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Evaluation of Physical Environmental Conditions in Unplanned Settlements Towards Eco-Settlement

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Abstract

Urban unplanned settlements have important function dan potential to be developed into a self-help-based urban eco-settlement. The quality of eco-settlement as sustainable settlements refers to friendly city with its equity, accessibility of the physical environment, and inclusiveness of the social environment. Using evaluation of physical environmental conditions, the objectives and expectations of the physical environments quality of the unplanned settlements in Kelurahan Petamburan Village could be identified whether it has referred to eco-settlement and the right strategy or not. Focus of this research is evaluating the variables from the physical environment of eco-settlement. The quantitative descriptive method is expected to be able to evaluate the unit variable conditions of the eco-settlement physical environment, including independent healthy houses, pedestrian ways, waste networks, and natural disaster and fire mitigation response. Ten (10) Neighborhood Units (RT) with 30 respondents are research samples selected at random, representing high,

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medium, and low density RT Units. Data and information obtain from field observation and interview are processed using The Statistical Product and Service Solutions (SPSS) Program. The results of the study, shows that factors related to the characteristics of unplanned settlements are in line with the criteria for eco-settlement requirements, in the sense of the social aspect, that is institutionalized voluntary self-help-communities or community participatory. This social aspect can be developed to increase further improvement or development of the physical environment.

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Evaluation of Physical Environmental Conditions in Unplanned Settlements Towards Eco-Settlement

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ABSTRACT

Urban unplanned settlements have important function dan potential to be developed into a self-help-based urban eco-settlement. The quality of eco-settlement as sustainable settlements refers to friendly city with its equity, accessibility of the physical environment, and inclusiveness of the social environment. Using evaluation of physical environmental conditions, the objectives and expectations of the physical environments quality of the unplanned settlements in Kelurahan Petamburan Village could be identified whether it has referred to eco-settlement and the right strategy or not. Focus of this research is evaluating the variables from the physical environment of eco-settlement. The quantitative descriptive method is expected to be able to evaluate the unit variable conditions of the eco-settlement physical environment, including independent healthy houses, pedestrian ways, waste networks, and natural disaster and fire mitigation response. Ten (10) Neighborhood Units (RT) with 30 respondents are research samples selected at random, representing high, medium, and low density RT Units. Data and information obtain from field observation and interview are processed using The Statistical Product and Service Solutions (SPSS) Program. The results of the study, shows that factors related to the characteristics of unplanned settlements are in line with the criteria for eco-settlement requirements, in the sense of the social aspect, that is institutionalized voluntary self-help-communities or community participatory. This social aspect can be developed to increase further improvement or development of the physical environment.

Keywords: eco-settlement, physical-environment, unplanned settlements

1. Introduction

The existence urban unplanned settlement in Kelurahan PetamburanVillage has been formed and developed due to factors of physical environmental conditions that grow side by side with planned urban areas. Kelurahan Petamburan Village is one of the settlements with the highest population density in Tanah Abang District, with a population percentage of 22.32% (density 36,756/km2) in 2020 [1] and with an area percentage of 9.68% of the area of Central Jakarta [2]. Based on statistical data accommodates 11 RW (Community Association as a community unit formed by a group of Neighborhood Units or RT units), 120 Neighborhood Units (RT) [1] is a plce to live a total of 42,708 people in 2018. Since of urban unplanned settlement in Kelurahan Petamburan Villageis included in the category of unplanned settlements [3], it has characteristics of an unorganized physical environment [4] and is a part of Jakarta's elements that can live and develop to this day [5]. Urban unplanned settlement of Kelurahan Petamburan Village has the potential to develop independently, and historically [3] is formed from the physical environment, socio-cultural and economic factors of the community

which are heterogeneous. This settlement grow alongside planned urban areas through voluntary self-help-communities or community participatory in the form of material and immaterial, so that they can live independently [6], has high solidarity [7], utilizes all the potential of existing resources [8]. It is necessary to evaluate the condition of the physical environment towards the criteria for eco-settlement because of the settlement environment degradation [9].

Friendly city has three principles, they are equity, accessibility of the physical environment, inclusiveness of the social environment [10]. Development of urban space that prioritizes an accessible and inclusive environment, by optimizing opportunities for health, participation, and security could increase the quality of the community life and residential environments [10]. In the sense of the friendly city, the physical space of Kelurahan Petamburan Village as anurban unplanned settlement, can be seen as a place where people with their heterogeneity and their different rights are acceptable. [11]. Eco city is based on the fact that the construction and development of residential areas will affect and have an impact on the environment and the natural surroundings. Therefore optimizing and maintaining the function of space, land, and the environment for the sake of community life is very important [12]. Eco-city, as a concept of sustainable development with the principle of equality and sustainability, has many important aspects, and one of them is the condition of the physical environment [12].

The condition of the physical environment is one part of the aspects of the eco-settlement [13]. The purpose of the physical environment aspect is to improve the quality and comfort in order to achieve sustainable development [14]. The existence of the physical environment in the settlements affects the quality of life of the people in the dwelling and the environment [12]. Unplanned settlements can be formed and developed based on the influence of the needs and habits of the community itself without the participation of the government, and without throughout planning during construction [15]. Evaluating the quality of the physical environment of unplanned settlements in the framework of eco-settlement concept, can be interpreted as an effort to evaluate the quality of a friendly environment.

The implementation of eco-settlement concept refers to the implementation of the pillars of sustainable development [13]. The evaluation of the unplanned settlements quality, which refers to eco-settlement, also means the evaluation of settlement arrangement [16] and the quality of sustainable and ecological settlements [17]. The principle of eco-settlement in residential areas guarantees the achievement of a quality level of a healthy living environment for the community [13]. Based on the issues and facts of previous studies found in Kelurahan Petamburan Village, it is necessary to evaluate the condition of the physical environment in unplanned settlements which refers to the quality of eco-settlement towards sustainable settlements and friendly settlement. The purpose of this research is to evaluate the condition of the physical environment in Kelurahan Petamburan Village. From the evaluation results, it is possible to identify whether it has referred to eco-settlement or not and the right strategy. And the focus of this research is on evaluating variables from the physical environment of eco-settlement.

2. Method

This research uses descriptive quantitative approach, primary and secondary data sources through field observations, interviews, questionnaires to residents living in Community Association 05 (RW 05), literature review studies, and data documents obtained from the city government (Kelurahan Petamburan village). Through this method approach, it deemed possible to evaluate the unit variable of the physical environmental conditions in the sense of eco-settlement concept of the urban unplanned settlements in Kelurahan Petamburan Village

The research was conducted in the Community Association 05 (RW 05) of Kelurahan Petamburan Village, Central Jakarta. RW 05 is a community unit consisting of 18 Neighborhood Units (RT). The selection of this area was based on the consideration that it is not categorized as a slum, but it is still considered a dense settlement area. The settlements within this community represent a range of density levels, from the highest to the lowest. This research was carried out between March and May 2022. Figure 1 (a) shows the urban village

map of Kelurahan Petamburan, and (b) illustrates the distribution map of the Neighborhood Units (RT) measurement sample points within RW 05.

