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# Uneven Urbanisation: Connecting Flows of Water to Flows of Labour and Capital Through Jakarta's Flood Infrastructure

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**Abstract:** This article analyses processes of uneven urbanisation by looking at flood infrastructure. Combining the conceptual frameworks of uneven development with the political ecology of urbanisation, we use flood infrastructure as a methodological device to trace the processes through which unevenness occurs within, but also far beyond, the city of Jakarta, Indonesia. We do this to show how the development of flood infrastructure in Jakarta is shaped by the logic of capitalism through mutually implicated tendencies of socio-natural differentiation and equalisation. These processes render waters, resources and labour as similar across places and times to produce different spaces for different populations, within and beyond city boundaries. This theorisation reveals how the urban inequalities (re)produced by flood infrastructure are intimately linked to inequalities (re)produced through the urbanisation of the non-city.

**Sari:** Artikel ini menganalisis proses-proses urbanisasi yang timpang dengan menelaah infrastruktur banjir. Menggabungkan kerangka konseptual pembangunan yang timpang dengan Ekologi Politik Urbanisasi, kami menggunakan infrastruktur banjir sebagai alat untuk melacak proses-proses yang menghasilkan ketimpangan baik di dalam maupun di luar kota Jakarta, Indonesia. Kami melakukan ini untuk memperlihatkan bagaimana pembangunan infrastruktur banjir di Jakarta dibentuk oleh logika kapitalisme melalui tendensi-tendensi yang saling melengkapi berupa perbedaan dan penyamaan sosio-alamiah. Proses-proses ini menempatkan air, sumberdaya, dan buruh menjadi mirip melintasi tempat dan waktu untuk memproduksi ruang-ruang yang berbeda untuk penduduk yang berbeda, di dalam dan di luar batas-batas kota. Teorisasi ini menyingkap bahwa ketaksetaraan-ketaksetaraan di dalam kota yang di(re)produksi oleh infrastruktur

banjir terkait erat dengan ketaksetaraan yang di(re)produksi melalui proses urbanisasi di luar kota.

**Keywords:** uneven development, political ecology of urbanisation, flood infrastructure, Jakarta, Indonesia

## Preventing Whose City from Flooding?

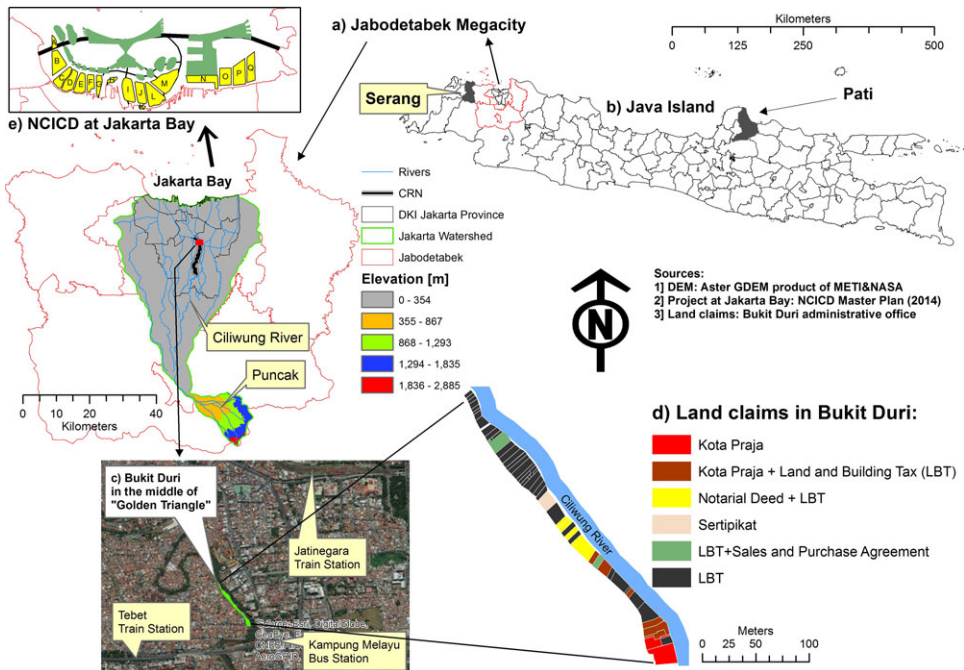
On 20 August 2015, over 1000 police personnel were mobilised by the Special Capital of Jakarta's (DKI Jakarta) Provincial Government to remove the riverside settlement of Kampung Pulo in eastern Jakarta. The government justified this forceful eviction of 920 households on the basis of future safety for all through improved flood management. This was the same rationale that was used throughout 2015 for the eviction of other urban poor settlements. According to the Jakarta Legal Aid Institute (LBHJ 2016a) there were 113 evictions in Jakarta in 2015, with 40% of these being related to the city's flood management: 10 settlements were evicted to enhance water retention following rainfall, 38 settlements were evicted to widen 13 surface water channels flowing through the city and discharging into the Jakarta Bay, and four settlements were evicted to develop urban green space. In total, 8145 households were removed from their homes in Jakarta, with the majority of the residents belonging to the city's underclass, with incomes lower than minimum wage (LBHJ 2016b). 2015 was not an exceptional year: the eviction of hundreds of thousands of low-income urban residents for flood control is a familiar feature of Jakarta's history (Gunawan 2010:305–361; Kusno 2011; Sheppard 2006).

