
— INTERVENTIONS

— SPACE GRABS: Colonizing the Vertical City

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Abstract

Much attention has been paid recently to land grabs in rural and urban areas of the global South, but relatively little attention has been paid to such activities in the third dimension—vertical space. Yet vertical space has also been increasingly colonized, as manifest in the transformation of mega-city skylines through the proliferating number and height of high-rises in both central cities and peri-urban developments. We investigate how floor area ratio policies, originally designed to control densification, have been reworked to facilitate densification through floor area uplift. Thus a tool originally developed to advance public welfare has been used to facilitate the profitability of real estate projects for developers and to benefit local governments. Taking DKI Jakarta as our case study, we sketch out the coevolution of this policy with urban regimes, focusing on the mid-2010s when compensation measures were formalized and made transparent. By using a particular project in Jakarta's central business district we show how the benefits of floor area uplift favor private sector developers over the local government. In a context of rapidly increasing land values, increasing demand for housing from an emergent middle class, and particularly the privatization of planning, this unevenness systematically favors the private sector.

Introduction

While skyscrapers had emerged as a defining feature of US central business districts (CBDs) by the 1960s, since the mid-1990s there has been an explosion of verticality in cities worldwide. In 1992, 20 buildings were completed across the globe that exceeded 150 m in height; in 2019 the number is projected to be 331. More than two thirds of these have been built in Asian cities—dominated by China (see www.skyscrapers.com). Urban theorists have begun to pay attention to this third spatial dimension through an emergent literature on urban density, and vertical and volumetric urbanism. In this essay, we seek to expand attention to this still somewhat neglected dimension of urbanization.

Responding to the exploding size of cities of the post-colony, where rates of urbanization exceed historical rates in North America and Europe by an order of magnitude, scholars have devoted much effort to understanding the land transformations precipitated by public and private sector strategies for securing land—horizontal space—for real estate projects, industrial estates and infrastructure. Drawing on language used to describe the massive alienation and privatization of rural land in recent decades, urban scholars are now paying considerable attention to urban land rights, land grabbing and land banks.

Yet there is also a third dimension: air rights, space grabbing and space banks. In this essay we use Jakarta, Indonesia as a case study to document and critically assess

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this phenomenon. In Indonesia, the 1997 Asian financial crisis precipitated the collapse of developers who had become heavily indebted on projects in greater Jakarta, a crisis that was then magnified by the collapse of their creditor banks. By 2005, the period of crisis in real estate development had passed. Since then, 228 buildings of at least 75 m in height have been completed in DKI Jakarta—a boom peaking in 2015–17, 31 of which exceed 200 m (www.skyscrapers.com). We document how floor area ratios (FARs), a local zoning regulation that defines the association between the total gross floor area of a building and the total land area on which it stands, originally designed to control building density, has become a tool for densification. Thus a tool developed to advance public welfare came to facilitate both the profitability of real estate projects for developers and local government revenues.

Reflecting neoliberal global urbanist norms, FARs have facilitated the privatized colonization of urban space—space grabbing. Space grabbing has been shaped by both informal and formal negotiations and arrangements between developers and the local government. In the absence of information about behind closed doors informal negotiations, we focus on the complex formal arrangements over FARs between developers and the local government, implemented by governor Ahok. The arrangement introduced transparency and formalized the compensation demanded by local government for higher FARs. We show that in a context of rapidly rising land values, increasing demand for housing from an emergent middle class, and particularly the privatization of planning, the compensation schemes systematically favor the private sector. We conclude by reflecting on the social and ecological implications of the continuous increase in FARs and the associated proliferation of high-rises in DKI Jakarta.¹

From horizontal to vertical urbanism

The recent past has seen increased attention paid to land grabs in urban areas. Building on the literature on rural land grabbing that took off across the post-colony after 2000 (Zoomers, 2010; Ince, 2014; McMichael, 2014), urban scholars began to examine how these processes played out within the city. A vibrant subsection of this literature has traced the various forms land grabbing has taken in cities around the world, and how developers' actions—facilitated by the norms of neoliberal global urbanism—have enclosed urban land and displaced less well-off urban populations (Hodkinson, 2012; Gillespie, 2016; Shin, 2016). This process has also triggered theoretical discussions about whether and how these processes play out differently in cities of the post-colony, relative to European and white settler cities (Jeffrey *et al.*, 2012; Leitner and Sheppard, 2018). Further, acknowledging that rural and urban processes are interrelated, scholars have begun to examine how urban–rural relations are shaping land grabbing (Steel *et al.*, 2017; Zoomers *et al.*, 2017).

