

A political ecology of speculative urbanism: The role of financial and environmental speculation in Jakarta's water crisis

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journals.sagepub.com/home/epn**Emma Colven** 

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Abstract

Jakarta, Indonesia's capital, is increasingly characterized by luxury real estate developments and high-profile infrastructural projects made possible by economic liberalization and finance capital. Yet these developments have contributed to Jakarta's struggles with chronic flooding, land subsidence, and water shortages. This paper contributes an empirical study of the spatial-temporal dynamics of speculative urbanism and the associated impacts on water resources and flood events in Jakarta. I use an urban political ecology approach to analyze mainland and offshore development. First, I show how *financial* speculation generates flood risk and the overexploitation of water resources, producing uneven socio-spatial distributions of risk. These transformations in Jakarta's hydroscape in turn threaten to undermine the city's viability as a site for speculative investment. I thus show how speculative urbanism can be threatened or disrupted by nonhuman agencies. Second, I illustrate a second form of speculation, which I refer to as *environmental* speculation. As Jakarta's water crisis has cast doubt on the future of the city itself as a place of habitation, the state explored an ambitious and potentially lucrative coastal defense project, while private developers have engaged in land reclamation. The turn toward offshore development illustrates how environmental speculation creates new opportunities for capital accumulation. I advance two arguments: first, in order to capture the full costs of speculative urbanism, it is imperative that urban scholars attend to its ecological dimensions. Second, an urban political ecology approach advances our understandings of speculative urbanism by illuminating its contradictions and limits.

Keywords

Speculation, speculative urbanism, urban flood risk, urban political ecology, water crisis

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Introduction

Since the 2010s, Jakarta has enjoyed growing international recognition as an emergent global city and one of Asia's leading real estate markets. Property prices more than doubled between 2009 and 2015 (Shaffer, 2015), luxury real estate prices increased by 38.1% between 2011 and 2012 (Knight Frank, 2013: 29)¹ and in 2014 global consultancy firm Knight Frank heralded Jakarta as the "hottest" luxury property market in the world (Chow, 2014). In cities across Asia, real estate development and land are increasingly treated as financial assets and a primary means to achieve economic development (Mosciaro et al., 2022). Subsequently, and against conventional wisdom that investors regard the global South as riskier than the global North, the financialization of the built environment is "now as much a feature of living conditions in the poorest settlements of the global South as it is in the financial heartlands of the global North" (Desai and Loftus, 2013: 789; Aalbers et al., 2020).

Capturing this development, Goldman (2011, 2021) coins the term *speculative urbanism* to refer to a historical conjuncture that ushered in a mode of urban development and governance wherein "global finance capital plays an increasingly important role in urban transformation" (Goldman 2021: 1). Goldman (2021) identifies four characteristics to speculative urbanism: first, the role of transnational policy network of global city experts who circulate imaginaries of the world-class city (Ghertner, 2015; Roy and Ong, 2011) and promote finance capital as a means to realize these aspirations. Second, the utility of speculative forms of finance (such as debt financing and derivatives used by financial firms). Third, states at the urban, regional, and national scale actively create conditions that foster speculative investment in urban development (Nam, 2017; Christophers, 2017; Shatkin, 2017; Shin and Kim, 2016), mobilizing new forms of finance for what was once considered the realm of public works, such as infrastructure (Angelov, 2020). In Jakarta, this has involved the implementation of policies that facilitate speculative investment and flows of finance capital, as well as the large-scale transfer of public lands to private developers. Finally, speculative urbanism is characterized by the emergence of a speculative governmentality that compels not only financial and political elites but also urban residents to take risks and speculate (Leitner and Sheppard, 2018). Speculative urbanism is thus driven not only by the need for profit, but also "for survival" (Bear et al. 2015: 387).

The environmental stakes of speculative urbanism are high, particularly in Jakarta. Owning to transformations in Jakarta's hydroscape facilitated by speculative urbanism, the city is experiencing a multi-faceted water crisis.² Flooding has become unavoidably disruptive, with major flood events having occurred in 1996, 2002, 2007, 2013, and 2020 (see Figure 1) and has been worsened by both sea level rise and land subsidence, the latter of which scientists attribute largely to groundwater extraction (Abidin et al. 2011). Subsidence has contributed to the salinization of groundwater resources upon which the city is heavily reliant. Intensified urban development has also put pressure on already-scarce surface water resources, raising the question of whether the city can provide its residents with enough water into the future. These changes are occurring in a hydroscape shaped by a "splintered" piped water network, the result of Dutch colonial rule that granted piped water supply only to Dutch settlers in order to distinguish this group from native people and, more recently, the failure of privatization efforts to extend the network to low-income consumers (Kooy and Bakker, 2008).

In order to examine the relationship between the real estate industry and water crisis in Jakarta, I use an urban political ecology (hereafter UPE) approach that takes as its starting point that cities are co-produced by social and ecological processes, and which extends analytical attention to the agency of non-human actors (in this case, water). A UPE approach advances our understandings and theorizations of speculative urbanism by elucidating the mutually constitutive relationship between processes of speculative urban development and water crises. As I will show, an UPE

