Study of Vertical Residential Development in the Poris Plawad Mass Transportation Development Area (TOD) in Tangerang City

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**ABSTRACT.** The aims of this study is the development of vertical housing in Tangerang City is an alternative strategy to meet the needs of housing for the community, especially Low-Income Communities (MBR), reduce backlogs, and optimize the fulfillment of Green Open Space (RTH). In addition, it also aims to build a vertical housing development model and its implications for policy / meeting the needs of the community for housing, providing a transit area that is responsive to the needs of mass transportation or developing a Transit Oriented Development (TOD) based area in Greater Jakarta, and creating a transit area with various kinds of supporting facilities with integrated activity functions. Data analysis methods used include descriptive analysis, statistical analysis, financial analysis, input-output (I-O) analysis, and dynamic system analysis. The results showed that the people of Tangerang City had the potential for great interest in vertical housing but the level of affordability was still very low. For this reason, the role of the government is very much needed in terms of facilitating developers in the form of policies. Housing development also has a multiplier effect on development in Tangerang City and the surrounding area. These impacts can, among other things, increase community income, a high rate of employment, also expected by the development of vertical dwellings in the TOD area can leave private vehicles and switch to public transportation or mass transportation such as the use of LRT, MRT, commuter line, bus, and etc.

**1. Introduction**

Based on the National Spatial Plan, Tangerang City is included in the National Center for Development Activities and intensive activities in Jakarta influence the growth in its surroundings, both acting as the Jakarta hinterland, as well as new centers of activity, (PKN) Jabodetabek and the National Strategic Area (KSN). In addition, there is Soekarno Hatta Airport in Tangerang City, which is the main airport in Indonesia. Therefore, the provision of transportation facilities and infrastructure is important to accommodate the movement of residents as well as the internal and external goods of Tangerang City.

Poris Plawad Terminal is a type A terminal in the city of Tangerang that serves movement within the city, between cities, and between provinces. The Poris Plawad Terminal is bypassed by City transportation (Angkot) and the Bus that connects Inter-City in the Province (AKDP) and Inter-City in the Province (AKAP), there are also TransJakarta Buses and Trans-Tangerang Buses. There is also a Batuceper station around the Poris Plawad Terminal which serves the Jabodetabek route, the KRL Tangerang-Duri. The two transportation nodes are located close to DKI Jakarta so they have an important role in the external connectivity of the City of Tangerang. The Poris Plawad Terminal is considered the gateway of the City of Tangerang with DKI Jakarta so that the area has a high intensity of activity on mixed use / mixed land around it.
Development of integrated terminals at Poris Plawad and Soekarno Hatta Airport trains at Batuceper Station. Intensive transportation mode changes will occur with the development plan. In addition, there will also be an increase in the intensity of spatial use with high density and diversity. Therefore, the concept of developing transit-based areas (Transit Oriented Development / TOD) is suitable to be developed in the Poris Plawad Terminal area. In addition, the layout of buildings around the terminal and station tends not to be well ordered. Plus the traffic flow as the main transportation node in Tangerang City, Batuceper Station and Poris Plawad Terminal still lacks supporting facilities such as parking areas and pedestrian lanes.

The Tangerang City RT / RW Directive states that the Cipondoh District will be developed as one of the Tangerang City Service Centers with a city service scale, this can be realized by developing the TOD at the main transportation node; Batuceper Station and Poris Plawad Terminal. The TOD was developed using the transportation integration method and the development of a dense mixed use area with moderate to high space utilization intensity. The formulation of the problem in this study is whether the plan to develop vertical housing in the mass transportation area of TOD Poris Plawad in Tangerang City can be realized ? The purpose of this research is the development of vertical housing in the TOD Poris Plawad area to (1) provide a transit area that is responsive to the increasing Jabodetabek transportation needs, (2) Become a transit area by mixing the functions of activities that support each other, AND (3) Creating a reactive area and productive but still functions flexibly.

The target of this research is the development of vertical housing at TOD Poris Plawad so that (1) Providing a transit area that is responsive to the increasing transportation needs in Jabodetabek. (2) Developing reactive and productive TOD Poris Plawad area but still functioning flexibly, and (3) Serving residents, especially accessibility that accommodates modal transit activities and activities of high intensity with vertical dwelling

2. Methods and Materials

2.1. Theory

Theories used in this study are Regional Development Theory and vertical housing theory. Theory of Regional Development in the TOD Poris Plawad Region (Tangerang City Spatial Planning, 2018) and a general description of settlements, the mobility intensity of the residents who mostly work and get housing from the informal sector (Khudori, 2002). The vertical housing theory used is a comparative review of scientific articles discussing flats and their shortcomings (Adianto, 2009) and the development of vertical housing concepts (Actar, 2010).

