

## Conference Paper

# Vertical Living Opportunities and Challenges for Low-income People in Southeast Asia Case of Indonesia

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**Abstract**

With limited land available, it is a fact and unavoidable that the house should be built vertically. When countries in Europe have started to organize it long enough since the end of the World War II in the 1950s, many states in Southeast Asia can be said to be relatively newer in developing this vertical residential building. Indonesia, for example, began to construct since the 1970s. However, it was in the 1990s that this type of housing was largely built and characterized by a type of luxurious apartment construction that was delivered mainly to the group of people who can afford. The vertical housing for low-income people in Indonesia were just started to be built since the mid-1990s in several locations in Jakarta, in the form of a walk-up flat housing. Nationally, these new housing flats were just constructed since the mid-2000s. This paper is proposed to conduct evaluation of the delivery of flats during these 10 yr period and its relevance to vertical living opportunities and challenges for low-income people in Indonesia. The question is whether the offered vertical housing, particularly walk-up flats, can be accepted by the community and what the problems are faced. The mixed method was used by conducting surveys in several locations of walk-up flats housing in Yogyakarta Special Province. The result of this study is that despite its imperfect situation, in general the flats are responded relatively well by the low-income group.

**Keywords:** Low-income People, South East Asia, Vertical Living, Walk-up Flats, Yogyakarta-Indonesia

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## 1. Introduction

In general, it was estimated by the central government of Indonesia that nearly 10 % of total population live in sub standard housing with inadequate sanitation facilities. These 25 000 000 people or 5 000 000 households have become the target for walk-up

flats. Low-income criteria are used by the governments to refer to these poor housing conditions. It was also added that the backlog in Indonesia is around 13 500 000 units.

Based on Law No. 20/2011, *rumah susun* or walk-up flat as universally defined, may best be described as a multi-storey building, which consists of units that functionally structured both horizontally and vertically. These units can be owned and lived separately by respective resident and equipped with sharing unit, land and infrastructure. The history of multi-storey or vertical housing in Indonesia, as an initiation for the walk-up flats, started in the 1950s with the construction and development of the sub urban satellite city of Jakarta. At that time, the form of housing was known as a flat; a shelter that had four floors, and included dwellings for Ministry of Foreign Affairs staff and Police officers. These flats were dedicated to accommodate public officials from respective institutions and were also called government housing (*rumah dinas*) or tenure housing [1]. In the 1970s, with the increasing demand for residential units, as well as increasingly limited and expensive land in urban areas, these vertical units were also intended to be able to accommodate more people whilst also offer affordable homes to the public. The form of this residential unit was a low-cost apartment or walk-up flats (*rumah susun*) consisting of up to five floors [2]. In the 1980s, walk-up flats were also dedicated to people affected by urban renewal projects, especially in environmental enhancement programs. It was then in the early 1990s that this type of vertical housing was largely built. The construction was characterized also by a type of luxurious apartment construction, which was delivered mainly to the group of people who can afford.

The vertical housing for specific low-income people in Indonesia were just started to be built since the mid-1990s in several locations in Jakarta, in the form of a walk-up flat housing. Nationally, these new housing flats were just constructed since the mid-2000s. There were some considerations that cause delay in the construction of this type of houses for this community group, such as rejection and unpreparedness of the people in accepting the existence of flats. On the other hand, there were also cases that occurred related to management of construction of flats in Jakarta, which made the government think long before offering it to the public. In addition, living in a vertical situation was assumed not suitable for most low-income people who generally live in landed house in the form of kampong. There were several indicators, i.e. the emptiness of units in the flats, the difficulty of the residents to adapt in vertical situation and so on, that suggest that the above assumptions were correct. In this era of 1990s, the National Housing Enterprise (*Perum Perumnas*) became the main institution appointed

by central government to build walk-up flats. The developments were located in many big cities in Indonesia, particularly in Jakarta.

