

(dynamic) increasing not followed by the amount of land area (static). To that end, vertical development is a solution to summarize the urban activities in a limited area.

However, if the left vertical development evenly without their control, the issue will return to the initial phase, the density of the city (negative), or even worse is the city of the dead. Vertical development also affects the cessation of air activity, prone to natural disasters such as earthquakes, and undermine the existence of historic buildings. In Indonesia, most major cities into building land vertically and no pengontoralan spatially within the scope of the city. This stage is called "Prepared to Investment".

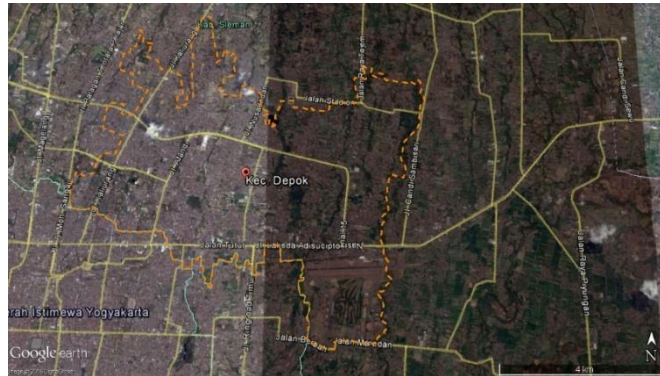


Figure 1. Administrative Map of Depok, Sleman, Yogyakarta
Source: Google Earth, 2016

Yogyakarta, Especially in Depok, as one of the districts that became the center of national activity has investors - investors saw as an opportunity to come and use the concept of vertical development as one of land use solutions that effectively and efficiently, such as malls, apartments, and hotels. This, contrary to the government's readiness to be a policy to control the construction of mega-structure length scale. As a result, the existing zoning solely devoted to the development of horizontal. Thus, vertical buildings scattered and poorly integrated with one another.

To that end, the zoning is the real solution to overcome the urban dynamics. In general, there are three techniques in the zoning arrangement which can be categorized as follows (Courtney, in Harold, 1983); 1) Incentives, use of government power and financial resources to organize land use effectively. 2) The prohibition of, the use of government power to control the use of land by private (private) and other development activities. Instruments used include zoning, subdivision, building control (code and Ordinance); Development control, and relocation or prohibition slums or illegal (<http://ovantheman.blog.co.uk> accessed on 1 November 2015). Thus, the existence of this planning can be a reference for local authorities to control the vertical development in accordance with the resistance of the Urban District of Depok.

2. Methods

Determination of UCA and UPA

This concept is derived from the Japanese zoning development combined with the concept of smart code zoning of New York. Selection is based on more easily applied, flexible, and secure to control the movement of urban development in developing regions : a) Easy to apply, the use of smart codes and principles is not confusing for citizen who do not understand and / or already understand zoning; b) Flexible, UCA and UPA understand the existing growth in developing countries so dynamic that will be a lot of indications of changes in functionality or usability to support the livelihood of people there. The code that is used as an additional zoning provisions have to be friendly renewal development, but security requirements surrounding environment; c) Secure, because the renewal that continues on the development in the area of zoning, remains in compliance with environmental advantages.

Determination of Urban Control Area (UCA) and the Urban Promotion Area (UPA) in Depok use criteria of people's activities and airport activity as main activities: 1) Zone UCA is a zone that has a density of community activities is low and intersecting with activity zone air is high (<3 Km). 2) Zone UPA is a zone that has a high density of community activities and intersecting with the best activity zone of low (<4 Km). 3) For areas desultory medium (zona gray) should be selected between UCA or UPA suitability dearah

planning, such as aircraft activity is not high - being and community activities are not high - medium can be prioritized to get in the zone UCA addition of zones UCA absolute , otherwise it will be focused on the UPA. In contrast to the high activity and high population aircraft activity is focused on the UPA by adjusting existing controls.

