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The River Navigating Urbanisation: From Forest Extraction to The New Capital City Development in East Kalimantan

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ABSTRACT: This article analyses the historical trajectory of landscape transformation in Sepaku Subdistrict, East Kalimantan, Indonesia, in order to clarify the extensive impacts of Indonesia's capital relocation project, officially framed as a 'forest city'. To do this, we specifically focus on the relationship between the river and urbanisation. Theoretically, we draw on the political ecology of urbanisation, which generally focuses on uneven spatial development, and we focus empirically on the historical transformation of the river. Based on seven months of fieldwork (2022-2023), including semi-structured interviews, document analyses, and participant observation, we detail how two moments of state intervention have shaped the relationship between the river and urbanisation. The first moment involves the territorialisation of Sepaku as a productive forest area in the 1960s, transforming natural forests into industrial forests and resettlement zones through extensive transmigrant flows. The planned urbanisation marks the second moment, aimed at transforming Sepaku into a new, sustainable, and inclusive 'forest city'. We argue that the current condition of the river and the city has been iteratively shaped by two moments of socio-spatial and socio-natural transformation. In order to move away from these extractive legacies, further planning for the new capital city should consider this relationship and incorporate the river into its vision of sustainable and inclusive urbanisation.

KEYWORDS: Urbanisation, river, forest extraction, forest city, Indonesia's new capital

INTRODUCTION

In August 2022, the first author visited Kampung Sepaku Lama, a community settlement in the Sepaku Subdistrict. Here, 'Sepaku' refers to the administrative subdistrict of the Penajam Paser Utara district, the 'Sepaku River' denotes the river flowing through this area, 'Sepaku Village' refers to the administrative village unit within Sepaku Subdistrict, and 'Kampung Sepaku Lama' denotes an Indigenous settlement within Sepaku Village. During this visit, Indigenous Balik communities expressed concerns about the

urban water project, the Sepaku River Intake, a crucial urban water infrastructure for Indonesia's new capital city, Ibu Kota Negara (IKN) in East Kalimantan. The community members expressed their perplexity: "Why did they choose the location for the river damming project along the entire stretch of the Sepaku River, right behind our homes?" (Interview with Indigenous people, Sepaku, 11 August 2022). This quote encapsulates the unease of Indigenous communities with the ongoing construction of water infrastructure in their territory.

In contrast, a Javanese resident who migrated to Sepaku through Indonesia's Transmigration Programme¹ in 1976 presented a different outlook. Although their oil palm plantation was appropriated for the water project, they perceived this project as a new economic opportunity. Capitalising on the compensation received for the plantation, they invested in a car rental business to benefit from economic prospects arising from the capital city megaproject (Interview with Javanese transmigrant, Sepaku, 20 May 2023). A group of Bugis communities from Sulawesi, who settled along the Sepaku River in the 1990s, provide another perspective. They are advocating for the inclusion of their fish and shrimp pond location in the water infrastructure development and are hoping for compensation. Some farmers are even contemplating returning to their hometowns in Sulawesi to start new lives instead of continuing their business amid the construction of the new city (Informal discussion with fishpond farmer community, Sepaku, 25 May 2023).

These diverse responses to the new city project, expressed along and in relation to the Sepaku River, do not merely reflect the heterogeneous aspirations of different groups living in this area. Rather, as shown in Gellert's (1998) account of Sepaku during the timber extraction era, as well as more recent studies following the capital's relocation there (Kusumawardhani, 2022; Saputra et al., 2022), they mirror historical trajectories that have shaped differentiated capacities to negotiate compensation or adapt to new economic opportunities. For instance, it is increasingly understood that Indigenous communities are in a weaker position when engaging in such negotiations or adaptations, due to historically weakened land tenure and the risk of cultural displacement caused by the damming of the river (Ayunda, 2023a). At the same time, the national government has framed the IKN as a project of "high-quality urbanisation" (Sucipto, 2023), which seeks to build a new "Forest City", which is to become "a World City for All" (Coordinating Ministry for Economic Affairs of the Republic of Indonesia, 2023).

In this context, the Sepaku River has emerged as the central arena where ecological, cultural, and social characteristics of the past landscape have begun to be observed through the capital city project's new infrastructural interventions. For instance, historically in Kalimantan, rivers have been integral to the economy of forest extraction (Gellert, 1998), materially enabling the outward flow of logs from the hinterland (Manning, 1971). With the IKN megaproject, this has been inverted: The river has become a route for the inward movement of the construction materials. Parts of its banks have been transformed into ports. Sections of its natural course have become focal points for new infrastructural interventions. These include intakes and dams for water capture to secure the urban water supply, as well as river normalisation measures to reduce flood risks through channel widening and deepening, as well as embankment reinforcement. Beyond serving the needs of the new city, many of these interventions are justified as attempts to restore the landscape that past forestry interventions have already degraded (Alexander, 2024). These interventions and their justifications have had differentiated impacts on the groups of residents and landscapes in Sepaku introduced above, yet little attention has been paid to the roles of the river in urbanisation, both in studies on IKN and in actual plans for the city's development.

¹ Indonesia's Transmigration Programme is a government-led initiative to transfer the population from densely populated areas in Indonesia, mainly Java, to outer islands such as Kalimantan and Sumatra. This initiative began in 1905 under Dutch colonial rule. Under the Indonesian government, the first National Transmigration Programme was launched in 1950, involving the resettlement and provision of land for relocated families. For research on the early trends of this programme from the colonial era, the Old Order, and the New Order in Indonesia, including population numbers and the distribution of resettlement locations, see Suratman and Guinness (1977) and MacAndrews (1978). The Programme is often associated with state territorialisation of forests, requiring extensive land areas for new settlement zones.

This paper proposes to follow the historical trajectory of the Sepaku River in order to clarify how the river has led to contemporary contestations of and interests in the IKN frontier. If the IKN's official discourse continues to emphasise sustainable and inclusive urbanisation, we need to ask: How has the Sepaku River shaped the urbanisation of Sepaku, linking past forest extraction to the current megaproject of building Indonesia's new capital? And, by the same token, how does urbanisation shape the river? How do different groups of people experience the process of the river and the new city shaping each other?