That low-income urban residents have to make space for flood management is of course not specific to Jakarta. Also elsewhere, it is the poorest residents who live on the most precarious urban land, along rivers or in floodplains (Douglas et al. 2008; Satterthwaite 2003). Very similar evictions of the poor for the sake of protecting the city from floods are documented for Tijuana (Meehan 2014), Bangalore (Ranganathan 2015), Kampala, Accra, and Nairobi (Douglas 2016), and Manila (Ortega 2016). Like what happens in Jakarta, a review of these analyses shows how urban flood management plans tend to use technical arguments to justify the deeply political selection of particular urban spaces as critical to new flood protection. The Jakarta government thus rationalises the clearing of urban poor settlements by referring to the technical exigencies of flood management: increasing flow capacities of rivers; the operation of pumping stations; or the creation of green and blue areas for increasing water retention capacity. The irony is that while some spaces are earmarked for clearing, development is allowed or even promoted in others, even when these are hydrologically sensitive areas (Rukmana 2015; Texier 2008).

We interpret this selective categorisation and production of urban spaces in relation to floods as a clear symptom of what Smith (2008:4) has called a "hallmark of the geography of capitalism", the uneven development of space. According to Smith (2008:132–174), the uneven selection of spaces happens through

parallel and intertwined tendencies of differentiation and equalisation. We mobilise Smith’s theorisation for understanding the history of flood protection interventions (and the spatial transformations these produce) in Jakarta because it allows inserting the understanding of flood management in a broader analysis of uneven development. In the name of improving flood protection, low-income housing areas and green spaces are converted into commercial super blocks in the middle of the city (Rukmana 2015); high end gated communities in the urban agglomeration, or in the mega-city of Jakarta-Bogor-Depok-Tangerang-Bekasi/Jabodetabek (Figure 1a) (Firman 2000, 2004), and into other private- or industrial-led developments (Leaf 1994; Winarso and Firman 2002). Smith’s theoretical proposal allows grasping how these urbanisation processes extend beyond city borders, by making visible how they are part of wider spatial transformations that facilitate, or respond to, flows of capital and labour. For Java especially, the forms of industrialisation that happened after the fall of Suharto’s New Order dictatorial regime (1967–1998) (Kusno 2013) were premised on forms of resource grabbing and extraction in the countryside that prompted the migration of millions to Jakarta. By empirically tracing such linkages, we show there is merit in understanding flood infrastructure as a specific manifestation of “capitalism at work”.

In this paper we propose an understanding of flood management infrastructure as part of and importantly co-shaping the socio-natural transformations that produce urbanisation. To do this, we bring Smith’s theory of uneven development into conversation with the political ecology of urbanisation (PEU) (Angelo and Wachsmuth 2015). We show that the city’s increased vulnerability to flooding is a



**Figure 1:** Maps and locations of many areas [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

result of urbanisation processes that reconfigure both rural and urban environments, while flood infrastructural responses are also themselves a specific form of urbanisation, connecting spaces of agglomeration in the city with spaces of extraction in the non-city.

## Methodology

In our analysis of uneven urbanisation we use flood infrastructure as a methodological device to identify and tease out the broader socionatural transformations characterising processes of urbanisation in Indonesia. Our choice of flood infrastructure is informed by its historical and current importance in the politics of the city. It is through particular flood protection plans and projects that decisions about who is flooded, evicted, or instead protected are made. It is telling in this regard that urban grassroots campaigns against eviction often use flood infrastructures as the rallying point of their protests. This illustrates how the tangibility and visibility of the transformations they produce—constructions, evictions, inundations—are not only a useful entry point for tracing processes of uneven urbanisation, but also for politically questioning and contesting these processes.

In our analysis we first use historical data to show how flood management plans are intrinsically connected to and sometimes originate in the economic and political relations characterising the New Order Regime of Indonesia (1967–1998). We show how these relations have transformed, and to a certain extent been transformed by, the flood catchment in which Jakarta sits. Using two specific flood infrastructure projects in Jakarta—the Ciliwung River Normalization (CRN) project and the National Capital Integrated Coastal Development (NCICD) project—we then trace how these projects further consolidate urbanisation processes that support these economic and political relations. We show how contested transformations within the city are connected to the equally contested transformation of environments outside of Jakarta: the extraction of raw materials (sand and cement) required for new flood infrastructure projects (embankments and flood protection islands). Showing these connections not only provides support for our thesis that flood protection should be understood as part of wider and distinctly capitalist processes of socionatural transformation, but also allows arguing for the need to politically connect the evictions of urban riverside communities with what happens in villages in the District of Serang in the adjacent Province of Banten, or villages in the District of Pati, Central Java Province (Figure 1b).

Our analysis of processes of uneven urbanisation through flood infrastructures is anchored in and done from the perspective of five months of fieldwork in Bukit Duri, the informal urban poor settlement earmarked for eviction by the CRN project. The settlement is located on the riverbank of the Ciliwung River, on the opposite side of Kampung Pulo, the evicted settlement we referred to in the introduction. Both these settlements, according to our interlocutor in Bukit Duri, are located within the city's "golden triangle" of commercial development (Figure 1c). We selected this location as the start of our investigation because the urban-based activist movement (the Urban Poor Consortium, or UPC) is present here. UPC has been advocating for the rights of the urban poor for many

decades. BB lived in Bukit Duri between February–April and July–September 2016, a time period when civil society resistance to flood infrastructure plans peaked, with evicted communities pursuing legal redress against government actions.<sup>1</sup> During his stay he engaged in extensive discussions with people living on the riverbank. He also visited other flood-prone neighbourhoods in Jakarta, and attended NGO and community meetings, protests, and court hearings about the evictions and infrastructure development plans, both at CRN and NCICD. Through his intimate connections with the network of activists the first author could also participate in civil society meetings protesting sand mining in the adjacent district of Serang (28 April 2016). Our documentation of civil society resistance to cement mining in Pati relies primarily on news, legal documents, and discussions with activists.

