

**EFFICIENCY CITY HOUSING LAND WITH THE SUSTAINABLE
HOUSING CONCEPT
CASE STUDY: THE GAYUNGSARI HOUSING, SURABAYA**

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Abstract

Urbanization is an inevitable issue at this time. Migration into the cities increase the urban population, along with the need for the housing land that is increasingly expensive and scarce. Limitation of land makes the housing availability today less attending to the green open space fulfillment and public facilities. In response to this phenomenon it is necessary to criticized the efficiency of housing land to get the ideal housing area. Land efficiency must be accompanied with sustainable development so that housing area can survive in the future and does not cause negative effects to the surrounding environment. The purpose of this study is to get the design concept on land efficiency, which is applied to the case study on The Gayungsari housing. The method used is descriptive qualitative, while the data collected through observation. The result this study show that the land efficiency of The Gayungsari housing can be done through the addition of green open space and the provision of public facilities for housing.

Keywords: *urbanization, housing, sustainable development, efficiency*

1. Introduction

Urbanization is defined by Munir (2000) as an increasing proportion of the population living in urban areas caused by the displacement of people into the city or as a result of the expansion area of the city. Along with the development of urbanization is rapidly increasing, causing the population of the city increased rapidly and need place to stay. With the increasing housing needs, the need for land has increased, so that the urban land increasingly expensive and increasingly limited. Limited urban land have negative impacts, especially in housing and residential areas, namely, housing today often do not pay attention to their green open space (RTH) and Public Facilities.

Recognizing that land for housing increasingly rare, the effort land efficiency required without sacrificing Green Open Space and Public Facilities. Because green open space is essential for the survival of human beings who live in surroundings and the lungs of the city. While General Facilities are very important to support human needs in activity outside and for social interaction. Supporting aspects, such as infrastructure, roads, drainage, water pipes, electricity grids must be considered to meet the standard. The efficiency of land aims to meet the standards of housing design to give the best thing for the occupant.

2. Literature Review

2.1 Housing and Settlement

According to Law No. 4 of 1992, understanding Houses, Housing and Settlement are as follows:

1. The house is a building that serves as a residence and means of fostering family
2. Housing is a group of home that serves as living environment with infrastructure and facilities.

3. The settlements are part of the environment outside protected areas, such as urban and rural area serves as a housing area and the activities place that support livelihoods.

The house can not be viewed separately, should be concerned with the social environment, the housing is an integral part of the social system environment. Housing units are organizing the need for privacy and social interaction (Syarief, 2000).

Environmental health in housing is strongly influenced by the economic, social, educational, traditions, tribal, geography and local conditions. Residential neighborhood affected by several factors that determine the quality of the environment, such as facility services, equipment, implementation of physical health, mental health, social health for individuals and families (Mukono, 2000). Efforts for the comfort and health of occupants must be achieved with technical approach that does not destroy nature (Syarief, 2000).

Some of the criteria for settlement areas eligible are as follows (Syarief, 2000):

- a. Legal protection.
- b. Availability of services, raw materials, facilities, and infrastructure.
- c. Affordability.
- d. Livable.
- e. Accessibility.
- f. Location.
- g. Feasibility culture.

Comfort and security of a house is determined by the house is located. Interest in a person's home location is determined from how to access the site and how the surrounding environment (Luhst, 1997).

2.2 Sustainable Development

Budimanta (2005) states that sustainable development is a point of view regarding the activities carried out in a systematic and planned within the framework of increased prosperity, quality of life and environment of mankind without reducing access and opportunity for future generations to enjoy and use.

Sustainable development in the residential sector is defined as settlement development, including the development of the city, ongoing basis in an effort to improve the social, economic and environmental quality as a place to live and work. The essence of sustainable settlement is an effort to improve the quality of life in a sustainable manner (Kirmanto 2002).

Several planning strategies of residential area that is environmentally friendly can be seen on the following principles (Grant, et al, 1996):

- a. Manage and maintain the environment in order to function properly.
- b. Minimize the influence of the building on the surrounding environment.
- c. Protecting natural resources and land resources for future generations.