2.1. Method

Explanatory qualitative approach with the method of observation, interviews and discussions with residents of the city of Tangerang. Field observations and interviews were carried out for 2 weeks in RT / RW Kota Tangerang to obtain data on the physical condition of the environment. The results of the field observations and interviews will be used to analyze the level of mobility of the residents of the TOD Poris Plawad area. (Spatial Planning of Poris Plawad). Discussions with residents were carried out to obtain data on the condition of residential residents, followed by analysis. The results of the analysis are used to determine the criteria for forming the concept of vertical housing.

3. Results and Discussion
TOD area is an area determined in the spatial plan as a centered area on intermodal and intermodal integration which is in a radius of 400 meters up to 800 meters from the transit node of mass public transportation modes, which has the function of utilizing mixed and solid spaces with moderate to medium space utilization intensity. High. The TOD principle in realizing mixed areas as well as dense and centralized areas that are integrated with mass transportation systems, consists of:

3.1. Regional development by encouraging sustainable mobility through increased use of mass public transportation. Includes integration of regional functions and facilities with the structure of urban space, the development of mixed areas; improvement of connectivity and unity between spaces and between buildings within the region;

3.2. Development of environmental facilities for non-motorized and pedestrian transportation modes that are integrated with the transit node. Include parking arrangements that encourage the use of mass transportation modes with high accessibility; building arrangement and regional development that provides short routes for users of non-motorized and pedestrian transportation modes.

The development of the TOD area is carried out through the development of the following:

a. Development of a mass transportation system is a major prerequisite for the development of the TOD area and the success of TOD is influenced by the number of mass transportation users at the transit nodes. as can be seen in table II.3.

b. Environmental Development;
   1) TOD area space structure
      Divided into public areas, central commercial areas, residential areas, secondary areas (outermost areas).
   2) Technical criteria for the design and use of the TOD area in the picture

The typology of the TOD area consists of City TOD, Sub City TOD, and Environmental TOD. Each typology has technical criteria for the design and use of space considering transit locations, primary transit networks, secondary transit and feeders and supporting facilities.

a. The City TOD area as a City Service Center, functions as a primary economic center, is served by mass transportation, is on the main line of high-capacity mass public transport, is served by a high-capacity transit system, and is a region with mixed functions. The following technical criteria and TOD performance criteria and indicators are as follows:
   • Served at least by 1 short distance transit mode and 1 long distance in the form of heavy rail, light rail transit, BRT, Local Bus / Express Bus with frequency (headway) <5 minutes.
   • Population density> 750 people / ha, workers> 200 people / ha.
   • High space utilization intensity with KLB> 5 to the highest KLB limit, while still not exceeding the carrying capacity of the environment, KDB 80% and occupancy density of 20-75 units / 1,000 m2 with a number of floors of more than 11 floors to 40 floors or more, street frontage of at least 90%.
   • Vehicle and bicycle parking is provided together with the maximum parking standard of 1 residential parking lot / unit; retail parking / office 1 parking lot / 100 m2; and maximum ground floor parking is 10% of the plot area.
• Mixed and diversity of spatial use is 20% -60% for housing and 40% -80% for non-housing (the developed housing is balanced occupancy in an effort to realize social and economic diversity of the region) and a minimum of significant activity in the area for 18 hours.

b. Subkota TOD area as a Sub City Service Center, with a service function on a city or city scale. as a secondary economic function center, served by a mass transportation system in an internal sphere; is in the circulation path; served by a high capacity transit system and is a region with mixed functions. The following technical criteria and TOD performance criteria and indicators are:
• Served at least by one short distance transit mode and one long distance in the form of heavy rail, light rail transit, BRT, Local Bus / Express Bus with frequency (headway) between 5-15 minutes.
• Population density 450-1500 people / ha, workers 40-200 people / ha.
• Intensity of medium to high space utilization with 3-5 KLB, KDB 70% and occupancy density 12-38 units / 1,000 m2 with a number of floors between 3-15 floors, street frontage of at least 80%.
• Vehicle and bicycle parking is provided together with a maximum parking standard of residential parking 1.5 parking / units; retail parking / office 2 parking lot / 100 m2; and maximum ground floor parking is 15% of the plot area.
• Mixed and diversity of space use is 30% -60% for housing and 40% -70% for non-housing (the developed housing is balanced occupancy) and a minimum of significant activity in the area for 16 hours.

