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To cite this article: T W Murtini and N Muladica 2018 *IOP Conf. Ser.: Earth Environ. Sci.* **152** 012026

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The Application of the Environmentally Friendly Co-Housing Concept in the Residences at Desa Tegaldowo, Kecamatan Bantul, Yogyakarta

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Abstract. Humans' comfort when living in their residences is heavily influenced by their economic level, and it distinguishes the design of residences of the poor and the rich. Having limited position, architects and society should participate in order to solve the aforementioned problem. In participatory architecture, the client's special position that is non-profit and non-private, and in this case the clients are the communities and people in lower class should be considered. The participatory architecture is also supported by a concept called 'CoHousing' or 'Community Housing'. It is a community-based concept in Yogyakarta where its people are identical with communal work. The study case took place at Desa Tegaldowo, Kecamatan Bantul, Yogyakarta where the people still live in simple houses. The participatory architecture concept and 'CoHousing' concept will complement each other in involving the community that can give impact for their household. So we can apply the concept of eco-friendly Cohousing on settlements in Desa Tegaldowo based on the participation of community. This research used the method of design guidance. The result of the research was the guidance of settlement design with concept of design participation, co-housing' and permaculture concept using environmental friendly materials and structures at Desa Tegaldowo.

1. Introduction

The property developments, especially in sector of housing are increasing. This is related to the needs of the community for housing in the increasingly limited availability of land. So, the developers are competing to provide the best facilities to attract for consumers to be interested in housing offered. But, sometimes the design and facilities of housing are just "opening" at the beginning. These new housing in general have the character of industrial goods that are made in bulk so that not in accordance with the needs of its users and the climate in Indonesia. And also affected at the comfort and feelings do not feel at home.

Home is not just a collection of physical but also a social gathering. High demand and demand factors for housing, forcing most urban communities in Indonesia to become individualists. The increasingly fragile urban security level, plus the lack of interaction with neighbours with the fence of houses such as fortresses make a dead social interaction. The characteristics of housing as mentioned above is not in line with the general character of Indonesian citizens are no exception Yogyakarta city



who like to socialize and cooperate. Actually, the problem of land limitations and social interaction in building a house is not just happening in our country alone. Abroad, this problem has long been happening so that there have been various concepts to overcome the problem. One of them is a concept called 'Cohousing' or short for 'Community Housing'. A community-based housing concept as one of the answers to various issues related to housing today. This concept has been started by some communities such as "Rumah Bersama Community".

Implementation of this concept is suitable when viewing the condition of the city of Yogyakarta as one of the friendly city between its citizens. This is seen in one of the villages in Yogyakarta, namely in Desa Tegaldowo, Bantul. As a village that has tourism potential, this village belongs to an independent village because it has various businesses in agriculture, farming, and also in handicraft, which belong to micro, small and medium enterprises.

1.1. Formulation of the Problem

Housing is a residential area inhabited by certain types of houses with large residential capacity. In urban areas have emerged various models of housing with fancy concepts. However, the character of the housing is actually not in line with the general character of Indonesian citizens are no exception the city of Yogyakarta in the village of Tegaldowo, Bantul District who love to socialize and cooperate. So the research question arises as follows:

1. What is the potential of Tegaldowo Village community in Kecamatan Bantul that can increase their occupancy value ?
2. How to connect the community potency of Tegaldowo Village, Bantul District with the application of Permaculture and Co-housing concept that is environmentally friendly on the dwelling ?

1.2. Research Purposes

The purpose of The Application of the Environmentally Friendly Co-Housing Concept in the Residences at Desa Tegaldowo, Kecamatan Bantul, Yogyakarta to be able to identify the potential of the community and apply the concept of eco-friendly Cohousing on settlements in Desa Tegaldowo, Bantul, Yogyakarta city based on the participation and ability of the village community.

1.3. Research Outcomes

The result of this research is a house design guidelines of settlement for the society with the concept of co-housing and participatory architectural approach using environmentally friendly materials and structures in Tegaldowo Village, Bantul District, Yogyakarta.

1.4. Research Methods

This research used the method of design guidance with the concept that refers to the way people build residential with his basic theory using the design participation, the concept of co-housing and permaculture.

