



**From Kali Mati/Dead River to Tanah Kali/River Land:
Displacement of Riverine Settlements in Jakarta, Indonesia**

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A thesis submitted in partial fulfilment of the requirements for the degree of
Doctor of Philosophy

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August 2024

Declaration

I, Sri Suryani, confirm that this thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not previously been presented for an award at this, or any other, university.

Abstract

This thesis investigates the significance of water flow in rivers to understand the process of displacement within riverine settlements resulting from flood mitigation policy. Its primary aim is to illuminate the evolving settlement patterns along urban waterfronts while also revisiting the historical context of interconnected riverine landscapes that transcend geographical boundaries to encompass agricultural settlements and port towns worldwide. In doing so, the thesis draws on the historiography of water management and flood mitigation policies alongside the spiritual underpinnings of dwelling landscapes, which influence the trajectories of urbanisation.

The study identifies vitality of water in the historiographies of riverine settlements and how they intersect with state-led town planning initiatives. By examining terms like 'Kali Mati'/dead river and 'Tanah Kali'/river land sourced from diverse materials such as archival records, historical literature, oral history, and on-the-ground observations, the research sheds light on the pivotal role of rivers in settling and unsettling urban activities in growing port towns and shaping flood mitigation policies affecting waterfront areas. Through a nuanced analysis of displacements along the low-lying plain of Kali Ciliwung in Jakarta, the capital city of Indonesia, the study elucidates the emergence of flood control infrastructure provision and growing private land development projects. It proposes the concept of 'river land' as a framework for comprehending the spirituality of the ebb and flow of rivers on the land-filled terrain, which entails continuous occupation in riverine settlements.

Acknowledgements

This thesis was brought to life through critical discussion within supervisory meetings with Michele Lancione and AbdouMaliq Simone. Glyn Williams, Stephen Connelly, and Ryan Powell, as PGR directors, also generously supported the research process. Alongside the analytical journey, critical attention on rivers and settlements was possible through discussion with Irit Katz, Vanessa C. Broto, Cheikh Ba, Aicha Diallo, Desy Aryanti, Anton Novenanto, Yi Fan Liu, Irna N. Maslon, Naimah Talib, Niranjana Ramesh, Melanie Lombard, Athina Ardhyanto, Robin H. Hanggore, Gede Bayu P.W., Idham Effendi, Rahul Raj, Feni Kurniati, Hafshah Salamah, Wahyu K. Astuti, Ismet B. Harun, Hengki Eko Putra, Eva Wishanti, S. Apresian, Nur Hamidah, Anastasia Widyaningsih, Gusmiati Wongsodiboyo, Indrawan Prabaharyaka, and Novita Anggraini.

The thesis is also possible through emotional support from Tessa Talitha, Esti N. Asih, Niken Nefritasari, Sarah Inas, Ann K. Ndeke, Jeni Vine, Bei Chen, Setiamurti, Selamawit Robi, Monica Martin Grau, Mateus Lira, Stephany Vargas, Dimitra Pillichou, Rhong Z., Victoria O. Okoye, Jenny Patient, Aya E., Nancy W., Jack Pickering, Andy Inch, Mutiara Haridah, Nayasari Aissa, Ajeng Tri Handini, and Yuliana Paminto. The study is funded by LPDP Indonesia, continuing my previous research funded by KKPP SAPPK ITB and the National Geographic Society. This thesis gives credit to Eburon Academic Publisher, Rockefeller Archive Center, Puslitbang Bendungan Kementrian PUPR, KITLV, the British Museum, Longmas, Green and Co. Ltd., Drukkerij Trio Publisher, and Martinus Nijhoff Publisher for their material for archival study. It also indebted numerous supports from the research participants during fieldwork, especially the inhabitants (*tukang, ibu-ibu, dan para 'duyung'*) of Arus Dalam/Kali Mati and Tanah Rendah/Tanah Kali as well as activists, field officers, and government officials who are concerned to the current ideas and practices of living with water in Jakarta, the capital city of Indonesia.

Finally, I dedicate this thesis to my family in Penggilingan: Tarmono, Sarwanti, Laila Nurhayati, and Titiek Handayani. Ultimately to Surya Pagi Asa, who has helped me find a new home in the serene, sombre, and bubbly surfaces of the river. Thank you for everything. Here is to many more.

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Transliteration of Acronyms

No.	Category	English	Bahasa Indonesia
1	National Government Institution	The Ministry of Public Works and Public Housing (MoPWPH)	Kementrian Pekerjaan Umum dan Perumahan Rakyat (KemenPURPR)
2		Ciliwung-Cisadane Regional River Board (CCRRB)	Balai Besar Wilayah Sungai Ciliwung-Cisadane (BBWSCC)
3		Meteorology, Climatology, and Geophysics Board (MCGB)	Balai Meteorologi, Klimatologi, dan Geofisika (BMKG)
4	Provincial Government Institution	Jakarta Regional Development Planning Board (JRPB)	Badan Perencanaan Pembangunan Daerah (BAPPEDA) Jakarta
5		Jakarta Provincial Government (JPG)	Pemerintah Provinsi DKI Jakarta
6		Water Resource Agency (WRA)	Dinas Sumber Daya Air (DSDA)
7		Public Housing and Settlement Agency (PHSA)	Dinas Perumahan Rakyat dan Permukiman
8		Life-Environment Agency (LEA)	Dinas Lingkungan Hidup (DLH)
9		Social Agency	Dinas Sosial (DS)
10	Governmental Projects	Kali Ciliwung Embankment Project (KCEP)	Proyek Normalisasi Kali Ciliwung
11		National Capital Integrated Coastal Development (NCICD)	National Capital Integrated Coastal Development (NCICD)
12		Wastewater Treatment Plant (WWTP) Micro Bed Biofilm Reactor (MBRR)	IPAL MBRR Setiabudi PD PAL Jaya
13		Government-led Subsidised Rental Housing	Rumah Susun Sederhana Sewa (Rusunawa)
14	Governmental Documents	Environmental Impact Assessment (EIA)	Analisis Dampak Lingkungan (ANDAL)
15		Sales Value Taxable Object (SVTO)	Nilai Jual Objek Pajak (NJOP)
16		Land Procurement Planning Document (LPPD)	Dokumen Perencanaan Pengadaan Tanah (DPPT)
17		Land Acquisition and Resettlement Action Plan (LARAP)	'LARAP'

Chapter 1. Introduction



Figure 1 Remnants of 'Kali Mati': a small ditch surrounded by soils and debris to fill 'land' in a plot of development projects, by author, fieldwork on 15/09/2021.

'Yes, this area was called Kali Mati. Senior generations called it long before I was born. Once, the river curved inland, then turned across Cawang towards the grojogan¹ area near rental flats in Bidara Cina. You need to ask the oldest person here, a haji Betawi. My family rented one of his houses. But he had already passed away, and his family also moved out after selling a large plot of land to a developer. Since then, this area has turned into a dark night void. The rest of the inhabitants gradually sold their houses to the developer and moved away, with some staying put until they received compensation. The city government relocated the squatters along the strip of riverbanks into the rental flats. People who occupied a strip of riverbanks were those who were 'untouched'². They were recidivists, (such as) transvestites and the homeless. Once, when they were away from their houses for night work, there was a flood event, and they came home to find their belongings swept away by the intense water. All that remained was attached to their body.'³

-Fajar, while serving construction workers at a food stall at the front of his house. The house was one remaining house in an ongoing construction site, 15th September 2021

¹ Grojogan is a term in Javanese language that means a waterfall.

² I translated the expression 'ngga disentuh' from Indonesian language to 'untouched' in English, which refers to the marginalised population in the city.

³ There is much to unpack in the excerpt from the interview. I will discuss the context of the excerpt in Chapters 5 and 7.

1.1. Introduction

This thesis explores the significance of water flow in rivers in comprehending the process of displacement within riverine settlements, stemming from flood mitigation policies. Its aim is to shed light on the evolving patterns of habitation along urban waterfronts while also revisiting the historical context of water management and flood mitigation policies. Contrary to contemporary governmental narratives on climate change, which often portray a 'war' against the looming threat of flooding due to rising sea levels and frequent storms, a closer examination of how people inhabit river landscapes during varying water levels reveals nuanced temporal patterns in these settlements. These insights based on historiography and grounded analysis challenge the effectiveness of current governmental security measures for waterfronts, which rely heavily on speculative planning and policies. In this way, the study brings together interconnected life of landscapes that the water brought in historiography of riverine settlements across the globe.

To provide a nuanced view of the temporal patterns, the thesis interprets the emergence of terms such as 'Kali Mati' (dead river) and 'Tanah Kali' (river land) to investigate the historical narratives of riverine settlements. These terms signify the past lives of the land-filled terrain, embodying various forms of vitality in living with water becoming 'dead' and 'alive'. Leveraging the ethnographic fieldwork detailed in the preceding sections, the thesis establishes a connection between continuous urban occupation and the hydraulic dynamics of settlement in riverine landscapes. By analysing archival records, oral history, and grounded observations, the research decodes these terms to grasp the settlement processes during wet and dry periods in the low-lying plain of Kali Ciliwung in Jakarta, the capital city of Indonesia. Additionally, it argues for the persistence of occupation in riverine landscapes despite the delayed implementation of flood mitigation policies and temporary repairs to urban water infrastructure. This persistence underscores the vital role of water in sustaining urban life and redescription of the predominant narrative of security towards 'slum' settlements. Lastly, it prompts a re-examination of town planning initiatives linked to state formation, including river embankment construction, coastal island reclamation, and the ongoing capital city relocation efforts.

1.2. Background

The term 'displacement' in urban studies has been coined with the notion of gentrification and forced eviction. The term is regarded as consequential effects of a global agenda of neoliberal urban development, driven by capital accumulation (see Harvey, 2006; 2007). For the past decades, a host of studies have captured the affective, personal, social, and environmental costs of these processes, and have situated them within a complex series of forces that includes racialized land and housing policies (Brickell et al., 2017; Lancione, 2019a; Rolnik, 2019). The fact that planning systems preside over such processes indicates the importance of considering the role played by the developmental state, alongside that of capital, when analysing these displacements (Lees, 2012; Lees et al, 2016; Shin and Kim, 2016).

While analysis of these broad capitalist processes is important, the form that they take across varies considerably with the different histories, social relations, and political negotiations in variegated urban spaces (Massey, 2004; see Silvestre and Oliviera, 2012). An exclusive focus on the threatening narrative of disaster may overlook the nuanced histories and collective memories of inhabitation. Consequently, portraying flood history solely as an 'objective' account runs the risk of oversimplifying the complexities of adaptation and resilience in the face of changing environmental conditions, further perpetuating societal divisions and undermining efforts to address the multifaceted challenges of inhabiting dynamic landscapes.

Specifically, recent literature has explored the effects of climate change, tracing displacement as a consequence of floods that are increasingly afflicting large cities (Baldwin and Bettini, 2017; Sherbinin et al., 2017). Importantly, spatial discrimination extends into official responses, rendering climate change policy explicitly political: social attitudes towards environmental responses are governed by an unequal distribution of risks for different groups in society (Baldwin and Bettini, 2017; Sherbinin et al., 2007). Precarious, already-displaced residents of disaster-prone areas are at an increasingly high risk of further displacement, which entails both loss of livelihood and further exposure to neoliberal policy (Fu, 2016; Rolnik, 2019). This creates a cycle of precarity: an originary act of displacement forces these groups onto land that is vulnerable to natural disasters, resulting in further waves of displacement and homelessness when these events occur (Ferris and Petz, 2010).

Everyday state-led or state-sanctioned planning and risk-mitigation policies led by land and property owners in the wake of such events often made the livelihood of these communities worse than before (Brown & Crawford, 2006; Steinberg, 2010; Uson, 2017). This results in a situation where the implementation of zoning and other forms of spatial regulation come together with disaster mitigation policies to deepen spatial segregation in the city. Simultaneously, the act of zoning also shaped the narrative of security that inherently leads to reconfiguration of 'home' and belonging that embodied a place and entangled idea of time between planning and lived experiences.

For example, the continuity of occupation in the affected settlements after the event of disasters revisits numerous studies that have shed light on diverse understandings of timescale in the face of environmental change, critically examining climate change adaptation policies (Baldwin & Bettini, 2017; McMichael & Katonivualiku, 2020). These studies emphasise the importance of considering time and future perspectives in understanding environmental change and climate-induced displacements. These grounded views of displacement also bring the nuanced histories of place through the changing materialities of home and landscape. It underscores the importance of recognising that policymakers and ordinary individuals perceive the materiality of the environment differently, shaped by social contexts and everyday experiences (Arnall & Kothari, 2015; Farbotko & Lazrus, 2012).

Departing from these backgrounds, attention to the temporality in materiality of urban space is important to contribute to the existing studies on displacement. My research aims to fill the gap of literature by paying attention to the depth of time within the historiography of urban inhabitation and the materiality of the present. I reconsider the ongoing 'displacement' within the fleeting present in the riverine settlement through the vitality of recurring floods in historiography of 'home' in rivers and settlements. Through this approach, the contemporary process of infrastructural displacement by flood mitigation policy can be mapped in the trajectories of shifting ways of living with water in the historiographies. In specific, I draw these intersecting historiographies of riverine settlements in Kali Ciliwung that flows through Jakarta, the capital city of Indonesia. By taking the case of Kali Ciliwung as part of larger studies of displacement, this thesis will further discuss the problem of narrative regarding riverine settlement in existing studies of displacement and flood-mitigation policy in the city.

1.3. Research Problem

Studies on riverine landscape in Jakarta unveils the rhythmic 'natural' wet and dry weather that are entangled with the spirituality of untimely floods. Simultaneously, the floods and riverine settlements persist amidst changes in architectural forms and infrastructural arrangements. In the tangled wet and dry times, a landscape of reciprocal connections and social interactions in the spirituality of water, governmental narratives of security, and recurring settlement weaved the historiography of 'displacement' by flood mitigation policy. Such continuity of temporary occupation by the river signals the significance of water in shaping the landscapes of urbanising and expanding settlements, from villages and ports to towns and capital cities.

The basic understanding on intertwined connection between topographic and hydraulic context suggests that the draining approach to embanking rivers with floodgates and water pumps provides only a temporary solution to long-term projections of flooding in the coastal city (Gunawan, 2004). The embankment requires continuous dredging to ensure functionality due to high sediment levels and hydraulic pressure between the upper stream and seawater level. The technologies employed to ensure drainage of wet terrain, such as pumps and floodgates, also encounter everyday urban waste flowing in waterways. Over time, the policy categorises the landscape in low-lying terrain into risk zones and subjects them to disaster response security measures. It also confines the narrative to the governmental responses during wet periods and overlooks the broader pattern of practices in water management institutions.

At the same time, recent studies demonstrate the diverse materials that stormwater brings, which in turn fosters emergent urban settlements that gather sediments and debris in the wet terrain (Kusno, 2018). This flooding period became a catalyst for heterogeneous socio-political movements, prompting various institutions to engage in temporary disaster relief efforts and philanthropic actions (Gunawan, 2004). It also compels governmental institutions to take decisive leadership actions in emergency response and multi-scale governance (Srikandini et al., 2018). Over time, the recurring wet season deeply integrates with social and political life, shaping how people perceive and interpret water in the continuity of urban life. This interconnected urban existence amidst the 'outlaw' of water reshapes both dry and wet times of urban settlement, influencing the planning of river embankments in flood-mitigation policies.

In this thesis, these pre-given associations are grounded by affective histories emerged through ethnographic observation in messy fieldwork encounters. I encountered a landscape named 'Kali Mati', translated literally as 'dead river' in Indonesian, to point to a jagged terrain filled with red soil, debris from demolished houses, and the humid air of September 2021. The term 'Kali Mati' or 'dead river' was recounted by displaced inhabitants affected by flood control infrastructure development and private projects, highlighting the past lives of the land-filled terrain.

In geomorphology studies of rivers in Java, the Island where Jakarta is located, the toponym 'Kali Mati' refers to bodies of still water known as fluvial or oxbow lakes (Verstappen, 1957). These formations result from natural processes of erosion and deposition along river bends, where changes in water flow during floods can cause the river's course to shift, leaving stagnant water bodies separated from the main channel (Fisk, 1944; Wolfe et al., 2006). Surveys on small islands in the equator like Java Island also has noted the smaller scale and size of rivers in comparison with broader continental landscape (Cabaton, 1914). These studies on biophysical elements of the landscape influence the temporality of inhabitation in 'river' that gathers 'land' and 'water' in becoming settlements.

Through ethnographic encounters, the 'dead river' referred to the stagnant water bodies as a consequence of engineering projects that straightened the meandering river into a straight-line channel. A construction project was underway to erect a high-rise apartment complex and mixed-use office building adjacent to a transit station on the elevated train network. Amidst the remnants of water, I gleaned insights into urban life conveyed through the language of shifting geographies in the flow of freshwater in a small ditch that eventually joined the river channel. The concept of 'Kali'/river appeared to transcend its physical form, dissipating into a multitude of living entities beyond capture, thus becoming an enduring element within the shifting wet and dry urban landscape (see Figure 2). The term also draws together historiography of landscape with human settlements. The meandering waterway of rivers emphasises the deep connection between historiographies of governmental interventions in water management and the collective memories of inhabitants, revitalising riverside settlements. It excavates a multiplicity of associations that surrounds the ontology of 'river'.

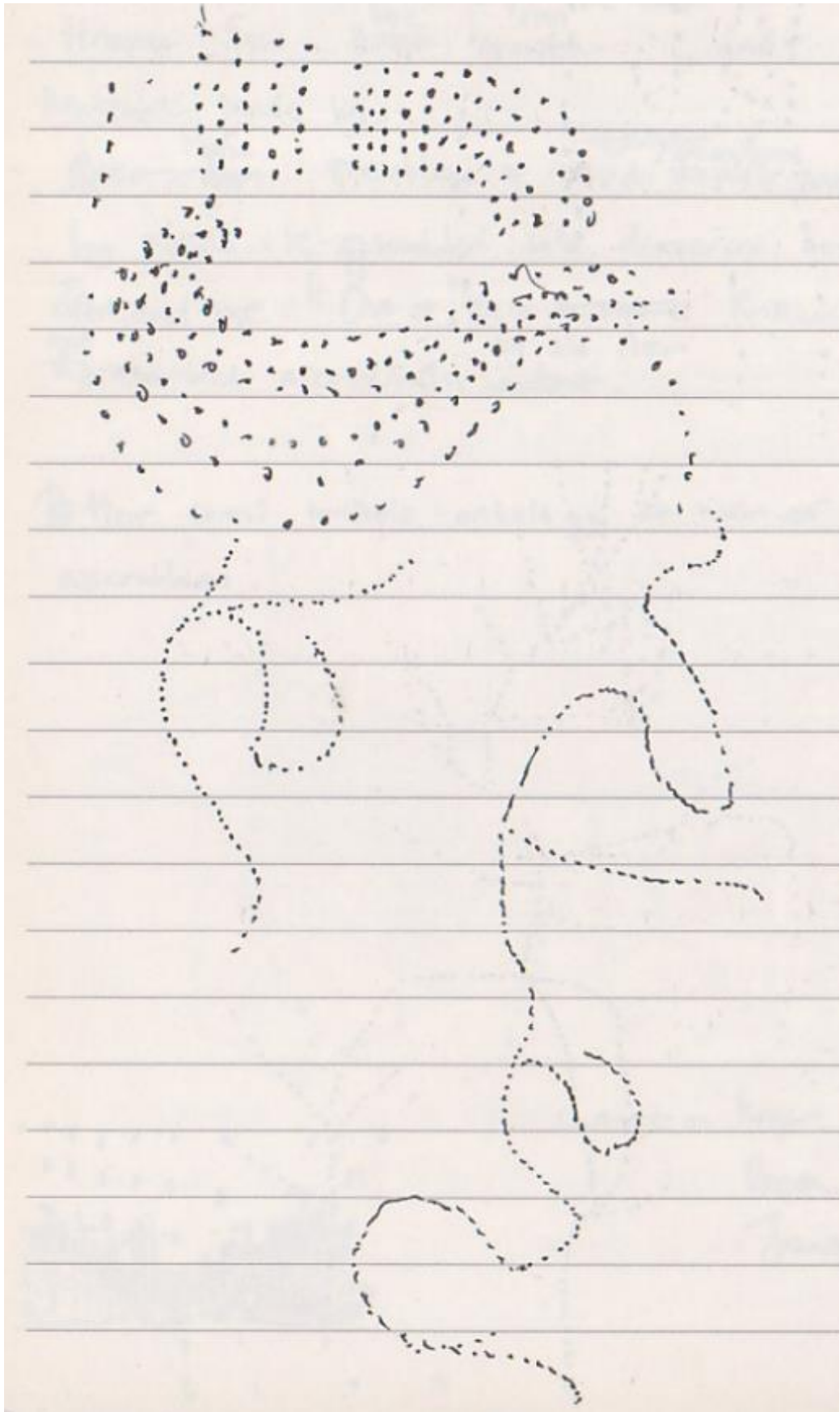


Figure 2 Speculative map of Kali Mati as meandering points of becoming river, by author, fieldnote on 18/09/2021.

What appears of 'river' is more than just an inert body of water; they depict a dynamic lifetime of settlements that unfolds the changing landscape. In this way, debates on infrastructural displacements by flood mitigation policy are part of historical trajectories of how different ways of living with water are made and remade over time. It intersects with spirituality of water amongst inhabitants of the landscape that connects to the shifting inhabitation and attitude towards life. Attention to 'deep time' that entangles rivers and settlements altogether underlines the far-reaching consequences of draining, landfilling, and embankment construction, both through state-led infrastructural projects and private initiatives. This alteration of the landscape profoundly impacts the frequency and severity of floods in low-lying settlements, prompting important questions regarding the continuity of various settlement types in wet terrain.

The term 'Kali' that emerged in the fieldwork encounter denotes spirituality of time that water can bring into life. The rhythmic shifts move beyond the duality of association embedded in 'river' between 'infrastructure' and 'landscape' (Chitra, 2021; see Mathur & da Cunha, 2019). Instead, the term offers an entry point to attend to the vitality of living with water in historiography of 'home' in collective memories of life amidst wet and dry riverine landscapes across changing seasons, often obscured by dominant recent translation and interpretation of riverine settlement as 'slum'. The rhythmic presence of water in riverine settlements traces the ongoing and continuous shifting inhabitation with water beyond the spatial boundaries of a place.

This thesis navigates the tension between these aspects through a temporal approach to displacement through historiography and grounded analysis on riverine settlement. The case of Jakarta, the capital city of Indonesia, is highly relevant to consider the multiplicity of geographical settings that shaped the presence of water flow. To provide a nuanced view of time, this thesis draws the becoming of the city as part of the constellation in the historiography of settlement and spirituality of water in the landscape. The 'Kali Mati'/dead river is a starting point to unpack these interconnections in the displacement of riverine settlements in Jakarta.

1.4. Research Aims, Questions, and Contributions

This research seeks to understand the process of displacements within riverine settlements driven by flood-mitigation policy, with a particular emphasis on the temporal dimension inherent in water flows within the historiography of rivers and settlements. By exploring the intricate interplay of wet and dry periods in water flow and the continuous evolution of state formation in river development, this study seeks to offer a nuanced perspective on displacements. The keywords of the study are historiography, displacements, and riverine settlements.

Based on the objectives, I formulate the research question as follows:

1. How are the relationships between displacements of inhabitation in riverine landscapes reflected in historiography, particularly concerning urban infrastructure?
2. How do flood policy and associated river and infrastructure development relate to the contemporary displacement of riverine settlements?
3. How do river inhabitants resist the development and articulate an alternative way of dwelling with the water?

The first research question elucidates the potential and limitations of the temporal approach within this dissertation, underscoring its significance in comprehending trajectories of riverine settlements. The second research question examines the tension between the governmentality of settlements, which shapes beliefs and values regarding water, and the implementation of security measures in displacements resulting from the Kali Ciliwung Embankment Project in Jakarta. Lastly, the final research question delves into the present-day practices of living alongside a river during the onset of wet and dry seasons. Conceptually, this study offers a comprehensive exploration of ethnographic fieldwork and the historiography of rivers and settlements on Java Island, particularly focusing on Kali Ciliwung in Jakarta. It contributes to the literature on displacements at the nexus of planning, disaster risk management, and anthropology studies of dwelling landscapes. The following literature review probes into existing scholarship on the displacement of inhabitants within riverine landscapes, aiming to elucidate the intersection of temporality and materiality in the context of contemporary displacements in flood mitigation policy.

1.5. Literature Review

1.5.1. Settlements of 'Dead River'

To begin, I probe into the material history of water flow, particularly its religious significance as a sacred symbol with purifying power. Drawing on Alley's (2002) analysis of the Ganga River, in India, I explore how the image of the river as a divine figure disrupts policy, bureaucracy, and legal activism related to water conservation and public health. Utilising Gramsci's notion of hegemony, Alley illustrates how the self-purifying nature of the river flow leads to differentiated yet temporarily aligned religious practices, legal activism, and official, science-based policy. She demonstrates how the concept of *gandagi*, or 'dirt' in the river's ritual sites transcends mere pollution, becoming embedded within historical conditions that perpetuate the norms and practices of a 'purifying river'. Alley also looks at how important pilgrimage rituals are to the economies of religious institutions in Indian cities that are near rivers. This helps us understand how visible embodied rituals and worship experiences are in the ongoing debate about government actions to improve river conditions within the institution of water policy and development.

The embodied spirituality of landscapes intertwines with historical encounters in emerging infrastructural settlements and the observation of changing landscape dynamics. Krenak (2021) contemplates the resilience of indigenous communities against environmental devastation resulting from the collapse of a mining dam in the Rio Doce River, Brazil, characterising the river as a 'comatose river' in its resistance. Similarly, Tadiar (2022) discusses indigenous resistance to the imposition of national laws on customary rights, which led to land dispossession in dam-building projects in the Philippines. The concept of a 'dying river' serves as a discourse to express frustration over river degradation and governmental failures to address it, as seen in the case of the Bagmati and Bisnumati rivers in Kathmandu, Nepal (Rademacher, 2011). These critical studies highlight the geopolitical narrative embedded in submerged settlements affected by large-scale infrastructure projects, contextualised within specific landscapes, populations, and temporal contexts (Qing, 1998).

Furthermore, road-based town planning has transformed rivers and waterfront areas into 'void' landscapes, paving the way for lucrative development opportunities. The narrative of abandonment in urban water infrastructure extends beyond speculative investment in monumental development projects (Sainath, 1996), evolving over time into sites for speculative development that devalue affordable settlements and urban water infrastructure (Ranganathan, 2015). Planning studies have interrogated the measurement of ecological value in terms of 'ecosystem services' to unpack the displacements caused by infrastructure projects (Gandy, 2013; Vollmer et al., 2015; Wolch, 2014). These studies on the material valuation of riverine landscapes offer nuances of gentrification in waterfront developments geared towards profitable commercial uses, reflecting a global trend in capital cities (Lees et al., 2016). For example, research on the resettlement process during the construction of the Tietê River Valley Park in São Paulo, Brazil, highlights the adaptive capacities of residents in establishing makeshift settlements despite recurrent flooding (Millington, 2016, 2018).

Still, the vitality of water and occupation along waterfronts intersect with the temporality of home, shaping landscapes within urban settlements. For example, municipal authorities in New York used urban water infrastructure such as river bridges and abandoned East River seawalls to temporarily shelter migrant residents before displacing them (Balmori & Morton, 1993; Morton, 1995). Resistance against displacement in the Boeng Kak Lake development in Phnom Penh, Cambodia, sheds light on the geopolitics of 'home' and its significance on a global scale (Brickell, 2014). The vitality provokes urban imagery of 'home' that prompts questions about the perception of flooding as contaminated water when it encroaches upon homes, influencing property values and challenging home insurance claims (Walker et al., 2011). As nighttime disasters become more common, community-based disaster response drills emphasise the importance of nighttime surveillance and settlement mapping, as well as the importance of temporal considerations (Shaw, 2014). These studies reveal the complex interplay between rising water levels, governmental security operations, infrastructure development, and housing market dynamics in cities. The next section will discuss further the resonance between landscape and language in the ruination and renewal of settlements.

1.5.2. Spirituality of Landscape in Riverine Settlements

So far, this literature review offers a grounded perspective on recurring flooding and riverine habitation by examining the temporal dynamics of water flow in riverine landscapes. It seeks to counteract the tendency toward totalizing historical narratives in state formation, particularly evident in Jakarta's evolution as the capital city (Kosselleck, 2018). Through a nuanced view, it illuminates the complexity and vitality of shifting modes of existence, from agricultural to service-based livelihoods, along urban waterfronts. By embedding narratives of dwelling within river historiography, it challenges conventional distinctions of landscape time, blurring altogether the natural, social, and eventful temporalities. Additionally, it scrutinises grand narratives of civilisation in rivers, foregrounding the vitality of human-landscape relations in shaping livelihoods.

Noxolo (2016) highlights the lens of creative literary imagination to understand landscapes inspired by literary works by Wilson Harris, a hydrographic surveyor renowned for his expeditions into the Guyanese interior. Harris articulates his lived experiences eloquently, suggesting that landscapes and riverscapes are vibrant realms teeming with resonance and life. He reflects: "It seems to me that, for a long time, landscapes and riverscapes have been perceived as passive, as furniture, as an area to be manipulated, whereas I sensed, over the years, as a surveyor, that the landscape possessed resonance. The landscape possessed a life because the landscape, for me, is like an open book, and the alphabet with which one worked was all around me. Nevertheless, it takes some time to grasp what this alphabet is and what the book of living landscapes is" (Harris, 1999, p. 40). In this portrayal, the landscape emerges as a canvas of imagination, accessible to those who engage with Earth's creative process, imbued with vitality, speaking its own language, and composing its own music. He senses this vitality as he envisions the ghost of a child swimming in dry land, evoking childhood memories of swimming near the Fort in Georgetown.

Noxolo connects Harris's introspection with the notion of fractals in geography, which elucidates scale and recognises repetition in the patterning of irregular shapes. The text highlights three key points regarding fractals. Firstly, fractals denote the spatial behaviour or appearance of a system independent of

scale, depicting a complex and dynamic yet interconnected universe. Secondly, they are understood in relative terms rather than absolute ones. Thirdly, they encompass temporal scales in addition to spatial ones. These points metaphorically conceptualise fractals in terms of scalar patterns. Fractals exhibit immense reproductive capabilities, creating meaning through profound transferences and representing deeper resemblances that resonate with unexpected truth.

For example, Da Cunha (2019) draws spiritual imagery of the Nile River in Egypt, illustrating the connecting wind traversing the shifting terrestrial horizon of riverine settlements. This wind, known as the 'monsoon' from the Arabic terms 'mauseum' or 'mausim', shapes the scaling of river flooding and directs trade winds (see Figures 3 and 4). The flooding in the Nile exemplifies the interplay between the restless wind and its impact on airflow elsewhere. Da Cunha (2019, p. 209) elaborates on the terrain life along the Nile and beyond: 'In the months of June, July, and August, it carries clouds that can become exceptionally deep and heavy with moisture skimmed off the Indian Ocean as it moves northeast. When these clouds meet the many high grounds stretching from Ethiopia to India and beyond, they condense into precipitation. This precipitation seeps into the Earth, saturating the air, nourishing plants, replenishing glaciers, and forming ice fields, generating numerous sources of wetness from the Nile to the Ganga and farther east.'

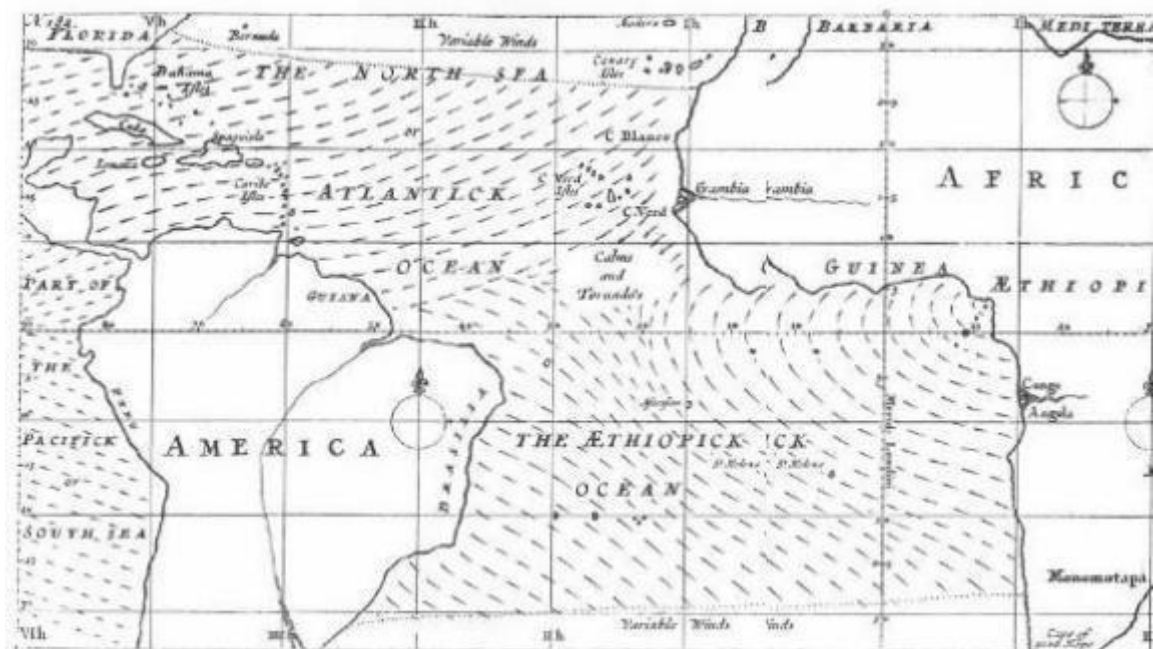


Figure 3 Map in the attempt to assign the physical cause of Trade Winds and Monsoons (part 1), including the lines of Nile in Africa, by Halley, 1686-092, pp. 153-68.

Settlements emerge within the Nile region ‘on the banks of a river, formed by a ‘river’ that flows and floods, and on the mounds in an ‘ocean’ of rain that rises and falls’ (Da Cunha, 2019, p. 216). The ever-shifting sands of the desert horizon and the settled alluvium of the flowing river serve as two distinct markers for delineating the terrain of towns and their surroundings. As the waters of the Nile extend over the fields and towns, the landscape undergoes a transformation: ‘The plains lie hidden, the valleys are covered over, towns stand out like islands. In the country’s interior, there is no communication except by boat. The less people see of their land, the happier they are’ (Seneca, 1971, pp. 23–29 in Da Cunha, 2019).

The spatial and temporal scaling of landscape also offers relational thinking of dwelling within interconnected materiality in riverine settlement. The vanishing boundary between wet and dry terrain assumes spiritual significance as the flowing waters of the Nile become a focal point for prayer, leading to the invocation of the ‘Nile in the sky’ among Egyptians. This spiritual resonance imbues the living landscape with a sense of interconnectedness, shaping the partial yet intertwined history of settlements across the globe. The celestial movements of the sun represent the passage of time, influencing both wet and dry terrain and weaving together the turn of the wind in the changing seasons as well as various narratives in riverine settlements.

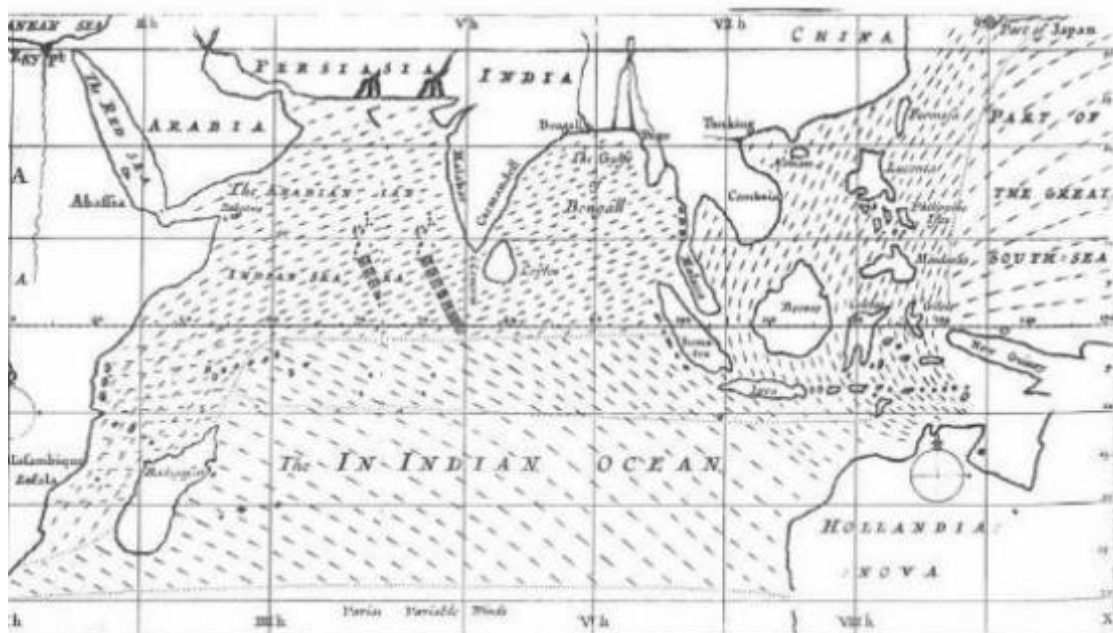


Figure 4 Map in an attempt to assign the physical cause of Trade Winds and Monsoons (part 2), including the lines of Nile in Africa. Note the presence of Java Island surrounded by oceans, by Halley, 1686, pp.153-68.

The configuration of a 'town' as a habitat is defined by its anchoring in the laborious pursuit of optimising time amidst the dynamic forces of nature across terrains and oceans. This concept encapsulates the notion of 'civilisation' across historical epochs, exemplified by modernization initiatives such as those in Bangkok, Thailand (Tuitjer, 2018). Simultaneously, the temporal essence of the landscape plays a crucial role in shaping the definitions of 'town' and 'dwelling' within the context of historical projection. Embedded within the landscape's temporal dimension is the continuous process of settling in urban centres, which is inherent to state formation and involves the configuration of human bodies and their labour as integral components.

Themes of memory and imagination, as discussed previously in relation to expansive landscapes and the significance of water abundance in shaping settlements on riverine landscapes, continue to emerge (Goh, 2021). Tadiar (2022) emphasises the importance of acknowledging the 'remaindered life' which encompasses forgotten pasts, overlooked presents, and various unaccounted-for temporalities that exist on the margins of a predetermined future (Tadiar, 2022, p. 314). In this context, the ever-changing wet terrain of riverine settlements becomes akin to an open manuscript, inviting the creative construction of 'waysides' within an evolving urban landscape. These settlements assume the role of 'artefacts in the world-making endeavour', possessing the potential to mediate, connect, generate, or contribute to alternative material imaginations beyond the prevailing paradigm of value-driven existence.

These studies highlight the temporal dimensions of memory intertwined with water, creating the fractals of the 'living' urban settlement. The following section will delve deeper into this topic by examining the role of water flow in shaping the translation and interpretation of the materiality of riverine landscapes across different geographical contexts. Departing from the name 'Kali Mati', the following review will unfold the vitality of water in Java Island and beyond. It investigates the relational and interconnected life made by water that draws together both the physical and spiritual aspects of settling on these landscapes.

1.5.3. Settlements of Kali in Java Island

Exploration of the linguistic context of 'Kali Mati' in the Sundanese and Javanese languages within the landscape of Jakarta, located in the western part of Java Island, uncovers the intertwined resonance of dwelling deeply ingrained within local communities. Examining the wind patterns that contribute to the creation of wet and dry terrain offers valuable insights into the interconnected water horizons that shape fields and settlements along rivers. The ecological interplay of translations and interpretations surrounding terms like 'water,' 'rain,' 'river,' and 'Kali' proves indispensable in grasping the essence of 'land' and 'terrain' within the context of 'river,' 'river-bed,' and 'settlement.' These investigations unveil diverse locales that underscore both the spirituality and physical materiality of water in the landscape, portraying it as a vibrant, interconnected entity.

The translation of 'Kali' reveals the spiritual dimension embedded within the landscape of Java Island, resonating across the Sundanese and Javanese communities, who constitute the island's ethnic majority. According to the Old Javanese-English dictionary, Kali is defined as a 'deep watercourse,' 'river-bed,' or 'channel,' and is associated with terms such as 'khata' and 'parikha', denoting 'excavated,' 'a ditch,' 'moat,' or 'fosse' (Zoetmouder, 1982a, p. 776). Additionally, Kaliyuga, meaning 'the kali-era,' refers to a period in Hindu cosmology known as 'yuga', representing a cycle of time wherein the world undergoes destruction and recreation, with Kali serving as the goddess of time and death during this phase. It can be assumed that there plays a role of 'Kali' in water management for the landscape across the countryside, villages, and towns.

Monsoon winds and rainfall patterns are crucial for agricultural village inhabitants in Java, who depend on abundant surface water rather than limited spring and groundwater sources. Comparatively, the hilly dry terrain in Central and East Java is relatively drier than the mountainous forests of West Java, where the Sundanese people reside. Consequently, a spiritual connection exists between rivers and irrigation practices among both Javanese and Sundanese communities. In the Old Sundanese and Old Javanese languages, the term 'bangawan' signifies greatness and divinity, as seen in the majestic rivers of 'Bengawan' Serayu and

'Bengawan' Solo in Central Java. Meanwhile, in Sundanese, 'cai' denotes water abundance, as evidenced by phrases like 'cai gede' for 'great water'. In Sundanese, terms like 'walungan', 'wahangan', and 'susukan' describe various tributaries of water channel that converge into significant bodies of water, such as 'cai gede'.

Furthermore, the Sundanese and Javanese languages differentiate between 'water' and 'terrain'. According to the Old Javanese-English dictionary, 'tanah' means 'land' or 'country', as well as a 'writing instrument' (Zoetmouder, 1982b, p. 1927). I can infer that 'tanah' also encompasses references to shaping terrains, including the construction of water channels like irrigation canals. Thus, while the name 'Cai'/'Ci' in 'Ciliwung' originates from Sundanese and denotes the flow of water, it may not connote greatness and divinity, as seen in the 'Bengawan' rivers.

The interconnectedness of embedded history between language and landscape is evident in the formation of settlements, as reflected in the term 'Kali Ciliwung'. The term 'Kali' persists in naming canals used for irrigation in the low-lying agricultural fields of Central Java and East Java. It signifies the terrain of rainwater, serving as an act of reverence to a goddess associated with spirituality, particularly during the dry period of the planting season. Thus, 'Kali Ciliwung' in Jakarta amalgamates elements of Javanese and Sundanese ecologies, offering a speculative interpretation of water terrain forms intertwined with the spiritual significance of the goddess 'Kali'. This synthesis encompasses the cultural domain, emphasising the spirituality of Kali as integral to sustaining continuous habitation amidst the fluctuating wet and dry cycles of water flow in the waterway.

Furthermore, the term 'Kali' refers to both wet and dry cultivation periods in South and Southeast Asian villages. The worship of Kali intersects spirituality with aspirations for the removal of obstacles or the provision of livelihoods, particularly within environments characterised by varying wet and dry terrains. The clustering of temples, trees, and water sources suggests that the agricultural practices of arid lands within village communities may be the root of Kali's veneration. For instance, in Sri Lanka, Rodrigo (2023) reflects on her translation of Tamil literature as an act of traversing diverse landscapes. This act of translation echoes her childhood memories, intricately intertwined with the temporal interpretation of landscapes. She recalls that Tamil temples often feature

a large tree within their premises, serving as a site of devotion to deities such as 'Kali, Mariamman, and Amman, along with numerous smaller clan gods and goddesses' (Rodrigo, 2023, p. 66–67, emphasis added).

The translation and interpretation of 'Kali' play a crucial role in denoting the specificity of terrain and dwelling, particularly within the context of South and Southeast Asia influenced by the monsoon winds. Bremner (2022) explores the diverse interpretations shaped by these winds, illustrating how they impact the geopolitics of the region. For example, in Chennai, the worship of the goddess Mariamman during the dry and hot period coinciding with the onset of the southwest monsoon demonstrates the intricate interplay between physical phenomena and economic activities in inhabiting the landscape. Additionally, studies in volcanism and seismology contribute to understanding how oceanic movements delineate the wet and dry terrains of cities like Yangon, Burma's capital. Despite these physical considerations, creatures such as ants, snakes, and 'naga' inhabit the subterranean realm, which remains intertwined with spirituality and influences geothermal dynamics (Cullen, 2022). These investigations highlight the ongoing interplay between spirituality and materiality in water flows, as well as the ontology of rivers as infrastructure in urban settlement.

The anticipation of water during wet and dry periods invokes narratives of both 'debt' and 'gift' within water management. In contemporary environmental discourse grounded in climate science, water's significance in ensuring irrigation functionality is often framed within the context of 'debt' obligations within global financial systems (Geros, 2022). This narrative underscores how infrastructural development prolongs the viability of global interactions but also exposes the limits of language in understanding the temporality of water abundance. Similarly, it avoids the concept of canals as a means of 'giving', 'offering', or 'bestowing', imparting spiritual significance to life and death processes in anthropological studies (Rigg, 1992). This infusion of village traditions and indigenous knowledge manifests as recurrent motifs, overlapping within the fabric of the landscape. As a result, the use of wet terrain for water storage serves to reinforce and extend temporal frameworks in the making of riverine settlements.

1.5.4. Riverine Settlements along Kali Ciliwung

The water flow of riverine landscape signals interconnected terrain that brings the movements between coastal port town and mountainous settlement. The presence of bamboo rafts, 'Betawi' dwelling traditions, crocodile bread, and giant puppets illustrates the material geographies of village life in agricultural settlements between the highlands and the port town on the low-lying deltaic plain of the riverine landscape. These elements reveal that political and economic interactions between ports in North Java, facilitated by global trading networks, have shaped the interconnection of time amidst emerging urban settlements, considering river seasonality, agricultural cultivation, and port activities. In the port history of Jakarta, the historical literature on agricultural settlements has described river-based mobility, connecting settlements between the upstream and downstream areas (Chaer, 2015; Harun, 1991). Archaeological evidence supports this narrative of the mobility of the port settlements towards Bogor, a city near the Gede-Pangrango-Salak volcanic mountains, with roots dating back to the 5th-century Hindu Kingdom of Tarumanegara (Djafar, 2009).

Gradually, the building material in West Java shifted from bamboo towards various types of wood in the forest. Bamboo, a plant that thrives in hot and humid tropical climates, played a crucial role in regulating water in the landscape and served as a significant building material in settlements across Java Island. Traders sourced bamboo from settlements situated upstream at the foot of the Gede-Pangrango-Salak Volcano, transporting it downstream to sell agrarian products in the markets of port towns like Banten and Sunda Kalapa, present-day Jakarta (see Figure 5). This mobility meant that the landscape between the markets and the rivers served as a temporary residence for these labourers. In Jakarta, people continue to use bamboo rafts as platforms for river crossing, cleaning, bathing, and even for recreational activities such as wild swimming (Suryani and Astuti, 2018) (see Figure 6). Furthermore, in Tandjong Priok, an additional coastal port that supports Sunda Kalapa, inhabitants have established wet rice fields in the low-lying plains of coastal areas, utilising bamboo for irrigation purposes (see Figure 7).



Figure 5 The landscape of the river valley surrounded by an open rice field in Bogor by Pieter van Oort Hzn, dated 1830, Public Domain, via Rijkmuseum Collection.



Figure 6 Bamboo rafts travelled from upper stream settlements on the feet of Gede-Pangrango Mountains to the downstream canal of Batavia in 1949, Public Domain, via Rijkmuseum Collection.



Figure 7 Bamboo embankment in the south of Tanjung Priok, Batavia, prior to regulation related to Malaria, between 1938-1939, public domain, via Leiden University Library Collection.