## **Dialogue between Uneven Development and the Political Ecology of Urbanisation**

In 2015, Angelo and Wachsmuth (2015:21) criticised Urban Political Ecology (UPE) scholars' tendency to reduce the examination of injustice to a question of differences in "access to", to the neglect of an inquiry into "the production of" unevenness. This was also Harvey's (2012:xv) point when he analysed the movement of Lefebvre from the right to "the city" to the right to "the production of space". We propose a dialogue between Smith's (2008) theory of uneven development and PEU as a way to produce a much-needed cross-fertilisation of ideas on spatial inequalities. On the one hand, PEU usefully enriches Smith's analysis of urbanisation. On the other hand, Smith's identification of unevenness as happening through mutually implicated tendencies of differentiation and equalisation draws attention to the larger political-economic processes that produce geographical space.

According to Smith, differentiation happens through the differential categorisation of spaces in terms of their functionality to capitalist production. An extreme case of differentiation is that between town and countryside. Equalisation happens through the expression of spaces and people—natures, bodies—in comparable exchange-values, making them amenable for valuation and commodification (Smith 2008). We use Smith's theoretical insights not to precisely tease out how capital and labour divisions are rooted in natural(ised) or technified similarities or differences, but as a strong reminder that the production of spaces through flood infrastructure happens within and as part of larger processes of capitalist development. It also helps understanding how urbanisation processes carry ramifications beyond the city, and in this way responds to contemporary critiques to "urban age theory", which identify the limits to understandings of the city as a bounded, fixed, and universally replicable type, and of urbanisation as a concentration of population within a certain spatial area (Brenner 2014; Brenner and Schmidt 2013, 2015).

The recent call for a PEU took these critiques of UPE as a starting point. Angelo and Wachsmuth (2015) went back to the early agenda of UPE to show that it originally aspired to *both* theorise the "socio-natural moment" and the



“Lefebvrian moment”. In their opinion, UPE succeeded in the former, by adopting the “socionatural moment” as a useful way to rethink urbanisation as consisting of mutually constituted social and natural processes (Angelo and Wachsmuth 2015). Swyngedouw (1996) famously used the concept of “socionature” to understand the city as a socionatural hybrid. He argued that a city is a “socionature” in which the social and the natural are “inseparable, integral to each other” (Swyngedouw 1996:66). The “Lefebvrian moment”, or attempts to understand the urban as a “complex, multiscale and multidimensional process” (Keil 2013: 725, quoted in Angelo and Wachsmuth 2015:20) has been much less well theorised, according to Angelo and Wachsmuth. This, they claim, has resulted in a “methodological cityism”, with too much empirical and analytical attention being paid to what is supposedly contained within the city boundaries, to the neglect of the *process* of urbanisation. We sum up this theoretical rapprochement between UPE and uneven development as “uneven urbanisation”,<sup>2</sup> using the term to analyse how the uneven socionatural transformations of urban and agrarian environments unfold through dialectical processes of differentiation and equalisation.

This theorisation, we maintain, usefully complements an emerging scholarly interest to understand flood prevention infrastructure as intrinsic to and productive of urban unevenness (Cousins 2017; Meehan 2014; Ranganathan 2015; Saguin 2017; Schramm 2016). Geographers of urban floods and flood risks conceive of infrastructure both as the materialisation of unequal relations between elite and marginalised populations and as one of the mechanisms through which inequalities are reproduced. This builds on critical geographical scholarship of other types of city infrastructure (Graham and Marvin 2001; Heynen et al. 2006; Kooy and Bakker 2008; Swyngedouw 2004) which has helped foreground technological objects and networks as pivots of political inquiry (cf. Meehan 2014). Partly on the waves of a heightened interest in risk and vulnerability in the context of global environmental change (Douglas 2016; Schramm 2016), urban geographers are also developing an interest in flood infrastructure, trying to explain how it produces “unequal risk” (Collins 2010), “risky urban socionatures” (Ranganathan 2015) or “hazardscapes” (Saguin 2017) by socially and spatially reconfiguring flood risks and vulnerabilities, creating spaces of protection for specific people and purposes and simultaneously sacrificing or “destroying” other spaces and people.

In line with the observation of Angelo and Wachsmuth, the critical geographers’ analyses of floods and flood infrastructure also seem to invest more effort in theorising and empirically teasing out the “socionatural moment”, than in thinking through the “Lefebvrian moment”. Mobilising different conceptual vocabularies, the stories about flood management in Tijuana, Bangalore and Metro Manila (see, respectively, Meehan 2014; Ranganathan 2015; Sanguin 2017) all convincingly demonstrate how the social and the natural are ontologically inseparable, and use this to re-politicise urban flood management plans and infrastructures. The question of how to best theorise the power (Meehan 2014) or agency (Ranganathan 2015) of technologies (or “tools” as Meehan calls them) is a recurrent theme of this conversation, one that is energised by a desire to

explore possibilities to *do political work* through more serious critical engagements with engineers and engineering.

We share and emphatically subscribe to this desire. Yet, our main aim in this article is not to provide further evidence of, or ways of unravelling, the politics of infrastructure. Rather, what we aim to do is to contribute to ways of thinking through the “Lefebvrian moment”, in two ways. First, we want to show how tracing flood infrastructural projects beyond their manifestation and effects within city boundaries is a useful way to respond to critiques of “methodological cityism”. Here, we are inspired by Saguin’s analysis of how safety in the city of Manila is produced through the creation of risk in the city’s hinterlands, most notably Laguna Lake. By following the water beyond the city, Saguin proposes a useful reading of the metabolic process of flood control as an exponent of the process of urbanisation (Saguin 2017). We take Saguin’s proposal one step further, and argue that the relations between urban flood protection and uneven urbanisation do not just happen through flows of water, but are also produced by and productive of flows of capital, resources and labour. We also identify how the relations between flood protection and uneven urbanisation require differentiation within the city, as well as between the city and the hinterland.

