discuss sustainability, sustainable development, developer and consumer behavior and the construction of subsidized housing so as to get the right answers and strategies in developing green and sustainable subsidized housing in Indonesia

II. Review of Literature

2.1 Continuity

Perera & Mensah, (2019) states that the sustainable Housing Development Process (PPP) must look at and consider the relationship between economic, social and environmental uncertainty in a given context with the agency factors associated (i.e. the interests of different stakeholders and their power relations). . (James, 2015) distinguishes sustainability into negative sustainability and positive sustainability. Negative sustainability keeps things going by reducing the bad effects of previous rounds of development, for example: current negative ecological sustainability focuses on reducing carbon emissions, negative political sustainability by means of processes such as reducing corruption, reducing excess power with *checks and balances* and reducing violence. through the reconciliation commission, while for economic sustainability it is carried out with a process of negation and risk management. In contrast to negative sustainability, positive sustainability requires defining the terms and conditions of what is positive, and this requires the practice of projecting current conditions to achieve a lasting future from present conditions. Seven core conditions were introduced by (James, 2015) , among others, the first is the core condition of adaptability, namely the ability to adapt to changes brought about by external forces that threaten livable conditions and security. The second core condition of continuous learning, is the capacity or ability to seek knowledge, by learning and then using the understanding gained for the improvement of social life. The third is the core condition of life worthiness which is a life skill and environmental management so that it is possible to live by increasing welfare, including having the resources to secure social life in various aspects of human security, both in a tangible sense and in an existential sense. One of the capacities here is the possibility to debate and plan possible alternative ways of living. Fourth is the core condition of reconciliation, namely the ability to reconcile differences that will be destructive or negative. that crosses continuing boundaries and fosters positive social difference. The fifth core condition, relationality, is the capacity to relate to other people and nature, in a meaningful way. This includes the ability to love, to feel compassion, and to make peace. The sixth is the core condition of resilience, namely the flexibility to recover and develop in the face of social forces that threaten the basic conditions of social life and the last is the core condition of sustainability, which is the capacity to survive over time, through improving social and natural conditions of growth. Positive sustainability can be defined as the practice and meaning of human engagement that creates a living world that projects the sustainable possibilities of natural and social flowering, passion, resilience, and adaptation.

Chiu, (2006) discusses the socio-cultural sustainability of housing as having (a) social prerequisites that are conducive to the production and consumption of environmentally friendly housing; (b) equitable distribution and consumption of housing resources and assets; (c) harmonious social relations in the housing system; (d) acceptable quality of housing conditions; and (e) preservation of residential heritage.

The definition of sustainable urban design as a process in which “all actors involved . . . work together through effective partnerships and participatory processes to integrate functional, environmental and quality considerations to design, plan and manage the built environment” (Union., 2004) . Five guiding principles for *sustainability “UK Sustainable Development Strategy Securing the Future”* among them is good governance, which involves creativity, energy, community diversity and enacting localism to empower local communities and local governments in the process of sustainable housing development.

Robinson, (2004) argues that sustainability is “ultimately a matter of human behavior and negotiation over a preferred future, under conditions of deep contingency and uncertainty”, “sustainability” in development reflects social consensus about what development is “sustainable” or "unsustainable".

2.2 Sustainable Healthy Simple Home

To achieve the right balance between environmental and socio-economic goals at the local, national and global levels, sustainability must be a major goal in a business (United Nations, 2015) . Humans greatly influence sustainable development, because their activities can have consequences for the environment and social injustice (Brundtland, 1987) . The construction industry plays an important role in the economic and social development of a nation (Ofori, 2006) , in order to achieve sustainability, construction development activities must make extensive use of natural resources, energy and water and exploit them wisely to avoid negative impacts on the environment.

The design of sustainable residential buildings also needs to consider the dignity and welfare of the family without compromising the environmental and economic impact (Ahmad & Thaheem, 2016) . Efforts to be able to build well -designed and sustainable residences require an embodiment of harmony between the three pillars of sustainability, namely environmental, social and economic rather than *trade-offs* between the *Triple Bottom Line* (TBL) sustainability goals. Along with structural and aesthetic criteria, occupant comfort and expectations, environmental impacts, and economic pressures must be considered in order to achieve a sustainable building design (Cuéllar-franca & Azapagic, 2012) .