According to Gunawan (2010), the landscape of West Java was predominantly characterised by wet terrain prior to the development of Batavia port town and the emergence of the 'Betawi' cultural identity in the 17th century. Early Betawi settlements were inland, situated along pathways that traversed gardens and plantations, leading towards the wet terrain of rivers (see Figure 8). These settlements typically consisted of family groups residing amidst a coastal landscape towards the highlands of the volcanic mountains, featuring gardens, fishponds (known as *empang*), granaries, and family burial grounds. Groundwater wells for bathing and cleaning were often located outside the house, often detached from the main living area (Chaer, 2015). Coastal areas featured houses elevated on stilts with connecting steps leading to the front door, while inland areas constructed houses closer to the ground (see Figure 9). Specifically, Kusumawardhani (2010) identified the presence of granary or rice storage room in the house of Betawi in Banten (see further discussion in Chapter 5).

Historians commonly attribute the stilted structure of traditional dwellings to protect inhabitants from floods and wild animals (Knapp, 2003), while most of anthropology studies on building tradition in Southeast Asia refer to cosmology of a living house (Waterson, 1998). In West Java, the stilted structure is part of wider understanding on cosmology in inhabitation that reflects material and spiritual worlds of a building process (Harun et al., 2011). In the late 20th century, the preservation of Betawi culture became an agenda within Indonesia's emerging capital city and state formation. Agricultural settlements gradually relocated to the outskirts as road-based infrastructure and industrial development expanded (Chaer, 2015). Some Betawi houses in Condet, a neighbourhood adjacent to Kali Ciliwung and renowned for its salacca plantations, remained clustered along road networks until 1983, maintaining agricultural gardens as a primary source of food and livelihood (see Figure 10) (Budiati, 2000). Over time, Betawi houses exemplified inter-generational building adaptation and abandonment of its inhabitants (Harun, 1991). In preservation efforts, the Cultural Agency of the Jakarta Provincial Government established a showcase of Betawi cultural heritage in a lake named Setu Babakan, in Jagakarsa district, situated along the middle stream of Ciliwung, and a museum named 'House of Si Pitung', in the coastal areas of Marunda in North Jakarta.



Figure 8 Variations of Betawi houses in Batavia, in Harun, 1991. Used under UK copyright exception.

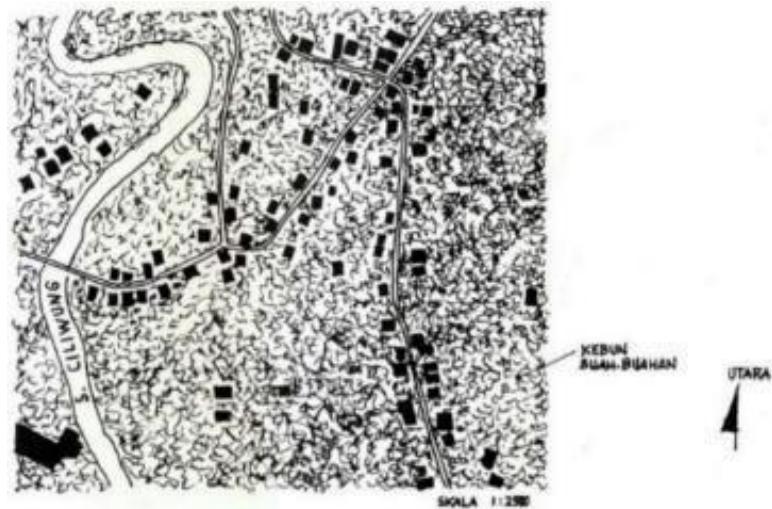


Figure 9 Betawi kampung in Condet near Ciliwung River, Jakarta, shows linear houses along the alley with vast garden space toward the river, by Yuwono, 1983, in Harun, 1991. Used under UK copyright exception.



Figure 10 Preservation of Betawi settlement in Situ Babakan, in Jagakarsa, in boundary between South Jakarta and Depok, by Water Resource Agency of Jakarta Provincial Government, 2021 Used under UK copyright exception.

Amidst the evolving landscape of agricultural settlements, ‘ondel-ondel’, a pair of giant puppets, remains a cherished element of village life. Traditionally, sacred rituals used these giant puppets to celebrate agricultural harvests, protect communities, and ward off malevolent spirits. Prior to performances, the individuals inside the puppets observed fasting rituals and made offerings to spirits (Tifada and Mahabarata, 2020). The degree to which the ‘ondel-ondel’ ritual performance is associated with migration processes is still unclear. However, Betawi settlements demonstrate a link with river-based migration, in which migrant workers from port towns and agricultural plantations, who make up the inhabitants of agricultural societies, appear to deeply intertwine the associated rituals with spirituality. The ritual carries an inherent belief in protection from adversity and calamities such as pandemics, droughts, and storms that have historically impacted settlements. Such considerations on untimely events in the past and future in the practices of livelihoods showed embodied understanding of forces in landscape and attitudes in building and settling in a place.

Despite the predominance of Islam in Jakarta and the transition of the urban economy towards agricultural settlements, ‘ondel-ondel’ remains an integral facet of the city's identity. Several neighbourhoods in Jakarta are renowned for their puppet makers, while street performers use the puppets for daily entertainment (Wahidiyat, 2019). Performances are typically held in public spaces, such as the street, with groups playing traditional musical instruments. Over time, the puppet has evolved in various forms, crafted from diverse materials and adorned with

different colours for masks and attire (see Figures 11 and 12). Presently, city authorities have embraced 'ondel-ondel' as a symbol of Jakarta's cultural heritage, incorporating them into various events and contexts, including public festivals, official ceremonies, interior decorations, and souvenirs (see Figure 13). This cultural icon serves as a reminder of the agricultural calendar's rituals during harvest seasons, symbolising prosperity and fostering a collective memory of agrarian life within the historiography of settlements shaped by the ebb and flow of the riverine landscape.



Figure 11 Giant puppet 'ondel-ondel' performance on the street during a celebration of Hotel des Indies in Batavia, 1923, public domain anonymous 70 EU, via Wereld Museum Collection.



Figure 12 Variation of 'Ondel-ondel' performed on the street of kampung in Batavia by G. Kolff & Co., circa 1910, public domain, via Leiden University Public Library (KITLV).



Figure 13 Popular form of 'Ondel-ondel' in Lebaran Betawi event celebration, by Media Indonesia/Bary Fathahilah, 2019, used under UK copyright exception.

Finally, the agricultural settlements reliant on surface water underwent a transformation, converting rivers and swamps in the deltaic landscape into arenas for encounters with water-dwelling animals. Historical records from the 17th century depict a plethora of creatures inhabiting the forests and swamps of the northern part of Java Island, including freshwater and saltwater crocodiles, as well as rhinoceros (Niemeijer, 2005; Wessing, 2006). Hunting these animals was a common practice in Batavia to safeguard the canals and surrounding areas of the port, leading to the displacement of crocodiles, tigers, rhinoceroses, and snakes that once roamed the rivers and waterways of the port town (Niemeijer, 2005; see Figure 14). Extensive deforestation and the influx of rural labour from the burgeoning agricultural and sugar industries in the 17th century drove a significant period of landscape transformation, as these records demonstrate. The establishment of these settlements through deforestation was contingent upon the political and economic stability provided by the colonial government.

Encounters with animals evolved into a creative process for the construction of traditions and collective memories within agricultural settlements. For instance, the practice of presenting a pair of crocodile bread as a dowry in Betawi culture resonates with the depiction of a crocodile puppet as a dowry in Banten, the neighbouring port located in the western part of Betawi. The crocodile puppet contains various agricultural harvest of the inhabitants. This illustrates the spiritual significance that water-dwelling animals hold as symbols of collective identity across the ecological cycle of landscape and life stages of the inhabitants (Figures 15 and 16). Folklore in Betawi and various Indonesian islands further narrates the transformation of water animals into humans, conveying spiritual and ethical messages aimed at maintaining social harmony (Taendiftia et al., 1996; Terada, 1994). In modern-day urban landscapes, place names memorialising the spirits of these animals persist, such as Lubang Buaya (crocodile's pit), Rawa Buaya (crocodile's swamp), and Rawa Badak (rhinoceros's swamp). These embodiments of spirituality within the settlements add depth to studies on animal geographies (Wolch, 2002).



Figure 14 Photograph a tied crocodile surrounded by a group in Langkat, Tanjungpura, Sumatra. Note the raised, silted houses made of wooden walls and windows with steps toward a door opened between two houses, by Heinrich Ernst & Co., 1907, public domain, via Rijkmuseum Collection.



Figure 15 Crocodile bread as dower in the hands of bride and groom in traditional Betawi wedding, by Instagram @elsafitriansyah, 2018, via Tagar.id, 2018, used under UK copyright exception.



Figure 16 White crocodile puppet containing agriculture products as dower in a wedding ceremony in Padarincang, Banten Province, via Majalah Teras, 2017, used under UK copyright exception.

1.5.5. Riverine Settlements in Jakarta

The preceding discussion discerns an intricate interplay between rivers and agricultural as well as industrial activities within the contemporary urban landscape of Jakarta. This underscores the evolving stance towards urban settlements and the provision of infrastructure in the capital city, particularly concerning the dynamic nature of the wet and dry terrain. The physical transformation of the landscape reshapes the temporality of living in riverine settlements as part of geographical processes that continue to influence the trajectory of settlement history. Changes in river morphology, such as avulsion, have occurred at varying rates throughout history, influenced by factors including climate, soil composition, and human interventions (Slingerland et al., 2004). Consequently, the water flow and sediment accumulation in rivers prompt inquiries into the planning and design of urban infrastructure, which dictates hydraulic relationships and landscape formation, thereby affecting daily life in riverine settlements (Figures 17, 18, and 19).

Paying attention to materiality reveals a paradox about how well urban infrastructure works with different types of settlements when figuring out flood levels in an urban world mostly controlled by road infrastructure. This revisits previous studies highlighting the vulnerability of the city's low-lying plains due to the uneven distribution of water during flood events (Caljouw et al., 2005; Gunawan, 2010; Kusno, 2018). Critically, it reexamines the evolving discourse surrounding floods, transitioning from a perception of security within stagnant wetlands to the recognition of the heterogeneous terrain of urban settlements. Here, hydraulic relationships determine the threshold of the 'flood level', potentially dispersing water damage across surrounding low-lying areas. This sheds light on the interconnectedness between contemporary road infrastructure and architectural configurations within the built environment, which collectively shape hydraulic dynamics and influence water damage capacity.



Figure 17 Sand and stone 'miner' during a dry time in upper stream river, 2014, via lovelybogor.com, used under UK copyright exception.



Figure 18 Inhabitants of Kampung Melayu use water of Ciliwung River to clean the remaining mud downstream after the flood, by dwi narwoko, January 2014, via Merdeka.com, used under UK copyright exception.



Figure 19 A child played on dry, hardened mud on the banks of West Flood Canal in Petamburan, Jakarta, by Andrey Gomico, 5th July 2018, via Tirto.id, used under UK copyright exception.

Furthermore, examining the continuity of urban settlements and their disruption by flooding is crucial for understanding the significance of time, labour, and material possessions in capital cities like Jakarta. In the 17th century, Batavia's rivers and canals served as focal points for daytime trading activities, while nighttime was characterised by leisure pursuits and bathing, albeit with the presence of lurking crocodiles (Gunawan, 2010). By 1983, sixty percent of Jakarta's area consisted of kampungs, where migrant inhabitants comprised seventy-five percent of the city's population (Taylor, 1983). Murray (1991) conducted an ethnographic study in Manggarai kampung near the Ciliwung River, which portrays a vibrant "nightlife" involving street traders and prostitutes, shedding light on the struggles of women from rural areas seeking livelihood opportunities. The transformation of former prostitution sites like Kalijodo into riverside pocket parks for recreational activities exemplifies the evolving landscape of these areas (Mardani and Christanti, 2020).

The interaction between daytime and nighttime activities intersects with the distribution of flood-prone areas, reshaping the continuity of daily routines. Despite the formal order that prevails during the day, nighttime activities along waterfronts continue through negotiations and agreements that go beyond conventional narratives (Tadie and Permanadeli, 2015). While historical studies often frame pollution in public health discourse using mortality statistics, they overlook the temporal dimension of dwelling processes (Burg, 2000) (see Figures 20 and 21). Nighttime conditions also influence emergency response capacity during flooding events. For instance, power outages during extreme weather at night may hinder emergency efforts, affecting residents in inundated settlements who must navigate physical and emotional labour (Sutrisna and Rastika, 2024) (see Figure 22). Infrastructure plays a crucial role in enabling waterfront activities to continue amid rising floodwaters, yet it also underscores the reliance on institutional frameworks and practices within specific contexts.



Figure 20 The scene in Batavia in a public health report where bathing and cleaning took place in a river, by Darling, 1927. Used under a UK Copyright Exception.



Figure 21 Washing and defecating in the banks of Ciliwung in October 2008, by Nova Kartika, 2008. Used under a UK Copyright Exception.



Figure 22 Night-time evacuation during inundation in February 2018 animates gendered bodies, by Joanito De Sao Joao, 2018, via Beritasatu.com. Used under a UK Copyright Exception.

Importantly, the continuity of water flow intersects with the transformation of agricultural settlements through infrastructural development and gentrification. This process was influenced by nationalist agenda of centralised government to introduce 'modernisation' project in Jakarta as the capital city of Indonesia. An ethnographic study by Jellinek (1991) presents an illustrative case, focusing on senior inhabitants in Kebon Kacang, an inner-city settlement near Kali Cideng, spanning from the 1920s to the 1980s. Oral histories from the inhabitants unveil a narrative of agricultural life characterised by seasonal inhabitation, livelihoods centred around subsistence agriculture, and recurrent inundations in low-lying areas. The local economy revolved around subsistence farming, with activities such as growing seasonal vegetables, maintaining gardens, and raising fish, chickens, and ducks all intertwined with the nearby market activities. The influx of new inhabitants created a transient market for rental properties, makeshift traders, and service labour catering to the developing capital city, encompassing roles in security, transportation, and construction. As the population grew, the administrative government changed land status from 'tanah terlantar' (abandoned land) to 'tanah garapan' (tilled land).

However, during the late 20th century authoritarian regime in Indonesia's political history, extensive infrastructural development initiatives led to displacements. Displacement in settlements like Kebon Kacang is one seminal example of massive redevelopment project that led to gradual expulsion of inhabitants (Harun, 2019). Amidst these changes, residents faced limited choices in navigating material compensation and emerging national housing institutions. Despite enduring pressures from gentrification and flooding from the Kali Cideng, the settlement persisted. The oral histories portray life within the neighbourhood, punctuated by temporary occupations and displacements triggered by development projects during the 1960s and 1970s, notably the construction of the Sudirman Boulevard corridor. In 1981, the National Housing and Urban Development Corporation announced a low-rise flat resettlement project alongside plans to dam the canal, further accelerating the displacement of the remaining settlement. The existing resettlement policies compounded the challenges faced by residents during this process.

Hence, the term 'Kali' embodies intricate temporal dynamics that challenge static distinctions between life and death, gift and debt, particularly within the context of fluctuating wet and dry terrains of settlement. Kali's presence transcends mere abstraction, intertwining with the tangible physicality of the landscape and the linguistic expressions of its inhabitants regarding the time of water flow. The temporal domain of Kali reveals a profound interconnection between worship rituals amongst villages in agricultural settlements and the technical operations in governmental water management. Settlement periods are an integral part of this reverence. Although Kali occupies an intermediary realm between village and kingdom, often associated with concepts of time, death, and even warfare, the specific nature of battlefields and enemies in worship remains subject to interpretation. Similarly, studying the historical context, including the resonance of language and landscape, can provide insights into past worship practices and the positioning of contemporary settlements for further exploration and interpretation.

The term 'Kali Mati'/dead river encapsulates the historical narrative of settlements, delineating the transient nature of water in the landscape of Java Island. In a subsequent analysis, the literature review explores the spiritual and practical significance of water in the evolving context of 'Kali Ciliwung' and its role in fostering agricultural settlements in contemporary Jakarta, the capital city of Indonesia. This examination sheds light on the ongoing interplay between tradition and change in riverine landscapes. I explore linguistic nuances within 'Kali Ciliwung' to grasp the subtleties of terrain and its evolving conditions in an increasingly urbanised setting. Furthermore, the investigation examines visual depictions of 'Kali Mati' in historical and geographical literature, focusing on the images of materiality of rivers in the context of Batavia's emergence as a port town in the deltaic landscape of Kali Ciliwung and the subsequent evolution of 'Betawi' and Jakarta in the hinterland of the river. The following section discusses changes in the material artefacts of riverine settlements along Kali Ciliwung between Bogor and Jakarta before narrowing its focus on the materiality of river flooding in low-lying plains of Jakarta.

1.5.6. Displacement of Riverine Settlements in Jakarta

So far, the literature review illustrates the evolution of settlements, from port-town extensions to the hinterlands of riverine landscapes surrounding Jakarta, the capital city of Indonesia. By delving into the historiography of settlement and the varied transformations within these landscapes, the review identifies three historical trajectories of displacement caused by flood-mitigation policies. Firstly, it explores the intrinsic spiritual dimension of water flow, which sustains inhabitation in dwelling landscapes. Secondly, it examines the implementation of flood-control infrastructure within the trajectories of water management and land reclamation from river sediments. Lastly, it traces the historical process of settlements, culminating in the establishment of 'public housing' and the labour forces integral to urban development in the making of Jakarta and the state formation of Indonesia.

These historical trajectories shed light on the dissonance between the valuation of water in colonial land policy and the emerging housing and infrastructural institutions in the postcolonial turn of political history in Indonesia. Kuswartodjo (2014) contends that current agrarian laws, rooted in agricultural cultivation as a means of production, differ significantly from the 'nature' of urban landscapes viewed as commodities. Additionally, he argues that the assumption of housing provision for labour, inherent in 19th-century European industrial societies, does not align with Indonesia's context, marked by a history of 'informal labour' in colonial plantations and industrialization.

Furthermore, early housing provision under colonial rule primarily served government officials (Direktorat Jenderal Penataan Ruang, 2003; Direktorat Jenderal Perumahan, 2023). Operation of colonial institution remained in the constellation of town planning and multi-scale government. Meanwhile, emerging worker occupations, predominantly emerging from migration in colonial economic expansion, took care of the drainage and clean water needs autonomously. This dissonance in the 'urban' landscape critiques colonial town planning in the framework of 'surplus population' and 'surplus water' in the middle of the 20th century, a discussion further explored in Chapters 3 and 4.

While a detailed analysis of the historiography of value, possession, and administration lies beyond the scope of this thesis, a brief examination of colonial land policy underscores the redefinition of the 'code' of valuation of water flow in riverine settlements. The periodic overflow of water during recurring floods disrupts the fixed value of water flow and material property in the landscape and infrastructure alike, blurring the boundaries between production and commodity in property entitlement within the liberal land market in the settlement of the capital city. Consequently, the displacement of settlements in riverine landscapes intersects the value of urban landscapes with the value of time for labour, care, repair, and leisure in the settlements within market 'codes' of value. Contrary to Kuswartodjo's assertion regarding the lack of reference on 'urban' landscape due to state-led industrialisation, the engineering of water flow in riverine landscapes prompts a re-evaluation of what constitutes value in the 'present' that transcends the binary of the past and future, production, and commodity.

This emphasis on material value in riverine settlement historiography contextualises the narrative of displacement within spatial planning in the early 21st centuries. Since the decentralisation era in the 2000s, urban literature has highlighted urban activism's role in negotiating flood-mitigation policies, emphasising the importance of building networks for on-site housing upgrading projects and alternative form of flood responses (Dovey et al., 2019; Firman et al., 2011; Padawangi & Douglass, 2015; Texier, 2008; Widyaningsih & den Broeck, 2021). However, focusing solely on governmental institutions managing physical infrastructure operations confines the nature of 'public' to institutional work and measured projects among the involved authorities (Octavianti & Charles, 2019).⁴

Still, life in the riverine settlements persists within the presence of flowing water. In parallel with continuous grow of the settlement, the pattern of living with water remains albeit the dominant mobility of road-based planning and projects. Within such continuity, the emergence of 'flooding' intersected with the piecemeal of buildings in the growing settlement and dynamic lift of 'the ground'.

⁴ This view doesn't consider the important role that assetization plays in private land developments, facilitated by discretionary air rights, space grabbing, and space banks for floor-area uplifts in the planning process (Liong et al., 2020).

In other words, the temporality of water flow prompts a re-evaluation of what constitutes flooding and its mitigation in urban settlements. From a historical perspective, the re-evaluation brings a broader context of planning institutions, state formation, and the interconnected history of riverine settlements in urban landscapes. Understanding the materiality of settlement in relation to time offers valuable insights into the political nature of floods and potential mitigation strategies. This understanding necessitates a revisiting of infrastructural policies, planning approaches, and displacement mechanisms. Furthermore, if the security of urban populations primarily frames resistance to displacement, an exploration of the shifting wet time of the atmosphere can shed light on the thresholds of settlement within the wet terrain of the riverine landscapes. Simultaneously, the focus shifts back to the assessment of water flow during the seasonal fluctuations of wet and dry periods in urban settlements, despite the governmental institutions regarding flood mitigation.

The concept of 'Tanah Kali', or river land, emerges as a reimagination of Kali Mati, or dead river, embodying the inherent complexities in displacements of riverine settlements through flood-mitigation policy. During my fieldwork with the Kali Mati, I encountered an untranslatable resonance that deeply influenced my positionalities, infusing my research and thesis with my spirit and values. This approach facilitates an alternative narrative by integrating various considerations and domains, which mutually shape each other. The dynamic encounters experienced throughout the research journey, particularly against the backdrop of the pandemic, have both unveiled and constrained numerous possibilities, ultimately defining the trajectory and culmination of the research. These dynamic encounters have prompted a reconsideration of displacements and a deeper appreciation for the temporality as well as spirituality of water in shaping materiality of urban landscapes. Chapters 3 and 4 will present a more refined discussion of the conceptual contributions of Tanah Kali and Kali Mati, while Chapters 5, 6, and 7 foreground the 'present' that gathers the thrown togetherness of the past and unpredictability of the future.

1.6. Conceptual Framework

This research is inspired by a synthesis of studies exploring relational thinking in time-space compression, assemblage thinking in materiality, and feminist perspectives on time and cultural politics. Geographical inquiries into relational thinking have extensively probed the interplay between time and space in shaping the urban infrastructure of globalisation. Drawing from these debates, the research delves into the intricacies of displacements resulting from infrastructure development, considering the convergence of multiple histories within the spatial context of the river (Massey, 1993, 2003). In the temporal and material dimensions of urban infrastructure, grounded inhabitation influences a reassessment of the concept of 'home,' disrupting the linear narrative often seen in the historiography of displacements. As elucidated by Bayat (2010), grounded inhabitation conceives of life as a political act that reshapes the landscape of social movements. It transforms urban spaces into platforms for latent communication, enabling strangers or passersby to establish connections based on shared sentiments and interests. When the river overflows, it transforms the urban milieu into a nexus for inhabitants to forge solidarities and extend their protests beyond immediate circles, bridging gaps with unfamiliar faces.

In this research, the methodological approach is inspired by assemblage thinking, which serves as a lens for navigating the complex, ambiguous, and contested social world of riverine settlements. The selection of appropriate research methods is paramount for engaging in a dialogue with the past and constructing plausible explanations through the translation and interpretation of the present (e.g., Baker and McGuirk, 2017). Throughout the process of data collection and analysis, careful attention is paid to the materiality of historical records and empirical evidence, which serve to delineate memories and desires, thereby revealing the multifaceted encounters of living with water amidst the displacement of settlements on the riverine landscape. By employing methods such as participant observation, the research aims to enhance sensitivity to the active formation of places (Dovey, 2010), thereby disrupting conventional epistemic hierarchies that prioritise the authority of the researcher over diverse forms of agency (McFarlane & Anderson, 2011).

This approach examines diverse elements that interact with each other in a reciprocal and mutually constitutive manner (Lancione, 2016; Law, 2004). As a result, assemblage thinking helps to show how landscapes change over time within the materiality of riverine settlements, which go through many moves and changes to their infrastructure. According to Anderson et al. (2012), assemblage thinking revisits 'relational turn' in socio-spatial theory, providing a new perspective on space that recognises difference, heterogeneity, and indeterminacy. It entails surfacing the ebb and flow of water over wet terrain, as well as continuously mutable forms of interchange and interventions in a seemingly untenable landscape (Simone, 2011). In this regard, the encounter with displaced inhabitants who told the history of the Kali Mati, or dead river, is a way to reveal the vitality of wet time that makes the river alive in the ebb and flow of water across the urban settlement. It brings together the openness of time in historiography and nuanced view of displacements in a grounded view of riverine settlement.

Informed by feminist studies, this research adopts an alternative perspective on space, considering it as transient, boundless, and traversing diverse historical contexts. Such scholarship challenges conventional notions of time, revealing its unpredictable nature and its capacity to disrupt established categories and strategies (Grosz, 2004). Rather than seeking to extend known pasts into the future, feminist methodologies encourage embracing uncertainty and experimentation. Within the realm of urban infrastructure, feminist study analyses the intricate dynamics of time and space in interdependence of labour. For instance, observations of occupation movements reveal the fluidity of public space occupation, with temporary encounters fostering connections and unveiling vulnerabilities among participants (Sharma, 2014). This temporary presence intersects with the rhythms of daily life, including various forms of service work that sustain urban productivity. Urban infrastructure also shapes desires, shaping perceptions of urban living and influencing the pace of labour in both daytime and nighttime contexts (Sharma, 2015).

Such interpretive analyses of time in history foster a climate of creativity and disruption, echoing the sentiments espoused by hooks (1994) as 'outlaw culture'. My approach to translating and interpreting textual and visual materials aims to heed the voices embedded within images, echoing Campt's (2017) assertion regarding the radical interpretive possibilities of images and state archives. These overlooked potentials challenge 'the dominant gaze of the regimes that produced them, defying the intended subjugation inherent in photographic representation' (Campt, 2017, p. 5). Inspired by Campt's insights, Hartman (2008) extends the archival endeavour, questioning its authoritative facade by embracing speculative discourse. By embracing the subjunctive mood—a grammatical form that expresses doubt, desire, and potentiality—Hartman crafts a narrative that mirrors the figurative intricacies of history (Hartman, 2008, p. 11). This notion of 'critical fabulation' guides my archival inquiry in historical analysis of rivers and settlements: 'whether in alleyways, porch stoops, or hallways, these spaces serve as arenas for diverse forms of human engagement—be it contemplation, study, vandalism, love, or discord' (Hartman, 2019, p. 23).

Based on the ideas from relational thinking, assemblage thinking, and feminist studies, the encounter with Kali Mati during grounded observations prompted reflections on the migratory journey of inhabitants across life stages and its profound impact on human-landscape relationships (Ho, 2019). Consequently, the thesis probes into how the alternating wet and dry periods of landscapes shape the cycles of life and death within riverine settlements. By meticulously exploring historiography, this thesis places a central focus on the examination of 'Kali Mati' (dead river) and 'Tanah Kali' (river land) through oral histories provided by displaced inhabitants. It underscores the significance of developing a methodological approach that acknowledges agency while fostering ethical research practices (Dowling et al., 2017). In this context, Larsen and Johnson (2016) define agency in this context as resonance within the landscape, which reconnects with the diverse ontologies inherent in various cultural politics of coexistence with water.

1.7. Methodology

To investigate the intricacies of Kali Mati in Jakarta, I critically examine displacements by combining historiography and sketching to express the life in the riverine settlements. The historiography offers a reflection of the past in the present, while the sketching makes visible the temporality and materiality in the vitality of water in depicting an unpredictable future in the present. These are the main contributions of the thesis to the existing studies on displacements in riverine settlements for urban water infrastructure in flood mitigation policy.

The historiography surrounds the term Kali Mati/dead river and Tanah Kali/river land that relies on archival studies, semi-structured interviews, and participant observation to unveil the spirituality of water flow in the landscape. The rich archival literature, which primarily addresses the spatial dimension of rivers, forms the foundation for this research. Its inquiries into the history of riverine settlements and the impact of policies aimed at flood reduction policies, as well as the experiences of those residing in makeshift homes within these settlements. Furthermore, the context of COVID-19 pandemic policies in 2021 and 2022 underscores the heightened sensitivity to time and temporality in research, thereby influencing this methodological approach. These disruptions also necessitate a reassessment of the feasibility and constraints of conducting fieldwork, along with a reflection on my own positionality and reflexivity in grappling with the inherent uncertainties of knowledge production.

The sketching as a medium of drawing the translation and interpretation of 'Kali Mati'/dead river to explore 'Tanah Kali'/river land are aimed at unravelling settlement histories, lived experiences, and flood mitigation policies. This approach reveals a diverse array of riverine realities, weaving together historical contexts and unveiling transient memories of agricultural settlements and infrastructure transformations. Each of the chapters make use of sketching to depict images of time and place and illustrate the vitality of water in maintaining the continuity of riverine settlement. The images in Chapters 3 and 4 meticulously probe into the historical narrative of the riverine landscape and settlements along Kali Ciliwung, ultimately culminating in the identification of Kali Mati. These themes resurface in the images in Chapters 5, 6, and 7, which delve into empirical research on the evolving terrain and settlements intertwined with urban infrastructure.

The meticulous consideration of time informs the analysis of archival studies, which encompass historical records predating and following the fieldwork as well as the transient realities observed during fieldwork. This analytical process is exhaustive, incorporating additional archival materials such as planning documents from national and provincial government sources. Archival studies anchor each research question to illuminate the historical context and narrative patterns. The second research question is followed by semi-structured interviews with government officials, development practitioners, and river inhabitants who have been impacted by changes in riverine settlements. Finally, the third research question entails participant observation in riverside settlements along Kali Ciliwung. The study will specifically concentrate on two settlements impacted by flood mitigation policies and planning, particularly the Kali Ciliwung Embankment Project. These fieldwork encounters with Kali Mati prompt further exploration into the geology studies of Java Island and the anthropological studies of dwelling in Southeast Asia.

The research methods employed necessitate careful considerations of access, ethics, positionalities, and reflexivity throughout the data collection process. My personal values and perspectives play a pivotal role in maintaining self-awareness and managing these connections effectively. This entails a continual re-evaluation of initial plans for participant interaction, such as collaborative mapping, to ensure ethical engagement. Despite various restrictions, the fieldwork process has prompted new engagement, leading to adaptations and improvisations in the historical analysis of rivers and settlements in Chapters 3 and 4. The post-fieldwork phase involving data management and analysis has also prompted a critical re-examination of research ethics. The task of translating and interpreting from Indonesian to English underscores my active involvement in the research process, highlighting the complexity of analysis and opening avenues for future interactions amidst evolving circumstances. This resonates with oral histories collected from river inhabitants, reminiscent of Portelli's seminal work on the labour struggles of coal miners in Harlan County, Kentucky, which delves into themes of voice, power, and truth in recollecting memories of the changing landscape (Buckwalter et al., 2013).

1.8. Structure of the Thesis

The thesis is divided into three sections. One chapter on the methodology introduces the combination of methods to comprehend the interconnections of time in the materiality of urban life beyond the local context of displacements in Jakarta. Then, two chapters introduce the historiography that investigates the transformation of rivers and settlements. Finally, three empirical chapters comprise an analysis of the continuity of riverine settlements in multiplying forms of housing processes.

Chapter 2 discusses methodological sensibility for understanding the temporal and material aspects of water in riverine settlements. It exemplifies a combination of historiography and visual ethnography, especially sketching, as methodology. In detail, the chapter discuss the methods to responds to the research questions: archival studies of historical literature, semi-structured interviews of government officials, consultants, NGOs, inhabitants, and participant observation of riverine settlements. Additionally, it argues for the sensitivity of the topic and proposes careful interpretive analysis when doing cross-cultural research.

Chapter 3 discusses the term *Kali Mati*, or 'dead river,' as found in historical records. It explores the translation and interpretation of *Kali Mati* in geomorphology and irrigation studies of the alluvial plain in the deltaic landscape of rivers, which drives the urbanisation process in Java. This chapter provides insights into the importance of wet and dry periods in shaping agricultural settlements in the hinterland and port towns along the riverine landscapes. It also examines the notion of 'surplus population' as portrayed in the geographical literature of Java Island in the mid-20th century.

Chapter 4 examines the historical records of riverine settlements to understand the notion of *Tanah Kali*, or river land, in the anthropology and linguistic studies of Java Island. The chapter also explores the spirituality that permeates dwelling landscapes, elucidating the distribution and concentration of labour across houses, villages, capital cities, and port towns during continuous wet and dry periods. This chapter outlines Jakarta's urbanising landscape with the notion of 'surplus water', which settled and unsettled urban occupation through the irrigation works of urban waterfronts.

Chapter 5 examines the continuity of riverine settlements along Kali Ciliwung. It highlights the diverse nature of the riverine landscape, drawing distinctions between settlements along the river and those along the coast. The analysis captures the rhythm of everyday occupations in riverine settlements amidst the shifting wet and dry seasons. These activities encompass seeking refuge and reclaiming territories during the wet season, undertaking repair and renewal, play and leisure in the dry season.

In Chapter 6, the government's approach to water management undergoes scrutiny to uncover the uncertainties and gaps inherent in flood-mitigation policies. The chapter examines the underlying assumptions that shape plans and designs aimed at securing waterfronts, while also exploring the significance of wetness in delineating urban landscapes and public housing. Furthermore, it examines the everyday operational realities of flood-control infrastructure within river embankments, highlighting the juxtaposition of temporal dynamics in infrastructure politics.

In Chapter 7, the focus shifts to the displacement of riverine settlements to comprehend the gradual process of ruination and compensation at sites where river embankments are constructed. The chapter also underscores the enduring significance of water flow during wet and dry periods, which consistently prompts acts of reclamation, reoccupation, repair, and renewal, as well as opportunities for play and leisure. This exploration highlights human-landscape resonance and underscores the persistent inhabitation of riverine settlements.

In conclusion, Chapter 8 underscores the importance of integrating temporal dimensions into our analysis of riverine settlement displacement and flood-mitigation policy infrastructure. This thesis offers valuable insights into the enduring significance of water in shaping the continuous settlement of riverine landscapes. It gives a new, more nuanced look at the relational ecology of living by looking at the process of displacements in the contemporary urban life. The chapter also points to the novelty of language and landscape resonances translated and interpreted across multiple living landscapes.

Chapter 2. Methodology

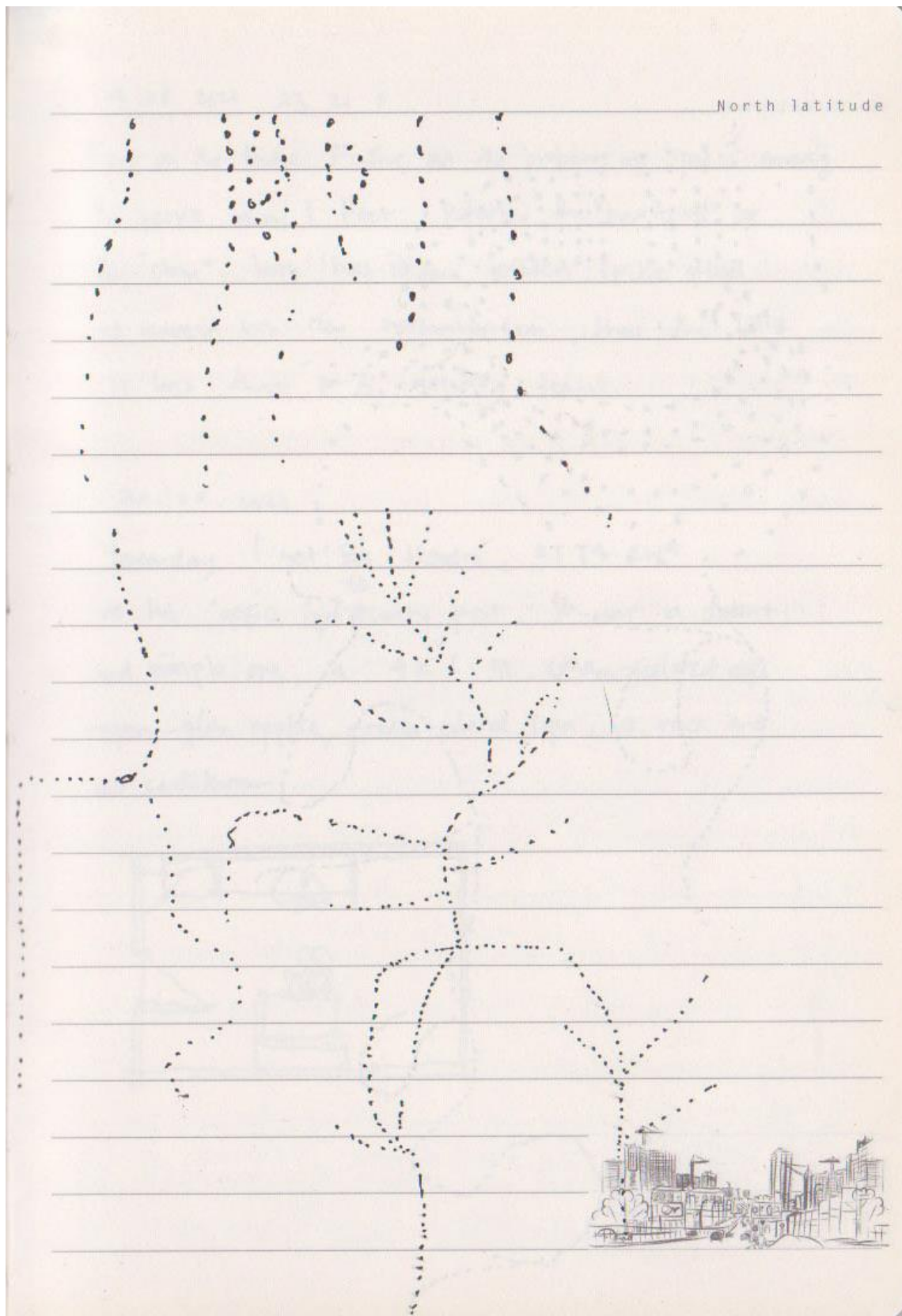


Figure 23 Sketching of 'dead river' during ethnographic observation, by Author, fieldnote on 18/09/2021.

2.1. Introduction

This chapter discusses the methodological sensitivity required to grasp the complexities of displacement within riverine settlements affected by flood mitigation policies. It explains the reasons for using historiography and visual ethnography for grounded analysis, especially the use of sketching in 'braiding' the theme of temporality in the research. Urban historiography often presents a linear timeline based on thematic periodization. For instance, scholarly articles trace the history of flood-mitigation policy in Jakarta since its inception in the 20th century (Octavianti & Charles, 2019; Simanjuntak et al., 2012). Similarly, Abeyasekera (1989) posits that the author's identity shapes the historiography of Jakarta, with Indonesian historians typically concentrating on the pre-Dutch colonial period in the 17th century. However, grounded observation on the flow of water in the urbanising landscape of rivers disrupts such thematic historiography. The waterflow offers a raw yet intertwined sense of time and place, revisiting notions of continuity and change and collapses these concepts in the vastness of life. It diverges from a generic understanding of linear time in historiography, which typically emphasises continuity and change. Such emerging awareness was present in the fieldwork during observation of ruins and rebuilding in riverine settlement (Figure 23).

The chapter further explores the importance of integrating multiple methods to address three key research questions pertaining to displacements resulting from flood mitigation policies. I probe into the translation and interpretation of poetic expressions from interviews, revealing specific dwelling conditions embodying diverse ways of living. A comprehensive description of the research design and methods, including brief linguistic research, archival analysis, semi-structured interviews, and participant observations, shapes the intersection of ideas in data analysis. These methodologies facilitate a nuanced understanding of the historiography of riverine settlements and the manifestations of displacement within infrastructural developments for flood mitigation. Additionally, the chapter discusses ethical considerations, positionalities, and reflexivity, which inform the decision to combine methods and guide the evolving encounters during fieldwork and thesis writing. The chapter concludes by emphasising the significance of historical analysis in supporting grounded observations during fieldwork, enabling a comprehensive understanding of the interactions between rivers and settlements, and fostering deeper insights into displacements within riverine settlements.

2.2. Historiography of Dead River and River Land

To address the questions, I employ a combination of historiography and visual ethnography that complement each other in data collection and analysis. The selection is based on the relevant approach that responds to the existing studies on displacement that focuses either in the present or in the past. While historiography mostly revolves around governmental narrative in written and visual records, ethnographic observation balances the immediacy of events and their unfolding with affective histories of a place. The former provides a recurring and multiplying pattern of the past in the present, while the latter offers a grounded view of the unpredictability in the present in thinking towards the future. Both approaches are mediated and analysed altogether through sketching, as a visual medium to bridge communication between the real and the virtual. The combination is crucial to refresh the temporal horizon of inhabitation with water in the recent studies of flood mitigation policy.

A similar effort to grasp 'subtle' information emerged during a fieldwork encounter in a semi-structured interview with a displaced inhabitant. I probe into the historical narratives of Kali Ciliwung, encompassing kinship history, riverbank occupation, and recurring flooding. The turning point started when I noted a statement of participant: 'Itu kan tanah Kali'/'The land belongs to the river,' challenging the prevailing narratives about materiality in flood patterns (see Charmaz, 2006). Other displaced inhabitants echoed this embodied connection to the landscape, reclaiming riverbanks and saying, 'Ladang kami di sini. Kami tetap di sini'/'Our farmland is here. We must stay here'. While I elaborated on this with Kali Mati in Chapter 7⁵, it is evident that the emphasis on translation and interpretation arises from the cross-cultural context of this research, necessitating sensitivity to language nuances and detailed contextual descriptions.

To decode the nuanced expressions within dwelling landscapes, I draw insights from studies on interpretive analysis, emphasising the importance of making knowledge traditions accessible to unravel the meanings influenced by the living conditions of the historical present. For instance, Robi (2022) delves into the significance of discerning the underlying intentions behind allegorical responses in interviews. She argues that the

⁵ Based on my discussion with Gede Bayu PW and Rahul Raj in December 2023, I consider 'Kali mati' to be more associated with the spiritual forces of water in the dwelling than with the symbol of the Goddess Kali.

application of interpretive policy analysis (IPA) requires a keen sensitivity to interpretive and hermeneutic traditions, alongside the IPA framework, with a specific focus on Tirguaamme⁶. Rooted in the Geez term, Tirguaame encapsulates the art of assigning meaning to reality or text, deeply embedded in Ethiopia's modernization historiography. Participants' use of biblical allegories, such as 'the barking of dogs on hyenas,' 'what to do with a tree once it is crooked?', and 'all rivers meet in the sea,' underscores the culturally imbued responses shaping their perspectives.

These allegories, which serve as indirect communication in speakers' expressions, are integral to African traditions of interpretation and political culture. Woldeyes (2017, p. 262) describes Tirguaamme as an 'act of interpreting the world, a process of creating new meaning out of existing meanings (past, present, foreign, local), and practices'. It represents one of several knowledge traditions that emphasise methods for uncovering the hidden meaning of a text by interpreting it within diverse life contexts. Additionally, Tirguaamme interprets the creation of complex and multiple meanings through poetry in everyday utterances. According to Woldeyes, Tirguaamme is both a philosophy and a method of interpretation that necessitates a willingness to engage in dialogue between the living experiences of the present and the messages left by the deceased. Thus, a constellation of knowledge traditions from the historical period of post-socialist Ethiopia serves as contexts and sources of relevant knowledge today⁷.

The meticulous attention to translating and interpreting the concepts of 'Kali Mati'/dead river and 'Tanah Kali'/river land brings forth the shifting historical narratives of settlement in the context of present-day urban life. Leveraging my background, experiences, and connections, I aim to foster meaningful engagements and resonances within both language and landscape. This approach transforms the research into a deeply personal, relational, and spiritual endeavour, intertwining my own encounters and interpretations of language and landscape with the research process. It highlights the

⁶ Robi (2022) discusses Tirguaamme with the framework of interpretive policy analysis based on Yanow (2000) and Wagenaar (2015). Yanow (2000) discusses meaning-making in the relationship between material and expressive. Meanwhile, Wagenaar (2015) proposes three broad categories of approaches to capture meaning, comprising hermeneutic meaning, dialogical meaning, and discursive meaning.

⁷ Woldeyes (2017) discusses the term 'traditions' in non-essentialist and non-universalistic sense as the meaning-making process and lived experiences, hopes and nightmares, beliefs, and fears of people in multiple geographical and social settings. He refers to Clifford (1994) that the meaning of traditions should go beyond the Enlightenment's epistemic blockage that restricted the use of the concept to refer to the past, the primitive, or the premodern in post-socialist Africa.

interconnectedness of spirituality within a landscape that extends beyond my conscious and unconscious understanding. This realisation stems from acknowledging the limitations of my perception of water and rivers amidst the contemporary urban landscape and its evolving settlements.

The underlying historical background provides insights into potential explanations for translation and interpretation within the same language. For instance, Tuitjer (2018) elucidates her challenges with translation from English to Thai in terms of an ecological view of translation, one that acknowledges the unpredictability and uncertainty inherent in working with the language-culture relationship (Jagosh & Bourdeau, 2009, p. 105). Bilingual research views the discrepancies in meaning during translation as both linguistic challenges and opportunities to gain insights into the relationship between culture and language. Thus, translation transforms into a process that aims to carefully convey and re-convey differences in descriptions. During an interview with environmental activists, Tuitjer reflects on the translation of terms such as 'resilience' and 'climate change'. An interpreter proposed the word 'bhumi' as a translation for 'climate change', attempting to amalgamate 'land' and 'weather' to convey the concept of 'climate'. However, 'bhumi' also connotes 'earth' or 'land', as well as the symbolic association of the king's name with the Earth as the foundation of everything. Tuitjer suggests that translation and interpretation provide a path towards a dialogic and conversation-driven approach to ethnographic research.

Memories of living with water and dwelling in landscapes also influence translation with approximations, comparisons, and various material forms to capture what constitutes 'difference' in urban settlements. For instance, recounting experiences in India, Tuitjer reflects on the implications of heavy monsoon rains and observes different mobilities of inhabitants based on their proximity to dry settlements: 'Monsoon-democracy only stopped when I entered our nice townhouse and took a warm shower, whilst most other people had to endure a night in submerged huts' (Tuitjer, 2018, pp. 109–110). Through juxtaposing 'monsoon' and 'democracy' with images of 'our nice townhouse' and 'people in submerged huts', she incorporates her positionalities as a researcher into the interpretation of place. Her attention to seasonal changes between monsoon and dry periods in Bangkok resonates in her observations of shared boats and floating over water surfaces in canal communities.

Tuitjer's study on 'urban-geo-hydro history' in Bangkok also underscores the convergence of habitual, traditional, and critical knowledge in the historiography of modernization. She traces the material history of the Chao Phraya River in the capital of Ayutthaya, highlighting distinctive dwelling practices in floating homes juxtaposed with terrestrial temples and palaces. The provisional presence of 'water' influences the interpretation of the *khlong*/canal in terms of labour for constructing and reconstructing moats for defence during the dry season. Furthermore, she reflects on the lack of linguistic differentiation between water and terrestrial paths in interpreting ancient maps predating the Ayutthaya period capital. Finally, she argues for sensuous histories of dwelling with the watery terrain of Khlong based on hydrological circumstances, encompassing practices such as wayfaring, travelling, and swimming.

Throughout the thesis, I gather historiography of Kali Mati/dead river by compiling archival material of governmental management of water flow in distributing wet and dry river terrain. They pinpoint the emergence of urban water infrastructure through a series of measurements aimed at making 'floods' comprehensible and to some extent 'controllable' for infrastructure planning in flood mitigation policy. Historiography stretches trajectories of the past to make the pattern appear on the surface of the present. Such identification of the past activities in the shifting riverine landscape, materiality of displacements within the present riverine settlements emerges as a synthesis of continuity and heterogeneity in dwelling. It serves as a testament to the intricacies of riverine settlements, characterised by their dynamic and diverse ecosystems, which are influenced by, yet also resist, governmental narratives and imposed infrastructure. The following Chapter 3 and Chapter 4 exactly depict such entangled historiographies together, which lay the foundation for the rest of the empirical chapters in Chapter 5, 6, and 7.