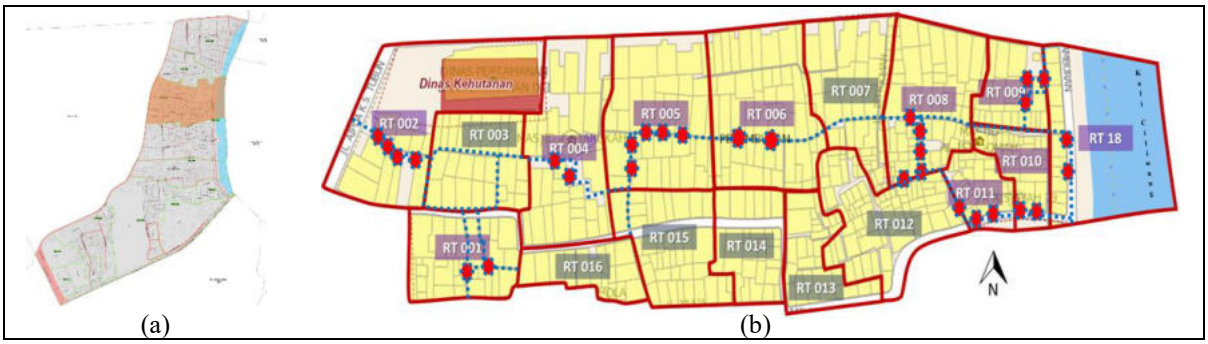

Figure 1 (a) Kelurahan Petamburan urban village map, (b) distribution map of neighborhood units (RT) measurement sample points in RW 05 (community association).

(Source: Department of human Settlements, spatial planning, defense of DKI Jakarta Province, (author's research results illustration), 05/04/2022, 02:15:51 WIB)

Variable units of the eco-settlement concept related to the physical environment include independent healthy houses, pedestrian ways, waste networks, and natural disaster and fire mitigation responses. Data and information for these variables were processed using the Statistical Product and Service Solutions (SPSS). The research was conducted in the Neighborhood Units (RT), the smallest community units within the city government structure, which are particularly effective in unplanned settlements. The population for this study included all 18 RTs in RW 05. Using the Slovin Formula, 10 RTs were selected to represent the population, ensuring a diverse sample across varying density levels.

$$n = \frac{N}{1 + N(e)^2}$$

Information:

N = Population size

$$n = \frac{18}{1 + 18(0.2)^2}$$

$$n = \frac{18}{1 + (18 \times 0{,}04)}$$

$$n = \frac{18}{1 + 0{,}72)}$$

$$n = \frac{18}{1{,}72}$$

$$n = 10{,}465 \Rightarrow 10 \text{ RT}$$

It is required to select a minimum of 10 Neighborhood Units (RT) after going through the data validity test phase, representing 18 Neighborhood Units (RT) of RW 05 (Community Association 05) in Kelurahan Petamburan Village, with 30 sample respondents. The distribution of the research sample covers 10 Neighborhood Units (RT), which include RT 001, RT 002, RT 004, RT 005, RT 006, RT 008, RT 009, RT 010, RT 011, and RT 018 (Table 1).

Table 1. Data On Placement of Sample Locations for Research Area RW05 (Community Association 05) Kelurahan Petamburan Village

Placement of Research Area RW 05	
Density Level	**Neighborhood Association (RT)**
Highest Density Level	RT 001, RT 006, RT 008, RT 010
Medium Density Level	RT 005, RT 009, RT 018
Lowest Density Level	RT 002, RT 004, RT 011

Source: Urban Settlement of 15.30 WIB

3. Result and Discussion

Unplanned settlements in RW 05 are distributed across varying density levels, with the highest density in Neighborhood Units (RT) 001, 006, 008, and 010, medium density in RT 005, 007, 009, 012, 013, 015, and 018, and the lowest density in RT 002, 003, 004, 014, 011, and 016. According to data (Table 2) from the Kelurahan Petamburan Village sub-district, the total population in the area is 4,452 people. Kelurahan Petamburan Village is located in a basin topography area, as indicated by informants. The village consists of several Community Associations (RW), some of which are affected by floods, while others remain unaffected.

Table 2. Resident data of Community Association 05 (RW 05) Kelurahan Petamburan Village

Website Citizen Data	Number	
	Family Cards	Resident
Community association 05 (RW) 05	1,614	4,452
Reports of Dasa Wisma (DAWIS)	947	3.169

Source: Urban Settlement of Petamburan, DKI Jakarta Province (author's research results), 31/03/2022, 15.30 WIB.

Eco-settlement of urban unplanned settlements Kelurahan Petamburan Village .can be identified from its 2 aspects of the sustainability pillars, that are social aspect reflected by voluntary self-help communities and participatory, through governmental and non-governmental institution (MUSRENBANG or Development Planning Consultation program and KARANGTARUNA or youth organizations, etc) and economy aspect reflected by community's self-supporting economy although the average income level is below the UMR (Regional Minimum Wage). The physical environment aspect as follows:.

Independent Healthy Homes

The physical environment variable unit eco-settlement shows the most dominant percentage frequency in the independent healthy home variable unit (using SPSS analysis data processing). From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows: (1) the frequency of tabulation of the Likert scale of respondents 50% quite satisfied and 50% dissatisfied; (2) with the frequency of tabulation of the Likert scale for facts in the field 63% dissatisfied as many 19 people. Table 3 presents the tabulation of respondents' answers regarding the condition of independent healthy homes based on the Likert scale. The table provides a breakdown of respondents' satisfaction levels, with 50% of the respondents reporting that they were "quite satisfied" with the conditions of their homes, while the other 50% expressed dissatisfaction. The table also includes field observation data, showing that 63% of respondents were dissatisfied with the condition of their homes. This data highlights a significant gap between respondents' self-reported satisfaction and the actual conditions observed in the field. The findings suggest that while residents may feel moderately satisfied, there are notable issues with the quality of the physical environment that need to be addressed, particularly in relation to the independence and healthiness of the homes.

Table 3. Tabulation of respondents on the Likert scale of Independent Healthy Homes

Independent Healthy House (Respondent)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	15	50.0	50.0	50.0
	Quite Satisfied	15	50.0	50.0	100.0
	Total	30	100.0	100.0	
Independent Healthy House (Field Facts)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	9	30.0	30.0	30.0
	Dissatisfied	19	63.3	63.3	93.3
	Quite Satisfied	2	6.7	6.7	100.0
	Total	30	100.0	100.0	

Source: Results of SPSS analysis research authors, 2022.

