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Spatial Planning and Community Involvement of Ecovillage Settlements in Tibang Village, Banda Aceh City

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Abstract

One of the handling strategies towards achieving the SDG Agenda is the 11th goal at the moment, namely environmentally sound development. Tibang, as a residential area in the city of Banda Aceh, has implemented a program from the city government that leads to environmentally sound settlements by applying the eco-village concept. This step has received support from the government in the form of policies and the existence of community institutions that care about the environment but have not been implemented optimally. Based on the problem in this study, how is the assessment of residential and residential areas in Tibang Village an embodiment of environmentally friendly villages? This study aims to assess the factors that influence housing and settlement areas in realizing the concept of the eco-village in Tibang Village. The method used is descriptive quantitative method with factor analysis, which has 82 respondents. By analyzing using the method of assessment and weighting analysis, the results obtained indicate that Tibang settlements need to be improved, especially in maintaining the preservation and environmental quality that can be realized through space utilization and community involvement in environmental preservation. Recommendations addressed to the community to increase the utilization of residential space efficiently and optimize the role of community groups concerned with the environment by embracing all levels of society and participating in realizing the eco-village concept.

INTRODUCTION

Based on the SDG Agenda, the 11th goal is to create cities, settlements that are inclusive, safe, resilient, and sustainable. One strategy currently being undertaken is environmentally sound development in rural and urban settlements. The city of Banda Aceh is one of the cities that applies its environmental relations with the community. This is following the Vision and Mission of the City of Banda Aceh, namely as the Model City of Madani in building insightful and environmentally friendly city infrastructure. One form of embodiment of environmentally friendly villages is eco-village settlements.

Gilman (1991) also establishes a definition of the eco-village, namely a full-featured settlement where human activities are integrated with nature by supporting healthy human development and can be successfully continued. An eco-village is a community where people feel supported and take responsibility for the environment, and they have a high sense of togetherness.

Tibang Village is one of the villages included in the environmentally friendly development program in Banda Aceh City. The policy of the Banda City Government was implemented in Tibang Village regarding the City Sanitation Strategy program to realize better sanitation. The greening movement and the provision of Green Coverage Coefficient or Ruang Terbuka Hijau (RTH) as the purpose of protecting local habitats and improving environmental quality in Tibang Village. This is also the case with community institutions that have the specificity of environmental concern and community empowerment.

However, with the change of time and the increase in population, the planning of housing and

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settlement development in Tibang Village, many people did not pay attention to environmental aspects and were not on target. Irregular housing development, poor drainage systems, public facilities that are not in accordance with needs. Based on Banda Aceh Mayor Decree No. 268 of 2018 The Government of Banda Aceh City (2018) concerning the establishment of slum and slum housing locations in Banda Aceh City, Tibang Village is included in the list of slum and slum housing locations in Banda Aceh City. This is very influential on the decline in the quality of the settlement environment and the implementation of the community towards environmentally friendly villages has not run optimally. Tibang Village has carried out environmentally friendly development but has not been optimally carried out due to the existing problems of the village. So it is necessary to do research on how to evaluate housing and settlement areas in Tibang Village as an embodiment of an environmentally friendly village.

The study aimed to assess the factors that influence housing and settlement areas in realizing the concept of the eco-village in Tibang Village. The study is located in Tibang Village, a village located in the east of Banda Aceh, directly adjacent to the Aceh Besar District. Administratively, Tibang Village is one of the villages in the Syiah Kuala District. The distance between Tibang Village and the city center of Banda Aceh is approximately 5.9 Km The description of the study location can be seen in Figure 1.

