The Assessment of Social Housing through The Availability of Social Facilities

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Abstract. Social facilities are one aspect that must be fulfilled in a residential environment. The orientation of the provision of facilities as a component of the housing environment and easy-to-reach use should be a consideration of housing development and management. Social housing built by the government through *Perumnas* was built with a large number of units. Over time and the age factor, *Perumnas* experienced developments and problems so that the quality of the environment in *Perumnas* decreased. This paper aims to assess social facilities services, using distance and travel time factors based on the concept of neighborhood units. The research uses a quantitative approach as a basis for finding the concept of neighborhood units in mass housing. The results in this study are the level of accessibility to reach social facilities in the *Perumnas* Banyumanik based on distance and travel time to access social facilities included in the medium accessibility. Besides that, the study found that social facilities as supporting life in mass housing *Perumnas* can be a strong bond in the neighborhood unit concept. Sustainable housing development requires the management and provision of social facilities through easy access in the concept of neighboring units.

Keywords: social housing, *perumnas*, the concept of neighborhood units, social facilities

1. Introduction
Service needs in housing for its occupants must be fulfilled by being equipped with infrastructure, utilities, social facilities, and public facilities that are adequate by the population accommodated [1]. Housing units or better-known neighborhood units are interpreted as physical environments that have clear boundaries, and social service services are available for low levels in serving several residents [2]. The orientation of the provision of facilities as a component of the housing environment and easy-to-reach use should be considered as a housing development. Accessibility to environmental facilities is based on explaining the use that is easily passed by using the concept of neighborhood units by Clarence Perry's or better known as the concept of environmental units [3]. Mentioning this concept is an evolution of the theoretical concept of Ebenezer Howard Park City and social reform aimed at urban population growth [4].

The concept of the neighborhood unit explains the limitation of a bright environmental unit to the center of housing and consideration of the ability of humans to reach housing facilities. The concept of neighborhood units is based on settlements and family units within a community with a particular physical unit [5]. The primary key in this concept is housing that should provide a sense of security and comfort for the community to fulfill or carry out their activities. Neighborhood unit planning that

emphasizes physical aspects, in essence, is an effort to realize the balance of the social life of its inhabitants [6]. This means that environmental units are primarily physical models that provide opportunities for social interaction between residents [7].

The housing planning is closely related to access to environmental facilities, housing facilities as housing facilities and infrastructure [8], [9]. The planning of providing housing social facilities usually begins by considering the closeness to the center of the house group so that it can meet the ideal conditions of housing. The existence of a housing social facility is essential to support the quality of life and mobility of residents in the ideal housing, such as the availability of social facilities. The link between housing that considers the healthy distance of residents and facilities can recognize the level of accessibility as well [8]. So, implies that essential factors influence the welfare and quality of the housing environment in the access dimension [10].

Housing for low-income communities (social housing) that was built by *Perum Perumnas* (National Housing Author) V Regional of Semarang City is complemented by service needs to support the activities of its residents. The existence of social facilities informal housing has a function to provide services and support community needs in social, economic, and cultural aspects [11]. Over time, the physical condition of several social facilities that have been built has decreased in quality. This condition is like what happened in *Perumnas* Banyumanik that it is not necessarily complete the provision of the types of social facilities that exist considering the quantity and convenience of residents accessing. This decrease in quality also affects the interest of residents to access environmental facilities around the location. For example, to go to open space facilities or playing fields for homes that are far from the location of the facility, surely they cannot use the facilities provided or will only use the streets in front of the house as a field. The development of *Perumnas*' age also influences possible access due to some physical changes in it. This paper aims to assess social facilities services, using distance and travel time factors based on the concept of neighborhood units in the *Perumnas* Banyumanik in Semarang City.

2. Methods

The analytical method used in this research is descriptive quantitative using the Likert scale assessment method. Likert scale is a scale used to measure attitudes, opinions, and perceptions of a person or group of people about social phenomena [12]. The quantitative approach has one goal to test the theory [13]. This approach uses theory, and the existing literature is chosen as the research variable. One of them is the concept of environmental units, environmental facilities for social housing, provision, and accessibility. The research location is in *Perumnas* Banyumanik located in Srondol Wetan Village, Pedalangan Village and Padangsari Village, Banyumanik District, Semarang City. In the *Perumnas* Banyumanik there are three types of houses, namely type D21, D33, and D36.