Our second contribution to a theorisation of flood infrastructures as constitutive of uneven urbanisation stems from our desire to flesh out, rather than assume, the relationship between capitalism and flood management. In her analysis of flood drains in Bangalore, Ranganathan likewise attempts to understand flood- or flood-protection-induced productions of risk and vulnerability are related to and shaped by capitalism. She aptly uses the tensions between *flow* (irrigation water, stormwater, sewage, capital) and *fixity* (social orders, state forms, intransigent discourses, settlements, solid waste) as the analytics through which to narrate the political ecology of flood risk. She argues that in the new millennium, flood risk is produced through an intensifying alignment between storm drains and the flow/fixity of real estate capital: “the dizzying flow of speculative and global real estate capital through Bangalore’s storm drains and the fixity of resulting informal developments in wetlands have rendered the flow of stormwater especially unpredictable and risky” (Ranganathan 2015:2). As we show, a very similar story can be told for Jakarta. The dialectics of *flow* and *fixity* bring to mind and resonate with Smith’s tendencies of differentiation and equalisation that we use to narrate our story.

Our purpose, however, is slightly different from that of Ranganathan. We want to draw attention to how current projects to protect Jakarta from floods originate in as well as perpetuate New Order crony-capitalism: they are a vehicle for further cementing political and economic power by spurring processes of socrionatural transformation that are founded on the contradiction between capital and labour.

## **Uneven Urbanisation: The Production of Flood Events and the Development of Flood Infrastructures**

We use the next three sub-sections of the paper to flesh out “the transformation of nature and the social relations inscribed therein” (Heynen et al. 2006:4). We



do so by documenting the workings of specific economic and political networks of the New Order Regime that continue to co-constitute Indonesia's contemporary processes of socionatural transformation. In particular, we use specific connections between land conversion and the economic and political networks of New Order Regime to illustrate how historical processes of urbanisation have evolved in Jakarta's floodplain. Using this to establish flood protection as an intrinsic part of Indonesia's capitalism, we then focus on two contemporary examples of flood infrastructure development to empirically illustrate how flood protection and management co-produces uneven urbanisation.

### ***The Production of Flood Events: New Order Urbanisation and Flooding***

From a hydrological perspective, there are three types of floods in Jakarta (NCICD Master Plan 2014:23). The first is river-flooding, which is caused by a high discharge of water from upstream catchment areas. River flooding was responsible for the city's catastrophic flood event in February 2007. The second is coastal-flooding, resulting from the entrance of seawater from the Jakarta Bay into the city. This happens when sea-dikes are not strong or high enough, as was the case in the November 2007 flood event (NCICD Master Plan 2014). The third type of flood is the result of insufficient storage to capture, store, or drain rainwater. These floods occur when water from heavy rains—referred to as *hujan lokal* (local rain)—surpasses the capacity of the drains, as was the case in the flood event of January 2013 (Deltares 2013).

Although green areas are crucial to flood management in Jakarta the period of the New Order Regime witnessed a substantial reduction of green areas in the city. Decreasing the absorption of river and rain water through reduction of green areas increased the vulnerability of the city to flooding. From 1985 to 1998, the green area in the city declined from 37.2% (24,140 ha) to 9.6%, and reduced further from 9.1% to 6.2% in 2003–2007 (Majalah Tempo 2007b:106). This happened against explicit spatial planning regulations, with the protected forest area in the city gradually being replaced with commercial development: malls, luxurious settlements, apartments, hospitals, international schools and factories (Majalah Tempo 2007a:110; Rukmana 2015). The loss of green space also increases rainfall run-off into the river, so that in 2007, 90% of the rain water within the city flowed directly into the river (Majalah Tempo 2007a:110). Our interlocutor in Bukit Duri explained this to us by using the metaphor of a glass of water. In the 1970s, according to him, when a glass of water came from the sky, half of it would flow into the river and half of it would percolate into the ground. Nowadays, the whole glass of water flows into the river.

The economic and political relations shaping the production of Jakarta's contemporary landscape are linked to Indonesia's New Order political regime. Under the promise of securing the economic and political stability required for national development, the New Order Regime, led by General Suharto, repressively controlled social, economic, and political life in Indonesia through military and police force (Robinson 2009; Robinson and Hadiz 2004) and built alliances both with

foreign and local capitalists (Vu 2010:66). Many of its policy decisions directly benefited those connected to Suharto and his ever expanding circle of business associates, drawn from the country's ethnic elite and Chinese-Indonesian allies. The many intimate linkages between cultural, political and economic powers cemented into a system of "crony capitalism" (Kunio 1990).

An iconic incidence of urban development by the notorious protagonist of the New Order regime, Ciputra, illustrates how the transformations of Jakarta's floodplain that co-constitute urbanisation can be characterised as crony-capitalism at work. Ciputra is the 22<sup>nd</sup> richest man in Indonesia today,<sup>3</sup> closely linked to political elites through his relationship with Liem Sioe Liong (i.e. Sudono Salim), one of the Chinese-Indonesian conglomerates supported by and for Suharto.<sup>4</sup> Ciputra is behind the conversion of 831 hectares of forest area in northern Jakarta into the luxurious real estate and industrial estates of Pantai Indah Kapuk (PIK). The 1985–2005 Jakarta Spatial Plan designated this area as "protected forest area", earmarked as green city space, important for rainwater retention (Leaf 2015; *Majalah Tempo* 2007c:108–109; Rukmana 2015).

