Affordable Residential in TOD Area

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Abstract. Transit Oriented Development (TOD) areas in Jakarta are formed with the operation of the first MRT line, followed by the LRT network. However, with the development of mass rapid transit arise the problem of providing affordable housing units within the TOD area. This problem is particularly noticeable in central city TOD areas. This paper describes the process of inquiry in the effort of providing affordable housing in central city TOD areas. The study begins with literature research and case study to find the percentage of affordable housing that should be provided within the TOD area. Discussion with stakeholders and expert of TOD planning will reveal what problems are faced by the provision of housing within TOD area in Jakarta, as well as some possible solution to these problems. The most difficult problem is the land price that prohibits the provision of affordable flats or apartment units there. Changes in regulation regarding the central city mixed use development as well as building codes might be necessary in order to build affordable apartment units in central TOD areas.

1. Introduction
The local government of DKI Jakarta province has made a regulation that requires the inclusion of low income housing within Transit Oriented Development (TOD) areas in the city. The Governor sees the reality where TOD areas are developed exclusively to cater for the upper and middle income strata of the society. Office towers and high rise apartment buildings that are often constructed on top of retail complex or shopping malls in TOD areas are generally too expensive for the low income people. During the development of TOD area, the poor people who previously lived in the urban kampungs near the MRT stations cannot live there anymore. They are displaced by the new high rise development.

The implementation of SK Gub is still difficult, not only because of there is a lack of standard for determining how much or what percentage of land/floor areas and types of residential use should be planned inside each type of TOD area (suburban, urban core etc.), but also due to the high land price in city center. This paper describes the process of inquiry in dealing with these problems of implementing the SK Gub. A study was undertaken as part of an assignment from the MRT Jakarta as the main operator in TOD areas. The main question in this study was what are the main issues and constraints that have to be taken into account as we strive to fulfill this regulation for providing affordable housing in TOD area? In the study we use the definition of affordable housing as stipulated in the Permen PUPR RI No. 10/PRT/M/2019 are dwelling units with floor area range between 21 sq.m and 36 sq.m for Masyarakat Berpenghasilan Rendah (Low Income Communities).[1]

The study was performed using qualitative method. Data was collected mostly from secondary sources in the form of regulation and standards. Primary data collection was also done in the form of focus group discussions and in depth interviews. The initial phase of the study investigates housing in each TOD area, particularly focused on the housing typology, zoning proportion etc. The next step is
finding the proportion of affordable housing within the TOD area (in term of land or floor area). This phase was mainly done as literature study or study of standards and current/applicable regulation. The second phase of the study focused on the implementation issues, i.e., the difficulty of providing affordable housing within the TOD area. This phase was done in a series of focus group discussion with key stakeholders (MRTJ operator, local government representative, experts) as well as in depth interview with developer.

2. Residential use in TOD area
To answer the first question on how much space in terms of land or floor area that must be provided for the lower income residential in the TOD area, an extensive literature study was performed to find the standard residential proportion for each TOD type. There are various types of TOD area according to its location and role in the city. The Center for Transit Oriented Development [2] defines the typology of TOD areas as presented in the Table 1.

| Table 1. TOD Areas Typology (source: The Center for TOD 2008) |
|---------------------------------------------------------------|
| Center | Regional Center | Urban Center | Suburban Center | Transit Town Center |
| DISTRICT | Urban Neighborhood | Transit Neighborhood | Special Use/Employment District |
| CORRIDOR | Mixed-use Corridor |

| Table 2. Typologies within each landuse (source: The Center for TOD 2008) |
|---------------------------------------------------------------|
| A TOD RESIDENTIAL BUILDING Typology |
| 1 Small-Lot Single Family/Duplex (15 DU/acre) |
| 2 Townhouse (30 DU/acre) |
| 3 Low-Rise Multifamily (55 DU/acre) |
| 4 Mid-Rise Multifamily (110 DU/acre) |
| 5 High-Rise Multifamily (75+ DU/acre) |
| A TOD MIXED USE BUILDING Typology |
| 1 Mid-Rise Residential Over Commercial (40-90 DU/acre) |
| 2 High-Rise Residential Over Commercial (60+ DU/acre) |
| 3 Mid-Rise Office/Commercial |
| 4 High-Rise Office/Commercial |
| 5 Institutional/other Employment |
| A TOD OPEN SPACE Typology |
| 1 Transit Plaza |
| 2 Plaza |
| 3 Small Parks |
| 4 Community-Scaled Parks |
| 5 Regional Open Spaces |