The historiography traces the dynamic interplay between human activities and the contoured topographic terrain of rivers. These narratives reveal the shifting associations of water within the geopolitics of urban development, creating a nuanced understanding of temporality in rivers that encompasses both ruins and repair in the riverine landscape. Despite the heterogeneous geographical locality, recurring expressions depict rivers as living entities, highlighting the cross-cultural appreciation of the vitality in the water flow that shape the contoured terrain of landscapes.

2.3. Sketching as Visual Ethnography

The grounded observation of everyday routines during fieldwork revealed the fine-grained temporality of inhabitation in the riverine settlement. Actively participating in the research process, I grapple with the unfolding of 'life' (Lancione, 2016). I use sketching as visual expressions, encompassing appearances, images, and figurations, play a crucial role in interpreting the categories and registers surrounding the lifetime of rivers embedded in the term Kali Mati, or dead river. Sketching prompted a longer and deeper observation in the field that generated careful realisations (Figure 24). The sketching draws the attention to the part and the gathering of parts into infinite and relational space. Through these emerging realisations, the amalgamation of textual and visual materials highlights the multiplicity of time as both a source of historical analysis.

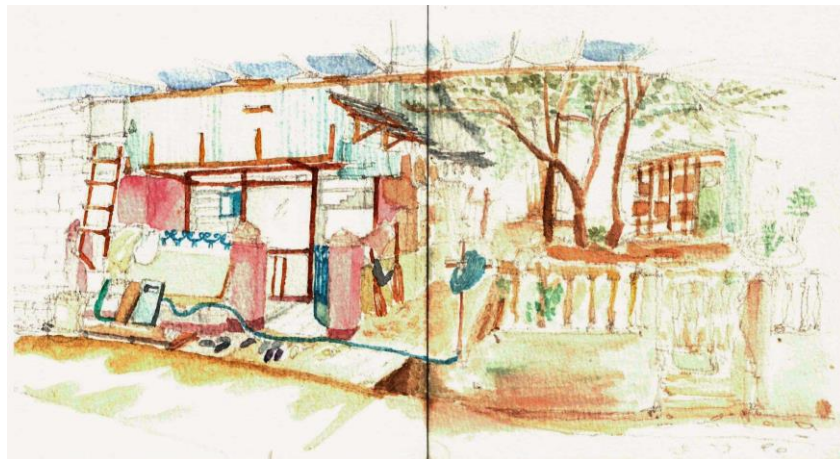


Figure 24 Sketching and watercoloring of a remaining house amongst ruined riverine settlement called Arus Dalam/Kali Mati, by Author, fieldnote 2021/04/01.

Throughout my fieldwork, I found myself increasingly attuned to the outdoor environment, becoming acutely aware of the heat, moisture, and atmospheric conditions in Jakarta's urban atmosphere. This sensitivity to the nuances of outdoor life highlights the researcher's and participants' positionalities within the research context. Observing the subtle shifts in atmospheric conditions, such as the transformation of clouds into raindrops and their eventual flow into rivers (Figure 25), offers a deeper understanding of the vastness of atmospheric life: the fleeting yet powerful spirits of water renewing the spread of landscape. Such contemplation of being exposed to torrential rains and drawing their emergence revisits 'property' in the materiality of displacement narratives, as Roy (2017) suggests.

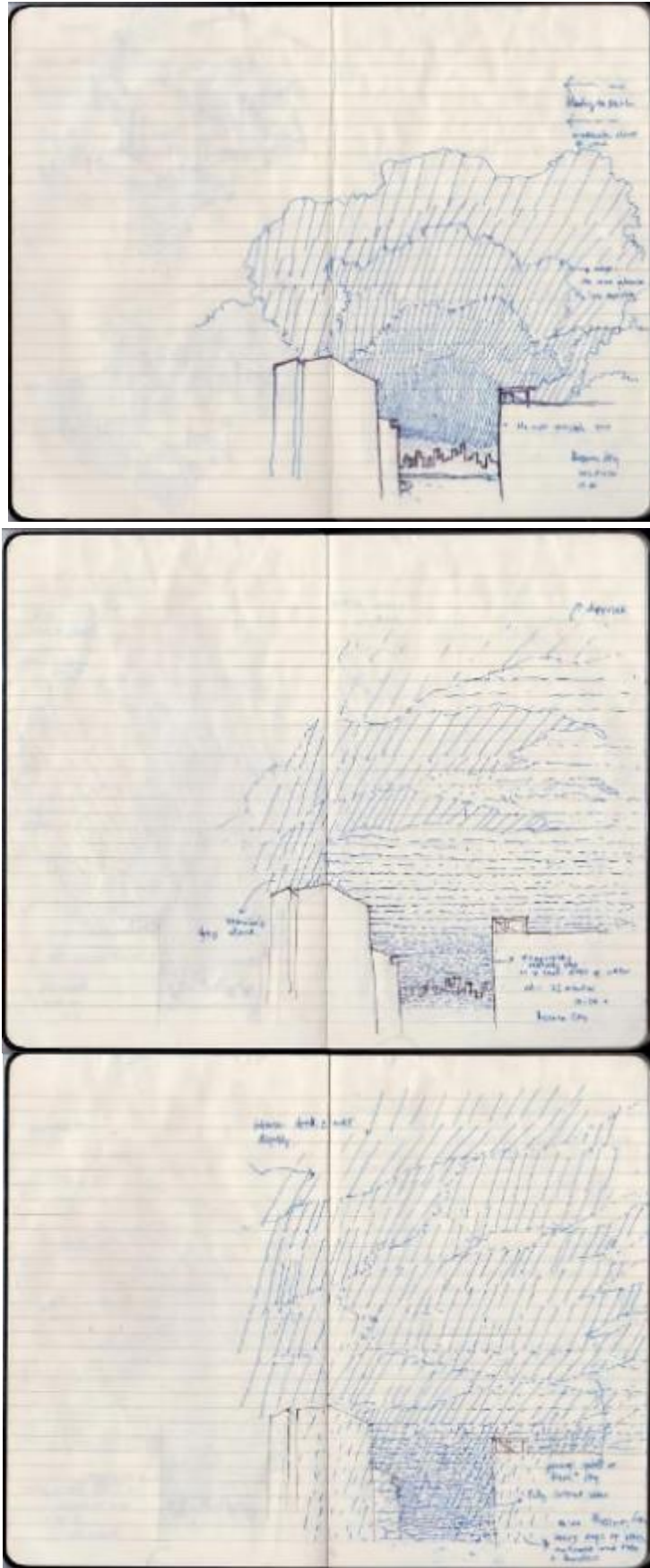


Figure 25 Observation of the blowing winds and turning of clouds into drops of rain from a mid-rise apartment in the city, by author, fieldnote 02/05/2020.

These on-site sketching resonates forms of living that gathers relational ecologies (Chitra, 2020) and humanity (Rumsby, 2020). At Katulampa Dam in Bogor regency, upstream of the Kali Ciliwung, the dry season triggers a resurgence in irrigation endeavours (Figure 26). While historical accounts often focus on floods and destruction, the dry period unveils the complex intricacies of water flow management in the former riverine settlements that was served by the irrigation of the dam. Furthermore, it piques curiosity about the social setting of riverine communities, both upstream and downstream, which have transitioned from agricultural practices to the proliferation of urban housing in Bogor and Depok.



Figure 26 Dry Katulampa Dam shows the building structure and the spread of sand and stones on the ground surface of the dam, by author, fieldnote on 2021/08/28.

The following sections delve into the inherent connections of each method and offer a critical assessment of their importance in facilitating interpretive analysis. I elucidate the methods used to uncover and interpret the narratives and practices of settlement amidst the displacements experienced by riverine communities along Kali Ciliwung in Jakarta. Each method employed entails data management and analysis, which includes organising fieldwork records, analysing materials alongside translations and interpretations, synthesising relevant literature based on emerging key findings, and composing the thesis.

2.4. Methods

This thesis explores a blended methodology involving archival studies, semi-structured interviews, and participant observation to collect textual and visual data on riverine settlements. Archival research provided an initial understanding of temporality in riverine settlements from semi-structured interviews and participant observation. Additionally, the significant disruptions caused by the pandemic policy in April 2020 heightened my awareness of the stability and disruption in urban spaces, offering insights into the nuanced perception of floods and displacements. This process of uncovering various narratives connects locations, materials, and historical contexts across different geographical settings. It transforms conventional narratives surrounding rivers, floods, and displacements, offering fresh perspectives on the complexities of riverine settlements. The following Table 1 illustrates in detail the research questions, method, and timeline for undertaking the research process.

Table 1 Research Questions, Method, and Timeline

No	Research Questions	Method	Timeline
1	How are the relationships between displacements of inhabitation in riverine landscapes reflected in historiography, particularly concerning urban infrastructure?	Archival studies: textual and visual records on Kali, Ciliwung, Java, East Indies	6 months (August-October 2020, July-October 2023)
2	How do flood policy and associated river and infrastructure development relate to the contemporary displacement of riverine settlements?	<ul style="list-style-type: none"> ● Semi-structured interviews of government officers and field workers ● Participant observation in floodgates, embankments, and seawalls ● Archival studies on town planning and flood-mitigation policy documents 	9 months (February-October 2021)
3	How do river inhabitants resist the development and articulate an alternative way of dwelling with the water?	<ul style="list-style-type: none"> ● Participant observation in riverine settlements of Ciliwung ● Archival studies on fieldwork ● Semi-structured interviews with inhabitants 	9 months (March-November 2021)

2.4.1. Archival Studies

To address each of the research questions, this study utilises archival research to discern patterns of narratives and practices in the processual understanding of displacements in riverine settlements due to flood-mitigation policy. For the first research question, archival exploration probes into intricate realms of time and language within historical records, depicting the temporality of dwelling landscapes. Archival studies encompass records from various periods and languages, serving as a bridge between urban settlements and river landscapes. To attain this, archival images serve as poignant mediums, capturing the complex intersection between urban settlements and the dynamic landscapes of river ecosystems.

The archival studies draw heterogenous studies such as philology, archaeology, geology, geomorphology, and anthropology. I translate and interpret records of landscapes on Java Island to elevate the over-focused narrative of 'Jakarta' to the shifting landscape of rivers in islands of Indonesia (refer to Table 2). This thesis discusses the archival material as part of historiography in Chapters 3 and 4, interconnecting histories of 'Kali Mati'/dead river in irrigation history and 'Tanah Kali'/river land in urban occupation. Meanwhile, some archival material of fieldwork between 2017 and 2019, as well as governmental planning document also supports the analysis for the empirical chapter in the Chapter 5, 6, and 7.

Table 2 List of Archives and Historical Literature for Analysis

Keyword	Reference	Timeline	Subject	Description
'Kali' in geology and geography	Geology of Indonesia I (Van Bemmellen, 1949)	The transition period in the 1950s	Java volcanic structure in the Tengger-Semeru complex	The dry terrain of Kali Mati as lava flows between Mahameru and Kepolo mountain
	Geology of Indonesia II (Van Bemmellen, 1949)		Mining industry for global security and civilisation	The shift from human labour to machine in industrialisation
	Malaya, Indonesia, Borneo, and The		Civilising mission in Java Island as plantation and	Physical and human

	Philippines (Robequain, 1954)		industrial progress	geographical measurement
'Kali Mati' in Ciliwung and Cisadane	Djakarta Bay (Verstappen, 1953)		Development of coastlines over 75 years	Kali Mati in the agricultural settlements
'Kali', 'Tanah', 'Bangawan'	Old Javanese – English Dictionary I and II (Zoetmouder, 1958)		Embedded interpretation of nature/spirits/time	
Dam in River Development in Indonesia	Buku Bendungan Indonesia	The late 20 th century	Development of dams in river irrigation by Ministry of Public Works	Record of dam development in various main rivers in islands of Indonesia
Public Health in Water Practices	Hookworm and Malaria in Malaya, Java, and the Fiji Islands	Early 20 th century	Report from a survey of public health conditions	Record of statistical study on public health condition that regards water practices in Java
Settlements	Warugan Lemah: Ancient Sundanese Settlement Pattern (Gunawan, 2012)	Prior 17 th century	List of desirable forms of terrain to settle with its sign, meaning and rituals	Forms of terrain to settle and prerequisite rituals
	Behind the city wall (Kanumoyoso, 2011)	1684-1740 (17-18 th century)	Development from the port town wall to the hinterland	Development of the port town relied on material and labour of the surrounds
	Open-access websites such as KITLV and museum collections	19 th century - 1950s	Traditions of housebuilding in towns and villages	Suburbanisation of port town in search of cooler air and free from floods
	The Indonesian Town (Wertheim, 1958)	Early 20 th century	Sociology study of overcrowding in town planning	Infrastructure and issues of populations of workers in town
	Fieldwork archives	2015-2018	Migration between highlands to port town intersect	The emergence of inhabitants from Pekalongan, Central Java in the

			with new inhabitants from different parts of Java.	1980s. wet terrain in the 'rivers' and road intersects
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Meanwhile, an analysis of government archives on planning documents addresses the second research question regarding contemporary flood-mitigation policy. Access to these documents emerged during fieldwork encounters in semi-structured interviews with government officials (refer to Table 3). Through archival studies of governmental records, I identify the interconnection between national planning and provincial planning in flood-control infrastructure within the Kali Ciliwung Embankment. Furthermore, this analysis bridges the gap between 'colonial' and 'slavery' narratives by examining the governmentality of water management and housing policy alongside the historical context of labour policy and urban occupation in riverine settlements. These planning records shed light on contemporary conditions of flood mitigation policy, as discussed in Chapter 6, highlighting the entanglement of historical legacies within governmental institutions.

Table 3 Governmental records of Infrastructure Planning and Town Planning Documents

Keyword	Reference	Timeline	Institution	Description
Planning of Kali Ciliwung	Plan of Water Resource Management in Ciliwung-Cisadane	2019	Ciliwung-Cisadane Regional Board (CCRRB)	Control of Water Damage Capacity in Ciliwung-Cisadane
Flood Distribution Map	Number of Flood Events in Ciliwung-Cisadane	2016-2020		Depiction of flooded areas in low-lying plain of river system
Design of Kali Ciliwung River Embankment	Design Review of Kali Ciliwung River Embankment	2013	Engineering Consultant under contract with CCRRB	Designation of water catchment in Kali Ciliwung and design of embankment
Assessment of infrastructural design in river	Environmental Impact Assessment (EIA)	2013	Consultant of EIA under contract with CCRRB	Justification of infrastructural development

Planning of Land Acquisition in Kali Ciliwung Embankment	Land Acquisition Planning Document (DPPT)	2016, 2017, 2018, 2019, 2020, 2021	Water Resource Agency- Jakarta Provincial Government	Administrative map and nominative list for acquisition process
Relocation to Rusunawa (Public Housing)	Diagram of Relocation Process to Access Rusunawa	2016	Public Housing Agency- Jakarta Provincial Government	Relocation focuses on managing administration to get rental units in Rusunawa
Planning of flood-mitigation infrastructure, slum improvements, and promotion of investment	Three periods of five-year planning document of Jakarta Provincial Government	2002-2007, 2007-2012, 2013-2017	Jakarta Regional Planning Board	Interconnection between national planning and provincial planning on flood-mitigation policy and emerging narrative of global city
	Twenty-year period of planning document of Jakarta Provincial Government	2005-2025		

Furthermore, archival material from my previous fieldwork in Kali Ciliwung addresses the third question about everyday inhabitation as a resistance to displacement. During my fieldwork from 2016 to 2019, I collected several photographic records that served as a backdrop for curating histories to understand riverine settlements. These archives not only convey the material essence, but they also encapsulate the social dimensions of the material record, portraying fleeting encounters between researchers and subjects and reflecting the temporal nuances inherent in spatial practices (Tayob, 2018). Throughout the archival analysis, I investigated the intricate interplay of historical narratives, lived experiences, and the evolving landscape of policy and planning that underpins the discourse on displacement. This historical study provides a more nuanced understanding of the intertwining of labour and infrastructure development in urban planning projects. It echoes contested notions of water value in global public health, living standards, and state-led security discourses. It also illustrates the temporal nature of 'pollution' by shedding light on floods that disrupt everyday 'urban' sediments such as 'domestic' and 'industrial' waste, eroding soils, and human remains.

2.4.2. Semi-Structured Interviews

Semi-structured interviews serve as invaluable tools for unravelling the multifaceted considerations that shape the specific realities surrounding Kali Ciliwung. In response to the second research question, I conducted semi-structured interviews using snowball sampling to delve into the current flood-mitigation policy in Kali Ciliwung and Jakarta. Through these interviews, I uncovered the distinctions among governmental institutions regarding the specifics of the 'Normalisasi Kali Ciliwung' (Kali Ciliwung Embankment Project) as irrigation infrastructure for controlling water damage capacity, as well as the acquisition of property and relocation of inhabitants for infrastructural provision (see Figure 27). These institutions operate within a framework that distinguishes the historical roles of national planning and provincial planning concerning river irrigation and public infrastructure.

I conducted one-hour interviews with a total of 43 participants, including governmental institutions involved in river management and activists advocating for river ecology conservation and housing rights (refer to Table 4). These interviews delved into nuanced expressions related to the inherent temporality of both the physicality of rivers and settlements, offering insights into the underlying assumptions and references shaping the social process of policymaking. The interpretation of these interviews relied on translating the diverse positionalities that defined the scope of institutional work, spanning from the planning and design phase to the implementation, operation, and maintenance of flood-control infrastructure.

The temporal dimension of labour among field station workers revealed the complex realities of infrastructure within the frameworks of water management institutions. Similarly, the changes in the timing of work for office workers highlighted the challenges that arise when policies aren't always clear-cut and are compared to scientific explanations and clearly defined weaknesses (Firman et al., 2011; Siswanto et al., 2016). Defining access becomes a matter of grappling with the obscure and developing a nuanced understanding through the process of translation and interpretation.

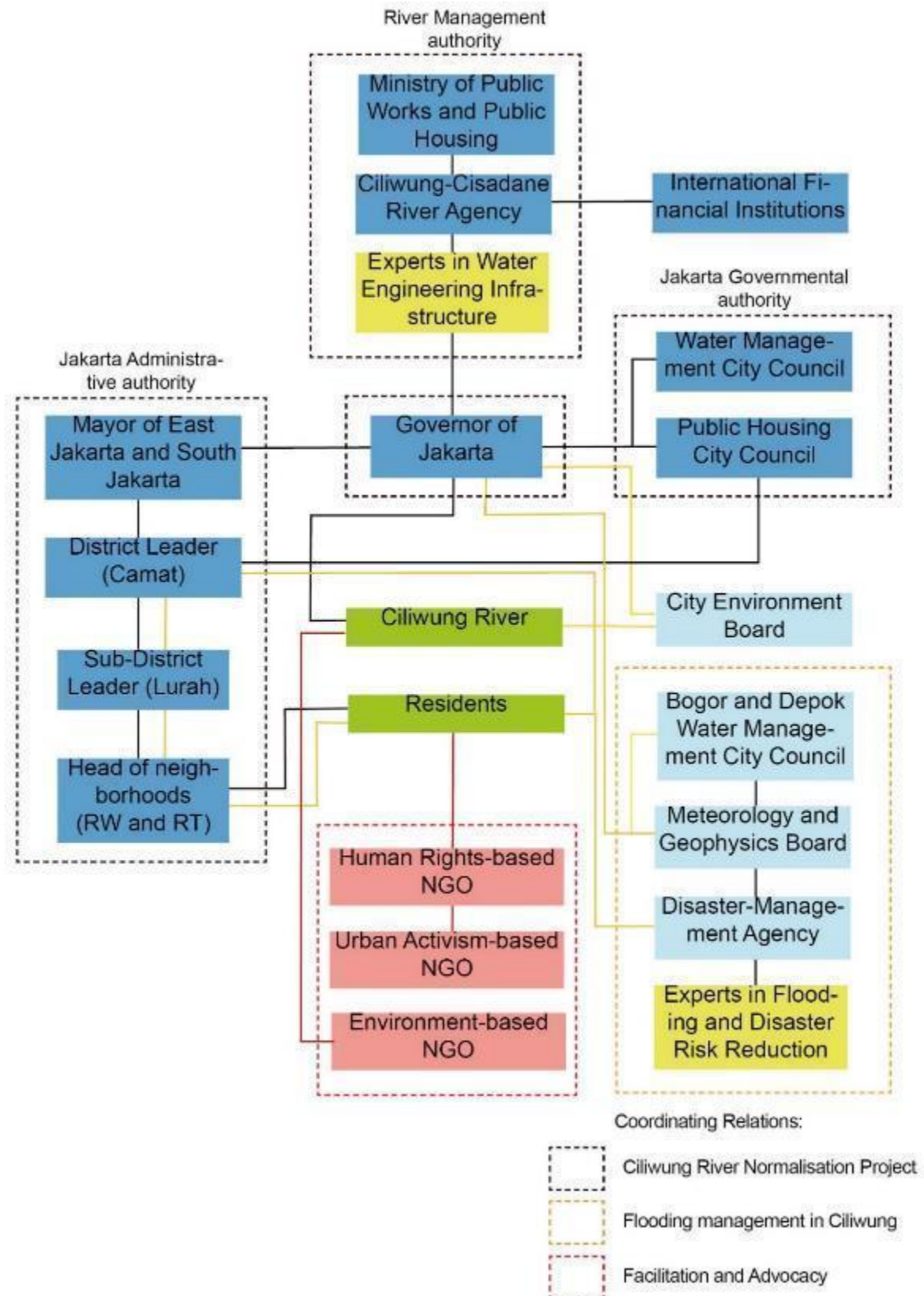


Figure 27 Diagram of participants who concerned on 'Ciliwung River Normalisation Project', by author, 2020.

Table 4 Participants of Semi-structured Interview

Scope	Level	Description	Number of Participants
Irrigation Planning and Drainage-associated Government officials	National Plan	National Planning Development Board	1
	Jakarta Province Office	Jakarta Regional Development Planning Board (JRPB)	3
		Flood-control Unit and Land Acquisition Unit	2
		Public Housing Agency	2
		Public Health District	1
		Waste picking	2
	Jakarta Province Field-station workers	Water surface level monitoring in Manggarai, Depok, Bogor	6
		Wastewater treatment monitoring	2
		Sediment dredging	1
Design and Building the Embankment of Ciliwung Terrain	Embankment Development Plan	Ciliwung-Cisadane Regional River Board (CCRRB)	2
		ESIA consultant	1
		Engineering consultant	2
	Development Agencies	World Bank consultant in LARAP	2
River-associated Activism	Ciliwung Institute	Incremental advocacy on community engagement	3
	Birdwatching	Recording biodiversity in urban parks	2
	Ciliwung Merdeka	Advocating compensation for resettlement	2
	Teras Kamala	Promoting sustainable living	2
	Ciliwung Depok	Raising environment issues	2
	Ciliwung Bogor	Waste management with the Bogor city government	3
Risk-based Research	Risk Insurance Company	Risk-based analysis of disaster management	1
TOTAL			43

Given the sensitivity of the research topic, I employed a snowball sampling approach to facilitate participant engagement, leveraging existing social networks within the circles of government officers and activists. Additionally, I paid particular attention to the rotational positions held by participants within governmental institutions, acknowledging the transient nature of their presence and labour. Understanding how participant presence changed over time helped translate and make sense of emotional arguments, uncertain knowledge, and moral claims found in the interview data.

For the third research question, I conducted semi-structured interviews with 63 residents from five riverine settlements in Kali Ciliwung, employing a snowball sampling process (Table 5). Drawing on my previous experience working as a staff member in an NGO and as a junior researcher, I established contact with riverine settlements in Jatinegara, East Jakarta, including displaced inhabitants in Bukit Duri and remaining inhabitants in Tanah Rendah. Additionally, contacts with displaced inhabitants in Arus Dalam and Bidara Cina emerged during fieldwork encounters with field officers of flood monitoring stations and a friend who participated in one of my field observations. Through interviews with inhabitants in Bukit Duri, I uncovered the term ‘Tanah Kali’ or river land. Similarly, the term ‘Kali Mati’, or dead river, emerged in interviews with the inhabitants of Arus Dalam.

Table 5 Types of Inhabitants in Riverine Settlements

Place	Description	Position	Number of inhabitants
Tanah Rendah, Jatinegara	In waiting for the time of displacement to rental flats	Inhabitants	39
		Neighbourhood leaders	10
		Subdistrict leaders	1
Arus Dalam, Cawang	Called Kali Mati where part of the settlements has been displaced	Inhabitants	8
		Neighbourhood leaders	2
Bukit Duri, Tebet	Displaced with material compensation as rental flats	Inhabitants	1
Rusunawa Jatinegara Barat	Displaced with material compensation of rental flats	Inhabitants	1
Cipinang, Jatinegara	Displaced with material compensation of money	Inhabitants	1
TOTAL			63

Through direct interaction with the inhabitants, the interviews elicited their memories of past lives and insights into daily life along the river. I conducted interviews with oral consent and limited them to one-hour conversations due to the sensitive nature of the paperwork. The gender distribution leaned towards males, with a ratio of 2:3, reflecting a higher male presence along the low-lying plain of riverbanks. Following observations and interviews, I crafted field notes and sketches to record the conveyed narratives or poignant moments that evoked an emotive atmosphere and prioritised obtaining oral consent.

2.4.3. Participant Observation

Participant observation within riverine settlements allows one to fully experience the essence of life along Kali Ciliwung. Geographically surveyed and physically documented, the terrain of Ciliwung originates from springs nestled in the highlands of Gede-Pangrango-Salak volcanic mountains in West Java. Spanning 136 km, it meanders until it reaches the low-lying Jakarta North Bay, delineating the administrative boundaries of governmental oversight across the east, south, centre, and west terrains of Jakarta. Nevertheless, the cyclical shifts in the wet terrain evoke what Tadiar (2022) aptly describes as quotidian existence imbued with deep temporal traces, preserving life's enduring secrets. This exposure reveals the subtleties of remembering and forgetting neglected realities. Such imagery manifests in the gentle descent of raindrops, merging with Jakarta's landscape in an unbroken rhythm, gradually drawing the bay nearer while transforming water bodies amidst the drained urban settlements.

Observation is an integral part of deciphering visual narratives through mapping and sketching, which is essential for understanding the significance of riverine settlements to their inhabitants (Corner, 1999; Hall, 2020; Tayob, 2018). Most inhabitants engage in surrounding economic activities due to their location at the centre of Ciliwung, which connects the east and west of Jakarta. While some identify themselves as Betawi, most participants are contractual workers from West and Central Java. The civil registration service registers the houses and residents 'inland' who operate businesses to support themselves and reclaim the sedimented landscape.

Participant observation on riverine settlement also unfolds the constellation of movements in inhabiting the growing economy through riverine landscape. Those who live near the wet terrain reside in rental houses work in trading hubs, such as Meester Market in Jatinegara. Their presence repositions contemporary displacements within migration trajectories as well as the origins of inhabitants. Since the 17th century, agricultural and industrial work has shaped the urbanising riverine landscape, up to the recent arrival of migrants in the late 20th century.

From my arrival at the end of January 2021 until my departure from the airport in October 2021, I observed the fluctuating weather conditions in Jakarta. This observation provided context for understanding settlement amidst shifting celestial cycles. While much of the daily activities unfold during daylight hours, the transition into night unveils a different facet of life along the slope of riverbanks. As darkness descends, the interconnection of water management, flood control measures, and individual life histories emerges, imbued with a spectral quality. Nighttime brings a noticeable drop in temperature, accompanied by a perceptible slowing of pace. The bustling street life takes on a new character, illuminated by the lights of street vendors and buildings, while the air seems to carry the vitality of water (refer to Figures 28 and 29).



Figure 28 The dark silhouette of skyline in the centre of Jakarta at the end of the day with Stratocumulus volutus cloud, by author at the 32nd-floor window, from Meteorologi ITB, 2021, p.42.

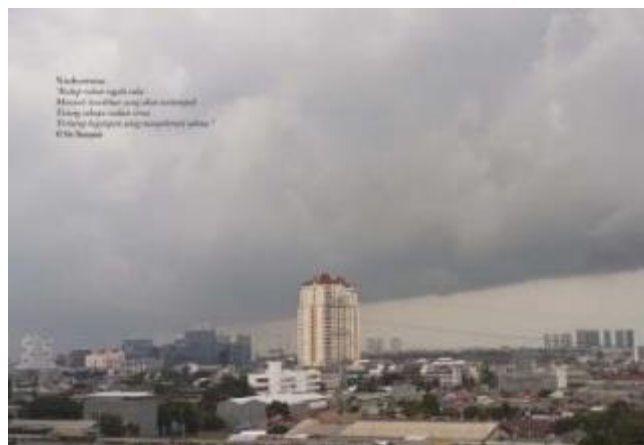


Figure 29 The skyline of urban landscapes during daytime in January comprises a collage of Nimbostratus cloud, signalling the coming of rain on the landscape, by the author during quarantine at a hotel in North Jakarta on 2021/01/22, from Meteorologi ITB, 2021.

Thus, observation during the dry season serves as a time for reflection on the intrinsic relationship between human settlement and the river, emphasising not only the interconnectedness of spatial topologies but also the potential for adaptation amidst ruination and abandonment. By embracing the challenges and opportunities presented by the river's fluctuating landscape, the communities demonstrate their resilience and ability to thrive in harmony with the natural environment, settling into a prolonged coexistence with the dry terrain.

For example, observation at the dam also led to attention on water flow with a subdued trickle, exposing the parched sediment of the terrain and the stark infrastructure of the weir and gates (Figure 30). This portrayal of aridity solidifies the narrative of surplus and scarcity, encapsulating the current state at a specific moment. Concurrently, the abandoned irrigation systems during this dry period disrupt the sedimentary foundations for cultivating urban life upstream and downstream. The analysis of these observations reveals a rich interplay between the fluctuating rhythms of water flow and the endurance of settlement, offering glimpses into overlooked moments, events, and knowledge from the past in the present. The observation also offers a fresh look at Kali Ciliwung's irrigation history, from managing the changing water levels between upstream and downstream areas to using the rivers for transportation, plantations, and industrial activities.



Figure 30 Katulampa Dam, rebuilt in 1912, turned back time in dryness with sands and stones, by author, on 2021/04/04.

Photography as a tool in visual ethnography also portrays the topography of the riverine landscape, and the various forms of labour involved in sustaining dwelling landscapes. The visual imagery gained prominence during ground observations along the Kali Ciliwung, where flood markings on structures such as the Panus Bridge serve as daily monitoring reports depicting the fluctuating wet and dry terrains (see Figure 31). These markings, painted onto the bridge's structure, underscore the transient nature of water presence and its significance in defining the value of flow and ground level of the landscape: green as 'normal' and red as 'dangerous'. While initially subtle, prolonged observation sparks contemplation on the passage of water and the implications of flooding within the historiography of riverine settlements.



Figure 31 Sunlight fell upon flood marking painted on a concrete-stone pile bridge for daily flood monitoring in Ciliwung on Depok City, by author, fieldwork in Jakarta, March 2021.

'jigsaw falling into place

So there is nothing to explain'

-Radiohead

(Fieldnote 2021/03/14, after I observed colours in flood markings painted on the stone-concrete pillar of Panus Bridge in Depok. The bridge was built upon the wet terrain of the riverine landscape between Bogor and Jakarta)

Grounded observation looks at the everyday act of watching and reporting the 'painting' on the Panus Bridge in Depok. It captures the complex dynamics of the riverine landscape and the meanings and instructions that go with it, which both stabilises and disrupts the idea that it is connected to 'disaster' and 'mitigation'. It seeks to encapsulate the vitality of time in water flow within the framework of governmental security measures across the recurring wet and dry cycles of urban settlements. Additionally, archival studies on Kali Mati reveal the irrigation practices of agricultural cultivation within similar mechanisms of opening and closing floodgates. The contemporary practice of directing water flow at Manggarai floodgate, known as 'the heart' of water flow management in Jakarta, bears similar references.

In addition, I conducted participant observation in two riverine settlements, the first of which was Tanah Rendah. My observations of Tanah Rendah date back to 2017, and I continued to visit the area during the 2021 fieldwork. Nestled in the meandering valley of the Kali Ciliwung, Tanah Rendah presented a densely populated neighbourhood characterised by interconnected houses and narrow, labyrinthine alleys (Figure 32). These alleys, numbered from the 1st to the 20th, indicate gradual expansion over time. Moreover, the presence of two administrative units, RW 7 and RW 8, suggests population growth that has surpassed the boundaries of a single administrative unit.



Figure 32 Picture of Tanah Rendah from drone that shows the meandering curve of Kali Ciliwung, by author, fieldwork archive on 2022/12/17.

In Tanah Rendah, the semi-official maps displayed in the community centre reflected noticeable tension among inhabitants regarding the expansion of houses onto the edge of wet terrain. Specifically, the maps from RW 07 focused on alleys without demarcating boundaries between the river and the settlement. In contrast, the maps from RW 08 differentiated between 'houses' and 'riverbank houses' using darker shading. These maps not only depicted the settlement's temporal evolution but also highlighted political distinctions between the 'river' and 'riverbank settlement' (Figure 33). They served as political and historical representations, complementing the static nature of photographs and providing insight into the continuous flow of energies and rhythms within the urban landscape (de Sola-Morales, 1995).



Figure 33 Map of RW 7 and RW 8 Tanah Rendah at community centre, by author, fieldwork in Jakarta on 2021/06/18.

The second location for participant observation is an abandoned riverine settlement that was undergoing negotiations for material compensation. The settlement, named Cawang Pulo (Cawang Island), is located in Cawang District, South Jakarta. It sits along an alley that leads to a river valley known as Arus Dalam, translated as 'Deep Stream' in English. This location is where I encounter the oral history of 'Kali Mati' from the displaced inhabitants who stay as land guards for an ongoing construction project. Due to delays in embankment construction and population displacement, the riverine landscape thrives, with various plants nurtured by recurring flooding and sediment deposition in the low-lying plain. The serene stillness of the plants creates an atmosphere reminiscent of a hidden forest, where an overflowing river breathes new life into the 'dead river' (see Figure 34).



Figure 34 Growing plants in the humid landscape of river land: sprouting coconut, growing grasses, and plants on the sediments in the ruins of abandoned houses in Kali Mati, by author, fieldwork in Jakarta on 20/05/2021.

In Chapters 3 and 4, I delve into the historiography of riverine settlements to provide context for the analysis of contemporary riverine settlements discussed in Chapters 5 and 7. Specifically, I conducted detailed observations of rivers to critically examine the interconnection between governmental narratives and water damage control practices, particularly in irrigation institutions for agricultural and industrial activities. These observations reveal the evolving value of water within the heterogeneous settlements on riverine landscapes.

The sporadic photography enriched and fostered deeper reflections during observation and analysis process after fieldwork. It brought settings to conversations, facilitated by snowball sampling, revealed that the slope of river terrain serves as a nexus of urban occupation, sustaining social life and defining the temporal identity of its residents. The degree of temporal identity is further evident in how residents, mostly migrants renting low-cost houses, give each other nicknames. Attention to landscape photography showed connections between how government officials, neighbourhood leaders, and people who live in riverine settlements interact with each other every day. These links create many confusing paths in city life and go beyond material gains to include bigger ideas of public goods (Simone, 2014). In this historical context, the discussion extends to the temporality inherent in riverine settlements, highlighting how these landscapes emerge and vanish in response to recurring water flow of flood and evolving urbanisation.

2.4.4. Data Management and Analysis

In the post-fieldwork phase, I organised the data according to the chosen method and carefully honed the emerging insights from the fieldwork summary through iterative and detailed analysis. Adhering to the principles of rigorous ethnographic reflexivity, I diligently maintained research journals to document my thought process, and the evolving emotions intertwined with the analysis, especially in the years 2022 and 2023. In the subsequent analysis process, I delved into several pivotal events that unfolded during the fieldwork, profoundly influencing the trajectory of the analysis. These events include discovering the Kali Mati, observing flood-monitoring operations, and witnessing a Betawi marriage featuring crocodile bread. Using a multifaceted approach, I combined textual analysis and drawing, as well as photographs and videos captured over an eight-month period from February to October 2021. The analytical framework evolved through iterative engagement with historical records and thematic synthesis of literature on displacement.

Each method employed served to elucidate the myriad expressions and perspectives shaping urban life, as well as the significance attributed to water. Translation and interpretation emerged as pivotal tools for unpacking the data. A close study of historical writings and pictures from archives demonstrated how riverine landscapes grow and connect in a wide range of geographical settings, from temporary settlements to port cities and the countryside. The study of fieldwork data from interviews and observations shed light on how embodied positionalities interact, showing that people in riverside settlements have different ways of expressing themselves and their thoughts on spiritual, sociopolitical, and aesthetic issues. Both strands of analysis illuminate the temporary nature of river dwellings. The analysis identifies the emergence of river irrigation systems to regulate water flow in riverine landscapes, as well as the strategic development of urban waterfronts in the process of state formation.

The combination of methods elucidates the ontology of rivers, particularly 'Kali', within the context of living with the temporality of water in the city. The focus on the time of labour within the ongoing sustenance of settlements dissolves the dichotomies of 'debt' and 'gift' within urban water infrastructure. The notion of 'quick wins' that emerged within planning agencies suggests an expectation of immediate results from the government. However, 'quick wins' also alludes to the governmental narrative of risk and control, which relies on practices to navigate the materiality in the field. Attention shifts to labour among contractual workers at field stations reveal a spectrum of emotions and playful attitudes that embrace the challenges and chaos of river management. This transformation of care, sentiments, and aspirations into a 'politics of fun' offers a nuanced view within water management institutions (Bayat, 2007).

However, it is important to note the limits of translation in deciphering the materials that I have gathered into a comprehensible narrative of the English language. On the one hand, this thesis gathers diverse sources of materials that propose another narrative of displacements through the thrown togetherness of histories in urban space. On the other hand, translating the embodied expressions of inhabitants with situated views of dwelling and reimagining the concept of 'urban' life required a significant amount of effort. The poetic expressions shed light on the boundless nature of water and its marginalised existence, often overlooked in conventional narratives of success and failure. They offer a reinterpretation of the river as a poetic canvas, inviting a re-evaluation of the history of urban landscapes and the potential for cultivating urban life amidst fluctuating wet and dry conditions. This interpretation further nuances the concepts of 'debt' and 'gift', which presume a stable relationship based on preservation and exchange. Singh and Joshi (2023) illustrate this resonance through their exploration of walking by the River Betwa, which reframes the interdependency of labour between villages and towns.

2.5. Opacity in Access, Ethics, Positionalities, Reflexivity

The temporal approach to understanding displacements, as gleaned from fieldwork encounters with Kali Mati, embodies what I refer to as opacity when contemplating access, ethics, positionalities, and reflexivity. This raises questions about accessible language and the reasons behind the common assumption of transparency. I am inspired by the statement from Jasbir Puar (Barnard Center for Research on Women, 2023) regarding 'the right to opacity' in thinking about accessible language and presumed transparency. Here, the right to opacity is a demand of labouring through, not necessarily about making things too complicated or dense, but actually about having to earn the right to see. In fact, my journey following fieldwork has been tumultuous, leading me to reflect on the complexities inherent in translating and interpreting Kali's presence in language and the landscape, transgressing the reality and the virtuality of 'water' and living with it. The opacity invites a deeper exploration of the vocabulary of 'land' and 'time' to understand the intricacy of settling in a riverine landscape. The landscape not only provides a physical foundation for habitation but also serves as a repository of knowledge and everyday life practices.

I explore the resonance in the translation of Kali that necessitates diverse configurations within landscape and settlement, particularly in relation to water. It involves recognising the vitality of coexistence with Kali and finding moments of joy amidst perpetual vulnerability. This process serves as both a critique and a creative endeavour, facilitating connections beyond mere exposition and explanation. The effort to remain untranslatable is profoundly generative, fostering a convergence of considerations and domains that influence the constitution of specific realities regarding the rivers. Exploring the significance of Kali amidst the prevailing narratives of displacement resonates with Simone's (2022) concept of rebellion without redemption. This is what he calls 'an environment full of propositions that can't be translated into anything else; the formation of materials whose compositions and uses resist definitive narration' (ibid., p. 18).

The opacity in this research resonates with longstanding arguments in feminist discourse regarding the situatedness of knowledge in scientific inquiry. I draw on Gilbert's (1994) insights to acknowledge my own biased understanding of language and landscape, shaped by limited exposure to riverine settlement conditions. Building on the critical politics inherent in knowledge production articulated by Rose (1997) and emphasised by Lawless (1992) in advocating for ethnographic approaches, I consider the emotive aspect of fieldwork as fertile ground in drawing the line between the analysis and the writing of the thesis (Cerwonka & Malkki, 2007). Embracing the naivety of researching within a familiar context, I explore the nuances of 'home' and contemplate the role of rivers in shaping notions of belonging. These considerations, spanning access, ethics, positionalities, and reflexivity, underpin my comprehension of temporality within the materiality of settlements.

In the subsequent section, I explore the opacity surrounding issues of access, ethics, positionalities, and reflexivity encountered during the data collection process. My personal values and perspectives play a crucial role in shaping the reflexivity necessary to navigate these emerging connections, especially given the constraints on rapport-building and collaboration with field participants due to pandemic-related restrictions. This situation necessitates a reassessment of initial engagement strategies, such as collaborative mapping, as part of the efforts to ethically revisit contacts with participants (Lancione, 2017b).

While pandemic policies limited direct interaction, alternative methods began to emerge. The decision to employ a combination of methods was continuously accompanied by adjustments and improvisations in the dynamics of fieldwork. The period of data management and analysis following fieldwork also involved a critical reassessment of the ethical dimensions of the research. The challenging process of translating and interpreting from Indonesian to English also highlights the researcher's embedded presence, underscoring the fluidity of subjectivities and the potential for dynamic encounters amidst shifting circumstances (Lancione, 2016).

2.5.1. Access

The word 'Kali' resonates both within and beyond accessible language, particularly within the confines of my home environment, which contributes to the opacity of my sensitivity in understanding the processes of translation and interpretation in migration and lived experiences. I was born and raised in Cakung, East Jakarta, where the Indonesian national language and Betawian Malay predominated (Tadmor, 2009). Although my parents spoke Javanese, they had migrated from their villages to Jakarta for education and work, underwent a religious transition from Javanese Hinduism to Islam, and rarely conversed in Javanese at home. Only yearly Eid celebrations and visits to my parents' native villages exposed me to the Javanese language.

Nevertheless, I recall instances when my parent's shared interpretations of nature, such as the significance of passing bird calls heard at night. These experiences became particularly salient during my visits to the dry fields near the peak of Semeru Volcano in Bromo Tengger Semeru National Park in East Java and have informed my understanding of the spiritual associations embedded in the materiality of Kali Mati, as discussed in Chapter 3. Additionally, I have observed the transformation of my neighbourhood's surrounding landscape, once characterised by fishponds and wet rice fields, into residential settlements.

Hence, my own childhood memories influence my perception of Jakarta's evolving landscape. I still vividly remember the sounds of frogs at night, the reverberating sirens, and the passing trains at dawn in Cakung station. I also recall encounters with snakes near my house's fences and porches, perhaps seeking refuge due to the changing terrain resulting from the conversion of fishponds and rice fields. These encounters have heightened my sensitivity to the concept of living landscapes, prompting me to pay closer attention to the flora and fauna in the watery terrain of the 'river land' (see Figures 35, 36, and 37).



Figure 35 Kingfisher organised the HomeRiver BioBlitz Sheffield in 2020 by author, 2020⁸



Figure 36 Bird amid Mangrove roots in Kapuk Mangrove Park, part of Pantai Indah Kapuk residential cluster in North Bay of Jakarta by author, fieldnote in Jakarta on 2021/03/20.



Figure 37 The structural trunk of a Fig Tree (*Ficus Benjamina*) next to a pond in Bogor Botanical Garden in Bogor, West Java, by author, fieldnote in Bogor on 2021/03/20.

⁸ The record of observation can be found here: <https://www.inaturalist.org/projects/home-river-bioblitz-don>

One of my most cherished childhood memories revolves around the simple joy of playing in the rain, a carefree activity referred to as 'mandi hujan' or rain bathing. I can vividly recall the makeshift rain gutter, affectionately dubbed the 'pancuran' or fountain, nestled between the rooftops of my home and our neighbour's. This spot became my sanctuary, where I would stand and bask in the refreshing downpour. Sometimes, my father would place a plastic drum beneath the gutter to collect rainwater for washing his motorcycle. Other times, I'd join my friends for rain play, finding the shared experience even more exhilarating. During prolonged showers, our neighbourhood alleyways would transform into shallow streams, offering us an opportunity for adventure. During these floods, we'd stumble upon fish from nearby swamps and joyously paddle and slide, turning our streets into impromptu swimming pools.

As I matured, I became increasingly attuned to the evolving landscape of my neighbourhood, particularly its gradual transition from wet rice fields to bustling shopping complexes and residential areas, influenced by the nearby Kali Cakung. These lived experiences, akin to sedimentary layers, have left an indelible mark on my understanding of urban settlement. One poignant memory stands out: my involvement as an activist for an NGO, where I witnessed firsthand the devastation in the Kali Ciliwung Embankment project. This experience prompted deep introspection as I grappled with the concept of the 'untranslatable' while empathising with displaced residents. The complexities surrounding issues such as river inundation, property compensation, settlement processes, and embankment design blurred the lines between understanding and action. To resolve this, I continued my research in Tanah Rendah in Jatinegara, which provided further insights into the temporal dynamics of river flooding and the daily practice of washing on bamboo rafts called 'getek'. These rafts, symbolising migration from highland to the lowlands of Kali Ciliwung, offered a perspective on displacement and adaptation to changing environmental conditions.

To gain insight into governmental institutions, I leveraged my connection with a fellow scholarship awardee who works as a civil servant at the Balai Konservasi Air Tanah (Groundwater Conservation Agency). Through him, I established contact with the Ciliwung-Cisadane River Board under the Ministry of Public Works and Public Housing, as well as various institutions within the Jakarta Province Government. Interviewing them at their offices gave me a better understanding of the day-to-day operations involved in shaping Jakarta's flood-mitigation policies. Additionally, this enabled me to identify the specificities of the Kali Ciliwung Embankment Project within the broader framework of water damage control policies. From a broader view, I noticed the continuity of irrigation policy to optimise the economic values of a stable urban life.

I noticed the hydraulic relations between highlands and coastlines in the delayed implementation of flood-mitigation policies in Jakarta. At first, the regular sedimentation 'flush' at the floodgates' opening time illustrates the efforts to control hydraulic forces to manage the distribution of wet and dry areas. These floodgates regulate water flow across varying topographic elevations, necessitating drainage technology to protect waterfront areas. Concurrently, they facilitate the development of seawalls and reclaimed islands, expanding coastlines in Jakarta's North Bay as part of the territorial landscape.

It's not surprising that children in riverine settlements humorously refer to their watery surroundings as a 'playground', sometimes likening it to a beach and playfully identifying themselves as 'beach boys' or 'beach girls'. This playful language reflects the intimate connection between language and the contoured relief of riverine landscapes, sparking imaginative reflections on the fluctuating waterfronts resembling 'islands' and 'seas' within Jakarta's low-lying plains. In Chapters 4, 5, and 7, I delve deeper into the ambiguity surrounding the definitions of 'river' and 'water in terrain' based on historical archives and fieldwork observations.

2.5.2. Ethics

This project is dedicated to pursuing an in-depth analysis of time in riverine settlements to understand the process of displacement in flood mitigation policy. I am aware of the sensitivities surrounding the topic of displacement, the ethical challenges of researching vulnerable participants, and the imbalances of power that can occur in such projects (Benzon & Blerk, 2017). The global COVID-19 pandemic also necessitated adjustments to the methods and timeline for fieldwork to comply with all governmental COVID-19 protocols in Jakarta. I omitted the plan to conduct participant observation in the highlands of Bogor after an officer from the Ciliwung-Cisadane Regional River Board mentioned that Jakarta is the focus of intervention in flood-mitigation policy due to the hydraulic condition of the landscape. I shifted my focus to historical research on irrigation work and the landscape of riverine settlements projected to be displaced, undergoing displacement, or already displaced.