Understanding the subjectivity of what are the needs and wants of various stakeholders will present some cases with some ambiguity. “Needs” in housing are not always related to buyers (Gokul Krisna et al., 2020) . The developer's need for subsidies from the government to consumers in purchasing housing has forced developers to follow government regulations so that they can take advantage of the facilities provided by the government. The regulations from the government include the determination of the minimum land area limits and minimum building sizes as well as the maximum selling price.

For subsidized residential buildings in Indonesia, the government through Kepmenkimpraswil 403/KPTS/M/2002 has determined 4 types of simple healthy residential buildings, namely RIT-1, RIT-2, RsS-1 and RsS-2 types (Kepmenkimpraswil Number: 403/ KPTS/M/2002 concerning Technical Guidelines for the Construction of Simple Healthy Homes (Healthy Hospitals), 2002) . In this regulation, guidelines have also been provided for the construction of a simple Healthy house complete with architectural and construction planning, technical specifications and material use plans.

2.3 Developer

A developer is a person or group of people or organizations who buy or control raw land and then obtain approval from the government to develop the land by planning and executing it into a housing estate by building infrastructure and building construction on the land, and then selling the building (Janjua et al. al., 2020) .

Developers in carrying out housing development have a complex task, Healey, (1992) makes an institutional model in the housing development process (figure 2). Healey in his 1992 paper stated that the housing development process is complex and complex, constrained by the number of events involved in the project, the variety of institutions complete with their roles and activities, and the prevailing trends in the social relations of the development process linked to the question -macro-economic and political questions, spatial and temporal variations (Healey, 1991) .

In Figure 2, it can be seen that the first level of analysis is the level of empirical observation where the problems and needs of the community are identified, the second level is the analysis of the assessment of strategies and interests of actors related to resources, rules and all kinds of ideas that govern the development process. While the third level is the level where the occurrence of social relations that are expressed in the production model that applies as a way of regulating society in the place where development takes place.