This literature has emerged alongside, but rarely in conversation with, scholars stressing the need to extend urban theory, analysis and practice to the third, vertical spatial dimension of urbanization. The term vertical urbanism emerged in architecture to highlight building upwards as the key to making cities more compact (Lin and Gámez, 2018). Yet a far broader conception has emerged in critical urban studies, catalyzed by Stephen Graham's (2016) vertical optic, taking readers through a transect of cities that begins with satellite surveillance and ends with underground mining, highlighting its geopolitics (Graham and Hewitt, 2013). Other scholars have concerned

¹ The findings reported in this essay are based on research undertaken in DKI Jakarta between 2017 and 2019. The research involved the collection and analysis of municipal government documents governing the regulatory framework for compensation, examination of detailed spatial plans produced by the city, and documents from consultancies on construction costs for different types of buildings in Jakarta and for individual projects, as well as articles from newspapers and magazines (e.g. *Tempo*) reporting on the surrounding political and public debates. These publications were complemented by 20 informal and formal, semi-structured interviews about the changing regulatory framework and the politics of floor area, with planning and real estate consultants, the head of a real estate organization, representatives of large domestic and foreign developers operating in DKI Jakarta and government employees.

themselves with the three-dimensional volume of cities, supplementing vertical with volumetric urbanism (Shelton *et al.*, 2011; Marvin, 2015; McNeill, 2019). Yet, as Andrew Harris (2015: 602) has observed, ‘urban verticality and a “political register” of the “volumetric” ... can be framed through more than security, secession and control’.

Harris highlights high-rise construction and skyscrapers as one such potential extension (see also O’Neill and Fogarty-Valenzuela, 2013). Interest in skyscrapers goes back to 1950s Manhattan, of course (McNeill, 2005), but they are now receiving attention under the ‘vertical urbanism’ moniker in Asian cities where high-rise living has become the norm: Hong Kong, Singapore and Taipei (Hou, 2012; Shelton *et al.*, 2011; Shih *et al.*, 2018; McNeill, 2019). Shih *et al.*’s study of Taipei is of particular relevance for this intervention. They explore how, under the influence of neoliberal global urbanism, FAR regulations (redolent of Fordist urbanism and designed to curb building upward) have been trumped by pro-developer legislation that accelerated floor area uplift (FAU), as neoliberalization came to bite. Chen (2020) details a threefold combination of marketable air rights—bonus floor area, tradable development rights (TDRs) and incremental floor area—deployed by the Taipei municipality to facilitate private sector FAU and to generate private sector revenues for a debt-encumbered municipal government. In Jakarta, TDRs are currently considered in conjunction with transit-oriented developments along new public transit routes. Here, we examine how elevated floor ratios, built into zoning plans, are combined with the introduction of linkage policies that grant further FAR exceptions in return for conditionality—pledges to contribute to the urban public good.

Drivers of increasing verticality

It is common parlance to equate high-rise architecture with densification, and with a more compact urban form, but this is by no means necessary (McFarlane, 2016). For example, population densities in Jakarta’s informal kampungs exceed those on New York’s Manhattan Island. Nevertheless, there are powerful forces normalizing FAU in cities around the world—and not just in city-states with limited land supply such as Singapore and Hong Kong.

Some of this normalization is associated with discourses of modernity and development. Jakarta, like all Asian megalopolises, aspires to world-class status (Ghertner, 2011; Roy, 2011; David and Halbert, 2014), for which a skyline of glistening towers of glass, concrete and steel is an essential feature. World-class status is associated with cities like New York, Tokyo or Singapore, all of which have such skylines. From Le Corbusier to Philip Johnson, modern to postmodern European architecture, high-rises are a dominant feature. As such discourses gain resonance, they become drivers of high-rise real estate development.

High-rises are also equated with efficiently housing the masses (a legacy of Bauhaus modernist thinking and mid-twentieth century public housing projects in North America). The Indonesian and the DKI Jakarta governments have repeatedly sought high-rise solutions to the rapid and mass provision of affordable housing, such as the national 1000 Towers Program. Currently there are private sector projects that are also promising high-rise solutions: the controversial massive peri-urban new city of Meikarta is marketing affordable housing for 6 million IDR (Rupiah)/m². Here, again, Singapore is often invoked as the model, whose Housing and Development Board (HDB) has successfully overseen the city-state’s transition from kampungs to high-rise public housing (Haila, 2015). The HDB actively markets high-rise living and working worldwide, enabling a more sustainable and greener, even eco, city (Chang *et al.*, 2016), reducing carbon footprints at the building scale through Leadership in Energy and Environmental Design (LEED) technologies, and reducing urban sprawl at the urban scale.

From both a public and a private sector perspective, building up rather than sideways reduces one of the barriers to construction in Indonesia: difficulties of land assembly. This is notoriously complicated in present-day Indonesia, where even public

sector infrastructure projects are plagued by the difficulty of government acquisition of land: use of eminent domain is rare, compensation paid to current residents is niggardly, and there is a reluctance to court political controversy by initiating evictions (controversy that contributed to Ahok losing office in 2017). Land costs are further exacerbated by accelerating land prices in central and peripheral locations, an ongoing trend in Jakarta—the largest city and most attractive destination in the country. When land is difficult to acquire and expensive, building up is quicker, cheaper and more profitable for developers. Much of the drive behind higher and higher buildings is the desire of developers to maximize profits through the assetization of air space.