The uncertainties of the situation make it more necessary to adopt a research position at the margins of egocentrism and object-centrism, attentive to small events, barely audible narratives, and new forms of production (Lanne, 2016). Through interactions with participants during fieldwork, I became more sensitive to the temporary register for flood-prone settlements. For example, encounters with buskers in Kampung Kebon Sirih led me to a story of floodgates steering water flow to prevent inundation around the Presidential Office. This intersects with a narrative about sludge tanks and ponds used for filtration in the wastewater treatment plant (Figure 38). Their gathering also relates to the dredging work of the East Flood Canal, which maintains the presumed surface water level within Kali Ciliwung embankments, illustrating a nuanced perspective on time in living the 'present' (Figure 39). They also approached the emerging displacement site, Kali Mati in Arus Dalam in Cawang District, ethically through encounters (Cutchin, 2002).

After spending several days with government officials through interviews and observations, I've come to understand the focus on infrastructural measures in flood-mitigation policy (Octavianti & Charles, 2019). However, the materiality of the measurement calls for further explanation regarding the assumptions, precision, and calibration used to define the terrain of the river landscape. This reveals the interdependency of labour and the vitality of everyday construction and reconstruction on the river landscape. In this sense, understanding the daily routines of places that absorb participants' concerns, shaping their perception of the meanings embedded in their activities, is crucial. For example, a shared moment of doubt and confusion emerged during an interview with government officers, as depicted in the field notes:

"Research is an act of making sense, and ethnography is the thin line drawing borders around any encounters. When I visited the WRA-JPG office, I found two men waiting at the security desk. They offered me a seat, as the security officer was nowhere to be found. A corridor connects the room to two pairs of elevators that lead to the Land Acquisition Unit office. The two men wore batik shirts. One of them had greyish hair, appearing older than the other. When I asked them which office they were visiting and whom they were meeting, they responded with 'no,' indicating they were not looking for Putra.

At 08:30, a man with an extensive and sturdy posture, likely the security personnel, approached me and inquired about who I wanted to meet before attending to the two men following me." He then guided me to the Land Acquisition Unit's designated room and showed me the door to an enclosed space. While I did not have the chance to observe the surroundings closely, I noticed maps of various rivers and lakes hanging on the wall. Inside the room, I met Putra, the secretary of the unit, who appeared relatively young, possibly in his thirties, with fair skin, neatly cut black hair, and a cautious demeanor. I expressed gratitude for his willingness to meet me in person and stated my intention to discuss the Land Acquisition and Resettlement Action Plan (LARAP)⁹ within the

⁹ Land Acquisition and Resettlement Action Plan (LARAP) is a document produced by the World Bank as a framework for infrastructural development planning that includes both land acquisition and resettlement plans. WRA-JPG creates *Dokumen Perencanaan* (DP) that only covers the land acquisition plan. The resettlement plan is within responsibility of Public Housing Agency.

context of the Kali Ciliwung Embankment project. I then inquired if it would be acceptable to audio-record our conversation. Initially hesitant, Putra preferred written documentation but eventually agreed to audio recording with the provision that certain parts could be omitted.

During our discussion, I learned that the LARAP document was not yet available until that day. Putra introduced me to Raksa from the Flood Control Unit, emphasising that if LARAP were to exist, it would be under the jurisdiction of the Flood Control Unit responsible for creating the Master Plan. His unit, on the other hand, focused solely on land acquisition. I also investigated the politics of scale within institutional planning arrangements and its implications for operational limits. His unit primarily produced a Planning Document (DP) containing general information for property acquisition in designated areas of the embankment, while LARAP was a detailed and comprehensive planning document. The Cadastral Land Agency provided initial data on registered plots as a reference for budget creation, while the National Land Agency and independent consultants determined the appraisal value to facilitate this process.

Amidst his responses, he made attempts to contact Raksa. The initial call likely went to her secretary, who informed him of her absence. On the second try, he managed to reach her. Caraka, a technical staff member responsible for monitoring water surface levels at the Manggarai floodgate, first introduced Raksa to me. Caraka had previously worked with Raksa in the office before moving to the field station at the Manggarai floodgate. According to Caraka, Raksa was considered an authority on flood-control infrastructure and was accustomed to meeting with public visitors, including media reporters, for interviews. I was aware of the type of information and discourse she typically handled.

Wait a moment. I recall that Putra's team delivered the document. The creation process likely involved more than one person. The fact that both individuals mentioned producing the document in 2021 initially perplexed me. Time and linearity became intertwined within me. If the WRA did not create the LARAP, what references did they use when drafting the DP? Further investigation into DPs is required, with DP 2021 being the most recent.

1. *Since the plan's inception in 2012, how many DPs have you generated? Could you observe any differences or changes from the initial to the most recent DP?*

2. *The WRA developed the DP as an operational tool for land acquisition, working in collaboration with the National Land Agency and the Building Permit Agency. Meanwhile, the Public Housing Agency had prepared social housing for the relocation process. While the working arrangements are clear, what delineates the division of responsibilities for land acquisition and resettlement? Are property acquisition letters involved? When it comes to defining property, what constitutes legitimate evidence? How are landowners, homeowners, and renters accommodated in the land acquisition and resettlement process?*

3. *The designated area serves as the primary reference in the Land Acquisition and Resettlement Action Plan (LARAP), guiding the acquisition of lands and evaluating the ability of residents to maintain their livelihoods after displacement. Therefore, land acquisition and resettlement decisions rely heavily on the land entitlement records maintained by the National Land Agency. These records form the basis for evaluating land and property ownership.*

The institutional mechanisms governing this process are characterised by linearity, hierarchy, division, and centralization. Notably, considerations related to housing often come at the end of the decision-making process rather than at the beginning. Detailed statistics on flooding in the master plan are still elusive; it is speculated that the scientific rationale behind water management, including hydro-meteorological calculations, may exist in documents predating the Planning Document created by the land acquisition unit. As a result, flood defence planning encompasses not only technical aspects of infrastructure construction but also social process that uphold division, hierarchy, and linear progression from planning to execution, with the planning document playing a central role in materialising these processes.

Budgetary constraints, often falling short of aspirations, further complicate the uncertain nature of planning. Present efforts aimed at bridging existing gaps intricately link to future possibilities. Questions arise about the timing of commitment and disengagement, the relative pace of infrastructure planning versus construction, the implications of waiting, and the plan's eventual

completion or obsolescence. Reflecting on the pace, speed, tempo, and fluidity of these processes prompts an inquiry into underlying priorities. Stakeholders must consider whether their focus lies in responding to flooding events, managing rivers, or executing planning documents complete with diagrams.

I inquired why LARAP was utilised as a reference for the master plan while the planning document or 'Dokumen Perencanaan' (DP), was referenced for embankment construction. Raksa appeared confused and somewhat cautious. She inquired, 'What is the focus of your research, exactly?' I responded by explaining that I am researching the process of displacement resulting from flood mitigation policies. Immediately, she redirected the conversation to Putra, indicating the man beside her. 'That falls directly within Putra's purview,' she stated. He remained quiet during their discussion. 'Your research question isn't entirely clear! If you're studying the Kali Ciliwung, then you should approach the Ciliwung-Cisadane Regional River Board (CCRRB). If you're investigating flooding and rivers in Jakarta, the conversation changes. If your focus is on displacement, then it falls under the domain of land acquisition, which is Putra's area. Be careful not to lose sight of your research objectives. What exactly are you seeking?' she reiterated.

I found myself at a loss for words.

After attempting to process the 'floods' of information regarding various topics and institutions, I inquired about the division of responsibilities between CCRRB and WRA in Jakarta. Raksa referred to a historical agreement on river management between the Governor of Jakarta and the Minister of Public Works. She retrieved a document from a drawer for me to examine. As I inspected the aged, laminated paper, I tried to ignore the perplexed expression in her eyes. After thanking her, I continued the interview by inquiring about the origin and purpose of the river observation table. She explained that the table was used to monitor water flows and opening levels at the Manggarai floodgate.

Next, I inquired about the design specifications for the Manggarai floodgate and how they correlated with the site's current condition. She responded vaguely, 'Based on the cross-sectional area of the floodgate,' before pausing. 'Do you have any other questions?' she asked abruptly. Then, turning to Putra, she commented,

'She seems intelligent.' She engaged with Putra as if I were not present. I mentioned that I had met Caraka, noting his respect for her as an experienced expert in understanding Jakarta's flood mitigation policy. Caraka had also mentioned that she had studied in the Netherlands. Raksa acknowledged this, stating that she had attended a short course there but not as part of a formal education. (Fieldnote 31/05/2021 07.08: Distractions or potential encounters?)

Establishing a rapport with government officials involves negotiating various challenges, particularly in terms of the questions posed, as the detailed account reveals. Each governmental office operates within its own unique considerations and domains, which intersect and influence one another's understanding of the river's realities and its management. While overarching national-level political agendas shape cross-administrative river management, the governing governor's priorities heavily influence the specific interventions in Jakarta's capital city. This context underscores a distinct narrative surrounding the river's capacity to cause damage, while delays in infrastructure provision reflect efforts to develop stabilisation mechanisms. Planning discourse embeds temporal dynamics that perpetuate the normalization of flooding in riverine settlements.

This encounter shed light on underlying assumptions within different institutions that contribute to delays, attempts to address them, and shifts in conditions to facilitate collaboration. First, the lack of integrated national-level planning places river management within the purview of provincial planning in Jakarta. The provincial government tailors its responses to specific infrastructural sectors like drainage, social housing, and waste management. Secondly, the CCRRB oversees water damage management, and irrigation technology informs strategies for river embankments. Importantly, the CCRRB operates within a framework of generic irrigation practices aimed at managing rivers for regional-scale agricultural settlement under the Ministry of Public Works and Public Housing (MPWPH). Notably, there isn't a dedicated disaster management unit within planning institutions. In 1919, the city government established the Fire Mitigation Agency, and in 1945, it formed the National Disaster Mitigation Agency to support emergency responses during wartime.

2.5.3. Positionalities

The analytical processes undertaken in this research must precede and converge with the compositional processes of thinking and positioning. Drawing from my personal background, having been born in Kampung Penggilingan, East Jakarta, and raised in a migrant family from agricultural villages in Central Java, I am attuned to the untranslatable energy of the landscape. Meanings and practices emerge within the complex tension and compression between these elements (Jones, 2000), shaping my understanding of city planning practices as observed through everyday reference planning codes and building permits within siloed office environments. For instance, I recognise that the failure to engage with the appraiser in land acquisition may be attributed to the confidentiality surrounding the valuation of material compensation, prompting me to limit discussions about the value of displacements.

My observations of the multiplicity of surfaces in riverine settlements revealed distinct patterns of behaviour among the inhabitants. Many utilise mats to sit cross-legged on the floor, creating spacious rooms for movement (see Figure 40). This observation highlighted the lightweight building materials used in traditional Asian houses and platform structures (Utzon, 1962). Proximity to the water surface facilitates a linear progression towards the wet terrain, allowing for the flow of passive heating and cooling air from the river corridor into the interior of the houses, including additional floors above (Phillipson, 2022). The reciprocal relationship between building materials and house structure also responds to wet terrain sedimentation, contributing to the concept of 'earth' architecture (Rael, 2009). A makeshift food kiosk in the Bukit Duri neighbourhood (see Figure 41), where residents from Kuningan, West Java, serve yellow rice in a compact space of 2.5 x 2.5 meters on the ground floor while optimizing alleyways for temporary seating, exemplifies this gradual formation of active and passive movements. I discuss this further in Chapters 4, 5, and 7 on dwelling landscapes.

Living within the wet terrain of a river landscape encompasses a temporal dimension that oscillates between memory and experience, rooted in the dwelling traditions of stilted house construction. Ground inhabitation reveals an intimate temporal rhythm for residents, who both absorb and endure the vitality of water during the dry season and cultivate the sedimentary richness brought by flooding during the wet season. Even after a decade of displacement, this dynamic scene persists in the embankments of the East Flood Canal, where continuous inundation gradually builds up fertile sediments, fostering the growth of freshwater plants and animals. The resurgence of life in these environments marks opportune moments that position time as a confluence between dreams and echoes of the past (Phillipson, 2022). As illustrated in the following field note excerpt, it embodies the generative temporal experience of living with both wet and dry terrains, an experience often overlooked and inadequately represented in the iconography of displacements:

'Can I sketch your home?' This question became a familiar companion I posed after each interview or observation during my fieldwork. Surprisingly, the response was always a resounding 'yes.' Drawings of homes filled three of my field notebooks, capturing the essence of the spaces as inhabitants graciously took me on tours, sharing stories behind each unique corner and spot. It was a flood of emotions; recounting the story of one's home felt like reliving memories, becoming one with the space, and witnessing life itself. These storytelling moments humbled me, evoking more emotions than I had anticipated.

The dismantling of homes sparks an affective response, breathing life into memories and creating poignant moments of care (Lancione, 2019). Memories intertwine with life's moments, expressed through our shared connection with the home's tangible, mundane materiality. A similar sense of emotion arose when I encountered abandoned houses reclaimed by river mud and overgrowth. These houses, abandoned and devoid of human touch, speak a different language. Their silence echoes with the weight of the past, yet it remains untranslatable.

'How does it feel to witness life's changes?'

When I posed this question to an elderly man regarding the altered landscape resembling a 'dry' ocean, a solemn silence filled the air. His gaze wandered, searching for an answer in the vastness of his memories. Uncertain whether it was ethical to ask such a probing question, I waited anxiously for his response. Moments passed, and then, with a hint of resignation, he replied rhetorically, 'Well, that's life. What can you do?' (Field note summary: October 22, 2021).

The fieldnote exemplifies the symbiotic relationship between language and landscape, intensifying over time in Kali, thereby fostering memories and nurturing the materiality of living. The interplay between wet and dry terrain facilitates resonance, with water serving as a constant presence vital for settlement and urban existence. The human presence further shapes the architectural fabric of settlements, continuously adapting to and reshaping the wet landscape to make it habitable. The perpetual 'present' embeds the concept of 'home' in the political status of Jakarta as the capital city, embodying a cumulative experience that leads to diverse destinations. Maintaining a daily research journal plays a significant role in cultivating an ethical approach, utilising reflexive and dialogic methods to avoid colonising discourses of the 'other' (Cloke et al., 2000).

In Chapters 3, 4, and 7, I discuss further the untranslatability of 'floating' life in riverine settlements and explore the potentialities of the future. Abandoned houses juxtaposed with the 'wilderness' of mud and architectural spectacles surrounded by growing plants underscore the complexity of the landscape. However, amidst these complexities, the wet terrain of Kali and the dynamic nature of the river during flooding convey a message—an archipelagic image inherent in the spatial topology of urban settlements. The discourse on displacements currently overlooks this new perspective on seeing and living.

2.5.4. Reflexivity

Before delving into the fieldwork encounter that led me to discover Kali Mati, it is crucial to explore the significance of engaging with emergent encounters during the time of Kali. The passage of time also reveals itself as an opportune moment to witness shifts in the landscape's 'mood,' particularly during transitions from daytime to nighttime. This led me to question the notion of 'home' in a bustling metropolis like Jakarta, where life is constantly in motion. For example, while renting a room near the Kali Ciliwung in Jatinegara, I encountered a young woman from Sukabumi, on the hillside of Gede volcanic mountain. She shared her experiences of working in a Korea-owned garment factory and her aspirations to work overseas, possibly in Japan. One night, amidst discussions about ghosts haunting our rental house, she revealed her family's belief in the protective power of a sacred amulet—a tiger skin folded and covered in black fabric. This spiritual connection to the tiger skin underscores the intricate interplay between kinship, spirituality, and the concept of 'home.' This encounter prompted reflections on the migration across life stages of urban inhabitants and its impact on human-landscape relationships (Ho, 2019).

Interactions with migrant workers who sell food in the city, such as a well-known meatball seller from Wonogiri, Central Java, or a satay seller from Padang Panjang, West Sumatra, provided another example of an encounter. Their operating hours were often unpredictable, reflecting the fluidity of their daily lives. During a conversation with a meatball seller about his opening schedule, he lamented that settling in Jakarta seemed unimaginable compared to his tranquil hometown in the village. Similarly, a satay seller shared a narrative of constant movement, having relocated from a rental room in flood-prone areas near the river to a new one on higher ground. These encounters during fieldwork reshaped my perspective on the amorphous relationships of time spent dwelling in the city and the ideas of 'home'. The archipelagic imagination of Jakarta's urban landscape began to emerge through the fluidity of time experienced by its inhabitants. Encounters with participants further underscored this temporal fluidity, as illustrated in the fieldnote below:

It's hard to believe it's been almost two months since I arrived in Jakarta. 'Jakarta wins every time,' my supervisor remarked. Perhaps he was right, or maybe it's because I was born here, and every corner of the city feels like my childhood home. Nadira was the first to join me on my solo journey in January 2021. She works as an investment analyst for an insurance company originated from Germany. We connected through social media chat, discussing our current situations, my fieldwork with river observation, and her new workplace. We planned to meet to catch up on our lives, sharing the ups and downs, the laughs, and tears. She expressed interest in joining the observation and informed Jon about our plan, who was also keen to participate.

Then, I reunited with Jon, a friend from university and, for a long time, an object of my affection. Looking back, I realised that I couldn't differentiate between infatuation, admiration, love, or desire. I was too immature to see beyond fleeting emotions and grasp the deeper aspects of friendship, family, and life. At that time, I was merely driven by curiosity, seeking closeness without fully understanding its implications. Now that I met him again, I see him from a different perspective. It's not that I've forgotten past feelings or memories; rather, I've gained a deeper understanding of myself and realised that life doesn't revolve around me. I know what led me to him, to the place we once shared, and to the mutual respect we have for each other.

The presence of Nadira and Jon evokes memories of past lives and intersects with the introduction of Nala into the narrative. Nadira introduced me to Nala as we convened at the observation point. Nala, too, showed an interest in rivers and architecture, expressing curiosity about the river's happenings and flooding. She accompanied me during an interview at the flood monitoring station at Panus Bridge in Depok, engaging in discussions about the intricacies of river water measurements, particularly regarding spatial registration and numerical data. Nala remained with me throughout the observation until noon and assisted in the interview process with the field officer in Depok.

During our interaction, Nala asked questions about calculating the numbers in the hourly report of the water surface level, seeking clarification on concepts such as cross-section area and baseline of 'river'.

Our extended discussion at a food court in a shopping mall in Depok delayed our arrival at the base camp of the Ciliwung Depok Community (CDC). By the time we reached the camp, the day had started to darken. While there, I met Tirta, Kahlil, Bayu, Banyu, and Setia. Tirta was doing well, overseeing her project on organising workshops related to water and permaculture and also working part-time as a lecturer at a university. She had convened with CDC members to prepare a video for Water Day. Surprisingly, Banyu and Setia were also present. On another occasion, I had previously interviewed Banyu. Setia's inquiry in 2018, during a meeting for river-based activists in Tanah Rendah, echoed in my mind: 'Ada rencana apa?' (What plans are in motion?) Once again, I found myself pondering the significance of providing a suitable response. Is there truly a 'right' answer to such a question?

I then inquired about Bayu's journey to joining the CDC. He recounted his experiences of wandering through various places until he encountered Setia three years ago, which led him to decide to join the community.

Suddenly, a dog named Angel joined our group. Angel, a golden retriever accompanying Bayu, had caught our attention since our arrival. With its furry golden-brown coat and sturdy physique, the dog was a sight to behold. Although I am not particularly fond of dogs, I am always welcoming towards animals. It is almost instinctual for me to reach out and pet them, much like a child reaching out to a kitten. Angel seemed to enjoy the gesture, licking my palms before settling down at my feet. Other animals were also present: a goldfish swimming in a small pond, a green snake, and a water snake devouring an eel.

I then inquired about the coordination between CCRRB, WRA, and Depok City Government in their KCD activities. The response was ambiguous, leaving me with a sense of unease. The day grew darker. Setia, Banyu, and Bayu engaged in conversation, discussing topics ranging from zero run-off to using the analogy of water and a basin to illustrate flooding and river dynamics. Nadira and Jon were not present around the basecamp of KCD.

Feeling unsettled, I asked Bayu about their typical schedule at the site. His response surprised me: They could stay all day, with one member even sleeping there overnight. This reminded me of the field officer from WRA-JPG, who

remained stationed under the Cipinang Indah Bridge while monitoring dredging work during the night. The mosquito population started to rush in, prompting me to bid farewell to the people in KCD after obtaining the contact information for CCRRB and Bayu.

I searched for Jon and Nadira, feeling suddenly exhausted and overwhelmed by fatigue. It dawned on me that I had unintentionally neglected them since our arrival. On a previous visit to the Manggarai floodgate with Nadira, I was more attentive to her presence because I was already familiar with the participants. However, since this was my first visit to Depok, my sole focus was on gathering information from the participants. I eventually found Nadira and Jon engaged in conversation in front of a futsal field by the road. Feeling remorseful, I struggled with the awkwardness of inserting myself into their conversation as a third party. I settled next to Jon, attempting to balance the dynamic. He proceeded to tell me about Gang Arus (Stream Alley) in Cawang, situated next to the Kali Ciliwung, where people commonly fish, similar to what we had just witnessed. After mentally noting the location, I conducted online research and found several news reports indicating the floods and displacements in the area. (Field note, 15/03/2021)

The detailed account in the fieldnote emphasizes the importance of paying attention to the interactions among participants, the thrown togetherness, and the transition from opacity to legibility over time. Engaging with the outdoors provides an opportunity for radical openness to the collective experience (Simone, 2022). This brief encounter during fieldwork influenced my decision to explore Gang Arus in Cawang and found Kali Mati. It also prompted me to ponder whose lives are valued and recognized for what purposes. As daytime transitioned into nighttime in Depok City, parallel lives unfolded under a bridge at the CDC base camp and through flooding reports at the Panus Bridge. Birds flitted about, nesting in the nooks and crannies of the bridge's steel framework, their chirps mingling with the rush of water and traffic noise from the nearby road. These experiences prompted me to contemplate the opacity in the ideas of home that repositions my role as a researcher.

2.6. Conclusion

The methodology chapter provides insights into comprehending the temporality inherent in the materiality of riverine settlements. It introduces a combination of archival studies, semi-structured interviews, and participant observations with the goal of elucidating the temporal modalities within the historiography of settlements in the riverine landscape. Specifically, the chapter demonstrates how this combination of methods led to the decision to conduct linguistic research on ‘Kali Mati’, the dead river, and ‘Tanah Kali’, the river land, capturing the embodied expressions of inhabitants regarding urban living in riverine landscapes. The chapter discusses each method in relation to the research questions, highlighting its limitations and potential in addressing the research aims and questions. Importantly, the chapter also explores considerations of access, ethics, positionality, and reflexivity in conducting the research methods, including adjustments made in response to limitations posed by COVID-19 pandemic policies in the middle of year 2020 and throughout year 2021.

This methodology chapter serves as a vital link between the introduction and the detailed analyses presented in subsequent chapters, addressing the first, second, and research questions. The subsequent chapters will delve further into the historiography of rivers and settlements, exploring the translation and interpretation of ‘Kali Mati’ and ‘Tanah Kali’ within its historical context. Chapters 3 and 4 go into detail about the historiography that illustrates interconnected landscapes, as well as shifting attitudes towards flooding in historical literature on riverine settlements. It also repositions the emerging term ‘surplus water’ in current flood-mitigation policy, juxtaposing it with the term ‘surplus population’ in town planning within the historical trajectories of labour, housing, and infrastructural development of Java Island and Southeast Asia.

Chapter 3. Historiography of Kali Mati/Dead River



Figure 42 Unfolding map of Kali Ciliwung landscape as a 'river land' that flows through weather, landscape, and partitions of 'Jakarta' from the 5th century onwards to the 21st century, by author, drawn in Sheffield, 2022.

3.1. Introduction

This chapter delves into the intricate nature of Kali Mati, also known as the 'dead river,' with the goal of revealing the historical development of landscapes into settlements. Through diverse perspectives, it seeks to depict the concept of Kali Mati by exploring multiple yet crosscutting narratives of water flow that define the continuous movement of landscapes. A sketch map of the Kali Ciliwung, spanning from archaeological discoveries in the 5th century to contemporary times, illustrates the changes in the physical landscape, highlighting the interplay of water dynamics in renewing landscape surfaces with emerging settlements (Figure 42). This map serves as an imaginary portrait, introducing riverine settlements from the temporal dimensions of urban life amidst atmospheric and geomorphological processes, tracing the evolution from the port town of Batavia into 'Betawi' and 'Jakarta.'

The chapter proposes a two-part framework for understanding Kali Mati. Firstly, it critically examines Kali Mati through seminal studies on Jakarta Bay's geomorphology, state-led river development for the irrigation of agricultural and industrial settlements, and geological literature on volcanic terrain formation. These studies shed light on the term's translation and interpretation within the geographical history of Java Island. Then, the chapter explores the narrative of surplus population in the geographical literature of Southeast Asia, documenting historical projects of civilising missions through economic expansion. It provides a global context of the shifting riverine landscape, utilised for river irrigation of agricultural and industrial settlements along the main rivers on Java Island, with the aim of developing settlements for port towns along the northern coastlines.

In conclusion, the chapter presents multiple ontologies of the riverine landscape. It contextualises 'Kali Mati' as remnants of river irrigation improvement in Kali Ciliwung, the western part of Java Island. The following chapter will discuss further the landscape from the point of view of seasonal settlements in the notion of 'river land'.

3.2. Historiography of Kali Mati/Dead River

3.2.1. Emergence of Kali Mati

I start the section with a seminal study on the geomorphology of Jakarta Bay that draws on the physical geography of the deltaic landscape, which was formed by the gentle slope of the 'alluvial fan' and 'alluvial plain' that is shaped by two rivers (see the popular map in Figure 42). These two embracing rivers are the Tjisadane/Cisadane in the west and the Tjitarum/Citarum in the east, with Tjiliwung/Ciliwung in between them. Both rivers follow the gentle slopes of three volcanoes: Salak, Gede, and Pangrango. Verstappen (1953) creates an assemblage of stretched radial valleys on three volcanoes through aerial photographs, surveys, maps from the Irrigation Service, and meteorological reports (Figure 43). The maps from the Irrigation Service offer contour lines, ranging from 1 metre to 0.25 metre, that were made to facilitate the irrigation of the extensive wet agricultural fields that occupy significant parts of this plain. The study illustrates how the interplay of tectonics, volcanism, climatic fluctuations, and movements of sea level influence the making and shifting of the landscape.

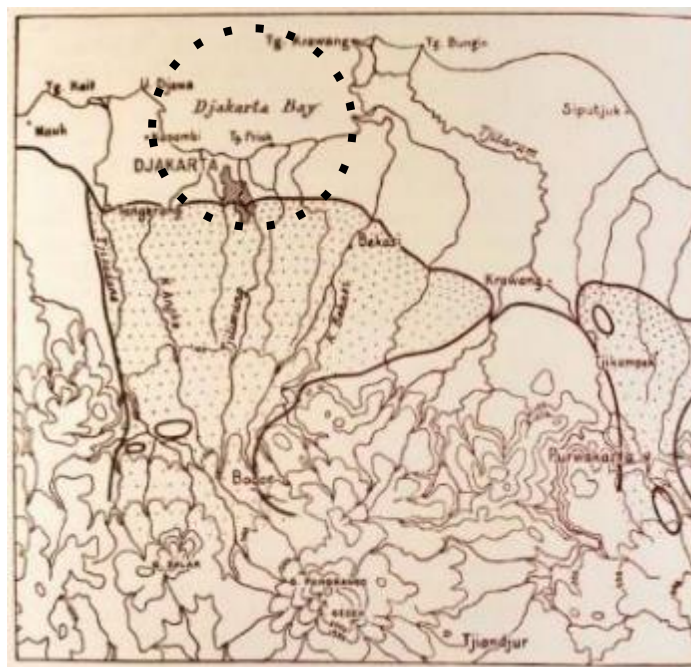


Figure 43 Map of Djakarta Bay (circled) with hinterland where the stippled area is the alluvial fan, surrounding Ciliwung: Cisadane in the west and Citarum in the east, by Verstappen, 1953, used under UK copyright exception.

In his reflections on small settlements on the beach ridges¹⁰, Verstappen provides a brief history of the place and muses on the interplay between human settlements and natural possibilities. He notes that 'in the early 17th century, the entire Tangerang district was a virtually uninhabited swampland, and rhinoceros and tigers came as far as the walls of former Batavia and gangs from Bantam who rendered the surroundings of the town unsafe and made use of these beach ridges' (Verstappen, 1953, p. 69). Then, he describes the development of settlements by making private estates in the beach ridge area with country houses and coconut plantations. As the population increased, the swamps were drained by digging numerous gutters through the beach ridges and laying out rice fields. The difference between beach ridges with coconut plantations owned by squires and leased land for rice fields is obvious in his survey.

This observation maintains that the landscape of the beach ridges has influenced the use of soil and the social structure of the settlements. The study analyses the 'alluvial plain' surface, comprising shifting rivers and beach ridges 'perfected' in making settlements for plantations. Although specific information based on observation of Jakarta is limited due to dense buildings altering the urban landscape, the study illustrates a historical record of urbanising landscape in the deltaic plain of rivers and its hydraulic relations with topographic conditions within distribution of volcanoes in Java Island. The geological setting is crucial to note the flow of minerals in soils for plantation, as demonstrated in the presence of *Kali Mati*, an 'old river' made by a shifting river between ridges and agricultural settlements (Figure 44). The aerial photograph illustrates fragmented curves of a bending river that was surrounded by a concentration of a coconut plantation and patches of rice fields.

¹⁰ In Earth science, beach ridges are 'landforms commonly developed on prograded coasts with beach shorelines' (Tamura, 2012, p.279). They are a result of complex patterns of linear crest in the progradation of wave- and riverine-dominated shorelines. For a discussion on the loss of beach ridges, coastal lowland habitat, and agricultural land under urban footprint, see Bohnet & Pert (2010).



Figure 44 An aerial photograph depicting an oxbow lake (circled) named 'Kali Mati' that is a fragment of the old river in the shifting Tjisadane on the left, by Verstappen, 1953, pp. 72-73, used under UK copyright exception.

The study provides a visual depiction of the intricate dance of water flow within the coastal landscape of rivers and settlements (see Figure 45). Verstappen (1953) noted that the contour map from the Irrigation Service does not perfectly replicate the original relief in all aspects. It reveals a complex interplay of deltaic formations influenced by the eastward current during the rainy west monsoon, which carries 80–90% of the annual silt load while depositing less during the westward current in the east monsoon. This process gives rise to two distinct sedimented landscapes: the ridges and small valleys of the alluvial fan and the flat expanse of the alluvial plain (see Figure 46). Additionally, the presence of escarpments along major rivers indicates areas where less sedimentation has occurred on the plain. The gradual elevation of the landscape, where paddy fields are situated, is primarily where settlements are found, albeit only at the highest points (Verstappen, 1953).

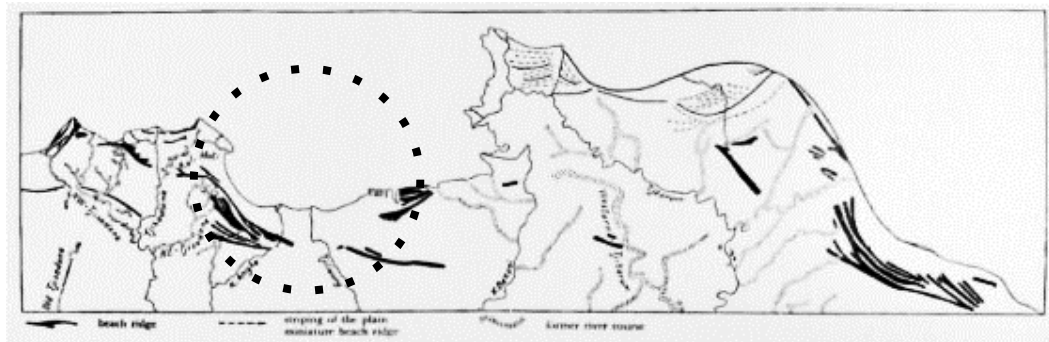


Figure 45 Shifting rivers and beach ridges that formed extension in coastlines of alluvial plain, including Jakarta Bay (circled), by Verstappen, 1953, pp. 76-77, used under UK copyright exception.



Figure 46 The aerial photograph illustrates parcels of 'sawah'/ricefield in Bogor towards Jakarta, prior to establishment of Depok City in 1999, by Verstappen, 1953, pp. 82-83, used under UK copyright exception.

The second narrative of Kali Mati unveils a history of enhancing irrigation systems as an ethical policy during the 19th and 20th centuries. This policy entailed the transformation of land use and the assurance of land tenure security to facilitate increased production to meet market demands. To store abundant rainwater during the wet season and sustain irrigation efforts during dry periods, the colonial government rerouted several major rivers in Java to construct dams. This redirection of water flow through weirs and floodgates gave rise to the name Kali Mati, symbolising stagnant water bodies resulting from irrigation projects.

Crucially, the manipulation of hydraulic forces influenced the morphological evolution of rivers, including the formation of riverine islands (see Figure 47). Over time, this engineering intersected with land-based transportation networks such as railways and roads, facilitating the expansion of agricultural and industrial settlements. Local studies and news reports document the remnants of stagnant water channels stemming from historical irrigation developments aimed at mitigating floods in urbanising regions, such as the Cisadane River in Tangerang, West Java (Ravesteijn, 2018), and the Kali Porong in Sidoarjo, near Surabaya, East Java (Kominfo Jatim, 2018)¹¹.

¹¹ Indeed, the stagnant water channel that is diverted from Kali Porong, Sidoarjo, was part of irrigation work and flood-control infrastructure in Surabaya. The past lives of this water body emerged during oral history of displaced inhabitants affected by Sidoarjo mud flow (interview with Anton Novenanto, October 13th, 2022)



Figure 47 Sluice for irrigation work that makes a short-cut in the Cisadane River, 1940, public domain, via Leiden University Public Library (KITLV).

The third narrative surrounding Kali Mati revolves around its toponym as a dry landscape situated at the foothills of Semeru volcano, the highest volcano in Java, and Kepolo mountain (see Figure 48). This designation stems from the presence of dry lava flows that once traversed the valleys following past volcanic eruptions (Morton, 2016; Wong, 2015). Indeed, a backbone of volcanic activity profoundly shapes Java's physical geography, contributing to the fertility of its soils and the sedimentation of its rivers (Cabaton, 1911). The interaction between volcanic relief, historical volcanic events, and climatic conditions continues to shape the formation of riverine landscapes and the emergence of settlements.

For instance, geographical studies highlight that interior basin like the Jakarta plain experience a drier climate compared to hill masses at higher elevations above sea level, such as Bogor and Bandung (Robequain, 1954). In the western mountains, rainfall is abundant and consistent, supporting the growth of evergreen forests. Within these physical settings, volcanic eruptions, earthquakes, and the movement of fault lines in Java have led to the destruction of villages, plantations, crops, and public infrastructure like mosques and hospitals. Following the eruption of the Salak volcano in 1715, extensive labour was mobilised from Cirebon to clear volcanic sediments from canals and their surroundings in Batavia (Kanumoyoso, 2011).

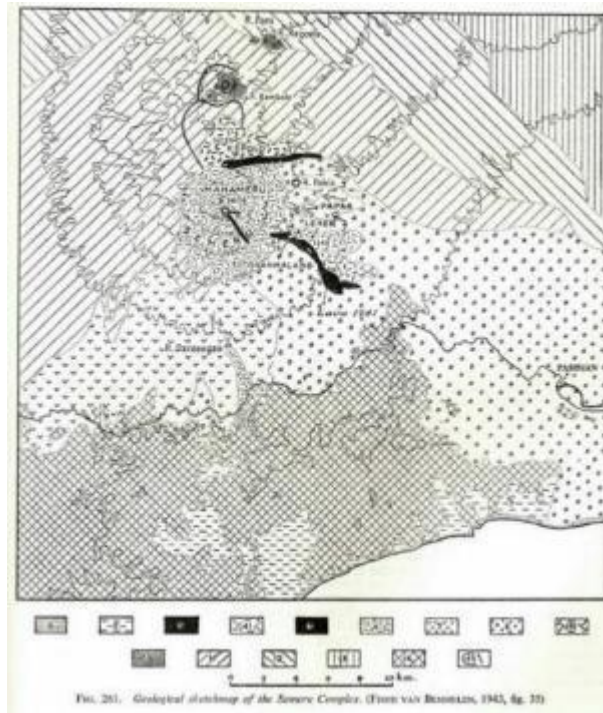


Figure 48 Location of 'Kali mati' (5) as sub-recent lava flow between Semeru volcano (6) and Kepolo volcano (9), by van Bemmelen, 1949, p.551, used under UK copyright exception.

Viewed through the lens of Kali Mati, the dynamic interplay of volcanic activities predominant on Java Island shapes its coastline towards the seas, driven by celestial movements and the physical processes of water flow. However, the significance of Kali Mati extends beyond mere engineering projects; it embodies a spirituality of water within the landscape for its inhabitants, encompassing a broader spectrum of meanings and implications than just irrigation development. Chapter 4 will delve deeper into this aspect, emphasising the spiritual significance of wet time in the habitation and cultivation of landscapes. The geomorphology field studies the idea of Kali Mati, which includes different ways of living along rivers and sheds light on the temporal aspect of how landscapes are formed physically. This interplay unfolds a multitude of material flows, contributing to the continuous formation of rivers and settlements. Agricultural settlements have played a pivotal role in altering the waterscape, transforming Kali Mati into an 'old river'. As a result, irrigation technology has adopted this name to regulate water flow distribution across wet and dry landscapes. The following section will delve into the irrigation initiatives in the settlement of port town Batavia.

3.2.2. Settlement of Port Town Batavia

In this section, I explore the historical process of settlements to elucidate the multifaceted process of settlement in the establishment of port town Batavia. I begin by examining the settlement of trading companies during the 17th and 18th centuries, particularly focusing on the port town of Sunda Kalapa. Niemeijer (2005) offers valuable insights into the transitional period colonial inhabitants in Sunda Kalapa faced as they navigated the unfamiliar surroundings. Notably, inhabitants named various canals after existing animals in Java, such as the crocodile canal (kaaimansgracht), tiger canal (tijgersgracht), and rhinoceros canal (rinocerosgracht) (Figure 49). This study suggests that prior to the late 17th century, residents of the fort town harboured a fear of venturing beyond the fort walls due to the presence of wildlife. During the nascent stages of colonial settlement, inhabitants confronted the challenges posed by their environment, including the presence of indigenous wildlife.

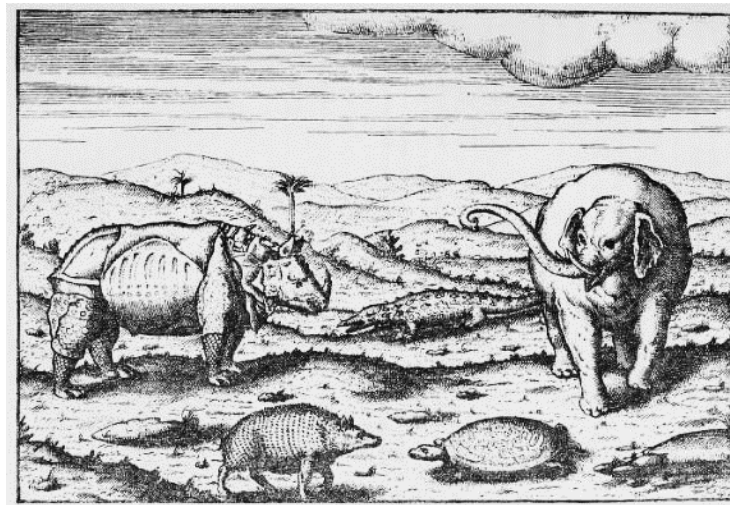


Figure 49 Depiction of elephant, crocodile, rhinoceros, and hedgehog, by Lodewyckz, 1915, p.134, used under UK copyright exception.¹²

¹² The side note in the picture says 'de afbeeldinghe vanden Olyphant in Java, die aldaer daghelijcks verhuert worden om te arbeyden, de figure van den Crocodilis hem onthoudende inde rivieren van Java', which can be translated as 'the image of the elephant in Java, which is hired out there every day to work, the figure of the crocodiles withholding from it in the rivers of Java'.

During this period, diplomatic missions sought to establish stability in the inland areas of Java and other islands, aiming to foster peace amidst ongoing tensions. The Courts of Banten and Mataram reached a peace agreement, but it did not entirely quell the conflicts between various groups, both at sea and inland. As a collective response to shared threats, groups formed shifting alliances that allowed them to navigate restrictions and access the port town. In 1633, the trading company responded to threats against its workers on the plantation by burning down a village outside the fort town. As political unrest subsided, migration flows connected via the trading company facilitated the settlement's growth. By the mid-17th century, multiple settlements had emerged around the port town, extending towards the hinterland of West Java.

Historical studies delve into the expansion of inhabitation, highlighting the diverse mix of ethnicities present in the settlement. Administrative records categorise inhabitants into groups such as Europeans, Mestizos, Mardjikers, Banda, Chinese, Moors, Malay, Ambonese, Bugis, Makassarese, Mandar, Sumbawanese, Timorese, Balinese, Javanese, and 'slaves' (Raben, 2000) (see Figure 50). Workers from Java Island made up the largest proportion, owing to their expertise in land clearance and agricultural cultivation, particularly in creating contoured terrain for terraced-irrigation fields.

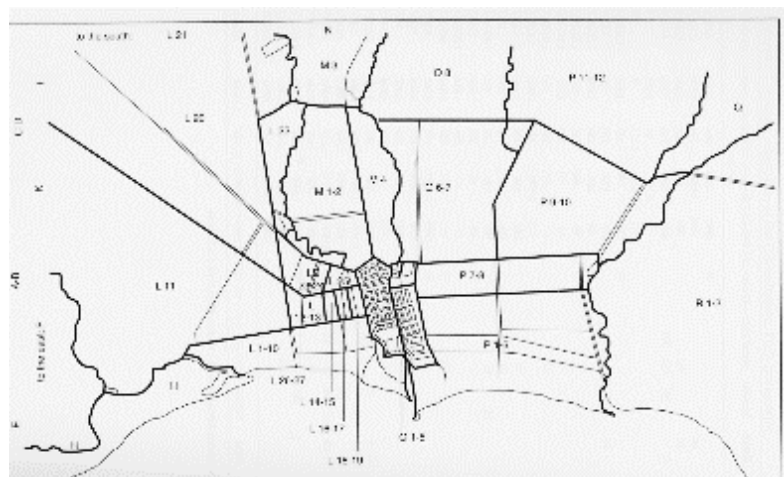


Figure 50 Map of surrounding Batavia port town into hinterland settlements divided into administrative districts, by Raben, 2012, used under UK copyright exception.

Kanumoyoso's (2011) exploration of administrative institutions sheds light on the intricate relationships between companies and colonial government administration. Through an analysis of notary records spanning the 17th and 19th centuries, Kanumoyoso's work provides valuable insights into the socio-economic landscape of Batavia. It reveals that 110 notary offices meticulously documented property transactions, reflecting the bustling economic activity of the era. The mid-17th century expansion of roads and forts necessitated extensive deforestation and land clearance to accommodate infrastructural development. Rivers were also manipulated and converted into canals, serving as crucial arteries connecting upstream production areas with the bustling city centre and port.

This transformation of waterways into canals not only facilitated transportation and irrigation but also delineated invisible boundaries between 'land' and 'water,' shaping land ownership and leasing practices. However, this shift towards agribusiness and industrialization had profound ecological implications. The deforestation for long-term agricultural cultivation and industrial activities depleted natural resources and disrupted ecosystems. Additionally, the dominance of sugar and rice cultivation in agricultural production further exacerbated environmental degradation.

Moreover, the expansion of settlements to accommodate agricultural and industrial activities led to the convergence of a diverse labour force with temporary contracts and schedules. The seasonal availability of water synchronised work shifts with the port's trade networks, utilising river flows to transport goods from the highlands while also serving as conduits for industrial waste disposal along the coastal areas (see Figure 51). Thus, while these developments drove economic growth, they also underscored the intricate interplay between human activity and the natural environment, highlighting the importance of sustainable resource management practices.



Figure 51 A harvest of tuber transported on a bamboo raft through the Cisadane River, 1926, public domain, via Leiden University Public Library (KITLV).

Animal encounters persisted as agricultural cultivation expanded into the hinterland. The colonial government instituted a hunting game with rewards offered for the carcasses of wildlife, which were then showcased in front of the castle plaza and presented at the Palace of Governor General in Buitenzorg, located in the highlands of present-day Bogor City. Some of the animals were also housed in the governor's palace, as documented in depictions of old Batavia: 'Even in 1830, the palace in Buitenzorg belonged to a menagerie (rhinoceros, tigers, caimans, etc.), of which the deer park is still a remnant today' (de Haan, 1922, p. 145). In 1744, they planned the palace's construction to find temperate climate conditions in the highland areas¹³. Hunting regulations emerged later in the 20th century¹⁴. The Game Ordinance and Regulations of 1939/40 introduced a limited bag per shooting license. They also imposed charges for shooting licenses for wild boar, tiger, leopard, and crocodile (Boomgard, 1999).

¹³ Official description states that several efforts of rebuilding and renovation during the war with Banten in 1750-1754 and afterwards (see Setneg, 2018).

¹⁴ 'Although a wide variety of snakes are found in the Indies, and several kinds, such as cobras and certain water snakes, are poisonous, the most dangerous reptiles are the crocodiles. It is wise to reconnoitre every stream with extreme care before bathing, laundering, or attempting a crossing' (Kennedy, 1943, p.14).

Meanwhile, historical studies assert that rivers in Java and many other islands in Indonesia were the primary transportation channels connecting sea trade with the inland economy. The shift towards land-based transportation began with road development connecting cluster plantation areas in Java during the 19th century (Nas & Pratiwo, 2002). The colonial administration engaged in intensive surveys and diplomacy with local governments to outline the land tax system and classify land possession. Raffles (1817), in his "History of Java," describes the Dutch system of administration in a land survey for rent and occupation, with additional footnotes as follows:

"The Javan mode of taking account of the population is by the number of 'chacha,' or 'families,' as it is usually rendered, though the word strictly means 'enumeration.' When the sovereign assigns land, it is common for him to express the extent of the land but the number of 'chacha' attached to it. [...]" (Raffles, 1817, p. 62)

The development of colonial settlements in rapidly urbanising areas like Batavia necessitated a closer examination of land registration in agricultural settlements, primarily to address housing concerns. It encompasses the language of land-use in the administrative distribution of rights in state formation. In the 20th century, agricultural resources and industrial production occupied the majority of land on Java and other islands. Previously, 'native land rights' were highly varied, including communal rights to shared village land, municipal land ownership rights to own dwellings on government land, temporary rights to occupy government land, private estates, formally unregistered land that was nonetheless recognised as 'owned,' land with unknown owners, agrarian forms of ownership, rights of use, adat or customary land ownership, and 'Batavia land lease' (Karsten, 1920, as cited in Kusno, 2012).

Ecological shifts closely link the temporary association of swamps in the river delta to the extent of habitation under administrative consideration. While the notion that swamps were uninhabited by humans might hold some truth, various historical studies have highlighted the existence of several dwellings near the port before the establishment of Batavia in the 17th century (Kanumoyoso, 2011; Abeyasekere, 1989). Additionally, travel journals from the late 16th century mention the presence of inhabitants known as the 'Baduy' in South Banten, who are believed to be ancestors of the present-day indigenous Baduy people practicing swidden agriculture (Suryani, 2021). It is plausible that there were traces of regular movements and makeshift houses near the Port of Banten and Kalapa, where farmers congregated for trade (see Figure 52).