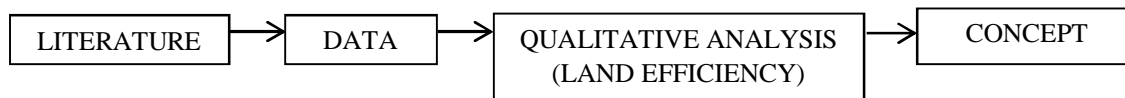
- d. Reducing the waste generated by residential buildings.
- e. Increasing community involvement in promoting environmental preservation.
- f. Promote the importance of healthy social environment.

The concept of environmentally-friendly building has a special attention to the management of natural resources, human safety, energy efficiency, use of materials that can be recycled. The general method used is residential design friendly, planting trees around the dwelling, procurement of green space, the management of rain water, efficient energy use, the use of solar energy, the use of resources that are renewable, waste management, prevent pollution and environmental degradation (Jha et al, 2016).

The objectives of sustainable housing is to minimize damage to the environment and where possible to improve the quality of housing environment (Anneke, 1998). Sustainable housing not only meet the present generation but also future generations and not only meet basic needs, but also the quality of the environment (Chiu, 1999)

3. Research Methodology

The research was conducted case studies on The Gayungsari housing, Surabaya. The data collection technique used is the field of observation, gather supporting data from the official website of The Gayungsari housing and of articles on the study site. Analysis technique used is descriptive qualitative analysis of the potential and problems, including the suitability of land use. The results



of the analysis will be the basis in making the concept of environmentally sustainable housing rearrangement.

Figure 1. Flow of Research

Source : author, 2016

4. Overview Location

The location of this research study is The Gayungsari housing at East Gayungsari Road, Surabaya. The Gayungsari housing built on an area of 7.5 hectares with a total of 230 units were launched on May 28, 2011, which only sells 2 floor house.



Figure 2. Location of Housing
Source : Google map, 2016

The basic shape building of The Gayungsari housing is tropics architectural appearance. In this housing there are 5 types of houses, namely:

1. Pineapple Type 113/112 (8 x 14) The Gayungsari totaled 59 units
2. Apple Type 127/144 (8 x 18) The Gayungsari totaled 64 units
3. Lychee Type 143/176 (8 x 22) The Gayungsari totaled 51 units.
4. Pear Type 162/207 (9 x 23) The Gayungsari totaled 42 units
5. Grape Type 222/286 (11 x 26) The Gayungsari totaled 17 units

4.1 Advantages

The Gayungsari Housing, a modern residential city of Surabaya with Concept One Gate System, Electric Underground, HGB has been broken by lots, street paving block, electrical networks, PDAM, available public facilities eg garden, swimming pool, minimart, club house and close to the other facilities

4.2 Problems

4.2.1 Noise

Residential location next door to the office Telkomsel, because housing is the result of cooperation between a subsidiary of Telkom, so that the master plan residential location and this office into one, though limited by the wall, but the effect is not convenient in terms of environmental conditions including voice noisy.

4.2.2 Support Facilities

The Gayungsari Housing is a luxury housing so that the supporting facilities can be considered almost complete, but there are still shortcomings, namely:

- dining facilities
- children's playground facilities

And all public facilities made centrally in the area and is located on the edge of a residential neighborhood so that within a range of homes to public facilities is not balanced.

4.2.3 Environmental Conditions

Conditions greenery in a residential area less green, and the green open space is still limited to the boulevard and the island roads, some open space dominated by pavement road paving.

5. Analysis

Based on the literature were used for analysis, there are several criteria for sustainable settlements, are as follows:

- a. Legal protection, The Gayungsari Housing have legal protection
- b. Occupants have access water from PDAM, use LPG for cooking, electricity from PLN, underground electrical system. Closed drainage channels, regular garbage disposal.
- c. Affordability, The Gayungsari Housing intended to upper-income.
- d. Livable, provide adequate space for the residents and protect from the weather or the threat to health. Security awake by one gate systems, cctv and security.
- e. Accessibility, residences can be access by all occupants, but no pedestrians line.
- f. Location, the location is ideally located in the center of the city and with the various facilities, public services, education, shopping center.
- g. Feasibility culture, The way housing is constructed, the building materials used can show the cultural identity of Indonesian tropical architecture.
- h. Regional development reforestation is still lacking and yet so looked green.
- i. Building is free from interference radiation and electromagnetic fields.
- j. Noise audible from a residential area bordering the area of Telkom
- k. The transport system, to reach The Gayungsari housing should use private vehicles.
- l. Utilization of natural resources is not maximized, for example, the use of sunlight.
- m. Land Use, The Gayungsari housing in accordance with the allotment of land for residential area land use map based on the city of Surabaya, 2016.