The results of observation in the field stated that the average wall in these residences withstands natural disturbances such as strong winds, rain, and heat. Permanent housing (plastered walls or masonry) and semi-permanent or half-wall or unplastered masonry or masonry or non-watertight boards. The average roof tile material in inorganic housing is asbestos, 1/2 zinc and clay tile. The floor uses waterproof building materials and is impermeable to creeping animals, there are also some worn or dirty ceramics or spots. The average ceiling in the residences has water spots, it is clean and not prone to accidents. The ventilation in the form of windows and doors. The windows do not penetrate the morning or afternoon or evening sunlight. Doors and windows are made of wood. The average air circulation in the residences are sufficiently well flowed, and not drained or stuffy. The average lighting in these residences are divided into two categories, one is the lighting are not bright enough making it not clear enough for a normal reading, for the other category the lighting is bright enough but not the kind of bright that is blinding for the eyes, therefore can be used for a normal reading. The distance between buildings with the type of residential house in a row, there is no distance between the neighbors, neither left or right, just a wall barrier. The average residence uses a goose-neck toilet, waste water disposal uses a septic tank and goes directly to an open sewer or small river in zoning areas close to small rivers such as neighborhood units (RT) 009, 011 and 018. There are 3 public toilets in the neighborhood units. (RT) 001. Table 4 and Figure 2 presents the tabulation of field observations regarding the average occupancy conditions of houses in RW 05, Kelurahan Petamburan Village. The table outlines various aspects of residential buildings, including the number of floors, building height, and the distance between buildings in each Neighborhood Unit (RT). The data shows that most houses in RW 05 have one to two floors, with building heights ranging from 2.3 meters to 4.5 meters. For instance, RT 01, RT 05, RT 06, and RT 10 have building heights between 2.8 meters to 3.6 meters, while RT 011 has the highest building height at 4.5 meters. Additionally, the distance between buildings in these areas generally follows the typical row house structure, with little to no space between neighboring houses. This close proximity could potentially lead to challenges in terms of air circulation, light penetration, and privacy. The table provides a snapshot of the physical layout of the neighborhood, offering insights into the spatial organization of the settlement. Such observations are critical in evaluating the overall quality of living conditions in the area, especially in terms of sustainability and health in the context of eco-settlement criteria.

Table 4. Tabulation of field observations on average occupancy of RW 05 houses

	Healthy House Occupancy									
	RT 01	**RT 02**	**RT 04**	**RT 05**	**RT 06**	**RT 08**	**RT 09**	**RT 010**	**RT 011**	**RT 018**
Number of Residential Building Floors	1- 2 floors	1-2 floors	1-2 floors	1-2 floors	1-2 floors	1- 2 floors	2 floors	2 floors	1-3 floors	2 floors
Residential Building Height	2.8m - 3.14 m (1 floor)	2.8m - 4 m (1 floor)	2.8m - 3m (1 floor)	3.6m - 4m (1 floor)	2.3m - 3m (1 floor)	2.8m - 3m (1 floor)	2.6m - 3m (1floor)	4.3 m (1 floor)	2.8m - 4.3m (1 floor)	2.8m - 4.5m (1 floor)
Distance between Buildings	Row Houses									

Source: Results of author's research observations, 2022

Figure 2. Result of field observation of independent healthy home variable unit

(Source: Result of researcher portrait, March-April 2022)

Pedestrian Ways

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the Pedestrian variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows: (1) the frequency of tabulation of the Likert scale of respondents is 63.3% dissatisfied as many 19 people; (2) the frequency of tabulation of the Likert scale of facts in the field is 100% very dissatisfied. Table 5 presents the tabulation of respondents' feedback on the condition of pedestrian ways in RW 05, Kelurahan Petamburan Village, as measured by the Likert scale. The table shows that a majority of respondents (63.3%) expressed dissatisfaction with the pedestrian pathways, while 20% were very dissatisfied, and only 16.7% were quite satisfied. This suggests that the pedestrian infrastructure in the area is generally considered inadequate by most residents. Additionally, field observations, as indicated in the table, confirm the lack of dedicated pedestrian paths in most areas. Instead, the alleyways, which are intended for both pedestrians and motorbikes, are described as insufficient for safe and comfortable pedestrian movement. This finding highlights a significant gap in the availability of proper pedestrian infrastructure, which is crucial for the development of eco-settlements that prioritize accessibility and safety for all residents. The data underscores the need for improvements in pedestrian infrastructure to enhance the livability and safety of the community, aligning with the principles of a sustainable and inclusive urban environment.

Table 5. Tabulation of respondents on the pedestrian ways Likert scale

Pedestrian Ways (Respondent)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Very Dissatisfied	6	20.0	20.0	20.0
	Dissatisfied	19	63.3	63.3	83.3
	Quite Satisfied	3	16.7	16.7	100 ,0
	Total	30	100.0	100.0	
Pedestrian Ways (Field Facts)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Very Dissatisfied	30	30.0	100.0	100.0

Source: SPSS analysis results author's research, 2022

The results of observation of facts in the field stated that in each neighborhood unit (RT) in the area Kelurahan Petamburan Villagep of the pedestrian paths are not available but every alleys are friendly to pedestrians ways and motorbikes (Figure 3).

Figure 3. Results of field observations of pedestrian ways variable units

(Source: Results of researcher portraits, March-April 2022)

Waste Networks

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the waste network variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows: (1) The frequency of Likert scale tabulation of respondents is 80% quite satisfied as many 24 people; (2) The

frequency of Likert scale tabulation of facts in the field is 100% quite satisfied from 30 sample locations. Table 6 presents the respondents' satisfaction levels regarding the waste networks in RW 05, as measured using the Likert scale. The results show that the majority of respondents (80%) reported being "sufficiently satisfied" with the waste management system in their neighborhood, while 20% expressed that they were "satisfied." This suggests that while most residents find the waste management system to be functional, there may still be room for improvement, especially in terms of optimizing efficiency and coverage. The data collected highlights that waste management practices, though deemed satisfactory by the majority, could benefit from enhancements in waste segregation and better systems for waste disposal. These improvements are essential for making the waste network more effective and sustainable, a key factor in achieving eco-settlement criteria.

Table 6. Tabulation of respondents Likert scale for waste networks

Waste Network (Respondents)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Sufficiently Satisfied	24	80.0	80.0	80.0
	Satisfied	6	20.0	20.0	100.0
	Total	30	100.0	100.0	
Waste Network (Field Facts)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Sufficiently Satisfied	30	30.0	100.0	100.0

(Source: SPSS analysis results author's research, 2022)

The results of observation of facts in the field state that waste is not segregated and is immediately disposed of in TPS, a place of storage using trash bags, garbage bins and garbage drums, frequency of transport are three times a week (Figure 4). Table 7 shows the field observations regarding the waste network in RW 05, with data collected from 10 different Neighborhood Units (RT). The table outlines the type of waste containers used and the frequency of waste disposal. Most of the neighborhoods use trash bags, garbage bins, or garbage drums for waste collection, with a frequency of waste collection varying from two to three times a week. The observations reveal that waste is not segregated and is disposed of directly into designated waste storage areas (TPS). While the frequency of waste collection appears to be regular, the current waste management practices do not align with eco-settlement standards, particularly in terms of waste segregation and environmental impact. Improvements in waste sorting, recycling, and more efficient disposal methods are needed to enhance the sustainability of the waste management system in these unplanned settlements.