There are also important symbolic and cultural aspects to the high-rise boom. For both developers and cities, building higher is a sign of prestige and success. In what are masculine cultural contexts, building higher has a certain phallocentric resonance. Cities and states across the global South are in an arms race to build something higher than their competitors: from Kuala Lumpur's Petronas twin towers, to Hong Kong's International Commerce Center, Taipei's 101, Beijing's CITIC Tower, Shanghai Tower, and Dubai's Burj Khalifa. Developers gain prestige from building higher than their rivals, and corporations like to see their logos on buildings towering above those of their competitors. In Jakarta, developers have collectively pursued marketing campaigns to persuade middle class families—used to living at ground level—to overcome a reluctance about living on the 35th floor in an earthquake-prone country. The superblock is currently the most common form of spectacular real estate project, sold as providing middle class families with a secure and comfortable environment that provides for all their needs, overlooking what is presented as the congestion and pollution of Jakarta's street life. Verticality is also driven by enabling legislation and policies, which are playing a key role in Jakarta.

Enabling and formalizing the build-up

The manipulation of FARs, accelerating FAU and setting terms for compensation, has proceeded in stages, beginning in the Suharto era. Building on a regulation dating back to 1975, under governor Soerjadi Soerdirdja regulation 678/1994 allowed FAU to exceed 5.0 in certain strategic areas, notably CBDs and superblocks, and along mass transit corridors. Developers were expected to provide public compensation, such as the provision of public infrastructure (especially affordable housing) in return for higher FAR. Compensation was to be at the discretion of the governor.

In 2012, through governor Act 27/2012, for the first time Fauzi Bowo allowed higher FARs around mass transit stations under the heading 'transit-oriented development', again requiring developers to contribute to public infrastructure development in primary and secondary urban centers and along urban transportation routes. However, the 2012 Act does not specify where or what kind of infrastructure improvement was required. Furthermore, compensation could be monetary, and no public records were kept about the interpersonal arrangements made between developers and the governor. FAR negotiations thus were characterized by elite informality.²

When governor Ahok (Basuki Tjahaja Purnama) was appointed in 2014, he moved to institutionalize the process of permitting FAU, make it more transparent than the preceding deal-making, and specify and formalize the size and type of compensation required by the local government. This was accomplished through a governor Act (Peraturan Gubernator DKI Jakarta No. 175/2015) and its three revisions (one in 2015 and two in 2016). Taken together, these revisions specified the technical requirements a new development should meet (environmental and traffic impact, conformity with the city's development plan), and empowered a one-stop shop to process all FAU requests, which also must be submitted to the governor for final approval. Compensation must be in-kind, not monetary: developers are required to construct public infrastructure prior

2 Interview, planning consultancy, July 2019.

to issuance of a building permit. Allowable public infrastructure includes public housing (Rusun), transportation infrastructure (flyovers, sidewalks, bikeways), green space, and restoration of cultural heritage. The monetary value of the required compensation is determined by a formula (given below).

Ahok characteristically exerted close control over the process. He increased assessed value/property tax in certain areas, thereby increasing the compensation developers would provide the city according to the formula. As he once put it, 'the space belongs to me' (Retaduari, 2016). Ahok also determined which public infrastructure projects developers were required to build for the city. Eleven such projects were negotiated, but just three were finalized by the time his term ended in 2017. It is important to note that while transparent, the formalization of the compensation policy is also an example of governor Ahok's pension for autocratic decision making and his attempts to reestablish the power and authority of the governor of Jakarta over the mayors of Jakarta's five subdistricts. These mayors have expressed frustration and complained that benefits of development were not shared with the subdistricts. It is not yet clear how these compensation policies will change under the current, populist and pro-kampung governor Anies Baswedan (Nailufar, 2019).

Summarizing, shifting FAR regulations have been important in facilitating the trajectory of high-rise construction in DKI Jakarta: the high-rise construction boom. Figure 1 displays high-rise construction by year, with the columns representing the number of buildings exceeding 100 m completed by year (right hand y axis), and the dots showing the height of major buildings (left hand y axis). Both of these measures have steadily increased since 2005. Completions boomed in the late 1990s, for example, on the eve of the Asian financial crisis, four years after the first FAR increases in 1994. In an era when elite informality was routine, this boom was cemented and supplemented by sweetheart deals between Jakarta's economic and political elites. Formalization under Ahok, domestic developers argue, imposes onerous terms that only foreign developers can afford to take up.³ In the next section, interrogating the compensation formula, we examine whether this is indeed the case.

Compensating for floor area uplift

The compensation formula developed under Ahok, drawing on a similar 2016 initiative in Melbourne, Australia, crafted to flexibilize FAR regulations in that city, determines the equivalent monetary value of public infrastructure that a developer must provide the city in return for the governor issuing a permit for FAU that exceeds the stipulated FAR. The current FAR, set at the sub-block scale in the city's periodically revised detailed spatial plan (RDTR), has been continuously increased in most recent revisions. In particular, the FAR in the Golden Triangle of Central Jakarta, also known as the Surdirman CBD, has experienced increases from 5.0 FAR in 2005 to 7.0–9.0 in the 2030 RDTR.