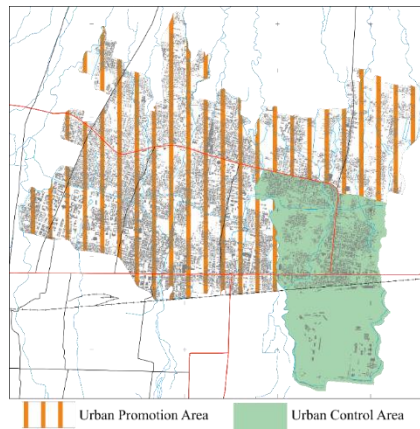


Figure 2. Concept Map of UCA and UPA Depok
Source : the author of plan, 2016

Vertical Zoning Criteria Of Sub-district Depok

Zone planning begins with determining the function space this planning (Commercial (C), Residential (R), and Special Services (PP)), further categorized spatially on a map of the plan in a particular function code. In residential divided into seven groups (R1, R2, R3, R4, R5, R6, R7). While commercial has five groups (C1, C2, C3, C4, C5) and public services three groups (PP1, PP2, PP3). In each group, the smallest figure shows a more natural hierarchy or with low density, and vice versa. Of code - This code also represents a building plan zone provisions contained therein and described in the following table :

Table 1. Control Zone Insularity of Building

Zoning Category	Maximum KDB (%)	Maximum KLB (%)
R1	40	50
R2	50	50
R3	50	60
R4	60	75
R5	60	125
R6	70	240
R7	70	344
C1	80	200
C2	80	200
C3	30	50
C4	80	340
C5	80	400
C6	80	600
PP	80	340
PK	80	340

Table 2. Control of Vertical Building Zone

Zoning Category	Flight Activity Range Zone			History	Earthquake Potential	
	< 3 Km	< 4 Km	> 4 Km		Medium	High
R1						
R2						
R3				C		D
R4		B				D
R5		B				D
R6		B				D
R7						
C1						
C2						
C3				C		D
C4	A	B				D
C5	A	A				
C6		A				
PP	A	B		C		D
PK	A			C		D

Can Be Built
 Can Not Be Built

A = Maximum height of buildings < 15 meter

B = Maximum height of buildings < 45 meter

C = Extra height or floor should Maintain the shape of the building and identity building

D = Had the Same Building Engineering.

Table 3 Control of Horizontal Building Zone

The Name Of Building	R1	R2	R3	R4	R5	R6	R7	C1	C2	C3	C4	C5	C6	PP	PK	No Land Use
Houses, Houses with Small Scale																
Kindergarten, elementary, junior high school, Senior High School																
Mosque, Shrine, temple, church, clinic																
Hospitals, University																
Shop (Daily Item) / restaurant with an area of 150m ²																
Shop (Secondary Goods) / restaurant with an area of 500m ²																
Stores (All Items) / Restaurants																
Office																
Hotels, Lodging																
Karaoke Boxes																
Theater, Movie Theaters																
Warehouse																
Bike shop																
Car repair shop																
Industry With Moderate Pollution																
Industry With High Pollution																