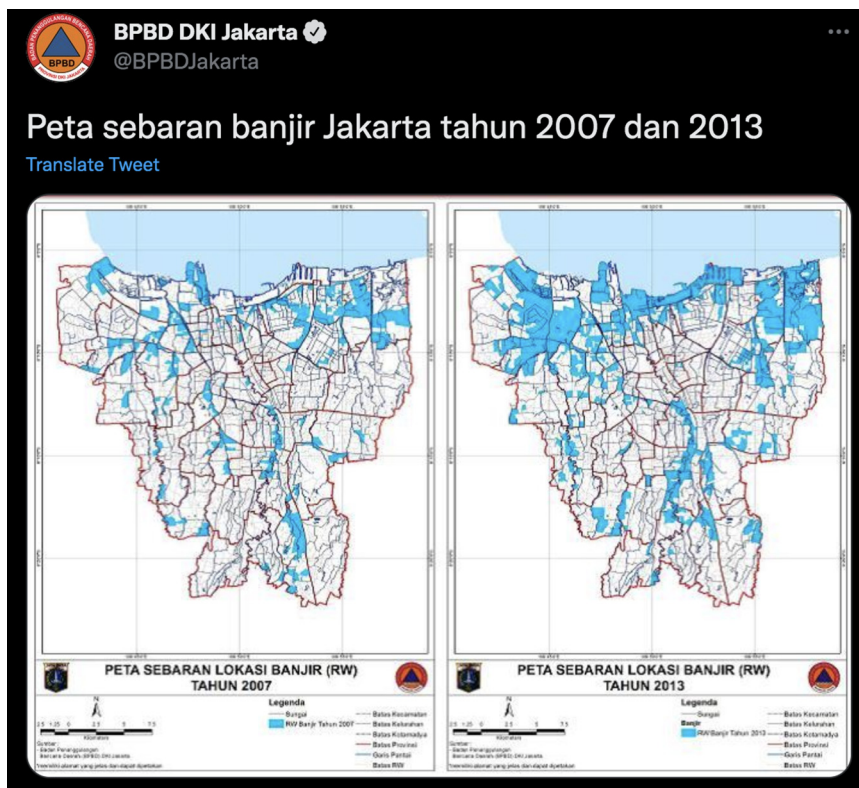


Figure 1. Map of the extent of flooding during the 2007 (left) and 2013 flood events. Source: BPBD DKI Jakarta Twitter account: <https://twitter.com/bpbdjakarta/status/503763885468295168>.

approach moves us beyond one-directional accounts of the relationship between speculative urbanism and water crisis, toward more nuanced understandings of speculative urbanism as a socio-ecological process shaped by both human and nonhuman agencies.

I analyze mainland and offshore development in Jakarta to make two arguments. First, in order to capture the full costs of speculative urbanism, it is imperative that urban scholars attend to its socio-ecological dimensions. I show how *financial* speculation orientated toward profit generates urban flood risk and the overexploitation of water resources, producing uneven socio-spatial distributions of risk. Water regimes and resources are entangled in practices associated with speculative urbanism, which is therefore best understood as a socio-ecological process that not only enrolls finance capital, the state, developers, investors, and the real estate industry, but also water. In response to Jakarta's water crisis, private actors, the state, and other stakeholders engage in *environmental* speculation on the future of the city, which is orientated toward survival. The state has explored an ambitious and potentially lucrative coastal adaptation and development project, while private developers have engaged in land reclamation in Jakarta Bay. The turn toward offshore development can be theorized as a "spatial fix" (Harvey 1982, Taylor 2020) to Jakarta's water crisis and illustrates how actors use environmental degradation, echoing the arguments of Aimee Bahng (2019), to create new opportunities for capital accumulation.

Second, I argue that under conditions of speculative urbanism, speculation extends beyond the financial realm to the future of the city itself as transformations in Jakarta's hydroscape threaten to

undermine Jakarta's viability as a site for speculative investment and as a place of habitation. Circulating narratives in the international media portray Jakarta as the archetypal Southern megacity mired by environmental disaster, and a flurry of articles since 2015 have posed the question of whether Jakarta's future lies underwater, as a modern-day Atlantis³. A 2017 New York Times article (somewhat hyperbolically) reports: "Hydrologists say the city has only a decade to halt its sinking. If it can't, northern Jakarta, with its millions of residents, will end up underwater, along with much of the nation's economy." Dystopian imaginaries of Jakarta threaten to cement its reputation as a sinking city while undermining opportunities for capital accumulation and the attractiveness of Jakarta to investors as a capital sink. Speculative logics thus extend beyond the world of global finance as various actors speculate on and "forecast" (Knuth 2020) Jakarta's ecological future. I refer to this form of speculation as *environmental* speculation. Further, the spatial-temporal imaginaries of Jakarta as both capital sink and sinking capital are not only representational, as Groves (2017) reminds us, but also materially grounded. Thus, while these imaginaries of Jakarta are speculative, they connect the future to actually-existing practices of speculative urbanism. This suggests we need to pay greater attention to the mutually constitutive relationship between the material and imaginative dimensions of speculative urbanism.

In the context of this special issue, this paper illustrates the utility of an urban political ecology approach to speculative urbanism. More broadly, it contributes an empirical case study to a growing literature that examines the socio-ecological dimensions of speculative urban development. This scholarship has provided important insights into the political economies of urban disaster risk and environmental crisis (Rumbach 2017; Shatkin, 2019) and highlighted the contradictions between disaster mitigation, resilience planning, and green urbanism on the one hand, and mainstream urban planning trajectories on the other (Octavianti and Charles, 2018; Colven 2020a; Weinstein et al. 2019; Koh et al., 2021). However, studies to date have focused more specifically on speculative urbanism as a financial process and have not yet engaged closely with speculative imaginaries associated with environmental speculation. I therefore draw together an UPE approach with insights from critical urban studies concerned with imaginaries of urban futures.

This paper and its contributions are timely. As urban water crises are expected to intensify into the future, it is imperative that researchers document the relationship between speculative urbanism and water crises, and the broader existential crises that these processes generate. My research findings have implications for how we understand the causes of urban water crises, and what or who we hold accountable. In the following section, I review emergent urban scholarship on real-estate speculation and geographies of environmental risk and disaster, particularly those studies focused on water. After detailing my methodology, I describe Jakarta's transformation since the speculative conjuncture emerged in the late 1980s and how speculative urbanism manifests in this particular site. In the empirical section of this paper, I provide two case studies of speculative development: high-end real estate on mainland Jakarta, and offshore reclamation projects in Jakarta Bay. I conclude by discussing the implications of my findings for urban theory and understandings of the relationship between speculation, environmental degradation, and urban futures.

Speculative urbanism and geographies of environmental risk and disaster

Urban development orientated toward attracting speculative investment and earning cities global world-class status has incurred substantial socio-ecological costs, particularly in Asian cities owing to the "real-estate and infrastructure boom of recent decades" (Shatkin 2019: 211). Dominant trajectories of urban growth across these cities have contributed to increasing environmental risk to hazards, such as flooding, even as city governments recognize the need for risk management and pursue sustainable development agendas (Weinstein et al., 2019). Water itself has emerged as a particularly important lens for examining the socio-ecological impacts

of speculative urbanism. In recent years, water crises have become strikingly common as cities across the world—including Bangalore, Chennai, Mexico City, and Cape Town—struggle with groundwater overextraction, water pollution, water shortages, stormwater management, and flood risk. Analyses of water crises under conditions of speculative urbanism point to their political economic origins. For example, Millington and Scheba (2021) trace the emergence of Cape Town's water crisis to an earlier financial crisis, at which time the state introduced mandated water consumption reductions. Goldman and Narayan (2019), meanwhile, find that large-scale land acquisitions and financial speculation in recent years have impacted Bangalore's water resources—where entire water bodies have dramatically disappeared, groundwater resources are overexploited, and private water tanks have proliferated—thus directly contributing to the city's water crisis. Here, as Ranganathan (2015) succinctly writes, “rogue capital flows have aggravated physical floods” (1311).