In addition, since the rent was arranged much less below the market price, there was a heavy subsidy to operate the building. Until today, the subsidy policy for these walk-up flats built by *Perum Perumnas* is still maintained by the central government with regards to people' concern that can lead to potential conflict if the financial support is lifted. Currently, *Perum Perumnas* still provides public housing although it is dedicated to the middle and higher-income groups. The task to build walk-up flats housing is then managed by the Ministry of Public Works and Ministry of Public Housing. These two ministries subsequently became the main actors or institutions in the flats development. To distinguish their role, it was decided by the central government that the rental walk-up flats (*rumah susun sederhana sewa* or *rusunawa*) would be the concern of the Ministry of Public Works, while walk-up flats which are for sale (*rumah susun sederhana milik* or *rusunami*), public foundation flats (i.e. civil servant and army officers' flat) and student dormitories are handled by the Ministry of Public Housing. There are sometimes situations in which the construction of rental walk-up flats are also built or supported by the latter Ministry, i.e. due to the financial reasons faced by the Ministry of Public Works. When combined with the Ministry of Public Housing program, nationally there will be approximately 600 twin blocks or 600 000 units that are expected to be built by the end of 2014 [3].

## 2. Objective, Method and Limitation

This research would like to explore or to evaluate the delivery of flats for these 10 yr and its relevance to vertical living opportunities and challenges for low-income people in Indonesia. The question is whether the offered vertical housing, particularly walk-up flats, can be accepted by the community as can be drawn from many aspects, and what the problems are faced in particular issue. The mixed methods was used by conducting surveys in several locations of walk-up flats housing in Yogyakarta Special Province as one of the cities or areas that has built this house quite a lot. The locations are several flats in the city of Yogyakarta, and the regency of Sleman and Bantul, which were treated as case studies [4]. The basic idea is first, the people are previously live in horizontal unit, which is then move to vertical unit. The second reason is that before moving to the planned unit, people are considerably live in sub standard situation.

Interviews to the manager of the flats from the government, the local manager of respective flats and the residents were conducted as well as giving questionnaires to

78 residents (30 people in Yogyakarta City, 22 in Sleman Regency and 26 in Bantul Regency). These interviews and observations were conducted to look at the real phenomena that occur in the field, which was then compared to quantitative questionnaire. The results of this study were then discussed with the broader phenomenon of the existence of flats in Indonesia and also in other countries in Southeast Asia in general. This paper is continuation of the researcher's unpublished preliminary study with regards to people's living experience in flats in 2011, added with new and updated surveys, locations and findings in 2016. This study faced limitation of ideal number of respondent who was expected to return the questionnaire, as well as several interviewees who did not want to answer the questions.

### 3. Theoretical Framework

#### 3.1. Concept of vertical living

In general, authors [5] suggested that the term of *vertical housing* can be replaced with the meaning of *multi-storey housing*. In addition, Chandler, et al. [6] stated that this type of vertical housing is usually efficient, flexible and be a good solution to live for families and attractive for single occupants, as compared to a single house, because it can save expenses for daily maintenance. It is also associated with the capabilities and ease of adapting to the situation in urban areas.

Generally, the basic concept of vertical housing policy is to put people who usually come from landed condition into vertical experience [7]. With respect to the situation of slums, the empty space created after the overcrowded building was replaced with a vertical housing, then can be utilised as a green or open space. There are several consequences associated with the implementation of vertical housing approaches, such as changes in the behaviour or habits of occupants, the impact on the surrounding environment, changes in the value of land and others. This condition is categorized into physical, social and economic impact by several authors [5, 8, 9].

#### 3.2. Occupancy and dwelling process

Living in a different circumstances, in this case is that move from landed home to walk-up flats, also means having a different experience. The low-income people, who often live in situations of low-rise and equipped with inadequate or minimum infrastructure, then shifted to the vertical housing with different standards, both in terms of physical

and social. The new situation also encourages the adaptation of their habits with the new neighbours' related conditions and living processes aspect. Correspondingly, there is also the concept of adaptation and adjustment or modification of the housing. This point of view will also be useful in identifying the response of the people living in a walk-up flats.

In theory, there are at least three ways in which housing may have an impact on family well-being, particularly in improving the housing conditions that are used to be unfavourable [8]. Similar issues also occur in the situations of walk-up flats associated to the need for improving the environment by the government, and a new practice of life for citizens, who shifted from the experience of horizontal or low-rise building (or landed house) to vertical. The first condition is through physical attributes and availability, which include quality and safety. The second is through a method or process in which it is due to several conditions, such as whether the new location may provide enough space so that the family was not then overcrowded, whether there is opportunity to create a positive aspect of empowerment, and if the unit is possessed or rented in terms of family security. The third key attributes are the environmental conditions, which include safety and quality of the environment, i.e. the location and accessibility of the housing. These general considerations then leads to the next condition related to adaptation and adjustment, primarily with regard to the experience and or personal behaviour.