In 2008 the DKI Jakarta Province Governor (Fauzi Bowo), stated that removing buildings built within the city's protected green space was "impractical" (quoted in Rukmana 2015). In a similar spirit, in 2016, the then DKI Jakarta Province Governor (Basuki Tjahaja Purnama) stated that all commercial buildings occupying areas that the Spatial Plan identifies as "green area" are considered legal (*Kompas.com* 2016a). The statements of these two Governors can be traced back to 1999, when Sutiyoso, the Governor of that era, used the Jakarta Spatial Plan 2000–2010 as a formal mechanism to legalise Ciputra's conversion and development on protected green space (*Majalah Tempo* 2007b:106).

This example illustrates the inseparability of the transformation of Jakarta's landscape and the New Order elite. In the next section, we trace how this relationship obtains continuity and durability in contemporary processes of urbanisation through flood infrastructure. We use two prominent flood infrastructure projects, CRN and NCICD, to make this argument.

### ***The Development of Flood Infrastructure: CRN to Reduce River Flooding***

The selection of riverside settlements as crucial to prevent river flooding is explained by the Indonesian government as related to the gradual narrowing of the Ciliwung River, which flows along 117 km from a catchment area in the south of Jakarta called "*Puncak*" (*puncak* means "peak" or "top") and ends in Jakarta Bay (Figure 1a). In 2013, only 200 m<sup>3</sup>/s of water could safely flow through the Ciliwung River, even though it is supposed to allow for a flow of 570 m<sup>3</sup>/s (Kementerian Pekerjaan Umum [Ministry of Public Work] 2015). High sediment and waste load, together with building on the riverbank, explain the reduced flow rate of the river. The response of the CRN is to increase the flow capacity of the Ciliwung River (Kementerian Pekerjaan Umum 2015:l-2, l-10) through a so-called "river normalisation" project. This project sets out to increase the width and depth of the river along a length of 22.1 km through dredging, installing sheet

piles on the edges of the river body, constructing dikes, and the laying of concrete tracks between the river and settlements.

The narrowing of the Ciliwung River is interwoven with the socionatural transformations that happen through land conversion in *Puncak*. Forest Watch Indonesia (2012) documented the pace and scale of these conversions: from 2000 to 2009 the middle and upper sub-catchment of the Ciliwung River Basin lost approximately 5000 hectares of its forest cover, mostly to the construction of settlements and villas. In terms of basin hydrology, this significantly reduced the interception capacity of the forest canopy and floor, while also reducing the infiltration rate of water into the aquifer (Pawitan and Sunarti 2013). The *Puncak* conversions also accelerated run-off. This was documented as early as in 1991 (Harto and Kondoh 1998). They, finally, have intensified rock weathering, increasing the sediment load of the river. Models of the sediment flows by Perbandono et al. (2014) show that the mean annual sediment load of Ciliwung River increased from 179 to 186 to 351 tons in 1901, 1995 and 2005 respectively.

The political and economic relations of this transformation are not difficult to disentangle. Owners of the villas and country estates found throughout *Puncak* are members of the New Order elite. Indeed, to these wealthy urbanites, *Puncak* has become a highly desirable “escape” from Jakarta. Those who own property here include, amongst others, Wiranto (who was from 1998 to 1999 the Indonesian armed forces commander-in-chief and from 2016 onwards the Coordinating Minister of Political, Legal and Security Affairs), Sutiyoso (1997–2007 Governor of DKI Jakarta), Oetoyo Oesman (1993–1998 Indonesian Minister of Justice), H.B.L. Mantiri (1992 Ninth regional military command [Kodam IX] Udayana commander) (Majalah Tempo 2007d); Basofi Sudirman (1993–1998 East Java Province Governor), Radinal Mochtar (1998 Minister of Public Works), Ginandjar Kartasasmita (1993–1998 Minister of Mines and Energy), Djadja Suparman (1999–2000 Army Strategic Reserves Command) (Majalah Tempo 2002); and Probosutedjo (Suharto’s step-brother) (Majalah Detik 2013).

The inception of the CRN in 2015 was based on a differentiation of spaces through a very selective categorisation of their function for Jakarta’s flood management. Hence, the CRN solution marks eight low-income settlements for eviction (Kementerian Pekerjaan Umum 2015), but does not question or touch the urbanisation process of *Puncak*, nor does it problematise the conversion of protected forest land in the city for commercial development. The processes of development seen here seem to reverse the order of differentiation identified by Smith. Where Smith (2008:141) suggests that the “natural differentiation of the earth” will influence the “division of labour”; in the CRN it is the division of labour—or the social differentiation of the land owners—that lays at the basis of the differentiation of spaces, spaces that are simultaneously social and natural. The CRN project identified low-income riverbank settlements as a major cause of the river narrowing, targeting these for eviction while ignoring other contributing causes of the floods. The increased sediment loads, rainfall runoff, and the land use conversions responsible for decreasing the flow rate of the Ciliwung River were left unaddressed, protecting the weekend villas in *Puncak* owned by the political and economic elite.<sup>5</sup>

The absence of any serious attempt to address upstream catchment issues contrasts with, and can only happen because of, the simultaneous sacrificing of other spaces in Jakarta, inhabited by those who do not belong to the elite. The 526 families (LBHJ 2017) evicted from one neighbourhood of Bukit Duri on 27–28 September and 1 December 2016, representing only one of eight settlements targeted for eviction by the CRN project, provide a dramatic testimony of the effects of this. The eviction was made legally possible by nullifying the validity of existing land claims. Of the total 400 parcels of land, only 3.25% of the evicted residents in Bukit Duri held what are considered valid land certificates (MetroTVNews.com 2016). Residents do hold a variety of claims and land rights,<sup>6</sup> but the vast majority of these were rendered invalid through the uniformisation of land rights and ownership which re-categorised land rights into either formal rights, or “state land”.