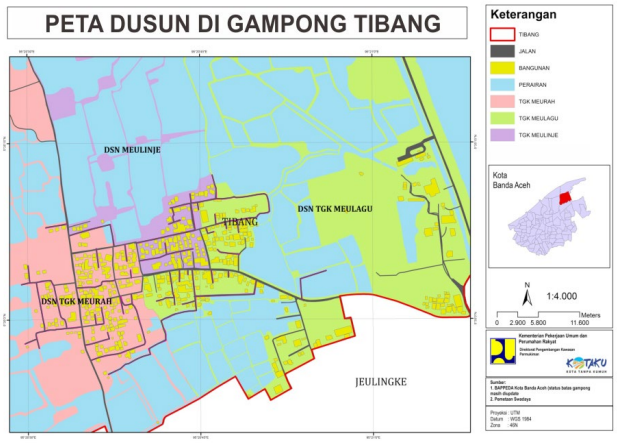

Figure 1. Study Location

Settlements are a residential environment that is more than just a house or housing that contains integrated interests and alignment of use as a living environment (Sadana, 2014). Settlements are defined as places where humans live (Winarso, 2013). Doxiadis (1968) further describes settlements in its five constituent elements, namely nature, human, society, shells, and networks. Formally, the definition of settlements in Indonesia written in Government Regulation No. 1 of 2011 The Government of the Republic of Indonesia (2011) concerning Housing and Settlement Areas is defined as a residential environment consisting of more than one housing unit that has the infrastructure, facilities, public utilities and has supporting activities for other functions in the regional urban or rural.

The term eco-village as a combination of ecology and village is needed to investigate the roots of each of these terms. The word 'ecology' comes from Greece, oicos, which means' household 'or' residence and logo mean learning and knowledge. Ecology means the living place of creatures but refers to the effects of the environment on living things, the effects of living things on the environment and reciprocal relations between living things. Eco-village settlements still prioritize environmental aspects during increasingly rapid urban development and proper use of natural resources.

According to Basyir (2008), the eco-village unit is a scale where each can recognize and be identified by his community, and to what extent each can have the opportunity to influence others. Eco-village community members are united by ecological, socio-economic, and spiritual and cultural similarities. According to (Yuliastuti et al, 2017) eco-village is one of the goals of the Global Ecovillage Network (GEN) to create and promote human settlements to live more comfortably. The implementation of the eco-village initiative is environmental preservation to ensure sustainable settlement development.

There are several variables used for the eco-village concept in the development of residential and residential areas in Tibang Village, namely the efficient use of space. (Byun et al, 2014) describes housing planning by providing guidance on space planning and supporting facilities. Supporting facilities are in the form of garden integration, which means access to the broader public and connected with other recreational facilities as well as green space networks (Djokic et al, 2016)

Another effort is community involvement in environmental preservation. (Yuliastuti et al, 2017) explained that the eco-village aspect could be achieved by community participation with the involvement of local institutions to bring harmony to environmentally friendly pillars of development. The success of implementing the eco-village is mainly due to the high level of a flexible, bottom-up approach, making it possible to adapt each environment-friendly community to certain cultural contradictions (Lietaert, 2010).

METHOD

This study uses a quantitative approach. According to Creswell (2014), quantitative method is an approach to test the objective theory of each variable. The research instrument used a questionnaire with data collection techniques in the form of questions or written questions to respondents to be answered (Sugiyono, 2009). The sampling technique used is probability sampling. The sample taken was the Tibang Village community consisting of the Head of the Family in 3 hamlets.

The probability sampling is done by using proportional random sampling, a sampling technique by sampling from each sub-population by taking into account the small sub-population (Subliyanto, 2010). From this formula, a sample of 82 families in Tibang Village was obtained as respondents from 460 households and determined by proportional random sampling. For the number of sample sub-populations or each hamlet, according to Widyastuti (2011) the procedure for obtaining a proportional random sampling method, a sample per- hamlet will be proportionally compared to other hamlets, as shown in Table 1.

Table 1. Distribution of Questionnaires

Hamlets	Number of House holds	Number of Samples
Tengku Meulagu	163	30
Tengku Meulinje	89	16
Tengku Meurah	208	36
Total	460	82

The quantitative descriptive analysis method is used with a scoring analysis tool to assess specific criteria or ratings using a measurable scale. The scoring analysis used was a Likert Scale analysis. The measurement scale used is a Likert Scale analysis which is classified into three categories: low, medium, and high levels (Table 2).

Table 2. Level Of Efforts Based On Value Intervals

Interval Value	Level	Embodiment of Efforts
100-166	Low	The realization of efforts is still low and there still needs to be a lot of maximization
167 - 233	Medium	Embodiment of efforts exists but needs to maximize efforts
234 - 300	High	Embodiment of effort is good

In the Likert scale, the research variables that will be measured and translated into variable factors. Then these factors are used as starting points for compiling instruments that can be in the form of questions or statements. The analysis used in this study is the analysis of the use of space and community in volvement in environmental maintenance

RESULT AND DISCUSSION

Analysis Of Efforts To Use Settlement Space

Conformity with Spatial Planning

The direction of the policy of the city of Banda Aceh is affecting the handling of prevention and improvement of the quality of settlements in Tibang Village by Spatial Planning of Banda Aceh city 2009-2029 (The Government of Banda Aceh City, 2009). Tibang Village is included in the development area of IV Ulee Kareng which consists of the sub-districts of Syiah Kuala and Ulee Kareng which function as centers of education, health, and other complementary activities with these two activities, namely as centers of settlements, trade, and services on a city and local scale.