Table 7. Tabulated field observations on the average waste network of RW 05

Waste Network										
	RT 01	**RT 02**	**RT 04**	**RT 05**	**RT 06**	**RT 08**	**RT 09**	**RT 010**	**RT 011**	**RT 018**
Containers Garbage	trash bags	garbage drums	garbage drums	trash bags	garbage bins	garbage bins	trash bags	trash bags	trash bags	trash bags
Frequency	3x a week		2-3x a week		3x a week		Dispose of garbage directly to the TPS		3x a week	

(Source: Results of field observations of the author's research, 2022)

Figure 4. Field observation results of pedestrian variable unit. source: researcher portrait results, March-April 2022.

Natural Disaster and Fire Mitigation Response

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the natural disaster and fire mitigation response variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows: (1) frequency of Likert scale tabulation of respondents 50% is not satisfied and 50% is very dissatisfied as many 14 people; (2) The frequency of Likert scale tabulation is facts in the field 100% very dissatisfied from 30 sample locations. Table 8 presents the tabulation of respondents' satisfaction levels regarding the disaster and fire mitigation response in RW 05, as measured using the Likert scale. The table reveals a significant dissatisfaction among residents, with 50% of respondents reporting that they were "very dissatisfied" with the current disaster and fire mitigation systems, while another 50% expressed being "dissatisfied." This indicates a general consensus that the existing disaster and fire response measures in the area are inadequate. The findings are further corroborated by the field observations, which show that the settlement lacks basic fire safety infrastructure, such as hydrants, and has no designated evacuation routes or disaster response signs. Furthermore, there are no clear gathering points or shelters during an emergency, which significantly heightens the vulnerability of the community in the event of a disaster. These results underline the critical need for improvements in the disaster and fire mitigation systems in RW 05. To align with eco-settlement criteria, it is essential to establish basic emergency response infrastructure, including fire safety measures, evacuation routes, and public awareness campaigns. Additionally, integrating disaster preparedness into the community's overall development plan will be essential in enhancing resilience to natural and man-made hazards.

Table 8. Respondents tabulation: Likert scale for disaster mitigation response nature and fire

Natural Disaster and Fire Mitigation Response (Respondent)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Very Dissatisfied	15	50.0	50.0	50.0
	Dissatisfied	15	50.0	50.0	100.0
	Total	30	100.0	100.0	

Natural Disaster and Fire Mitigation Response (Field Facts)					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Very Dissatisfied	30.0	30.0	100.0	100.0

(Source: SPSS analysis results author's research, 2022)

Results of observation in the field stated that there were no hydrants in residential areas, prone to fire hazards because the settlements were dense and lined up. For the evacuation field, it is located in the field of SMP and SD. There are no evacuation routes, there are no separate information signs for evacuation or disaster threat signs, there are no gathering points or fields, only in the fields of junior high schools (SMP) and elementary schools (SD). There is no temporary post or field for flooding only in the Kelurahan.

4. Conclusion

The unplanned settlements in Kelurahan Petamburan Village can grow and develop until today because they have gone through a long evolutionary process of forming places by independently diverse communities [3], They have the potential from the self-help communities and participatory and show, historically, can survive until today, even though it is adjacent to a neighboring planned urban area. This self-help communities and participatory in the RW 05 is able to do well due to the MUSRENBANG (Development Planning Consultation) program and youth organizations. The results of this research, shows that to get to the criteria for eco-settlement, the social aspect has been fulfilled because of existence of self-help-communities and participatory and the also the government and non-government institutional aspects. On the other hand, the aspect of the physical environment does not reflect eco-settlement criteria, because there is only one variable that meets the eco-settlement criteria, out of four required variables, namely waste network. It can be concluded that

unplanned settlement Kelurahan Petamburan Village have the potential to be developed or improved to become eco-settlement.

5. Acknowledgments

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6. Conflict of Interest

The authors declare that there is no conflict of interest related to the research and publication of this study. No financial or personal relationships have influenced the research, data analysis, or the writing of the manuscript. All authors have contributed equally to the study and have reviewed and approved the final manuscript.

References

[1] B. K. J. Pusat, "Kecamatan Tanah Abang Dalam Angka 2021," Badan Pus. Stat., hal. 1–67, 2021, [Daring]. Tersedia pada: https://jakpuskota.bps.go.id.

[2] BPS Jakarta Pusat, "Kecamatan Tanah Abang Dalam Angka 2019," 2019, [Daring]. Tersedia pada: https://jakpuskota.bps.go.id/publication/2019/09/26/2a57ae012d05114ce1e99c13/kecamatan-tanah-abang-dalam-angka-2019.html.

[3] D. Nurgandarum, Inavonna, dan M. Ischak, "Understanding unplanned settlement structure as a result of self-organization in Jakarta," Int. J. Sci. Technol. Res., vol. 8, no. 11, hal. 2459–2465, 2019.

[4] Inavonna, "HUBUNGAN LINGKUNGAN FISIK DENGAN KUALITAS UDARA RUANG LUAR PADA PERUMAHAN PADAT DI PERKOTAAN Studi Kasus Kelurahan Petamburan Jakarta Pusat," Jur. Arsit. FTSP, Univ. Trisakti, Semin. Nas. Keberlanjutan Ruang Huni Masa Depan EKO-ARSITEKTUR, hal. 274–282, 2020.

[5] I. Kustiwan dan A. Ramadhan, "Strategi Peningkatan Kualitas Lingkungan Kampung-Kota dalam Rangka Pembangunan Kota yang Inklusif dan Berkelanjutan: Pembelajaran dari Kasus Kota Bandung," J. Reg. Rural Dev. Plan., vol. 3, no. 1, hal. 64, 2019, doi: 10.29244/jp2wd.2019.3.1.64-84.

[6] R. Ngalu dan Y. M. Jamun, "Peran dan Strategi Lembaga Swadaya Masyarakat dalam Pemberdayaan Sosial Ekonomi Masyarakat (Studi Kasus di Kabupaten Manggarai Nusa Tenggara Timur)," J. Penelit. Kesejaht. Sos., vol. 18, no. 3, hal. 279–288, 2019, [Daring]. Tersedia pada: https://ejournal.kemsos.go.id/index.php/jpks/article/view/1762.

[7] P. Priyanto dan E. Wiratno, "Peran Swadaya Masyarakat dalam Pembangunan Desa Munggung Kecamatan Karangdowo Kabupaten Klaten," Juripol, vol. 2, hal. 124–133, 2019, [Daring]. Tersedia pada: http://polgan.ac.id/jurnal/index.php/juripol/article/view/245.