Further confirming the now accepted notion that disasters are not “natural” but socially produced by political and economic structures (Smith, 2006), Rumbach (2017) traces the devastating impacts of Kolkata's floods to trends in the political economy of land and urban development, including the commodification of hazardous land by private developers, facilitated by state policies of economic liberalization. As the exchange value of land increases dramatically under conditions of speculative urbanism and the potential for profit becomes irresistible to developers and state actors alike, it has become common practice for even ecologically precarious land, such as flood plains and coastal zones, to be developed into real estate. This transformation of once marginal and non-commodified land into “a place of value” (Baviskar 2011) typically relies on the forced displacement and dispossession of those typically most exposed to environmental risks, often under the guise of flood risk management (Alvarez and Cardenas 2019, Colven and Irawaty 2019). Collectively, these studies demonstrate that speculative urbanism enrolls not only finance capital, land, and various actors (the state, developers, investors, residents, the real estate industry), but also flows of water that hold the potential to shape processes of speculative urbanism as material or nonhuman agents.

Indeed, while the impacts of speculative urbanism on socio-ecological systems are clear, this is not a unilateral process. Urban political ecologists have drawn attention to the role of material or nonhuman agencies (such as water and infrastructure) in shaping speculative urbanism. For example, Ranganathan (2015) shows how stormwater and stormwater drains in Bangalore constitute nonhuman agents with the power to undermine or elude state efforts to manage water via infrastructural interventions. Flood risk, with its potential to generate financial risks, can therefore threaten or interrupt speculative urban development. Also emphasizing the co-production of speculative finance and urban ecologies, Reis (2017) uses Moore's (2015) concept of capitalism in the web of life to argue that finance capitalism “does not work *upon*, but *through* nature” (977). Reis demonstrates how financialized housing in Mexico City is made possible via the existing water regime: developers must acquire water rights before seeking permits for new construction to ensure that they can supply future residents with water. As a nonhuman agent, water thus has the potential to actively shape processes of speculation, posing limits at times and opportunities at others. Speculative urbanism can thus be understood as a socio-ecological process (Reis 2017).

Certainly, scholars have posed normative questions about material and socio-ecological relationships in Jakarta (see Firman and Dharmapatni 1994, Steinberg 2007, Douglass 2010), and recent scholarship has critically engaged with the politics of flood mitigation in the city (Betteridge and Webber, 2019; Goh, 2019, Leitner et al., 2017; Shatkin and Soemarwi, 2021). Recent scholarship has also explored the socio-ecological dimensions of speculative urban development (e.g. Shatkin, 2019, Weinstein et al., 2019, Vogt, 2021; Koh et al. 2021; Colven, 2022). However, the role of non-human agencies in shaping speculative urbanism is understudied. Thus, in the analysis that follows, I examine not only how development practices under speculative urbanism shape urban ecologies, but how non-human actors (namely, different flows of water) in turn shape the

possibilities and trajectories of speculative urbanism. As I will show, increased flood risk in Jakarta has driven speculative development offshore as state actors and private developers seek investment opportunities in direct relationship with environmental risk.

Beyond shaping speculative urbanism, non-human agents also raise questions about the future viability of cities as sites of habitation. While “speculation” in the literature typically refers to forms of *financial* speculation, whether by the state, residents, investors, or developers (see Goldman 2011, Shin 2014, Shin and Kim 2016, Aalbers et al. 2020, Mosciaro et al. 2022), critical scholarship shows how cities have become both objects and subjects of a form of speculation that extends beyond finance as climate change poses an ongoing existential threat (Knuth, 2020; Wakefield, 2020). Media reports, master plans, and climate models, for instance, that forecast and predict crisis have the potential to operate as dystopian imaginaries. Further, a growing awareness of the threats that climate change poses to cities has prompted critical urbanists and human geographers to pay greater attention to futurity (Bunnell et al. 2018) and anticipation (Anderson, 2010, Groves, 2017), creating a lens through which to imagine city futures in dystopian ways. Notably, the role of discourse and representation in imagining and pursuing a future “world class city” (Ghertner 2015, Parnell and Robinson 2006, Robinson 2006, Roy and Ong 2011) has been well studied, while dystopian renderings of urban futures have historically received lesser attention in critical urban studies.

Like financial forms of speculation, discursive and imaginative renderings of future cities also hold the potential to have material impacts. In this paper, therefore, I attend not only to the impacts of *financial* speculation orientated towards profit, but what I refer to as *environmental* speculation, that is orientated toward survival and enacted through the envisioning of environmental disaster in Jakarta. Particularly instructive for teasing out this form of speculation is scholarship from ecocriticism and critical urban studies concerned with urban dystopian imaginaries in relation to climate change. While much of this scholarship focuses on literature and particularly science fiction novels (e.g. Abbott, 2016; Dobraszczyk, 2017), this paper examines how the circulating imaginary of Jakarta a sinking city informs actually-existing urban development practices.

Methodology

This paper is drawn from a larger program of interviews conducted over five visits to Jakarta and one visit to the Netherlands, between 2014 and 2019: 24 architects, engineers and financial consultants of Dutch and European firms; 6 Indonesian consultants, experts and academics; 10 activists, journalists, lawyers, community architects, and non-profit staff; 17 city and state government staff, 4 researchers and property consultants from global consultancy firms with offices in Jakarta, and 1 staff member from non-profit organization, Jakarta Property Institute.⁴ Participants were recruited strategically and identified on the basis of their knowledge of and involvement in flood risk management, water infrastructure, urban planning, and/or community activism and resistance to state-led flood interventions. Semi-structured interview schedules included both a standard set of questions that enabled comparison across informants, as well as tailored questions designed to focus on their particular area of expertise. For example, consultants were able to provide detailed information regarding design and planning processes relating to a planned coastal defense project, while property consultants provided insights into the workings of the real estate sector, historical investment flows and trends, and the impact and implementation of government policies. I recorded interviews when permission was granted, and took handwritten notes also throughout the interview, also noting down additional questions or emergent themes to pursue. I then transcribed recordings both by hand and using Otter.ai software.