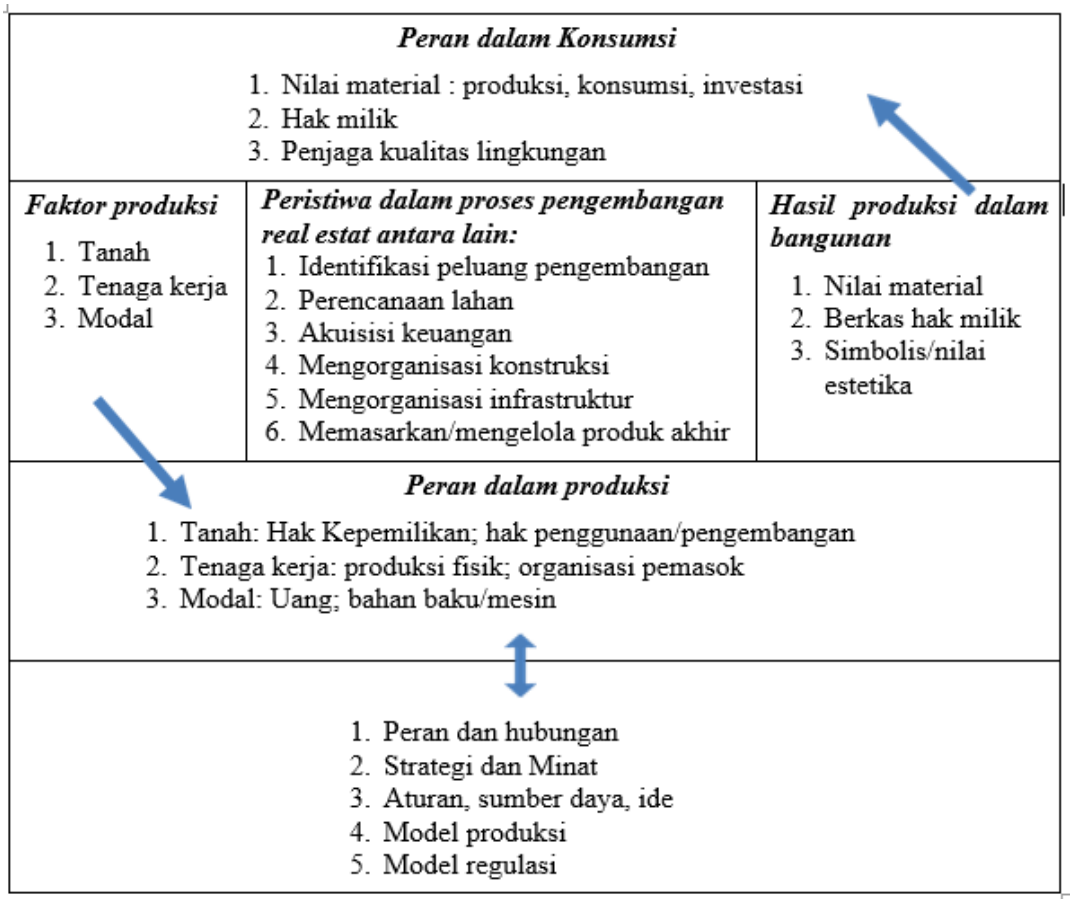

Figure 1*Institutional Model of the Housing Development Process*
Source: Adopted from (Healey, 1992)

2.4 Consumers of Subsidized Housing

Consumers of subsidized housing are low-income people (MBR) limited by regulations from the government through the Ministry of PUPERA which determine the maximum amount of monthly income for people/families who are entitled to receive subsidized assistance from the government. This assistance can be in the form of interest difference subsidies, down payment assistance and other assistance from the government, which in essence provides convenience for citizens to be able to have decent and affordable houses (REGULATION OF THE MINISTER OF PUBLIC WORK AND PEOPLE'S HOUSING OF

THE REPUBLIC OF INDONESIA NUMBER 1 YEAR 2021 CONCERNING COMMUNITY CRITERIA LOW INCOME AND EASY REQUIREMENTS FOR HOME CONSTRUCTION AND ACQUISITION, 2021) .

Previous research explains that consumer demand for housing is influenced by several factors, including (Widyastuti & Handayani, 2013) :

1. Location factor, whether the location is close to the city center, workplace, school and other supporting facilities.
2. The consumer's income factor, a person's ability to own a house is very dependent on his income. When a person's income increases and the economy is not in a recession and inflation, then people's desire to own a house also increases.
3. The ease of getting a loan greatly influences consumer decisions in buying a house. Due to high house prices and high interest rates, government assistance in various kinds of housing subsidies will increase consumer interest in owning a house.
4. House prices, as is usually the law of supply and demand, the higher the house price will cause a decrease in the demand for housing, but when the middle house price rises, the demand for subsidized housing tends to increase.
5. Public facilities and facilities, the availability of adequate public facilities and facilities in a housing estate, will also increase consumer interest in buying.
6. Legislation greatly affects consumer interest in owning a house, the existence of rules for providing subsidized mortgages that provide interest difference subsidies, down payment subsidies, Housing Financing Liquidity Facility assistance and other subsidized assistance will tend to increase interest in buying houses in people who are included in the MBR criteria.

2.5 The Role of Government in Sustainability

In maintaining environmental sustainability in housing development in Indonesia, the government begins by making regulations that require developers before starting housing development to first apply for a location permit or permit for land use/utilization on residential land to be built/developed (Government Regulation, 2021).) In the implementation of government politics in the regions, it is not possible to only prioritize one aspect (economics) but it is important to pay attention to other aspects, namely environmental sustainability so that the implementation of green government is very important in supporting environmental sustainability in the political process of government in the regions (Dama, 2021). In addition, prior to ratification of the site plan, the government (through the local government) requires developers to carry out an Environmental Impact Analysis or Environmental Management Efforts and Environmental Monitoring Efforts. All of this is intended to keep the environment around the development site and the wider area sustainable. In addition to EIA, UPL and UKL, developers are also required to prepare and sign a Statement of Environmental Management and Monitoring Ability (SPKPPL). All of the things mentioned herein are regulated in the Regulation of the State Minister of the Environment of the Republic of Indonesia Number 16 Years 2012.

