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Regulating Compact Urbanity in Jakarta

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Dyah Fatma is an urban designer with more than 10 years of experience. She pursued her master's degree in Urban Design at Kyushu University, with a thesis on human perception of security in public space, and obtained her doctoral degree at the University of Tokyo, with research on green area provision in a new administrative municipality. Following her graduation, she joined PDW to write PDW's first book, *Architecture: Beyond Building* and joined the company's Urban Design Team. She is interested in how humans use the built environment, and actively researches with her networks on varied subjects relating to urbanism.

Julianti P. Setiawan started her career as an urban designer at PDW in 2013. She has been involved in designing various projects, ranging from master plan to urban design guidelines of wide-ranging urban development projects, especially in Indonesia. After gaining four years of experience in the field, she took a break to pursue her master's degree at the Norwegian University of Science and Technology, focusing on Urban Ecological Planning. During her studies, she has been involved in research globally, concentrating on people's participation in planning and design processes. After finishing her degree, she returned to PDW.

Abstract

One of the key challenges to achieving livable, compact urban complexes in Jakarta is the local building codes, which regulate types of activities, setbacks, spatial utilization, and ground-floor frontage, as well as easements. This paper provides a desktop-study analysis of challenges faced in designing compact transit-oriented development (TOD) areas in Jakarta, by reviewing and comparing several existing regulations and building codes, in order to analyze their roles in encouraging the establishment of compact TOD in the city.

Keywords: Building Codes, Compact, Jakarta, Transit-Oriented-Development, Urban

Introduction

Jakarta's predominant growth pattern over the years has been sprawl, with inadequate public transport, and a heavy reliance on private motorized vehicles, resulting in uneven distribution of facilities around the city, high energy consumption, and a low quality of social life due to traffic congestion (JICA 2012, Kirmanto, Ernawi & Djakapermana 2012). A number of efforts to provide a reliable public transport system have been taken, including introducing the TransJakarta BRT (bus rapid-transit) network starting in 2004 (TransJakarta 2016) and the modernization of the commuter train system (including trains, ticketing, and stations) since 2011 (Kumparan 2017). In 2017, Indonesia committed to accomplishing Sustainable Development Goals (SDGs), incorporated into the National Development Plans as per Presidential Decree no. 59 (2017). To achieve these goals, the government of Daerah Khusus Ibukota (DKI) Jakarta encourages the implementation of the "compact city" concept and vertical development through its Regional Spatial Plan (2012). The compact city has been identified as a more sustainable approach, where intensification is supported by a good public transportation system and good city management (Jenks, Burton & Williams 1996). The concept relies greatly on the availability of mass public transportation, which Jakarta has historically lacked.

Around the same time as the drafting of the Regional Spatial Plan, the city started to improve its transportation network.

The improvement of the commuter line network was followed by the opening of the of Mass Rapid Transit Jakarta (MRTJ) metro line in 2019, which is to be followed by the Greater Jakarta Light Rail Transit (LRT), which is expected to begin operations in July 2022. With the addition of these mass public transport systems, Jakarta plans to implement transit-oriented development (TOD) around the stations. On another note, it is important to acknowledge that the success of compact cities in developing countries such as Indonesia depends on economic power and good governance (ibid.) However, spatial planning regulations on the macro and micro levels, such as those assessed in this paper, define the built spatial form, and thus play a great role in achieving the higher quality of life associated with well-managed, compact cities.

This paper assesses the existing regulations related to spatial planning and building codes, and highlights how these regulations may or may not encourage the establishment of compact TODs in Jakarta, and thus accomplish a more sustainable and livable city. As most of the available land in Jakarta is built up already, establishing a compact TOD in Jakarta may well be a challenging task, which will rely largely on the brown-field redevelopment of the existing built environment.

The assessment started with an evaluation of the compact city discourse, highlighting the physical characteristics of a sustainable compact city in the urban context of developing countries. These characteristics

are used as a base to identify the scope and gaps of existing spatial planning and building regulations applied in DKI Jakarta, which may affect the establishment of a successful TOD. The Dukuh Atas TOD Area is used to further illustrate the impact of these regulations.