[8] L. Rubianto dan A. Navastara, "Karakteristik Ruang Kampung Tambak Asri Berdasarkan Pendekatan Placemaking," J. Tek. ITS, vol. 7, no. 2, 2018, doi: 10.12962/j23373539.v7i2.33680.

[9] J. Kasmudin HarahapWahid, B. Arch, M. Arch, D. Ph, Z. Lubis, dan M. Eng, "Aplikasi Hukum Lingkungan Dalam Pembentukan Karakteristik 'Ruang' Interaksi Sosial Di Permukiman Kelurahan Petamburan, Kecmatan Tanah Abang, Jakarta Pusat," P R O C E E D I N G S Int. Semin. 2013 Fac. Eng. Univ. Pembang. PANCA BUDI, 2013.

[10] O. H. Lativa, W. Astuti, dan H. Mukaromah, "AKSESIBILITAS FISIK PUSKESMAS RAMAH LANSIA MENUJU AGE," vol. 3, hal. 1–16, 2021.

[11] D. Nurgandarum dan C. F. Anjani, "Legibility of Building Facades and Imageability of Historical City Center, Case Study: Bukittinggi City Center," IOP Conf. Ser. Earth Environ. Sci., vol. 452, no. 1, hal. 0–11, 2020, doi: 10.1088/1755-1315/452/1/012158.

[12] F. C. S. Adiyanta, "Hukum Dan Rencana Tata Ruang Kota: Urgensi Kebijakan Pembangunan Kawasan Perkotaan Berbasis Sustainable Eco City," Masal. Huk., vol. 48, no. 2, hal. 137, 2019, doi: 10.14710/mmh.48.2.2019.137-146.
[13] V. A. K. & R. L. . S. Kartika Puspa Dewi, "Penentuan Kualitas Permukiman Berdasarkan Kriteria Eco-Settlement Di Kelurahan Sindulang Satu Kota Manado," Spasial, vol. 6, no. 1, hal. 169–177, 2019.
[14] D. Aryanti, "Arahan Penataan Pemukiman Lingkungan Kumuh Kelurahan Seberang Palinggam," Din. Lingkung. Indones., vol. 7, no. 1, hal. 1–6, 2020, [Daring]. Tersedia pada: https://dli.ejournal.unri.ac.id/index.php/DL.
[15] S. Moertiningsih, D. Nurgandarum, dan O. Nurfanty, "Permeability characteristics of unplanned settlements in Jakarta," Int. J. Sci. Technol. Res., vol. 9, no. 3, hal. 1999–2003, 2020.
[16] D. B. Anindito, N. R. Indriansyah, F. K. Maula, dan R. Akbar, "A quantitative perspective on kampung kota: Elaborating definition and variables of Indonesian informal settlements: Case study: Kelurahan Tamansari, Bandung City," Int. Rev. Spat. Plan. Sustain. Dev., vol. 7, no. 2, hal. 53–74, 2019, doi: 10.14246/IRSPSD.7.2_53.
[17] N. Mylajingga dan L. Mauliani, "Kajian Elemen Perancangan Hamid Shirvani Pada Kawasan Kota Satelit," J. Arsit. PURWARUPA, vol. 3 No 2, hal. 123–130, 2019.

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Evaluation of Physical Environmental Conditions in Unplanned Settlements Towards Eco-Settlement

Abstract. The importance of function and potential of unplanned settlements for urban elements in a context towards eco-settlement based on independent construction. Through Friendly city with equity, accessibility of the physical environment, inclusiveness of the social environment in unplanned settlements refers to the quality of eco-settlement requirements towards sustainable settlements. Using evaluation of physical environmental conditions as one of the criteria for eco-settlement requirements. The objectives and expectations are to evaluate the quality of the physical environmental conditions of the unplanned settlements in Petamburan by identifying whether or not it has referred to eco-settlement and the right strategy. For the focus of this research is evaluating the variables from the physical environment of eco-settlement. The quantitative descriptive method is expected to be able to evaluate the unit variable conditions of the eco-settlement physical environment, including independent healthy houses, pedestrians, waste networks, and Natural Disaster and Fire Mitigation Response. The Neighborhood Units (RT) with 10 selected represent 18 Neighborhood Units (RT) with 30 respondents. Data processing uses the Statistical Product and Service Solutions (SPSS) program and field observations in the selection of neighborhood units based on the criteria for density levels from highest, medium to low. The results of the study, shows that matters related to the characteristics of unplanned settlements are in line with the criteria for eco-settlement requirements and have potential from the social aspect which is the voluntary self-communities or participatory and the institutional aspect of government/non-government with the MUSRENBANG (Development Planning Consultation) program. So that these requirements can be used as an effort to be developed to increase development and further improvement of aspects of the physical environment.

Keywords: unplanned settlements, independent healthy houses, pedestrian ways, waste networks, and eco-settlement.

INTRODUCTION

The existence urban unplanned settlement in Petamburan can be formed and developed due to factors of physical environmental conditions that grow side by side with planned urban areas. Kelurahan Petamburan village is one of the settlements with the highest population density in Tanah Abang District. With a population percentage of 22.32% (density 36,756/km2) in 2020 [1] and with an area percentage of 9.68% of the area of Central Jakarta [2]. Based on statistical data accommodates 11 RW (community association as a community unit formed by a group of RT units), 120 neighborhood units (RT) [1] and has a total of 42,708 people in 2018. Since of urban unplanned settlement in petamburan is included in the category of unplanned settlements [3], it has characteristics of an unorganized physical environment [4] and is a part of Jakarta's elements that can live and develop to this day [5]. Urban unplanned settlement in petamburan has the potential to develop independently, historically [3] and is formed from the physical environment, socio-cultural and economic factors of the community which are heterogeneous and grow alongside planned urban areas through voluntary self-communities and participatory in the form of material and immaterial so that they can live independently [6], has high solidarity [7], utilizes all the potential of existing resources [8]. So it is necessary to evaluate the condition of the physical environment towards the criteria for eco-settlement because of the degradation with planned settlements so that the quality of the settlement environment decreases [9].

Friendly city have three principles, they are equity, accessibility of the physical environment, inclusiveness of the social environment [10]. Development of urban space that prioritizes an accessible and inclusive environment, by optimizing opportunities for health, participation, and security so that the quality of life of the community in residential and residential environments [10]. Through the friendly city in the physical space of the urban settlement of petamburan center which is an unplanned settlement, space will be seen as a place where people who have heterogeneity and have different rights are able to accept these differences [11]. Eco city is based on the fact that the construction and development of residential areas will affect and have an impact on the environment and the natural surroundings, therefore by optimizing maintaining the function of space, land, and the environment for the sake of

community life [12]. Eco-city is a concept of sustainable development with the principle of equality and sustainability has important aspects, one of them is the condition of the physical environment [12].