In order to answer these questions, we draw from the theoretical framework of political ecology of urbanisation and detailed analyses of two historical conjunctures of landscape transformation in Sepaku: the forest extraction phase (1960s-2020)² and the IKN development (2021-present). By examining these moments and their interconnections, we aim to advance the ongoing discussions on the political ecology of urbanisation from their dominant spatial focus on the uneven urbanisation outcomes between the city and its hinterland (e.g. Angelo and Wachsmuth, 2015). Instead, we foreground the historically constituted dynamics of the hinterland enabling contemporary urbanisation. We pay specific attention to the interconnections between the past, extractive regimes and the present urban megaproject interventions by tracing the historical transformation of the river. This results in our specific methodological contribution: We materially follow the river to highlight how inequalities are produced and reproduced, but also to identify possibilities for different groups of people affected by IKN to contest, adapt to, or co-opt the landscape's transformation.

The remainder of this article is structured as follows: Section 2 details the theoretical framework, explaining the political ecology of urbanisation and highlighting the importance of historical analysis. Section 3 introduces our methodology. Section 4 presents the results and analysis, and Section 5 concludes by summarising the case and key findings.

THEORETICAL FRAMEWORK

Political ecology of urbanisation

The theoretical framework for studying the 'political ecology of urbanisation' (PEU) is underpinned by a body of literature that approaches the urbanisation processes as being shaped through both human and non-human dynamics (Swyngedouw, 1997; Angelo and Wachsmuth, 2015). According to that framework, 'urbanisation' is a process that extends beyond a city's boundary into non-urban spaces that are mobilised to sustain urban life (Angelo and Wachsmuth, 2015; Brenner and Katsikis, 2020). It is also a local process intertwined with global dynamics, which affect landscapes at a planetary scale (Harvey, 1996; Swyngedouw, 2006). Such analyses, which highlight how urban frontier expansion does not stop at administrative borders but reaches into the peripheries (Brenner, 2019), have been conceptualised as 'extended urbanisation'. This involves modifications to hinterlands to make them production zones for various urban needs, including energy, water, and food (Brenner and Schmid, 2012; Brenner, 2013; Arboleda, 2015; Gandy, 2022). The adjustment of these hinterland landscapes implies that urbanisation "is decidedly multi-scaled and spatially networked in an extended manner" (Swyngedouw, 2015: 614).

Over the past years, PEU scholars have emphasised the importance of the socio-spatial and the socio-natural dimensions shaping urbanisation (Angelo and Wachsmuth, 2015; Batubara et al., 2023). According to Jessop et al. (2008), the 'socio-spatial dimension' refers to the ways power operates in various economic, political, and cultural forms to shape places through territorial logics and networks that span diverse spatial contexts. All categories of space are understood as "socio-spatial constructions rather than natural categories" (Kaika, 2005: 63), which distribute benefits and burdens unevenly (Swyngedouw, 2015) through mechanisms such as privatisation, commercialisation, and the

² Industrial forest plantation industry activities are still ongoing in the Sepaku forest, but most of the land has already been allocated for the centre of the new capital.

appropriation of public land (Apostolopoulou and Kotsila, 2022). In line with the thesis of planetary urbanisation (Brenner, 2013), socio-spatial analysis has often been used to highlight the unevenness produced by processes of spatial segregation, concentration, and expansion (Batubara et al., 2023). At the same time, scholars also understand that urbanisation transforms and erodes or exhausts ecological function (Batubara et al., 2023). Therefore, the focus on the 'socio-natural' dimension of urbanisation analytically foregrounds how socio-ecological processes are also intensely political (Swyngedouw, 2015), and natural conditions are socially produced, contested, and politicised (Angelo and Wachsmuth, 2015). Taken together, the political ecology of urbanisation suggests that urbanisation has an inherent tendency to expand and inscribe its socio-ecological footprints in the urbanisation frontiers (Swyngedouw, 1999), leading to the co-evolution of nature and society.

The PEU thus enables us to study the relationships between the river and urbanisation within a broader political, economic, and ecological context. However, relatively little attention has been paid to the historical changes to such relationships or how the historical trajectory influences contemporary and future urbanisation processes.

The river navigating urbanisation? Situating PEU within Kalimantan's agrarian scholarship

The river offers a material lens through which to analyse distinctive events that have defined moments of urbanisation leading to the IKN. It serves as a medium for understanding power relations, struggles, and conflicts, as well as how various groups position themselves within trajectories of urbanisation (Escobar, 1999). Therefore, building on the PEU scholarship, we further refer to the studies of river urbanisation that foreground rivers as analytical connectors linking cities and countryside in uneven socio-spatial and socio-natural relations (Swyngedouw, 2004; Acara, 2019; Hommes et al., 2020). More specifically, we pay attention to two historical moments that have shaped the river-urbanisation relationship as discussed in Kalimantan's agrarian scholarship: First, the moment when an extractive frontier's expansion along the rivers integrated Indigenous settlements – such as Sepaku Subdistrict – into operational hinterlands, marked by timber extraction and industrial forest plantation to supply urban and industrial production elsewhere. Second, the moment when the large-scale infrastructural interventions in the river, following the capital city master plan, reconfigured these earlier landscapes.

The scholarship on extractive frontier expansion in Kalimantan documents socio-spatial and socio-natural transformations as outcomes of state-led forest territorialisation (Peluso, 1992; Vandergeest and Peluso, 2015). This territorialisation occurred in three stages during the New Order regime: the establishment of logging concessions; industrial plantations; and resettlement programmes that relocated populations from Java to Kalimantan under transmigration (Peluso, 1992). This territorialisation process restructured forested landscapes and their surroundings, marginalising Indigenous communities. While the process fuelled protracted struggles by these Indigenous communities to reclaim their dispossessed forests, it also embedded them into extractive relations that reshaped their livelihoods and social practices (Peluso, 1995; Gellert, 1998).

Scholars have described rivers as enabling the outward movement of timber from Kalimantan's forests, including Sepaku, to distant centres of accumulation (Manning, 1971; Peluso, 1983; Gellert, 1998; McCarthy, 2007). Yet the mobilisation of rivers during this period was not merely logistical; it was also ecological and cultural. Logging and forest exploitation altered hydrological regimes, degraded water quality, and heightened flood risks, undermining riverine livelihoods (Douglas et al., 1993). For riverine Indigenous groups, this meant not only material dispossession but also the erosion of river-based identities and reciprocal relations (Gunawan et al., 1999; Maimunah, 2021), as discussed in broader debates in critical water studies (Wilson and Inkster, 2018; Boelens et al., 2023; Rodríguez, 2023).

While Kalimantan's agrarian studies have provided rich accounts of logging, plantation expansion, and riverine transformations, these analyses have rarely been brought into debates on urban planning and city-making. Recent studies, however, suggest that the processes through which forest landscapes in

Kalimantan's interior, including Sepaku, were transformed can be understood as forms of extended urbanisation (Batubara, 2025). Through forest-based extractive economies, Sepaku was subsumed into a hinterland to support urban development through labour regimes, new investments, infrastructure development, and the population growth (Batubara, 2025).