2. Literature Review

2.1. Co Housing

Cohousing is a concept of residence. This concept is emphasizes "common space" called common house on housing. The core of the concept of Cohousing i.e. in one housing there are spaces that can

be shared by all residents of the house in the housing [1]. The difference with ordinary housing, in housing cohousing residents of houses already formed the community first before the housing itself was built. Then they commit to live in a housing together and come to design the housing design. According to McCamant and Durrett [2] there are several characteristics of Co-Housing concept, among others:

1. Participatory process, prospective occupants are involved from the beginning in designing settlements and community forms that suit your needs
2. Shared Facilities, designed for everyday use to save land & expenses.
3. Design Housing, must support community life. Usually cluster-shaped, motor-free and allows each member to always interact with each other.
4. Managed by Occupants, there is a division of tasks among fellow residents to manage the settlement area.
5. Decision-making is done by consensus, not hierarchy.
6. The economic system is not communal, in which each occupant has his own source of income that does not come from the community.

2.2. Permaculture

Permaculture derived from the word "permanent" and "agriculture" can be interpreted as the management of agriculture, animal husbandry, and fisheries by improving the quality of ecosystems so fulfilled human needs that remain sustainable into the future. In fact, according to Yayasan IDEP (one of the institutions that develop Permaculture in Indonesia) in the Permaculture Handbook, the permaculture can also be meant "permanent culture" which is to preserve, support and cooperate with local culture and environment, and grow together at the same time [3]. Work with nature and people and learn from them instead of fighting or competing with them. These ethics and principles speak of responsibility for our own lives, our environment, and the future. It also helps us plan for a safe future for our families, nature, and culture [4].

According to Permatil [5] there are characteristics of the concept of permaculture

1. Permaculture is one of the most holistic, integrated systems analysis and design methodology found in the world.
2. Permaculture can be applied to create a productive ecosystem from a human perspective using or to help restore the health of degraded and wild ecosystems. Permaculture can be applied to any ecosystem, no matter how degraded.
3. Permaculture is the value of validating traditional knowledge and experience. Permaculture combines sustainable farming practices and land management techniques and strategies from around the world. Permaculture is a bridge between traditional culture and emerging earth cultures.
4. Permaculture aims to maximize symbiotic and synergistic relationships between the components of the site.
5. Permaculture is urban planning and land design in the countryside.

2.3. Participatory Planning

The development through community participation is one of the efforts to empower the community potency in planning development related to local resource potential based on consultation study, that is increasing the aspiration in the form of desire and real need that exist in the society, increasing the motivation and role of community group in development process, And increased sense of belonging to community groups on program activities that have been developed. Development planning process based on community participation must pay attention to the interest of the people which aims to improve the welfare of the community. The working principle of development through community participation is as follows:

1. Work programs are presented openly to the community by conducting participatory communication in order to get community support,
2. Work program implemented through cooperation and working together groups between communities, village officials and all citizens in order to minimize barriers in the program
3. The work program does not lead to certain groups in society or groups in order not to cause division,
4. During the program, coordination is always done vertically or horizontally,
5. No need to be superior or "feel most know" in every opportunity of implementation of work program,
6. No need to promise to anyone but the seriousness of work within the context of a work program that has been determined.

Community Development with all its activities in development should avoid the "doing for the community" work method, but adopt the "doing with the community" work method. The working method of doing for, will make the community become passive, less creative and helpless, even educate people to rely on government assistance or voluntary aid organizations. In contrast, the working method of doing with, stimulating the community to be active and dynamic and able to identify where the needs of its nature - real needs, felt needs and expected need. The working method of doing with, closely matches the great ideas of KI Hajar Dewantara about education leadership in Indonesia - ing ngarso sung tulodo, ing madyo mangun karso, and tut wuri handayani - which focuses on the need for participative independence in the development process [6].

3. Discussion

The location of this research is located in desa Tegaldowo Kecamatan Bantul kota Yogyakarta. The village is located on the border of the sub-district Pajangan and the subdistrict of Sewon.



Figure 1. Site location of Tegaldowo Village

Tourism Tegaldowo Village has a variety of interesting tourism potential to be visited by tourists and folk art that is still preserved. As geographic this land area is located in Bantul regency located on the south side of Yogyakarta Special Province. This land has an area of 7,327 m². With a relatively large number of residents and most of the livelihood as private employees and laborers.