### 3.3. Adaptation and adjustment

The term adaptation suggests an association between behavioural change in environment usually leads to a reduction of dissonance or discrepancy in environmental systems to improve the interaction harmony of a series of variables [10]. In general, the process of adjusting the personal fittingness to the environment can be in form of adaptation and adjustment. Bell [11] stated that the process of conformity between the individual and his environment is known as adaptation. In this condition, a person changes his behaviour in accordance with the conditions of the circumstances, especially the social situation. Parallel to that, the process of environmental change by the individual is called adjustment. In this situation, someone is trying to change the physical environment [12].

Soemarwoto [13] argued that adaptation is an attempt by organism to adjust his living with the environment. In addition, he argued that adaptability have survival value. The definition of adaptation, according to Iskandar [14] is the adjustment of

the response to stimuli. The adjustment made in the adaptation is aimed to change behaviour in order to fit to the environment. Furthermore, according to authors [10, 14], adaptation is a change of quantity in the distribution of assessment or ratings or effective response to the unity of the stimulus, as a function of continuous stimulation. Based on the above understanding, it can be summarized that adaptation is the adjustment related to the living conditions in certain environments with a changing behaviour, based on the response to stimuli. The adjustment itself is distinguished from adaptation as external conformation, which is related to physical modification towards surrounding environment as argued by Berry [10].

#### 4. Contextual Setting: The Development of Walk-up Flats in Yogyakarta Province

Generally, the development of walk-up flats in Indonesia has become a part of the national housing policy [2]. The flats are constructed by the government with regards to formal housing provision or public housing. The development has been carried out through different eras with respective conditions and challenges. Currently, there are two programs to provide flats for low-income people, which are related to urban renewal and provision for the general population. Each program has been defined to be built or delivered by different ministries or institutions in cooperation with the local governments. The main housing problem in Yogyakarta Province, as well as in other provinces or regions in Indonesia is the increasing need for housing facilities in urban areas, compared to the limited availability of land [2]. This scarcity has led to increasing land and housing prices, mainly in the city centre and other urban areas. The development of low-cost walk-up flats has become an alternative solution for accommodating people who cannot afford to access formal market housing, whilst becoming a strategy to upgrade the sub standard environment.

Yogyakarta Special Province has an area with size about 32.5 km<sup>2</sup>, inhabited by more than 3 000 000 people (greater Yogyakarta). It consists of five city and regencies, namely Yogyakarta City, Sleman Regency, Kulon Progo Regency, Bantul Regency and Gunung Kidul Regency. Yogyakarta City is one of the big cities in Indonesia, particularly in Java Island. The urban-rural situation blended in urban kampong situation in Yogyakarta City, as well as in the other regencies although with different intensity. Currently, there are development of medium-rise buildings in Yogyakarta Special Province, in type of hotels and residential apartments.

The development of walk-up flats in Yogyakarta Province was initiated in 2004 by the construction of the Cokrodirjan walk-up flats on the banks of the Code River. Since that year, there has been large scale development of flats. From 2004 to 2012, the provincial government of Yogyakarta built 26 blocks, which consist of 13 blocks for low-income people and 13 blocks for others (students, public employees and army officers). These developments are located in all cities or regencies in Yogyakarta Province. The total number of units for the flats is more than 6 000 (2016), in which one twin block (or two buildings) usually consists of 68 to six units. All of the walk-up flats have been developed by the Ministry of Public Works and the Ministry of Public Housing. Until today (2016), there is no flat housing provided by the private sector or individually funded by the local government of Yogyakarta Province. As in the cases at the national level, the two ministries have different tasks and objectives in building flats in Yogyakarta, in which The Ministry of Public Works builds walk up flats for low-income people in an urban renewal situation, while the Ministry of Public Housing develops walk-up flats for low-income people in general.

The walk-up flats in Yogyakarta City were built along the Code River, as a part of the urban renewal program. The area along this river is considered by the local government to be the most densely populated area, compared to the other two riverbanks in Yogyakarta City (Winongo and Gadjahwong River). Finding the most suitable land and ideal location for constructing the walk-up flats was also the reason for building the flats in this location. In addition, social acceptance by surrounding neighbours also became an important consideration. Similarly, finding suitable space was also the reason for the location of the walk-up flats in Sleman and Bantul Regency. The village vacant land (*tanah kas desa*) became the best possible and affordable option for the construction. The development of the walk-up flats in Sleman and Bantul Regency was not strongly focused on an urban renewal program (like those cases on the banks of the Code River in Yogyakarta City). As a consequence, the residents of the flats in the case of Sleman and Bantul come from various places and backgrounds.