The condition of the physical environment is one part of the aspects of the eco-settlement [13]. The purpose of the physical environment aspect is to improve the quality and comfort in order to achieve sustainable development [14]. The existence of the physical environment in the settlements greatly affects the quality of life of the people in the dwelling and the environment [12]. To resolve problems in the area and urban spatial planning from unplanned settlements. Unplanned settlements can be formed and developed based on the influence of the needs and habits of the community itself without the participation of the government so as to form urban spatial planning and physical environmental conditions that are not planned or without throughout planning during construction [15]. Therefore, by implementing friendly city will be able to evaluate the quality of the physical environment in unplanned settlements through the application of eco-settlement.

The application of eco-settlement refers to the implementation of the pillars of sustainable development [13]. In determining the evaluation of the quality of unplanned settlements, which refers to eco-settlement, it is the implementation of settlement arrangement [16] and the quality of sustainable and ecological settlements [17]. The principle of eco-settlement in residential areas guarantees the achievement of a quality level of a healthy living environment for and for the community [13]. Based on the issues from the problems and facts of previous studies found in Petamburan. Because it is necessary to evaluate the condition of the physical environment in unplanned settlements which refers to the quality of eco-settlement towards sustainable settlements or sustainable development. The purpose of this research is to be able to evaluate the condition of the physical environment in urban settlement in petamburan. From the evaluation results, it is possible to identify whether it has referred to eco-settlement or not and the right strategy. And the focus of this research is on evaluating variables from the physical environment of eco-settlement.

RESEARCH METHODS

This research uses descriptive quantitative approach, primary and secondary data sources through field observations, interviews, questionnaires to residents living in community association 05 (RW 05), literature review studies, and data documents obtained from the city government (Kelurahan Petamburan village). Through this method approach, it deemed possible to evaluate the unit variable of the physical environmental conditions eco-settlement of the urban unplanned settlements in Petamburan.

Delineation of Research

The object of the research location is in the community association 05 (RW 05) of the Petamburan sub-district, Central Jakarta. RW 05 (community association 05 as a community unit formed by a group of RT units) consists of 18 neighborhood units (RT). With the selection of area determination based on considerations which is not included in the category of slums but still in the group of dense settlements, furthermore settlements have represented the density level from the highest to the lowest. This research was conducted from March to May 2022.

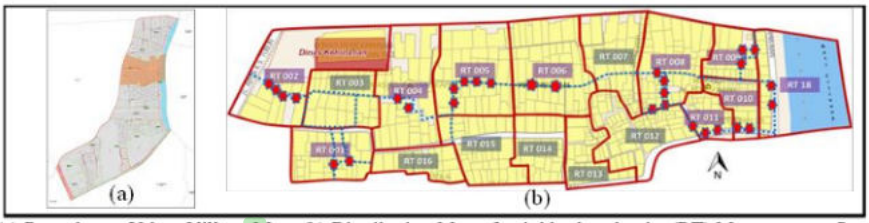

FIGURE 1 (a) Petamburan Urban Village Map, (b) Distribution Map of neighborhood units (RT) Measurement Sample Points in RW 05 (community association). Source: Department of Human Settlements, Spatial Planning, Defense of DKI Jakarta Province, (author's research results illustration), 05/04/2022, 02:15:51 WIB

Variabel Unit

From several aspects of the eco-settlement variable units, therefore variable units related to the physical environment were determined including independent healthy houses, pedestrians, waste networks, natural disaster and fire mitigation responses. After the data is collected and analyzed, the data will be processed using the Statistical Product and Service Solutions (SPSS).

Population and Sample

Units of Neighborhood Units (RT) are the smallest units in the city government structure and are more effective in unplanned settlements [3]. With the Neighborhood Units (RT) sample units in the RW 05 area (community association 05 as a community unit formed by a group of RT units), there are 18 Neighborhood Units (RT). Formula Slovin:

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{18}{1 + 18(0.2)^2}$$

$$n = \frac{18}{1 + (18 \times 0{,}04)}$$

$$n = \frac{18}{1 + 0{,}72)}$$

$$n = \frac{18}{1{,}72}$$

$$n = 10{,}465 \Rightarrow 10 \text{ RT}$$

Information:
N = Population size
n = Sample size/number of respondents
e = error tolerance

Requires a minimum of 10 Neighborhood Units (RT) by going through the data validity test phase representing 18 Neighborhood Units (RT) of RW 05 (community association 05) Kelurahan Petamburan village which consists of 30 sample respondents. with the distribution of regional locations in the study in the RW 05 (community association 05) covering 10 points of the Neighborhood Association (RT) selected based on the results of the solving formula that will be sampled, including RT 001, RT 002, RT 004, RT 005, RT 006, RT 008, RT 009, RT 010, RT 011 and RT 018.

Table 1. Data On Placement of Sample Locations for Research Area Rw 05 (Community Association 05) Kelurahan Petamburan Village. Source: Urban Settlement of 15.30 WIB.

Placement of Research Area RW 05	
Highest Density Level	RT 001, RT 006, RT 008, RT 010
Medium Density Level	RT 005, RT 009, RT 018
Lowest Density Level	RT 002, RT 004, RT 011

RESULT AND DISCUSSION

Unplanned settlements scattering in RW 05 (community association 05 as a community unit formed by a group of RT units) has the highest density in the neighborhood (RT) 001, 006, 008, 010, the medium density level in the neighborhood (RT) 005, 007, 009, 012, 013, 015, 018 and the lowest density in the neighborhood (RT) 002, 003, 004, 014, 011, 016. Based on the results of data statistics from the Petamburan sub-district has a total population of 4,452 people. According to the informant, Petamburan is included in the category of land area with a basin topography. There are several community association (RW) scattered in Petamburan that were affected by the flood and not affected by the flood. Petamburan has a density level from high, medium to low and they can develop because there are voluntary self-communities and participatory with the criteria for implementing eco-settlement

TABLE 2. Data Recap of community association 05 (RW 05) Kelurahan Petamburan Village. Source: Urban settlement of petamburan, DKI Jakarta Province (author's research results), 31/03/2022, 15.30 WIB.

Website Citizen Data	Number	
	Family Cards	Resident

Community association 05 (RW) 05	1,614	4,452
Reports of Dasa Wisma (DAWIS)	947	3.169

Eco-settlement of urban unplanned settlements in Petamburan.implementing them in 2 aspects of the sustainability pillars, including social aspect has been reflected voluntary self-communities and participatory, economy aspect which has been reflected in the community's self-supporting economy, the average income level is below the UMR (Regional Minimum Wage, organization government/non-government institutions aspcet with the MUSRENBANG (Development Planning Consultation) program and KARANGTARUNA (youth organizations), and the physical environment aspect as follows:

Independent Healthy Homes

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the independent healthy home variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows:

1. the frequency of tabulation of the Likert scale of respondents 50% quite satisfied and 50% dissatisfied
2. with the frequency of tabulation of the Likert scale for facts in the field 63% dissatisfied as many 19 people

TABLE 3. Tabulation of Respondents on the Likert Scale of Independent Healthy Homes. Source: Results of SPSS Analysis Research Authors, 2022.