Residential Ownership Status in Tibang Village

The ownership status of the residence aims to identify the owner of each residential house. Ownership of private property dramatically influences the quality of buildings and the environment, land owned by a person or family so that the community feels responsible for protecting the environment and implementing a clean and healthy lifestyle. It is different from the status of rental/contract house ownership which does not care about the quality of the building and the environment whether it is renovating the house or arranging the surrounding environment because they only temporarily settle down.

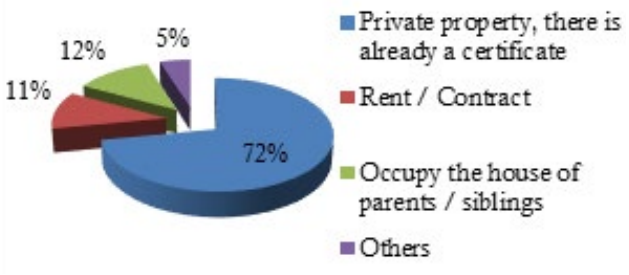

Figure 2. Residential Ownership Status Chart

From Figure 2. As many as 72% of respondents already have private property, and this indicates that the ownership status of houses in Tibang Village is quite good with legal occupancy and certificates. The majority of private homes are aid homes that were rehabilitated after the 2004 earthquake and tsunami disaster. However, people still

care about the environment and the conditions of the houses they occupy. The condition of privately owned houses is easily directed to the regularity of the building by renovating homes according to the tastes of residents and repairing houses to be better and applying environmentally friendly concepts.

Building Coverage Ratio (BCR)

The density of a house is a percentage ratio of the area of land built to the area of land in each house/occupancy. Based on the general provisions of the Banda Aceh city zoning regulations 2009-2029, The Government of Banda Aceh City (2009) for residential areas, it has Building Coverage Ratio (BCR) 40% - 60%. From the results of the study, it was found that the BCR level of Tibang Village's homes as a whole was under 60%.

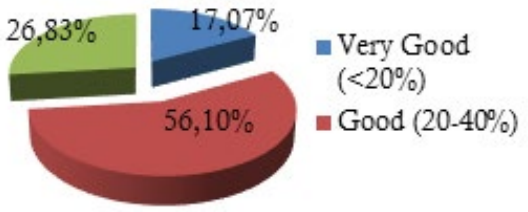

Figure 3. BCR chart of Tibang Village House

From Figure 3. Illustrates that the BCR program with functional categories is 56.10% (20-40%). Every house in Tibang Village has a non-built / open land area that is still very efficient to use by environmentally friendly concepts.

Green Coverage Coefficient or Koefisien Dasar Hijau (KDH)

The Green Coverage Coefficient or Koefisien Dasar Hijau (KDH) is a percentage comparison of the number of green lands with land built in residential areas per one house unit.

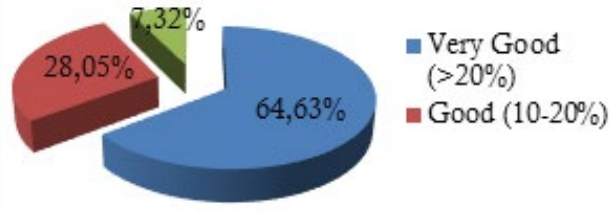

Figure 4. KDH Chart in Tibang Village

From Figure 4. Regarding the KDH chart in Tibang Village, it can be explained that as many as 64.63% of dwellings have good quality KDH (> 20%). From the results obtained in general, the Green Base Coefficient in Tibang Village meets the standards.

Availability of Public Green Space

Based on Law No. 26 of 2007 The Government of the Republic of Indonesia (2007) concerning Spatial Planning, Green Open Space consists of 20% Public Green Open Space and Private Green Open Space 10%. To increase the quantity of utilization of green space in Banda Aceh City, the plans for the development of urban Green Space can be developed in other areas which are not designated as Green Space areas, referring to the applicable regulations or the standard area including sub-district Green Space with a minimum area 2 ha and village scale Green Space with a minimum area of 2500 m^2.