### ***The Development of Flood Infrastructure: NCICD to Reduce Coastal Flooding***

The coastal flood infrastructure for Jakarta is physically very different from the CRN: the NCICD addresses the problem of coastal flooding caused by land subsidence, rather than river flooding caused by channel narrowing. NCICD infrastructure consists of polders, pumps, and dikes, while the CRN consists of “natural” surface water channels. Where the CRN transformation involves making space for water, the NCICD makes space out of water, by creating new land in front of the coast of Jakarta to “offer Jakarta long-term protection against flooding from the sea and rivers in the coastal area, and at the same time facilitate socio-economic development” (NCICD Master Plan 2014:15). And yet, and as we show, the NCICD is produced by, and productive of, the same process of uneven urbanisation as the CRN.

The NCICD mega-project combines the construction of a giant sea wall with land reclamation for the creation of new islands in the Bay area protected by the sea wall. The creation of these islands (17 in total, namely A, B, C, ... Q; Figure 1e) was originally a separate development from the NCICD. The islands plan has its origins in the New Order Regime, going back to 1995 when Suharto issued a Presidential Decree Number 52 on Reclamation in Jakarta Bay. In 1997–1998, the Asian financial crisis put a halt to the project.

After coastal flooding hit the northern part of Jakarta in 2007, the Indonesian Government—with the help of the Netherlands—launched the Jakarta Coastal Defense Strategy (Deltares et al. 2011). In 2013 this became the NCICD. In April 2016, Indonesia’s President Joko Widodo announced the 17 islands reclamation project and NCICD would be merged (Kompas.com 2016b). Following this announcement, a meeting was organised on 23 May 2017 by the Ministry of Coordinating Maritime Affairs at the Ministry’s office to explore the possibility of cross-subsidising the development of NCICD from the revenues of the 17 islands.<sup>7</sup>

In what follows, we zoom in on one specific case—that of PT Taman Harapan Indah (THI)—to illustrate how the specific features and direction of the

socionatural transformations envisaged by NCICD were shaped by the New Order networks of crony capitalism. Like with CRN, this story starts by tracing the origins of the problem of land subsidence causing flooding in the first place. In the 1990s, PT THI developed Pantai Mutiara, a luxurious housing complex in North Jakarta built on reclaimed land and drawing groundwater from the contained aquifer (Rusdiyanto and Pratomo 2007) to provide its residents through a private piped network. This location is the very site where land is subsiding at the highest rate, sinking almost a metre in depth over a 10-year period (December 1997–September 2007). Geoscientists consider excessive extraction of groundwater as a dominant cause of this land subsidence (Abidin et al. 2011:1759), alongside increased building weight and soil compaction, but the relative contributions are contested amongst both scientists and decision makers, groups who are not unrelated. Tracing the social relations constitutive of this transformation, it may be no surprise to find a connection with the New Order. PT THI is a subsidiary of PT Dharmala Intiland (Kompas 1995a, 1995b), owned by Suhargo Gondokusumo. Suhargo is a member of the Yayasan Prasetya Mulya (YPM) (Kompas 1993), a foundation previously led by Sudono Salim, a top New Order crony (Aditjondro 2006:201–202; Borsuk and Chng 2014:240–247).

PT THI is also, not coincidentally, one of the companies vying for commercial land development opportunities through the NCICD's island reclamation plans—Island H, with the total area of 63 hectares (PT THI 2015). In 2017, Tax Object Sales Value of land at Island H was IDR 25 million per square metre (News.detik.com 2017). Against the investment costs of IDR 4–6 million per square metre (Finance.detik.com 2014), this would mean a profit of around 20 million IDR (equals US\$1504 based on January 2018 currency) per square metre for the developer like PT THI.

Like with CRN, the sad irony is that the same people who caused the floods through the transformation of water–land dynamics are now the ones who will benefit most from new flood infrastructure projects. This group benefits from flood protection of their prior properties and investments while also reaping the profits from new investments in flood infrastructure.

Meanwhile, and just as with CRN, the newly proposed plans for Jakarta Bay to develop both flood protection areas and spaces for real estate development for 1.5 million new residents are only possible through the clearing of existing uses and users. According to the *People's Coalition for Fisheries Justice* (KIARA),<sup>8</sup> the NCICD, the transformation of the existing fishing grounds into commercial real estate will negatively affect more than 50,000 fisherfolk. Floating fishing communities express concern that new fishing zones identified in the NCICD design, located at the far ends and outer areas of the sea wall, will expose small fishing crafts to much stronger currents and larger waves.<sup>9</sup>

The creation of the islands and the construction of the sea wall also require the transformation of spaces far outside of Jakarta, much farther than the Bay, or the spatially contiguous area of the Puncak. This is because the enormous quantities of sand and cement required for construction have to be brought from afar. KIARA's activists estimate the reclamation of 17 islands requires 330 million m<sup>3</sup> of filling material, whereas engineering documents specify that the giant sea wall

requires up to 935 million m<sup>3</sup> of sand (Valkenburg 2014:5). It here in the NCICD project that the “socio-natural moment” explicitly meets the “Lefebvrian moment”: the creation of new flood protected spaces can only happen because of and through the transformation of other spaces from where the sand and cement are extracted.