Each local government has different rules regarding the Basic Building Coefficient (KDB) and the area of effective plots as well as the area of green parks, public and social facilities as well as the minimum road area or the area of the Road Owned Area (DAMIJA). All of them are determined based on the carrying capacity of the land.

In addition to the government's authority to ratify the Siteplan, the government also has the authority to issue building permits, or what is currently known as Building Construction Agreements (PBG), in accordance with Government Regulation (PP) Number 16 of 2021 concerning Implementing Regulations of Law Number 28 of 2002. about Buildings.

Through Kepmenkimpraswil 403/KPTS/M/2002 the government has also set several standards for building simple healthy houses complete with pictures and calculations of material use. In addition, the government in order to monitor the feasibility of building subsidized Simple Healthy Homes has also launched a construction supervision system using the SIPETRUK application (the ministry of public works and public housing et al., 2021) . The government has also required developers who build subsidized housing to join the Developer Association registered with the PUPERA ministry, which is registered in the Developer Registration System (SIRENG), currently more than 11,000 Developers are registered with SIRENG (SIRENG 2021 data).

III. Discussion

Green and sustainable subsidized housing should be the main goal of the government in meeting the need for housing for low-income people in Indonesia. The government with its various regulations has made many regulations to achieve a beautiful, green and sustainable environment. Since the beginning of the process of developing subsidized housing, developers have been required to comply with quite complex regulations, and some of them even took a long time to complete the requirements in these regulations. The non-transparent and convoluted rules made by the people in charge of implementing these government regulations have become an open secret. This is what causes high costs and does not even reflect a green government. It is as if regulations can be bought and changed at will by the authorized stakeholders.

In addition, the regulation of Kepmenkimpraswil 403/KPTS/M/2002 does not reflect the construction of green and environmentally friendly buildings, the use of natural materials that do not require green as a specification causes many materials to become damaged quickly in use, such as wood that is easily weathered and porous.

Subsidized housing developers who want to keep production costs as low as possible have a big enough share in not achieving green development and sustainability goals. The selection of materials, especially natural materials such as wood, sand and stone is done with the principle of cheap, not with the principle of green and sustainability. The use of wood materials for formwork and single-use scaffolding causes a high waste of natural products. In addition, the use of wood materials obtained from illegal logging in nature causes environmental damage which will eventually lead to landslides and floods. Such wood material is also used for roof construction as well as frames and door and window leaves which are susceptible to termites and easily weathered, this shortens the life of the building.

Consumers who use subsidized housing also contribute to the creation of a beautiful and green environment. The desire of consumers to fulfill their need for adequate space in their homes has led to the development of buildings so that many of them cover almost the entire plot of land, resulting in a very significant change in KDB, which in turn will reduce the absorption of land to rainwater. Eventually this water will run off and cause flooding. The lack of supervision by the local government on the development of this house is one of the causes. This is different from residential real estate, where the developer is very strict in monitoring by establishing an environmental management agency. The character of consumers of subsidized housing who are low-income people is more difficult to obey the rules.

IV. Conclusion

From the literature review, the development of green and sustainable subsidized housing in Indonesia has actually been adequately regulated, what is needed now is the attitude and awareness and strategies of all stakeholders in implementing it. The only drawback is that the use of green materials has not been regulated in the construction of subsidized housing. In order to upload the developer's awareness in building green houses, it is necessary to dispensate to reduce taxes or other levies if the developer carries out the construction of his house using green materials. Supervision of the use of green materials can be done through the SIPETRUK application.

The availability of land banks and the ease with which small developers can obtain and access them will have a positive impact. So far, many small developers have obtained land on the basis of cooperation with land owners, so that the location selection is " given " not based on a thorough feasibility study and suitability for spatial planning.

The registration of the developer in SIRENG does not guarantee that the developer will prioritize sustainable development. SIRENG is just an administrative requirement, there is no rating for developers in associations, there is no difference between obedient developers and naughty developers, also between developers with small capital and developers with large capital. There is no rating given based on the availability of skilled and expert workforce owned by the developer.

It is necessary to conduct further research on the behavior of subsidized housing developers, consumer behavior of subsidized housing and also the behavior of the government which has a function as a supervisor in the development of subsidized housing, to obtain, know and understand the factors that influence them in building green and sustainable subsidized housing.

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