The Issue: Developing the Compact City

The discourse around compact cities has evolved since the 1960s, aiming to develop the built environment, as well as social and economic sustainability, through the concentration of functions in a relatively small area. Through the discourse, the following characteristics are highlighted as the key components to developing a compact city: relative density, accessibility, diversity, flexibility and adaptability, availability of green open space, and inclusivity.

Relative density leads to accessibility and diversity. It enables proximity to facilities and diversified uses for citizens (Burgess 2000). Amenities and facilities will also be economically efficient and socially sustainable in a higher-density area, as the cost can be shared by more people. Furthermore, proximity provides a friendly environment for pedestrian and bicycle use (Houghton & Hunter 1994). These characteristics would make a city more vibrant and attractive to both residents and visitors (Williams, Burton & Jenks 1996).

To be effective, the concentration processes of the compact city require efficiency and adaptability, especially when it comes to the economy and property markets (Knight 1996). As a dynamic and innovative system, the property market is driven by the demand fluctuation of buildings (offices, shops, housing, etc.) following population growth and diversity. The compact city's ability to continuously adapt to innovation (e.g., swiftly adjusting to new, heterogeneous property products) would leverage its market competitiveness and lower the need to open new land for development (ibid.)

Despite the positive virtues of the compact city, Breheny (1992), illustrated that a compact

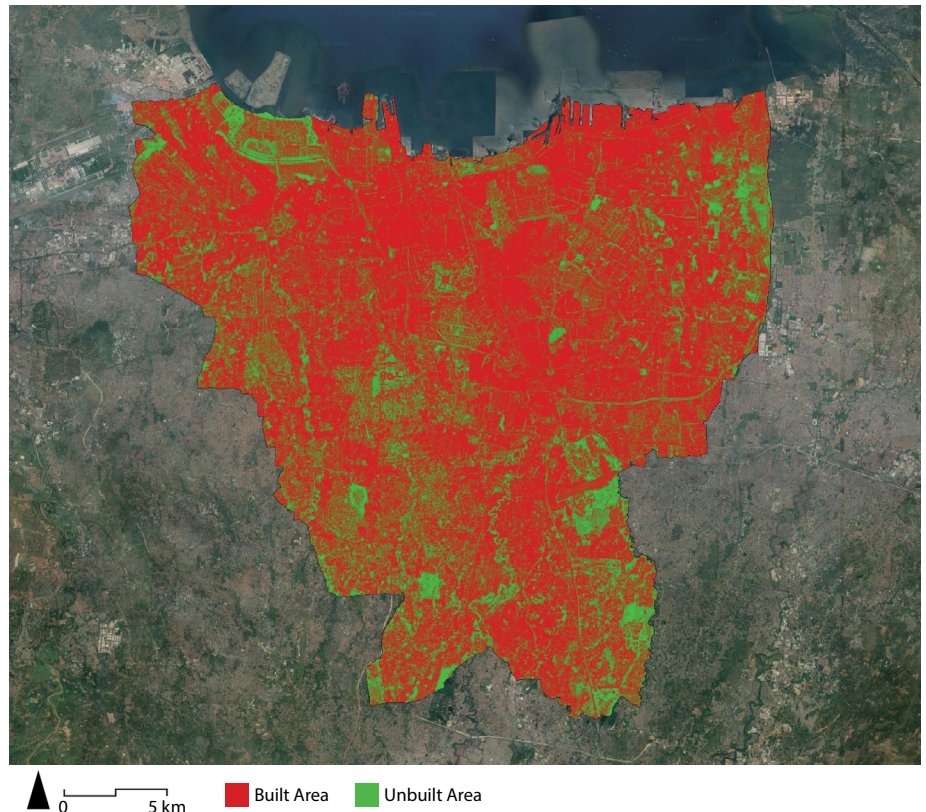


Figure 1. Jakarta land cover as of 2019; about 90 percent of available land is built-up, leaving only about 10 percent for green space.

city may later become overpopulated, both by buildings and people, which may lead to urban quality degradation due to the loss of open space, increasing congestion, and pollution (Jenks, Burton & Williams 1996). Mouratidis (2017 & 2019), however, argues that overcrowding and low satisfaction in densified places happen when people compare them to well-planned sprawl. He noted that when “well-planned sprawl” is compared to “well-developed and compact cities”, people find higher satisfaction in the latter. The notion emphasizes that density should be balanced with the availability of green, open spaces to lower the feeling of overcrowding (Chiesura 2004, Tappert, Klöti & Drilling 2018).