Under Ahok's compensation policy further FAU is possible only in designated areas. The level of compensation to the city depends on a location index, which is designed to encourage or discourage FAU. The index ranges between 0.6 and 1.8; numbers below 1 act as an incentive to build up in that location, and numbers exceeding 1 constitute a disincentive. The compensation also depends on the floor area the developer seeks to add, the current FAR, and the taxable assessed value of the land.

The compensation formula is as follows, where K is the monetary value of compensation, I is the location index, L is the floor area to be added as FAU, and $NJOP$ (Nilai Jual Objek Pajak) is the taxable assessed value per m^2 :

$$K = I \frac{L}{\text{Current FAR}} NJOP$$

³ Interview with real estate consultant, Jakarta, July 2019.

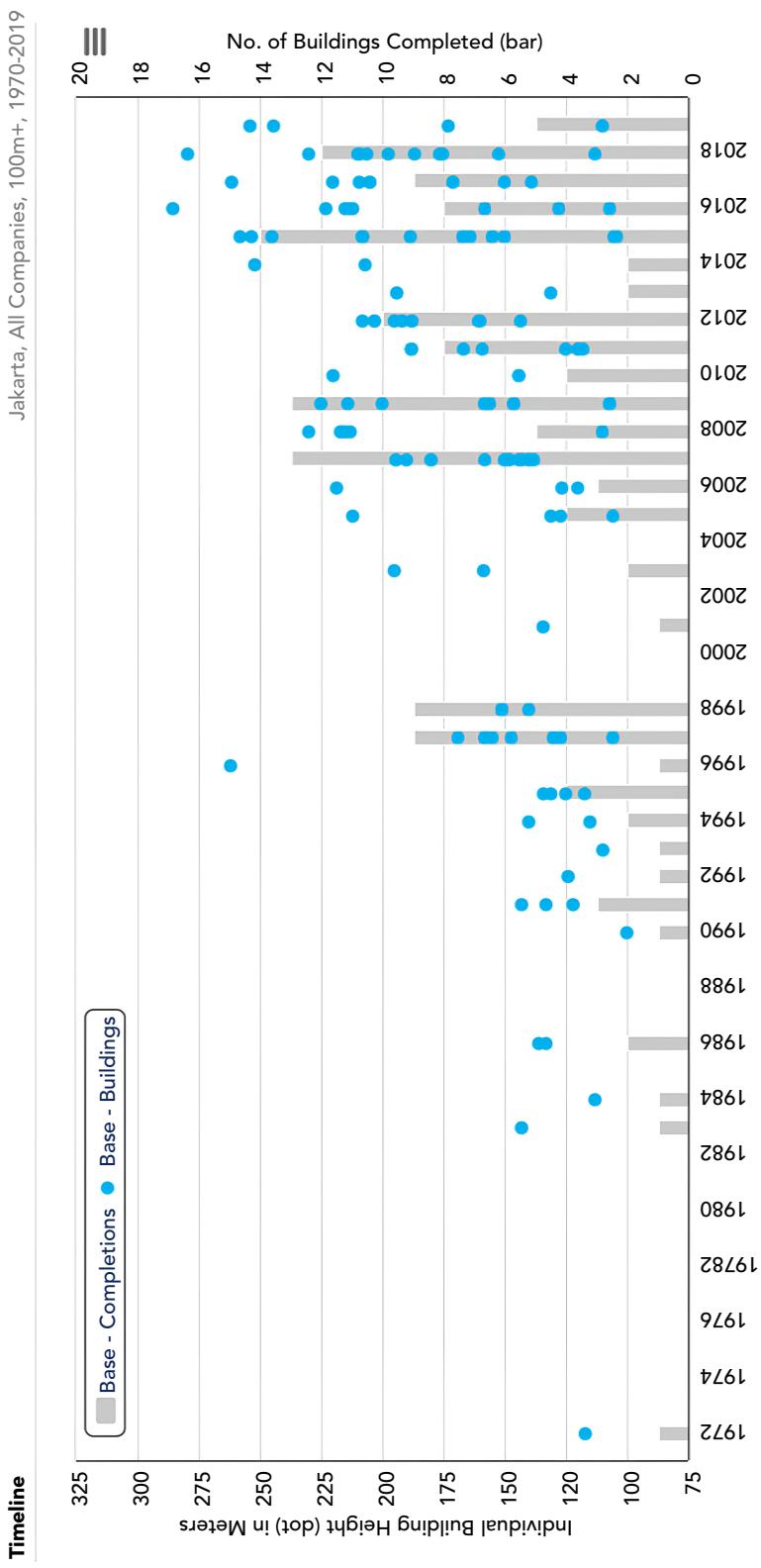


FIGURE 1 High-rise completions in Jakarta 1972-2019 (source: Skyscrapercenter.com)

Monetary compensation due to the city thus equals the location index, multiplied by the planned additional FAU and the taxable assessed value per m², and divided by the FAR in the current detailed spatial plan. Applying this formula means that developers have to pay greater compensation when the FAR is low, when the index is high, and when the assessed value per m² is high. Further, construction of the required public infrastructure has to be completed before construction permits are issued.