As the Environment Impact Assessment of island H (PT THI 2015:1-20) confirms, sand would be mined from the coastal area around Serang (approximately three hours by car from Jakarta), in the nearby Province of Banten, whereas the rapid expansion of cement production in response to demand from NCICD happens largely in the District of Pati in Central Java. Fishermen in Serang are protesting the loss of fishery resources, while the environmental impacts from sand mining are covered widely by Indonesia’s mass media (Kompas.com 2016c; Rappler.com 2016). In one meeting attended in Serang (28 April 2016) residents who fish in the estuarine area reported rapid abrasion of the beach and changes in the sea currents, identifying these changes as the impacts of sand extraction. Residents claimed this had affected 1500 hectares of beach, and 500 hectares of fishpond.

In Pati District (500 km from Jakarta), residents are voicing similar concerns over the uneven impacts of environmental transformation, this time in relation to cement production by PT Indocement Tunggul Prakarsa (PT ITP). In the annual report to its shareholders, this company clearly suggests a direct causal link between its proposed mining activities for cement production in Central Java and the new market for these materials created by the NCICD infrastructure project (Indocement 2014:11). The existence and involvement of PT ITP is yet another illustration of crony capitalism at work. The company was established in 1975 by Sudono Salim and when Suharto was in power he provided financial protection to Salim’s Group, the main holding company of Sudono Salim business. After the end of the oil boom in the 1980s, the Indonesian economy declined, currency was devalued, and many companies suffered a high level of foreign debt during the crisis. PT ITP nevertheless survived: in 1985 it was rescued through an Indonesian government bailout of US\$325 million, with the government buying 35% of the company’s share. In 2001, the Salim Group decided to sell 51% of its share in PT ITP to a German-based cement company, Heidelberg Cement Group (Dieleman 2007:54, 108). However, through its subsidiary of PT Mekar Perkasa (Nasional.kontan.co.id 2016), the Salim Group still holds 13.03% of its share in PT ITP (Indocement 2014). In 2016, Anthoni Salim, Sudono’s son, was the second richest person in Indonesia (GlobeAsia.com 2016).

The resistance to cement mining by Pati farmers is well known within social movement networks in Indonesia. In 2017, one farmer from Pati (Gunarti) was supported by German-based activists to lead a series of rallies throughout Germany to pressure the Heidelberg Cement Group to stop investments in Central Java.<sup>10</sup> Farmers also filed a lawsuit against the company’s Environmental Permit to engage in cement mining. This permit was issued in December 2014 by the Head of Pati District issued to PT Sahabat Mulia Sakti (SMS), a company of which 99.99% of the shares are owned by PT ITP. The permit was issued to develop a cement factory, to mine limestone and clay (as these materials are needed for cement) on a total of 2843 hectares of land. In March 2015 farmers legally



protested against the issuing of this permit in the Semarang State Administrative Court and they won the case. Indeed, the farmers' complaint was based on a convincing identification of the many negative impacts. They predicted that their rice fields would be without water irrigation, as this water comes from karstic area that would be mined. They also predicted that ash from the cement factory would cause air pollution, and that the blasting activities associated with mining would cause damage to their houses. In February 2016, the company filed an appeal to the Semarang State Court decision with the Surabaya State Administrative High Court. It won. In September 2016, the farmers filed a cassation with the Supreme Court, which they lost in March 2017. One of the main reasons was the assessment of the judge that the proposed mining area did not overlap with the karstic area. This is a disputed assessment. In 2005, Indonesia's Ministry of Mining issued a Ministerial Decree that stated that the disputed area is a part of karst conservation zone. In Indonesia, karst areas are classified into three types based on their water storing capability, namely type I, II and III. Mining activities are only forbidden in type I karst systems, the ones that store most water. In 2008, the Governor of Central Java issued a Regulation stating that the disputed area is karst type II, thereby clearing the way for mining activities. The Judge in Supreme Court followed the logic of the Governor's Regulation.<sup>11</sup>

## **Conclusion: Emancipatory Promise of Uneven Urbanisation**

While subscribing to a conceptualisation of Jakarta's flood events, floodplains, and flood infrastructures as socionatural, "embodying and mediating nature and society" (Swyngedouw 1996:66), in this article we have used flood protection in Jakarta not to further theorise the "socionatural moment" of UPE or the politics of infrastructure. Instead, we have used flood infrastructure as a methodological device to think through the "Lefebvrian moment" of UPE, proposing a reading of floods as deeply constitutive of wider processes of uneven urbanisation. Following Smith, we have theorised these processes as shaped by capitalism through mutually implicated tendencies of socionatural differentiation and equalisation premised on the contradiction between labour and capital. Waters, resources and labour are rendered similar across places to produce different spaces and people both within and beyond city boundaries.

We have discussed two specific flood protection projects to narrate our story and substantiate our argument: CRN, a river flood infrastructure project, and NCICD, a coastal flood infrastructure project. In both projects, the causes of the floods against which Jakarta now needs to be protected can be traced to the speculative or recreational buildings of the very investors who will benefit most from the new flood protection infrastructures. Many of them belong or are closely connected to and protected by a circle of economic and political elites that has its origins in Suharto's New Order Regime (Hadiz and Robinson 2013). Those belonging to Chinese-Indonesian conglomerates now even assume a stronger position, as they loosen the ties with their former patrons (politico-bureaucrats led by Suharto) to themselves become patrons of politicians (Chua 2008). As noted

by Warburton (2016), the “New Developmentalism” that is happening in (post-) New Order Indonesia is not very different from the old “Developmentalism” of Suharto’s New Order (Heryanto 1988).