Figure 52 'Boeren oft landtlyuden van achter Bantam (Badoej's?)' or 'farmers or people or back Banten (the Baduy?)', by Lodewyckz, 1915, pp.128 (2), as cited in Suryani (2021), used under UK copyright exception.

The historical study from the 19th century sheds light on the intricate relationship between the Baduy people and the predominantly Muslim community of Banten. Central to the Baduy identity are their villages, which are named after rivers like Cikanekes, Cibeo, and Cikertawana. Conversely, the inhabitants of Banten and the Baduy community refer to each other based on their respective topographical locations; the Muslims regard the Baduy as 'urang tonggoh' (people of the highland), whereas the Baduy term the Muslims as 'urang landeuh' (people of the lowland) (Suryani, 2021, p. 30). This interchange highlights the mobility and positionality of inhabitants within the diverse terrain of landscapes, demonstrating the intricate intertwining of social life with the geography of dwelling landscapes.

Moreover, rain-fed swidden farming, which relies on vegetation-ash fertilisation, was prevalent in early farming settlements in Java. Christie (2002) delineates a gradient between the spring line and areas further away from volcanic ash deposition, closer to the mountains than the coast. Subsequently, the royal court's involvement in agricultural production and settlement in the 9th and 10th centuries led to the conversion of forests and swidden land into wet rice fields. This transformation aimed to regulate rice surpluses through taxation mechanisms, settlement administration, and religious establishments, depicted by a painting of terraced fields of hills in Sumbing volcanic mountain (Figure 53).



Figure 53 Depiction of Sumbing volcano in Central Java with several stone statues from Javanese Hindu period, by C.W. Mieling & F.W. Junghuhn, dated 1854, public domain, Rijkmuseum Collection.

As observed in the Mataram Kingdom in Central Java, the royal court palace settlements consolidated control over land and water management (Tjahjani, 2005). Intricate links existed between the establishment of trading ports in northern Java's coastal areas and the transformation of the landscape to accommodate road connections and agricultural settlements in villages. These developments complemented the river irrigation works, addressing water flows and labor requirements for cultivating settlements in port towns and villages across Java Island. I will delve further into this topic in the next section on the governance of the growing population on the island.

3.3. Government of Islands

3.3.1. Government of Surplus Population

The section begins by exploring the geopolitical narrative that encompasses the term 'surplus population' in Southeast Asia during the mid-20th century. The term reflects a historical agenda that prioritised poverty eradication, economic expansion, commodified labour, and global security. An analysis of the book 'Malaya, Indonesia, Borneo, and The Philippines' by Robequain (1954), a Professor of Tropical Geography at the University of Paris, and translated by Laborde, an assistant Master at Harrow School, provides insights into this narrative. The book concludes with a postscript express, 'that the future is still uncertain is a commonplace saying. It is greatly to be hoped, as President Eisenhower vigorously stated recently, that the Malay lands will soon benefit from the total war which advanced nations should wage against poverty where it exists in the world.' The statement displays a hope for the Malay lands to benefit from the global effort against poverty, as emphasised by President Eisenhower.

The term 'The Malay lands' includes 'Malaya with Singapore and the adjacent islands, the East Indies, and the Philippines, but excludes New Guinea and other Melanesian islands. The East Indies comprise Indonesia (i.e. the islands formerly known as the Dutch East Indies), the British colonies of North Borneo and Sarawak with the state of Brunei, and the whole of Timor' (Robequain and Laborde, 1954, p.1). The term is linked to a historical endeavour of population control, highlighting the concentration of manpower in certain regions such as Java, Luzon, and parts of the Visayas and Molucca slands. This concentration, facilitated by forced immigration of labour, attracted European attention primarily due to the abundance, docility, and relative skill of the available labour force, which was crucial for the success of plantations and the economic system. The book underscores the importance of efficiently utilising labour, supported by scientific advancements in monitoring weather and climate conditions impacting the landscape.

The book shows that the narrative of labour intertwines with the physical condition of landscape and formation of settlement, such as kingdoms and trading companies. In specific, scientific studies have provided insights into the climate variations that characterize Southeast Asia, particularly the influence of the monsoon climate (see Figure 52). The region's trade winds are shaped by the interaction between the land masses of Asia and Australia, with latitude, relief, and the configuration of the island chain further contributing to localized climatic differences (ibid., p. 30). It also highlights the establishment of ports within international trading networks, the heterogeneous formation of settlements to facilitate economic expansion, and the spread of plantation across the landscape of each island. For instance, observations of the landscape in the North Bay of West Java reveal how rivers originating from the southern mountains extend their courses by depositing sediment, forming a series of deltas that give rise to the lifetime of ports in Bantam, Jakarta, and Chasem Bays, as evidenced by 'the creation of other trading stations at Benkulen by the English and at Batavia by their Dutch rivals [which] brought on the decline of Bantam' (ibid., p. 180).

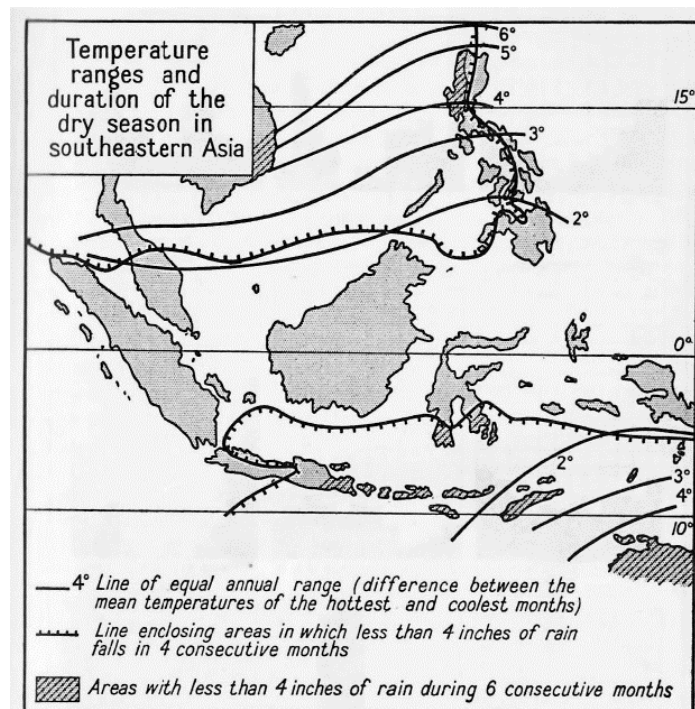


Figure 54 'Temperature Ranges and Duration of the Dry Season', by Robequain and Laborde, 1954, p.31, used under UK copyright exception.

The fast growth of plantations in Java compared to Sumatra, Borneo, and Celebes was believed to have led to the overpopulation problem. As Robequain and Laborde (1954, p.432) say, 'the overcrowded island no longer offered adequate horizons to the visions of businessmen, who therefore strongly urged the effective occupation of the Outer Provinces'. Specifically, the mining industry articulates a comparative analysis between natives and Westerners in terms of methodological improvements, contrasting the primitive extraction methods of the natives with the machinery-based processes of European techniques. The narrative of industrialization, which aims to absorb the surplus agricultural population, also articulates the issue of population in Java (ibid., p. 433). Government intervention in migration policies, which aim to redirect populations from Java to sparsely populated islands and underdeveloped areas such as Sumatra, Borneo, and Celebes, illustrates the population's uneven distribution.

Van Bemmelen (1949a), a renowned geologist and professor at Utrecht University, offers invaluable insights into the transitional period that influenced historical encounters in the 'East Indies,' later known as Indonesia. His seminal work, "The Geology of Indonesia," comprising two volumes, provides a parallel narrative to Robequain's discussion on the sluggish pace of industrial development. The first volume examines cumulative geological studies, featuring detailed physiographic sketch maps of each island in Indonesia, including the Java Islands (see Figure 55). These maps categorise geological processes, dividing Java into distinct sections covering its western, central, eastern, and eastern spurs, along with Madura Island. Noteworthy features highlighted on these maps include north bays such as Banten and Batavia, volcanic classifications, plains, and the upward folds of stratified rocks in Bogor. Furthermore, the maps vividly illustrate central depression zones and significant rivers, offering valuable insights into the distribution of volcanic structures like the Semeru Complex, the Citarum River in West Java, and the Bengawan Solo River in Central Java.



Figure 55 'Physiographic Sketch map of Java and Madura', by van Bemmelen, 1949a, p.26, used under UK copyright exception.

Meanwhile, the study of economic geology documents the mineral deposits and their distributions (refer to Figure 56). Van Bemmelen (1949b) emphasises its significance to succeeded vegetative civilisations and plays a crucial role in countries' industrial capacities. He argues the importance of access to mineral deposits, asserting that 'the industrial capacity of a country depends on its provision with raw materials and energy in times of peace as well as war; therefore, also the communications are of vital importance' (ibid., p. 1). Additionally, he discusses the role of labour and technology, noting that 'Oil, water, wind and beasts of burden add their energies to the activities of Man. But coal still provides more than half of the total energy production of the world' (ibid., p. 2).

Van Bemmelen categorises minerals into organic, metals and ores, and industrial minerals. He argues that heavy labour machines constitute a hierarchy of economic and military power in global affairs, influencing sufficiency in mining reserves that require economization and restrictions, thus becoming a matter of vital importance on a global scale. He highlights the continued significance of 17th- and 18th-century colonial trading companies in shaping both domestic and export industries. In 1939, raw mineral product exports ranked second after vegetable products, indicating an expected increase in their importance. The government's support of foreign capital and enterprise was believed to contribute to the Indies' prosperity.



Figure 56 'Mineral Deposits of the East Indies', by van Bemmelen, 1949b, p.2, used under UK copyright exception.

Therefore, the 'Malay lands' intricately intertwine the material aspects of the landscape with technology, thereby reshaping the government's economic strategies concerning labour and geopolitical security. The open-door economic policy, which has encouraged private enterprise since 1870, substantiated this vision. It ensured that the country's products were available and sold to all nations at the same price, without favouritism towards any nation (ibid.). As stated in the text, 'We are now standing at the beginning of another era in the history of the East Indies. The latest war and the subsequent political turmoil have destroyed much that needs reconstruction. A new start has to be made by a new generation under new political circumstances' (ibid., p. 5) (refer to Figure 53).

Thus, the 'lands' unveil a complex web of historical projects revolving around population, labour, poverty, and migration policies during the mid-20th century. These records underscore the interconnectedness of Southeast Asia's geographical landscape within the global context of resources and security. They show that the narrative of the surplus population in 'the Malay lands' is part of a historical project aimed at sustaining geopolitical influence. The interpretation of the Malay lands extends beyond its geographic boundaries, encompassing the vital forces that have shaped historical encounters and temporal dynamics. Furthermore, it has a significant impact on the labour economy, providing a framework for initiatives related to plantation, industrialization, and global security. The next section locates them in the studies of river irrigation in Java.

3.3.2. Government of River Irrigation

The colonial settlement's diverse methods of managing water flows gradually shaped the narrative of Kali Mati and its profound influence on the river delta's morphology. Simultaneously, it also influenced the subsequent formation of alluvial plains and alluvial fans in the deltaic landscape. The transition from a trading company to a colonial government heightened concerns about environmental change and the pivotal role of labour in projects such as canal construction, road expansion, irrigation, and fortification. The excavation and dredging of sediments to irrigate the wet fields catalysed the transformation of the forested landscape into makeshift agricultural areas, industrial zones, and housing for the emerging inhabitation. This process significantly amplified the efforts of various inhabitants to assert political authority amidst ongoing conflicts and diplomatic manoeuvres during the 17th century.

Despite enduring political uprisings, colonial agricultural expansion, industrial development, and settlement expansion characterised the late colonial period from the 19th to the 20th centuries. Dutch engineers intervened by constructing several weirs and dams aimed at water storage and flood control to enhance irrigation practices in terraced wet fields. In his examination, Ravesteijn (2002) provided a historical overview of irrigation initiatives aimed at optimising wet-rice cultivation that put tension between civil servants, engineers, and agricultural experts. These efforts entailed continuous advancements in irrigation technology to facilitate water storage during the rainy west monsoon season. Collaboration among engineers, civil servants, and agricultural experts was crucial in executing these irrigation projects and establishing viable agricultural-economic frameworks. At the same time, plans to build big, long-lasting irrigation systems to make sure there was enough rainwater came true with dam projects on Java's main rivers, such as Kali Ciliwung in West Java (Figure 57).



Figure 57 Map of irrigation areas in Java around the year 1940. Note the presence of the Ciliwung River in Jakarta between the delta of the Cisadane River in Tangerang and Citarum in Bekasi-Karawang in the west part of the island, by Ravesteijn and Kop, 2008, used under copyright permission.

Over time, the riverine settlements become a site of thrown togetherness of intersecting histories. The Cisadane, Ciliwung, and Citarum intersect the landscape, transforming it into a diverse built environment of urban settlements. In 1953, Verstappen's observations of the Kali Mati along the Cisadane revealed alterations in its size due to urban development and the construction of a weir (refer to Figure 58). Similarly, an aerial photograph from 1928 depicts irrigation infrastructure along the Citarum at the Walahar Weir, reshaping the floodplain to accommodate wet-rice cultivation in Karawang (see Figure 59). Furthermore, a 1931 photograph captures a bamboo raft navigating through a floodgate, illustrating the movement of inhabitants traversing the river's waters from the upper to the downstream regions (see Figure 60).



Figure 58 Weir in Cisadane River in Tangerang with urbanising settlements from road development, by Ravesteijn, 2018, used under copyright permission.



Figure 59 Assemblages of irrigation work and road development in Walahar Weir that serves agricultural settlements in Karawang, 1928, public domain, KITLV.



Figure 60 Bamboo raft passes through the opening floodgates in the sluice of Karawang Weir, 1931, public domain, KITLV.

The Katulampa Weir, located in the upper stream of the Kali Ciliwung, facilitated the irrigation of 7,145 hectares of agricultural land in Bogor Regency's highlands. Notably, the weir underwent two major repairs, first between 1905 and 1910 and then from 1911 to 1912 (Mohtar & Zuhdi, 2023). The latter repair phase saw significant enhancements, including the utilisation of a combination of concrete and stones in its construction and the incorporation of a sluice to regulate water flow. The weir served as a component of a network of smaller weirs and drainage channels, facilitating irrigation activities while allowing passage across the river through the installation of crossing bridges (Figure 61).



Figure 61 Dam in the river behind Beri-Beri Hospital di Buitenzorg, the upper part of Katulampa Dam, 1897, public domain, KITLV.

Meanwhile, land-based infrastructure introduced in the 19th century intersected with migration in burgeoning port cities. This interplay gave rise to a complex institutional framework governing water infrastructure, coinciding with the villagers migrating to these urban centres for employment opportunities, particularly in seasonal agricultural activities. Noteworthy examples include the emergence of sheltered boats during inundation events, such as those observed along the Solo River in Cepu, where elevated railway embankments provided makeshift shelter during periods of river flooding (see Figure 62). According to Ravesteijn (2018), the phenomenon of raft-dwellers in seasonal rivers and the implementation of temporary indigenous irrigation served as poignant symbols of poverty, driving efforts to innovate water storage technologies.



Figure 62 Flood in Solo River in Cepu. The raft-dwellings, makeshift shelter, and dry level of the railway embankment are present, between 1905-1920, public domain, KITLV.

In the 20th century, the focus of dam projects transitioned from solely irrigation to encompass broader objectives under the name of ‘multi-purpose dam’ such as electricity generation, water supply, and flood-control. These projects were often implemented within regional contexts, where major rivers intersected with hubs of economic activity and global trade. Critical analyses have scrutinised the socio-economic ramifications of such projects, including resistance to political regimes and maintenance in post-construction (Qing, 1998; Sainath, 1996). Notably, in Indonesia, over 100 dams, ranging from small weirs to large-scale structures, were constructed between 1900 and 1995 by both private and public authorities (Departemen Pekerjaan Umum, 1995) (Figure 63).



Figure 63 Regional Rivers with Dam development project in Indonesia, 1995, Departemen Pekerjaan Umum, used under UK exception.

Development projects in the mid-20th century extended the historical trajectory of state formation, echoing narratives of liberal policies from the 19th century. One notable example is the Kedung Ombo Multi-purpose Dam Project, which diverted water from the Serang River in Central Java to enhance agricultural productivity and generate electricity (World Bank, 1998) (Figure 64). However, this project resulted in the displacement of 5,268 households across 37 villages in the Sragen, Boyolali, and Grobogan regions (Aditjondro, 1998; Nondi, 2014). Several studies have documented displacements from rural areas to cities, highlighting the emergence of a ‘surplus population’ due to the conversion of forests and wet-rice fields (Batubara et al., 2022; Peluso, 2010).



Figure 64 Interconnection of dam building (below) and the designated agricultural areas where the water flow is channelled (top), 1998, World Bank.

With the emergence of urban planning initiatives in the 20th century aimed at defining the 'living standards' of settlements, responses to the significant growth of urban labour forces became imperative. Scholarly research has elucidated the disparities in social and economic status in the distribution of infrastructure across diverse colonial settlements (Kooy & Bakker, 2008; Putri, 2019). The term 'kampung' is commonly used to denote settlement formations for temporary labour engaged in urban activities, reflecting a complex amalgamation of labour practices, seasonal cultivation patterns, and transient engagements (Figure 65). In the following chapter, I will delve into the narrative of slum dwellings and 'kampung' based on international labour standards.



Figure 65 Washing activities along concentrated well at the front of houses (left) and public bathing and washing facilities are provided by municipality (right) date unknown, public domain, Tropenmuseum Collection.

This complexity extends to the definition of town planning and urbanisation in the historiography of settlements, particularly in relation to the notions of 'differential access' and 'water supply'. This transition is emblematic of the gradual shift from river-based settlement to road-based town planning and housing development. For instance, in the 1870s, the colonial government introduced artesian hydrants, which provided clean water circulated through iron pipes for townhouses, accompanied by wastewater treatment for the settlements (Figure 66). Meanwhile, water practices diversified across heterogeneous locations, utilising various technologies such as rivers, wells, public water taps, and water vendors. Later in the 20th century, Jakarta's clean water provision shifted from the Tarum Canal to the Juanda/Jatiluhur Dam. Based on the Citarum watershed, the dam provided irrigation, electric power supply, water supply, flood-control infrastructure, and leisure activities (Figure 67).



Figure 66 Infrastructure for water supply showing slow filter installation and water purification in Manggarai, date unknown, public domain, Tropenmuseum Collection.



Figure 67 Jatiluhur Dam in Purwakarta, West Java, 1995, Departemen Pekerjaan Umum, used under UK exception.

Here, the term 'kampung' intersects with housing segmentation and infrastructural abandonment in riverine landscapes, thereby naturalising the notions of 'differential access' and 'water supply'. The term remains ambiguous in defining living standards in burgeoning autonomous settlements of the worker's population, encapsulating the idea of self-help housing from a humanistic perspective (Werlin, 1999). Water bodies, in turn, intersect with the concept of 'poverty' as evidenced in reports and statistical analyses of disease, influencing the tools and models used in global health policies. It also repositions the value of water and labour that maintain ostensibly abandoned landscapes and accumulated sediments (Figure 68). It brings the hydraulic relations of road-based urban occupation to the forefront by installing interconnected water pipes and drainage channels (Gaymans, 1986; Mukherjee, 2006; Polle & Hofstee, 1986).



Figure 68 'Kampung Verbetering'/Kampung Improvement in making drainage and dredging occupied riverbanks, 1993, public domain, Tropenmuseum Collection.

This interplay of topographical terrain and hydraulic relationships shapes the thresholds of urban occupation. While scholars lack a precise definition of 'kampung,' it generally denotes areas characterised by low socio-economic status and substandard housing, representing a transition from rural to urban lifestyles (Giebels, 1986, p. 111). The cyclical wet and dry seasons are integral to the structuring of settlements within the riverine landscape, reshaping collective water practices over time. Amidst the seasonal fluctuations of the landscape, the waterways and water bodies in Kali Ciliwung invite urban occupation.

As Jakarta's development historically centred around landscape shifts for agriculture and industry towards road development, the urban environment reflects the transformation of 'drained' rivers through urban water infrastructure. Still, the bamboo raft remains a fixture in the lives of inhabitants along the middle stream of the Kali Ciliwung in Condet, Jakarta (refer to Figure 69). The raft has given rise to diverse encounters shaped by a multiplicity of perspectives regarding natural forces within this heterogeneous agricultural society, ranging from religious affiliations to industrial production, construction, and maintenance.

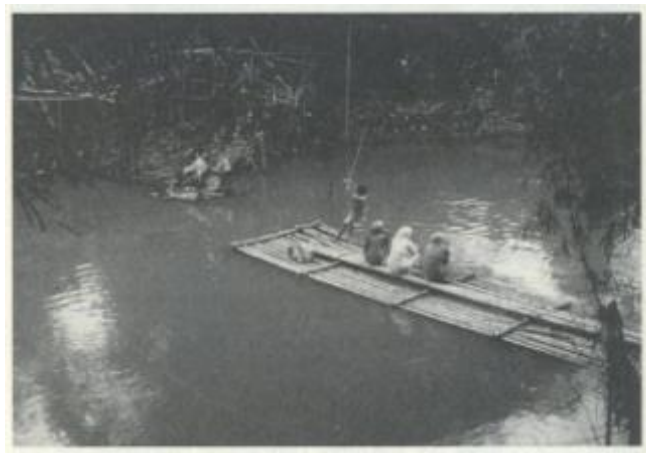


Figure 69 Bamboo raft for crossing the Kali Ciliwung in Condet, by Budiati, 1994, used under UK exception.

The shifting tributaries of rivers and sedimentary materials from flooding persist in the materiality of contemporary urban life. It appears at intervals of the season with the labour of managing irrigation and establishing settlements of 'river land'. Local news articles and blog posts have referenced 'Kali Mati' as the name of flood-prone neighbourhoods in Jakarta targeted for city-wide slum upgrading projects (Aziza, 2013). Various reports have described waterways named 'Kali Mati' in Tangerang as being filled with human waste and occupied by squatter settlements (Kabupaten Tangerang, 2022; TangerangNews, 2022). The toponym also appears in coastal towns like Padang and Surabaya, where irrigation canals divert waterways and are occupied by heterogeneous urban inhabitations of temporary settlements (Aryanti, 2018; Novenanto, 2015). I will discuss the rebirth of these landscapes in the following chapter.

3.4. Conclusion

Throughout this chapter, I have investigated the concept of 'Kali Mati' to uncover the dynamic physical process shaping the temporal and material dimensions of the landscape on Java Island. Drawing from studies across various disciplines, including geomorphology, irrigation history, and geology, I have analysed the history of the landscape in Java Island. I emphasized the pivotal role of water flow management in shaping the emergence of Kali Mati and its impact on the organisation of riverine settlements. This vitality of water flow extends beyond mere hydraulic processes; it also influences the development of port towns along rivers, from the coastal areas to the hinterland settlements, in conjunction with river-based irrigation systems and transportation networks.

Furthermore, the discussion explores the inhabitation patterns within riverine landscapes and deltaic formations, emphasising the interplay between topographic relief, climatic conditions, and geological processes. This understanding underscores the significance of irrigation practices in contemporary urban settlements within riverine landscapes. Additionally, the chapter examines the ecological transformations brought about by political-economic history, particularly in the development of agricultural and industrial settlements, which have shaped the heterogeneous landscape and impacted settlement patterns.

Finally, the chapter explores the emerging urban water infrastructure for colonial settlement in urban areas, which is characterised by the development of multi-purpose dams, reclamation of riverine sediments, and provision of wastewater treatment plants. This conceptualises 'Kali Mati' as a nuanced perspective on inhabiting wet landscapes under dynamic environmental conditions. The next chapter will further explore this discourse by investigating water management in the spirituality of dwelling landscapes.

Chapter 4. Historiography of Tanah Kali/River Land

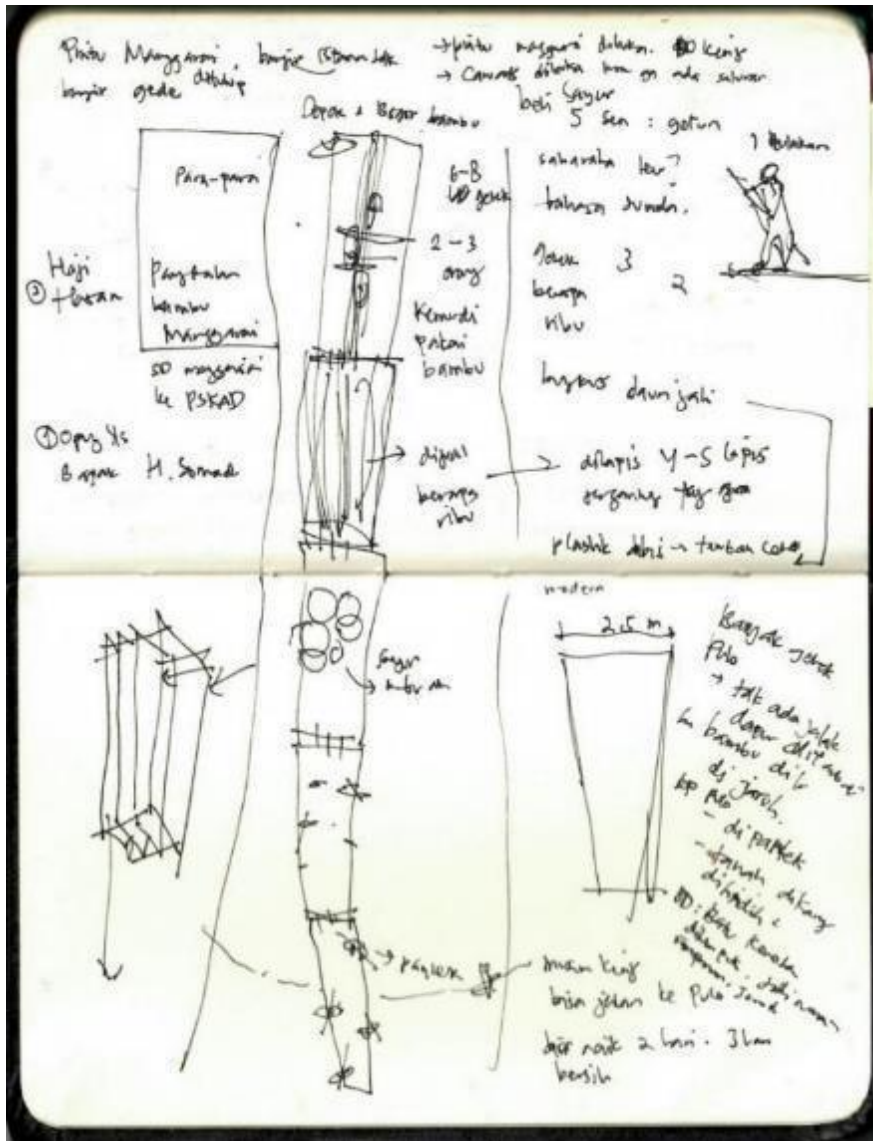


Figure 70 Sketch of a lining up bamboo rafts in Kali Ciliwung made during oral history of displaced river inhabitants who lived in Bukit Duri neighbourhood, by author, fieldwork archive 2017.

4.1. Introduction

This chapter seeks to explore narratives and practices that contextualise the ebb and flow of inhabitation within interconnected waterways in riverine settlements. To comprehend this phenomenon, I introduce the concept of ‘Tanah Kali’/river land, which encompasses both wet and dry habitation patterns rooted in the vitality of water in riverine landscapes. This understanding broadens the discourse to encompass the ramifications of surplus water in flood-control infrastructure, particularly in contemporary metropolises like Jakarta, Indonesia's capital. Notably, it delves into settlements that adapt to the cyclical wet and dry seasons of riverine landscapes, as exemplified by the use of bamboo rafts in the oral history of displaced inhabitants in Kali Ciliwung (refer to Figure 70). This concept underscores the interconnectedness and interdependence of settlements, moulding the temporal fabric of riverine landscapes during their establishment and periods of upheaval.

The first section of this chapter examines the emergence of spiritual dimensions in riverine landscapes and their role in establishing temporality in artificial ‘seas’ and ‘island’ settlements—both wet and dry—in Java Island's capital cities. It sheds light on the governmental influence on religious settlements and their impact on infrastructure development in these urban centres. Subsequently, the chapter revisits the preceding discourse on the ‘surplus population’ narrative in 20th-century colonial literature, particularly in the context of town planning in the burgeoning port town of Batavia. This narrative delves into the shifting labour and population in the region. Drawing from archival records, it contextualises labour dynamics within the framework of ‘urban society’ by exploring river-based mobility between highland villages and coastal towns. These analyses of temporal dynamics in urban settlements also contextualise narratives of tidal flooding in contemporary coastal settlements around Jakarta. In conclusion, the chapter explores the temporality inherent in settlements, highlighting its endurance amidst the diverse spectrum of occupations and settlements, belongings and possessions in urban life.

4.2. Historiography of Tanah Kali/River Land

4.2.1. Emergence of Seas and Islands

In this section, I delve deeper into the temporal aspect of settlement by conducting an archival analysis of water flow in sustaining the formation of capital cities of kingdoms in Java Island. I revisit Kali's translation and interpretation in relation to the spirituality of water, which encapsulates multiple symbolism of the settlements in landscape involving rulers, spirits, and adversaries. To achieve this, I synthesise findings from various studies, including an archaeological investigation of the Batoe Toelis inscription in Bogor (Buitenzorg) in the west, a landscape analysis of the artificial lake known as 'Segaran' in the Tamansari garden in Yogyakarta in the central region, and a historical inquiry into a similar lake named 'Segaran' in Trowulan in the east.

Firstly, the geographical location of the three capitals depicts the spirituality of volcanic mountains and oceans. They are situated in distinct terrains within the interior of Java, yet they share a common geographical feature of being surrounded by volcanoes and interconnected by rivers that flow towards the sea. Moving from west to east, there are Padjajaran, the capital of the Sunda Kingdom from the 5th to 16th century; Jogja, the capital of the Mataram Kingdom from the 18th century to the present day; and Trowulan, the capital of the Majapahit Kingdom from the 12th to 15th century (refer to Figures 71–75). The 16th-century Batoe Toelis (1) inscription sits between the highlands of the Mount Gede-Pangrango-Salak between the Kali Ciliwung and Cisadane, both of which flow towards the Java Sea. In 1758, the Karaton Ngayogyakarta Hadiningrat constructed the artificial lake known as Segaran in Tamansari (2), nestled amidst the gentle slopes of Kali Winongo and Kali Code at the foot of Mount Merapi, which eventually led towards the Indian Ocean. Similarly, Segaran in the Trowulan district (3) occupies a flat slope along the Kali Brantas at the foot of Mount Anjasmoro, a river that branches into the Madura Strait and the Java Sea.



Figure 71 Distribution of the capitals: 1. Padjajaran, 2. Yogyakarta, 3. Trowulan, basemap from open street maps by Goran tek-en, 2018.



Figure 72 'A shelter at Batu Tulis containing an inscribed slab' by Jacobus Flikkenschild, 1812, British Museum Collection.



Figure 73 Steen met inscriptie te Batoetoelis bij Buitenzorg', 1890, KITLV.



Figure 74 Tamansari complex, 2018, Kratonjogja.id.



Figure 75 A part of Tamansari named 'Segaran Pulo', 2018, Kratonjogja.id.



Figure 76 'Plan of Majapahit', made by Wardenaar in 1815-1816, on the scale of 1: 12.000, 1939, British Museum Collection.



Figure 77 Aerial view of 'Segaran' in the preservation project of Trowulan, Mojokerto, by Balai Pelestarian Kebudayaan Wilayah XI, 2023.

Despite variations in topographic features and historical timelines, these capitals exhibit a consistent pattern in their spatial organization. Firstly, these capitals are located away from coastal regions, nestling amidst contoured volcanic mountains that offer access to rivers as water sources and fertile soil for agricultural activities. Secondly, these capitals function as spiritually significant centres of governance, connecting the kingdom's internal affairs with external influences like trade, transportation, and maritime activities. These connections extend to trajectories of population, including the movements of armies and followers. Overall, the remnants of these capitals, often in the form of ruins, serve as repositories of cosmology in early urban settlements, especially regarding water management in the making of artificial water tank as 'segaran' that refers to 'sagara'/ocean and 'sasagaran'/pond (Zoetmouder, 1982b) (Table 6).

The pattern of settlement in the landscapes for the seat of the government provides valuable insights into the relationship between water management and landscape setting of settlement. As shown in Table 6, water management in the capital cities is based more on crafted contoured of landscapes in the watershed than directly on river terrain. Firstly, the establishment of water reservoirs within these capitals serves as a symbolic offering by rulers to honour the spirits of the landscape as well as contemplative spaces for religious practices. Secondly, various natural forces such as earthquakes, volcanic eruptions, and political conflicts profoundly influence the shaping of these capitals, often leading to the destruction of buildings.

This transformation of the capitals reflects the spiritual ethos of rulership and influences the cosmological interpretation of the landscape, as evidenced by the creation of artificial features such as hills, lakes, seas, and islands. Rather than merely delineating between 'land' and 'water', the capitals embody a complex interplay of wet and dry terrains across the 'earth', with water surfaces spanning both above ground and underground realms, shaping the architectural orientation and materiality of these settlements. Table 6 demonstrates a pattern of religious establishment on water management in the making of water infrastructure in capital cities of kingdoms in Java.

Table 6 Description of the ruins of the capital that illustrates materiality of settlements

No	The ruins	Materiality of Settlements
1	Batoe Toelis inscription	The inscription is translated as 'Om, pardon [any errors]. This is the memorial of his majesty the former king, inaugurated here with the name Prabu Guru Dewata, (and also) inaugurated here with the name Sri Baduga Maharaja, king of kings in Pakwan Pajajaran, Sri Sang Ratu Dewata. He is the one who demarcated Pakwan here, (being) the child of Rahyang Dewa Niskala, the one vanished at Gunung Tiga; grandchild of Rahyang Niskala Watu Kancana, the one who vanished to Nusa Larang. <u>He, that one; produced the commemoration monument, artificial hill, cladded [it] with stone; he produced the ritual ground (samida); he produced the holy Color Lake.</u> Greatly victorious was he! In the year: 'the five Pandawas guard the earth'. (i.e. in 1455 Saka) (Gunawan and Griffiths, 2021, emphasis added)
2	Tamansari garden	'Garden in the court palace is in 10 hectares area that arranged 57 buildings comprises of towers, corridors, bathing pond, hanging bridge, <u>canals, artificial lake, islands, mosque, and underground tunnel.</u> (...) Other than leisure means, the garden is also a religious site for meditation, placed in <u>'sumur gumuling' and 'pulo panembung' in the middle of the large pond named 'segaran' (ocean).</u> (...) In 1867, an earthquake shook the buildings in the Tamansari which left the garden abandoned. In time, the abandoned ruin was occupied by residential settlements' (kratonjogja.id, 2018, translated by author, emphasis added).
3	Segaran in Plan of Majapahit	' <u>A dug-out tank lined with bricks called Segaran or the 'Little Sea',</u> people say that it was once 18,5 feet (5.8 meters) deep with a floor of similar bricks, but now it is not more than 9 feet (2.8 meters) deep and the Trowulan villagers plant their rice here' (Wardenaar, 1815, translated by Gomperts, et al. 2013). 'Many experts placed the capital city of the kingdom based on the toponym and the findings surrounding the canal networks, where <u>the centre is near Segaran'</u> (DPP, 2009, p.49, translated by author, emphasis added).

Such religious arrangements of settlement are a significant aspect of studying the distinction between centralised and autonomous water management system in irrigation. Christie (1992) highlights the ancestral connection to water as a manifestation of the spirituality inherent in rulership in the agricultural fields of Java and Bali. Religious institutions play a pivotal role in organising such mechanisms, as evidenced by charters from Harinjing describing the construction of a dam (referred to as 'mula-dawuhan') and a channel ('dharma-kali') at the

direction of the religious figure Bhagavanta Dhari of Wulanggi, around the year 804 A.D. The terms 'mula' (meaning 'origin' or 'ancestor', often associated with certain types of temples) and 'dharma' (denoting a religious foundation or pious act) establishes a connection between the deceased and the living, the spiritual and material aspects of existence. The rulers are either constructing or endorsing the construction of sacred sites and allocating a portion of their tax revenue to ensure the continuity of funding.

These studies facilitate an examination of the multifaceted concept of 'Kali' and the context of 'Kali Mati'. The construction of infrastructure, like dams or channels, is a religious practice that invokes the spiritual force of Kali. Hinduism reveres Kali as a goddess associated with dark times, depicting her as a potent force often engaged in combat against adversaries on the battlefield (Kinsley, 1977; 2003).¹⁵ The engineering of water resources by rulers may symbolise the challenging historical circumstances faced by these societies, including warfare, famine, and plague, wherein the arrival of rain and the flow of water during the wet season are of paramount importance for revitalising and nourishing the landscape to sustain life among inhabitants. 'Kali Mati' signifies a state of 'dead' and 'dry' Kali, representing periods of drought and arid conditions where the landscape remains devoid of water flow, symbolising absence and desolation.

Geographical studies have underscored the importance of critically understanding the intricate nuances of perception inherent in the linguistic portrayal of a locale (Tuan, 1991). Rather than diminishing its significance, water serves to redefine both time and space within the temporal framework of labour associated with the establishment and growth of towns and villages. Throughout history, the interplay of water management has revealed its interconnectedness over time, delineating the evolution of settlements and the materialisation of urban centres. Moreover, it enriches the narrative of urban transformation by furnishing a historical perspective on the emergence of distinct regional identities, thus elucidating the transition from rural to urban contexts (McGee, 2014).

¹⁵ See Britannica, The Editors of Encyclopaedia (2023, 2024) to see the definition of 'kali' and 'yuga'.

However, water in the landscape also intersects with a narrative of spiritual forces defining the beginning and ending of time. For example, the Maranaos¹⁶, one of the Moro groups dwelling on the shores of Lake Lanao, Philippines, have a folk epic recounting the origin of Bembaran from 'Darangen,'¹⁷ which intersects the spiritual power of the landscape with the protection of society. The folk epic depicts Bembaran as a city of ancestors, situated near a great river 'that no longer exists, due to its enchantment: its people, animals, and treasures petrified, and the land sank to the bottom of the sea' (Saber, 1961, p. 43). The heroes in the epic worshipped and sought assistance in war and peace from tonong, guardian spirits who reside in the air, clouds, or tall trees and serve the people (Miura, 1989). They could control the forces of nature through their entreaties, summoning storms and floods to defeat enemies or condemning a country's wicked inhabitants to the sea¹⁸.

In the oral history documented in the film 'War is a Tender Thing' by Adjani Arumpac (2013), a similar narrative of tonong emerges, recounting tales from the war in River Kakar, Mindanao, where invisible 'crocodiles' turn the river red with blood. These supernatural forces residing in the landscape, such as mountains, rivers, and seas, persist in the collective memory of inhabitants, imbuing the meaning of war and punishment by state policies. The film portrays the juxtaposition of tenderness and conflict in shaping the notion of 'home' through the expressive gestures of men and women amidst unresolved religious and land disputes post-nation-building. It intersects the memory of the landscape, migration, and poverty with 'a shared sense of longing and anticipation, encapsulating the potential for alternate worlds within spaces marked by devastation and desolation' (Tadiar, 2022, p. 316).

¹⁶ *Maranaos* or *Maranaws* people are Muslim inhabitants of central Mindanao in the Philippines. Darangen is their epic song. In the epic, heroes could call on supernatural characters to bring floods and storms to drown the enemies of Bembaran. Similar legend can be found in Senegal river Mame Coumba Bang (Michelle, 2007).

¹⁷ 'Darangen' is the folk epic that shows pre-Islamic view of the supernatural presence amongst the Maranao people of Lake Lanao, the region of Mindanao. Meaning literally 'to narrate in song', Darangen comprises of ancient epic song about history and tribulations of mythical heroes (UNESCO, 2008).

¹⁸ Their mysterious powers controlled the forces of nature, such as storms and floods, thunder and lightning, and rivers and seas (Saber, 1961).

So far, this section has shed light on the intricate cosmology of dwellings, which intersects with spirituality amidst the lifecycle of water, landscape, and settlement. It contextualises the notion of Kali within various historical events, emphasising the recurring theme of the spiritual power of water flow and the political arrangement of terrain as symbolic representations of the earth. In the process, this section connects the dwelling landscapes in West Java into larger part of the Java Island through the remains of the past settlements in the ongoing present. Collective memories embedded in the landscape that brings together the living 'traditions' with the water in ancient capitals and ancestral folklore, infuse a transient dwelling on earth. It embodies the notion of settlement with the ethos of reciprocity in giving and offering during times of adversity.

Specifically, this section shows the attitude towards the presence of water and the effort to manage the water is inextricably linked to embodied understanding of the past events in myths and folklores of the origin of a settlement. Although the section requires more space to discuss the situated interpretation of the historical records in the available sources, the speculative discussion illustrates the spirituality of water that exist in the turns of beginning and ending of a society and human settlement. Importantly, the spirituality of water repositions the 'human' in the settlement itself as depicted in the imagery of terrain and required rituals that surrounds the presence of water in a settlement.

The next section situates the preceding discourse on settlement within the embodied spirituality within the living landscape, emphasising its temporary habitation as well as in realms beyond geographical confines in the lifetime of settlement. Literature on geographical setting and settlements of western part of Java is deeply engaged to understand the constellation of living landscape that surrounds the present 'Kali Ciliwung' and 'Jakarta'. Still, the connection between the western part of Java, Java Island, and surrounding islands in archipelago is also noted to identify the pattern of connection between settlement and landscape.

4.2.2. Settlements of Living Landscapes

Aditia Gunawan (2010), a philologist specialising in Sundanese and Javanese inscriptions, elucidates the 'Warugan Lemah', which documents eighteen distinct forms of terrain and associated spiritual orders and rituals in Java. The inscription distinguishes the term 'lemah' as referring to the terrain, while 'dayeuh', 'imah', 'lembur', and 'umbul' denote different types of dwellings. The script denotes careful attention to the influence of terrain that significantly impacts the lifespan of the dwelling. Neglecting this consideration, such as improper orientation, may result in adverse effects on the inhabitants' health. For instance, the seventeenth entry in the list describes a terrain located beneath the river known as Si Bareubeu, which carries a taboo that invokes punishment by 'dewata'¹⁹. To cleanse such a terrain, inhabitants must cook meals at the village's forefront, followed by planting good deeds in the same location where the cooking took place.

The list in Warugan Lemah commences with 'Talaga Hangsa' and progresses towards less favourable forms that depict physical disruptions in wet and dry terrain, intersecting with dwelling encounters. The initial entry, 'Lamunna bahe ka ke(n)ca ngara(n)na Talaga Ha(ng)sa, asih wong sajabat. Panyudana pacar pimula di pahoman,' translates to 'If the terrain leans to the left, then it is named Talaga Hangsa, which is fond by everyone, plant the henna tree to cleanse' (Gunawan, 2010, translated by the author). 'Talaga Hangsa,' meaning 'Lake of Swans,' evokes imagery of terrain with freshwater where swans reside, symbolising fertility and imbuing the world with prosperity. As the list progresses, it probes into increasingly dynamic contoured terrain inhabited by human presence. Each form has distinct associations and necessitates particular rituals performed in specific locations to establish contact with the terrain's spirits. Then, the list heads down towards more dynamic terrain, such as crooked valleys, folded terrain, sea-facing landscapes, burial grounds, cutting river terrains, underwater terrain, terrains surrounded by houses, and finally, sites deemed sickening, enclosed by houses.

¹⁹ Dewata means Hindu gods that refers to the historical context of the script that was written in pre-Islamic period. See the previous discussion on the tale of Darangen in Mindanao, South Phillipines.

The spirituality of the landscape also encompasses its appearance. The concept of 'boundary,' known as 'wates,' embodies the ideas of 'dilelelungkeun' (blanketed, kept hidden) and 'wates nu katingali jeung nu katingali' (visible/seen and invisible/unseen physical boundaries) (Alamsyah, 2012). The visible boundary includes tangible elements such as rivers, forests, rice fields, hills, bamboo fences, ponds, and canals. Conversely, the invisible boundary refers to shared beliefs held by the inhabitants, manifesting as spirits to avoid, such as burial grounds, ancient trees, and protected forests. In the housebuilding process, a seminal anthropological study of Southeast Asia manifests the interconnection of house and landscape, treating the house structure as 'planting' (Waterson, 1998). Ethnographic studies of various inhabitants of islands in the region illustrate the pattern of treating the plant-based structure as a living entity, planted within the landscape of the island.

The traditions of housebuilding in West Java exhibit similar attitudes. Rusnandar (2015) outlines the sequential process of constructing a collective house, ranging from 'nyuhunkeun' (seeking blessings) and 'babahan' (gathering materials) to 'ngalelemah' ('cleaning' and flattening the terrain), 'milari dinten nu sae' (choosing the appropriate time), 'ngawitan' (collecting elements), 'ngabobohan' (arranging the elements), 'ngarangki' (weaving the elements), 'nanjeurken imah' (raising the house), and 'ngabenteng' (embanking the terrain with rocks). The house-raising ritual, known as 'ngadegkeun suhunan' or 'ngadegkeun bumi', symbolises both the act of lifting the roof beam and the earth itself (Wessing, 2008). The diverse names for the roof reflect the ecological landscape of the dwelling, such as 'tagog anjing' (sitting dog), 'parahu kumureb' (upside-down boat), 'badak heuay' (yawning rhinoceros), and 'julang ngampak' (flapping wings of the Hornbill).

Unsurprisingly, the spirituality of nature and ancestors imbues the spirituality within the house. The house embodies the life and death of its inhabitants, prays for their well-being and prosperity, and simultaneously represents the ecological landscape of dwelling. For instance, the dimensions of 'goah' (rice storage inside the house), 'leuit' (a granary separate from the house), and 'lesung' (a place for husking rice) signify the socioeconomic status of the

inhabitants and the significant role of women in economic activities, as these areas fall under their domain. Water sources like rivers and springs, used for bathing, cleaning, drinking, and cooking, are integral parts of the everyday dwelling landscape. It connects collective gathering within the settlements to wells, fishponds, and spice gardens in the house yard. Lastly, the burial ground near the house forms part of the landscape, resonating with the spirits of ancestors who protect and guide the inhabitants (Wessing, 2008).

The spirituality permeates the landscape through the weaving of clothes, which exemplifies rules of behaviour and rituals that guide the process of dwelling. These woven clothes become heirlooms, accompanying major life events such as birth, marriage, pregnancy, and death of the inhabitants (Gunawan, 2019; Martowikrido, 1994; Sanday & Kartiwa, 2006). The patterns in these clothes reveal the codification of worldviews, transforming the living landscape into a symbolic philosophy that guides ritual processes. For instance, the 'awi'/'rabuang-batuang' pattern in Sundanese and Minangkabau weaving narrates the story of bamboo growth, from young shoots to mature ones, symbolising progression from useful to helpful. Another example is the 'udan liris' pattern in Javanese weaving, which symbolises gentle rain and expresses hopes for fertility and prosperity, or the 'liwatan' pattern, which offers pregnant mothers protection for an easy childbirth (Keerveld, 2022; Martowikrido, 1994).

The act of weaving itself encompasses the ecological aspects of the dwelling. Photographic collages depict the social life of weaving practices, expanding women's mobility beyond the hearth and granary, which are associated with the earth spirit (see Figures 78–101). These images document moments of dry weather that facilitate outdoor weaving, with weavers basking in sunlight on the dry terrain at the house's edge. Weaving necessitates the preparation of tools and materials harvested from the garden. On Java Island, for example, the weaver crafts tools from wood planks and split bamboo, primarily sourcing threads from cotton and colouring them with plant roots and leaves (Gunawan, 2019; Martowikrido, 1994). The process of preparing threads also necessitates humid air for drying, rolling, and stretching, which aligns inherently with the dry seasons of the year.