To assess how the benefits for FAUs under Ahok are distributed between the developer and the city, we examine the case of the Jakarta Office Tower (also known as the Mori Building) currently being built by PT Mitra Panca Persada in the Sudirman CBD of central Jakarta. This district, where the majority of multinational corporate offices are located, has among the highest land values in Jakarta. The district has also been designated a massive increase in the FAR—from 5.0 in 2005 to 7.0–9.0 in the 2030 RDTR. PT Mitra Panca Persada is a subsidiary of the Japanese property management firm Mori Building Company, and this tower is Mori's first major investment in Southeast Asia. The office building, begun in 2017 and due for completion in 2021, is planned to be 59 floors (266 m) high, supplemented by four basement floors. There will be approximately 190,000 m² of offices, restaurants and parking. The architect is Kohn Pedersen Fox of New York, and it is being jointly constructed by a Japanese corporation (Shimizu) and a local contractor (Bangun Cipta Kontraktor owned by Siswono Yudo Husodo, Indonesian businessman and former minister of housing under Suharto).⁴

Negotiations with the then governor Ahok resulted in a building permit allowing the developer to add 13 floors. According to city building regulations, however, a developer is permitted to add an additional 20% to the FAR to compensate for floor space lost to lift shafts and other infrastructure, and a further 50% for parking, together increasing the FAR by 70%.⁵ For example, a permitted FAR of 10 enables the developer to build up to a FAR of 17. These additions enabled the Mori Building to achieve its planned height of 59 floors (Figure 2).

Using the compensation formula, PT Mitra Panca Persada was required to compensate the city the equivalent of 579,326 IDR (approximately US \$41 million). Governor Ahok stipulated that PT Mitra Panca Persada use this money to build the Semanggi Flyover, easing connection between two of Jakarta's busiest highways. The flyover, located in the midst of the Golden Triangle and very close to the planned tower, was completed in 2017.

To determine the distribution of benefits, we calculate the estimated extra net revenue to the developer made possible by the negotiated FAU, and the share of that accruing to the city. The agreed FAU adds 104,169 m² to the building. With an estimated 37.6 million IDR of revenue per m² (using 80% of market value as the basis), the extra gross revenue made by the developer as a result of FAU would be approximately 3,917,000 million IDR. Calculation of new revenue requires an estimate of construction costs. Our fieldwork generated a range of estimates, from an independent consultant's estimate of 15 million IDR/m² for high-quality office space (Arcadis Consulting, 2018), to 22 million IDR, a value provided by an architectural firm hired by PT Mitra Panca Persada: Planning Design Workshop (Putrikinasih Santoso, private communication).

Estimated construction costs of between 15 and 22 million IDR/m² imply total costs of between 1,563,000 and 2,292,000 billion IDR. Estimated net revenues thus range between 1,625,000 and 2,354,000 billion IDR. This implies that compensation to the city ranges between 25% and 35% of net revenue, leaving 65–75% in the hands of the developer.

Interviews about FAU compensation in Jakarta with domestic developers and a development industry representative generated a consistent narrative that only foreign

⁴ This aligns with the multifaceted ways through which elite informality shapes the relationships between politicians and developers in Jakarta (Herlambang *et al.*, 2019).

⁵ Interview with planning consultant, July 2019.