Each TOD type is suitable for certain residential building typology. Regional Center for High-rise and mid-rise apartments and condos; Urban Center and Suburban Center for Mid-rise, low-rise, some high-rise and townhomes; Transit Town Center for Mid-rise, low-rise, townhomes, small-lot single family; Urban Neighborhood for Mid-rise, low-rise, townhomes; Transit Neighborhood for Low-rise, townhomes, small lot single family, and some mid-rise; Special Use/Employment District has limited residential potential but mid-rise and high-rise if appropriate; Mixed-Use Corridor for Mid-rise, low-rise, townhomes, with small-lot single family off the corridor.

Calthorpe [3] together with Mintier & Associates indicate that the housing proportion in Neighborhood TOD is between 40-60%, whereas in Urban TOD it is 20-60%. This was the earliest concept of TOD, with more residential use in neighborhood TOD and more non-residential use in urban TOD.
Table 3. Landuse proportions in TOD (*source Calthorpe*)

For Indonesian city, such as Bandung Metropolitan Area, Widyahari & Indradjati [4], stated that within each types of TOD areas (Regional Center, Urban Center, Sub Urban Center, Transit Town Center) the proportion of residential development are 20%-30% in the form of high-rise, mid-rise apartment and condominium in the highest/regional center to mid-rise, low-rise townhouse and small-lot single family in the lowest/Transit-town center. The residential types and density is described in table 4.

Table 4. Criteria and Indicators for TOD in Bandung (*source Widyahari*)

As explained in the literature study above, most of the theory or standard only specify the proportion of land uses in each TOD type. Some indicates the residential building typology for each TOD type, for instance low-rise, townhouse etc. as well as its building density expressed in Floor Area Ratio (FAR) or the number of dwelling units per hectare. The next step in this study searched for indications on minimum or ideal number of affordable housing units that have to be provided within a TOD area.

Only one literature gives an indication about the low income housing in TOD, as written by Anjali Saji in https://www.academia.edu/37461624/Transit_Oriented_Development_Norms [5] that describes the criteria according TOD norms that applies in Mumbai CIDCO. The following is a portion of the text from the CIDCO norm.
According to this norm, 30% of Floor Space Index (FSI) must comprise of residential units of 65 sq.m or less including 15% FSI for units ranging from 32 to 40 sq.m. Therefore, the mixture of small, medium and large residential unit is ensured with floor area proportion of 15:15:70 respectively.

Furthermore, the norm stated in section VI about Minimum Housing Mix Criteria (by Unit Sizes) the Policy to Ensure a minimum supply of affordable housing options for low and medium income population within walking/cycling distance of Stations, and in close proximity to sources of employment and recreation. This norm about Minimum Housing Mix Criteria is in line with the Governor of DKI Jakarta’s intention to provide housing for the lower economic strata within the TOD area.

In the Housing Act UU RI No. 20/2011 about Flats article 97 requires that in the construction of commercial flats, the developer is obliged to provide public flats at least 20% (twenty percent) of the total floor area of the commercial flats built.[6] This law pertains to the concept of Hunian Berimbang (Balanced Shelter) that regulates the composition of low : mid : high income housing equals to 6:2:1. However, it was intended more for landed housing in general or mixed vertical housing outside the TOD area.
Another way of regulating this is by setting the required number of affordable dwelling units for each TOD. In other words, the standard does not refer to the area or proportion of each land use, but to the number of population in each income group. This kind of regulation is also suggested by ITDP in their publication TOD Standard. One of the criteria for Mix is planning for mixed use, with the objective that lower income groups have short commute. Measurement method is by quantifying the number of residential units in the TOD area, as well as the number of affordable residential units. Ideally within the defined station area, 30% or more of all residential units are affordable.[7]

3. Affordable Housing in TOD area

The second phase of the study focused on the difficulty of providing affordable housing within the TOD area. In order to find the answer to the second question regarding the high land price in TOD area, the study undertook a discussion series with stakeholders of TOD development. In the discussion it was agreed that the main problem that hinders the provision of affordable housing within the TOD area is due to large disparity between land value and the housing/rental cost. Private developers always need to get some profit from the land development. Buildings in the TOD areas are usually taller than those in other areas because the developers have to maximize the saleable floor area to compensate for the extremely high land procurement cost (that may reach over Rp. 100 million per sq.m). Hence it would be prohibitively difficult for the private developers to subsidize the affordable housing units if constructed on their land within the TOD area.