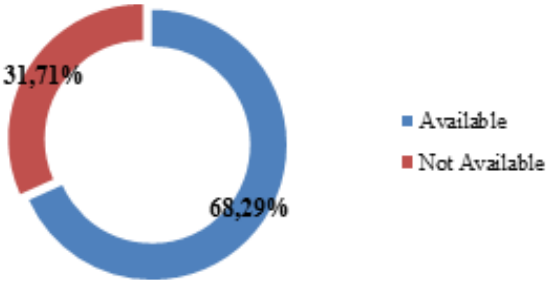

Figure 5. Availability Chart of Green Space in Tibang Village

From Figure 5. A total of 68.29% of respondents stated that there was a Green Space. The form of availability of Green Space referred to by the community mostly shows Public Green Space with a village scale, namely BNI City Forest located in Tengku Meulagu Hamlet, while there is no scale residential and hamlet Green Space. It can be concluded that the availability of Green Space in Tibang Village is sufficient were based on village Green Space with a minimum area of 2500 m2 it has been fulfilled. Urban Forest is a tangible manifestation of Public Green Space.

One of the city government programs is the realization of the construction of the BNI City Forest, Banda Aceh in Tibang Village. The city forest is an icon for Tibang Village in particular and the city of Banda Aceh in general. BNI City Forest Banda Aceh is designed to be a forest that has a balance between ecological values, socio-economic values, cultural heritage and science (Figure. 6).

The parks in the city forest are essential to collect various types of plants with a specific concentration of themes that are entirely typical of Aceh. Plaza and social interaction space become unique open spaces created for activities that enjoy nature, such as children's play, contemplation/ reflection, painting, or just sitting. The pedestrian path is one of the 'main frameworks' of the BNI City Forest in Banda Aceh because it is through

Figure 6. BNI City Forest in Tibang Village

this path that this forest can be enjoyed. The parking area of about 6000 meters is located separated from the forest area by a water channel 25 meters wide.

This condition is advantageous because thus, busy/public/ solid activities can be localized in this area. In this area, there is also a place for semi-permanent souvenir shops for commercial activities related to urban forests. This space also allows for Sunday market activities to sell local products, including urban forest products. Sports facilities that are already available in the city forest are basketball and futsal courts.

The results of the analysis of the use of space in Tibang Village can be said to be good, in utilizing space efficiently included in the category of "high" with an average score of 235. Building Coverage Ratio levels and Green Coverage Coefficient of Tibang Village houses as a whole are categorized as useful and meet the standards. The availability of green space in Tibang Village is sufficient were based on the village scale Green Space with a minimum area of 2500 m2 it has been fulfilled. However, for the scale of settlements, green space is still very lacking, the limited open land windows this in the residential area, which is very minimal to function as a green open space.

Analysis Of Community Involvement Efforts In Environmental Maintenance

Level of Concern for the Environment of Settlements

Concern for the neighborhood is an essential aspect in assessing the extent to which community awareness and responsibility in maintaining environmental quality.

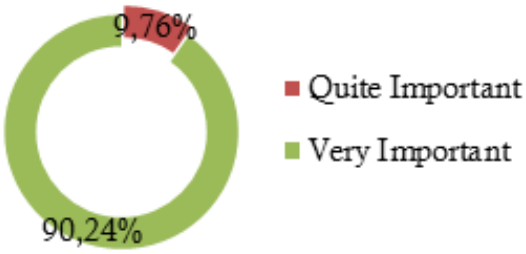

Figure 7. Chart of Opinions About Cleanliness Interests

Based on Figure7. It can be explained that in general, the community considers that maintaining cleanliness is an essential thing. Respondents answered that the majority of 90.24% stated that cleanliness is an absolute thing in maintaining environmental quality. This opinion is also supported by efforts made by the community to maintain cleanliness such as community service and cleaning the condition of the house regularly at the scale of settlements or private homes.

Level of Community Involvement in Environmental Maintenance

In maintaining the environment to maintain the quality of the settlement environment, community involvement is significant where communities themselves have a responsibility in maintaining their settlement environment. The level of public participation in environmental maintenance activities in Tibang Village is still quite low, and this can be seen from the number of respondents who routinely carry out environmental maintenance only 40.24%. Environmental maintenance efforts need to be improved because of the lack of support from the hamlets and the village.