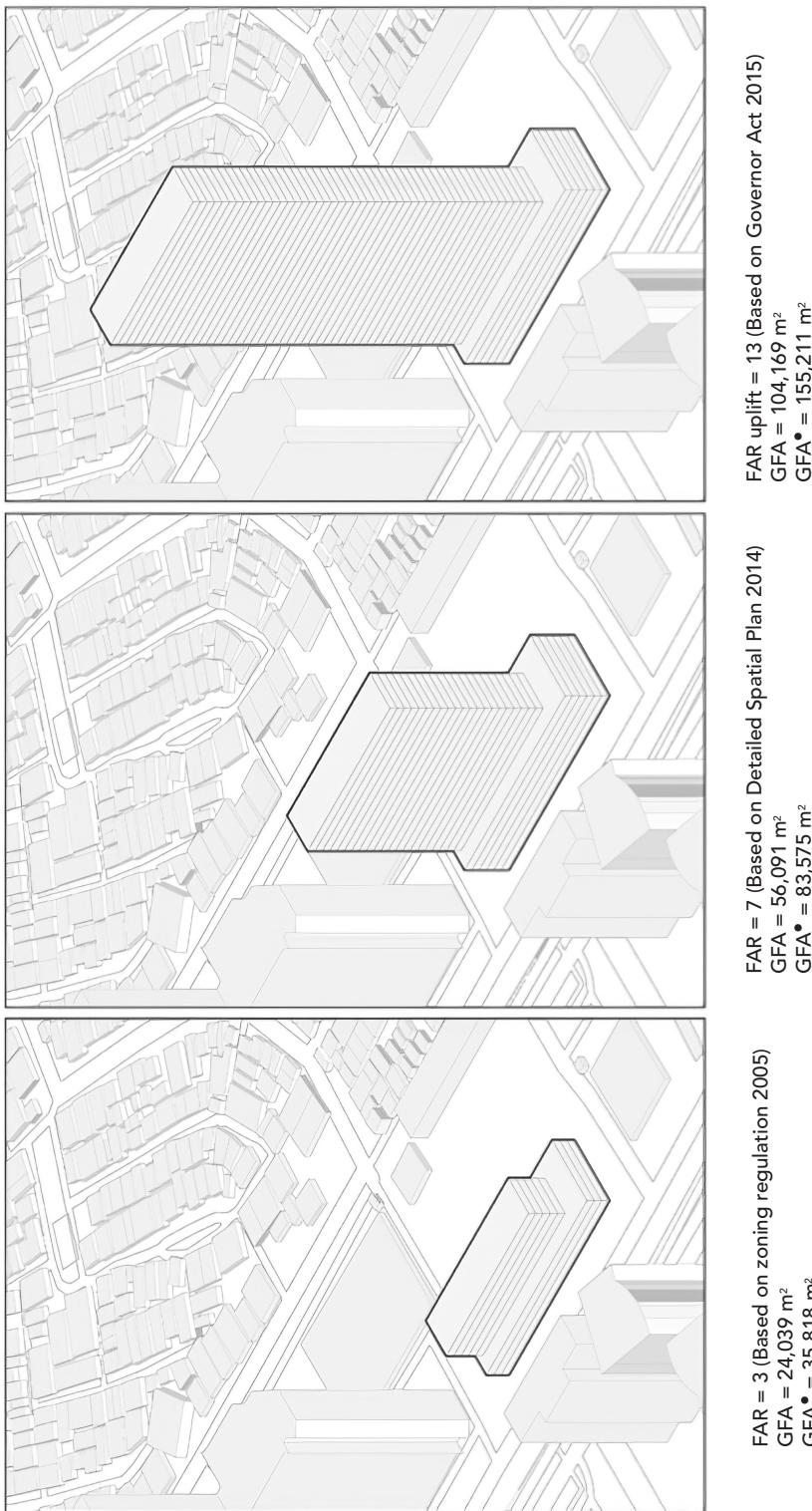


FIGURE 2 Floor Area Uplift Mitra Panca Persada (Mori Building) (source: authors)

developers have deep enough pockets to participate in the compensation scheme.⁶ This argument was reinforced across our interviews, becoming a powerful leitmotif that left little room for questioning. However, this contrasts starkly with narratives circulating within the industry. An international real estate consultant who we interviewed suggested that domestic developers in conversation with him had expressed no reservations about the compensation formula: 'it was OK from their perspective'.⁷

The approach taken is similar to the compensation formula developed by planners in Melbourne, Australia in 2016. The city of Melbourne is more generous to developers: requiring a compensation of 10% of the gross realization value per m² for all additional floor area. Further, it is worth noting that required compensation in the city of Melbourne is not restricted to the construction of public infrastructure: commercial office space is also allowed (Day, 2016).

Reflections and implications

The colonization of vertical space by high-rises, the drivers and facilitating mechanisms of which we have discussed here, has enabled the proliferating number and height of high-rises in Jakarta, and left its imprint on mega-city skylines across the globe. In this essay we have highlighted the crucial role of the municipal state in promoting and enabling this colonization. A tool originally designed to regulate and control densities, the FAR was reworked by neoliberalizing urban administrations by increasing the FAR in certain areas and also allowing increased FAU. In many cities such flexibilization of the FAR was enacted by introducing tradable development rights—buying floor area from locations where they are less than fully utilized to build higher elsewhere. Jakarta up until recently has taken a different approach, with governors permitting FAU in return for compensation, a type of linkage policy that has also been common in the US context. Compensation involved payments by developers to the city for public use and/or construction of public infrastructure, ensuring that FAU also provides public benefits. This is a form of urban entrepreneurialism, a characteristic feature of neoliberalizing cities whereby city administrations facilitate (real estate) market mechanisms. Under neoliberal global urbanism, cities like Jakarta are enjoined to adopt such mechanisms in order to prosper, accepting this as necessary to realizing world-class status.

In Jakarta, FAU began in 1994 during Suharto-style neoliberalism (Herlambang *et al.*, 2019) through a steady drumbeat of increasing FARs in the RTDR, revised every five years. From 2012 onwards, by which time post-Suharto Indonesian *reformasi* had devolved spatial planning powers from the national to the metropolitan and regency scale, Jakarta's governors supplemented this process with compensation deals. Under Fauzi Bowo these were backroom deals, whereby developers paid the governor's office in order to receive a building permit for FAU. These monies were supposed to be used to upgrade public infrastructure, but no records were kept of whether this happened. The first few years of compensation policy can thus be seen as urban entrepreneurialism leavened by elite informality. From 2014 to 2017, under Ahok, the process was formalized and made transparent, bringing it under the rule of law—a form of urban entrepreneurialism conforming to what the World Bank calls 'good' governance (World Bank, 1991).