We have shown that floods and flood infrastructure are instrumental in cementing this stabilisation. Positive spirals of capital accumulation that happen through the production of some spaces as safe and protected from floods and that are therefore made attractive to further investment occur alongside and are dialectically connected to negative spirals of impoverishment and vulnerability in those spaces that become earmarked as conduits for water, or from which resources for constructing flood protection projects are extracted. These latter spaces include the settlements of fishermen in the Jakarta Bay that are now transformed into sites of urban agglomeration. They also include the riverside settlements of Kampung Pulo and Bukit Duri, which bring together many people who recently migrated to Jakarta, sometimes because they lost the resources on which they depended for their livelihoods. Ironically, similar infrastructure development projects for which they now have to make space in the city continue to chase their former neighbours in the countryside to Jakarta: the sand and cement needed for NCICD is extracted from such rural places. Tracing such linkages clearly shows how urbanisation is a very uneven process, that it is dictated by capitalism and that extends far beyond the city.

Smith’s (2008) *Uneven Development* did not explicitly seek to identify possibilities of political mobilisation, and neither do Angelo and Wachsmuth (2015). “Smith’s account”, as Ekers and Prudham (2017:3) observed, “downplays the role of political struggle and contestation in actively constituting the specific trajectory of socioenvironmental change”. Our analysis of uneven urbanisation through flood protection has yielded two potential promising entry points for political struggle against processes of capitalist development, however encompassing they may seem. The first lies in meticulously re-politicising natural or technical flood protection plans, by identifying how they use equalisation (of waters, resources, people) to produce very different spaces and people. The second lies in tracing the connections between urban and rural civil society movements agitating against the unevenness of these transformations. For Indonesia, this latter point is particularly important, given how until recently civil society movements are separated quite sharply between urban and rural constituencies: environmental (in)justice issues are seen as different, strategies also differ, resulting in relatively separate practices of resistance. The framework of uneven urbanisation allows showing how they are connected, which holds the “emancipatory promise” (Arboleda 2015:9) of building alliances between grassroots, civil society collectives as dispersed as those in urban poor settlements like Kampung Pulo and Bukit Duri, fisherfolk associations in Banten and Jakarta Bay, and agricultural associations in Pati. Some of these alliances are already in the making, as SJBC for instance included sand mining extraction in Serang into their complaint (Save Jakarta Bay Coalition 2016). The strengthening of movements through alliances is much needed, since what is in demand in Jakarta—and Indonesia more broadly—is not more flood infrastructural management but rather a social movement to confront the uneven urbanisation.

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## Endnotes

<sup>1</sup> In October 2017, after almost a year, Bukit Duri's people won their class action; the court ruled that DKI Jakarta Provincial Government should pay a compensation fee of 18.6 billion Indonesia's Rupiah (IDR), far below the claim of 1.07 trillion IDR. More on legal proceedings since 2016 can be found here: <http://megapolitan.kompas.com/read/2017/10/26/08554891/warga-bukit-duri-menang-anies-tegaskan-pemprov-tidak-banding>

<sup>2</sup> Kipfer (2014:291) uses the term "uneven urbanization" in the context of rural/urban and North/South divide.

<sup>3</sup> See GlobeAsia.com (2016) and Leaf (2015) for more on Ciputra's businesses and political relationships.

<sup>4</sup> When Suharto was the Commander of Army Diponegoro Division in Central Java, Sudono Salim became the main supplier for the Indonesian Army. When Suharto came to power in the 1960s, Sudono expanded his business into other sectors like food, cement, banking, while continuing to support Suharto (Borsuk and Chng 2014; Robinson 2009:271–322).

<sup>5</sup> A mere 200 buildings in the catchment area were removed in 2013 (Majalah Detik 2013); in the year 2000 there was an estimated 30,000 villas (Kompas 2000:20).

<sup>6</sup> The official system of land regulation, the Basic Agrarian Law 5/1960, recognises eight types of land rights, but only the right of ownership certificate (*sertipikat hak milik*) constitutes a formal ownership title. The other types of land rights (listed in Figure 1d) are requirements for the issuance of the right of ownership.

<sup>7</sup> Field observation (23 May 2017).

<sup>8</sup> Presentation by General Secretary of KIARA in public discussion for a documentary screening of *Rayuan Pulau Palsu/The Fake Islands* at the University of Paramadina, Jakarta, 8 June 2016.

<sup>9</sup> Field observation at Save Jakarta Bay Coalition's meeting (28 April 2016). SJBC is a coalition against the NCICD project. Members of the Coalition, in October 2016, are: Indonesian Traditional Fishermen Association (KNTI), Muara Angke Traditional Fishermen Association (KNT Muara Angke), Fish-Processing Fishermen Community (PNPI) of Muara Angke, Jakarta Legal Aid Institute (LBH-J), Women's Solidarity (SP), The Indonesian Centre for Environmental Law (ICEL), The Indonesian Forum for the Environment (WALHI), KIARA, Dompot Dhuafa Legal Aid Centre (PBH DD), Indonesian Legal Aid Foundation (YLBHI), and a students organisation from the University of Indonesia.

<sup>10</sup> Discussions with German-based activists in Berlin and Bremen (21 and 22 March 2017; see also dw.com 2017).

<sup>11</sup> Information is summarised from a Supreme Court decision (Mahkamah Agung 2017), and discussion with Mokh Sobirin (15 January 2018), Director of Desantara Foundation, an NGO working in Pati.

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