In addition, social equity persists as another challenge to achieving a sustainable compact city. Social equity is often left out during the planning stages, and it takes political will to achieve such goals (Trudeau 2018). For example, access to high-quality space and amenities remained affordable for only a

limited number of people in the middle to upper classes. Densification in a compact city encourages sharing of amenities, and thus makes them accessible to those who previously were denied or unaware of such features, and allows a hint of both social and spatial justice in the urban area. All things considered, the set of regulations that aims to promote a compact city should prioritize promoting equity ahead of other previously mentioned characteristics.

Redeveloping Jakarta as a Compact City

Jakarta: the Ever-Changing Metropolis

Jakarta is home to more than 10 million people, with an addition of more than one million daily commuters from its surrounding municipalities (JICA 2012). The city is predominantly built-up (see Figure 1). Despite the city's target of 30 percent urban green coverage, Jakarta's actual green coverage is only about 10 percent. On the other hand, the average population density



Figure 2. Jakarta is highly dense, but the density mostly comes from low-rise *kampung* settlements, as opposed to its high-rise buildings. © PDW



Figure 3. A new pedestrian ramp in the Dukuh Atas Transit Plaza allows seamless mobility for the elderly, and people with disabilities.



Figure 4. An at-grade pedestrian crossing near Bundaran HI provides near-barrier-free mobility, as compared to the previously-built pedestrian bridge.

is 14,464 people per square kilometer, mostly in the form of low-rise, high-density settlements across Jakarta, dominated by urban *kampungs*, the traditional neighborhood typology (see Figure 2). Jakarta's city centers lack relative density compared to other areas within the city.

The current shape of Jakarta is a result of several towns merging, following Indonesia's independence. The earliest Jakarta master plan, published in 1967, refers to a "greenbelt" concept, to limit the city's sprawl into the hinterlands (Blackburn 2011), in line with the compact city ideal. However, during Indonesia's rapid development throughout the 1980s and into the early 1990s, new town developments and small housing clusters were developed on the outskirts of the city, due to limited land availability inside Jakarta. It has encouraged the middle and upper class to move out of Jakarta, into these new well-equipped residential areas. During the same era, high-rise buildings were built in ribbon patterns along the main roads, such as the Sudirman-Thamrin and the Kuningan corridors. The *kampungs* behind these high-rises became even more crowded and

uncontrolled. In the late 1990s, the CBD development in Jakarta started with Sudirman Central Business District (SCBD) and Mega Kuningan. However, economic decline, followed by political turmoil, halted the development at the city center and shifted office and business development to Jakarta's peripheries at the beginning of the 2000s. Later, at the end of the 2000s, middle-class apartment building development started to surge (Salanto 2013). Previously, vertical housing development had been limited to public housing for the lowest-income residents, and high-amenity apartments for a mainly expatriate upper class (Pratama, Trilistyo & Indraswara 2013).

Current and Future Development Trends in Jakarta

Jakarta explicitly aims for compactness and densification through its spatial plan. However, no assessment of the appropriateness of the compact city concept in either Jakarta or Indonesia has been established to date. The theories and practices are typically translated directly into derivative concepts, and then implemented as the prescriptions for establishing compact cities in the Indonesian context.

Following the SDGs, Jakarta is now attempting to move towards a more sustainable path. With MRT Jakarta opening in 2019, followed by the establishment of a redevelopment plan, as well as urban design guidelines for MRT Jakarta TOD Areas, the concept of high-density and compact living in the city centers, adjacent to the transit nodes, has resurfaced. Urban regeneration projects, whether located in the existing densely-built residential areas, *kampungs*, or industrial estates, have emerged and pulled more attention towards environmental sustainability and social inclusion, as well as the circular economy.

Endeavoring to establish a more just city, Jakarta promoted several programs to engage active participation from all citizens in urban activities. Following the Kampung Improvement Program (KIP) in the 1970s, Jakarta introduced the Community Action Plan (CAP) and Collaborative Implementation Plan (CIP) in 2018. These instruments act as part of the revitalization tools for the regeneration of the urban villages.