According to Brenner and Ghosh (2022), new spatial strategies unfold through inherited spatial configurations and emergent urban interventions. The dynamics and implications of these past transformations therefore analytically constitute the material preconditions for Sepaku's contemporary urbanisation. In the context of the river in Kalimantan, urbanisation often advances a conception of the river as a resource, which legitimises infrastructural intervention aimed at producing and taming water in the name of urban growth (Bakker, 2012). City-making incentivises the instrumentalisation of rivers within new metabolisms (Beltrán and Velázquez, 2017), through which meanings are renegotiated in the planning process that shapes future relations between cities, rivers, and communities (Naruka, 2022).

Scholarship remains elusive about how urbanisation and its impacts can be understood as a historically situated process of river-urbanisation landscape transformations in Kalimantan, particularly in contexts where extractive landscapes are reworked into large-scale urban megaprojects. We thus turn to the case study of the two historical moments leading to the IKN in Sepaku in order to demonstrate how past and present interventions have shaped and been shaped by the river and, in turn, created or limited opportunities to benefit from these interventions for different communities.

METHODOLOGY

The Sepaku River forms the central observation site in this study for two reasons. First, it has mediated the two phases of urbanisation in East Kalimantan: as an extractive channel during the 1960s and as the techno-political foundation of IKN's construction since 2021. Second, the river constitutes an arena in which meanings, identities, and interests are produced and contested, involving the state, capital, and diverse social groups. Based on these two rationales, the lead author collected data through fieldwork conducted in two stages: in August 2022 and then over six months of intensive research from May to September 2023.

Data collection consisted of the collection of documents, semi-structured interviews, and participant observation. The documents include materials on the planned water infrastructure of IKN, such as government presentation slides released (but not widely circulated) by the Ministry of Public Works in 2022, the IKN planning book published and made available on the official website of the IKN Authority, and the 2021 capital city masterplan. These documents provided a basis for understanding the types of infrastructural interventions proposed along the Sepaku River, specifically with respect to water supply and flood control. Mapping these interventions subsequently informed the design of semi-structured interviews conducted in locations directly affected by the construction of IKN's water infrastructure.

Semi-structured interviews were conducted throughout the fieldwork period with 35 participants, grouped into five categories. The first group comprised seven participants from government institutions: three representatives from the River Basin Authority (*Balai Wilayah Sungai* or *BWS*), selected for their mandate as the central government's extension in managing rivers in East Kalimantan, including the Sepaku River, and for their pivotal role in IKN's water infrastructure development; one official from Sepaku Subdistrict (*pemerintah kecamatan*); two village heads (*pemerintah desa*); and one fisheries facilitator (*penyuluh perikanan*) at the subdistrict level.

The second group consisted of two officials from PT Adhi Karya, the state-owned enterprise appointed as the contractor responsible for the Sepaku Intake, an infrastructure project designed to produce and channel 3000 litres of water per second from the Sepaku River to the main reservoir located at the centre of the new capital city.

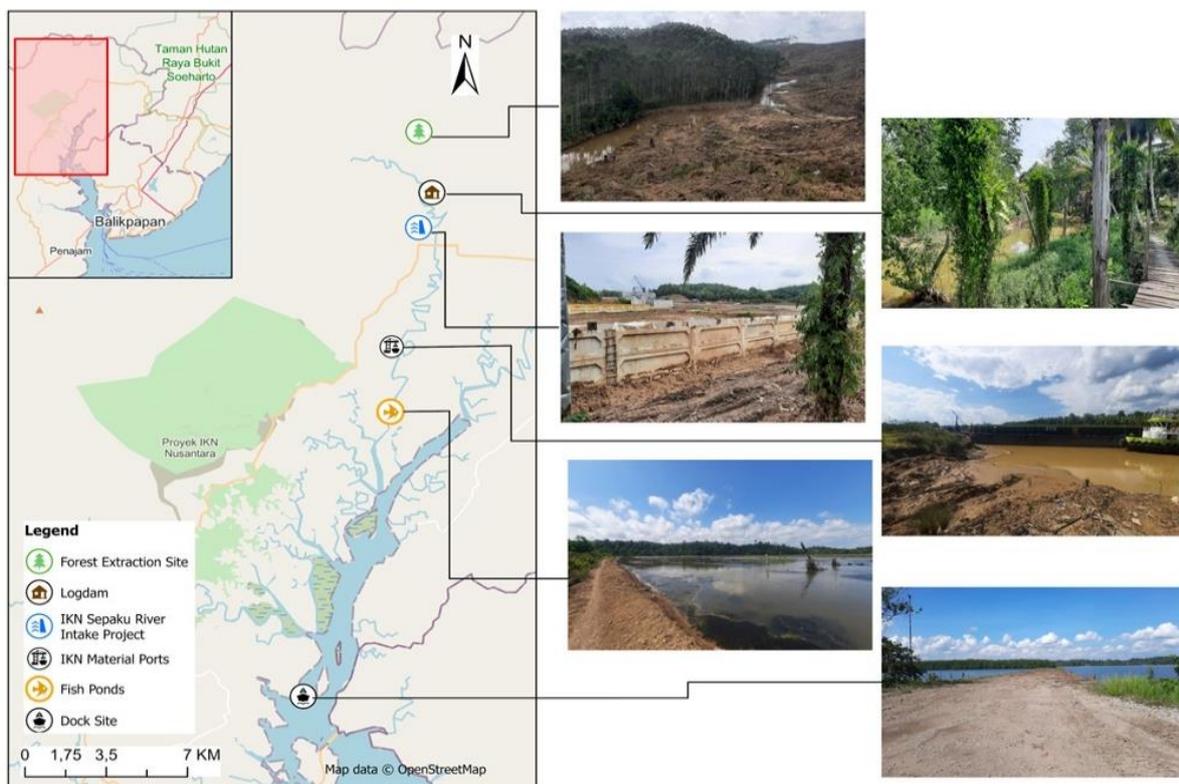
The third group comprised 20 residents of Sepaku Subdistrict, including six members of the Balik Indigenous community, four Bugis and Paser migrants working as fishers, one Bugis farmer, three Bugis fishpond farmers, three Javanese transmigrants, and two non-transmigrant Javanese residents, one a retired employee of a logging company/HPH, and the other a former worker in industrial forestry/HTI. This group was selected to capture the historical knowledge of the various stages of urbanisation in Sepaku. The diverse composition also enabled triangulation when clarifying the historical aspects and the river’s current role in the IKN construction.