I supplement interviews with field notes detailing my observations at property showrooms, during tours of flood infrastructure led by consultants, and at relevant public and private workshops,

conferences, and meetings that I was able to access, and which were attended by public and private sector actors, as well as community members, activists, and academics. I also draw on gray literature and archival materials, including market reports from global property consultancies, marketing brochures, government policies, media reports, and news articles from the Jakarta Post archive. I analyzed and coded transcripts and gray material iteratively and by hand, first identifying pre-defined codes, then identifying emergent themes via subsequent rounds of coding.

Speculative urbanism in Jakarta

In this section, I provide an overview of how the Indonesian state has facilitated speculative urbanism over the past four decades through the introduction of neoliberal economic policies and spatial planning practices designed to create the “conditions of possibility” (Nam, 2017: 648) to lure investors. Since the adoption of market-led economic growth in Indonesia in the late 1980s, Jakarta’s urban landscape has been transformed as luxury residential towers, superblock developments and high-profile infrastructure projects, symbols of the city’s global city aspirations, have consumed much of the *kampung*s⁵ and agricultural lands once common to the city. This transformation has been facilitated by a series of provincial and national state economic policies over several decades, which have fundamentally reshaped the land and property market.⁶ In October 1988, the Indonesian government introduced a package of neoliberal policy reforms known as “Pakto,” which deregulated the banking sector, supported the growth of private banks, and eased restrictions on foreign banks. These changes triggered a growth in credit availability, but a parallel increase in loans categorized as “bad” (Bennett, 1995). Pakto also generated a symbiotic relationship between developers and banks, such that “By the mid-1990s many developers had become highly debt-leveraged, starting new housing projects in the hope of paying off existing debts” (Herlambang et al., 2019: 635).

A series of policy changes in recent years have further intensified opportunities for speculative activities. In 2015, President Jokowi’s administration lifted restrictions on foreign ownership as proscribed in the 1960 Agrarian Law⁷, allowing foreigners to “own” apartments valued above 3 billion rupiah (approximately USD200,000) under the “right of use.” Bank Indonesia, Indonesia’s central bank, issued no. 17/10/PBI/2015, a loan-to-value relaxation policy which lowered down payments on first, second, and further properties (Paraminta, 2015). In 2016, both state and private banks sought to encourage property sales by making mortgages available to consumers with low down-payments. Bank Indonesia, Indonesia’s central bank, began allowing banks to issue home mortgages for houses not yet built (Diela and Agustiyanti, 2016). In 2018, the administration announced a raise to the threshold at which the luxury tax on property sales would apply: the 20% tax would only apply to properties worth at least IDR 30 million (approx. USD 2.1 million) (Reuters, 2019). These policies have facilitated the use of real estate as a vehicle for capital accumulation by both foreigners and Indonesia’s upper-middle class,⁸ who purchase property (typically apartments) as a speculative investment. In fact, a consultant interviewed in Jakarta in 2019 estimated that 60 to 70% of buyers of the high-rise residential apartments are investors, rather than end-users.

In an effort to attract foreign capital and compete with comparable markets such as Bangkok, the Indonesian government also sought to reduce bureaucracy and red tape thought to slow land acquisition and property construction, for example by streamlining the permitting process. According to a report released by the Indonesia Investment Coordinating Board (BKPM), in 2018 around 70% of investments in housing projects, industrial estates and office space developments came from foreign companies operating in Indonesia and strong growth in the real estate sector in 2017–18 was driven by increased foreign investment (Oxford Business Group, 2019). Developers also began using “pre-construction sales,” following Indonesian property developer

Lippo Cikawang's success with this model: Units are sold ahead of their completion, enabling developers to raise funds to finance construction, reducing their dependency on loans (Arai, 2001). Developers speculatively rely upon end-users and investors to purchasing properties in advance in order have access to the capital needed to realize their projects, illustrating how speculative finance capital is "defined by the fact that it departs from any bedrock of economic value" (Humphrey, 2020: 118). For example, aptly reflected the township slogan that promises residents that "The Future is Here Today!" (fieldnotes 2017), Lippo Cikarang's Meikarta township sold some 16,800 apartments (not yet built) in one day in 2017, the highest number of apartment sales ever recorded in a single day in Jakarta.

In addition to policies and interventions designed to create favorable conditions for speculative urbanism, Jakarta's transformation has also been shaped by the "hybrid neoliberalism" of Indonesia's political economy characterized by "long-standing and resilient oligarchic power structures" (Herlambang et al., 2019: 631; see also Hadiz and Robison, 2013; Savirani, 2017) originating in the New Order Era (1966–2007) under then-President Suharto. Notably, during Suharto's New Order, the National Land Agency transferred large areas of land to large developers, who built new town developments on Jakarta's peripheries (Firman, 2004; Herlambang et al., 2019), driving urbanization outward. Even three decades after the fall of Suharto, Indonesia's real estate sector remains dominated by a handful of Indonesian and Indo-Chinese property development conglomerates, some with powerful connections to the Suharto family. Further, as Herlambang et al. (2019: 633) observe: "A revolving door sees individuals moving between private-sector organisations, political parties, government agencies, and the military".

Empowered by these informal networks, private developers have been able to exert great influence over Jakarta's urban development. When state regulatory powers were decentralized during the *Reformasi* period (1998–present), local governments lacked the capacity to implement their own spatial plans⁹ and developers took advantage of this, stepping into the role in ways that benefitted them (Herlambang et al., 2019). It is therefore developers, rather than the government who have led Jakarta's development, as one Dutch expert expressed during a 2015 interview:

...the government is complaining that they will have to build the infrastructure after the private sector has already made the investment (...) So nowadays you see the government changing a bit the regulations (...) but so much [has] already happen[ed] in the past that the government is still playing catch up.¹⁰

Developers continue to seek influence over spatial planning and zoning processes undertaken by the provincial government. Jakarta's Regional Body for Spatial Planning and Development (Bappeda¹¹) is responsible for composing the city's spatial plans. In a 2015 interview, a Bappeda employee described the process of developing the spatial plans for reclamation projects:

we stipulate that every island must have 30% green [space], 5% blue... well, you know, developers they always... try their best... to have more land to sell instead of provide the pure 30% green.¹²