Figure 2. The condition of housing in Tegaldowo village

With the growing population of villagers, coupled with immigrants like the Pringgomukti community of Pinggokusuman in early 2017 to settle for a long time that determines their upcoming life plans. It shows that there will be a development of residential space for them. The development of this dwelling refers to their life plan based on their needs as residents. The development of this dwelling will not take a long time, because in the empirical conditions of Tegaldowo village has the characteristic of people who like mutual cooperation and tolerance. In addition, the development of houses in the village Tegaldowo itself evolved from the concept of Java house with the division of three main rooms namely the front room, living room, back room. This proves that their culture is still preserved.

Therefore, the application of residential design concept in Tegaldowo village still refers to the concept of Javanese house with the shape and material adapted to the ability of the community. And the development of residential space tailored to the needs of residents who are the same majority of the community in accordance with the concept of co-housing. The role of Tegaldowo villagers themselves is vital because the attitude of mutual participation among the community is so high that the concept of co-housing is very appropriately applied in the village. In addition, land use that can be used as a cultivation area as a basis for applying the concept of permaculture to use it as an area of cultivation and alternative resources

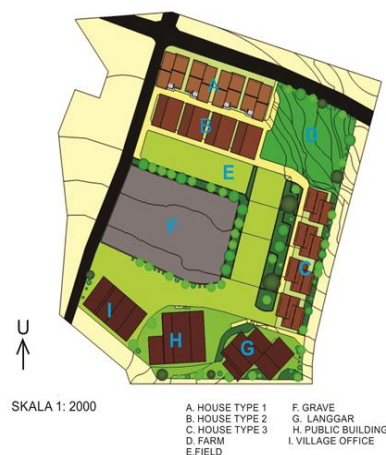


Figure 3. Part of siteplan in Tegaldowo Village

The design process starts from the area of the village. The design includes the location of the cemetery, rice fields, houses, gardens, village hall and langgar. Each placement is based on the hierarchy of the place. In Tegaldowo village the burial area has the highest hierarchy so that the cemetery area is placed some distance from the residential area. The boundary between the cemetery area is limited by the rice fields surrounding the cemetery. New settlement and public place of the village. As explained before, with the development of villagers affected by the immigrants there will

be changes in residential space. Based on the results of meetings with the residents, there are several aspects that can be taken as the life plan of residents if already settled in Tegaldowo, namely health, religious, harmony, comfort, environment, economic growth, productive, new life, happy children. The concept of house refers to the way villagers from Tegaldowo village build their house with the concept of traditional Javanese house by dividing the house into 3 parts (Javanese traditional house concept of the front room, living room, back room / servise) which is also applied to the design guide. The design guidelines include:

1. Create a private space as a stimulant for space restrictions.
2. The development of space according to the needs of residents of the front room and living room in accordance with the concept of traditional javanese house.
3. The addition of service space on the back of the house.
4. Use of insubstantial spaces between spaces to maximize the existing shelter.
5. Use some natural materials such as wood as walls and bamboo as a roof frame and columns.
6. Periodic maintenance of all materials used in that house.
7. Use of environmentally friendly materials that use woven bamboo coated cement on the outer wall of the dwelling house.