Independent Healthy House (Respondent)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dissatisfied	15	50.0	50.0	50.0
	Quite Satisfied	15	50.0	50.0	100.0
	Total	30	100.0	100.0	

Independent Healthy House (Field Facts)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	9	30.0	30.0	30.0
	Dissatisfied	19	63.3	63.3	93.3
	Quite Satisfied	2	6.7	6.7	100.0
	Total	30	100.0	100.0	

The results of observation in the field stated that the average wall in these residences withstands natural disturbances such as strong winds, rain, and heat. Permanent housing (plastered walls or masonry) and semi-permanent or half-wall or unplastered masonry or masonry or non-watertight boards. The average roof tile material in inorganic housing is asbestos, 1/2 zinc and clay tile. The floor uses waterproof building materials and is impermeable to creeping animals, there are also some worn or dirty ceramics or spots. The average ceiling in the residences has water spots, it is clean and not prone to accidents. The ventilation in the form of windows and doors. The windows do not penetrate the morning or afternoon or evening sunlight. Doors and windows are made of wood. The average air circulation in the residences are sufficiently well flowed, and not drained or stuffy. The average lighting in these residences are divided into two categories, one is the lighting are not bright enough making it not clear enough for a normal reading, for the other category the lighting is bright enough but not the kind of bright that is blinding for the eyes, therefore can be used for a normal reading. The distance between buildings with the type of residential house in a row, there is no distance between the neighbors, neither left or right, just a wall barrier. The average residence uses a goose-neck toilet, waste water disposal uses a septic tank and goes directly to an open sewer or small river in zoning areas close to small rivers such as neighborhood units (RT) 009, 011 and 018. There are 3 public toilets in the neighborhood units. (RT) 001.

TABLE 4. Tabulation of Field Observations on Average Occupancy of RW 05 Houses. Source: Results of Author's Research Observations, 2022.

Healthy House Occupancy

	RT 01	RT 02	RT 04	RT 05	RT 06	RT 08	RT 09	RT 010	RT 011	RT 018
Number of Residential Building Floors	1- 2 floors	1-2 floors	1-2 floors	1-2 floors	1-2 floors	1- 2 floors	2 floors	2 floors	1-3 floors	2 floors
Residential Building Height	2.8m - 3.14 m (1 floor)	2.8m - 4 m (1 floor)	2.8m - 3m (1 floor)	3.6m - 4m (1 floor)	2.3m - 3m (1 floor)	2.8m - 3m (1 floor)	2.6m - 3m (1floor)	4.3 m (1 floor)	2.8m - 4.3m (1 floor)	2.8m - 4.5m (1 floor)
Distance between Buildings	Row Houses									

FIGURE 2. Result of Field Observation of Independent Healthy Home Variable Unit. Source: Result of Researcher Portrait, March-April 2022

Pedestrian Ways

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the Pedestrian variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows:

1. the frequency of tabulation of the Likert scale of respondents is 63.3% dissatisfied as many 19 people
2. the frequency of tabulation of the Likert scale of facts in the field is 100% very dissatisfied

TABLE 5. Tabulation of Respondents on the Likert Pedestrian Ways scale. Source: SPSS Analysis Results Author's Research, 2022.

Pedestrian Ways (Respondent)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	6	20.0	20.0	20.0
	Dissatisfied	19	63.3	63.3	83.3
	Quite Satisfied	3	16.7	16.7	100 ,0
	Total	30	100.0	100.0	

Pedestrian Ways (Field Facts)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	30	30.0	100.0	100.0

The results of observation of facts in the field stated that in each neighborhood unit (RT) in the area Kelurahan Petamburan Villagep of the pedestrian paths are not available but every alleys are friendly to pedestrians ways and motorbikes.

FIGURE 3. Results of Field Observations of Pedestrian Ways Variable Units. Source: Results of Researcher Portraits, March-April 2022.

Waste Networks

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the waste network variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows:

1. The frequency of Likert scale tabulation of respondents is 80% quite satisfied as many 24 people
2. The frequency of Likert scale tabulation of facts in the field is 100% quite satisfied from 30 sample locations

TABLE 6. Tabulation of Respondents Likert Scale for Waste Networks. Source: SPSS Analysis Results Author's Research, 2022.

Waste Network (Respondents)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sufficiently Satisfied	24	80.0	80.0	80.0
	Satisfied	6	20.0	20.0	100.0
	Total	30	100.0	100.0	

Waste Network (Field Facts)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sufficiently Satisfied	30	30.0	100.0	100.0

The results of observation of facts in the field state that waste is not segregated and is immediately disposed of in TPS, a place of storage using trash bags, garbage bins and garbage drums, frequency of transport are three times a week.

TABLE 7. Tabulated Field Observations on the Average Waste Network of RW 05. Source: Results of Field Observations of the Author's Research, 2022.

Waste Network

	RT 01	RT 02	RT 04	RT 05	RT 06	RT 08	RT 09	RT 010	RT 011	RT 018
Containers Garbage	trash bags	garbage drums	garbage drums	trash bags	garbage bins	garbage bins	trash bags	trash bags	trash bags	trash bags
Frequency	3x a week		2-3x a week		3x a week		Dispose of garbage directly to the TPS		3x a week	

FIGURE 4. Field Observation Results of Pedestrian Variable Unit. Source: Researcher Portrait Results, March-April 2022.

Natural Disaster and Fire Mitigation Response

The physical environment variable unit eco-settlement sees the most dominant percentage frequency in the natural disaster and fire mitigation response variable unit using SPSS analysis data processing. From 10 selected Neighborhood Units (RT), there are 30 samples of respondents with a total cumulative percent total of 100. For the total valid missing of all the variable units collected is 0 out of 30 respondents. Stating the healthy home variable unit shows:

1. frequency of Likert scale tabulation of respondents 50% is not satisfied and 50% is very dissatisfied as many 14 people
2. Thefrequency of Likert scale tabulation is facts in the field 100% very dissatisfied from 30 sample locations

TABLE 8. Respondents Tabulation Likert Scale Disaster Mitigation Response Nature and Fire. Source: SPSS Analysis Results Author's Research, 2022.

Natural Disaster and Fire Mitigation Response (Respondent)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	15	50.0	50.0	50.0
	Dissatisfied	15	50.0	50.0	100.0
	Total	30	100.0	100.0	

Natural Disaster and Fire Mitigation Response (Field Facts)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Dissatisfied	30.0	30.0	100.0	100.0

Results of observation in the field stated that there were no hydrants in residential areas, prone to fire hazards because the settlements were dense and lined up. For the evacuation field, it is located in the field of SMP and SD. There are no evacuation routes, there are no separate information signs for evacuation or disaster threat signs, there are no gathering points or fields, only in the fields of junior high schools (SMP) and elementary schools (SD). There is no temporary post or field for flooding only in the Kelurahan.