6. Concept

Results of an analysis of the advantages and problems of The Gayungsari housing is require rearrangement. Here is the concept of efficiency of land:

6.1 Noise Countermeasures

To overcome the noise of Telkom area then how that is done is to create a buffer area. For the northern border the land area is limited, it will make the plant wall retaining noisy, as high as 2 meters that absorb noise as well as limiting the view of the direction area Telkom to provide privacy to the housing residents. As for the east side will be create a garden area of the buffer that will be placed after the dividing wall.



Figure 3. Border north, the current state (left) and the plant wall retaining noisy (right)
 Source : ideaonline.co.id, 2016



Figure 4. Border east, the current conditions, the barrier wall away from the green area (left) and proposed laying a buffer area (right)
 Source : author, 2016

6.2 Compliance Support Facilities

Procurement of dining facilities and a children's playground facilities. Then this area placed in a location that can be easily reached by all residents of the housing. (The location of public facilities seen in Restructuring Masterplan)



Figure 5. Proposed playground (left) and the proposed places to eat (right)
 Source : dennytrisaputra.blogspot.co.id & nabilrental.com, 2016

6.3 Environmental Conditions

Adding greenery to wider the island road by reducing the width of road each 1 meter on each side, so that the total width is 3 meters and the island roads can be built and beautiful green garden, to greenery boulevard road by increasing the plants. Repair the existing park and the park position at a location that is more beneficial, namely in the eastern area of the side wall so that the park also serves as a buffer area. Residential garden can be combined with a children's playground and also where to eat, so that the area of public facilities into a single unit in a single location. Pedestrian accessibility, put limits on the road by distinguishing color in the allotment for walkers or grant writing / pedestrian signs.



Figure 6. Island road, eksisting width 1 meter (left) and the proposed width of 3 meters (right)

Source : bt-01.blogspot.co.id, 2016



Figure 7. Boulevard residential street, the current state (left) and proposed (right)

Source : tlharysantoso.wordpress.com, 2016



Figure 8. Parks housing, the current state (left) and proposed (right)

Source : kontraktortamansurabaya.blogspot.co.id, 2016

6.4 Utilization of Solar Panels

Utilization of natural resources available is not maximized, as a country with a tropical climate, the sun is a natural resource that can be utilized optimally by using solar panels.

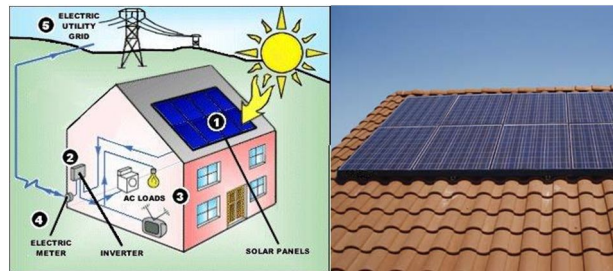


Figure 9. How the solar panel (left) and solar panel (right)
Source : xteknologi.blogspot.co.id & indoenergi.com, 2016

6.5 Penataan Ulang Masterplan



Figure 10. Masterplan Housing (existing)
Source : thegayungsari.com, 2016



Figure 11. Masterplan efficiency results with the concept of sustainable
Source : author, 2016

The efficiency of The Gayungsari housing land with the concept of sustainable housing is like a masterplan above, the white part is the part that the layout at reset.