At the same time, Jakarta has also started to improve sidewalks and major street crossings

to better serve the disabled communities. Physical barriers are slowly being reduced, if not fully removed. Some of those efforts include the sidewalk widening along the Sudirman-Thamrin corridor, and exchanging at-grade crossings for pedestrian bridges along the Sudirman-Thamrin arterial road, as well as designing Dukuh Atas Park as one of the most convenient transit areas for people with physical disabilities (Hardum 2019, Rohman 2019) (see figures 3 and 4). In addition, Dukuh Atas Park is often utilized as a venue for public education activities and campaigns related to physically disabled people, as well as those with visual and hearing impairment (Pusbisindo 2019).

The Enablers: Policies and Regulations

Reviewing the Existing Regulations

The enacted policies and regulations related to urban planning, urban design, and other building codes in Jakarta consist of several layers of hierarchy; from the national and ministerial regulations to the governor and local regulations. There are 12 policies and regulations reviewed in this paper, which range from urban and regional planning to architectural building codes, along with supporting regulation regarding aviation

safety and the Indonesian National Standard. Each of the regulations is related, if not bound, to the others (see Figure 5).

Most of the regulations are naturally well-aligned and well-synchronized. However, within the scope of each regulation come questions and challenges of congruence and consistency, not only towards one another, but also on how each code influences the implementation of compact urban complexes in Jakarta. In this section, each of the regulations is dissected and broken down by its relevant scope, and cross-analyzed with the sustainable compact city concept's principles.

DKI Jakarta's Zoning Regulation continues to be the main reference when it comes to master planning and urban development in DKI Jakarta in general. It has determined the designated density zones, development

blocks, land-use and sub-zones, and the development parameters attributed to each of the parcels, as well as the recommendation of uses and activities in each sub-zone.

The Zoning Regulation also divides DKI Jakarta into several designated density zones (PSL), i.e., "very dense" ("Sangat Padat" (SP)), "dense" ("Padat" (P)), less dense ("Kurang Padat" (KP)), and not dense ("Tidak Padat" (TP)). These zones set up a basis for the Zoning Regulation in Jakarta in general, including development intensity, floor area ratio (FAR), building coverage ratio (BCR), and maximum building height.

DKI Jakarta's regulations address the housing provision issues in general through the Special Clauses for Housing Provision stipulated in the Zoning Regulation. These clauses would allow the non-residential

“Despite the city’s target of 30 percent urban green coverage, Jakarta’s actual green coverage is only about 10 percent.”