Can Be Built
 Can Not Be Built

3. Results

Determination of Land Zoning Plan

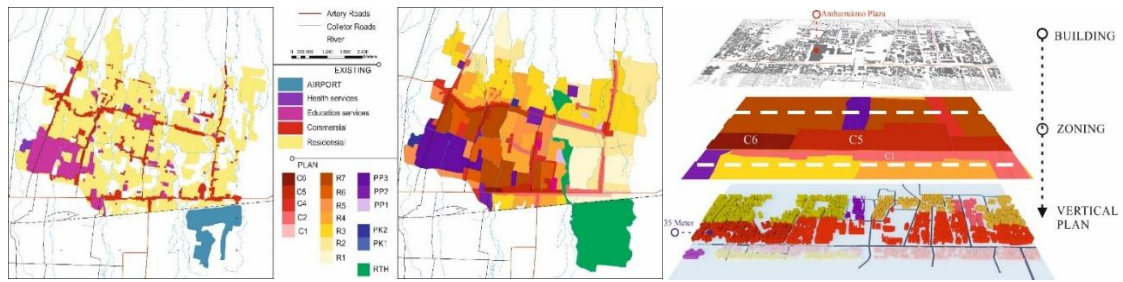


Figure 3. Land Zoning Plan of Depok Sub-district

Figure 4. Stage of 3D Model Land Zoning Plan

Source: the author of plan, 2016

Here's the translation of UCA and the UPA on the Zoning Plan Depok. Zone formed aiming to memberkan sense of friendly and safe in the area. In addition, the plan supports the mobilization of air transportation, supports the preservation of cultural or regional cultural heritage, and protect the vulnerability of buildings to earthquakes. Enhanced functions contained in the central part of the region to secure the suburb remained friendly with the surrounding area. Fitness activities in the city center make it easier to supply and demand in the economy. Furthermore, the dominance of high-rise buildings in the city center facilitate the adaptation of society which gives the following cities that previously lived in cities than in rural communities (Figure 3).

Phasing of Zoning Plan (Corridor)

In the context of micro (Corridor), the control zone divisualiasasikan on 3D shapes. The use of models of vertical zoning is useful as a simulation of planning zones on specific provisions of that region persawat activity, natural disasters, and the history of the region there. The scale of observation used in micro planning using a scale of 1: 5000 Plan This modeling can mengevaluasai good size vertical building to be built or already built. This vertical zone using the provisions of the maximum limit and the color code specified in the zone control table zones (Figure 4).

Application of Zoning Plan

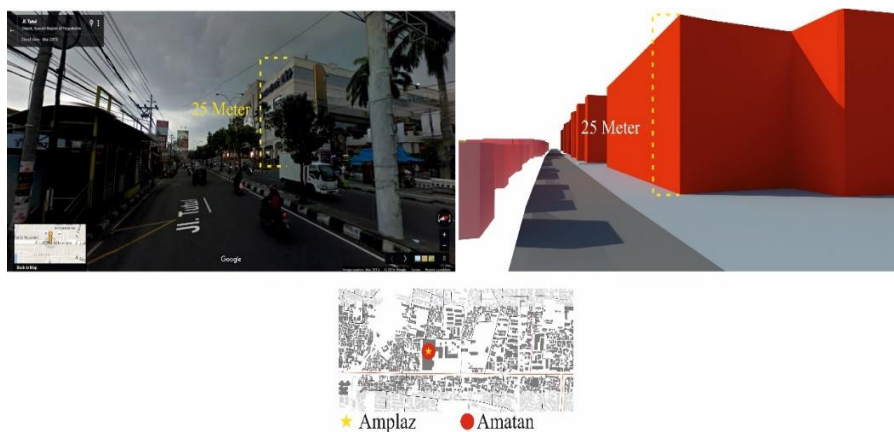


Figure 5. Evaluation of Commercial Buildings (C5) Ambarukmo Plaza

Source: the author of plan, 2016

In the control function, vertical zoning plan can be an evaluation tool which makes it easier, better yet terbagun and was awake. To that end, the following is a comparison between a zoning plan with the existing buildings. On the left, we see that the building-commercial dominance is still the same and the cause is under planning zoning, that is still allowed.