This quantitative approach is based on the philosophy of positivism, meaning that it is used to examine specific populations or samples, data collection using research instruments, and quantitative or statistical data analysis. This study uses a specific sample for accessibility representatives of residential neighborhood facilities in *Perumnas*. Besides, this research is deductive to answer the problem statement using the concept of housing environment units [13], and then analyzed to get measurable results regarding the level of access using descriptive statistics.

The analysis carried out to obtain the accessibility level index was carried out by the scoring method. Scoring analysis was carried out by giving score scores on each indicator determined by each of the criteria (Table 1). This assessment uses three levels of scores: 1, 2, and 3. The score is obtained from the questionnaire data, which is converted into numerical form, that is, by giving 1-3 values in each of the answers to the specified questionnaire.

Table 1. Assessment criteria (scores) on accessibility indicators

Indicator	Score		
	3	2	1
Distance to access facilities	Characteristics of houses with a distance of ≤ 400 m can access facilities (in *Perumnas*)	Characteristics of a house with a distance of> 400 m can only access facilities (in *Perumnas*)	Characteristics of houses that have to access facilities from outside the housing sector
Travel time to access facilities	Facilities can be accessed from 5-15 minutes	Facilities can be accessed 16-20 minutes	Facilities can be accessed in> 20 minutes

The assessment of each indicator is then calculated to obtain an index value of the level of accessibility of each type of house and social facilities by using the Likert scale. For more details can be seen in the calculation of Table 2.

Table 2. The analysis of social facility accessibility index

Indicator	Low Access			Medium Access			High Access		
	Frequency	Weight	f x b	Frequency	Weight	f x b	Frequency	Weight	f x b
Distance to access facilities	f	3	f x b	f	2	f x b	f	1	f x b
Travel time to access facilities	f	3	f x b	f	2	f x b	f	1	f x b

The level of accessibility index for social facilities, there are three classes which can be translated into grades 1-3 for each specified criteria. Calculating the index value on the valuation, the Likert scale calculation is used so that the results of the category of accessibility index for social facilities are obtained (Table 3).

$$Index\ Range = \frac{Highest\ Index - Lowest\ Index}{Number\ of\ levels\ of\ score}$$

$$= \frac{3-1}{3}$$

$$= 0,67$$

Table 3. Social facility accessibility index category

Index Value	Index Category at Accessibility Level
1.00 – 1.66	Low accessibility
1.66 – 2.33	Medium accessibility
2.34 – 3.00	High accessibility

3. Result and discussion

3.1. Identification of Availability of Social Facilities at Perumnas Banyumanik

The condition of the *Perumnas* Banyumanik since the beginning was built has been equipped with several facilities to support community activities in it. The five types of facilities are identified as being available in *Perumnas* Banyumanik. of the five social facilities, their needs were identified in the Housing Office based on SNI 03 1733-2004 concerning Procedures for Housing Planning in Urban Areas and SNI 03-6981-2004 concerning Procedures for Planning a Simple Non-Composite Housing Environment in Urban Areas. The following are the results of identification of availability and needs of social facilities based on existing standards in *Perumnas* Banyumanik with a population of 22,057 people in *Perumnas* Banyumanik.

Table 4. Amount of availability and need for social facilities at Perumnas Banyumanik

Facility Type	Availability of Facilities (Existing)	Facility Requirements (Analysis Results)
Educational facilities		
PAUD	4	22
Kindergarten	15	22
Elementary school	6	14
Junior high school	1	5
Senior High school	2	5
Health facilities		
Posyandu	15	18
Citizens' Medical Center	3	9
Puskesmas	1	1
Doctor's Practice Site	10	4
Pharmacy	7	1
Trading facilities		
Stall	63	88
Shop	11	4
Market	2	1
Worship facilities		
Islamic Prayer Room (*Musholl*a)	4	88
Citizen Mosque / RW	14	9
Village Mosque	1	1
Church	2	1
Sports and Open Space facilities		
Park Environment / Playground	11	88
Field	17	9

Several types of educational facilities are available in the *Perumnas* Banyumanik Area to meet the needs of the *Perumnas* community. Educational facilities that are located in the middle of a residential environment and the center of a residential environment. When referring to the results of the needs, the number of educational facilities is inferior to fulfill. However, the community can still reach educational facilities that are outside the housing complex, which are located not far from the *Perumnas* area.