The fourth group comprised two researchers from a local university who were involved in preparing the Environmental Impact Assessment (AMDAL) documents for IKN’s water infrastructure. These interviews provided insights into how environmental studies attempted to capture local complexities within their planning processes.

The fifth group consisted of four socio-environmental activists, engaged in advocacy and reporting on IKN’s development and its impacts on local communities: two from the Mining Advocacy Network (JATAM), one from the Indigenous Peoples’ Alliance of the Archipelago (AMAN), and one from Project Multatuli, a journalism movement that, in 2022, produced extensive reporting on the socio-ecological consequences of IKN’s construction.

Additional data were collected through participant observation, involving two engagements with the Sepaku River during the second period of fieldwork. The first was a river exploration conducted by a small boat, accompanied by local fishers, and following the route once used for timber transport. This provided a socio-geographical understanding of the history of the logging industry in Sepaku, which was subsequently visualised through a map (Figure 1). The second was a river walk undertaken with members of the Balik Indigenous community along a shorter stretch, where they identified locations of traditional, spiritual, and historical significance and shared personal narratives of their lived experiences of riverine change.

Figure 1. Multiple locations along the Sepaku River.



All field activities generated detailed fieldnotes and interview transcripts, with interviews averaging 60 minutes in length, recorded and written through the interpretation and subjectivity of the first author. This body of material constitutes the empirical foundation for analysing the two moments shaping the historical trajectory of forest extraction frontier expansion leading to the development of infrastructure for IKN and the process by which communities navigate the changing river-urbanisation relationships.

RESULTS AND ANALYSIS

Background: Rivers in the urbanisation of Kalimantan

The integration of Kalimantan's interior as hinterland supporting centres of accumulation – cities – has been marked by intense and rapid socio-spatial and socio-natural transformations since the colonial era, driven by extractive economic agendas (Lindblad, 1988). This transformation involved the large-scale exploitation and transportation of natural resources such as timber (Lindblad, 1988), palm oil (Li, 2018), and coal (Toumbourou et al., 2022), enabled by waterways connecting the remote territories to regional centres across the island (McCarthy, 2007). Felled logs were rolled into the river, moved, and transported by large ships, while some floating wood species could be transported down the river with the help of traditional boats, known as the *banjir kap* method (Ross, 2001). As Manning (1971) recorded, these river routes contributed to higher exports of Kalimantan timber than those of other Southeast Asian regions since the 1970s.

These extensive land-use changes under extractive regimes have transformed Kalimantan's rivers (Gellert, 2010). The erosion and sedimentation resulting from massive deforestation have altered the hydrological systems, obstructed water channels, and contributed to droughts and floods. The loss of vegetation within and around the forests has further degraded the water quality (Douglas et al., 1993). These socio-natural disruptions then generated new socio-spatial dynamics, as riverine communities were displaced from their lived environments (Maimunah, 2021). Particularly for Indigenous communities, this has meant separation from the river and eviction from forests long understood as their customary lands (Gunawan et al., 1999; Maimunah, 2021). Consequently, rivers in Kalimantan have also become sites of contestation, conflict, and insecurity among different actors (McCarthy, 2007).

The (post-)colonial state's power officially territorialised the hinterland, asserting authority over land and forest through the *domein verklaring* of 1860 during the Dutch colonial period, which granted the state full authority over land without 'formal ownership'. This was reiterated in the post-colonial era through the Old Order's Basic Agrarian Law of 1960 and consolidated under the New Order's Basic Forestry Law of 1967 (Peluso, 1992). Through the (post-)colonial state's authority to assert control over the forests, the rivers also became the targets of official control. The state authorised timber extraction in upstream areas, permitted log storage along riverbanks, and sanctioned the establishment of processing facilities downstream (Gunawan et al., 1999). In the following section, we examine how these dynamics unfolded, leading to the two key moments of infrastructure development and eventual urbanisation, specifically in Sepaku.

First moment: Sepaku River and state-led forest extraction

Balik's original relationship with the River

As documented by Mustikawati (2016), the area of Sepaku towards the city of Balikpapan had been known as Balik Land or *Tanah Balik*³ since the early 18th century, when it was under the jurisdiction of

³ Tanah Balik refers to the territory of the Kutai Sultanate, the area now known as Balikpapan and Penajam Paser Utara. Mustikawati (2016) explains that when the Sultan of Paser's daughter married a noble from the Kutai Kartanegara Kingdom, her

the Sultanate of Paser. The current Indigenous Balik community in the Sepaku Subdistrict relocated there from the city of Balikpapan (farther inland) in the 1940s, as Balikpapan had become the central business hub of East Kalimantan and forced the community to give up their traditional way of life. According to one of the community elders:

We, our people, cannot get close to others because we open up fields in the gardens, hunting for animals. It is not easy if we are close to people. Back in the day, my parents used to say looking for deer or setting up deer traps on the outskirts of the garden would be enough. (Interview with Indigenous people, Sepaku, 15 August 2022)

However, the Balik people's migration to Sepaku did not mark the return of their territory. Now, they lives dispersed across several villages and urban areas in the Sepaku Subistrict, including Kelurahan Sepaku, Desa Bumi Harapan, and Kelurahan Pemaluan (Jumaidi and Indriawati, 2023).

The forest and river are central to the Balik community's way of life, providing the material basis for their subsistence through the cultivation of wild rice, vegetables, and fruits, and the spatial condition that organises settlement patterns along the riverbanks. Here, socio-spatial relations are evident in how proximity to the river structures everyday life and sustains dense riverine settlements. At the same time, the river embodies socio-natural relations: Beyond supplying water, fish, shrimp, and transport routes, it also constitutes a lived knowledge system anchor through which humans and non-humans are intertwined. This is illustrated by the community's reverence for three large river rocks: *Batu Badok*, *Batu Tukar Tondo*, and *Batu Bawi*, believed to channel the Balik group's ancestral spirits and provide protection from disasters. Ritual practices, such as floating offerings for newborns, further entrench these ties, embedding the river as a central element from the very beginning of human life. These socio-natural relations also render the river a cultural landscape for the Balik, sustaining ways of life centred on practices of caretaking for the water (Ayunda, 2023a; Interview with Indigenous people, Sepaku, 15 June 2023).