Developers have continually sought to minimize their obligations to the city. For instance, while the 1992 Housing and Settlement Law stipulates developers must build three middle income and six low-income units for every high-income housing unit (the 1-3-6 provision), developers have typically been able to circumvent this, also successfully lobbying to reduce this requirement in 2011 to 1-2-3 (Herlambang et al., 2019). In other cases, developers have resorted to bribing local officials. In 2016 Ariesman Widjaja, then-President Director of the Indonesian property developer PT Agung Podomoro Land, was found guilty of seeking to influence two draft bills relevant to Jakarta's land reclamation projects. He was jailed for three years and charged IDR 250 million,

causing Agung Podomoro's stock to plummet by 10% (Indonesia Investments, 2016). In 2018, the Corruption Eradication Commission made nine arrests relating to bribes paid to the Bekasi Regent (a region of the Jakarta Metropolitan Area) by PT Lippo Cikarang in an effort to obtain the property permits for their high-profile flagship *Meikarta* project. Those arrested include Lippo Group's operational director, Billy Sindoro, and Batholomeus Toto, then-president director of Lippo Cikarang both of whom were subsequently fined and given short sentences. Nonetheless, the state has allowed these projects to continue. The private sector has aggressively and predictably pursued profit often at the expense of both Jakarta's residents and its environment. Indeed, the social impacts of speculative urbanism in Jakarta have been well documented. Speculative investment has facilitated the gradual but ultimately large-scale displacement of kampung residents from central Jakarta as developers slowly procure, assemble, and enclosure land from the occupying households, demolishing buildings to make way for high rises (Leitner and Sheppard, 2018). This paper contributes to broadening our understandings of the costs of speculative urbanism by examining its environmental dimensions, to which I now turn.

Capital sink or sinking capital?

In this section, I examine both mainland and offshore development in Jakarta to examine the socio-ecological impacts of speculative urban development and in particular the relationship between speculative urban development in Jakarta and the city's water crisis. I also illustrate the interconnections between financial and environmental speculation: the water crisis threatens Jakarta's future and drives environmental speculation on the future of the city itself, which has in turn encouraged the state and private sector to resolve this impending crisis by pursuing offshore development as a "spatial fix" (Taylor, 2020), as I discuss in the following discussion.

Mainland development

Speculative urbanism has contributed to enormous environmental and land-use changes in Jakarta in recent decades. Between 1972 and 2011, the upper catchment area of the Ciliwung River—the largest of the 13 rivers running through Jakarta—was rapidly deforested and developed, increasing from 7% urbanized in 1972 to 50% by 2012 (Remondi et al., 2016, 211). In the central city, intense development has contributed to the loss of the green space and reservoirs crucial for absorbing and storing rainwater. While the Jakarta Spatial Plan stipulates that 30% of the city's land be designated Green Open Space (GOS), this objective is in direct tension with the city's adopted model of economic growth centered on real estate development. As one expert explained in an interview: "there's a trade-off between areas of land you can sell, and the green areas for retention that you can't sell."¹³ Actual GOS is estimated to be between 4% and 11% (Setiowati et al., 2018).

Spatial planning violations by private developers have led to widescale loss of green space and flood catchment areas, crucial for groundwater recharge and retention. As a result, as one ministry official described in a 2015 interview, land that "used to be trees... has become real estate."¹⁴ One such violation was the construction of Taman Angrek Mall in 1996 on an area zoned for urban forest. Illustrating the capacity of flows of water to shape and disrupt urban life, the mall's basement flooded during the 2020 New Year's floods, leading to its closure for several weeks (Larasati, 2020). Another violation occurred at Pantai Kapuk, with the construction of Pantai Indah Kapuk (PIK), which went ahead in 1989 without an Environmental Impact Assessment (Salim et al., 2019) on what was once over 2000 ha. of mangrove forest. Djaja et al. (2004) calculated that this area had a land subsidence rate of 12.1cm/year between 1997 and 1999, the fastest rate of all sites in their study. Despite these well-documented ecological impacts, PIK is currently

rolling out a controversial expansion (PIK2) of which environmental activists have already voiced criticisms (Firmansyah, 2021).

Rather than penalizing developers, Rukmana (2015) shows how the state effectively sanctioned violations of Jakarta's spatial plan between 1985 and 2005 by incorporating these into subsequent spatial plans, illustrating the centrality of the state in facilitating speculative urbanism (Goldman, 2021). Critics argue Jakarta's spatial plan (the RTRW 2030) targets low- and middle-income housing for acquisition to create green space, while failing to identify malls constructed on green space (Mariani, 2010). Thus, spatial planning violations should not be interpreted as signaling the absence or the failure of state planning. Rather, state-sanctioned violations are indicative of a planning regime fundamentally shaped by informality (Roy, 2009). This mode of urban planning played a crucial role in facilitating speculative urbanism, disproportionately benefitting developers speculating for profit, and generating costs for those most vulnerable to flooding. Meanwhile, the state has forcibly evicted riverbank settlements in recent years, citing their illegal occupation of public land and alleged contributions to flooding as justification (Colven and Irawaty, 2019).

Urban land transformations also have caused considerable hydrological changes (Remondi et al., 2016) in Jakarta, illustrating the entanglements of processes of speculative urbanism with urban ecologies. The construction of shopping malls, office towers, and high-end apartment buildings has contributed to the exploitation of deep groundwater resources, despite these developments typically being located in areas with adequate connections to the city's piped water supply (Furlong and Kooy 2017, 897). Deep groundwater usage has been a longstanding practice by public and commercial buildings, and industry—in fact, it is estimated that some two-thirds of Jakarta's water consumption is met by groundwater (Furlong and Kooy 2017, 895)—but has historically been both underreported and poorly regulated, leading to overexploitation (Furlong and Kooy 2017, Colven 2020b).