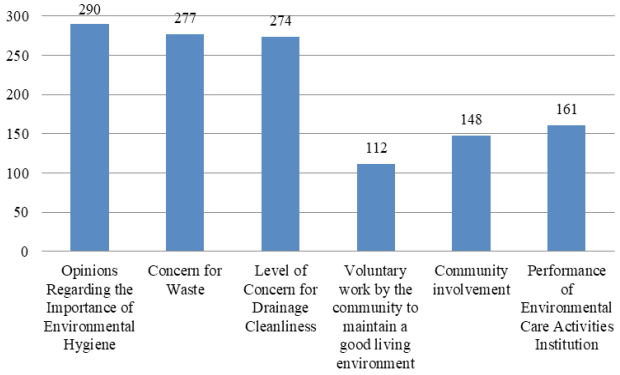

Figure 8. Assessment Chart of Community Involvement Efforts

Based on Figure 8. The efforts of Tibang Village towards community involvement in environmental preservation are included in the "sufficient" category with an average score of 210. Opinions regarding cleanliness, most respondents stated that cleanliness is an absolute thing in maintaining environmental quality with a high score of 290. The level of concern for waste and drainage has been good with a score of 277 and 274, and this can be seen from the majority of respondents answering garbage and drainage in the home garden environment or outside the average home immediately answered immediately.

The intensity of the service activities in Tibang Village is still low, with a score of 112. Most respondents answered that community service is not routinely held only once in 2-3 months. The level of public participation in environmental maintenance activities is still quite low, with a score of 148, the majority of respondents do not routinely carry out environmental maintenance. The existence of organizations that care about the environment in Tibang Village, in general, the respondents knew of the existence of the institution, Lembaga Sahabat Hijau (SAHI). For the assessment of the performance of these institutions, the respondents answered quite well with a score of 161.

Sahabat Hijau (SAHI) is an organizational body established in 2014 that has a specific nature of environmental care and community empowerment. Sahabat Hijau Institution activities cover 3 (three) fields, namely: Economics and Business, Education, Research and Information, and the Field of Maintenance and Development of Green Space, especially in the BNI City Forest. Profile of Sahabat Hijau (SAHI), this institution also has a role in establishing instant cooperation with related staff and the community to care for the environment by participating in cooperation and tree planting. SAHI is also committed to waste management by implementing a collecting point system. The form of waste processing in the form of garbage bank shelter in BNI City Forest (Figure. 9)

Figure 9. Waste Bank Shelter in BNI City Forest

Figure 10. Handicraft Products and Recycling f Waste in the City Forest of BNI

The sorting of waste can be reprocessed into something more valuable, such as organic waste processed into compost and packaging plastic waste managed into handicraft products. Residents then use the resulting compost fertilizer as fertilizer plants in the home garden, and handicraft products are a product of the community's creative economy that can be used as an alternative income for the community. (Figure. 10).

SAHI also then made various kinds of training on planting flowers and nurseries and making hydroponic plants vertically (Figure. 11). From the research conducted, it can be concluded that there are still many people who do not know the SAHI institution because the institution only focuses on providing training and socialization in the BNI City Forest whereas socialization in the residential area is still very minimal.

Figure 11. Nursery Training and Making Hydroponic Plants

CONCLUSIONS

It has been analyzed that the utilization of residential space in Tibang Village is assessed based on the percentage of Building Coverage Ratio (BCR), Green Coverage Coefficient or Koefisien Dasar Hijau (KDH), and availability of Public Green Space. Overall, the utilization analysis of space can be said to be good. However, it needs to be improved in terms of efficient utilization of residential space by the environmentally friendly concept and maintaining a private open space for reforestation and water absorption. The community also further improves the understanding of the rules of the government regarding Building Coverage Ratio and in the future is wiser in a building.

To procure a Public Green Space in a residential area, there needs to be a policy from the government and community cooperation in terms of land acquisition so that the availability of green open space in the settlement environment of Tibang Village can be maximally realized.

Community involvement in environmental maintenance is assessed based on the level of concern for the settlement environment, the level of intensity of environmental preservation and the level of capacity of institutions/groups that focus on environmental activities. Overall, the analysis of community involvement efforts in maintaining the environment in Tibang Village is quite good. For village officials, support and appeals should be increased to the community regarding the implementation of community service.

From an institutional standpoint, the government needs to be more focused on improving the optimization of the program / environmental care groups in Tibang Village through the Sahabat Hijau (SAHI) working partners, and enhancing the development of environmental cadres and inviting all levels of society in Tibang Village to participate in realizing eco-village settlements.

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