Timber extraction and the river

The timber boom in Kalimantan pulled Sepaku's forests into the expanding circuits of extraction. In this process, the forests previously managed by the Balik people were classified as state-owned and subsequently parcelled out to private concessionaires (hak pengelolaan hutan or HPH) through forest logging permits. Through such legal instruments, the state became the sole actor authorised to reorder Sepaku's landscape, converting the Indigenous land into concession zones and simultaneously dismantling customary forest governance. At the same time, this territorial reorganisation constituted a socio-natural transformation: Forests were no longer treated as multi-functional landscapes of subsistence, ritual, and ecology, but redefined as commodified reserves of timber. These changes positioned the state and private companies as powerful actors who controlled land and ecological flows in Sepaku; meanwhile, the Balik communities were removed from decision-making and dispossessed of their spatial autonomy. Their reciprocal socio-natural relations with the forest were eroded. This form of marginalisation has shaped ongoing Indigenous struggles to reclaim forest lands.

As in the broader pattern of forest extraction across Kalimantan, control over the forest also implied control over the river. Trees of various species, once felled in the upstream forests, were manually transported to the banks of the Sepaku River, to a site later known as the 'logdam'. The logdam materialised the extension of extractive control from the forest to the river, embedding the waterway into the circuits of timber commodification. Due to its proximity to Balik dwellings, the area came to be identified not only as Kampung Sepaku Lama but also as Kampung Logdam. Here, the river was regulated so as to create a holding point where the timber could be lowered into the water and temporarily

father gifted her the territory of Tanah Balik, situated on the border between Paser and Kutai Kartanegara. At the same time, he instructed her to cultivate the land and coexist with the Balik community.

dammed to prevent the logs from drifting away (Interview with Indigenous people, Sepaku, 26 June 2023). Submerged logs were lifted onto barges, while floating logs were tied together and towed downstream by rafts. From there, they were delivered to company-owned dock sites for sorting and processing before being loaded onto much larger ships for export (Interview with former HPH company officer, Sepaku, 14 June 2023).

This infrastructure development impacted Indigenous communities' cultural practices profoundly. Batu Bawi, the rock located in the middle of the river and of spiritual significance for the Balik people, was removed because it obstructed timber transportation (Ayunda, 2023a). This created the socio-natural rupture, whereby the Indigenous worldviews that positioned the river as a cultural landscape were displaced by the logic of extractivism. These shifts reveal how the state and its concession-holders are exercising control not only over the river's physical flow but also over its meanings (Wilson and Inkster, 2018). The removal of Batu Bawi weakened one component of the river-based knowledge system, while intensified timber transport along the river disrupted customary practices.

Transmigration project and population growth

The forest territorialisation also provided the foundation for the state to engineer the demographic composition of Sepaku. Through the transmigration programme, the state restructured the landscape from an Indigenous living space into a Javanese-majority settlement zone. This demographic engineering unfolded in successive stages: Nearly 3000 settlers were relocated there between 1974 and 1975, around 8000 in 1977, a further 3000 at the end of the 1970s, approximately 4000 in the 1980s, and about 1200 in the early 1990s.⁴ The Sepaku River, which had already been activated as extractive infrastructure for timber transport, also facilitated the transmigration process. Passenger ships from Java carried thousands of Javanese settlers inland, turning the river into a corridor that enabled Sepaku's socio-spatial transformation through this state-led demographic engineering project.

This exercise of state power rapidly reshaped Sepaku's demographic structure and land ownership regime. Out of the current 15 villages, 11 are Javanese settlements, making them the dominant population group. A new socio-spatial order was also introduced through the clustering and naming of villages in Javanese and the allocation of two hectares of land to each transmigrant household, which was formalised through land certification. Control over land and population in this way displaced the centrality of Indigenous communities and further locked in their marginalisation, as the lands used and inhabited by them were excluded from land categories recognised by the state.

Beyond this state-led demographic engineering, the timber economy also stimulated spontaneous migration from other parts of Kalimantan and Sulawesi into Sepaku. Together with transmigrants and Indigenous Balik, these migrants were absorbed into the extractive labour, some directly engaged in logging and others in the transportation of timber. The convergence of state demographic planning and the pull of extractive opportunity accelerated socio-natural transformation: Deforestation advanced even more rapidly than the targets set by concession-holders (Interview with former HPH company officer, Sepaku, 24 June 2023). The ecological implications were profound. A major flash flood struck Sepaku in 1986. Since then, flooding has become a routine event, exposing riverside settlements, including Indigenous households, to heightened vulnerability (Interview with Indigenous people, Sepaku, 26 June 2023). In parallel, the altered hydrological regime has expanded crocodile habitats, turning the river and its adjacent settlements into spaces of new risk.

Here, the extension of demographic control materialised through respatialisation, whereby some groups secured legal tenure and authority over land while others were excluded. At the same time, the demographic restructuring of Sepaku created a multi-ethnic landscape, with state resettlement schemes

⁴ Database of Transmigration Locations (Pusat Data dan Informasi Transmigrasi/Pusdatintrans, 2005), cited in Final Report on the Preparation of the Master Plan and Development Strategy of the National Capital 2020 (IKN, 2020).

conferring political and economic advantages on some settler communities while leaving others behind. This translates into local authority structures, village leadership, and economic networks that were reconfigured through state-led resettlement and that continue to constrain the capacity of certain groups – particularly their capacity to advance alternative land claims.

Industrial forest expansion

The introduction of industrial plantation forests (hutan tanaman industri or HTI) in the late 1980s imposed a new form of socio-spatial control over Sepaku's deforested landscapes by HPHs, converting them into monocultural zones of acacia and eucalyptus for the pulp and paper industry. Unlike the earlier logging regime, in which felled timber was processed locally within Sepaku, the HTI expansion reorganised the landscape into the "hinterlands of hinterlands" (Brenner and Katsikis, 2020: 28), spaces connected not to centres of use or consumption, often represented by cities, but to other productive hinterlands. By these socio-spatial reconfigurations, Sepaku started to become embedded in a more complex network of production shaped by a new agro-industrial market.

Figure 2. The Sepaku River transformation.



The consequences of this socio-spatial change are identified in two ways: first, through the mechanisms used to reorganise deforested land into productive plantation zones, and second, through the socio-natural impacts generated on the river. In terms of mechanisms, companies divided plantation zones according to estimated harvest cycles of fewer than ten years, allowing land clearing to be staggered rather than conducted all at once. However, in pursuit of their production targets, concession holders expanded cultivation into wetlands and up to the edges of small streams feeding into the Sepaku River (Interview with Indigenous people, Sepaku, 26 June 2023). Natural waterways and swamps were blocked to make way for monoculture planting, with engineered ditches dug to divert water flows. Locally, this method is known as *parit cacing* (Interview with Bugis farmer, Sepaku, 2 July 2023).