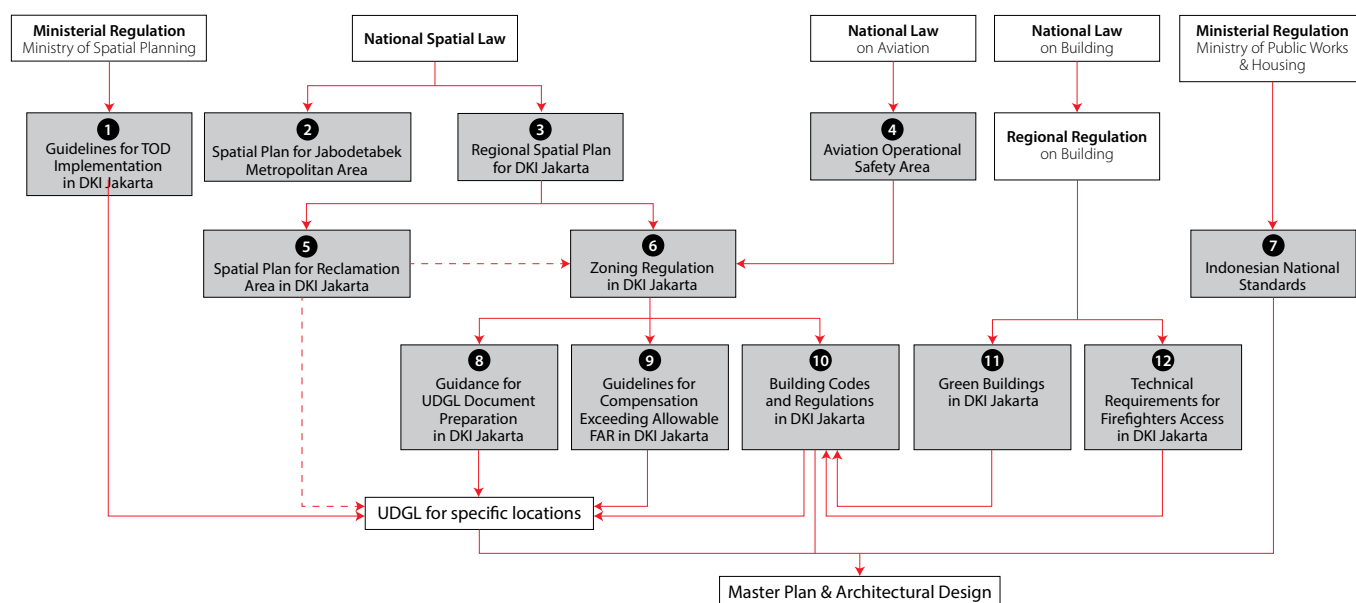


Figure 5. Schematic diagram showing the progression of existing regulations into a master plan for Jakarta.

Setbacks	1991 Building Codes	2010 Building Codes**	2019 Building Codes
A. Road Setback	(No information in the document)	N/A	1/2 of right of way (ROW)–10 meters, depends on width of the ROW (as per DKI Jakarta’s Zoning Regulation)
B. Setbacks for single buildings			
1. To parcels			
a. Back	2–10 m, depends on building type	N/A	Following point B2 except for buildings in small parcels
b. Sides	1.5–8 meters, depends on building type		Following point B2 except for buildings in small parcels
c. Front	(Same with road setback)		(Same with road setback (point A))
2. To other building masses			
a. In other development parcel(s)	1st floor*: 4 m (or as much as the road setback)	N/A	1st*–4th floor: 4 m (or equal to road setback)
	2nd–18th floor: 0.5 m increment for each additional floor		5th–10th floor: 0.5 m increment for each additional floor
	18th–32nd floor: 12.5 m		21st floor or higher: 12.5 m
	33rd floor or higher: 15 m		
	Half of the aforementioned distance for windowless façades/solid walls and building masses whose position is angular (minimum 30°) toward one another		
b. Within the same development parcel	(Same as point 2a.)	N/A	Half of the aforementioned distance for windowless façades/solid walls/core wall and building masses whose position is angular (minimum 30°) toward one another Half of the distances mentioned in point 2a.

Notes:

*The “first floor” in these regulations refers to the ground floor.

**No particular setback regulations found in 2010 Building Codes. In practice, regulation regarding setbacks during this period referred back to the 1991 Building Codes.

Table 1. A comparison of required setbacks for buildings in Jakarta, according to the 1991, 2010, and 2019 building codes.