In general, all of the walk-up flats in Yogyakarta Province are rental flats (*rumah susun sederhana sewa* or *rusunawa*), while the rent amount per month varies. Usually, the higher the floor, the cheaper the rent is. The maximum period for renting is 6 yr. This is based on a regulation that the initial occupancy period is 3 yr, which can only be extended to another 3 yr if the residents request to re-apply. After occupying a place for the allotted time period, the residents have to move out to find other accommodation. The implementation of walk-up flats in Sleman and Bantul Regency is mainly targeted

at low-income people in general and not for residents in specific or designated areas such as in Yogyakarta City.



**Figure 1:** Flat housing Cokrodirjan in Yogyakarta City.

The walk-up flat housing usually consists of 1 type of unit (21 m<sup>2</sup> or 24 m<sup>2</sup>), with total of around 96 units in each block and has (4 to 5) floors. The ground floor is occupied mainly for public use, service, social facility and people with specific needs (although only several units). The other above floors is occupied for residential. The targeted resident for the walk-up flat building is generally low-income people who do not own house and have local identity card of respective regency or city or reside in Yogyakarta Province. The renting system is conducted as the approach, while the amount of rent can be various. Originally, the maximum occupation or renting is 6 yr, divided into 2 periods of 3 yr each. The renters or tenants are then encouraged to improve their capacity in finding better accommodation after the tenancy.



**Figure 2:** Flat housing Dabag in Sleman Regency.

## 5. General Evaluation of Living in the Flats

Most of the residents said that they are happy to live in the walk-up flat. They stated that living in walk-up flat has many advantages compare to their previous situation. It was stated further, especially by relocated people, who are living in the walk-up flat as part of upgrading program, that their current unit is generally better. The residents said that their unit are physically liveable, since they felt secure (in terms of tenure), safe (due to less criminality), comfortable (in terms of good air or temperature), and convenient (related to adequate size of the unit). In addition, the complete facility within walk-up flat is also mentioned as positive factor. Usually, the walk-up flat is equipped with social or public space, parking area, yard and or sport facility, whilst



**Figure 3:** Flat housing PTS 3 in Bantul Regency.

the unit itself generally consists of bedroom, bathroom, kitchen, outdoor terrace or corridor and drying area in the back.

In non-physical aspect, the respondents said that the rent is inexpensive and the location is quite strategic or can be easily accessed easily. Therefore, they also gave positive remarks in this side. However, the maximum 2 times 3 yr tenancy period is considered too short, added with the reality that there is no further option to own the unit or no access to owned walk-up flat or *rusunami*. The possibility to extend the period becomes one of the residents' aspirations.

Parallel to this resident's review, generally the surrounding communities gave neutral to positive assessment in physical-environmental aspect. In physical-environmental concern, they said that the walk-up flat development has positive

aspect to surrounding situation in terms of infrastructure enhancement after completion. However, people said that the construction was noisy since the location is very close to their house. In non-physical aspect, the surrounding community provided different assessment. Some of them said that the impact is relatively minimum, while the others gave opinion that the situation is now getting more crowded.

Similar to above qualitative interview result, the quantitative questionnaires also showed that most of the residents gave positive assessment of fair to good for the condition of walk-up flat facilities in general. There is only water provision issue and risk of having flood (for walk-up flat located near Code river) being a concern of the residents. In addition, the surrounding communities mostly gave neutral opinion related to the physical-environmental impact. They said that there is relatively no difference after the completion of walk-up flat building compare to before situation. The issue of health, comfortability and security is being said as usual or just normal.

TABLE 1: Questionnaire related to overall experience.

Question	Response	Percentage (%)		
		Yogyakarta City (30 people)	Sleman Regency (22 people)	Bantul Regency (26 people)
Better Quality	Yes	43	64	69
	No	3	5	27
	So-so	43	32	0
	n/a (not answered)	10	0	4
Want to move out	Yes	10	68	4
	No	80	32	92
	n/a (not answered)	10	0	4
Overall assessment	Good	40	45	46
	Just enough	47	45	50
	Bad	0	5	0
	n/a (not answered)	13	5	4

Adapted from Swasto DF. [2]

## 6. Adaptation for Living in the flat

Generally, the residents of the walk-up flat gave opinion that they face no difficulty in shifting their experience from horizontal to vertical living. They said that dwelling in walk-up flat is different compare to their previous situation in landed house, since there are new conditions and social norms. However, most of them stated that they were able to adapt and or adjust their unit despite some limitations. The action of this adjustment within limited space are expanding the unit, dividing the unit both horizontally and vertically, creating consensus space for doing communal activity, utilizing open space or 'left over' space and doing shifting period for using communal space [15, 16].