As a result of unsustainable usage, deep groundwater extraction has contributed significantly to land subsidence (Abidin et al., 2011),¹⁵ which has emerged as a major challenge and defining characteristic of Jakarta in recent years. With extremely high rates of land subsidence of up to 15 cm/year (Abidin et al. 2011), Jakarta has earned an international reputation as the world's fastest sinking city, generating speculation as to its future viability. Both the duration and geographical extent of flooding in Jakarta have been significantly worsened in recent decades owing in large part to land subsidence. Land subsidence increases flood risk in two ways: first, rivers can no longer discharge to the sea via gravity, increasing risk during high-precipitation events. Second, approximately 40% of North Jakarta now lies below sea level, making the city highly vulnerable to tidal flooding and sea level rise. While recognizing that current groundwater consumption is unsustainable, the state has been unable thus far to provide an alternative water source. Subsidence also exacerbates water insecurity by contributing to the salinization of shallow groundwater. With a piped water supply network that reaches less than 60% of the city, Jakarta's residents depend on groundwater resources to meet their daily needs (alongside other more expensive sources including bottled or refill water). The highly uneven nature of the piped network reflects its origins in Dutch colonial times when it was designed to provide water to European settlers but not natives (Kooy and Bakker, 2008), as well as the failures of World Bank-driven efforts to extend the system via privatization (Furlong and Kooy, 2017). In fact, privatization not only failed, but also increased municipal debt (Wu and Ching 2013) since, while piped water proved not to be a lucrative enterprise, the contracts drawn up in the 1990s guaranteed Thames Water and Suez (later taken over by two Indonesian companies) profits.¹⁶ This resulting water crisis is thus the product of both processes of speculative urbanism *and* ecological or nonhuman processes. In the next section of my analysis, I show how Jakarta's water crisis and the environmental and financial threats it poses have contributed to driving the state and real estate sector to pursue a second mode of speculative development: offshore land reclamation in Jakarta Bay.



Figure 2. Architectural visualization of the Great Garuda project (depicted in white) and 17 islands (depicted in gray along Jakarta's coastline).

Source: NCICD Project.

Offshore development

In this subsection, I examine how land reclamation from Jakarta Bay has emerged as a “spatial fix” (Harvey 1982) to Jakarta’s water crisis. A spatial fix is generally understood in geographical theory to constitute “a precarious, temporary solution mobilized in response to crises of capitalist reproduction that only exacerbates fundamental, underlying contradictions” (Bok 2019: 1100). Geographers and urban planners researching the financialization of urban adaptation planning have used this concept to illustrate how capitalism’s self-generating crises are not resolved, but instead displaced onto other people and places. For example, Taylor (2020) analyzes how insurance-linked securities (ILS) help to “sustain the circulation of capital through risky built environments by absorbing the catastrophe exposures of mortgages and other forms of property-linked finance” (1131). ILS therefore “*momentarily* offsets growing environmental barriers to property-led accumulation” (1131, emphasis added). Likewise in Jakarta, offshore development provides a temporary means to escaping the limitations imposed on urban development by Jakarta’s emergent water crisis. Whether in the form of urban flood risk or groundwater resources, water thus has the potential to shape processes of speculative urbanism as a nonhuman agent.

Plans for offshore development in Jakarta Bay predate the city’s water crisis but have been revived in recent years after a long period of stagnation. For decades, the provincial and Indonesian governments have planned to redevelop North Jakarta via a series of land reclamation projects in Jakarta Bay (Colven, 2017; Kusno, 2011). Initially stalled by the Asian monetary crisis (*krismon*), developers resumed reclamation in the 2010s in the form of plans for 17 islands that would total more than 2500 hectares (Figure 2).¹⁷ A second development once planned for Jakarta Bay is the National Capital Integrated Coastal Development (NCICD) project, a coastal defense project designed by a consortium of private firms contracted by the Government of the Netherlands. The original master plan for the project published in 2014 (since updated in 2019) proposed the integration of flood mitigation infrastructure (seawalls, pumping stations) with 1250 hectares of land reclamation in Jakarta Bay. Envisioned in the shape of the *garuda*, Indonesia’s symbol of Independence, this reclaimed land would be home to a new Central

Business District, and residential, commercial, and green space. In line with Bahng's (2019) observation that speculation dominates urban adaptation planning efforts, the initial business model for the project relied heavily on speculative investment in land reclamation (Wade 2019, Colven 2020a). Once constructed, taxes derived by the city from the reclamation projects would be used to pay for the flood management infrastructure.

The speculative imaginary of Jakarta as a capital sink, circulated by global consultancy firms, has contributed to a demand for new land to enhance development and economic growth, driven in large part by a perception that the city "needs space to grow, space to expand, space to accommodate [its] future prosperity", as one Indonesian minister explained in a 2015 interview.¹⁸ Developers and the city government alike mobilize a narrative of land scarcity to justify land reclamation (e.g. Haskoning, n.d.; Jakarta Post, 2015; Mongabay Indonesia, 2016). This perception of scarcity is partly shaped by Jakarta's geography, which limits the physical availability of land. As an engineering expert with explained in a 2015 interview:

Jakarta is already full. Development to the south, that is not possible because there is conservation area. Land in Jakarta is very expensive. It's difficult to get land that is less than 10 million¹⁹ (IDR per square meter) and also it is difficult to get good land, big land. It is already full here. [With] reclamation... that is easier. You can make 300 hectares directly here.²⁰

However, this narrative also reflects a common perception that land is difficult to acquire, especially in large tracts. Processes of democratization associated with the *Reformasi* period have made forced evictions much less politically viable as a state strategy, and communities enjoy greater legal rights. The state and private developers must therefore enter into negotiations with residents to purchase land, often resulting in what these actors consider to be a lengthy land acquisition process. This is further complicated by Indonesia's "dual" land tenure regime, comprising both land formally registered with the Land Agency and unregistered land governed by an Indigenous land regime (Leaf 1993), which contributes to frequent conflicts over land ownership. The difficulty associated with land acquisition has contributed to the discursive construction of land as scarce, where "available land" is implicitly understood as unoccupied and readily available.