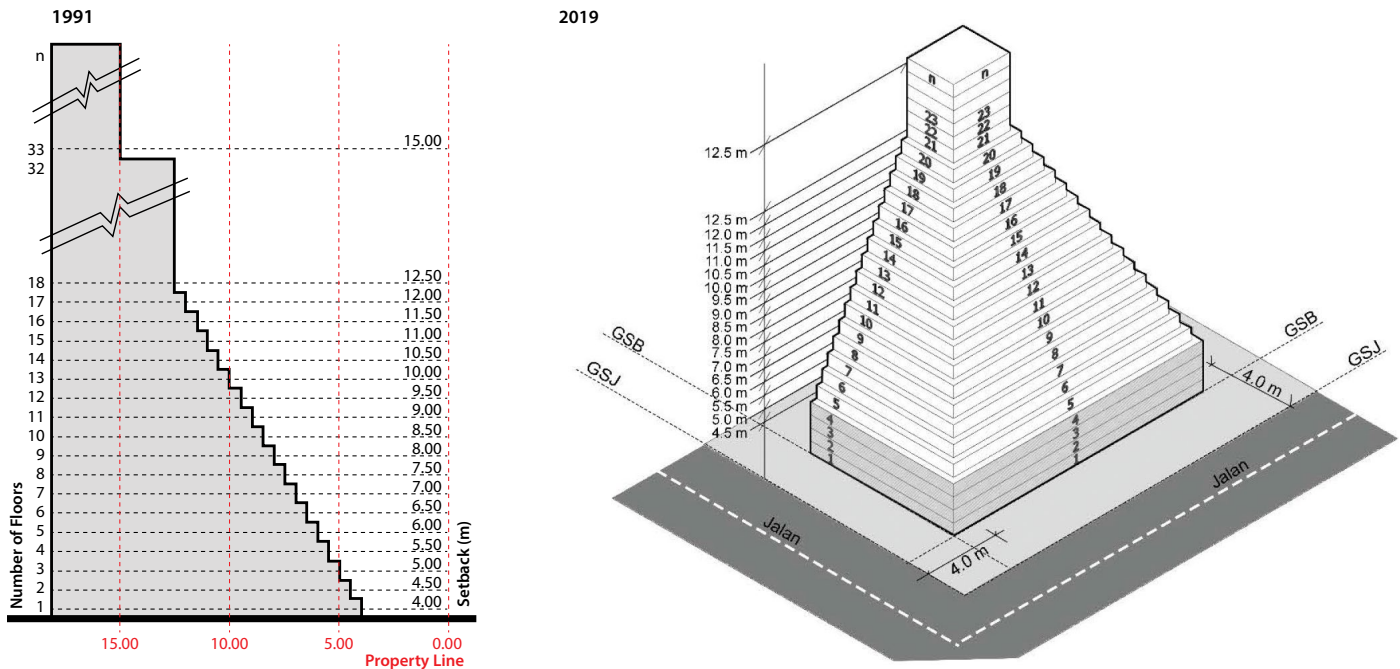


Figure 6. Comparison between Jakarta building setback regulations in 1991 and 2019. Source: Perda No. 7 Tahun 1991 and Pergub No. 135 Tahun 2019

sub-zones other than “green”, “blue”, and “nature reserve” to be altered into residential uses (i.e. apartments and, especially, affordable housing) according to several terms and conditions based on its designated density zone, including minimum development parcel area, maximum allowable FAR, building height, and minimum width of the access road to the parcel.

Another aspect regulated by the Zoning Regulation is the recommendation of

activities and uses in each of the sub-zones. The recommendation comes in several codes, i.e., “I” for any activities and uses that are allowed to happen in a certain sub-zone; “T” indicates certain limitations to the activities and uses; “B” denotes conditional permission for certain activities and uses; and “X” indicates forbidden activities or uses. By having this recommendation attached to the Zoning Regulation, it is possible to go beyond the type of land use to ensure the desired mix of uses, as well as the variety of activities within a certain area.

DKI Jakarta's Building Codes and Regulation is one of the key documents used for translating the development direction in Jakarta into building shapes and architectural design. The most-referenced documents for building codes in Jakarta have typically been the Regional Regulation (Perda) No. 7 (1991), followed by the updates in Regional Regulation (Perda) No. 7 (2010), and today, the Governor's Regulation (Pergub) No. 135 (2019) (see Table 1). The building codes document provides guidelines on the site planning, architectural

block plan (including setbacks, arcades, parking and ramps, underground and elevated buildings, and tall buildings), development intensity (BCR, FAR, basement coefficient, green coefficient, and maximum building height), public service and facilities buildings, clearance area from high-voltage lines, buildings over water bodies, river and lake setbacks, and the buildings in the Kepulauan Seribu area. Compliance with this document will determine the building permit issuance. Among the revised clauses in the latest building codes and regulation are those related to building setbacks, i.e. the distance between two adjacent architectural masses within two neighboring sites, or within the same development site (see Figure 6).

Case Study: Dukuh Atas TOD Area

Dukuh Atas is often referred to as one of the most complex TOD areas in Indonesia. It is located in the heart of the Sudirman-Thamrin CBD, with at least six public transportation modes interconnecting around the commuter line station and the newly-built MRT station (see Figure 7). Dukuh Atas has been promoted to be redeveloped as one of the TODs in Jakarta as stipulated in DKI Jakarta's Regional Spatial Plan for 2030. However, not until the establishment of MRT

Jakarta, Corridor 1, Phase 1, did any of the urban design guidelines for redevelopment go into effect. The urban design guideline is yet to be enacted, but is referring heavily to the prevailing zoning regulation, which consists of a detailed spatial plan for each of the districts in DKI Jakarta.