In addition, the residents said that there is also no difficulty to interrelate among themselves as well as to surrounding community. Therefore, it was mentioned that social interaction and harmony can still be conducted. However, the intensity is not always as expected due to its social dynamics. According to that, the surrounding community gave opinion that the social interaction is different to previous situation. It is said that the bond is stronger in the past since they know each other quite well due to long relationship. At this moment, the resident of walk-up flat are relatively new person, even comes from different area or regency.

TABLE 2: Questionnaire related to social situation.

Question	Response	Percentage		
		Yogyakarta City	Sleman Regency	Bantul Regency
Adaptation	Easy	47	41	96
	Difficult	0	0	0
	n/a (not answered)	53	59	4
Problem in flats	Yes	30	18	19
	No	50	45	65
	n/a (not answered)	20	36	15
Socialization	Good	47	50	46
	Just enough	23	23	23
	Bad	10	14	4
	n/a (not answered)	20	14	27

Adapted from Swasto DF. [2]

By exploring the quantitative questionnaires, it was showed that most of the residents gave similar result as above qualitative findings. They said that there is relatively no difficulty in doing adaptation to live in walk-up flat. The act of socialization is formed by creating communal association and conducting periodical meeting. The temporary situation of renting the walk-up flat unit and not knowing each other quite close becomes their major reason. In addition, generally the surrounding communities gave neutral opinion according to the socio-economical impact. They said that the situation is just usual, compare to previous experience. However, some people said that there is economic opportunity after the building of walk-up flat since there is more potential customer.

## 7. Other Findings and Comments

Besides above assessments, there is also some issue related to living in vertical situation as raised by the residents of walk-up flat and sometimes supported by the opinion from surrounding communities. **Firstly**, there was aspiration to live in landed house in the future. From the survey, although most residents said that they enjoy living in walk-up flat, it is said that dwelling in vertical housing is just a temporary situation. They are aware that they cannot live there permanently or forever, with regards to renting condition and the need to raise children when they grow up. They know that one day they have to move out, therefore, they have to be prepared for that, by at least doing saving, building a small house in somewhere else, and or looking for follow-on contract house or unit. Based on quantitative survey, there was at least one person in every walk-up flat who prepares him or herself to move out, considering above reason of temporary renting, raising children, and or situation that they have already built house somewhere else.

**Secondly**, there was concern with regards to compatibility and flexibility of walk-up flat building. It is said that the residents have no difficulty in adapting or adjusting their circumstances when moving in vertical unit. However, the characteristic of the residents is various in terms of related existing job. Some of the residents said that they must also shift their existing job since living in walk-up flat means that there is limitation in doing previous work habit. For residents who previously work as a service provider, such as a tailor, he or she cannot open their home-based enterprise as formerly occurs. Resident who work as a trader with mobile chart or as food stall seller also have difficulty in continuing their business since the unit space has limitation to store their chart, goods and or other necessary equipment.

### 7.1. Comparison to general situation in Indonesia

In general, the development of flats housing in Indonesia has been targeted to reach certain national housing objectives that are to accommodate urban low-income people. However, the performance has fallen short of achieving its purpose. Related to the housing shortage, the achievement has only reached the target for a small percentage compared to the national numbers. In this situation, the development of the flats has not yet solved the housing problem on a wider scale. In addition, although the units have been constructed on a large scale in many cities, more than a quarter of a percent of the flats have not been occupied. These circumstances indicate that the performance of the walk-up flats has been ineffective. However, the result in this study in people' response showed otherwise.

Although the number of the flats that have been constructed can correspond to the national housing requirements and decrease the housing gap by a certain amount, the residents or occupiers are not always the people with low-income status as the target of the flat provision. It is indicated that the subletting situation occurs nationally, in which many flats are not currently occupied by low-income people, but by the higher-income group. From the case of flats housing in Yogyakarta Province, the shifted residents occurred in its early years due to the need to reach full occupancy.