Land reclamation reflects both the logics of *ecological* speculation, as hopes for the future of Jakarta are pinned on reclaimed land, and of *financial* speculation, as developers seek to derive profits from future islands. Yet while rationalized as easy and inexpensive relative to the more difficult, time-intensive option of assembling small plots directly from occupiers, land reclamation is a highly speculative activity, and far from risk-free. As one consultant involved in the NCICD stressed to me:

Land reclamation [is] a much riskier business. And if I buy a plot of land here in Jakarta, I can immediately start building. If I develop land reclamation, I pay the same amount of money, but I have to wait three to four years. And waiting (...) with the current interest rates is very expensive. (...) if I buy a piece of water, there's nothing to show [investors]. And you saw the opposition against land reclamation so this investor will think 'I have to put the money up front? But it's still water? and I hear of lot of opposition.' And everything could go wrong.²¹

Changes in interest rates, saturation of the real estate market, and slowing demand each have the potential to threaten the feasibility and profitability of land reclamation, as does the cost and availability of construction materials, particularly sand. As "a material at the centre of global urbanization process" (Dawson, 2021: 995), sand is in high demand around the world and, owing to high transportation costs, expensive. In addition to its material qualities, the volume of sand and time taken to reclaim land vary dependent on the technique used. The process of land reclamation

involves carefully depositing sand into coastal waters to create layers that stabilize and form islands. One technique to achieve this, developed by the Dutch, is known as ‘rainbowing’: dry sand is transported to the site, mixed with local water to create sludge, and then sprayed from a ship into the water.²² Land is therefore not so much ‘reclaimed’ as it is created anew from material taken from elsewhere, defying commonly held understandings within political economy of land as a fictitious commodity (AlShehabi and Suroor, 2016). Batubara et al. (2018) thus argue that land reclamation in Jakarta “can only happen because of and through the transformation of other spaces from where the sand and cement are extracted” (1198), namely from Serang in the province of Banten, approximately 90 kilometers west of Jakarta. Land reclamation in one site therefore has the potential to shape the environmental futures of others.

Land reclamation in Jakarta has also become highly contested and politicized. With the support of environmental NGOs, fisherfolk and coastal communities have mobilized against land reclamation, organizing demonstrations and via social media. In 2015, the National Ministry of Maritime Affairs and Fisheries claimed the 17 islands had not secured the necessary permits, casting cast doubt on the future of the whole development. A year later, the aforementioned bribery scandal involving PT Agung Podomoro further tarnished the 17 islands. Owing to the growing controversy, DKI Jakarta’s current Governor, Anies Baswedan revoked 13 of the 17 permits; developers and DKI Jakarta have been engaged in legal battles since (Jakarta Post 2020). This broader political-economic context also means land reclamation is increasingly a risky business. Subsequent high-profile corruption cases regarding the 17 islands, and the legal challenges developers encountered in pursuing these developments held the potential to shape investors’ perceptions about Jakarta’s real estate market and its desirability as a destination for capital.

The financial risks associated with land reclamation also raise questions about the use of speculative investment mechanisms to fund what was previously described by the Indonesian government and consultants as a much-needed project to protect the city from tidal flooding. Relying on speculative real estate investment makes the project vulnerable to the whims of investors, as one consultant closely involved with the NCICD expressed:

... you know, these investors are opportunistic... all the investors we spoke to were interested to participate because you always can pull out.²³

Additionally, any perceived hostility to investors, one financial consultant argued, could deter them from investing and thus jeopardize the NCICD. For instance, when the Ministry of Maritime Affairs and Fisheries raised questions about the permits for the 17 islands, this could have impacted the feasibility of the NCICD, as the financial consultant explained in a 2016 interview:

Now, it’s very important to [ensure] all the environmental procedures are in place, however, don’t piss off the private investors. Why do I say that? Because we need them to invest also in the giant garuda [NCICD]. Without them, we can’t do anything.²⁴

Since both projects would depend on the same streams of investment in order to be realized, their fates became tied together. Further, while Jakarta’s real estate sector experienced rapid growth in recent years, peaking in 2014, Jakarta’s real estate market has more recently slowed. Lastly, the land reclamation-driven financing strategy would put the NCICD into direct competition with the 17 islands developments. Too much newly reclaimed land could potentially flood the market, reducing land values and making both projects less profitable.²⁵

Land reclamation also poses environmental risks, not least by increasingly the pressure on North Jakarta. While North Jakarta has become a target of both private developers and the state, it is an

ecologically precarious area of the city, highly vulnerable to flooding. The sea wall was overtopped in February 2007, resulting in devastating flooding. Ironically, it was this event that ultimately led to the NCICD master plan and proposed land reclamation, as the Indonesian government requested the assistance of the Dutch to protect Jakarta from tidal flooding. Various actors have therefore used the imaginary of Jakarta as a sinking capital to justify further development. In fact, the project was initially branded as an opportunity to “transform threats into opportunities” (NCICD, 2015). Perversely, then, Jakarta’s water crisis thus enables further opportunities for capital accumulation via reclamation and real estate projects, which would likely pressure on Jakarta’s socio-ecological systems, illustrating the contradictions at the heart of speculative urbanism.

Given the role of urban development in increasing flood risk, plans to finance coastal protection via more development might strike as counterintuitive. However, these risks do not necessarily concern investors. As one expert explained to me during a field visit to North Jakarta in 2016, investors in the construction of buildings on the coast or islands are not concerned with land subsidence because they can turn a profit typically within five years, a much shorter timeframe than that of the state agencies who are concerned with Jakarta’s long-term future. “The government thinks about 2050, but the investors think ‘let’s make some money’. But somebody finally pays the price somewhere”, he added.²⁶ As Taylor (2020) observes with regards to Miami’s insurance-linked securitization, the temporalities of financial and environmental risk in Jakarta are far from aligned. As a result, financial speculation by Indonesian real estate developers (underwritten by the Indonesian government and funded by actors in and beyond Jakarta) is effectively undermining the city’s financial and environmental future but in ways that do not necessarily concern investors.

The NCICD illustrates how speculative urbanism and the associated socio-ecological changes generated have produced a form of environmental speculation orientated toward survival. Predictions of when Jakarta will be underwater are circulated through not only via news media but also policy documents. Diagrams and models produced by water experts invite city managers, bureaucrats, and residents to envision a world in which Jakarta becomes a modern-day Atlantis. For instance, an image in the NCICD master plan depicts Jakarta submerged by the sea. Monas, the iconic national monument to Indonesian Independence, is shown rising from the flood waters, providing readers with a strategic and “memorable visual reference... for an otherwise wholly unfamiliar apocalyptic narrative” (Dobraszczyk, 2017: 874). The use of Monas is symbolical: it signals that flooding not only threatens Jakarta, but the Indonesian nation and economy. This dystopian image and the threat it represents take on new significance in light of the decision announced in 2020 by President Jokowi to relocate the national capital to East Kalimantan.