Redeveloping the Dukuh Atas area necessarily means interfering with the pre-existing built environment, consisting of grade-A offices, mixed-use development, and smaller buildings such as shophouses, landed houses, and urban villages. Naturally, the existing built environment contributes to the issues and complexity of the area, posing one of the most prominent issues: land availability for redevelopment. Not only are most of the development parcels in the area already built upon, but the buildings that have been constructed are comparatively miniscule when compared to the optimal developable envelope. The comparison between DKI Jakarta's spatial plan as imposed in the zoning regulation, and the existing parcel size, as well as the land ownership status according to the cadastral map from the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency, shows that some of the smaller existing development parcels are likely to be

encouraged for land consolidation for future development (see Figure 8).

The existing housing parcel size in Dukuh Atas ranges from approximately 80 to 600 square meters. Although the preference for land consolidation may be in line with the common practice for mixed-use development in the city center, which would require at least 10,000 square meters of the development parcel area, the varied land ownership statuses may complicate the acquisition and consolidation process. However, land consolidation would allow a certain degree of ease in compliance with the building codes, especially regarding setbacks. The new building codes also enable more compact development by minimizing the minimum building setbacks. Such arrangements would provide a shorter walking distance from one building to another.

Other than mixed-use development, a TOD area is also supposed to support the ridership of the public transport modes interconnecting in the area, by providing an adequate volume of residential occupants for mixed-income communities. The designated zoning for the Dukuh Atas TOD Area is "dense" (P), which makes the



Figure 7. Overview of the Dukuh Atas TOD Area, with BRT, LRT, MRT and RailLink stations overlaid. © PDW

“The buildings that have been constructed in Dukuh Atas are comparatively miniscule when compared to the optimal developable envelope.”

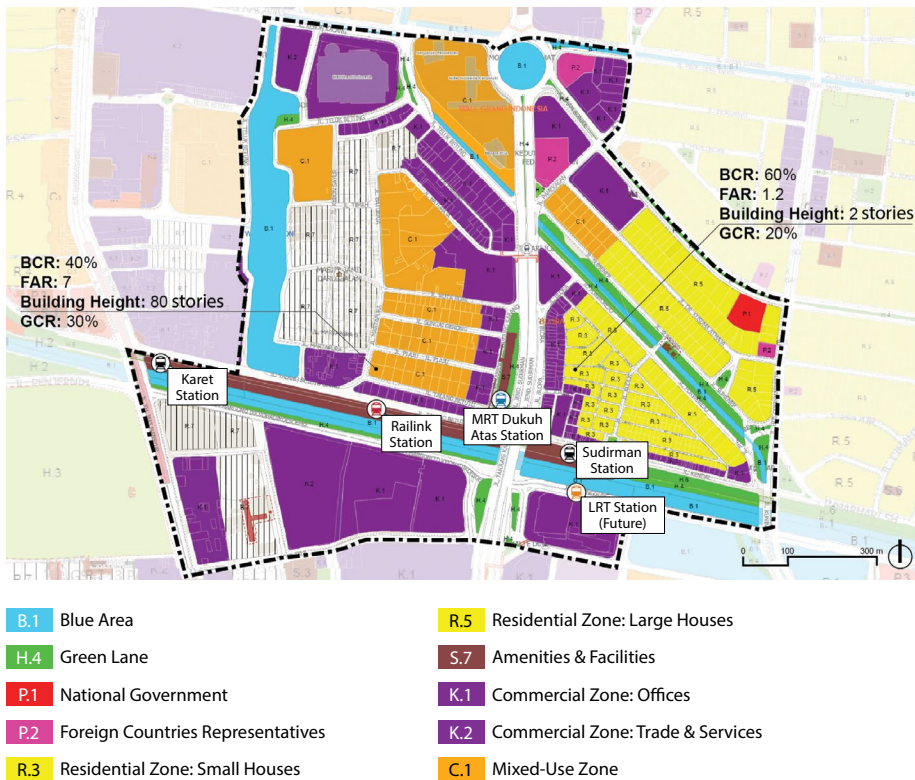


Figure 8. Development parameters attributed to smaller parcels in Dukuh Atas TOD Area. Source: Jakarta Satu, 2019