The existing health facilities at the *Perumnas* Banyumanik show that they have been completed starting from the *posyandu* (health facilities), community medical centers, health centers, doctors' offices, and pharmacies. The placement of the health facility is located on the main road of the housing environment and is close to the center of the residential environment. Based on the results of

the analysis, several health facilities are still less than needed. However, the number of existing health centers, doctors' offices, and pharmacies are adequate.

Trade facilities at the *Perumnas* Banyumanik consist of stalls, shops, and markets. Markets in residential areas are Rasamala Market and Damar Market. These two markets are located on the main residential road. The placement of shops and minimarkets in *Perumnas* Banyumanik if it is associated with the principle of neighborhood units has explained the appropriate conditions because it is placed around a traffic lane (main road) that binds several environments. If referring to the calculation of needs, the number of stalls that exist is still less than the requirement based on the standard. However, for the availability of minimarkets and markets, the amount has exceeded the calculation of needs and has the same trade function so that it can cover the lack of stalls.

The worship facilities located at the *Perumnas* Banyumanik consist of prayer rooms, mosques, and churches. These facilities are located on the main residential road and in the center of the residential area. For two churches in a residential area not only serve residents in the housing but also serve the community to all Banyumanik Districts. Based on the number of mosque needs, the number will be very less compared to the number of currently available. However, if look at the number of existing mosques already exceeding the number of needs, so the shortcomings of the mosque can be complemented by the existence of a mosque that can serve a larger population.

Sports and open space facilities found at the *Perumnas* Banyumanik consist of a field, an environmental park, and a playground. Some existing fields are still utilized according to their functions optimally and are also often used to support several activities to increase social interaction between residents of housing. However, several fields are not used optimally as they function, although the location of sports facilities and open space has been in the middle of a residential environment. Based on the results of the analysis of the needs of environmental parks, the number is very less than the number of existing ones. However, the number of available fields, the conditions are appropriate because they exceed the calculation and can replace the same function of the environment playground, which is less than it should be.

3.2. Distance Accessing Social Facilities

The concept of environmental units refers to Perry as the initiator of the neighborhood unit concept explaining that physical closeness is one of the requirements to meet the neighborhood unit so that it can be implemented in planning. Previously to obtain some data on the physical proximity of the house by referring to Perry's sketch of the population in consuming local facilities, the maximum radius that can be reached is ¼ miles or 400 meters on foot. The ease in a distance of accessing social facilities can be seen from Perry's ideal distance, and placement location is still inside or outside the housing [3]. Distance and location of residents in accessing facilities are divided into five social facilities, including educational facilities, health facilities, trade facilities, worship facilities, and sports and open space facilities.

After knowing the selection of distance and location of social facilities that are easily reached by residents of the housing complex, the next step is to conduct the assessment method, that intended to obtain an index value related to the distance that is easily reached by residents.

Table 5. The index accessibility to social facilities

Facility type	The index value for each type of housing			Perumnas
	D21	D33	D36	
Educational facilities	1.53	1.71	1.75	1.62
Health facilities	2.08	2.13	1.75	2.09
Trading facilities	2.12	1.96	2.00	2.04

Worship facilities	2.69	2.60	3.00	2.66
Sports and Open Space facilities	1.59	2.13	2.00	1.86
Average Index	**1.93** **Medium**	**2.11** **Medium**	**2.10** **Medium**	**2.06** **Medium**

Table 5 seen the distance of accessing the five social facilities at the *Perumnas* Banyumanik are in the medium category (index value 2.06). Means that the level of ease in achieving social facilities at the *Perumnas* Banyumanik is still included in the medium category. The residents of the housing sector who access facilities with long distances (> 400 m in housing) are quite high in percentage. Besides, the percentage of residents who access facilities outside the housing sector is also high. Although in general, the residents of the housing complex easily reach the social facilities that are in the housing sector. Based on the type of house category, both houses with the characteristics of types D21, D33, and D36 indicate similarities with the index results in the housing sector, namely medium.

3.3. Travel Time Accessing Social Facilities

Travel time is one indicator to assess the level of accessibility. If the travel time is short, then the performance of accessibility is high, and vice versa. To measure travel time, it also needs to be related to the distance to access and the choice of how to access or the mode of transportation used. By the ideal distance that Perry has sketched 400 meters on foot, it can be reached in 5 minutes and a maximum of 15-20 minutes. The following is a description of the travel time to access each type of social facility and typology of houses in *Perumnas* Banyumanik.

After knowing the travel time that is easily achieved in accessing social facilities by residents of the housing complex, the next step is to conduct the assessment method to obtain an index value related to travel time that is easily reached by residents.