Figure 78 'Weefster op Atjeh', 1900, public domain, KITLV.



Figure 79 'Weefsters te Djohore', 1900, public domain, KITLV.



Figure 80 'Dajak weefsters te Kuching', circa 1900, public domain, KITLV.



Figure 81 'Weefsters te Kota Gedang', 1925, public domain, KITLV.



Figure 82 'Weefster in een Karo Batakdorp in de Karolanden', 1930-1940, public domain, KITLV.



Figure 83 Songket-weefster op Sumatra's Westkust', 1890, public domain, KITLV.



Figure 84 'Weefsters te Tapanoeli', 1915, public domain, KITLV.



Figure 85 'Batakse weefsters te Tapanoeli', 1925, public domain, KITLV.



Figure 86 'Weefster op Java', 1900, public domain, KITLV.



Figure 87 'Kain weefsters te Baros. Java. (Nabij Soekabumi)', 1900, public domain, KITLV.



Figure 88 'Weefster op Oost-Java', 1900, public domain, KITLV.



Figure 89 'Balinese weefster', 1910, public domain, KITLV.



Figure 90 'Weefster in de Toradjalanden', 1925, public domain, KITLV.



Figure 91 'Weefster in een dorp in de Toradjalanden', 1925, public domain, KITLV.



Figure 92 'Weefster te Makassar', 1925, public domain, KITLV.



Figure 93 'Weefster te Gorontalo', 1895, public domain, KITLV.



Figure 94 'Sasakse weefsters op Oost-Lombok', 1920, public domain, KITLV.



Figure 95 'Weester op Flores', 1925, public domain, KITLV.



Figure 96 'Weefster te Larantoe', 1925, public domain, KITLV.



Figure 97 'Weefsters te Sikka', 1925, public domain, KITLV.



Figure 98 'Weefster te Likoewali bij Badjawa op Midden-Flores', 1910, public domain, KITLV.



Figure 99 'Weefsters op Timor', 1925, public domain, KITLV.



Figure 100 'Weefsters te Niki-Niki', 1925, public domain, KITLV.



Figure 101 'Weefsters en draadspinsters op de Tanimbar-eilanden', 1915, public domain, KITLV.

The practice of weaving adds to existing studies on the ecological calendar known as 'pranata mangsa', highlighting the sensitivity of agricultural activities as farmers navigate the oscillation of nature (Iskandar & Iskandar, 2022; Sindhunata & Khastiti, 2011). The ecological calendar reflects rhythmic cultivation based on twelve seasons (mangsa), which encapsulate the physical and ecological characteristics of the riverine landscape, influencing specific times for wet and dry cultivation (refer to Table 7). For instance, flooding during season 7 marks the transition to the dry period in the fields, while storing rice grain in granaries during season 12 shifts cultivation from the wet to fallow periods. This calendar illustrates the interconnection of agricultural life with celestial and earthly entities. The living landscapes signal the forthcoming planting cycles, reflecting temporal movements and varying physical conditions that create artificial ecosystems.

'Pranata mangsa' facilitates collective planning of agricultural economies, starting with the anticipation of the wet period, which culminates in fruition during the dry season at the end of the cycle. This temporal awareness also shapes the social fabric of villages interconnected by flowing river waters. Sensitivity towards timing encourages heterogeneous plantation across wet and dry periods rather than confining settlements to fixed locations. Recurring temporality fosters prudent resource management during scarcity and cultivates a sense of joy during abundance. Another example is the irrigation calendar of Ulun Danu Batur Temple in Bali, which orchestrates water temple rituals, village activities, and terrace ecosystems near Lake Batur and Batur volcano in Gianyar district (Lansing, 1987). The water temple plays a crucial role in scheduling fallow rotations and optimising two rice harvests based on regional rainfall patterns. Additionally, it serves as a hub for seeking advice on irrigation channels and resolving conflicts over water distribution. In this context, the time spent irrigating the wet terrain of terraced landscape connects social rhythms across the livelihoods in the settlement of houses, villages, and towns.

Table 7 'Pranata mangsa' as ecological calendar for cultivating landscape (Sindhunata & Khastiti, 2011)

No	Mangsa	Characteristics	Cultivation	Calendar	Meteorological
1	Kasa	Star <i>mesa</i> , falling leaves, spawning locust	<i>Palawija</i> / secondary crop	22 June - 1 August	Sunlight 76%, humidity 60,1 %, rainfall 67,2 mm, temperature 27,4 C
2	Karo	Star <i>pesaba</i> , <i>paceklik</i> /famine with cracking earth	Growing <i>palawija</i> , spring of randu and mango tree	2-24 August	Sunlight 76%, humidity 60,1 %, rainfall 32,2 mm, temperature 27,4 C
3	Katelu	Star <i>mintuna</i> , growing vines, dry well, and dusty wind	Harvesting <i>palawija</i> , growing bamboo, yams	25 August-17 September	Sunlight 76%, humidity 60,1 %, rainfall 42,2 mm, temperature 27,4 C
4	Kapat	Star <i>rekata</i> , dry spring, hatching weaver and sparrow bird	Dry soil rice (<i>padi gogo</i>)	18 September-12 October	Sunlight 72%, humidity 75,5 %, rainfall 83,3 mm, temperature 26,7 C
5	Kalima	Star <i>singha</i> , roaming snakes and larva, first rainfall	Irrigating field, planting dry soil rice, growing turmeric and yam	13 October-8 November	Sunlight 72%, humidity 75,5 %, rainfall 151,1 mm, temperature 26,7 C
6	Kanem	Star <i>kenya</i> , fowl come to the fields, and cockroaches at levee	Ploughing land, green fields with flowing water, fruition of trees	9 November-21 December	Sunlight 72%, humidity 75,5 %, rainfall 402,2 mm, temperature 26,7 C
7	Kapitu	Star <i>tula</i> , storm and strong wind, flooding river	Paddy seedling at <i>pawinihan</i>	22 December-2 February	Sunlight 67%, humidity 80 %, rainfall 501,4 mm, temperature 26,2 C
8	Kawolu	Star <i>mraceka</i> , mating cat	Greening fields, growing paddy, beetle larvae emerge	3-28/29 February	Sunlight 67%, humidity 80 %, rainfall 371,8 mm, temperature 26,2 C
9	Kasanga	Star <i>danuh</i> , cicadas and crickets emerge	Part of paddy flower emerges and comes to fruition	1-25 March	Sunlight 67%, humidity 80 %, rainfall 252,2 mm, temperature 26,2 C
10	Kasapuluh	Star <i>makara</i> , birds lay eggs, mammals gestation	Maturing wet paddy, harvesting dry soil paddy	26 March-18 April	Sunlight 60%, humidity 74 %, rainfall 181,6 mm, temperature 27,8 C
11	Dhesta	Star <i>kumba</i> , birds are hatching eggs and feeding the chicks	Harvesting wet-paddy	19 April-11 May	Sunlight 60%, humidity 74 %, rainfall 129,1 mm, temperature 27,8 C
12	Sadha	Star <i>mina</i> , cooling air, drying soil	Drying paddy rice grain, storing the rice grain in granary	12 May-21 June	Sunlight 60%, humidity 74 %, rainfall 149,2 mm, temperature 27,8 C

The heterogeneity and multiplicity of labour in changing seasons provide a critical perspective on scrutinising a typical red herring in official reports about droughts in wet-rice agriculture in Java. For instance, a historical study of famine in the 19th century in the Indramayu and Kandanghaur regions, situated along the Cimanuk River, reveals a complex interplay between landlords of private domains influencing rice production and land rent with population migration patterns aimed at circumventing government-mandated cultivation (Fernando, 2010). Various factors, including the nearness to water sources, proportion of crops allocated for land rent, differing capacities to pursue multiple livelihoods within a family, and the practice of reserving rice in collective village barns as contingency measures, influence rice scarcity at the family level. This analysis sheds light on the interconnections in time, labour, and social life of livelihoods, offering insights into famine events within the context of plantation economies, governmental policy, and regional planning within global trading networks.

From the discussion, it can be argued that the spirituality of dwellings and landscapes intersects within the lifetimes of inhabitants and displacements of settlements. It unveils the role of the state in increased urban mobility that has precipitated notable transformations in village settlements, marked by the disappearance of household and collective-based traditional structures like granaries and stilted platforms used for rice cultivation and protection against adversity. Consequently, it repositions narratives of the transition from agrarian societies to urbanised ones (Muanas & Abu, 1998). The spirituality of landscape in sustaining dwellings redefines the narrative of settlements in a monetized economy. It remains in sustaining dwelling landscapes through heterogeneous forms of livelihood amongst the multiplicity of settlements. Importantly, it makes possible state-led infrastructural arrangements with consequential change—ranging from technological advancements and economic shifts to changes in religious and educational landscapes. The next section discusses this further.

4.3. Settlement of Riverine Landscape

4.3.1. Settlement of Growing Port Towns

From the previous historical analysis of Southeast Asia, this section delves into the narratives and practices within town planning to elucidate the concept of 'urban society' and address issues of overcrowding or surplus population in port towns in Java Island. It begins by examining a report from a sociology study conducted in early 20th-century port town Batavia, which evaluates various components within the town planning framework, with a particular focus on the phenomenon of slum dwelling amongst the distinctions of rural and urban society. Subsequently, I trace the evolution of this term through an archival study of housebuilding traditions, seasonal labour, and river-based migration patterns within the settlements situated between the highlands and the port towns.

It is important to arbitrary narratives of 'urban society' to understand the vitality of time in shaping the embedded history of urban settlement. In the preface to 'Slum as a Way of Life', Jocano (1975) delineates the distinctive intersection between sociology and anthropology, highlighting anthropologists' recent foray into research among urban populations. He confronts the prevalent stereotype that urban neighbourhoods are exclusively the domain of sociologists. He argues that 'it is unbelievable, even to many university colleagues and educated laymen, that an anthropologist should be interested in studying urban neighbourhoods—a sacred domain of the sociologist' (Jocano, 1975, p.vii).

Jocano's study focuses particularly on 'slum' neighbourhoods situated in flood-prone areas of Manila, seeking to apply anthropological methodologies to gain deeper insights into Philippine urban life. One significant discovery from his research in these neighbourhoods is the inhabitants' orientation towards home, which illuminates the concealed dimensions of their existence. He contends that the rationale behind considering the neighbourhood as a temporal unit stems from a historical perspective regarding their place of residence. Furthermore, Jocano emphasises the importance of time in shaping events within these communities. He observes that explanations for events are often less about the situational factors that precipitate them and more about the temporal context that enables their

occurrence. Phrases like 'na sa tiempo lang liyan' (it is due to time) or 'na sa tiempohan lang' (it is simply of time) underscore the significant influence of temporal considerations on residents' understanding of events. In this way, Jocano argues that the temporal dimension of life in the slum delineates social hierarchies, determines the significance of events, establishes values, and shapes residents' expectations and behaviours. Highlighting that many urban residents are first-generation migrants from rural areas, he underscores how ecological pressures have moulded adaptive strategies for settlement and survival. Hence, the slum is not merely a phenomenon or urbanisation problem²⁰ but a vital means through which individuals effectively utilise their environment to survive and propagate their communities.

Meanwhile, recent urban studies have illuminated the notion of 'surplus population', revealing its intricate temporal dimensions within the context of urban poverty (Simone, 2015; Tadiar, 2013). This perspective views urbanisation as possessing a certain 'plasticity' that allows for manipulation of the disposable nature of this population. This manipulation hinges on the fluctuating rights and property status of individuals, which are abstracted and monetized by the neoliberal state. Consequently, the urban poor often find themselves at the forefront of the labour force in the global politics of urban life (Tadiar, 2021). An example of this dynamic is the displacement of populations, illustrating how cities continually regenerate themselves and mobilise operations at minimal costs, often at the expense of marginalised communities. These studies compel us to critically examine specific instances where surplus populations are marginalised and undergo socio-spatial transformations within the urban landscape.

The notion of 'surplus population' within the context of mid-20th century town planning on Java Island in a book titled 'Indonesian Town' published by the Royal Tropical Institute of Amsterdam, edited by van Marle (1958), serves an example. The book sheds light on the nuanced implications of sociology studies,

²⁰ In anthropology literature, the culture of poverty, as characterised by scholars like Lewis (1966) who associates poverty with fatalism and a perceived inability to plan for the future, which is believed to contribute to intergenerational cycles of poverty.

along with the mobilisation of labour and strategies for urban development. Initially, the study advocates for sociology's potential to pivot from its predominantly 'rural-oriented' focus to offering comprehensive insights into urban planning. It claims that 'compared to that motley and exciting world of the visible, tangible products of the process of urbanisation appeared grey and forbidding, and the inhabitants of the growing towns, torn loose from their original customs and *adats*, seems to the ethnologists less interesting' (Wertheim, 1958, p.vii). This disparity exemplifies a discordance between the historical narratives of rural settlements and colonial settlements.

Moreover, the study acknowledges the profound impact of political upheavals and conflicts, which resulted in the destruction of numerous dwellings across Java, Sumatra, Celebes, and Ambon. This destruction, in turn, fuelled the rapid urbanisation and population growth in port towns. Thus, a complex interplay of historical timeframes and material geographies emerges, shaping the ruins of villages, the migratory patterns of inhabitants, and the demographic surge in urban centres. The discussion establishes town planning within the context of defining urban society in the large towns of Java during the early 20th century. It emphasises the significance of physical assessment the housing, river systems, and street networks, particularly in relation to the concept of 'surplus population' amidst issues of overcrowding and urban expansion. This perspective considers the complexities arising from conflicting interests, including technical interventions by the government, liberal land ownership practices, and the vested interests of powerful groups. For instance, the study identifies various challenges, such as hygiene concerns and traffic congestion, labelling them as 'evils' that impede orderly urban development. A detailed analysis of these issues, presented in Table 8, underscores the need for improvements across multiple facets of urban life. It advocates for an integrated approach to town planning while recognising the socioeconomic segmentation inherent within urban society.

Table 8 Town Development in The Indies (Wertheim, 1954)

No	Subchapter	Excerpt
1	Residential buildings (page 18)	'The houses of a large part of the urban masses are outspokenly poor in many places. The reason for this is to be found in the coincidence of two factors, neither of them so bad in itself, but disastrous in combination: a tendency towards fairly 'primitive', originally rural methods of development and building, and marked (and insufficiently curbed) tendency towards 'intensification' of building and overcrowding. The retention of a certain primitiveness and cheapness in development and building methods leads to the fact that all sorts of conditions which are (and may properly be) the rule in the rural desa are also to be found in town: difficult accessibility of the dwellings (in the rainy period only through mud puddles), poor drainage, and lack of sewage disposal, street lighting, or water system.'
	(continue pages 19 and 20)	'Slum dwellings (for example in the three coastal towns of Java and Palembang); congested kampongs regularly threatened with flooding (in the same towns); a serious fire hazard (in Batavia); an almost complete lack of recreation areas, combined with far too little light and fresh air in the dwellings (in many towns) - these are the chief hygienic and other evils, evils which are accepted as being practically normal.' (...) 'It is true that the program of kampong improvement has attempted to combat these evils in the past decade, but it has been able to tackle only a few of them, specifically drainage and path construction.'
2	Industrial Buildings and the Nuisance Ordinance (page 26)	'With the ordinance a basic step was undoubtedly taken towards curbing the evil in the Indies. Nonetheless, in application, the regulation would hardly seem to be effective.'
3	Streets and Traffic (page 34)	'In a general sense, then, traffic is not a blessing, but an unavoidable disadvantage which must be kept down as much as possible; in fact, in the large cities abroad the lack of safety, the cost of traffic installations, and the enormous loss of time have made it a necessary evil, and it can also become that here in the future.'
4	Ribbon Building (pages 40-41)	'Ribbon building has a number of disadvantages. In the first place, as was mentioned above, the admixture of various sorts of buildings creates extreme disorderliness and confusion which is positively ugly.' (..) At the same time, the traffic difficulties increase.' (...) 'a choice has to be made between effecting quite costly building-line changes and retaining one evil more: an evil seriously affecting interlocal traffic and traffic safety, for a long such thoroughfares leading out of town (...).'

5	Recreation and Sports (page 43)	'Mention should also be made of swimming pools. The Indonesian has perhaps no other habit which is so important from the point of view of hygiene and his highly cultivated sense of bodily cleanliness. For him, leisurely bathing in the open air has become almost a sport. The fact that, if there is no better place available, he makes use of the highly polluted waterways of the town may not be not only distasteful but also a source of infection; nonetheless it demonstrates the stronghold which the habit still has on the urban Indonesian.'
6	Sanitation, Public Health, and Refuse Disposal (page 47)	'The vast significance of making the towns healthful places in which to live is of itself indisputable both for the great masses of the population and for other groups. There are not only financial and technical problems (both of which may be left out of consideration at this point) involved, but also problems of town planning, and again the latter are generally not recognized as such.' (..) 'Batavia provides a brilliant example of the first sort of mistake: the drainage canal built less than twenty years ago is already a stumbling-block in the way of expansion, and some of its works require drastic and expensive remodelling.'
7	Chapter Four: Urban Development as the Central Problem: 1. Integrated Town Planning (pages 74 and 75)	'It is extremely instructive to note that urban development in the present-day Indies manifest the same traits as did nineteenth-century development in Europe, and it is for this reason that the latter has been outlined above. Not only are many of the evils analogous (though on the one hand aggravated by the colonial situation, and on the other alleviated by smaller degree of building concentration in the towns and the more favourable climate of the country. The incidental approach to those evils and the lack of appropriate legislation, official guidance, and training facilities are also parallel.'
8	Conclusion (page 77)	'The process of urban development exists and will continue to exist. The authorities are devoting attention to it, and would not be able to keep from doing so even if they wanted to. The complexities exist, because the situation is complicated. The social evils exist, and likewise the expensive measures to combat them. What is lacking is a coordinated, comprehensive approach.'

The Table 8 illustrates that the sociological study scrutinises the complexities of planning ordinances, revealing a juxtaposition of historical contexts in town planning narrative. On the one hand, it underscores the administrative challenges posed by the archipelago's vastness, suggesting a decentralisation of governance from the governor-general's palace in Buitenzorg. Conversely, it advocates for comprehensive town planning in the face of rapid population growth, mass migration, and instances of corruption within governing bodies. Such chaotic

conditions in town planning embed contrasting narratives within the built environment, with a keen focus on their distinct physical attributes. For instance, the study examines residential dwellings through the materiality of bamboo and wooden houses, highlighting vulnerabilities like fire and floods while also symbolising the primitive identity of rural society. Similarly, the study depicts rivers not only for their functional utility like inadequate drainage canals but also for their aesthetic appeal, highlighting their natural beauty.

Such entanglement of town planning and the physical materiality of large towns in the early 20th century is embedded the trajectories of urban growth and societal development throughout the lifespan of three centuries of port town activities in Batavia. Batavia has been subject to extensive historical scrutiny since its establishment in 1619 by the Dutch East India Company (VOC), with records detailing land ownership patterns dating back to the 1950s. In the early stages of settlement, European landowners, particularly VOC officials, viewed their landholdings as long-term investments. As such, they often leased these lands to Chinese, *Mardjikers*, or indigenous communities for agricultural and industrial purposes, laying the groundwork for the various contracts for settlements (Kanumoyoso, 2011). Hence, the encounters between the existing settlements and the port town accelerated the changing deltaic landscapes.

In addition to the narrative of reclaiming swamps for town development during the colonial period in the 17th and 18th centuries, another tale unfolded: that of the construction of 'illegal dams' to facilitate the expansion of agricultural and industrial settlements (Kanumoyoso, 2011; Neimeijer, 2005). Diverse private initiatives erected these unauthorised dams to harness seasonal river water fluctuations, particularly during the wet and dry seasons. Notarial records documented numerous disputes and claims regarding the uneven distribution of water resources among agricultural and industrial enterprises. These documents shed light on the ambiguous stance of the colonial government, which vacillated between endorsing a centralised management approach and tolerating decentralised initiatives. Complicating matters further were land administration

issues, including disputes over land ownership and rental agreements, which hampered the government's ability to effectively regulate these 'illegal dams'.²¹

Historians specialising in Jakarta emphasise the pivotal role of rivers in sustaining various economic activities during the 17th and 18th centuries, including the irrigation of wet rice fields, support for the sugar industry, and cultivation of market gardens (Kanumoyoso, 2011; Neimeijer, 2005). These waterways served as lifelines for economic development and commercial endeavours towards the inland coincided with the establishment of plantations in upstream areas, facilitated by the political stability under colonial rule, which enabled extensive surveys of the hinterland. This expansion extended the urban landscape along rivers such as Kali Ciliwung, Kali Ancol, Kali Sunter, and Kali Marunda to the east and Kali Krukut, Kali Grogol, Kali Anke, and Citarum to the west, with settlements for contractual labourers situated beyond the confines of the port town (see Figure 102).



Figure 102 Houses for rest from the work inside the wall of fort-town Batavia in the 17th century. The house was reached through a small river, by Neimeijer, 2005, used under UK copyright exception.

The concept of owner-cultivator had implications for governing colonial society (Neimeijer, 2005). In the 18th century, Cornelis Chastelein, a colonial administrator, proposed transforming the highlands' forests into agricultural settlements to establish a Christian community. Central to this proposal was the transfer of land ownership from religious entities to labourers who had embraced Christianity. By the 19th century, this religious classification extended to include

²¹ The notion of 'illegal' here requires a more space to discuss the situation of colonial government in the early making of settlements beyond the fort town of Batavia and limited knowledge on climate and landscape of Java Island, as well as the heterogeneity of workers who operates the plantation and its settlement.

emancipated labourers within the Christian community who inherited land ownership previously held by Muslim inhabitants. Governmental policies tied this transfer of ownership, requiring landowners to contribute one-tenth of production, while rent-based cultivators contributed one-fifth of their production.

Amongst the heterogeneous conversions, proximity to a river held significant value as a 'privilege' for irrigating agricultural plantations and providing open water sources for residents. Taylor (1983) illustrates this by describing landowners and government officials' landed villas, or 'landhuis', which feature spacious rooms, individual gardens, and opportunities for boating along the river. These 'landhuis' served as residence and places of refuge, with the dense vegetation surrounding the city providing a degree of safety from wildlife and runaway slaves (ibid.). Domestic workers and hired housekeepers performed domestic tasks like cooking, cleaning, and gardening in the front and back areas of these houses (Figure 103). The employer likely administered disciplinary actions while workers rested in the pavilion at the rear (Neimeijer, 2005). Town planners oriented the street layout to facilitate transportation mobility, alongside villas and government offices (Figures 104 and 105).

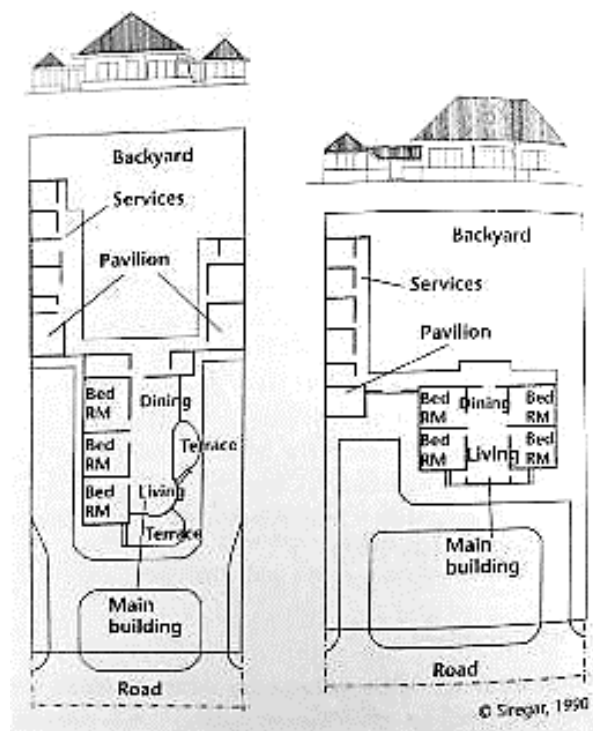


Figure 103 Pavilion for service activities towards backyard in the colonial townhouse in the early of the 20th century, by Siregar 1990, in Harun, 2017 used under UK copyright exception.



Figure 104 'Binnenplaats aan de achterzijde van landhuis Rustenburg in Meester Cornelis te Batavia', 1930, KITLV.



Figure 105 'Landhuis Rustenburg in Meester Cornelis te Batavia', 1930, KITLV.

The 17th-century marks a shift in colonial societies to focus on maritime connections with Europe to a more inland orientation, expanding beyond the city walls in widening arcs, and a desire to settle. These pavilions of landhuis provided a much-needed respite from the demanding nature of domestic chores. The bustling public life along open streets and rivers, including weekend river trips, blurred the lines between leisure and control. For some residents, rivers served as sanctuaries, providing fresh air and open spaces amid the urban hustle and bustle of houses, roads, and streets. Photographs until the late 20th century depict activities such as cleaning, washing, and swimming (Figure 106).



Figure 106 'Wasplaasten bij de Tjiliwoeng in Meester Cornelis te Batavia', 1895, KITLV.

The diverse array of dwellings also occupied the wet terrain of riverine landscapes along the streams. A collage of photographic records offers glimpses into the settlements of river landscapes from the late 19th century to the early 20th century (Figures 107-130). In these images, the proximity of the settlements is striking, with dwellings seemingly light and ethereal, almost floating or perched on the terrain, some adorned with carved steps.



Figure 107 'Buitenzorg 1107 Waterbronnen', 1910, public domain, KITLV.



Figure 108 'Bamboebrug bij Buitenzorg', 1880, public domain, KITLV.



Figure 109 'Bamboebrug bij Soekaboemi', 1910, public domain, KITLV.



Figure 110 'Batoe Toelis bij Buitenzorg', 1910, public domain, KITLV.



Figure 111 'Kampong Tjipakoe bij Buitenzorg', before 1880, public domain, KITLV.



Figure 112 'De kampong Batoe Toelis bij Buitenzorg', 1870, public domain, KITLV.



Figure 113 'Kampong aan de rivier, mogelijk te Buitenzorg', 1890, public domain, KITLV.



Figure 114 'Kampong Pledang bij Buitenzorg', 1920, public domain, KITLV.



Figure 115 'Kampong te Buitenzorg tegenover Hotel Keijzer', 1931, public domain, KITLV.



Figure 116 'Een Soedanese kampong bij Buitenzorg', 1910, public domain, KITLV.



Figure 117 'Depok nabij Buitenzorg', 1915, public domain, KITLV.



Figure 118 'Kali te Depok', 1900, public domain, KITLV.



Figure 119 'Wasplaats in een rivier in Kwitang te Batavia', 1905, public domain, KITLV.



Figure 120 'Weltevreden. Gezicht op de Kali te Tanah-Abang', 1910, public domain, KITLV.



Figure 121 'Woningen aan een rivier in Tanahabang', 1936, public domain, KITLV.



Figure 122 'Rivier te Batavia', 1936, public domain, KITLV.



Figure 123 'Veerpont over de Kali pasir te Batavia', 1910, public domain, KITLV.



Figure 124 'Bamboevlotten, waarop de was gedaan wordt, in de Tjiliwoeng bij Meester Cornelis te Batavia', between 1901 and 1902, public domain, KITLV.



Figure 125 'Rivier te Batavia', 1935, public domain, KITLV.



Figure 126 'Woningen aan een rivier, vermoedelijk te Batavia', 1936, public domain, KITLV.



Figure 127 'Bamboevlotten aan de achterzijde van de Pintoe Ketjil te Batavia,' 1936, public domain, KITLV.



Figure 128 'Bamboevlotten in een rivier in Angke te Batavia', 1936, public domain, KITLV.



Figure 129 'Jakarta's main street. Clothes washing is an everyday occurrence', by Robequain and Laborde, 1954, used under UK exception.



Figure 130 'Mannen op een vlot, vermoedelijk in de haven van Batavia', between 1895-1905, public domain, KITLV.

The collage of these photographs displays how, as one moves from the thick forests and cliffs of the upper stream settlements, situated near the watersheds of the Gede-Pangrango-Salak volcano, the landscape gradually transforms into a smoother slope, eventually leading to the bustling port town at the bay. The horizon of waterfronts evolves from rugged terrain with rocks and sands in the upper stream to the gentle slopes of 'clean' embankments and the orderly arrangement of buildings, including stilted shophouses over water in the port town. In the course of the water flow, bamboo bridges, rafts and wooden boats signalled the movements across the watery landscape between the highlands and lowlands.

The collage vividly depicts the connections between diverse forms of dwellings and the fluid mobility within the riverine landscape. Heterogeneous activities of dwelling also emerged along the evolving terrain, such as fetching water from springs, bridging, constructing pathways, cultivating crops, sculpting, washing, bathing, swimming, and travelling. The fluidity of dwellings emphasises how the terrain itself serves as a holistic 'dwelling' rather than an individual unit of a house. The collage emphasises these dwellings' enduring presence in response to the ever-present hydraulic flow throughout the landscape. This continuity is evident in the heterogeneous labour practices observed in the port town of Batavia and the hillsides of the mountains (Figure 131). It encapsulates the symbiotic relationship between human activity, natural resources, and water flows.



Figure 131 'Verkoop van bamboe te Batavia', 1936, public domain, KITLV

Time plays a critical role in the meticulous assembly of the intricately woven and layered components that transform the dwelling into a delicate yet sturdy platform (Figure 132). Situated in close proximity to the water, these dwellings are

uniquely shaped by the natural flow of wind that permeates through the 'corridor' of the river terrain, gently breezing through the partitions of each structure. These houses carefully design their architectural layout to harmonise with the ebb and flow of air and water movements, a response essential for navigating the dynamic conditions of both wet and dry terrains, including periods of flooding.



Figure 132 'Woningen aan een rivier te Batavia', 1936, public domain, KITLV.

Over time, water bodies have played a pivotal role in shaping the concept of 'urban' through the continuous effort of water management. Urban centres emerged in transitional zones between bustling ports and the administrative cores of ancient kingdoms, where villages evolved into more complex settlements. Colonial surveys and travel narratives spanning Java, Nusa Tenggara, Borneo, and Sumatra during the 19th century document this phenomenon in Java and throughout the archipelago (Brommer, 1979). These narratives vividly depict the symbiotic relationship between human habitation and water bodies, emphasising the role of rivers in fostering governmental and economic vitality.

Photographic documentation from expeditions to Borneo during the 20th century offers compelling insights into the relationship between settlements and water bodies. The floating market on the Barito River in Banjarmasin (Figure 133) serves as a striking example, showcasing commerce flourishing in the swampy terrain, bolstered by stilted or floating platforms accessible through ladders and boats. Riverine communities in Lake Tondano, North Celebes, exhibit a similar mode of existence (Figure 134), emphasising the adaptability of dwellings to aquatic environments. Kampung Tering, Borneo, provides another noteworthy illustration, where houses perched on stilts integrate with the ebb and flow of the

Mahakam River (Figures 135 and 136). These architectural marvels withstand various forces, like earthquakes (Tjahjono, 2003). Moreover, the choice of materials reflects a deep interconnection with the surrounding landscape.



Figure 133 'Haven in Bandjermasin', 1920, KITLV.



Figure 134 'Huizen aan een rivier te Tondano bij Manado', before 1880, KITLV.



Figure 135 'Kampong Tering bij hoog water te Midden-Borneo', 1915, KITLV.



Figure 136 'Kampong Tering bij laag water, Midden-Borneo', 1915, KITLV.

The discussion challenges conventional notions of overcrowding or surplus population in town planning by emphasizing river-based mobility and the interconnection between riverine settlements and landscape arrangements. Instead, it emphasises the temporality inherent in riverine landscapes and the ambiguous understanding of 'urban society', particularly in making rivers sites of temporal encounters between the emerging colonial society in the port town of Batavia and the existing movements across the river terrain connecting the highlands to the bay. Furthermore, the allure of water in riverine landscapes blurs the distinctions between 'rural' and 'urban', influencing inhabitation amongst villas, mobile boats, and ports within the city. Consequently, rivers and their fluctuating terrain shape labour movements across heterogeneous dwellings, offering a nuanced perspective on the urban landscape within the wet times of flooding.

These changes have reconfigured the built environment within a broader constellation, encompassing diverse governmental entities spanning villages, port towns, the capital city, and the overarching state apparatus. This phenomenon has reshaped the social life of dwelling, giving rise to what Lopez (2020) called the 'remittance house'. It is a house built with money earned by migrants for the construction of a dream house, emphasising remitting and migration as key components of contemporary transnational building practices across the globe. Specifically in this chapter and the previous one, I identify that the labour patterns in the migration process are linked to agricultural cycles, with work intensifying during the dry season when rural agricultural activities are minimal and tapering off during the wet season due to weather disruptions.

So far, I have demonstrated the narratives and practices of settling wet and dry settlements that encompass the liveliness of dwellings and landscapes. They provide an analysis of seasonal inhabitation of riverine settlements in Java Island. Over the course of a century, Java's population has witnessed an exponential rise, soaring from 5 million to 50 million by the middle of the 20th century (van Bemmelen, 1946). Approximately 17% of Java's inhabitants dwell in urban centres, with Jakarta leading the ranks, followed by Surabaya, Bandung, Semarang, Surakarta, and Yogyakarta (Giebels, 1986). In the transitional period of nation building and the making of Jakarta as the epicentre of the global city in Southeast Asia, the presence of riverine settlement in Kali Ciliwung extended along with the flows of migration from villages of Java Island and its surrounding.

As Indonesia's capital city, the landscape of Jakarta undergoes a continual shift, influenced by an interplay of historical legacies, migration patterns, and planning institutions. By 1971, Jakarta's population had burgeoned to 4.5 million from half a million in 1930. Consequently, there has been a heightened demand for temporary labour in construction activities, ranging from forest clearance and land tiling for wet-field irrigation to housing for the growing population (Sannen, 1986; Firman, 1991). Historical practices in pre-colonial agricultural settlements in Java, where collective construction efforts are typically concentrated during the dry season (Wertheim, 1964, as cited in Nas, 1986), echo this seasonal labour dynamic.

4.3.2. Displacement of Riverine Settlements

In contemporary urban life, North Jakarta's coastal areas are critical to the hydraulic relationships of tidal flooding. This region marks urban expansion at the convergence of many rivers originating from the mountainous highlands, including the present-day Kali Ciliwung (Verstappen, 1988). It denotes the mainstream narrative of the urban history of Jakarta. Previously, the port of Sunda Kelapa was a thriving colonial port town that competed with neighbouring ports along Java Island's northern coast in the 17th century. In the 20th century, the main port hub relocated to the eastern part of the coastal areas, leaving the previous one for small-scale port activities. In parallel with the establishment of capital city, heterogeneous activities such as leisure, residential, and commercial hubs has emerged.

Tidal flooding, a recurring natural phenomenon, has influenced the role of governmental arrangements for managing wet terrain along coastal settlements. The Meteorological, Climatological, and Geophysics Agency advised residents of North Jakarta and districts near rivers to remain vigilant against rising tides and the potential for moderate to heavy rainfall. This alert is based on the characteristics of a 'wet spell,' denoting a period of consecutive days where precipitation exceeds a specific minimum amount (AMS, 2022). This period is characterised by a cloudy morning and noon, followed by rainfall in the evening and night. The full moon intensifies concerns about rising water levels, prompting various bodies, institutions, and news sources to issue alerts in multiple inhabited areas. It brings resonance to the materiality of the living landscape in the city.

Urban water infrastructure, such as floodgates and pumping stations near North Jakarta's seawall, anticipates rising sea levels during the full moon (Kompas.com, 2013). For example, two of the three non-functioning water pumps used for extraction have undergone repairs, while the remaining pump, under a different government authority, remains unrepaired. These intertwined natural rhythms contribute to the complex political responses of the majority of residents to coastal conditions (Simone & Benjamin, 2022), alongside diverse visions of habitation (Betteridge & Webber, 2019), and gendered experiences of living amidst landscape degradation (Tilley et al., 2017).

The full moon's impact on the anticipation of tidal flooding in coastal cities in North Java is not a new phenomenon. Kusno (2018) describes its presence as one of the factors determining the occurrence of tidal flooding in Jakarta, particularly concerning the politics surrounding seawall and floodgate operations. The lives of inhabitants along flood-prone riverbanks and seawalls are at risk when a full moon causes tidal flooding and storms in both the upper and lower river streams simultaneously. The perception of the flood has fluctuated between being a disaster, an opportunity, or even a beneficial event. Attempts to control the flood and integrate multiple infrastructures have not been entirely successful. Instead, multiple anticipations and improvisations have occurred by making the most of available resources and intertwining material, political, and spiritual affiliations. The temporary presence of rising water has opened a site of care for different socio-economic levels of urban inhabitants, a site of charity for political parties, and a site of religious expression during times of abundance of water.

Meanwhile, Ley (2018, 2021) expands the discussion to relational ecology in infrastructure's temporal politics. The discussion focuses on governmentality in the discourse of 'river normalisation' in response to tidal flooding in Semarang, with heterogeneous interests in gaining material compensation, social support, and political positions. Simultaneously, the politics of flood control infrastructure have established a normative form of social life in rivers by removing undesirable settlements from the riverbanks. While Kusno discusses floods as a phenomenon of encountering surplus water, Ley discusses the politics of infrastructure in the undesirable excess of flood-prone areas, as indicated in the ecological history of swamps. Swamps, which are geographical coastal city areas, are associated with disease, waste, and crime, making them unhealthy. Additionally, they straddle the boundaries between residential and agricultural areas (ibid.).

Kusno and Ley may find themselves intrigued by the concepts of surplus (e.g., 'water surplus' and 'surplus money') and excess (e.g., 'excess of water and unruly social elements') that characterise the temporal inundation of coastal terrain. Exploring how flooding manifests differently in urban environments, both as a phenomenon and an event, may draw them in, posing challenges for comprehension. The terms surplus and excess prompt a discussion on the historical

inhabitation of floods and the temporary infrastructure associated with them, revealing the diverse anticipations of inhabitants. Thus, the history of inhabiting floods and their infrastructure intertwines with the unpredictable nature of flooding events, the history of unwanted wetlands, the iconic ruins of displacements, the promise of infrastructure, and the stabilisation of dry settlements.

However, such an immediate association with surplus water also ignores the underlying assumption that measured exchange can achieve normative balance or equity. It presumes the stable reality of a model. In fact, the built environment and flooding are reshaping perceptions of time and reality, creating a dense temporality that persists in the deltaic plain of the coastal landscape. As mentioned earlier, studies on historical ports have pointed out urban pressure between the inland and coastal landscapes that induces geomorphological shifts (Verstappen, 1988). This urban pressure encompasses various factors such as bay water pollution, the use of beaches and coral debris for construction, the implementation of major engineering works, intensified fishing and tourism, and the extraction of groundwater within Jakarta's conurbation, leading to land subsidence.

Historical studies also articulate the concept of surplus water in relation to water balance, ensuring timely water management in a built environment. However, the usage of the term varies across different historical periods. In the 17th and 18th centuries, during periods of agricultural and industrial development, surplus water was associated with practices such as wet-rice agriculture and water irrigation, aimed at optimising production in agricultural settlements for colonial governments (Kanumoyoso, 2010). In the 21st century, town planning and infrastructure, including urban land use and flash flood mitigation, discuss the specification of water balance in urban contexts (Sani, 2005). This discussion considers the permeability of physical surfaces and the magnitude of surface runoff to anticipate the balance between precipitation and discharge, as well as to determine the timing of flood peaks and the occurrence of overbank flows.

Still, this notion of water balance presupposes an assumption of fixed conditions and relatively controlled flows of materials in waterways and their

surroundings. Van Bemmelen (1949) conducted a comprehensive study on Indonesia's geology in the mid-20th century, which revealed that the regulation of water runoff with forest vegetation only partially relates to maximum water transport during intense rain. In tropical climates, denudation and the active processes of mountain building are affected by how permeable the ground is and how much water can soak through the surface. These factors are more important than the percentage of protective forest cover that is often claimed as the approach to environmental conservation. In this argument, terracing wet fields may contribute more to protection against erosion and floods than creating forest conservation areas in the highlands upstream. The argument evokes the assumption that the inundation in the lower stream areas is not directly associated with the clearance of forests for agricultural cultivation and other forms of land use. Rather, it is the entanglement of the seasonality of rain-fed rivers and their erosion that has shaped and shifted layers of riverine terrain.

Indeed, the historical associations of surplus and excess contribute to the interplay of time between immediate governmental responses, deemed legitimate, and slow landscape formations observed in science. Trading companies in the 17th and 19th centuries closely linked the settlement of the river to transportation and irrigation work across the landscape of colonial plantations, as well as the establishment of colonial towns. On the one hand, flooding reduces the economic value of the plantations and disrupts the stability of the towns. On the other hand, it is also part of the natural cycle that revitalises the materiality of the landscape. Hydrographic studies in the 20th and 21st centuries demonstrate how large amounts of mud and sand are natural characteristics of rivers in northern Java (Cabaton, 1911; Gupta, 2011). Rivers in the tropical climate of Indonesia and Southeast Asia are rain-fed, and 'the majority tend to exhibit a seasonal pattern of discharge corresponding to the shifting monsoon' (Gupta, 2005, p. 65). The extensive tropical forest is evidence that the subcontinent is a region with 'surplus water'. In general, the assertion of surplus water aligns with the concept of water balance during most months, given the average annual rainfall of 2000 mm.

Thus, the city pulsates with infrastructure that both withstands and harnesses physical forces. Despite existing beyond the confines of normative urban

planning procedures like 'risk zone' or 'river boundary', heterogeneous and makeshift settlements continue to emerge. For instance, abandoned rivers and canals serve as venues for workshops and home industries operated by seasonal workers from Pekalongan, Central Java, contributing to the vibrancy of local markets (Andriyanto & Harjoko, 2018). Within the urban landscape, the flows of commuters and the diverse architectural styles intertwine, necessitating affective labour to negotiate temporary relationships (Simone, 2014). It is crucial to grasp the materiality of urban infrastructure as an intersecting temporality of labour, settlements, desires, and political agendas, both within and beyond the realm of flood-mitigation policies. This understanding traces settlement temporality within the multi-scalar politics of spatial planning, as highlighted in critiques of planning and development (Firman & Dharmapatmi, 1994; Rukmana, 2015).

Meanwhile, urban life during times of inundation raises questions about what, when, and for whom the 'familiar' exists. Jakarta's urban history, consisting of fragments and patches of landscapes with piecemeal infrastructure provision, inherently transforms inundation periods into various shifts. Moments of emptiness, breakdowns, and pauses occur, such as during electrical shutdowns to prevent damage from electric currents, tram halts, or when stormwater clogs privies with garbage and mud (Colven, 2022). The emergence of water animals, such as snakes, lizards, and crocodiles, in the streets and houses during floods illustrates water's ability to bring underground life to the surface (Hadi, 2018; Putri, 2016). Times of inundation also involve the extraction of material sediments that seasonally settle, dry, and accumulate in river terrains (Mahadew, 2014).

The abundance of water elevates the temporality of 'infrastructure,' navigating between heterogeneous and multiple ecologies of rivers by valuing 'fresh' and 'waste' water over time. Within this context, temporary settlements emerge, shaping the division between wet and dry periods and prompting questions about maximising their utilization. The water surface in rivers and streets blurs the boundaries between inhabitation and the environment, transforming both into conduits affected by the life passing through them (Simone, 2004). This dynamic unfolds in urban life with multiple surfaces of enclosure and disclosure. The fluidity between beginnings and endings reveals the reversible nature of

'river,' 'street,' and 'houses,' creating temporal symmetries. Makeshift settlements delineate the borders between 'wet' and 'dry' through material circulations that reclaim water, reshaping the urban landscape temporarily (Batubara et al., 2018).

In a study on flood-prone districts in North Jakarta, Simone (2004) illustrates how urban inhabitants grapple with uncertain urban futures, emphasising the external influence of time on their experiences. The uneven terrain of these areas creates a complex landscape where residents must navigate the possibility of displacement, resulting in a diverse range of anticipatory responses shaped by individual associations and affiliations across space and time. Residents perceive time as a rupture that manifests in various forms, such as faith, market forces, or speculation, prompting them to seek new opportunities and prepare for potential moves in crowded and insecure districts. This dynamic encourages flexible collaboration and asset pooling to manage the uncertainty of city life.

Turning to the impact of natural phenomena like full moons and wet weather, flooded waterways in urban environments present a unique aspect of urban life where resilience and adaptability intersect. Instead of solely focusing on predicting or preventing flooding, understanding how time influences residents' responses to risk and security is essential. Inhabiting the riverbanks means engaging with the public life of water, similar to street life, where everyday events shape time's progression and are governed by established norms and movements. River life is defined by navigation, potentialities, and refusals, highlighting the dynamic and habitable nature of rivers in urban settings.

Hence, contemporary urban landscapes witness a heterogeneous politics of anticipation as abandoned, drained, and reclaimed waterways. These dynamic environments integrate flood control infrastructure, which is subject to the unpredictable forces of nature and shapes diverse futures for urban inhabitants. Reflecting on the narratives associated with deltaic landscapes offers insights into the geological studies of Java Island, where the formation of settlements has been intertwined with the value of water for agricultural and industrial purposes. Such historiography of urban settlements reverted back to the previous chapter on the Kali Mati/dead river about irrigation history.

4.4. Conclusion

This chapter offers a nuanced perspective on 'Tanah Kali'/river land by conducting a historical analysis of the interconnectedness among settlements in towns, villages, and houses, as well as the evolving riverine landscapes of Java Island. It builds upon the preceding discussion of surplus populations by investigating the spiritual nature of dwellings in the transient life of settlements. The chapter delves into the evolving dynamics of water management within settlements, ranging from the religious rituals involved in shaping sea and island terrains to the technological advancements in river irrigation that fuel economic expansion. Additionally, it explores the intricate relationship between labour, time, and social life in times of adversity, particularly in the context of livelihood transitions from seasonal agriculture to a monetized economy.

Furthermore, the chapter illustrates shifting settlement patterns during the urbanisation process. It notably examines migration patterns in burgeoning port towns, which are facilitated by both infrastructure development and political instability in Java and neighbouring islands. By repositioning discussions of 'urban society' within the late plantation and industrialization periods, the chapter highlights the temporality of labour activities and settlement patterns. This repositioning juxtaposes the romanticised portrayal of rivers as serene landscapes and leisure destinations with their pragmatic role as hubs of labour and sanctuary for diverse worker populations. Through an exploration of this evolving urban fabric, the chapter concludes with a discussion on coastal settlements in north Jakarta. It discusses the narratives of displacement that intersect the temporal rhythms of tidal floods and the potential ramifications of infrastructure development for the future of the capital city. The subsequent chapter will delve deeper into the interconnectedness between coastal and riverine settlements.

Chapter 5. 'The land belongs to the river': Continuity of Riverine Settlements



Figure 137 Imagining latitude and horizons of Jakarta by juxtaposing silhouette of Gede-Pangrango-Salak Volcanoes and The National Monument in the flat landscape of Central Jakarta, by author, fieldnote on 18/02/2021.

5.1. Introduction

This chapter delves into the continuity of historiography of 'Kali Mati' and 'Tanah Kali' within evolving landscape of Kali Ciliwung in the contemporary riverine settlements of Jakarta. The chapter derives its title, 'The Land Belongs to the River,' from a statement made during interviews with displaced inhabitants who occupied the wet terrain of Kali Ciliwung in Bukit Duri, Jatinegara District. This statement evokes spiritual significance and underscores the historical settlements along Kali Ciliwung. To illustrate the historical trajectories discussed, I juxtapose the Mountain of Gede-Pangrango-Salak with the National Monument, a symbol of emerging nationalism in Jakarta during the mid-20th century (Figure 137). This juxtaposition highlights the urbanising riverine landscape's 'hybridity,' characterised by heterogeneous settlements that have displaced and replaced agricultural and industrial activities. Despite the transformations, the spirituality of the landscape remains, echoing responses from previous historical stages of irrigation work and urbanising settlements.