These land use intensifications produced socio-natural disruptions: The redirection of watercourses destabilised hydrological rhythms, reducing the river's buffering capacity and embedding new risks into everyday life along its banks. The soil's diminished capacity to absorb water, combined with the closure of natural drainage channels under HTI expansion, meant that rainfall could no longer be adequately contained during the wet season. A 20-year dataset shows that floods have occurred with increasing frequency, even during the dry season (Ramadhan et al., 2024), with 15 events recorded between 2019 and 2022 (Purwaningsih et al., 2022). Increasingly frequent flash floods erode the river channel, while siltation occurs when flow is reduced, contributing to changes in the river's physical form (Figure 2). On top of all this, fertiliser runoff into the river contributes to changes in water quality.

The biophysical changes to the Sepaku River have produced broader socio-natural transformations, particularly for populations living along it, including the Balik and segments of the Bugis community around *Kampung Sepaku Lama (Logdam)*. Beyond the heightened risk of flooding, Indigenous households, materially dependent on the river, were forced to adapt. They adapted to this situation by using rudimentary filtration before storing water in tanks. Such water was only suitable for bathing and washing; for drinking, they were compelled to rely on informal water businesses. These adaptations also eroded cultural relations with the river, as ritual practices diminished and reciprocal ties were replaced by commodified relations to something that had once been freely accessible. As one of the Indigenous inhabitants recalled:

In the past, we could fish for under half an hour in the river behind our house and catch plenty of fish. Setting traps would yield a bountiful supply of shrimp. Nowadays, it is become quite a challenge. Even the water quality is not what it used to be. We now have to use filters to make it safe for consumption. In fact, for the past few years, we have stopped using it for drinking altogether and have switched to buying from local water sellers. We only use the river for bathing and washing. (Interview with Indigenous people, Sepaku, 26 June 2023)

Through this socio-natural transformation, land and water became bound up in increasingly risky relations. At the same time, it disrupted the intricate cultural and material ties that Indigenous communities had maintained with the river for a long time. These dynamics were underpinned by asymmetrical power relations through which the state and concessionary holders were able to sustain accumulation after forest resources were depleted. This involved rearticulating Sepaku's landscape from logging to plantation, integrating it into a broader agro-industrial network distinct from HPH. During the HPH period, timber extracted from Sepaku was transported to multiple urban centres and primarily supplied urban construction needs, including major cities in Japan, the United States, and China, as well as across Java (Interview with former HPH company officer, Sepaku, 14 June 2023). Under HTI, harvested timber from Sepaku was shipped to processing facilities in Riau, Sumatra, where it was converted into pulp and paper products and subsequently exported to more than 70 countries worldwide (RGE, n.d.).

Second moment: New city-making and the river

The forest extraction as a precondition for the new capital city

The government's and eventually the private businesses' control over the forest and river in Sepaku played a role as the building blocks for the government to reconfigure the landscape and to enable the new city construction. The decision to relocate the capital city to East Kalimantan and centre it in Sepaku was explained as stemming from the existence of a forest concession area and the large presence of transmigrants, which, in the eyes of the former President Joko Widodo's regime, would make land acquisition for new infrastructure development relatively easy. In this official narrative, the historically shaped disparities between different groups of people in Sepaku are neglected: State narratives frame the land designated for the new capital as state-owned in the form of forest concessions. At the same time, the area's heterogeneous demographic was presented as evidence that the new capital city location

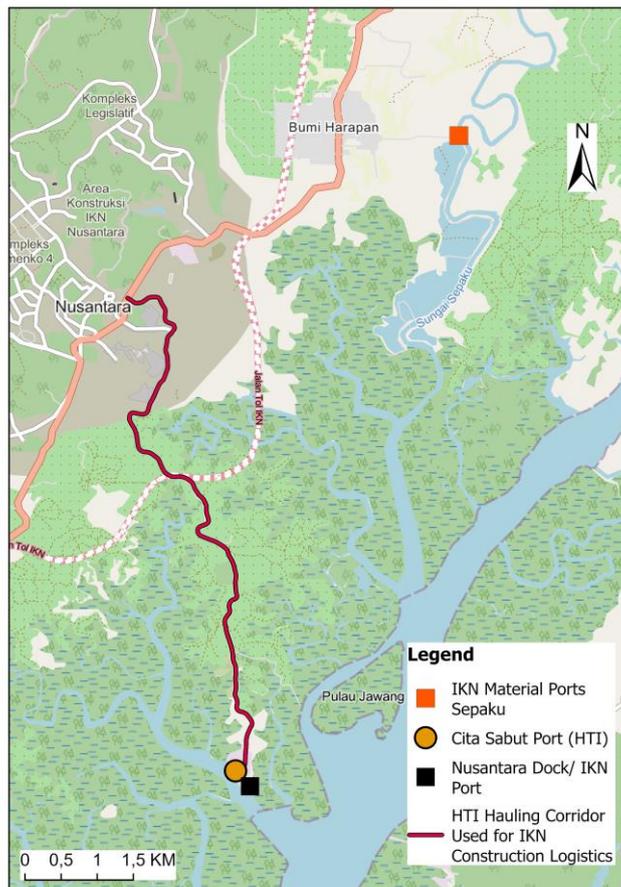
was prepared to receive newcomers (Nurdifa, 2023). Both these conditions were results of the previous forest extractions.

In parallel, the government mobilised a narrative of saving and restoring the Kalimantan forest as the basis for designing a sustainable forest city (Alexander, 2024). Through the idea of the forest city, extensive green areas are prioritised within the urban setting and city development is framed as a means of reclaiming Kalimantan’s former prominence in tropical forest coverage (Hakim, 2023). River interventions are likewise framed as measures to repair a fractured landscape, particularly addressing flood risk (Interview with River Basin Authority official, Samarinda, 8 August 2023). This narrative represents a rearticulation of the same socio-natural transformations that previously produced ecological ruptures, now reimagined as problems to be overcome by recreating nature through centralised state control.

The river enabling the urban material influx

The justification for Sepaku being the centre of the new capital city was materialised in two ways: First, the river’s ports, built to export timber, became connectors between the emerging urban landscape in Sepaku and its extensions into the Sulawesi hinterland. Core construction materials such as sand and stone, extracted from the hinterland, were channelled into Sepaku through the river. Second, the river’s normalisation and the river’s intake infrastructure for the new capital city were built in relation to the former forestry infrastructures.

Figure 3. From HTI ports to the city: Material flows in IKN’s construction.