7. CONCLUSION

The Gayungsari is a residential housing in the city of Surabaya can do rearrangement related to efficiency can increase land for green space and support facilities to maximize the benefits that will be felt by the residents of the housing. With the rearrangement of the housing will look green, has a cool air and beautiful scenery as well as the occupants get the ease of access facilities to support the procurement of the playground, where to eat and park improvements that are placed on two locations on the housing so that every house balanced range.

References

- Aneke V. Hal (1998). "Sustainable housing in Europe". Jurnal HERON, Vol. 41 no.1.
- Budimanta, A (2005). "Urban Development through Sustainable Development in Indonesia Anthology Urban Development in the 21st Century"
- Grant, Jill, Manuel, Patricia, Joudrey, Darrell (1996). "A Framework for planning sustainable residential landscapes". Journal of the American Planning Association. Vol. 62 no. 3 Summer, pp. 331-344.
- Jha, B., Shalwee, Verma, S., & Chaudhari, P. R. (2016). "Green Building Concept towards Sustainable Urban Development and Panacea for Global Warming". *IJLRET*. 2(1), 35-41.
- Kirmanto, Djoko (2002). "Development of Housing and environmentally sound strategic pncegahan urban flooding". seminar Care Flood "Forest", Jakarta.
- Luhst (1997). "Real Estate Valuation". Principles Aplication. USA.
- Mukono H.J, (2000). "Basic Principles of Healthy Environmental". Airlangga University Press. Surabaya.
- RLH Chiu, (1999). "Sustainable Development A new Perspective for Housing Development", Centre of Urban Planning and Environmental Management. The University of Hongkong. HK.
- R. Munir. (2000). "'Migration", Fundamentals of Demography edition of 2000". Issuing UI: Jakarta.
- Law of the Republic of Indonesia Number 4 of 1992 on Housing and Settlement.
- Zulfie Syarief (2000). "Government Policy in the Field of Housing and Settlements for Low Income Communities". USU Press. Medan.

Reference to a web source:

Contractors garden surabaya [Online] [http://kontraktortamansurabaya.blogspot.co.id /2015/09/kontraktor-taman-perumahan-real-estate.html](http://kontraktortamansurabaya.blogspot.co.id/2015/09/kontraktor-taman-perumahan-real-estate.html) (December 19, 2016)

For Rent: Shop in Tirtasani Royal Resort Malang [Online] <https://tlharysantoso.wordpress.com/2009/01/05/> (December 19, 2016)

How to install solar panels on the roof of the house [Online] <http://www.indoenergi.com/2012/04/cara-memasang-panel-surya-di-atap-rumah.html> (December 19, 2016)

It is He, choice Plants Full Benefits! [Online] [http://www.ideaonline.co.id/iDEA2013/ Tips-Trik/Ini-Dia-Pilihan-Tanaman-Penuh-Manfaat!/TIPS-PAGAR-TANAMAN-130602](http://www.ideaonline.co.id/iDEA2013/Tips-Trik/Ini-Dia-Pilihan-Tanaman-Penuh-Manfaat!/TIPS-PAGAR-TANAMAN-130602) (December 19, 2016)

Median Park Road Plan A. Yani Katingan [Online] [http://bt01.blogspot.co.id/2014/06/ rencana -taman-median-jalan-ayani.html](http://bt01.blogspot.co.id/2014/06/rencana-taman-median-jalan-ayani.html)(December 19, 2016)

Solar energy diagram [Online] [http://xteknologi.blogspot.co.id/2012/10/solar-energy-diagram .html](http://xteknologi.blogspot.co.id/2012/10/solar-energy-diagram.html) (December 19, 2016)

Some Tasty Food For Breakfast in Banjarmasin [Online] [http://nabilrental.com/ category /wisata-kuliner/](http://nabilrental.com/category/wisata-kuliner/)(December 19, 2016)

The gayungsari [Online] <http://www.thegayungsari.com/>, (October 7, 2016)

Wildlife housing ex Pabuaran jakarta [Online] [http://dennytrisaputra.blogspot.co.id /2013/08 /taman-perumahan-ex-pabuaran-jakarta.html](http://dennytrisaputra.blogspot.co.id/2013/08/taman-perumahan-ex-pabuaran-jakarta.html) (December 19, 2016)