During the discussion it was acknowledged that the high housing cost in TOD areas may be approached by changing the household monthly spending/expenditure by decreasing the transportation cost and increasing the housing cost for those who previously live far away from place of work in city center. Further study on this cost shifting option needs to be conducted for Indonesian case, that might be different from the case in the US. According to American Public Transportation Association, households in location efficient environment such as TOD spend only 9% of their monthly income on transportation cost. In contrast to that, households in auto-dependent suburbs spend 25% of their income for transportation. Therefore, there is a potential 16% savings that can be reallocated for housing cost.[8]

Housing cost is very important and particularly sensitive for the lower income families. In their paper Zhao and Li [9] shared their finding about the determining criteria in selecting the place of residence. According to this paper, people do not consider land use as the most important but income and property price are more important. People selects the property price that lies within their budget regardless of the land use zones. Therefore, one of the important consideration for urban planners is the combination of population density and employment opportunity in each TOD area. An ideal combination must be attained to ensure that income to pay for the dwelling is sufficient. The population density and employment opportunity is presented by SANDAG as following [10]:

| Place Type             | Minimum Residential Target | Minimum Employment Target | Minimum Transit Service Characteristic |
|------------------------|----------------------------|---------------------------|---------------------------------------|
| Metropolitan Center    | 75 d/h/ct    | 100 emp/hac       | Converter Rail / BRT                   |
| Urban Center           | 40 d/h/ct    | 50 emp/hac       | Light Rail / Rapid Bus                 |
| Town Center            | 20 d/h/ct    | 30 emp/hac       | Light Rail / Rapid Bus                 |
| Community Center       | 25 d/h/ct    | N/A             | High Frequency Local Bus w/in Transit Priority Area |
| Rural Village          | 10.5 d/h/ct  | N/A             | N/A                                    |
| Special Use Center     | Optional     | 45 emp/hac       | Light Rail / Rapid Bus                 |
| Mixed Use Transit Corridor | 25 d/h/ct | N/A             | High Frequency Local Bus              |

Table 5. Residential density and employment for Smart growth (source: SANDAG)
Another strategy that was considered during the discussion is to build the affordable housing units on land belonging to the local government. The DKI Jakarta provincial government possesses some land parcels within the TOD area, for instance kantor dinas (local government office), marketplace, health facility, school and others. In this scenario, the affordable residential units are constructed as flats above the current market or dinas office. Some revision to the current zoning regulation may be necessary if residential activity is not allowed in the government-zoned land. In order to overcome this problem of market-oriented approach, changes in policy and strategy is necessary. Hitherto the policy of the DKI Jakarta provincial government in providing housing for the people is not matched to the development around TOD areas. The alignment of various mass transportation networks and therefore the potential location of TOD areas is just recently decided. We can observe the discrepancy by comparing the map of potential location of TOD and the map of RP3KP Rencana Pusat Permukiman Kota Administrasi Jakarta Pusat. Source: Rencana Pembangunan dan Pengembangan Perumahan dan Kawasan Permukiman (RP3KP) Provinsi DKI Jakarta 2030.

Figure 1. Map of potential location of TOD (source: BPTJ)

Figure 2. Settlement Center Plan Central Jakarta (source: Dinas Perumahan dan Gedung DKI Jakarta)
4. Conclusion

The proportion of residential land use area has been determined for various types of TOD. However, there is still a need for arrangements so that within the residential zone in the TOD area, the mix the housing size and price are also determined so that various strata of the community can live there. Setting the required number of affordable dwelling units for each TOD is more preferable than setting the proportion of land or floor area for the affordable housing. A study need to be undertaken in determining this minimum number of affordable dwelling units, possibly in relation with the number of each income strata that works in the TOD area.

The difficulty of providing residential units in Urban core for particular price bracket – i.e. the low cost housing – may be approached by changing the household monthly spending/expenditure by decreasing the transportation cost and increasing the housing cost for those who previously live far away from place of work in city center. Other approach of solving the high land cost in TOD area for affordable housing involves the use of any available public land there. The construction of affordable flat units on land zoned for government office use may need revisions in building regulation, including the UU Perumahan/the Housing Act.

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