This chapter is arranged into two parts. Firstly, it examines the settlements along the riverine landscapes of Kali Ciliwung. The emerging sediments, island reclamation efforts, and construction of seawalls, which cultivate mangroves in the low-lying coastal plains, provide insights into the continuity of settlement across historical stages. Additionally, I focus on the emergence of urban settlements and the remnant of irrigation works that define the riverland between highlands and low-lying plains. The hydraulic relationships in both forms of settlement illustrate the continuous occupation of urban waterfronts and the interconnectedness of landscapes during wet and dry periods.

Then, the chapter explores the temporal and material dimensions of riverine settlements during wet and dry times of weather along Kali Ciliwung in the low-lying plain of the urban landscape in Jakarta. Field observations underscore the recurring occupation of the riverfront and prompt reflection on the spirituality in temporal and material aspects of the riverine landscape, raising questions about the nature of 'being' and 'becoming' at home.

5.2. Riverine Settlements Along Kali Ciliwung

The wetland along Jakarta's coastline broadens the history of the port town into a continuous formation of 'outlaw' settlements. Various urban activities have emerged, displacing, and altering the beach ridges and mangroves. The fluidity of coastlines has become fertile ground for the 'purification' of wetlands into fragmented pieces of town planning. The relocation of the historical port town of Sunda Kelapa to Tanjung Priok has left behind ambiguous patches within a heritage district. The President authorised the development of this district in 1995, resulting in detailed spatial planning that encompassed urban activities such as residence, conservation, leisure, and commerce (see Figure 138).

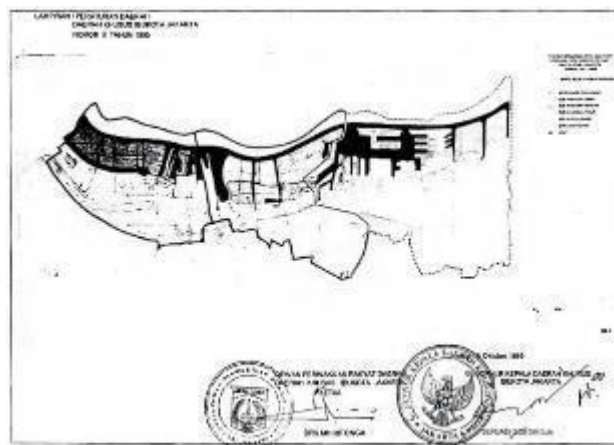


Figure 138 Plan of Jakarta Bay Reclamation Plan in (Perda No.8 Tahun 1995), following Presidential Decree No.52 Year 1995 about Reclamation of Islands in North Jakarta Bay (Keppres No. 52 Tahun 1995)

The planning of the coastline continuously reshapes the character of the landscape under the influence of national interests. The mangrove forests of North Jakarta Bay underwent continuous transformation, with authorities reclaiming 'natural' mangrove ecosystems for residential settlements. In the 2000s, authorities established the 'artificial' one, such as the Mangrove Conservation Forest in Kapuk Angke, to combat abrasion and safeguard new residential development (BKSDA DKI, 2015) (Figure 139). It extends the waterfronts along the coastlines and causes sedimentation brought on by water flow from the hinterland.



Figure 139 Plantation of mangroves in the Mangrove Conservation Forest make 'natural barrier' of reclamation islands of Pantai Indah Kapuk (PIK) residential clusters, by author, fieldwork on 2021/03/2).

Subsequently, the infrastructural plans for a seawall evolved into the National Capital Integrated Coastal Development (NCICD), responding to narratives of rising sea levels and land depletion. The creation of new islands, connected by seawalls and road networks leading towards the hinterland, marks a new frontier in the sea (see Figure 140). Over time, these islands have reshaped the coastline, effectively transforming the beach into a 'river' between them. The only noticeable difference is the continued presence of boats, which serve as regular transportation for local residents and fishermen. Subsequently, the mangrove park has evolved into a strip of wetlands, blurring the distinction between sea waves and river flows and gradually integrating into the hydraulic relationship of the urban landscape as it extends towards the hinterland of highlands in the volcanic mountains.



Figure 140 A wood junk with a view toward an emerging line of horizon made by sediments of seawater in Jakarta North Bay, by author, fieldwork on 2021/03/21.

Muara Angke Port also reflects the shifting horizon of the sea through the construction of coastal lines and the development of seawalls (see Figure 141). The port serves as a hub for traditional fishing and boat services, facilitating travel and material distribution between the small islands in the bay and the hinterland. The seawall embodies a sense of temporality, blending the planned progression of urbanisation with the transient rhythms of ebb and flow in the waves, as well as the occasional infrastructure disruptions caused by tidal flooding. Temporary repairs by the government have extended the seawall to accommodate the new islands of the NCICD project.



Figure 141 The emerging seawall from Google View in April 2013 and 2015 (top), with April 2019 (bottom), compiled by author, in 2021.

The construction of the seawall has reshaped the coastline and transformed the sea into a cultivated wetland. Various elements of port infrastructure, such as seawalls, piers, and port hubs, coexist within this dynamic landscape, along with marine settlements inhabited by fishermen and concrete deck ports providing access to small islands (see Figure 142). Moon phases and seasonal storms regularly subject these settlements to tidal floods, while boats are neatly lined up, while artificial breakwaters line the piers, serving to gather sediment. As night falls and the air cools, the urban life of the waterfront shifts into the glow of small kiosks and stalls offering fresh seafood. Amidst the darkness, faint lights from sailing ships punctuate the boundary between the open sea and the sky.



Figure 142 From seawall to the open sea that shows heterogeneous movements and activities, by author, fieldwork on 2021/05/01.

Waterfronts have become a haven for 'outlaws', exemplifying the fluidity of these spaces as they embody various roles and temporalities simultaneously. Another illustration of this phenomenon is the revitalization of the riverfront along Kali Ciliwung in the Old Town Heritage District, which was undertaken with the aim of preserving the abandoned port town of Batavia (see Figure 143). This effort involved a consortium of developers (AntaraNews, 2013). Meanwhile, staff from the Social Agency of Jakarta Provincial Government, who monitors rivers and bridges, recounted stories of people living and sleeping near the waterways: 'They are usually migrants from villages seeking employment. We urge them to return to their villages or direct them to social facilities.'



Figure 143 Lingering presence of 'The Great River'/Kali Besar in 17th century Batavia has been surrounded by the development of the Old Town 'Kota Tua' conservation area, showing the hotel on the right side, by author, fieldwork on 2021/01/03.

At night, the Old Town heritage district transforms into an enigmatic landscape, characterised by dim lighting and limited mobility amid the deserted buildings. The once-vibrant tourist destination in the daytime now takes on a subdued atmosphere, resembling an open-air gallery. However, the glow of makeshift street vendors occasionally punctuates the darkness along the banks of Kali Besar (see Figure 142). A vendor selling 'kerak telur', a traditional Betawi cuisine, recalled an incident where a child fell into the river while visiting a floating art installation on Kali Besar. The river enclosure for the art installation raised unresolved concerns about security-oriented development.



Figure 144 Lights of 'kerak telur, a renowned Betawi street food, at riverfront of Kali Besar in Old Town 'Kota Tua' during the nighttime. Despite the revitalisation plan, the existing activities are highly temporary with abandoned and ruined colonial building, by author, fieldwork in April 2021.

The Old Town district also takes on the eerie ambience of a 'ghost town', where a sense of anonymity permeates the atmosphere among the abandoned buildings. In the past, the canals were illuminated by bathhouses and floating boats resting on the decks. The accounts shared by government officials about people sleeping in the Old Town resonated with the feeling of invisibility amidst the dimly lit urban landscape. Young people frequented some spots along the riverfront park, but the ambiguity of the neighbourhood during the day seemed to extend into the nighttime. The Kali Besar corridor creates a void amidst the openness of the building facades, intensifying the sense of desolation after dark.

The Kali Ciliwung bifurcates into the West Flood Canal and its original meandering course. The West Flood Canal, depicted in the 1973 Drainage Areas in Jakarta Master Plan, serves to drain the densely populated urban areas in the central and western regions (see Figure 145). Along the canal, makeshift dwellings and wooden ladders line the floodwalls, interspersed with debris and grasses on the canal's sediments. A waste picker, who collects floating trash from a pedestrian bridge, shared a tale of encountering a crocodile that emerged at night, adding to the sense of unpredictability in this environment.



Figure 145 West Flood Canal and its occupation and settlement in western Jakarta, by author, fieldwork on 2021/05/28.

Meanwhile, the intersection with the old meandering river course harkens back to the suburbanization of the port town of the colonial society of Batavia in the 18th century. Nestled amidst the shadows cast by the National Monument, the Istiqlal Grand Mosque, and the National Palace, the river's life intertwines with dilapidated railway networks, deserted streets beneath elevated railways, and a closing floodgate that regulates the river's flow (see Figure 146). This urban void often goes unnoticed amid the bustling street life of the prominent district, yet it serves as an invisible refuge for those seeking respite amidst the city's activity.



Figure 146 Intersection of Kali Ciliwung shows hydraulic life of the river and 'hidden' life, by author, fieldwork on 2021/02/18.

In Manggarai District, the sedimented water flow has once again covered the river terrain and marked the end of the canal embankment of Kali Ciliwung from the port town. A centralised flood-control infrastructure manages 'water traffic' in the city, steering water from the upper stream to the East Flood Canal and the old meandering river and enclosing the floodgate to Kemang neighbourhood (Figure 147). This area operates with flood monitoring, floodgate opening, and waste collection protocols. Meanwhile, piles of domestic waste attracted a water monitor lizard (*Varanus salvator*) to climb on the floodwall.



Figure 147 Manggarai Floodgate assembled floodgate, water monitor, waste collection, and hazard indicator, by author, fieldwork in 2021.

Towards the higher topographical latitude, the riverine landscape comprises various segments of road embankments from the ongoing Kali Ciliwung Embankment Project and existing riverine settlements. One notable example is the densely populated settlement of Jatinegara, situated within walking distance of Manggarai District. This area was once a suburban enclave of colonial-era Batavia in the 19th century, nestled amidst meandering rivers, train stations, bus terminals, markets, and the main road in the city.

The flood-prone neighbourhood in low-lying terrain, known as Tanah Rendah/Low Land follows the contours of the river valley. The remaining Betawi houses serve as evidence of the early inhabitants, primarily of Betawi descent. Row houses line the meandering river alleys, accessible only to motorcycles and pedestrians, gradually descending towards the stream where wooden debris rhythmically drifts back and forth. Basic amenities such as shared toilets and water taps are integral to the settlement, with makeshift defecation boxes assembled from wood planks and corrugated sheets for those residing in close proximity to the water (see Figure 148).



Figure 148 The materiality of dwelling in riverine settlement of Tanah Rendah, by author, fieldwork on 2021/05/29.

The ongoing Kali Ciliwung Embankment has resulted in fragmented infrastructure across the riverine landscape. Still, the toponyms of riverine settlements reveal the rich history embedded in the landscape. Some sections have been altered with engineered channels, creating shortcuts through land-filled development. During the dry season, exposure to river terrain prompts a re-evaluation of surface water levels, bridging connections between groundwater and rainwater systems within settlements. The observation of abandoned irrigation infrastructure along the embankment in Bidara Cina highlights ongoing reoccupation and utilisation of dry terrain for various purposes (Figure 149).



Figure 149 Abandoned floodgate, occupation of embankment, and piled sediments, by author, fieldwork on 2021/08/04

In the abandoned settlement, nestled amidst the riverine landscapes, remnants of human habitation intertwine with the material sediments left behind by flooding. Amidst the dry soils of mud, the remnants of embankments, and the ruins of settlements within development sites in Arus Dalam Alley, Cawang, several houses still stand. Flourishing trees and tall grasses surround them, creating a tranquil atmosphere untouched by human presence and displacing the urban crowd into a realm of serenity (Figure 150). A cemetery remains in the contoured river valley, bearing witness to refugee areas' past lives during flooding. Chapter 7 will delve deeper into these grounded observations of Kali Mati.



Figure 150 The materiality of Arus Dalam/ Kali Mati settlement ranges from speculative development, river normalisation, cemeteries, and abandoned houses, by author, fieldwork in 2021

Gradually, the river terrain becomes steep and lush with plants. In Depok, south of Jakarta in West Java Province, the upper Kali Ciliwung flows beneath the 'Panus' Bridge that connects the steep terrain of river valleys. The bridge features a flood level indicator and an adjacent monitoring station providing daily reports to Jakarta city officials (see Figure 151). Located at a higher latitude, the hills with lush bamboo adorn the landscape, with roadways and bridges connecting settlements along the riverbanks, such as Panus and Depok Ciliwung Community.



Figure 151 The higher latitude of river terrain in Depok City that shows the steep terrain in the meeting of two rivers, drainage channel, emplacement of flood-warning, and river activism, by author, fieldwork in 2021.

In the highlands of Bogor, the Kali Ciliwung meanders through rugged terrain characterised by boulders and rocks. Archaeological studies have revealed boulder inscriptions dating back to the 5th century, depicting the centre of the Sunda Kingdom in Padjajaran. The river's course established Pulo Geulis, a settlement with a temple and historical tomb, on an island between rivers. The agricultural landscape thrived in the 18th and 19th centuries, with notable landmarks such as the Botanical Garden, Governor's Palace, and Katulampa irrigation weir (see Figure 152). These weirs, equipped with flood level markings, served as monitoring points for networks in Jakarta.



Figure 152 Ciliwung River flows through Botanical Garden, Pulo Geulis, Presidential Palace, and Katulampa Weir, by author, fieldwork in 2021.

At the fork of the Kali Ciliwung in Katulampa Dam, makeshift washing cubicles line the riverbanks near Katulampa village, adjacent to the Katulampa weir and floodgates. These cubicles are connected to the higher-ground settlement by pathways along the contoured riverbank. Each cubicle varies in construction; some are made of tarpaulin sheets supported by wooden sticks, while others consist of bamboo fences and corrugated iron. However, they all share a common feature: an open location on the water's edge, allowing direct access to the flowing water without any overhead covering (see Figure 153).



Figure 153 Various forms of makeshift washing are placed at the banks of canal, by author, fieldwork in 2021.

It is evident that the shift from downstream to upstream towards the Gede-Pangrango-Salak Volcano has significantly impacted the physical atmosphere, riverine landscape, and urban settlement. The gradient between the waterfront and the surrounding land blurs downstream, where material flows, sedimentation, and reclamation continue to alter the settlements. Contrary to Octaviati and Charles (2019), observations of settlement patterns suggest that technocratic solutions do not solely drive flood-mitigation policy. Instead, they are influenced by historical town planning practices and state-led infrastructural projects, particularly in the coastal areas of Jakarta Bay. This approach reclaims the waterfronts by securing them with embankments, facilitating the shifting pattern of wet and dry times in riverine settlements.

The next section will delve into the wet and dry times of the riverine landscape, surrounded by hydraulic forces of embankment in coastline development and contoured settlements from the highlands. It responds to the discussions in Chapters 3 and 4 on living houses and living landscapes in the contemporary capital city. In detail, I will illustrate the fleeting settlements that intersect the temporary physical conditions of wet and dry times in the riverine landscape of Kali Ciliwung in Jatinegara and Cawang, East Jakarta.

5.3. Wet Time of the Settlement

5.3.1. Refuge

I start with wet weather, which orchestrates a complex interplay of atmospheric phenomena, moulding the landscape and dictating weather patterns that culminate in flooding. It shapes the time of refuge and stay put in the settlements. When discussing my research focus—life amidst rivers and floods—residents suggested a visit between the New Year and March, the peak flood season. However, some observed that floods had become increasingly sporadic compared to previous years. This implies that people hone their sensitivity to weather and flooding over time, evolving into a continuous process of adapting and rearranging homes, organising activities, and refining house-building practices to navigate the constantly changing landscape.

In response, residents like Nico, a migrant mother, exhibit a remarkable capacity for adaptation. For instance, Nico adeptly anticipates weather patterns and flood events, as follows:

'Look at there, the dark, cloudy sky, signalling a will to rain,' said Nico. 'Where to look?' I asked. 'There is that storm cloud over there. Over there is Bogor. If it is clouded, we must prepare for rain and flooding.' Nico further explained, *'My house has become a signal, too. If I start picking up the stove, it means I'm prepared for flooding. If I am already taking a motorcycle to the steep alley, the inhabitants on the higher ground should be prepared to flood. My house is at the lowest level.'* *'Is there any news or warning?' I asked again. 'If it is the case of a huge flood or banjir gede, there is news reported live that can also be checked on a mobile phone.'* She informed me that the media had previously conducted interviews with her. *'The neighbours asked, 'Why are you willing to be interviewed?' I said, 'Well, it is okay; I only say what I can say. They (the reporter) are fine too. It was a live report. On the Internet, you can find the report. Well, I did that because nobody wants to be interviewed.'* From the side door of a rental house, Kumis and Bawah just finished the repair work for today. The house owner asked, *'Have you cleared the dirt?' Kumis responded, 'Yes. It was cleaned.'*

In that moment, I observed the convergence of disparate elements: the communal effort of repair, the intensifying wind, and Nico's pragmatic response to impending rain. As Nico set out to prepare rice, I felt compelled to investigate the ominous cloud she had identified. From the balcony, I surveyed the sky, sensing the imminent arrival of rain and potential flooding. With a sense of urgency, I captured the scene on video, documenting the dramatic display of lightning illuminating the darkening sky. In that moment of awe and apprehension, I found myself suspended between the forces of nature—a precarious balance between chaos and beauty, as if caught in the midst of a cosmic war or a mesmerizing dance.' (On thinking with place, Fieldnote 2021/06/15)

The excerpt from the fieldnote illustrates how the atmospheric conditions of flooding, driven by delicate material forces within the vitality of atmospheric life, extend beyond the spatial confines of Jakarta or the island of Java (Figure 154). It provides the emergence of 'river time' through sensory experiences within the low-lying terrain of riverine settlements. Nico, who has lived in the area since the 1970s, resides in one of the lowest ground-level settlements. During her adolescence, she learned to swim in the river from a friend after finishing her work serving food at a kiosk in the Kebon Pala market. Subsequently, she established a food stall at her home after marrying a local resident and moving into his family's house.



Figure 154 Slow motion of lightning in three seconds during a night storm, taken from balcony on 2nd floor of one rental house of the riverbank settlement, by author, fieldwork on 2021/06/15.

Here, careful observation of weather patterns and an intimate understanding of the river's contours imbue the landscape and the settlement with diverse layers of significance for residents. Nico's narrative illuminates the intricate relationship between human agency and environmental forces influencing the ability to stay on the riverbanks. Learning to swim and devising ingenious methods to sustain her food business during prolonged floods exemplify the resourcefulness and resilience ingrained in the community. She remains ever vigilant, attuned to the subtle signs of impending floods, ready to mobilise and safeguard her belongings at a moment's notice.

Her experience underscores the adaptive measures taken to navigate the challenges posed by flooding. She explained, 'Even when flooding takes time, I sell food at the second story. That was the time when the flood took a month and three days. I did not remember the years of flood events. However, I remember that I sold fried noodles to my neighbours. They asked, 'Are you working?' So yeah, I prepared food for them. I sold to the neighbours around my house.' When I asked her how she delivered the food, she replied, 'I use a bucket and stick like this' (Figure 155).

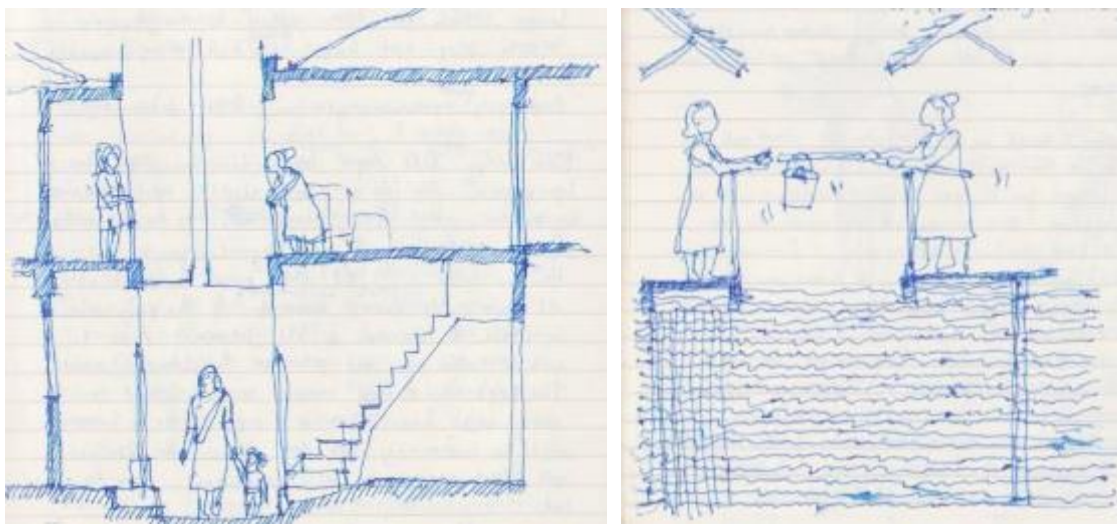


Figure 155 Nico maintains business to keep going in shifting dry and wet life, by author, fieldwork on 2021/06/15.

The time of flooding becomes a moment to test the threshold of habitability, occupying the curvature of river terrain and showcasing one's position in public performance. While Nico focuses on maintaining the house and business, her

husband, who works for a political party, records the flood using a video camera and shares the footage on his social media account. He explained, 'The video is sent through my phone to my relatives in charity organisations, legislative officials, and political parties. Then they will provide support for food supplies for the people in the area. I pooled it and then distributed it to those in need.'

Furthermore, adversity during flooding becomes an opportunity to exercise and calibrate values in collective settlement arrangements. The convergence of resilience, endurance, and community action amplifies the visibility of flooding events. Some residents seek refuge²² in designated evacuation centres such as the Kampung Melayu district office and mosque upper floors (Figure 156). Others, like Nico and her husband, adopt proactive measures to document and address the crisis while keeping the contact with external organisations.



Figure 156 Maps at the community hall depict the evacuation route (left) and river normalisation project (right). The latter is printed on laminated paper that has been spoiled by the mud of flood, by author, fieldwork on 2021/05/29.

²² I use the term 'refuge' that is a direct translation from 'ungsi' in Indonesian. The inhabitants, most of times, use this term when narrating the events of moving away from home, and use less the term 'evakuasi' or evacuate.

The spirituality of such 'river time' also emerged in the imagination of settling on the riverbanks, including references to 'a house of the rich' and the 'crocodile pact'. Ilyas, likely the oldest resident I encountered, remained steadfast in his residence, which he claimed to belong to the early generation of inhabitants. Situated adjacent to a mosque, it initially served as a temporary shelter for migrant workers arriving by bamboo raft from Pondok Terong in Bojong, West Java. Over time, the shelter evolved into a *musholla/prayer shelter*, providing overnight accommodations. Despite facing challenges such as recurrent flooding that hindered mobility, Ilyas's decision to remain in his home reflects a determination to preserve historical presence despite adversity.

If the topography of location is traced, the *musholla* is located in the middle of gentle slope of valley towards waterway during dry season. The spatiality of 'river' as the landscape in Jatinegara has shifted by various cut- and- fill from plane runway, female prison, and military base made by (neo)colonial government since 18th century onwards. Despite the subsequent delays in embankment plans that have further fueled uncertainty, the community's resilience is evident in their willingness to take risks and prioritise security. Ultimately, what resonates is the significance of tangible presence and narratives of resistance, underscoring the enduring spirit of the community in navigating the uncertainties of their environment.

Lala, Ilyas's daughter, resides in a house on the riverbank with her husband and daughter. Previously employed as a night shift cleaner at the Railway Company, Lala resigned due to work fatigue. Later, she provided laundry services to a nearby middle-class community, but her employer denied her request for renovation funds due to flood damage, leading her to cease operations. She currently manages a small kiosk located at her home's front window (Figure 157). Her older sister, who lives adjacent to Lala's residence, provides laundry services and sells daily groceries from a nearby market to the local community.

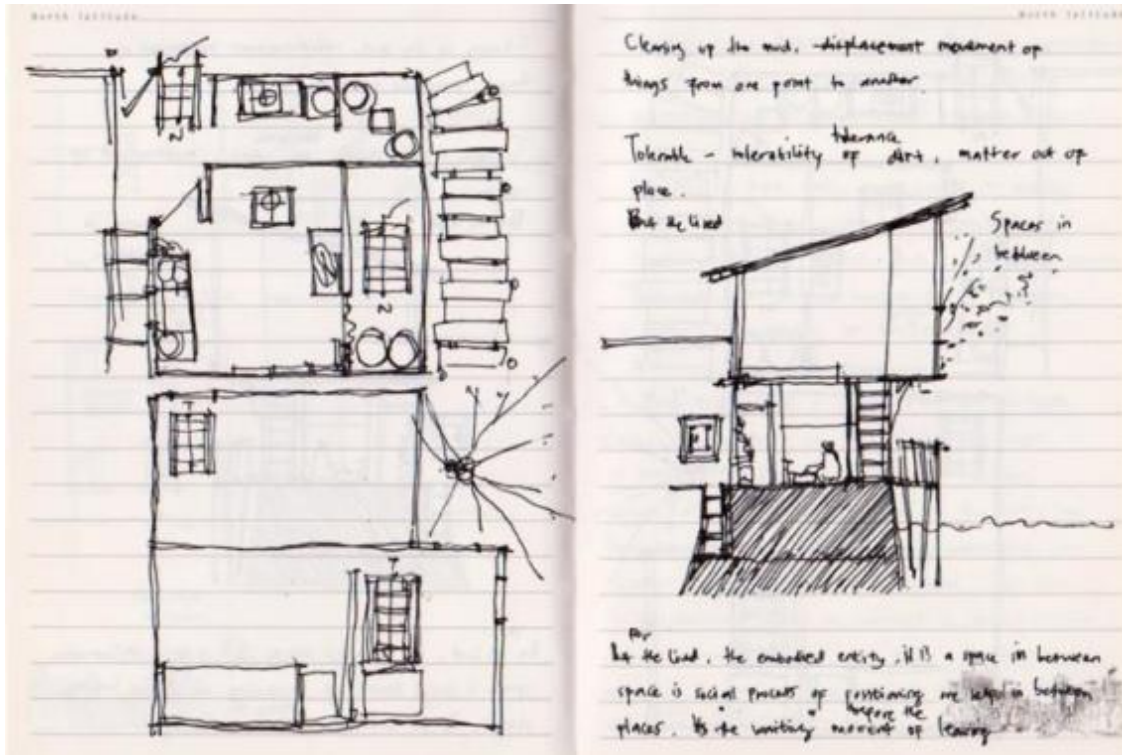


Figure 157 River floods made 'rich people' who constantly re-make their houses, by author, fieldwork on 2021/08/18.

Lala's husband, Safin, also worked as a tukang until his retirement due to declining physical health. Each time a flood damaged their home, he was responsible for its construction and reconstruction. Lala humorously refers to their residence as 'the house of the rich' given their recurrent construction efforts prompted by flooding incidents. She recalls that the neighbourhood once used the area where their home now stands as a garbage dump, and a generous senior leader from the community facilitated their decision to build.

The house's landscape incorporates mud from floods, forming the foundation of its 'ground floor', which adjoins a fig tree and a neighbouring wall. This ground level serves as the focal point for daily activities, primarily centred around water-related tasks such as water collection, cooking, and operating the 'window store' (Figure 158). Lala regularly collects water from a nearby pump and transfers it to two buckets inside a designated, partly open 'wet' room, located above an irrigation channel that marks the boundary between the settlement and a gated residential cluster. Positioned above the 'wet' room are her sister's sleeping quarters, featuring an open-layout design.



Figure 158 Water pump, holes of 'wet' room, kitchen corner in the house marked with red mat, and 'window' store, by author, fieldwork on 2021/08/16.

Safin's influence on the house is evident in the deliberate curvature of the ground, combining the aesthetics of a "river-made house" with the functionality of an urban dwelling. The bathroom's strategic positioning facilitates seamless movement between the rooms on the ground and above, accommodating daily routines. In flood-prone scenarios, strategic placement of appliances such as the refrigerator, storage cabinet, and electrical sockets on the upper floor reduces the need for heavy items to be moved upward.

This arrangement complements the positioning of wooden steps that efficiently distribute the load-bearing structure while employing lightweight materials like plywood for the floor and walls, maximising the functionality of the compact, semi-floating rooms both below and above ground level (Figure 159). Again, the lightness of the house made it possible for the inhabitants to stay put in the house. At the same time, it redefines the temporality of inhabitation into the spirituality of dwelling with the riverine landscape in the shifting wet and dry times.



Figure 159 The lightness of thin wood board is assembled to make a semi-'floating' room in the upper space mostly empty during daytime, by author, fieldwork on 2021/08/16.

Here, I do not romanticise the housebuilding process, as the structure's susceptibility to flooding emphasises the spiritual power of water in the hydraulic relationship of the riverine landscape. Instead, I emphasise that the close-knit social fabric of the surrounding settlement sustains the cohesion of the compact house, shared water pump, and exit door, emphasising the importance of resourceful improvisation and adaptability. For instance, the wall separating the neighbourhood from the adjacent residential cluster doubles as an emergency exit during floods, reflecting the adaptive nature of the dwelling (Figure 160). Safin's expertise as a house builder and his communication with the local leader of the neighbouring residential areas contribute to the ongoing maintenance of 'the house of the rich', underscoring the significance of an invisible code that governs and shapes interactions among residents across multiple temporal dimensions of settlement.

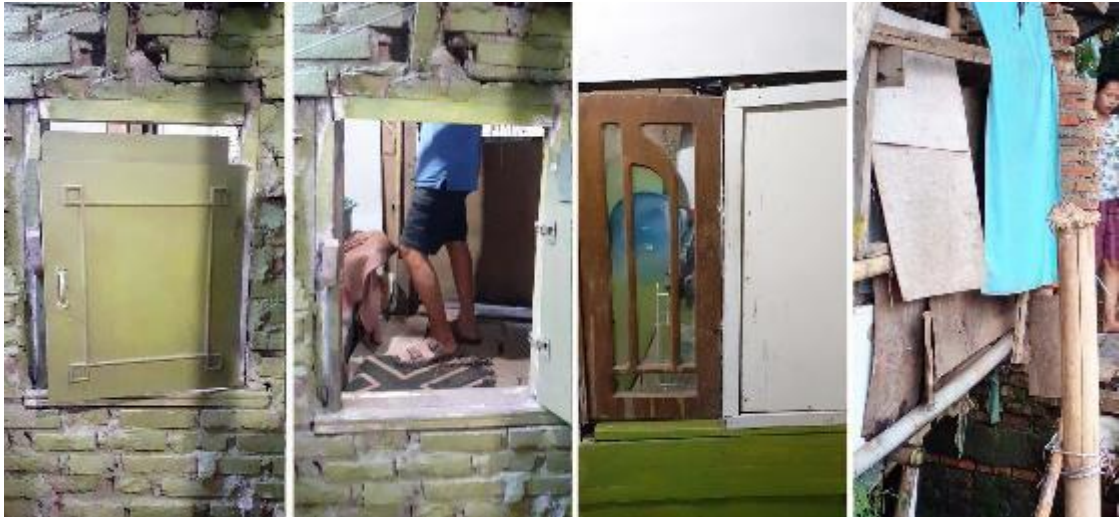


Figure 160 Assemblage of opening and closing wall made by joining pieces of boards, by author, fieldwork on 2021/05/08.

I end the discussion of river time with an anecdotal tale of the ‘cerita orang tua’ or the ‘tale of the people before’ to add a layer of cultural richness to the narrative of the riverine settlement. Lala's account of the crocodile pact, a covenant with the river's crocodiles, underscores the profound bond between the locals and their natural surroundings. Despite uncertainties about its origins, the tale serves as a reminder of the community's respect for the river and its inhabitants, past and present. This story resonates with similar narratives found in other neighbourhoods along the Kali Ciliwung, underscoring the shared cultural heritage and beliefs of the region. The crocodile tale's variations reveal different interpretations, ranging from the crocodile as a harbinger of floods to the belief in offering meat to appease the river spirits.

Regardless of the specific interpretation, the presence of these tales underscores the inhabitants' awareness of and reverence for the unseen forces within the river. Inhabitants who have lived in the area for generations remain cautious of these invisible forces, demonstrating deep-seated respect for the natural world and an acknowledgement of their interconnectedness with it. As a result, the crocodile pact story serves as a fitting conclusion to the discussion, highlighting the enduring traditions and beliefs that shape continuous reclaim in the riverine settlements along the Kali Ciliwung.

5.3.2. Reclaim

This subsection features the quote ‘the land belongs to the river’ from a nighttime interview with Risma, a key participant from the Bukit Duri neighbourhood, another riverine settlement along the Kali Ciliwung. During our discussion on the initial occupation of the riverbank, Risma delineated the river's terrain by referencing a steel rail post marking the boundary between the railway company's territory and the riverbank. She explained how her parents, who were originally from upstream areas of the Kali Ciliwung, initially settled on the other side of the riverine settlement. After getting married and working at a nearby market, she moved to a neighbourhood on the other side of the river. ‘Kali Ciliwung cannot be controlled. If it wants to flood, it floods,’ she asserted, emphasising her upbringing to reclaim and occupy the riverine landscape. During the interview, she briefly mentioned the anxiety of waiting for compensation from the Jakarta Provincial Government due to participation in a legal suit with an NGO and lawyers.

Such a claim challenges the hierarchical nature of governmental institutions, and the delay in displacement shapes the range of possible responses. For instance, Rachmat lamented the difficulties of navigating crowded streets during floods, preventing emergency services such as ambulances from reaching health clinics. While sub-district office staff prepared food supplies and evacuation centres, cleaners faced the arduous task of clearing up flood-related debris such as blocked toilets, spilled water, and leftover food. Amidst these challenges, Dedi from the public health district office highlighted the proactive efforts of neighbourhood leaders in flood anticipation. His team supported these leaders by regularly providing disinfectant to clean the ground floors of settlements.

Over time, the wet season in the low-lying plain nurtures the process of sedimentation, resulting in the expansion of growth of terrain in the riverine landscape. Residents coordinate the timing of sediment cleaning from the elevated areas down to the waterway, frequently relying on supportive technologies like water pumps and disinfectants (Figure 161). Jaka, a community leader in Tanah Rendah, aptly described this social-natural process of reclaiming landscape as ‘Dari kali kembali ke kali’/From the river back to the river.



Figure 161 Gathering of flood sediments and pumping river water to the river terrain, by author, fieldwork archive on 2018/02/11.

The phrase "From the river back to the river" encapsulates embodied understanding of the river's influence on living in the wet landscape. Fajar, a resident of Arus Dalam, recounted the struggles during flood events, stating, 'The false alarm added confusion to the timing to take refuge and to work (...) At one point, the mud accumulated into a towering pile. Then, it exploded! There was accumulated gas inside. Some people got injured'. He also recounted the increasing frequency of floods, 'Previously, only one or two flood incidents had entered the house. In recent years, it has become more frequent, even during the arid season. Our belongings are stolen, water is limited, the toilet is filthy, and the room is noisy'.

The phrase also conveys a spirituality within the settlement. Kandi, an advocate for housing rights, delved into the oral history of Kampung Pulo, recounting myths of crocodiles as river spirits. Similarly, Zainab, an elder resident of Tanah Rendah, reflects on the tradition of crocodile-shaped bread as part of Betawi wedding dowries (Figure 162). "I'm not certain of the origin of the tradition from the days of our ancestors. *It is in (our) blood and flesh.*²³ It's not obligatory for everyone, only for those who can afford it' (emphasis added).

²³ The statement is '*sudah mendarah daging*' which refers to embodied cultural and habitual experience.



Figure 162 Display of crocodile bread at Setu Babakan Museum of Betaw, by Irna Maslon, 2022/12/01.

Such embedded understanding of practicing ritual in affordance illustrates the social life of settlements that endure the temporality of riverine inhabitation. It revisits the ethical considerations of collective living in the riverine landscape. It also challenges the discourse surrounding slums and flood-prone areas regarding the historical conditioning of living with water in the city. On the one hand, the residents have a deeply ingrained understanding of and experience with navigating the changing landscape of the city. On the other hand, the interplay between flood-induced ruination and the stigma associated with slum dwelling influences how various actors envision life alongside the river.

The delay in embankment construction and the absence of on-site upgrading measures left settlements vulnerable to devastating fire incidents, highlighting the critical role of river surface water. One afternoon in August, I witnessed a fire outbreak in Tanah Rendah, prompting a swift community response. Men formed a chain, passing buckets of water from the river to douse the flames, while the fire brigade arrived and pumped water from the river to extinguish the blaze (Figure 163). The disruption by fire induced a gathering of inhabitants in the alleys of riverine settlements and made visible the vitality of water in the riverine landscape.



Figure 163 Emerging gathering to extinguish the source of fire in Tanah Rendah, by author, fieldwork archive on 2017/08/20.

Within such a social setting, the absence of inhabitants redefines the everyday process of reclamation. Walking through the contoured landscape of Kali Mati reveals this awareness, with the open expanse of air above the ruins of abandoned houses and landscapes, away from the bustling city (Figure 164). It emphasizes the emptiness of alleys as silent witnesses to unresolved stories. Even in the brightness of daytime, these ruins exude a haunting presence, reminding me of the ongoing renewal of urban life in the absence of human settlement.



Figure 164 Ruins and abandoned houses in Kali Mati that show accumulation of sediments, by author, fieldwork on 2021/04/01.

The spirits of the landscape shifted the once abandoned area into a vibrant urban occupation, marking the beginning of a new phase of settlement. Gradually, abandoned landscapes and houses began to see a resurgence of makeshift inhabitation. The active movements between the upper and ground floors of the landscape illustrate the emerging presence of these abandoned houses and ruins (Figure 165). This gradual yet persistent process of settling and unsettling along the waterfront transforms the ruination into a temporary renewal of urban settlements on the quiet riverine landscapes of the city.



Figure 165 Occupying ruined and abandoned houses in Arus Dalam, Kali Mati, in Cawang, by author, fieldwork in 2021.

In so far, the wet time of the settlement reveals the rhythm of refuge and reclaim in the meantime of ebb and flow of water flow in the riverine settlements. Grounded observation in the settlements makes visible the gradual yet carefully curated understanding of riverine landscapes in the making of house to the leaving the house and returning to the house. The surface water of the riverine landscape continues to give materiality of living for the inhabitants, such as sediments for the 'ground' of the house and importantly, the flowing water in the contoured terrain of the landscape. The 'home' of the house is the water catchment itself as it moves with the hydrological cycle of water and its ongoing geological processes of the terrain and temporary inhabitation of the riverine settlement. The next section further discusses the 'home' in the dry time of the settlement.

5.4. Dry Time of Settlement

5.4.1. Repair and Renewal

Existing in the realm of death is a complex experience, especially within the context of ethnographic research. From 2017 to 2021, I witnessed the deaths of several senior residents in Tanah Rendah, which has profoundly influenced the temporal dynamics of life in the riverine settlements. Additionally, many renters, primarily early families or young migrants, have relocated from the riverbanks to other areas, either within or outside the neighbourhood. This transience imbues the materiality of the settlements with a sense of impending emptiness, evoking fleeting memories and relationships during fieldwork, as depicted as follows:

'Haji Dudung was a respected elder in the neighbourhood, known for his active involvement in managing local mosques. As one of the few remaining second-generation seniors, he shared stories of the area's evolution, particularly noting the migration from Manggarai. His passing left a void in the community. Similarly, Pak Jemu, a construction worker originally from Pekalongan, Central Java, have also since passed away, leaving his wife and their children.'

The news of their deaths evoked a profound sense of loss within me. Despite our brief interaction during the interviews, their absence resonated deeply. Engaging in ethnographic research imbues such moments with a profound intensity, as if their presence continues to shape my memory. Their absence, though intangible, is undeniably palpable in the fabric of the present. Once again, their names become intertwined with shared experiences, forging connections that transcend time.' (Time of absence and change, field note 2021/05/07)

In the evolving landscape of riverine settlements, the dynamic interplay between dry and flooding conditions shapes settlement emergence and positioning, with the river's orientation and origin serving as pivotal markers. The kinship affiliations observed among residents living on opposite riverbanks highlight the subtle understanding and intimate relationships that define social life in these communities. At night, the sharing of stories and the deepening of connections create a communal existence, illuminating the intricate fabric of riverine societies.

Within these communities, behaviour and interactions are guided by internal norms. One such norm, observed during fieldwork in Tanah Rendah since 2017, dictates a prohibition on speaking ill of others: ‘Taking land on a shared pathway is not allowed. That person took the land of the pathway 50 centimetres. That is not blessed. This part should not be recorded in the interview.’ This unspoken rule reflects a deeper understanding of communal harmony and respect for collective spaces. As I navigated this historical process of settling in the riverine settlement, I became attuned to the nuances of communication, recognising the significance of both spoken and unspoken expressions. The anonymity of the river terrain, seemingly belonging to no one yet shaping the lives of many, underscores the resilience and adaptability of riverine settlements in the face of recurrent flooding and environmental challenges.

The river's historical conditioning reveals a multifaceted perspective on communal spaces. During the night, as residents seek rest and reprieve, the tangible remnants of daytime activities come into focus. For instance, Ida, a local artisan, highlights the significance of “sodara” as he prepares offerings for a prominent politician residing across the riverbank. The notion of "sodara," encompassing kinship and community ties, forms the bedrock of the commons along the riverbanks. This is exemplified by the presence of a makeshift workshop nestled within a small plot of land adorned with diverse materials, serving as a testament to the interconnectedness of residents.

Ida's narrative further illustrates the intricate web of interactions within the community as he recounts the renovation of a dilapidated rental house in 2017. ‘We were offered to buy the house from the previous owner. It was very dilapidated! We bought it for 20 million rupiah and then rebuilt it for approximately 70 million rupiah, borrowing money from my son’s office. I built it with Jaka, the long-haired house builder. Do you remember him?’ He added, ‘My son wanted to make a terrace towards the river so people can relax and hang out.’ This anecdote underscores the communal spirit and collective efforts that shape the ruins into an evolving landscape of the riverine commons (Figure 166).



Figure 166 Remnants of the riverine settlements in ruined and abandoned infrastructure on the banks during dry weather of daytime, by author, fieldwork in Jakarta, on 2021/07/17.

Amidst the influx of migrants, rental houses emerge as vital sources of income for both first- and second-generation inhabitants, serving as repositories of hard-earned labour and economic activities centred around nearby markets and transportation hubs. Despite the comparable costs of government-provided housing²⁴, rental properties on the riverbanks demand a spectrum of maintenance efforts, ranging from basic repairs to structural reinforcements, reflecting the transient nature of occupancy and the diverse needs of residents. Unlike the regulated environment of government housing, the informal rental sector offers a sense of anonymity and flexibility, fostering short-term engagements and diverse facilities tailored to heterogeneous communities. On the other hand, government housing entails stringent security measures and infrastructure, necessitating additional care and maintenance, including elevators, fire alarms, and parking facilities, among other things.

This ambiguity was particularly palpable in another section of the settlement, previously inhabited by migrants from Sumedang, West Java (Figure 167). Many of these houses now stand abandoned, either filled with mud and waste or left locked and empty, serving as temporary accommodations for migrant workers employed in nearby markets and neighbourhoods. The presence of temporary workers who rent abandoned houses is imbued with the perpetual

²⁴ Approximately Rp. 700.000 (38 GBP) per month

potential for cultivating urban life amidst impermanence (see Bentley et al., 2016). In the next section, I discuss further the temporality of inhabitation in the 'river time' that redefines the spirituality of water and hydraulic relations in the submerged landscape of riverine settlements.



Figure 167 Map of abandoned houses that are rented out temporarily, by author, fieldwork in Jakarta, on 2021/08/03.

At first glance, the abandoned houses appear as fragile remnants amidst the ruins, often inundated by recurring floods that carry sediment and mud. Yet, upon closer inspection, the deserted grounds reveal a textured landscape saturated with moisture from the surrounding environment. Over time, inhabitants have elevated the ground surface, constructing steps to access the interiors of the wooden houses on higher levels (see Figure 168). The piles of dry soil in the interior of abandoned houses' ground floors, where some grass has grown, also reveal the sediments of flooding. It became the foundation for the upper-floor dwelling, which was made of wood plank materials.



Figure 168 Mud sediments from the floods accumulated in the landscaping of the 'ground' of the abandoned houses, by author, fieldwork in Jakarta, on 2021/07/17.

At night, the houses take on an air of weightlessness, considering Kamalia's rental dwelling was vacated by its Sumedang-based owner. Kamalia herself works as a housekeeper for a nearby middle-class family, and after her shifts, she retreats to this space for rest. Her husband passed away a year ago, leaving her with two children back in Sumedang, West Java. Her niece, a 4-year-old who lives a few houses down, accompanied her when I visited her house around 7 p.m. Together, they invited me up the steps to Kamalia's room—a modest 2x4-metre space with a single window overlooking an alley, its corrugated zinc roof slightly askew (see Figure 169). Since her arrival in 1990, Kamalia has made do with the space, improvising the building structures of the house.



Figure 169 An improvised rental house in the daytime and nighttime, by author, fieldwork on 2021/08/09.

Another example is a rental unit on the upper floor, occupied by three men hailing from Klaten, Banten, and Purbalingga, Central Java, who first crossed paths at Meester Market. Among them, one stood as the elder figure, while the others joined him later on. They've formed a camaraderie based on shared encounters with floods and their transient occupation of the rental dwelling in the abandoned houses. One of them remarked, 'Jakarta is not a home, only a potential source of work,' as we conversed in the shared TV room (Figure 170). At the end of the interview, one of them asked about the possible support and assistance that the research could provide for them in times of flooding.



Figure 170 Watching TV in a shared 'living room' of a rental house, by author, fieldwork on 2021/08/09.

The nighttime habitation of abandoned houses along the riverbank prompts a re-evaluation of home and the seasonal work involved in cultivating urban life. Inside one of the dwellings, a resident had fashioned a pigeon cage using basic crafting tools (Figure 171). These tools aid in evacuation during floods by allowing occupants to access the roof. They showed me around three adjoining rental rooms, describing one as 'just enough for a man to sleep in at night'. This comment served as a reminder of their adaptability to diverse circumstances, refraining from romanticising their situation as mere resilience.



Figure 171 Tools for everyday crafting, such as making pigeon cages and opening roofs for evacuation during flooding, by author, fieldwork on 2021/08/09.

Zooming out to the broader urban landscape, the dry season reveals a 'dry river time' scenario characterized by reduced surface water levels, facilitating uninterrupted building repairs and construction activities. This ability to gather resources and materials amidst less rainfall disruption underscores the resilience of communities and their capacity to stay put with urban life even during adverse conditions. This period in the river land signifies a renewal of opportunities and relationships among inhabitants, fostering a sense of continuity and connection within the community. In addition, the dry time marks another beginning of ground terrain in expecting floods and adapting to the ever-changing wet and dry cycles. It brings together the temporality of distinctions between living and dying in the water flow of a low-lying plain of a river that continuously renews the landscape.

5.4.2. Play and Leisure

'While I was writing this piece in a rental house, a nearby loudspeaker broadcasted a 'pengajian,' a common weekly activity organized by Muslim women groups in the area, which lasted for approximately 1 hour. Another prayer in Arabic filled the air in the distance, then transitioned to Indonesian as they offered prayers for the deceased. This signalled to the community the details surrounding the deceased and the upcoming prayer rituals, often including the recitation of Al-Fatihah. The sermon then transitioned into reflections on life, death, and the transient nature of existence in this world. The sermon underscored the importance of 'ibadah,' or worship, during one's lifetime and the significance of 'ngaji,' the communal recitation and study of the Quran under the guidance of a senior member. It encouraged family participation in 'ngaji', particularly for children, and highlighted the attainment of Allah's approval ('ridha Allah') as the path to heaven. With this, my focus shifted back to my writing.' (Time: Everyday Economy in TR, Fieldnote 2021/06/12)

An afternoon speaker at a small mosque in Tanah Rendah narrated a narrative about the temporality of death. This occurred during the pandemic, when death was a prevalent theme in health protocols, obituaries, and burials. However, the message from the speaker framed death as an intrinsic aspect of life and discussed the types of lives worth living. This perspective suggests that religious practices intertwine life and death, guiding the temporal experience of material

existence. By listening to such an embodied narrative of dying, I consider a critical view of time in the materiality of the settlements with the spirituality of being and living. The neighbourhood recontextualizes dying as a component of kinship formation, social worship, and the temporalization of existence. In this section, I reveal the ways the river escalates the narrative into gathering and play.