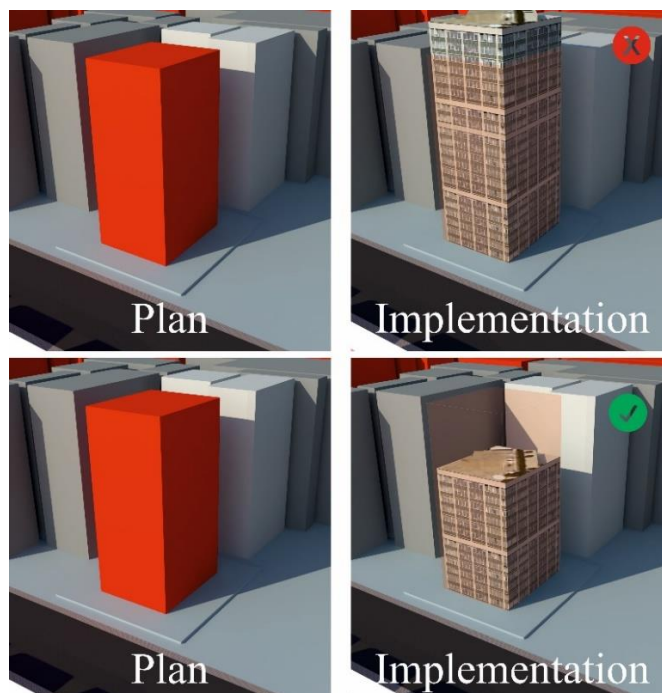


Figure 6. Applying Elevation Plan of Vertical Building Land Zoning

Source: the author of plan, 2016

More specifically, the builder can adjust the plan of the building with a height that no model plan. when the building plan exceeds the high level model rules means that the building height plan should be rejected or can be revised to fit the model boundaries. This includes, roof or top of buildings that do not fit. For that, keep in mind both aesthetic and functional which includes the existing building height. For on this planning, provide incentive bonuses floor of the building as a regular vertical development. Meanwhile, the lifting function facilities and infrastructure to forcibly cutting floor becomes a disincentive vertical development in the zone.

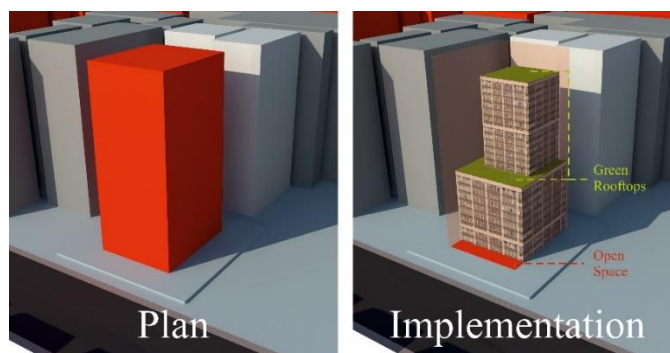


Figure 7. Applying Disclosure Plan of Vertical Building Land Zoning

Source: the author of plan, 2016

Furthermore, the provision of open space in any development of existing land, so that it can continue to support the sustainable development as the original purpose of their vertical development. In detail, provision of disclosure of the construction has been described in the previous indicator, which has been described with a certain closure of any new building can be allowed to land, builds on the desired zone. This plan controls KDB and KLB relates to the maximum specified in the control table before. On the incentives and disincentives that are used remain the same with the provisions of the building height.

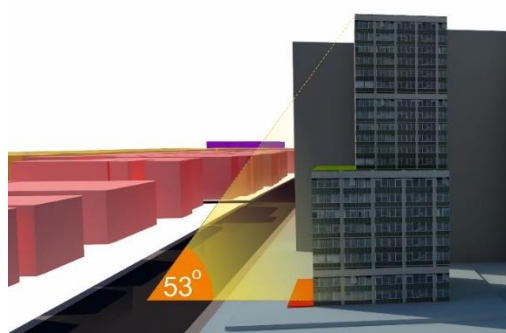


Figure 8. Applying Insularity Plan of Land Zoning
Source: the author of plan, 2016

Keep in mind, the normal limits of space owned by the closure of the commercial function, which is different from that held by the residential closure. This is because the density of space activity that occurs in both have different functions and purposes. If commercial aims for high mobility, while for residential purpose for society not to switch or switch to the longer require sunlight freely. To that end, the vertical building plans and buildings already terbangunan must comply with this provision.

4. Conclusion and Suggestions

Conclusion

Depok has a high development potential. In particular, as the vertical space, where this is indicated by a hierarchy of sub-district development as National Activity Centers Sleman. Fortunately, it is still not evenly distributed pattern of community activities and distribution of vertical buildings. To that end, the need for the realization of vertical zoning plan to be fixed to synergize future development plans Depok current conditions. So there is no vertical development gaps that spreads unfocused and destructive patterns of economic, environmental, and social city.

Suggestion

The need for further assessment associated with indicators related to zoning. As well as the need for, elaboration or explanation of the zoning on the RT and RW in order to be able to contribute to build a friendly and safe zones.

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