c. The Environmental TOD area as the Center for Environmental Services, functions as the center of the local economy; served by a mass transportation system in an internal scope; in a residential environment with access to either the city center or sub-city center; served by medium and low capacity transit systems by Light Trains, BRT, local buses and / or feeder buses; and is a region with mixed functions. The following technical criteria and TOD performance indicators, namely:
• The character of developing the area as a center of local economic activity and local communities and has a scale of environmental services.
• Use of space for dominant housing with access to either regional or subregional.
• Served at least by 1 short distance transit mode and 1 long distance in the form of light rail transit, Local Bus / Express Bus with frequency (headway) between 15-30 minutes. In some cases the commuter line can serve the TOD area.
• Population density 350-1000 people / ha, workers 12-40 people / ha.
• Medium space utilization intensity with outbreak 2-3, KDB 70% and occupancy density 15-20 units / 1,000 m2 with a number of floors of more than 3 to 8 floors, minimum 70% street frontage.
• Vehicle and bicycle parking is provided together with maximum parking standards and maximum ground floor parking of 20% of the plot area.
• Park and Ride is still possible.
• Mixed and diversity of space use is 60% -80% for housing and 20% -40% for non-housing and a minimum of significant activity in the region for 14 hours.
Vertical housing has become one of the options for urban communities who have practical and efficient lifestyles. Living in an apartment is starting to be accepted by the community and has been considered a lifestyle, especially for young executives and middle class citizens who want to live comfortably, safely, practically and efficiently. Apartments outside Jakarta, especially in buffer cities, including Tangerang City are starting to show their appeal. The market is intensifying it in line with the availability of public transportation accessibility. In fact, the accessibility of the expressway makes the apartment outside Jakarta seem to be showing more attraction, especially the existence of toll roads from and to the buffer cities of Jakarta. Models of developing middle class apartments in general are:

- Studio type. Studio type with an area of 18-21 m²
  - 1BR. 1BR (1 Bedroom) where in one apartment room there is only 1 room. With an area of 24-28 m²
  - 2BR. 2BR with an area of 36-42 m².
  - 3BR. 3BR type unit with an area of 60-72 m².

For vertical residential planning in the Poris Plawad Terminal Area, around 3000-4000 apartment units will be developed, consisting of Studio, 1BR, 2BR and 3BR units with a building mass of three towers @ 40 floors. With supporting facilities, namely as many as three floors of the mall and one-story station or terminal.

From the results of the analysis of the need for housing conditions, the development of vertical housing is expected to meet the needs of settlements in the city of Tangerang, especially for the middle class.

The concept of the Vertical Occupancy planned in the Poris Plawad TOD Area is based on the predetermined vertical occupancy criteria, then a vertical residential block plan is made above the POD Plawad TOD Terminal.
4. Conclusion

The results showed that the people of Tangerang City had great interest in vertical housing, but the level of affordability, especially MBR, is still very low. To increase the affordability of the community in owning housing, the role of the government is needed especially in providing assistance and housing ownership incentives. Housing development in this case vertical housing also has a multiplier effect on development in Tangerang City and the surrounding area. These impacts include high housing construction, increased income of the community, and high employment rates due to housing construction. The increase in the number of residential needs, as well as the housing backlog in Tangerang City shows a trend of growth following the exponential curve in the simulation year 2001 to 2025. To meet the housing needs of the people in Tangerang, especially the MBR, taking into account the community's ability to own housing, maintaining the availability of green space, also provide a transit area that is responsive to the increased need for transportation in Jabodetabek, a transit area with a mix of mutually supportive and integrated activity functions, and create a reactive and productive area but still functions flexibly.

5. References

[1] Actar. 2010. Total Housing. Barcelona:
[2] Actar. Adianto, Joko. 2009. Desain Unit Hunian Rumah Susun Sederhana Sewa: Modularisasi Raga Tanpa Jiwa. Jurnal Tesa Arsitektur. Volume 7 Nomor 2.
[3] Arikunto, S. 2003. Manajemen Penelitian. Rineka Cipta. Jakarta.
[4] Butters, C. 2003. Sustainable Human Settlements – Challenges for CSD, working paper in the 12th Session of the Commission on Sustainable Development (CSD 12). NABU. New York
[5] Badan Pusat Statistik. 2005. Kerangka Teori dan Analisis Tabel Input – Output. Badan Pusat Statistik. Jakarta.
[6] Ditjen Penataan Ruang. 2005. Kajian Konsepsi Ruang Terbuka Hijau. Jakarta
[7] Djunaedi, A. 2000. Indikator Indikator Lingkungan Perkotaan : Belajar dari Pengalaman Negara- negara Lain. Pusat Penelitian Lingkungan Hidup, Universitas Gajah Mada. Yogyakarta.
[8] Kepmenkes No. 829/Menkes/SK/VII/1999 tentang Perumahan dan Kawasan Permukiman. Jakarta. Republik Indonesia. 2001. SNI 03-2396-2001 tentang Tata Cara Sistem Pencahayaan Alami pada Bangunan Gedung. Jakarta. UN-Habitat.
[9] Pemerintah KotaTangerang. 2014. Rencana Detail Tata Ruang dan Peraturan Zonasi Kota Tangerang. Jakarta. Republik Indonesia.
[10] Peraturan Menteri ATR/BPN RI nomor 16 Tahun 2017 tentang Pedoman Pengembangan Kawasan Berorientasi Transit
[11] Undang-Undang Nomor 22 Tahun 2009 Tentang Lalu Lintas dan Angkutan Jalan
[12] Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup Undang-Undang Nomor 20 tahun 2011 tentang Rumah Susun