Table 6. Index level accessibility travel time indicators to social facilities

Facility type	The index value for each type of house			*Perumnas*
	D21	D33	D36	
Educational facilities	1.47	1.82	2.25	1.66
Health facilities	2.41	2.42	2.00	2.40
Trading facilities	2.39	2.33	2.00	2.35
Worship facilities	2.78	2.84	3.00	2.82
Sports and Open Space facilities	1.78	2.36	1.50	2.03
Average Index	**2.16** **Medium**	**2.46** **High**	**2.15** **Medium**	**2.25** **Medium**

Based on Table 6, the five social facilities in the *Perumnas* Banyumanik has an average accessibility index value (2.25) in travel time. The ease of travel time in achieving social facilities is included in the medium category, because some of the facilities are unable to respond to occupants' preferences so that some residents access facilities outside the housing complex and do not get shorter travel times. Although in general, the housing residents easily reach the social facilities that are in the housing sector and still consider the proximity to existing facilities in the housing sector as a priority. If based on the type of house, occupants in types D21 and D36 have an intermediate level accessibility index level. Whereas the type of house D33 shows the accessibility index in the high category. So, the ease of achieving social facilities in this type of house is shorter than other types of houses.

3.4. Accessibility Level of Social Facilities

The analysis by comparing indicators in accessibility analysis based on both indicators. The two indicators are the distance of residents to reach social facilities and travel time. The following is the result of an assessment of the level of accessibility in *Perumnas* Banyumanik (Table 7).

Tabel 7. The accessibility level of social facilities

Indicator	Educational facilities	Health facilities	Trading facilities	Worship facilities	Sports and Open Space facilities	Social Facilities
Distance to access	Low 1,62	Medium 2,09	Medium 2,04	High 2,66	Medium 1,86	**Medium 2,05**
Travel time to access	Low 1,66	High 2,40	High 2,35	High 2,82	Medium 2,03	**Medium 2,25**
Accessibility Level	Low 1,64	Medium 2,25	Medium 2,20	High 2,74	Medium 1,95	**Medium 2,15**
Rank	5	2	3	1	4	

The level accessibility of social facilities in *Perumnas* Banyumanik is included in the medium category, namely 2.15. The index is obtained after considering and calculating the value of each facility on each indicator. For distance indicators, residents reach social facilities with intermediate results (2.05) as well as social facility index values for travel time indicators (2.25). Whereas the lowest level of accessibility is educational facilities (1.64) and the highest level of accessibility is worship facilities (2.74).

The distance indicator of residents reaching social facilities gets intermediate results because the dominance of each value among the five facilities is medium, while high scores are only found in one worship facility and even low scores are found in educational facilities. The low value is because it was found from several residents, many of whom used facilities that were outside the housing sector. The condition is because residents who choose educational facilities outside the housing complex are quite high (reaching 37.76%), so the travel time needed to reach this educational facility is also quite long. So, from the accessibility index of travel time in educational facilities in the low category (1.66). The occupants reach social facilities with the highest index value found in worship facilities, because the majority of residents choose facilities that are close as a priority, so the travel time needed also tends to be short. So, that the level of accessibility in worship facilities is the highest index value among other social facilities.

In general, such conditions which explain the level of accessibility of social facilities in *Perumnas* Banyumanik based on the distance of location and travel time show a final medium value. The medium category indicates a decline in the quality of the housing environment, but residents of the *Perumnas* Banyumanik still use social facilities.

4. Conclusion

The level of accessibility to reach social facilities in *Perumnas* Banyumanik is based on distance and travel time to access social facilities included in the medium category. The intermediate category is caused by several things seen from the distance of the occupants reaching social facilities and travel time to access social facilities that are both in the medium category, because there are still some people who access social facilities within a distance of> 400 m in public housing, and social facilities that are outside the housing sector. The travel time needed to reach educational facilities is also quite long. So that the level of accessibility of social facilities in *Perumnas* Banyumanik based on the

distance of location and travel time shows a final average value. The medium category indicates that there is a decline in the quality of the housing environment, but residents of the *Perumnas* Banyumanik still use social facilities. It is still by the concept of neighborhood unit Clarence Perry, who stated that in a residential neighborhood where factors of social facilities and distances significant achievement. From the results of this research, further research can be conducted to assess the sustainability of *Perumnas* Banyumanik.

Acknowledgments

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