TABLE 3: Summary towards living in the flats.

Aspect	Residents	Surrounding Neighbours
General responses	Most of the residents gave positive feedback according to their experiences	Most of the surrounding neighbours gave neutral responses regarding the impact of the flats development
Responses to Physical-Environmental Aspects	Most of the residents gave positive remark to most of the physical-environmental aspects	Most of the surrounding neighbours gave neutral remarks to most of the physical-environmental impacts
Responses to Socio-economic Aspects	Most of the residents gave positive remarks to most of the socio-economic aspects	Most of the surrounding neighbours gave neutral remarks to most of the socio-economic impacts
Wider Aspect of Resident's Lives	Several residents must change their job after living in the flats The flat is only temporary in the resident's housing career	The flats provided economic opportunities for the surrounding neighbours
Adapted from Swasto DF. [2]		

## 7.2. Comparison to general situation of vertical housing

It can be seen that dwelling in walk-up flats with a renting system means living in a temporary situation, considering the unit as just transitory housing. This situation leads to consequences. **Firstly**, the unit can be transferred to those low-income people who need it the most, taken from a positive aspect. However, in the future the absence of follow-on housing will become a problem for the residents in the post-tenancy term. It becomes a concern that low-income people cannot find decent alternative accommodation if the unit is not available or deliberately provided by the government.

**Secondly**, this impermanent nature will demand the need for a quick adaptation. People are expected to be able to adjust their experience to new circumstances. This situation becomes a challenge as not all people will have similar ability. Conversely, the excellent awareness upon the delivery of improved housing standards and related infrastructure also occur temporarily. It becomes a concern that the expectation towards living in an enhanced housing situation cannot be continuously put into practice. When people move out from the flats and cannot find an alternative unit, they may go back to poor housing conditions.

## 8. Conclusion and Recommendation

From above discussion, the conclusion can be summarized as follows. Firstly, it can be said from the finding that, although living in vertical situation is relatively new to most of them, the dwellers are happy to live in walk-up flat. The indicators are they want to return live there (rent again) after the rental period is over, they feel convenient or comfortable (related to opinion of having bigger or liveable place, feeling good air or temperature, and experiencing bigger and enough room size rather than in previous building or landed house situation), and they feel safe and secure (in terms of tenure). In addition, the reason why they gave positive assessment towards living in walk-up flat is the inexpensive rent and its strategic location.

Secondly, most of the target group are eager to live in walk-up flat. From the survey, the low-income people, as the potential target of walk-up flat program, are keen to live in walk-up flat. The indicators are the long awaiting list of living in walk-up flat and change of bad perception that living in such vertical housing is not comfortable. Thirdly, people are ready to live vertically in general. Based on interview and questionnaires, the residents said that they may adapt to vertical living without any difficulty. This effort is carried out by reshaping social value in relatively new 'space' or environment.

They have new neighbour, social process and norm, so they have to live in harmony or communal tolerance, by creating new community association within walk-up flat, new social space, and new social interaction within friendly atmosphere.

In addition, although most residents gave positive assessment in general, as well as neutral opinion given by the surrounding community, there are some further notes related to this vertical living situation. Living in rental walk-up flat means living in temporary situation or transitory housing. This situation leads to assumption that living in walk-up flat will only be suitable for a person with certain job characteristic, considering its limitation. However, there is a big opportunity for the residents to do saving, with regards to inexpensive rent, compared to common situation. On the other hand, there is also enhancement of sanitation awareness if the walk-up flat delivery is connected to slum upgrading or renewal program since the dwellers are provided with relatively better infrastructure condition than previous situation.

Despite its relatively completed facility, living in walk-up flat may not be as comfortable as expected if the physical delivery is not properly built. The residents, and supported by surrounding communities, provided notes on this problem of physical completion, which are: safe site due to the closeness to the river, the importance of good water provision, consideration of regular maintenance by using low-cost material, and the need to provide proper floor design or levelling priority, i.e. for elderly, people with specific needs, and so on. Above it all, the perfect completion of the building, such as to avoid water leakage, is considered as the main necessity. For further research, this paper encourages study in an owned walk-up flat (*rusunami*) conducted in other place since there is only rental walk-up flat delivery in Yogyakarta. Comparison to different situation in higher flats (such as in medium-rise building in other places) can also be explored to improve the result. In addition, detailed impact in each aspect can also be examined.

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