As an entry route for city-making materials, several points along the Sepaku River were transformed into ports. Prior to the intensive construction phase, existing dock sites operated by HPH and ports managed by HTI had already been identified and planned as key logistical corridors for IKN's development. The HTI port in particular was prioritised due to its proximity to the planned city centre, approximately eight kilometres away (Figure 3) and was already connected to established timber hauling routes linked to the plantation areas. During the initial inspection, President Joko Widodo also visited the capital construction site by sea from the nearest city, Balikpapan, arriving at a port built and operated by an HTI company (Sekretariat Presiden, 2022).

Despite this, in 2023, the government decided to construct a dedicated IKN port (Nusantara Dock) directly next to the existing HTI port (Figure 3). This was in order to avoid disrupting ongoing plantation operations, as HTI had not yet entirely ceased production during the early stages of the city's construction (Maharani and Alexander, 2023). Nevertheless, the presence of HTI ports and timber-hauling infrastructure served as material preconditions for IKN development, facilitating the transport of construction materials to priority development zones during the first phase of construction. These included the presidential complex, ministerial offices, official residences, and several designated commercial zones.

At the same time, another port's infrastructure, at the transmigrant village of Bumi Harapan, was developed to accelerate logistics and to prevent material flows from being concentrated at a single access point. To establish the port, mangroves along the riverbank had to be cleared, even though the local environmental law enforcement agency (GAKUM LH) had long prohibited such practices. Since the commencement of the IKN project, numerous ports have emerged along the Sepaku River, particularly near Bumi Harapan. This situation contrasts with conditions before the IKN project, when a local had to deal with GAKUM LH in order to clear mangrove areas (Interview with a Paser fisherman, Sepaku, 29 July 2023). At the port site, ships carrying stone and sand dock, unload their cargo, and transfer it onto trucks, which transport the materials to construction sites. The village government, through its village enterprise body (BUMDES), has obtained new revenue streams by imposing fees on these vessels. Trucks passing through residential areas also pay additional contributions, earmarked for the operational costs of cleaning village roads.

Figure 4. A sand and stone transport vessel docked on the Sepaku River.



Furthermore, the site closest to the port, which had previously been a fishpond owned by a transmigrant, was converted into a loading area for materials. The pond's owner received significant compensation, amounting to 2 billion rupiah (US\$126,000). Based on interviews with the Bugis fishpond group (25 May 2023, Sepaku) and a fisheries facilitator (29 July 2023, Sepaku), this high value was attributed not only to the size of the land but also to its secure legal status, certified through formal land titling.

Near the port, a group of Bugis fishpond farmers who had migrated to Sepaku in the late 1990s reported a different experience. According to them, yields of fish and shrimp have declined ever since the river was turned into a material transport corridor. They believe this is likely due to fuel spills from material ships entering the riverway, which are challenging to filter out and subsequently seep into the fishponds, damaging the aquaculture ecosystem. The location of their ponds on a bend in the river has further increased their vulnerability, as on several occasions vessels carrying construction materials have collided with their houses. Although they have always gotten compensation after these events, the amount is minimal compared to the losses they incur.

One of our group members' houses was once hit. A small wooden bridge there was also damaged. If a ship collides on the right side of the river, it is not such a problem because it is only mangrove, but on the left side, it is our houses, so they get damaged. Especially since the river here is narrow; when the large vessels carrying sand and stone pass each other, the risk becomes even greater. (Interview with Bugis Fishpond Group, Sepaku, 25 May 2023)

These uneven risks, tied to the river's respatialisation, have fostered expectations that their ponds too might eventually be converted, enabling them to secure significant compensation similar to that received by other farmers whose lands lie closer to the port. With such compensation, many of them even plan to return to their places of origin in Sulawesi. It should be noted, however, that these aspirations are also tied to the land certificates they obtained in 2016 under the National Agrarian Programme (PRONA), a few years before the IKN project (Interview with Bugis Fishpond Group, Sepaku, 25 May 2023).

Normalising the Sepaku River for the new city's water supply

While the river has enabled the inflow of materials, the Sepaku Intake infrastructure has elevated the riverbed and dammed the water in order to divert water for the new city's use. In parallel, the Normalisation Project has widened and deepened the river to protect the city from flooding. These infrastructural interventions work to reassert state control over the river, now articulated through the narrative of saving Sepaku's 'nature' from the risks of flooding. As explained by a BWS official:

Previously, this (IKN) area was classified as an industrial plantation forest (HTI), and the company had its own environmental impact assessment (AMDAL), which was not under our authority. (...) Later, some parts were released following the IKN project. (...) Now, the river is maintained by BWS, mainly through dredging sediment originating upstream (i.e. HTI territory). (...) In this sense, for me, IKN has helped to improve environmental conditions. (Interview with River Basin Authority official, Samarinda, 2 August 2023)

Such a discursive framing of environmental reparation is rooted in material preconditions that help explain why particular locations and infrastructural choices have been made in the development of IKN. The river normalisation works involve channel widening, deepening, and embankment reinforcement along approximately 40 kilometres of the river. This technical necessity is closely linked to the decision to locate the IKN urban core on the former HTI land, previously dominated by acacia and eucalyptus. The concentration of largely concrete-based infrastructure such as government offices, ministerial and administrative buildings, and the presidential palace on already degraded forest land has further reduced the soil's capacity to absorb water. This absorptive capacity had already been significantly weakened during earlier logging concessions (by HPH), and the loss was intensified through decades of HTI operations. As a result, the concentration of impermeable surfaces in this area substantially increases downstream flood risks, including in parts of the IKN area itself. The river's 'normalisation' thus functions

as a hydrological buffer intended to manage these inherited vulnerabilities and prevent flooding. Another BWS official explained:

There is definitely an impact from forest land-use change, as the area becomes more open. Automatically, surface runoff increases. The soil's capacity to absorb water is no longer optimal, unlike in the past (before HPH and HTI). Once the land is opened up, and especially when it is then covered with concrete (as in the construction of the IKN city centre), there is basically no infiltration anymore. Runoff keeps increasing over time, while the river itself remains the same size. So flooding becomes inevitable. (...) That is why, to increase the river's carrying capacity, one of the measures we take is normalisation. This includes widening the river and, in some sections, deepening it. (Interview with River Basin Authority official, Samarinda, 10 August 2022)

The siting of the intake infrastructure further illustrates the close connection between current interventions and the industry forestry in the past. Prior to its current location, which is adjacent to an Indigenous settlement, consultants proposed situating the intake further upstream, in close proximity to and partly within an active HTI concession. However, because HTI operations were still ongoing during the early phase of the IKN development, the intake was relocated to its present site (Ayunda, 2023b). This decision, in turn, further marginalised the riverine communities, particularly those of the Balik people. Their socio-natural relations, changed during the forestry development, with their cultural sites in the river gradually removed, were further disrupted as river normalisation works and intake infrastructure directly constrained their physical access to the river. Two remaining sacred stones, *Tukar Tondoi* and *Badok*, were forcibly removed as water infrastructure expanded into their Indigenous riverscape (Ayunda, 2023a). As explained by an Indigenous Balik:

We have already protested against the Sepaku River intake project, as the river holds significant importance for us. For example, the ritual stones we used have been dug up and removed. In my view, stones that carry such history should never be disturbed. But the government seems to have no concern for that (stones); whatever they want, they simply do. In the past, when people here were ill, there were no hospitals. We would naturally perform rituals, turning to the river or the trees. (Interview with Indigenous people, Sepaku, 22 August 2022)

The Indigenous communities hold weaker land titles, and this has contributed to their low bargaining power against these infrastructural interventions. However, this constrained position has also opened up new space for them to redefine power relations through broader political struggles involving wider, national Indigenous alliances to resist the expansion of infrastructure. Although their complex relations with the river have been materially disrupted by the concrete wall that now separates them from it, their determination to remain in place constitutes the outcome of a cultural struggle, following earlier plans that sought to displace them. The displacement plans involved proposals for relocation, which were presented to the community in order to designate the area as a dedicated water infrastructure zone. These proposals were contested by Indigenous groups through demonstrations and the display of banners stating "Indigenous Balik communities reject relocation". The involvement of broader Indigenous alliances strengthened this struggle, extending its visibility beyond the local level, including through media channels that disseminated these demands more widely (CNN Indonesia, 2023; Rizki, 2023).

Following their refusal to be relocated, Balik communities demanded that the proposed intake infrastructure supply water not only to IKN but also to themselves and other affected households. At the same time, under these constrained conditions, Balik communities and broader Indigenous alliances sought to preserve what could still be protected, in an effort to prevent the further erosion of their identity. In collaboration with broader Indigenous alliances and local researchers, they have initiated an encyclopaedia project to document vanishing cultural practices. They have also developed a dictionary of the Balik language, to avert its extinction and rebuild relations with the river that have been materially severed (Almerio, 2025; Swara et al., 2025).

By tracing the conjunctural processes of urbanisation through the Sepaku River, it becomes clear that the socio-spatial and socio-natural transformations produced by forest extraction have become material preconditions for how the city is built. These processes have never been detached from historical processes that affected certain groups while opening opportunities for others. The river's modern transformations are built upon and, in turn, reproduce asymmetrical power relations. Within this historical trajectory, the state retains control over territorial transformation through urban infrastructure, whether by design or by default. By design, this control operates through the legacies of forest extraction. By default, it operates through the same ecological degradation that legitimises new interventions in rivers and forests. Consequently, some groups have been able to secure greater benefits, such as certified landholders (mostly transmigrants) who can monetise their official land titles. By contrast, Indigenous communities are pushed into a structurally weaker bargaining position, their cultural complexity effectively negated by the imperatives of state infrastructure. Finally, in the context of Indigenous experiences, urbanisation is not limited to the restructuring of socio-spatial and socio-natural relations; it also entails the profound reconfiguration of socio-cultural attachments.

CONCLUSION

This study uses the river as a methodological lens to grasp and show the extensive impacts of landscape transformation under a state-led megaproject. Drawing on the political ecology of urbanisation, we analyse two historically distinct state interventions – forest extraction and new capital city-building – and show how they are connected through the Sepaku River. Our main findings demonstrate that the socio-spatial and socio-natural transformations produced by extractive regimes have generated some of the material and institutional conditions that shape how the new capital city can be framed and built. The past operationalisation of the landscape and its implications, particularly through the state-led land concessions and hydrological degradation, were discursively mobilised to present the new capital city as a more sustainable and improved intervention, especially in relation to flood risk and water security. This discourse is grounded in material conditions that also facilitate, shape, and constrain specific spatial configurations and infrastructural choices in city-making.

Ports that previously served as extractive infrastructure for timber shipments now facilitate the inflow of materials for the new city's construction. Access routes to the river that were initially opened as hauling roads by HTI have likewise been used as logistical corridors, enabling the transport of materials to the emerging urban core. In this way, infrastructure for forest extraction is integrated into the process of city-making. Through these ports, hauling routes, and plantation infrastructures, the very choice of the new capital's location was partly informed by features generated during the forest extraction era.

The decision to locate the urban core on degraded forest land could intensify hydrological vulnerabilities in the Sepaku area. The reduction in soil absorption capacity resulting from earlier logging concessions, further exacerbated by HTI activities and intensified by the concentration of urban infrastructure, has led to river normalisation being framed as an early intervention in the process of city-making. In this case, normalisation goes beyond aesthetic considerations and is instead articulated as a technical response to inherited material vulnerabilities. It is therefore treated as a measure to increase flows to the level required to support the continuity of urban development, particularly in the emerging city centre.

The siting of the river intake infrastructure further illustrates how the legacies of forest extraction operate as material constraints on contemporary city-making interventions. Although this water supply infrastructure was initially proposed for an upstream location close to the urban core, an option considered advantageous due to its proximity, the site lay adjacent to an HTI concession that remained materially active at the time. As a result, the intake could not be constructed there and was relocated to its current location, which is farther away and carries a higher risk of broader impacts on the surrounding communities. This decision demonstrates that, while land tenure regimes institutionally facilitate the

development of IKN, the material configurations produced by extractive operations constrain how urban infrastructure can be built, effectively displacing risk and impact onto local populations, particularly Indigenous communities.

Through the lens of the river, this study reveals that Indonesia's capital relocation megaproject is portrayed as an intervention of improvement, yet it remains locked within extractive legacies, continuing to marginalise certain groups of people, mostly Indigenous Balik. The river reconfiguration aimed at making the city 'safer' responds to the river's condition, which is itself the result of past interventions. At the same time, these technical measures intensify the marginalisation of communities whose socio-natural relations had already been eroded by earlier state territorialisation. In this sense, past extractivism not only generated the conditions that the new capital city seeks to address, but it also materially and institutionally conditions how urbanisation unfolds, including how the city is built, where infrastructural interventions are located, and how risks and benefits are distributed. This reveals a tendency that planners must confront: High-modernist ambitions to render Sepaku an exemplary urban centre do not, in themselves, reduce injustice. Rethinking an inclusive and sustainable urbanisation requires sensitivity to the socio-spatial and socio-natural legacies underpinning a particular trajectory of urbanisation. As these legacies are embodied in the river, we contend that future planning needs to move beyond technical and aesthetic concerns and instead recognise how river interventions actively shape inclusion and exclusion in relation to access and risk.

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