Dystopian imaginaries of Jakarta are also significant because they have the potential not only to shape, but to *limit* the kind of futures we can envision and plan for. As Dobraszczyk (2017: 870) argues: “the emphasis on *multiple* imaginaries of climate change... is critical in expanding the narrow range of possibilities that currently characterize the literature on cities and climate change”. Likewise, Groves (2017: 33) observes that “particular anticipatory assemblages” can “help constrain or exclude other anticipations of the future.” We should, therefore, be concerned that the dominant image of Jakarta would appear to be a dystopian one that might not only limit the kinds of futures that can be envisioned and pursued, but which might lend support to less democratic interventions in the name of crisis.

Conclusion

Using an urban political ecology (UPE) approach, this paper analyzed two case studies in Jakarta—mainland and offshore development—in order to interrogate the socio-ecological dimensions of speculative urbanism in this site. From my findings, I have made two main arguments. First, in

order to capture the full costs of speculative urbanism, it is imperative that urban scholars attend to its ecological dimensions. I have shown how *financial* speculation, supported by state policies and the city's planning regime, has shaped water resources in Jakarta and contributed to an emergent water crisis characterized by increased flood risk. I have also shown that *environmental* speculation oriented toward survival can generate new opportunities for capital accumulation. Jakarta's water crisis has threatened mainland developments, thereby pushing speculative urban development offshore. Speculation is therefore not only driven by predictions of future prosperity, but also by forecasts of environmental disaster. In examining this form of environmental speculation, this paper demonstrates the deep entanglements of water (and other material and nonhuman agents, such as sand) with speculative urbanism and the extension of speculation beyond the financial world. My findings therefore suggest that urban scholars might usefully engage a broadened definition of speculation.

Second, I have argued that an UPE approach advances our understandings and theorizations of speculative urbanism by illuminating its contradictions and limits. This research broadens our understandings of speculative urbanism by illustrating how water has the agency to disrupt and shape processes of speculative urban development. A UPE approach also helps to ensure that we as researchers do not overstate the hegemony of speculative urbanism, which is an especially important task in light of the potential impacts of dystopian urban imaginaries on urban planning and governance. More broadly, these findings have important implications for city managers, spatial planners, and others tasked with water governance and environmental planning, whose work is undermined by current development practices. Jakarta's experience resonates with cities around the world as urban water crises look set to intensify into the future. By documenting the relationship between speculative urbanism and water crises, researchers can force decision makers to reckon with the existential crises this mode of urban development generates. Doing so would contribute to preparing our cities for the environmental futures we are on track to face.

These findings have immediate relevance to ongoing developments in and beyond Jakarta. In August 2019, facing mounting pressure to address Jakarta's subsidence issue and following months of speculation, President of Indonesia Joko Widodo announced the administrative capital city would be relocated to a new "smart city" in East Kalimantan. Almost immediately, developers and investors quickly moved to buy up tracts of land surrounding the approximately 180,000 hectares owned by the Indonesian government and allocated for new city (Sipahutar and Dahrul, 2019). As environmental activists and Indigenous communities have voiced concerns about the impacts of the new capital city on the environment and residents of East Kalimantan Jokowi's announcement has also generated environmental speculation on Jakarta's future. Commentators have raised the question of what this means for Jakarta: Will constructing a new capital mean less public funding for Jakarta? Will the Indonesian government still prioritize protecting the city from flooding? Will investors see this move as a sign that Jakarta is no longer a safe investment? These questions reflect a concern that the new capital will jeopardize Jakarta's image as a capital sink and cement its reputation as a sinking capital.

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Notes

1. In 2007, Jakarta had 24 public housing apartment buildings. Compare this to the 334 private apartment developments (plus 116 under construction) (Savirani, 2017).
2. Land subsidence, flood risk, and water shortages in Jakarta arguably each constitute a water crisis in their own right. However, I refer to Jakarta's water crisis in the singular to capture how these crises are interconnected. Additionally, this 'crisis' impacts people and places differently. I thank Alex Loftus for this observation.
3. See Vincent (2014), Kimmelman and Haner (2017), and Mei Lin and Hidayat (2018), and Simon (2019).
4. At the time of writing, developers had not responded to requests for interviews. I therefore cannot draw conclusions about how developers understand or respond to the water crisis, or how the water crisis affects their operations.
5. *Kampungs* range widely in terms of tenure arrangements and housing quality but are generally low-level, high density neighborhoods of auto-constructed housing, often with their own governance structures.
6. For a detailed discussion see Herlambang et al. (2019).
7. Foreign buyers have typically circumvented this restriction by purchasing property through a company registered in Indonesia or an Indonesian spouse. Online articles and guides aimed at foreigners interested in purchasing property in Indonesia are abundant.
8. The emergence of a "new middle class" in Indonesia has been well documented. It is a cultural identity as much as an economic one: Indonesia's new middle class are educated, travel abroad, and enjoy lifestyles orientated around consumption (often of Western goods). They demonstrate a preference for individualism, atomized living, and private property ownership over collective *kampung* life.
9. In February 2020, the Indonesian government introduced the Omnibus Law on Job Creation that would recentralize power with the central government while also weakening environmental laws and protections for workers, and streamlining building permitting and land acquisition. Initially met by public protests, the law passed by the House of Representatives in October 2020.
10. Personal communication. December 14, 2015, Hague, Netherlands.
11. *Badan Perencana Pembangunan Daerah*.
12. Personal communication. November 17, 2015. Jakarta.
13. Personal communication. 14 December 2015, Hague, Netherlands.
14. Personal communication. November 20, 2015. Jakarta.

15. Though to a lesser extent, construction loads also contribute to land subsidence by compacting soils (Abidin et al., 2011).
16. This has become more complex in recent years as civil society groups successfully campaigned against privatization, citing Article 33 of the Indonesian constitution that stipulates that “The land, the waters and the natural riches contained therein shall be controlled by the State and exploited to the greatest benefit of the people.”
17. Though owned by different developers, they are commonly referred to as the “17 islands”.
18. Personal communication. November 20, 2015. Jakarta.
19. Approximately US\$670.
20. Personal communication. October 7, 2015. Jakarta.
21. Personal communication. November 5, 2015. Jakarta.
22. Personal communication. November 5, 2015. Jakarta.
23. Personal communication. September 29, 2015. Jakarta.
24. Personal communication. December 22, 2015. Rotterdam, Netherlands.
25. Proponents of the NCICD sought to integrate the projects, though this integration was rejected by DKI Jakarta and developers.
26. Personal communication. August 18, 2016. Jakarta.

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