A distinct feature of this facilitatory regime is that the governor of DKI Jakarta has been able to use discretionary power to decide on large real estate and infrastructure projects in the city. Some discretionary power also persisted after the introduction of the 2014 detailed spatial plan and the compensation formula in 2015. City agencies are intermediaries, accepting and processing developers' requests, organizing impact assessments and enforcing technical requirements, but all roads lead through the

6 Interviews, July 2019.

7 Interview, July 2019.

governor's desk. This introduces uncertainty into the process, as procedures can change dramatically from one governor to the next, or even during a governor's term of office by dint of his power to issue new governor Acts. While it is conceivable that this power might undermine the ability of developers to profit from urban development, our analysis of the compensation agreement signed under Ahok suggests that this is not the case in practice. The governor determined which public infrastructure should be built, and for this to proceed a building permit would be needed, but our calculations suggest that developers pocket 65–75% of the profits generated through FAU. There is also the question of who benefits from compensation projects that include the construction of a flyover, sidewalks in the CBD, renovation of the old city core and affordable rental flats (*rusunawa*). While all of these projects are considered elements of building a world class city, not all Jakartans benefit equally. The Semanggi Flyover primarily benefits those living and working in the central city, and the sidewalks built in the CBD are primarily used by office workers—displacing informal traders.⁸

Beyond the question of the distribution of economic benefits, FAU has broader environmental and societal implications. Proponents argue that high-rise buildings can solve the challenge of housing ever-increasing urban populations, are important engines of economic development, and are beneficial because compact cities are greener and more energy efficient than urban sprawl. Critics, however, draw attention to skyscrapers' large ecological footprint; their excessive water use, energy consumption and CO₂ emissions (Al-Kodmany and Ali, 2013). High-rise buildings can in and of themselves be built to LEED standards that may even eliminate a building's net carbon emissions. Yet critics note that this requirement does not take into account the broader context, pointing to such negative effects as urban heat islands, wind tunnels, air pollution, overburdened infrastructure and land subsidence (a particular issue in Jakarta; see Prasetyo *et al.*, 2018). In terms of societal implications, the FAU recently enabled by compensation deals adds office space and expensive housing that are not accessible to the urban majority. Affordable high-rise housing exists but has its own problems: it typically fails to serve the specific needs of the urban majority, such as the need to engage in informal economic activities, isolates people from their social networks, and can have detrimental effects on the psychological wellbeing of individuals. Interviews with public housing residents in Jakarta have shown their dissatisfaction with living in high-rise public housing (Leitner and Sheppard, 2018, Tilley *et al.*, 2019).⁹

In cities across the world, neoliberal urbanism has incentivized strategies to evade FAR planning restrictions, enabling private sector developers to build ever higher. In Jakarta, this practice has taken the form of developers negotiating FAU arrangements with the DKI governor in return for compensation (either informally or formally through a compensation formula) that is meant to benefit the city. Our analysis of the application of a compensation formula shows that the bulk of the revenues generated remain in developers' hands and suggests that the compensation arrangements bring few benefits to Jakarta's urban majority. More broadly, FAU is facilitating the ownership and assetization of vertical urban space: space grabbing. Urban studies would thus benefit from extending scholarship on land grabbing and assetization to the third dimension, unpacking the processes driving the colonization of vertical urban space.

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⁸ Field observations show that as sidewalks are built, police act to prevent street traders from setting up shop there.
⁹ In-person interviews, Jakarta, August 2017.

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References

Al-Kodmany, K. and M.M. Ali (2013) *The future of the city: tall buildings and urban design*. MIT Press, Boston, MA.

Arcadis Consulting (2018) *Construction cost handbook Indonesia 2018*. Fourth edition, PT Arcadis Indonesia, Jakarta.

Chang, I.C.C., H. Leitner and E. Sheppard (2016) A green leap forward? Eco-state restructuring and the Tianjin-Binhai eco-city model. *Regional Studies* 50.6, 929-43.

Chen, H.-Y. (2020) Cashing in on the sky: financialization and urban air rights in the Taipei metropolitan area. *Regional Studies* 54.2, 198-208.

David, L. and L. Halbert (2014) Hubs of globalization and high finance: constructing 'world-class' cities. In M. Hibbard, R. Freestone and T. Sager (eds), *Dialogues in urban and regional planning*, Volume 5, Routledge, New York, NY.

Day, H. (2016) *Comparative planning controls report: inter-city research*. State of Victoria Department of Environment, Land, Water and Planning, Melbourne.

Ghertner, D.A. (2011) Rule by aesthetics: world-class city making in Delhi. In A. Roy and A. Ong (eds), *Worlding cities: Asian experiments and the art of being global*, Wiley & Sons, New York, NY.

Gillespie, T. (2016) Accumulation by urban dispossession: struggles over urban space in Accra, Ghana. *Transactions of the Institute of British Geographers* 41.1, 66-77.

Graham, S. (2016) *Vertical: the city from above and below*. Verso, London.

Graham, S. and L. Hewitt (2013) Getting off the ground: on the politics of urban verticality. *Progress in Human Geography* 37.1, 72-92.