minimum parcel size for the development of public housing and apartments as much as 5,000 square meters, with a minimum parcel frontage of 20 meters. Therefore, land consolidation is, again, implicitly put forward to allow the redevelopment to take place, consistent with the maximum FAR and allowable maximum building height attributed to those smaller parcels in this area, as stipulated in the zoning regulation (see Figure 8). However, as the small parcels on the east part of Dukuh Atas are part of the Menteng Heritage District, they have much lower-value development parameters.

One of the key determining factors in establishing a compact urban complex lies in the way in which the building touches the ground; including the ground floor area, space between buildings, and building frontages, which are partially regulated under the BCR value in the zoning regulation. The BCR for parcels within the Dukuh Atas TOD area ranges from 40 to 75 percent. The smaller values are usually attributed to the parcels adjacent to water

bodies, and larger values attributed to shophouses. This regulation would be best supported by urban design guidelines on building layout and setbacks, as well as uses and activities on the ground floor, in order to achieve a high-quality space at the human scale.

Developing a successful TOD area is also very much supported by the possibility of absorbing optimum development volume within the TOD area, so that it is possible to achieve the critical mass required for public transport to operate. One of the commonly-used tools to promote development is a transfer of development rights (TDR). DKI Jakarta's zoning regulation has enabled several development blocks to use TDR as a means to acquire extra GFA. However, TDR remained unpopular among the developers, because the scheme is considered less appealing compared to the compensation scheme for exceeding the allowable FAR. Among the limitations that have made TDR unfavorable are: (1) the TDR transaction can only be enacted once for each parcel; (2) the

recipients may only receive a maximum of 50 percent of their original FAR from the TDR transaction; and (3) the TDR can only be done between development parcels with the same zone/land use.

Gaps in Supportive Regulations for Compact Urban Development

A review of the existing regulations regarding urban design and development and its correlation to the endeavor to achieve sustainable compact urban complex in DKI Jakarta has shown that most of the regulation is in line and supports such ambitions. Most, if not all, of the zoning and building regulations have encouraged urban redevelopment towards a more compact urban form, supported with adequate density. However, there seems to be a gap between the ambition to establish a sustainable compact urban complexes in Jakarta and the on-site implementation. As the execution of the development relies on the actors, there may be some underlying factors that have kept compact area development to its present limitations. One of the most prevalent aspects is the land provision aspect of development.

Most of the regulations, especially the Zoning Regulation, involve certain recommendations on the development parcel's size, which is quite sizable (3,000–20,000 square meters) compared to those available on-site (which may range from less than 100, to several hundred square meters). Considering the available parcel sizes, the redevelopment does not happen, simply because the parcel size would not allow efficiency in land utilization and development. Although land consolidation is highly promoted to address the land provision issue, several operational challenges are revolving around the land status (there are eight types of land status in Indonesia, including for lands without any legal ownership certification).

In Ministerial Regulation (Permen) No. 12 (ATR/BPN 2019a) the Ministry of Agrarian Affairs and Spatial Planning/National Land

Agency has published a regulation that could perform as the implementation tool for land consolidation. However, the regulation is relatively new and hence too premature for its effectiveness to be analyzed. It is worth noting that the previous regulations could not bridge the aforementioned gaps and accommodate the complexity of land consolidation (Ishak, Nurlinda & Pujiwati 2011).

Several other factors may contribute to the complexity of land and housing provision. Skyrocketing land prices, especially in DKI Jakarta's CBD, have caused massive spikes in sales and rental prices for both residential and non-residential functions. This issue has materialized in a gap between the selling price and affordability in general, which has caused a decrease in property transactions (Salanto & Gobi 2019). Lastly, the second aspect that may prevent the realization of compact urban complexes in Jakarta is a general hesitation on the part of communities to redevelop in favor of tall buildings (ATR/BPN 2019b). ■

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Unless otherwise noted, all image credits in this paper are to the authors.

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