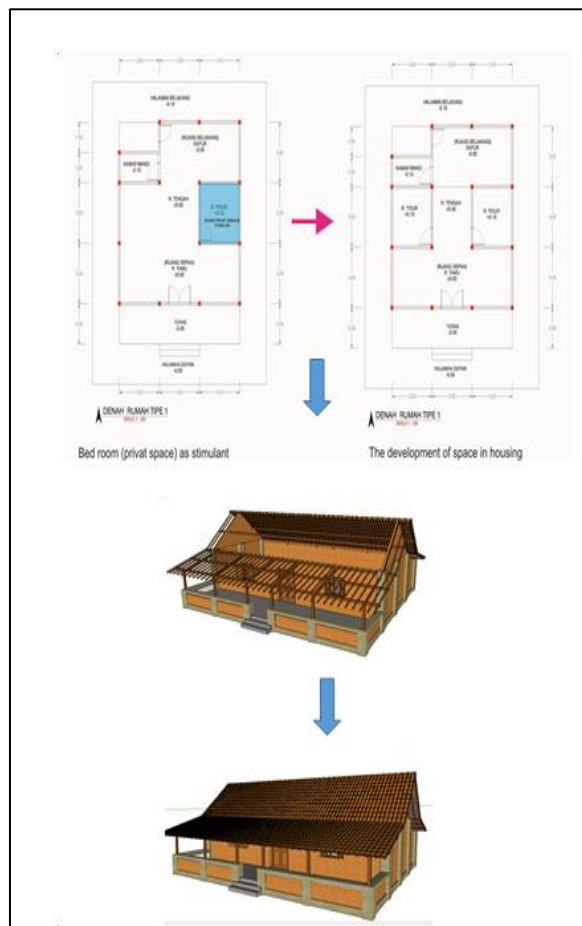


Figure 4. The steps of space housing development in Tegaldowo village

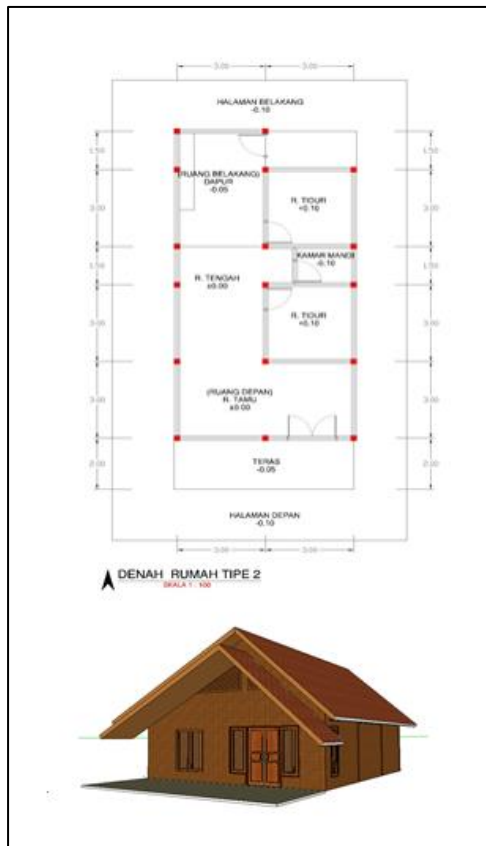


Figure 5. Alternative design 2 (floor plan and 3D model)

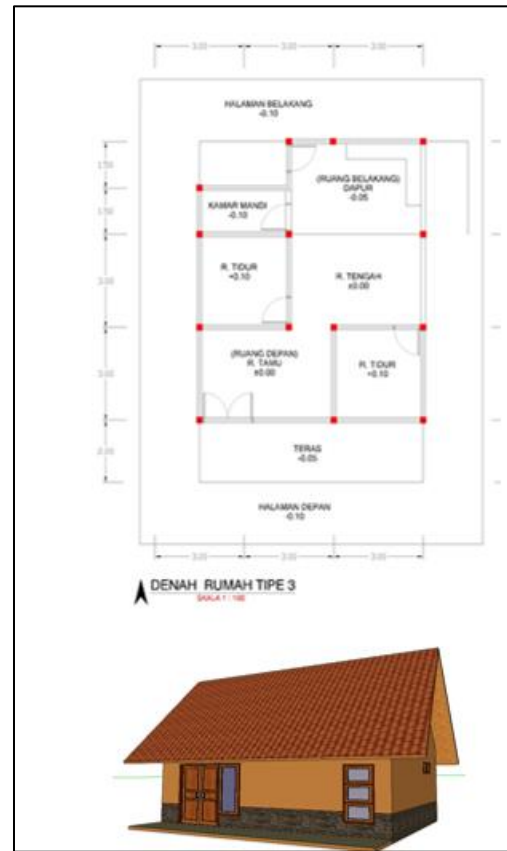


Figure 6. Alternative design 3 (floor plan and 3D model)

In the process of residential design in Tegaldowo village, the material and the shape of the house adjust the ability of the community. So that the participation of village communities is needed in the planning process. There are 2 alternative home design models that have the same concept on the basis of Javanese house concept (consist of front room, living room and back room). But using the saddle roof and bamboo material according to the ability of the villagers.

4. Conclusion

In Desa Tegaldowo, Bantul, Yogyakarta has the potential of settlements that can be developed according to the needs of residents and the community. The development of settlements through residential design where the space within it develops according to the needs of its inhabitants. The role of the tegaldowo village community is crucial in the residential planning process that suits their ability. So that the design and design model can be easily understood and applied because the proposed design is adapted to the activities of the community to form their house with the application of the concept of co-housing and permaculture.

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