CONCLUSION

The unplanned settlements in Petamburan can only grow and develop until today because they have gone through a long evolutionary process of forming places by independently diverse communities [3], they have the potential from the self-communities and participatory and have a strong enough history that can survive until today. Even though it is adjacent to a neighboring planned urban area. This self-communities and participatory in the RW 05 is able to do well due to the MUSRENBANG (Development Planning Consultation) program and youth organizations. Based on the results and discussion of research to get to the criteria for eco-settlement, the social aspect has been fulfilled because it has reflected an self-communities and participatory and the institutional aspect of government/non-government with the MUSRENBANG (Development Planning Consultation) program involving non-governmental organizations. On the other hand, the aspect of the physical environment does not reflect eco-settlement based on the results of SPSS data analysis and field observations that only meet 1 variable, which is the waste network of 4 selected variables. With that being said it can be further improved in development and further improvements with the eco-

settlement institutions government/non-government namely the MUSRENBANG (Development Planning Consultation) program.

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REFERENCES

[1] B. K. J. Pusat, "Kecamatan Tanah Abang Dalam Angka 2021," *Badan Pus. Stat.*, hal. 1–67, 2021, [Daring]. Tersedia pada: https://jakpuskota.bps.go.id.

[2] BPS Jakarta Pusat, "Kecamatan Tanah Abang Dalam Angka 2019," 2019, [Daring]. Tersedia pada: https://jakpuskota.bps.go.id/publication/2019/09/26/2a57ae012d05114ce1e99c13/kecamatan-tanah-abang-dalam-angka-2019.html.

[3] D. Nurgandarum, Inavonna, dan M. Ischak, "Understanding unplanned settlement structure as a result of self-organization in Jakarta," *Int. J. Sci. Technol. Res.*, vol. 8, no. 11, hal. 2459–2465, 2019.

[4] Inavonna, "HUBUNGAN LINGKUNGAN FISIK DENGAN KUALITAS UDARA RUANG LUAR PADA PERUMAHAN PADAT DI PERKOTAAN Studi Kasus Kelurahan Petamburan Jakarta Pusat," *Jur. Arsit. FTSP, Univ. Trisakti, Semin. Nas. Keberlanjutan Ruang Huni Masa Depan EKO-ARSITEKTUR*, hal. 274–282, 2020.

[5] I. Kustiwan dan A. Ramadhan, "Strategi Peningkatan Kualitas Lingkungan Kampung-Kota dalam Rangka Pembangunan Kota yang Inklusif dan Berkelanjutan: Pembelajaran dari Kasus Kota Bandung," *J. Reg. Rural Dev. Plan.*, vol. 3, no. 1, hal. 64, 2019, doi: 10.29244/jp2wd.2019.3.1.64-84.

[6] R. Ngalu dan Y. M. Jamun, "Peran dan Strategi Lembaga Swadaya Masyarakat dalam Pemberdayaan Sosial Ekonomi Masyarakat (Studi Kasus di Kabupaten Manggarai Nusa Tenggara Timur)," *J. Penelit. Kesejaht. Sos.*, vol. 18, no. 3, hal. 279–288, 2019, [Daring]. Tersedia pada: https://ejournal.kemsos.go.id/index.php/jpks/article/view/1762.

[7] P. Priyanto dan E. Wiratno, "Peran Swadaya Masyarakat dalam Pembangunan Desa Munggung Kecamatan Karangdowo Kabupaten Klaten," *Juripol*, vol. 2, hal. 124–133, 2019, [Daring]. Tersedia pada: http://polgan.ac.id/jurnal/index.php/juripol/article/view/245.

[8] L. Rubianto dan A. Navastara, "Karakteristik Ruang Kampung Tambak Asri Berdasarkan Pendekatan Placemaking," *J. Tek. ITS*, vol. 7, no. 2, 2018, doi: 10.12962/j23373539.v7i2.33680.

[9] J. Kasmudin HarahapWahid, B. Arch, M. Arch, D. Ph, Z. Lubis, dan M. Eng, "Aplikasi Hukum Lingkungan Dalam Pembentukan Karakteristik 'Ruang' Interaksi Sosial Di Permukiman Kelurahan Petamburan, Kecmatan Tanah Abang, Jakarta Pusat," *P R O C E E D I N G S Int. Semin. 2013 Fac. Eng. Univ. Pembang. PANCA BUDI*, 2013.

[10] O. H. Lativa, W. Astuti, dan H. Mukaromah, "AKSESIBILITAS FISIK PUSKESMAS RAMAH LANSIA MENUJU AGE," vol. 3, hal. 1–16, 2021.

[11] D. Nurgandarum dan C. F. Anjani, "Legibility of Building Facades and Imageability of Historical City Center, Case Study: Bukittinggi City Center," *IOP Conf. Ser. Earth Environ. Sci.*, vol. 452, no. 1, hal. 0–11, 2020, doi: 10.1088/1755-1315/452/1/012158.

[12] F. C. S. Adiyanta, "Hukum Dan Rencana Tata Ruang Kota: Urgensi Kebijakan Pembangunan Kawasan Perkotaan Berbasis Sustainable Eco City," *Masal. Huk.*, vol. 48, no. 2, hal. 137, 2019, doi: 10.14710/mmh.48.2.2019.137-146.

[13] V. A. K. & R. L. . S. Kartika Puspa Dewi, "Penentuan Kualitas Permukiman Berdasarkan Kriteria Eco-Settlement Di Kelurahan Sindulang Satu Kota Manado," *Spasial*, vol. 6, no. 1, hal. 169–177, 2019.

[14] D. Aryanti, "Arahan Penataan Pemukiman Lingkungan Kumuh Kelurahan Seberang Palinggam," *Din. Lingkung. Indones.*, vol. 7, no. 1, hal. 1–6, 2020, [Daring]. Tersedia pada: https://dli.ejournal.unri.ac.id/index.php/DL.

[15] S. Moertiningsih, D. Nurgandarum, dan O. Nurfanty, "Permeability characteristics of unplanned settlements in Jakarta," *Int. J. Sci. Technol. Res.*, vol. 9, no. 3, hal. 1999–2003, 2020.

[16] D. B. Anindito, N. R. Indriansyah, F. K. Maula, dan R. Akbar, "A quantitative perspective on kampung kota: Elaborating definition and variables of Indonesian informal settlements: Case study: Kelurahan Tamansari, Bandung City," *Int. Rev. Spat. Plan. Sustain. Dev.*, vol. 7, no. 2, hal. 53–74, 2019, doi: 10.14246/IRSPSD.7.2_53.

[17] N. Mylajingga dan L. Mauliani, "Kajian Elemen Perancangan Hamid Shirvani Pada Kawasan Kota Satelit," *J. Arsit. PURWARUPA*, vol. 3 No 2, hal. 123–130, 2019.

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