Haila, A. (2015) *Urban land rent: Singapore as a property state*. John Wiley & Sons, New York, NY.

Harris, A. (2015) Vertical urbanisms: opening up geographies of the three-dimensional city. *Progress in Human Geography* 39.5, 601-20.

Herlambang, S., H. Leitner, L. Tjung, E. Sheppard and D. Anguelov (2019) Jakarta's great land transformation: hybrid neoliberalisation and informality. *Urban Studies* 56.4, 627-48.

Hodkinson, S. (2012) The new urban enclosures. *City* 16.5, 500-18.

Hou, J. (2012) Vertical urbanism, horizontal urbanity: notes from East Asian cities. In V. Bharne (ed), *The emerging Asian city*, Routledge, London.

Ince, O.U. (2014) Primitive accumulation, new enclosures, and global land grabs: a theoretical intervention. *Rural Sociology* 79.1, 104-31.

Jeffrey, A., C. McFarlane and A. Vasudevan (2012) Rethinking enclosure: space, subjectivity and the commons. *Antipode* 44.4, 1247-67.

Leitner, H. and E. Sheppard (2018) From kampungs to condos? Contested accumulations through displacement in Jakarta. *Environment and Planning A: Economy and Space* 50.2, 437-56.

Lin, Z. and J.L. Gámez (eds.) (2018) *Vertical urbanism: designing compact cities in China*. Routledge, London.

Marvin, S. (2015) Volumetric urbanism: artificial 'outsides' assembled 'inside'. In O. Coutard and J. Rutherford (eds), *Beyond the networked city: infrastructure reconfigurations and urban change in the North and South*. Routledge, London.

McFarlane, C. (2016) The geographies of urban density. *Progress in Human Geography* 40.5, 629-48.

McMichael, P. (2014) Rethinking land grab ontology. *Rural Sociology* 79.1, 34-55.

McNeill, D. (2005) Skyscraper geography. *Progress in Human Geography* 29.1, 41-55.

McNeill, D. (2019) Volumetric urbanism: the production and extraction of Singaporean territory. *Environment & Planning A: Economy and Space* 51.4, 849-68.

Nailufar, N.N. (2019) Anies Berencana buat regulasi agar dana komensasi KLG transparan [Anies plans regulations to make KLG compensation funds transparent]. *Kompas* 12 March [WWW document]. URL <https://megapolitan.kompas.com/read/2019/03/12/08445941/anies-berencana-buat-regulasi-agar-dana-kompensasi-klg-transparan?page=all> (accessed 11 March 2020).

O'Neill, K.L. and B. Fogarty-Valenzuela (2013) Verticality. *Journal of the Royal Anthropological Institute* 25.3, 378-89.

Prasetyo, Y., B.D. Yuwono and Z. Ramadhanis (2018) Spatial analysis of land subsidence and flood patterns based on DInSAR method in Sentinel 1a imagery and weighting method in geo-hazard parameters combination in North Jakarta region. *IOP Conference Series: Earth and Environmental Science* 123.1. IOP Publishing, Philadelphia, PA.

Retaduari, E. (2016) Tentukan syarat peninggian gedung, Ahok: langit Jakarta milik saya [Regulating building height, Ahok: Jakarta's sky belongs to me] [WWW document]. URL <https://news.detik.com/berita/d-3183603/tentukan-syarat-peninggian-gedung-ahok-langit-jakarta-milik-saya> (accessed 11 March 2020).

Roy, A. (2011) The blockade of the world-class city: dialectical images of Indian urbanism. In A. Roy and A. Ong (eds), *Worlding cities: Asian experiments and the art of being global*, SUSC Book Series, Wiley-Blackwell, New York, NY.

Shelton, B., J. Karakiewicz and T. Kvan (2011) *The making of Hong Kong: from vertical to volumetric*. Routledge, London.

Shih, M., H.B. Chang and F.J. Popper (2018) Development rights: regulating vertical urbanism in Taiwan. *Planning Theory & Practice* 19.5, 717-33.

Shin, H.B. (2016) Economic transition and speculative urbanisation in China: gentrification versus dispossession. *Urban Studies* 53.3, 471-89.

Steel, G., F. van Noorloos and C. Klaufus (2017) The urban land debate in the global South: new avenues for research. *Geoforum* 83 (July), 133-41.

Tilley, L., J. Elias and L. Rethel (2019) Urban evictions, public housing and the gendered rationalisation of kampung life in Jakarta. *Asia Pacific Viewpoint* 60.1, 80-93.

World Bank (1991) Managing development: the governance dimension. Discussion paper, The World Bank, Washington, DC.

Zoomers, A. (2010) Globalisation and the foreignisation of space: seven processes driving the current global land grab. *Journal of Peasant Studies* 37.2, 429-47.

Zoomers, A., F. van Noorloos, K. Otsuki, G. Steel and G. van Newsten (2017) The rush for land in an urbanizing world: from land grabbing toward developing safe, resilient, and sustainable cities and landscapes. *World Development* 92 (April), 242-52.