Firstly, it's crucial to recognize that riverine settlements spend a significant amount of their worldly time earning a living during the day. It supports heterogeneous practices in terms of material appearance. For example, in Tanah Rendah, the daytime marks a careful process of collectively repairing bamboo rafts, which requires skilled work through direct practices of making. Craftsmen from Bojong, an upstream area of the Kali Ciliwung, who transported bamboo downstream to various gathering points towards Manggarai, taught them the technique and assembled the rafts (see Figure 172). The mentorship in hands-on making practice also takes place over river water, necessitating familiarity with the terrain and water flow patterns in the riverine landscape.



Figure 172 The making of bamboo raft over the river buoyancy, by Indrawan Prabaharyaka, 2017.

The 'getek' served as a platform for washing various items in the river. In the 1980s, migrants from Pekalongan, Central Java, established a proliferation of tofu and soybean cake workshops on the riverbank, supplementing this washing practice. One such migrant, who shared a rental house with me, recalled a 'river bathing' in the dawn time: 'There was one day I used the raft at dawn, then someone came and jumped directly into the river, fully immersing themselves before leaving.'

Additionally, oral histories from senior residents shed light on the use of natural materials such as woven bamboo walls, palm fibre roofing, and earth floors in the early days of the settlement.

Daytime reveals the spirituality of temporary inhabitation, serving as a starting point and sustaining various livelihoods for the incoming and departing inhabitants. It also revisits the previous study on slum dwellings that overlooked the flows of population, labour, and water in the riverine settlement. Although flooding and pollution increased, leading to the gradual abandonment of riverbanks, the riverine settlement continuously attracts various expectations on possible water practices. Government agencies, development organisations, religious charity projects, and political parties introduced shared water facilities, drainage systems, and pathways connecting to the main street.

Still, grounded observation of the settlements reflects the common values of social life in the settlements during the daytime. It alludes to the concepts of life and death among the inhabitants who occupy the settlements' landscapes. For instance, annually, the settlement celebrates Eid Betawi, which signals a time to gather collectively and share the same meals in the alleyways surrounding the central mosque (Figure 171). The openness of the gathering in the fluid spaces between tiered houses created an intimate moment of becoming part of a group that welcomes the temporary nature of inhabitation.



Figure 173 Gathering during Eid Betawi at alleyway of Tanah Rendah, by M. Yusni Aziz, 2017.

Such attention to spiritual values shaped ethical values amongst inhabitants in the wet terrain of riverbanks. Bawah, who intermittently assisted Kumis during the repair work, exemplifies a common value of time in the materiality of houses. One day, Bawah fell ill during the repair process and had to resign before the plastered roof had fully dried. When I visited Bawah's house, I found him lying on a mat beneath the stairs to his compact dwelling. He was 59 years old, born and raised in RW 8 with his brother, then moved to RW 7 and stayed with his wife and her family from Banten. After a fire ruined their houses on the edge of wet terrain, they rebuilt them. Reflecting on the makeshift nature of their rebuilt homes, Bawah remarked, 'We use whatever materials are available.' Again, the nearness to water flow in the wet terrain of riverine settlements influences a specific understanding of making in the process of dwelling with the river.

Another element of spirituality in the riverine settlement is the value of religious affiliation and establishment amongst the inhabitants. In a subtle way, the value of the spiritual world shapes the attitude that encompasses the temporality of life. For instance, I encountered a 'tukang', an informal builder, who was responsible for fixing the leaking asbestos roof of a cupcake factory, a home-based food industry in the neighborhood. The asbestos roof, dating back to the 1990s, had weathered over time and was in need of repair (see Figure 174). The homeowner, Bei, a second-generation business owner of Betawi-Chinese descent, enlisted the help of Kumis, a 'tukang' from RW 8, after the regular 'tukang' declined the job due to the pandemic. Kumis, 66 years old and originally from Kuningan, West Java, had faced political exclusion during the New Order period²⁵. He eventually converted to work from teaching Islam to being a construction assistant in Jakarta, following his relatives. Kumis's wife, who hailed from a Betawi family, supplemented the household income by selling food at the local market.

²⁵ 'Golkar' is an abbreviation of 'Golongan Karya', once a ruling political party that was highly associated with authoritarian regime of Soeharto between 1965 to 1998. See Harun (2019) for displacement in this period.



Figure 174 Kumis took a rest on a gable end after a day of repairing a leaking rooftop of one of the houses in settlements near the Kali Ciliwung, by author, 2021/07/02.

Bei mentioned that Kumis assisted his wife's efforts by selling homemade cakes in the market. 'She is diligent,' Bei commented on her entrepreneurial spirit, quickly calculating the potential daily earnings from cooking and selling snacks at the market, 'Survival is possible here, as long as you are diligent. Kumis started the repair work on Monday because the earnings on Mondays at the market were lower than on other days. You can sell anything nearby: Slamet Riyadi Market, Mester Market, or Kebon Pala Market. Some people even sell worms in exchange for fish food collected from rivers. You can sell anything to earn money, provided you are diligent.' Bei also shared the ethical values of social life in entrepreneurial efforts, such as selling ice blocks at a very affordable price. 'This is a way to stay connected with the neighbours in our daily routine of making ends meet,' she explained. 'The Buddhist perspective prohibits you from rejecting anyone who approaches you,' she continued.

Riverine settlements elucidate the temporal resonance between urban landscapes and the lifecycle of inhabitation. Through an examination of the mutual dependence between landscape and housebuilding practices, I underscore the essential role of time in shaping the ecological framework of a house within the broader norms of inhabiting riverine settlements. Simultaneously, it refers to the essential role of time in shaping the interdependence of housing processes within the broader context of dwellings.

The spiritual register in the continuity of time after dying also emerged in discussion between Kumis and his assistant, Namam. Namam, originally from Cirebon, West Java, joined the work in between his activities in textile-based service in Meester Market. One day after work, they talked about the recent news that their neighbour had passed away (Figure 175). They discussed the fact that the deceased had established a religious school that became a spiritual deed that will continue to be counted even after the time of living ends.

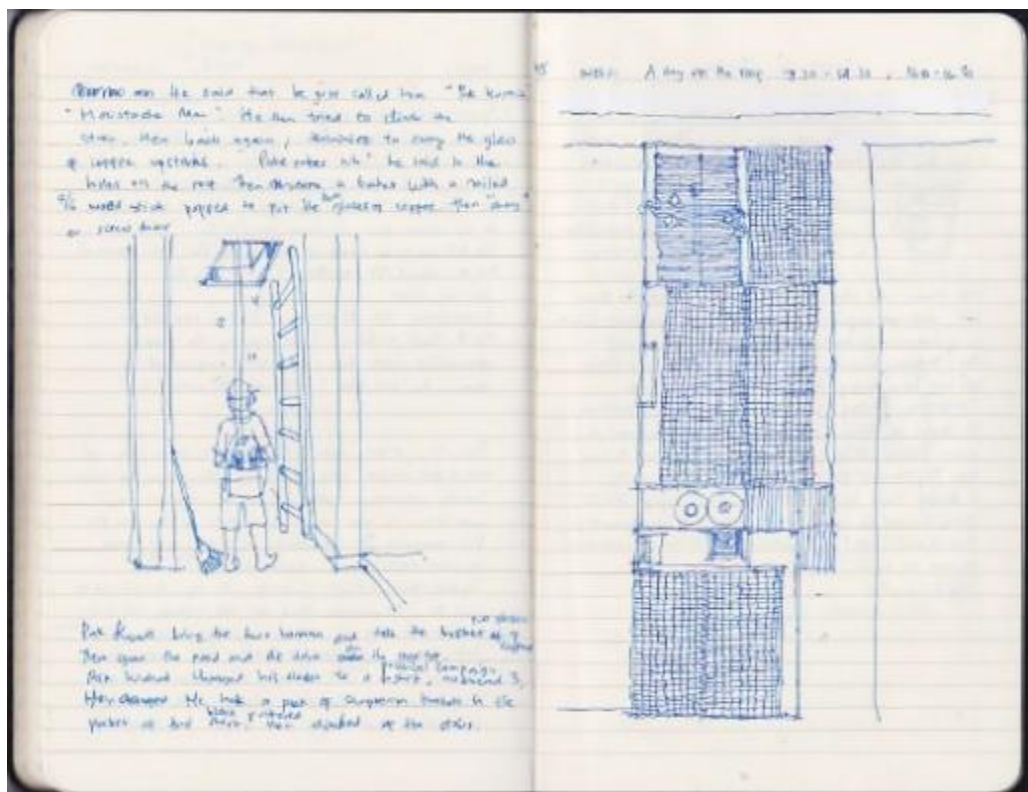


Figure 175 Kumis and Bawah repaired the rooftop in daytime of dry weather, by author, Fieldwork archive, 2021

As I approached the wet terrain along the riverbanks, the sense of temporality intensified, as did the spirit of reciprocal living. In a conversation with Bawah, he recounted an incident where he fell from the fourth floor while constructing a nearby house, resulting in a permanent foot injury. Tongo, another tukang, joined our discussion. When discussing the occupational hazards faced by tukang, Tongo emphasised that 'Every work has its own risk. Even working behind the desk comes with its own risks.'

The ethical consideration also shaped the time of play. Bawah introduced me to a group of youths who regularly engage in pigeon racing on the edge of the wet terrain. This activity, popular among teenagers and those in their mid-twenties, involves training pigeons and exchanging them for those seeking high-quality birds (Figure 176). To accommodate the rising water, the pigeons are housed on two elevated bamboo platforms, one of which is supported by a fig tree trunk known as *Loa* (*Ficus racemosa*), commonly found along the riverbanks.

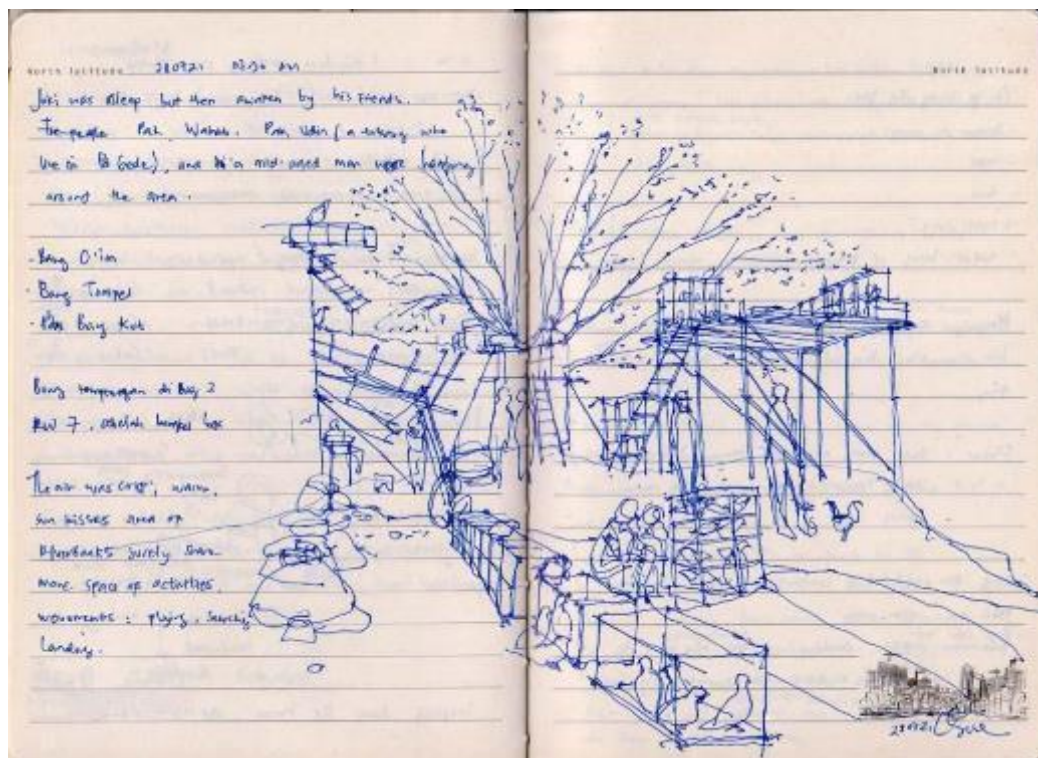


Figure 176 Elevated platform with existing fig tree as part of 'playground' in the riverbank, by author, 2021/07/28.

The expansive landscape provides an ideal setting for leisure pursuits, fostering a sense of community among the youth groups. They dedicate much of their time to training the pigeons, typically during early mornings or late afternoons, except for inclement weather, which disrupts the birds' orientation to fly back home. Amidst the games, the participants share their daily challenges and engage in light-hearted banter, strengthening their bonds. On one occasion, a younger member of the group sought advice on employment opportunities after discontinuing his studies.

5.5. Conclusion

In this chapter, I delve into the continuity of histories in riverine settlements along the landscape of Kali Ciliwung in Jakarta. Through a temporal approach, I explore the interplay of heterogeneous practices in settlements where the ebb and flow of water intersect with infrastructural provisions in flood-mitigation policies. Through an examination of the riverine landscape of the Kali Ciliwung, I uncover two entangled landscape formations that define urban settlements in Jakarta. Firstly, riverine settlement operates within the drainage mechanisms established in coastal settlements by multi-level planning institutions. Secondly, riverine settlement operates within the cyclical processes of flooding and sedimentation that are inherent in the riverine landscape. These formations come together in the endurance of settlement, creating hydraulic relationships that allow people to live in wet and dry landscapes in a rhythmic way across different time dimensions.

The chapter also depicts a detailed analysis of the shifting wet and dry times of riverine settlement. This temporality intersects with invisible boundaries, norms, and spiritual values that govern speech, actions, and tolerance within the community, facilitating the continuity of livelihood in settlements. Amidst the spirit of the day and the night, flooding emerges in what I term 'river time' in the wet time, enriching hydraulic relations that foster experiences of refuge and reclaim. Then, dry time reveals experiences of repair and renewal with play and leisure. This interaction of temporal wet and dry dimensions shows a range of occupations from the past to the present. These occupations shape the historical identity of the place as it goes through changes, with both tangible and intangible factors present, which makes the riverine landscape more temporal. In Chapter 7, I will discuss further the encounter of spiritual values and kinship affiliations in the process of displacement. Before that, the next chapter will discuss governmental narratives and practices of settlement that influence the future of riverine settlements.

Chapter 6. 'This is temporary repair': Government of Flood-Mitigation Policy

The figure displays three pages of handwritten notes and forms from the Water Resource Agency in Jakarta Provincial Government, detailing flood response segmentation.

The top-left page is a letterhead from the "DINAS SUMBER DAYA AIR" (Water Resource Agency) with a handwritten note:

Dear MR,
 - Harap sbt. sampai ke
 Sungai Ciliung akibat
 banjirannya BAWA Pagar
 Per (BPA) baru untuk
 perbaikan lahan
 - Di samping itu

The top-right page is a "LEMBAR DISPOSISI/ DISTRIBUSI" (Disposition/Distribution Sheet) with handwritten details:

No. Surat: 222/1010012
 Tgl. Surat: 21/01/2011
 Perihal: PERANGKAP BAWA Pagar Per (BPA) baru untuk perbaikan lahan
 Aspek: The University of Jember

The bottom page is another "LEMBAR DISPOSISI/ DISTRIBUSI" with handwritten details:

No. Surat: 222/1010012
 Tgl. Surat: 21/01/2011
 Perihal: PERANGKAP BAWA Pagar Per (BPA) baru untuk perbaikan lahan
 Aspek: The University of Jember

The bottom page also includes a table for tracking the distribution of documents:

Revisi / Keterangan	Revisi / Keterangan
1. Bant 4/8	1. Vignawan
	2.
	3.
	4.
	5.
	6.

At the bottom, there is a section for "Berdah diumumkan barang sebagai dibagikan" (Distributed as announced) with a date of 2011/01/21 and a signature.

Figure 177 'Notes/Disposition Page' traces handwriting regarding the segmentation of river and flood response in Kali Ciliung based on institutional work of Water Resource Agency in Jakarta Provincial Government.

6.1. Introduction

This chapter scrutinises government initiatives aimed at managing water flow in the riverine landscapes of Kali Ciliwung as part of flood-mitigation policy in Jakarta. It builds upon discussions from previous chapters 3 and 5 regarding agricultural and industrial settlements along the Kali Ciliwung and Jakarta Bay coastlines. Of particular importance is the systematic process of delayed implementations and the limited scope of governmental institutions in the Kali Ciliwung Embankment Project (Figure 177). This analysis captures multiple registers of time in policy, as evidenced by the calibration of tax and property value in urban development, infrastructural provision, and housing segmentation. Such systematic capture of temporal value contrasts the dissonance of time in temporary on-site responses of flood-control infrastructure: 'This is temporary repair,' as mentioned by field officers during interviews and observations of prompt responses to eroding embankments during floods.

The chapter is organised into three parts. The first part explores plans for spreading and concentrating infrastructure, which redefines the habitability of wet terrain in settlements within the narrative of security. Floods are spatially framed by government narratives, while temporary embankments, road transportation, and housing segmentation solidify the material value of irrigable urban landscapes. This valuation influences the ongoing shift towards stabilising water bodies and capacities. The second part delves into irrigation infrastructure design, focusing on the speculative formation of water bodies to manage water flow and the economics of infrastructural investment. It also exposes the infrastructural politics of water flow management, which devalue the wetness of riverine settlements through arrangements for material compensation in money and relocation mechanisms. The final part discusses the plan and design operations, including steering and repairing flood-control infrastructure. It illustrates the liveliness of play amidst the hierarchy and messiness of operations on the field site. In conclusion, I propose a reconsideration of the vitality of wetness within the governmentality of flood-mitigation policy in the city.

6.2. Plans of Water Infrastructure

6.2.1. Spreading and Concentrating Infrastructure

The discussion begins with an examination of governmental planning processes, emphasising the iterative nature of updating plans as a tangible expression of time within government labor. Specifically, the term "plans" refers to the recurring process of revising previous plans that delineate water bodies within the urbanising landscape's cultivating wetlands. This choice of terminology serves to connect the current discussion with the previous chapters' exploration of town planning within the context of surplus water and surplus population narratives. It aims to shed light on historical projects aimed at governing and securing riverine landscapes, emphasising the temporal and material dimensions of governmental labour within urbanising settlements.

Deciphering the Kali Ciliwung Embankment Project, records of governmental institutions involved in town planning and irrigation development illustrate overlapping planning politics in Jakarta and Indonesia. As discussed in previous chapters, the settlement of water infrastructure within the capital city forms a crucial aspect of the historiography of settlements across historical periods of state formation. The incorporation of the river into the narrative of town planning allowed for the assessment of spatial and ecological changes within urbanising landscapes during the mid-20th century. However, despite various efforts to convert wetlands for urban activities, the risk of water damage through flooding persists. The presence of water bodies continues to pose challenges, necessitating governmental intervention for security through irrigation projects incorporated into national planning initiatives. This ambiguity surrounding "urban" settlements is reflected in the segmented infrastructure of town planning, which must accommodate the expanding settlements that both spread out and concentrate the topography of the urban landscape.

In July 2020, the Ministry of Public Works and Housing, the Ministry of Environment, the Ministry of Agrarian and Spatial Planning, the National Board of Disaster Mitigation, and the city governments of Jakarta, Bogor, Depok, Tangerang,

Bekasi, Puncak, and Cianjur reached a consensus on 'seven quick wins' to address floods and erosion. Asura, representing the River, Coast, and Water Damage Restoration at the National Planning Board, outlined the plan, which includes reducing risk levels, establishing regulations and institutions within a special task force, enhancing project management, minimising hazards through zero runoff strategies, supporting infrastructure development, improving spatial planning, and strengthening crisis management capabilities. He emphasises that the plan is considered a 'living document' and stresses the importance of bottom-up responses from local to national government levels. This response in July 2020 underscores the interconnected nature of planning practices, mitigation strategies, anticipatory politics, and administrative routines.

The quick wins proposed by the National Planning Board share similar characteristics with the structural and non-structural approaches advocated by the Jakarta Regional Planning Board (JRPB). The structural approach focuses on managing water bodies within settlements, while the non-structural approach emphasises spatial planning, Early Warning Systems (EWS)²⁶, naturalisation²⁷ efforts, and fostering a 'water-sensitive society' that prioritises water management within the city. However, Sidi, representing Irrigation and Water Resources in the JRPB, highlights the unique position of Jakarta as the capital city, stating, "The challenge is that planning documents are initially formulated in a technocratic manner and then adjusted to align with the political vision of the ruling governor." This statement emphasizes the politics involved in multi-level planning²⁸ and the potential for initiatives to transcend Jakarta's administrative boundaries.

²⁶ In a sharing session of BMKG (Badan Meteorologi dan Geofisika/National Meteorology and Geophysics Board) on 2022/10/21, there was a complaint on the 'cultural' awareness in responding to the early warning system, "Inhabitants of Jakarta respond to early warning created by social media account of American Embassy than the official one by the BMKG."

²⁷ 'Naturalisation' is an emerging term adopted by the government to make room for water in the city. Nevertheless, the term has been criticised as it requires more water space and induces more displacements.

²⁸ Before the decentralisation policy in 2002, the national government decided the election of governors and mayors. The shift can be traced to the five-year Jakarta planning document adjustment from 2007-2012 onwards when the governor was elected through public election. There is a detailed discussion on the priority agenda of the elected governor.

The concept of 'winning' in managing water bodies within the riverine landscape encompasses not only technological solutions, but also the diverse array of strategies, regulations, and objectives governing heterogeneous planning domains. According to insights from the Ciliwung-Cisadane Regional River Board (CCRRB), the construction of embankments along the Kali Ciliwung serves as a response to the potential destructive force of water in the riverine landscape in Kali Ciliwung and Cisadane, which includes surrounding agricultural areas (refer to Figure 178). Thus, through mapping flood event distributions, authorities can capture the temporary spreading and concentration of flooding within urban settlements.

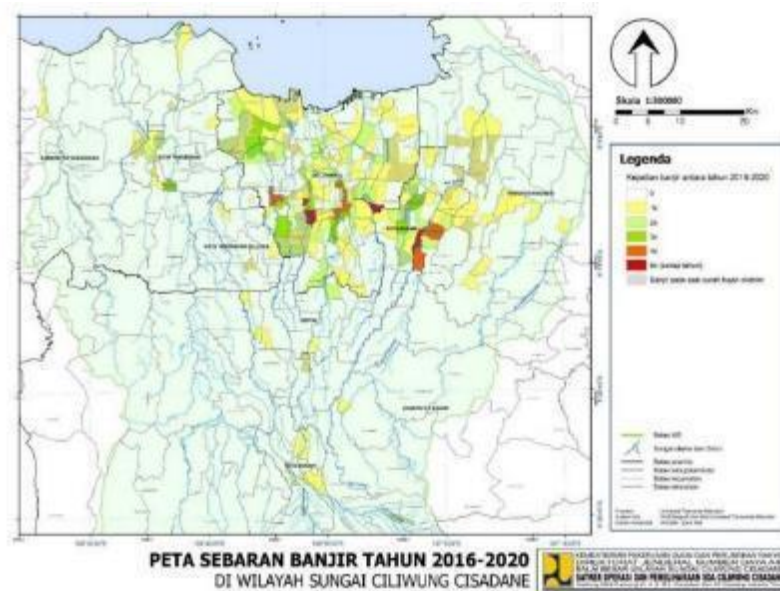


Figure 178 Spreading and concentrating floods zones based on districts of Ciliwung-Cisadane year 2016-2010, by CCRRB, 2021.

The patterns of flood-prone areas not only reflect the evolving river landscapes and road-based infrastructure throughout Jakarta's urban history, but they also intersect with administrative governance and regional infrastructure development, particularly given Jakarta's role as Indonesia's capital city. An examination of mid-term planning documents²⁹ from Jakarta City Development Planning, spanning 2002 to 2022, reveals a significant transition from a focus on

²⁹ The five-year development planning document is named a middle-term development plan (*Rencana Pembangunan Jangka Menengah Daerah (RPJMD)*) that fits into the long-term development plan in twenty years (*Rencana Pembangunan Jangka Panjang Daerah (RPJPD)*).

population control and economic recovery post-the 1998 economic crisis to alignment with a global development agenda. Previously, Jakarta's spatial planning followed national policies, but from 2002 to 2007, the national agenda incorporated the city's plans, highlighting a strong economy based on the service sector and road-based transportation mobility. Subsequently, the narrative shifted towards prioritising optimised spatial planning and stability to attract global investment, a trend that persists today.

In the context of town development and road-based infrastructure, rivers and settlements grapple with recurring urban challenges such as floods, traffic congestion, pollution, and declining infrastructure. However, we often address these issues separately, isolating them from each other. For instance, disparities in roadways and population growth typically contribute to traffic congestion. Scientific studies examine low-lying landscapes, sea-level rise, and land subsidence to discuss floods. Discussions around pollution and declining infrastructure typically revolve around the unequal distribution of clean water and wastewater facilities, including waste treatment plants and public housing provisions.

The national identity of Jakarta further emphasises the need to foster livable urban settlements to maintain stability and attract global investment. In terms of income, planning documents have consistently highlighted the commercial and service sectors as primary revenue sources since 2002, with the construction sector also contributing significantly. Sectors deemed less profitable, such as government and domestic services, are identified as areas needing improvement. While attention to building regulations emerged later in the 2013–2017 plan, with the introduction of the Expert Team for Building Assessment and increased inspection of development projects, the effectiveness of these regulations in addressing past challenges remains uncertain. Instead, planning narratives often focus on streamlining the process for issuing building permits to create a conducive environment for economic investment. Consequently, planning narratives and practices often overlook discussions about the constitution of the 'public' within the geographical landscape of rivers.

In the current landscape, flood management primarily falls under the purview of urban infrastructure planning institutions and disaster mitigation response bodies. While both share a common goal of ensuring urban habitation security, their approaches and endpoints differ significantly. As part of flood-mitigation policies, infrastructure planning focuses on addressing the destructive potential of water by implementing projects such as river embankments. However, challenges such as delays in land acquisition and limited capacity to secure settlements often undermine the effectiveness of this technocratic approach over time.

In the next section, I discuss in detail security mechanism in Kali Ciliwung Embankment Project. Importantly, it attends to security mechanisms aimed at managing risks during flooding events in disaster mitigation responses to address disruptions of activities in urban settlements. I identify the continuity in historical narrative of swamps that naturalises the recurring flooding and economic calculation of wetland that justifies the embankment and displacement in riverine settlement in flood-mitigation policy.

6.2.2. Securing River Irrigation

Recently, the discourse surrounding town planning and development projects has incorporated a background narrative about the swamps that once characterised the landscape of Jakarta. Sidi recognised the historical significance of 'rawa'³⁰ as a geographic feature, as evidenced by the toponyms of districts and neighbourhoods that were once wetlands and plantation areas. This historical perspective has led to a shift in the environmental narrative towards the coastal areas (Figures 179 and 180). Prior to 2017, the narrative often framed the living conditions of waterfront settlements, including riverine communities, as

³⁰ *Rawa* means wetland in a freshwater ecology of a river that creates delta formation. It is commonly found in coastal areas of North Java. For a discussion on the geomorphology of North Jakarta, which was considered uninhabitable, please see Chapter 4.

slum/'kumuh'³¹ reflecting the challenges posed by the limited available land. Issues such as open defecation practices and untreated domestic waste accumulating in water bodies reinforced the narrative of poverty and migration.

The narrative shifted towards one focused on disaster risk response, particularly evident in efforts to dredge river sediments³² and develop infrastructure, alongside the relocation of slums to subsidised social housing. These narrative shifts can be interpreted as a means to 'naturalise' flooding within the context of limited capacity in fragmented infrastructural provisioning as well as to promote public housing projects. Despite ongoing flood control efforts, the incompleteness of flood control plans persists as governmental and developmental agencies continually reassess these plans within the framework of economic stability and public security.

Disaster risk reports, which measure material loss and damage resulting from natural disasters and frame them within the context of state-level security³³, carefully curate this narrative. Public media outlets further propagate this narrative through patterns of reportage, often featuring interviews with disaster risk response officers as well as local government officials such as the governor, mayor, and district leaders. Additionally, interviews with representatives from the Ministry of Housing and Public Works provide insights into the current status of flood control efforts, including instances of breakdowns of urban infrastructure.

³¹ In Indonesian National Dictionary, '*kumuh*' is translated as an adjective (dirty, polluted), verb (pollute) and noun (pollution). Various developmental reports associate the term with 'slum', including the slum-upgrading project.

³² While risk measurement creates a narrative of vulnerability, flood control development projects supported 'social safeguards' in the Land Acquisition and Resettlement Plan (LARAP). Sediments from river dredging work in the river normalisation project are used for land reclamation in North Jakarta.

³³ The risk is approached through the formulation of hazard, vulnerability, and capacity that aims to create an overall indexing of disaster at the national level to cope with international agreement on disaster mitigation framework (BNPB, 2016).

dynamic in water management, with certain waterways deemed undesirable, as indicated by the statement "the upper stream areas got a higher proportion."³⁵

Within such a partial response, time management emerges as a primary concern for government and development officers, aimed at ensuring effective budget management while anticipating potential public resistance during land acquisition processes. Tantri, representing an international development agency, expresses frustration over the costs incurred by delays in river development projects and the challenges associated with defining the eligibility criteria for individuals entitled to development benefits. She also highlights the complexities of river development, particularly the phenomenon of inhabitants reoccupying riverbanks following relocation efforts. Asura further underscores the constraints of infrastructural development, particularly in the context of projects financed through loans. He advocates for a risk-based approach to flood management, emphasising its potential for effectiveness compared to physical interventions.

In addition to the uncertainty surrounding the flood-control masterplan, there is a noticeable absence of narratives addressing water quality in surface water, particularly rivers, within town planning discussions. The national government initiated the Clean River program in the early 2000s as one of the last concerted efforts to address water quality issues in major cities like Jakarta and Surabaya. The Ciliwung-Cisadane Regional River Board (CCRRB) also conducts regular water quality assessments as part of its broader study of water resources, with a specific focus on areas like the Tarum Canal, which serves as a source of clean water supply. At the city level, the City Environment Agency consistently reports on pollution levels in surface and groundwater samples taken from rivers and settlements. Additionally, the agency deploys 'orange troops' for daily waste collection activities. Meanwhile, the Public Health and Sanitation Agency conducts surveys and produces reports on hygiene practices within riverine settlements, addressing issues such as open defecation and lack of wastewater treatment.

³⁵ the only available planning board of regional Jakarta is BKSP Jabodetabekjur (Firman, 2008), that has yet to respond to participate in the research.

Based on the discussion, I argue that the concern over the damaging effects of floods necessitates a considerable investment of time and labour in governing water bodies as 'wetlands' and cultivating material inhabitation in urban settlements. This attention to labour underscores how the river irrigation system intersects with the temporality of urban settlements, shaping town planning and housing segmentation in the city. The subsequent section will delve into how the designs of river embankments contribute to the capture and creation of land value by optimising development and generating segmentation in the spreading and concentrating of water flow through infrastructure.

6.3. Designs of The Plan

6.3.1. Ordering River Water Flow

I use the term "irrigation" to echo previous chapters' discussions about surplus water and infrastructure that link the capital city with state formation. Fragmented town planning has transformed Jakarta's riverine landscape into heterogeneous public and private waterfronts for the valuation of urban settlement and primary location. For example, a private-led development project transformed a segment of Kali Cideng into a riverside park within a commercial business district (CBD) on Rasuna Said Road in South Jakarta. I conceptualise this river segment as a ribbon of an urban park and waterfront, integrating it into high-rise buildings for commercial and residential activities, and connecting it to the road network. Floodgates within this 'wetland' segment serve to connect and regulate the wet terrain, integrating it with the hydraulic relationship of water flow in Kali Cideng.

Within this interplay between the public and private sectors in designing urban waterfronts, I examine the various actors involved in the design of the embankments, water pumps, and floodgates along Kali Ciliwung as part of flood-mitigation policies. The 'Normalisasi Kali Ciliwung'/Ciliwung River Embankment represents a departure from the traditional logic of 'wetlands' in irrigation practices aimed at cultivating wet terrain and water bodies. This departure can be traced back to the irrigation work outlined in the 'Rencana Pengelolaan Sumber Daya Air'/Water Resource Management Plan (RPSDA) for the Ciliwung-Cisadane River,

where certain agricultural areas in Jakarta, Banten, and Bekasi in West Java still rely on the Kali Ciliwung and Cisadane. The river transitions from being mere waterways to becoming focal points within governmental institutions for forestry and environment, town planning, water resources, and human settlements.

As outlined in previous chapters, state-based organisations have historically specialised in infrastructure development, including regional roads, irrigation systems, and dam construction, a practice dating back to the colonial government's inception in the 18th century³⁶. Within this institutional framework, the Ciliwung-Cisadane Regional River Board (CCRRB) is responsible for the river embankment along the Kali Ciliwung. The project is part of the broader 'water damage restoration programme' outlined in the Regional Water Resource Management Plan (RPSDA), aimed at enhancing the land value through irrigation initiatives. However, the agenda also intersects the valuation of water flow in urban landscapes and hydraulic operation of interconnected flood-control infrastructures. Firstly, interviews with Agni and Skanda, members of the planning division at CCRRB, revealed that the Water Resource Agency of the Jakarta City Government is currently overseeing the land acquisition process for the project. The officers clarified that the Sales Value of Taxable Objects (SVOT)³⁷ serves as the fundamental property valuation method in land acquisition. Similar processes are underway for projects such as the 'Ciliwung Underground Diversion Channel'³⁸ and the construction of dry dams in Ciawi and Sukamahi, located in the upper stream areas of the Kali Ciliwung in Bogor Regency³⁹ (Figures 181).

³⁶ A specific Water Resource Department in the Ministry of Public Works and Housing is responsible for formulating water resource management of the main rivers in Indonesia.

³⁷ Sales Value of Taxable Object (SVTO) is translated from *Nilai Jual Objek Pajak* (NJOP), an average price based on a 'common' buy and sell transaction. The Ministry of Finance publishes the term to classify taxable objects and SVTO for Land and Building Tax/*Pajak Bumi dan Bangunan* (PBB) (Ministry of Finance Law No 186/PMK.03/2019).

³⁸ Based on RPSDA Ciliwung-Cisadane Regional River Board (CCRRB), the terms are *Normalisasi Kali Ciliwung* and *Sodetan Kali Ciliwung*. The former operates by widening the surface water to the West Flood Canal and Old River; the latter connects the surface water to the East Flood Canal through an underground tunnel.

³⁹ The 'dry' dam is designed to store water temporarily with an open water channel to slow down the water flow towards the downstream areas of Jakarta. It manages potential damage by storing stormwater in the dam's catchment areas.



Figure 181 3D Model Displays of Ciawi Dam in Cipayung, Bogor Regency, in the office of CCRRB that demonstrate the watershed landscape of Kali Ciliwung and operation of the dam, by author, 2021/04/14.

Planning infrastructure provision, however, entails more than just understanding water management and the technical aspects of implementing technology within river basins. Agni emphasised that a project only becomes active upon its inclusion in the National Strategic Plan crafted by the National Planning Board, underscoring the importance of aligning with the national planning process. Simultaneously, the planning phase often extends due to land acquisition negotiations and decision-making processes regarding the continuity of the plan (Figure 182). This prolonged timeline illustrates the complexity of coordinating various stakeholders and addressing legal and administrative procedures.



Figure 182 Abandoned underground tunnel designed to connect water flow of Kali Ciliwung with the East Flood Canal that relied on the land acquisition process, by author, 2021/03/16.

The planning process for river embankment design provides a window into the second point of calibration in river embankment. It entails a participation of expert consultancy in public infrastructure provision. Sasri, the manager of an

engineering consultancy, recounted her involvement in the project, which commenced with a design review contract in 2013. In the interview in the meeting room of her office near Kali Malang near Pondok Bambu, East Jakarta, she states that, 'The consultancy of the design review process was based on the Terms of Reference (ToR) by CRRB.' Subsequently, another consulting firm evaluated the design for Environmental Impact Assessment⁴⁰ (EIA) compliance. After receiving approval from an EIA committee⁴¹, the Jakarta Provincial Government (JPG) took charge of the land acquisition process.

This underscores the JPG's pivotal role in the acquisition of river terrain and the relocation of its inhabitants, which intersect urban development and territorial security. This institutional framework links the process of moving riverine settlements to the changes in the irrigation framework from agricultural settlements. In this way, irrigation purposes repurpose the remnants of dam construction among heterogeneous settlements to cultivate riverine landscapes more effectively. It hinges on effectively steering water flow, necessitating field-based monitoring and regular maintenance of the infrastructure supporting wetland settlements. Such politics of water flow challenge the narrative of failure caused by the flat topography of river terrain in the city (contra Gunawan, 2004).

The design process intersects various temporal dimensions to shape the material significance of irrigation efforts. Prasad, an engineering consultant involved in embankment design, highlighted the 2013 review's aim to update the previous design based on current conditions. He emphasised the valuation of development projects in response to water damage restoration, noting the

⁴⁰ Environmental Impact Assessment is a translation from *Analisis Dampak Lingkungan*, a document focuses on assessing the environmental implication of development projects in the designated development territory. There is a general discussion on the social setting, such as surveys of land possession, damage to biological entities in the area, and speculative analysis on potential job and income generators.

⁴¹ Candra, the consultant for ANDAL in the project, described regulations that situate the requirements of ANDAL in the project, such as a volume of 500.000 m³ in the development boundary. He is an alumna of the Forestry Department from one of the prominent universities in Indonesia and has experience in managing a team for making ANDAL analysis since 1992. During the interview, he acknowledged the development project's complexity which requires freeing up land for 22 km through districts in South Jakarta and East Jakarta. Like the design, the ANDAL needs to be reviewed over time.

importance of the benefit-cost ratio (BCR) in assessing feasibility. He states, 'It has a BCR, benefit-cost ratio, to look at the feasibility of secured assets, such as roads, offices, and industrial complexes.' The calculation is clear for the irrigation project. For instance, (design for) water supply multiplies the harvest in the cultivation of rice and crops, from once to twice a year, through extending channels for irrigating the fields.'⁴² Prasad illustrated how irrigation projects, like extending channels for crop cultivation, can increase harvest frequency. Thereby enhancing agricultural productivity and justifying project costs when the value of BCR is more than one (>1).

The emphasis on water containment capacity within the project management framework underscores the designation of a 'wetland' over a river ecosystem in the presence of embankments. Prasad acknowledged Jakarta's susceptibility to flooding, saying, 'Jakarta cannot be free of flooding. The design is merely a partial solution, necessitating a balance with governmental policy in water catchment areas in Depok and Bogor, incorporating green conservation measures for ground filtration. He stressed the importance of routine dredging operations in rivers and advocated for green conservation measures in Depok and Bogor to aid ground filtration. This shift in discussion from irrigation technology to broader governmental responsibilities reflects the project's role in managing overflowing water and underlines the role of river irrigation in shifting the value of agricultural settlements to urban settlements.

6.3.2. Acquiring Material Security

Planners often lament the intricate nature of land acquisition processes in river normalisation, citing it as a primary cause for delaying design implementation and rehabilitating underperforming infrastructure. However, this delay affects the river's value as a 'wetland' in the urban landscape. As the design of river embankments unfolds, it gradually transforms the perception of the 'river' through nomenclature and spatial designation, segregating governmental responsibilities

⁴² He also explained a similar approach in designing water storage to reduce economic loss in flooding and maintain water supply based on water price per litre in a specific area.

under the guise of population security. The government can set the Sales Value of Taxable Objects (SVTO), which means that setting thresholds for the procurement of material compensation changes the way that water is valued in terms of damaging the settlement. This process involves the calibration of the investment in the river design with an analysis of public spending and the calibration of property value from appraisal value and market value.

A historical analysis of land acquisition plan documents contextualises the process of *pengadaan tanah*/land acquisition⁴³ and relocation⁴⁴ for riverine settlements. These plans, managed by the Land Acquisition Division within the Water Resource Agency of the Jakarta Province Government (WRA-JPG), compile a variety of materials obtained from consultants hired by CRRB. Engineering consultants provide a base map for design development, land titles from environmental impact assessments (EIA), and official letters confirming material possession as part of the administrative process. However, the narrative surrounding property valuation in land acquisition and relocation focuses on the concept of 'public interest'.⁴⁵ The Land Acquisition Plan documents from 2016 to 2021 underscore the project's importance, with increasing emphasis on environmental flood analysis.

Documented materials consistently indicate that district SVTO determines the lowest selling price, while an independent consultant's appraisal study during project implementation determines the highest selling price. As a result, potential discrepancies may arise between CRRB's valuation based on SVOT and WRA-JPG's assessment of the "real value," as land values appreciate over time. As of 2021,

⁴³ 'Land acquisition' is my translation from *Pengadaan Tanah* in *Dokumen Perencanaan Pengadaan Tanah*/Land Acquisition Plan Document. However, the translation of the term '*pengadaan*' is closer to 'procurement', which shows the intricate materiality of land as a 'thing'.

⁴⁴ The term 'relocation' directly translates from *relokasi* in the Standard of Procedure (SOP) in applying for public housing made by PHD-JPG. International development agencies used the term 'resettlement' to illustrate the social safeguards in ensuring the long-term economic security of inhabitants in the transition period after being displaced. I use the term 'relocation' since the approach of JPG focuses on promoting subsidised public housing rather than resettling the riverine settlements.

⁴⁵ Based on interviews through letter correspondence, the plan states that money is the only medium to purchase the land for development. Hence, the resettlement process is beyond the scope of the land acquisition plan. Any loss of livelihoods will be further analysed by appraisal of a third-party consultant.

monetary compensation is the only form of reparation in the land acquisition process.

The intersection of valuation on material compensation and procurement for acquisition gives rise to a significant displacement issue that intersects with institutional practices. This issue adds historical layers to the political conditions of displacement within the infrastructure development planning routine. Putra, the Land Acquisition Division secretary, emphasises that their focus is solely on preparing the Land Acquisition Plan documents, with any additional documents required for land acquisition and resettlement falling under the purview of the Flood-Control Division. Meanwhile, Raksa, the chief of the Flood-Control Division in the Jakarta Water Resource Agency, emphasises CCRRB's state-level authority over Kali Ciliwung and directs river inquiries to CCRRB. She further highlights the distinction between discussions on flooding and waterways in Jakarta and the focus on displacement, which falls under the jurisdiction of the Land Acquisition Division.⁴⁶

The intricacies of calibrating SVTO value extend to the relocation process, particularly for inhabitants who are ineligible to claim property ownership. WRA-JPG, the primary institution responsible for water damage restoration in the city government, advocates for relocation to *Rusunawa*⁴⁷ as a means to equitably address flood-control development.⁴⁸ Hima, a staff member from the Public Housing Department (PHD) Finance and Partnership Division, asserts that

⁴⁶ The Land Acquisition Division/Divisi Pengadaan Tanah di Water Resource Agency also works on wastewater infrastructure development project. In a book on JPG wastewater enterprise, land acquisition is the main issue in implementing a wastewater infrastructure plan (PD PAL Jaya, 2018).

⁴⁷ *Rusunawa* is an abbreviation for *Rumah Susun Sederhana Sewa*. The term is registered in the Ministry of Public Work and Housing Decree No. 14 Year 2007, which contextualises housing as one of the basic needs and responds to the increasing need for housing in urban areas. *Rusunawa* becomes an alternative to fulfil the need for housing for people with middle-low income, especially low income. *Rusunawa* is a stacked building in a built environment arranged in a functional structure horizontally and vertically. Each unit is used separately, in rental possession, and built with a national or local budget where the main use is for living. The inhabitants are people with National Identity Card of Indonesia that fit into the category of low-income group based on regulation and hold a contract with housing management.

⁴⁸ During the interview at the WRA-JPG office, Raksa argued that the Jakarta City Government also provided social housing for the relocation process, "*Rusunnya bagus kok!* /The housing is decent!"

relocation to Rusunawa is a suitable option that does not infringe upon private property territory, noting that "a house contains civil code."

In 2014, the Jakarta governor issued a decree outlining the procedures for applying for and residing in Rusunawa, targeting both "programmed" and non-programmed inhabitants. Programmed inhabitants include those affected by development projects, natural disasters, spatial ordering initiatives, or similar circumstances.⁴⁹ Meanwhile, non-programmed inhabitants consist of low-income individuals who meet specific terms and conditions.⁵⁰ The narrative of housing segmentation aligns with the governmental discourse on land value, with the Central Statistics Bureau's classification of "kumuh"/slum neighbourhoods contributing to the ongoing slum-upgrading project in select areas.

Rusunawa facilitates the process of relocating riverine settlements to various government-controlled infrastructure units, thereby expanding housing segmentation through homeownership opportunities for the middle-income population. This aligns with the growing middle-class demographic in Jakarta. Hima argues that the Transfer of Development Rights (TDR)⁵¹ for Rusunawa, which facilitates the discretionary allocation of public housing provision by the PHD within private urban development frameworks, enables on-site redevelopment or urban renewal, like in the case of Kampung Aquarium in North Jakarta and Kampung Bukit Duri in East Jakarta. Such initiatives are further supported by temporary political contracts between NGOs, architects, and the governor in times of election.

The design of the embankment adds material value to the appraisal work for land acquisition and relocation in the provision of Rusunawa. However, the

⁴⁹ See Jakarta Governor Decree No.111 the Year 2014 on Mechanism of Inhabiting *Rusunawa*.

⁵⁰ The prerequisite for applying is submitting administrative paperwork comprising a national identity card, letter of income less than one million rupiah, tax number, marriage letter, and recommendation letter from a neighbourhood leader to apply for *Rusunawa*. In other words, the housing is not particularly dedicated to someone with a Jakarta identity card, as arranged in the national-led housing regulation.

⁵¹ The provision of Rusunawa is also part of National Capital Integrated Coastal Development (NCICD) under the project of One Million Housing Program. In specific, the project develops 603.516 houses for low-income families in Jakarta (see KPPIP, 2015)

incomplete master plan, wetland irrigation design, compensation for existing settlements, and occupancy of subsidised housing all contribute to securing water bodies as governmental assets for regulating spatial value. This speculative process often leads to delays in implementation and infrastructure breakdowns, as property valuation remains under continuous appraisal. Even though Putra says that the current governor supports a collaborative agenda, the planning and design processes change the land value through SVOT distribution and appraisal study analysis.⁵² This makes the story of displacement more complicated within the frameworks of flood-mitigation policies, yet at the same time it fleshes out multiplicity of planning institutions and a mundane routine of state formation.

6.4. Operations of The Design

6.4.1. Steering the Water Flow

In the final phase of planning and design, the focus shifts to the operational aspects of planning and design, representing the technical execution of the flood mitigation policy. This stage entails navigating the structural labour hierarchy required to manage the infrastructure and address the challenges posed by the limits of technology in managing floods. The narrative is characterized by conflicting security and habitability concerns, which are evident in the daily challenges and conflicts field officers encounter due to delays in infrastructure provision. Consequently, the ongoing implementation of plans and designs reveals a landscape valuation riddled with contradictions, exacerbating housing inequality. Ultimately, this underscores the pivotal role of water in the daily operation of infrastructure for securing wetlands, prompting a critical reevaluation of current approaches within flood-control policy frameworks.

Starting with the concept of "steering," which involves adjusting floodgate openings to regulate water flow and facilitate irrigation, is crucial. This process requires the ability to analyse reports and measurements collected during routine

⁵² During the fieldwork in 2021, the WRA-JPG focused on continuing appraisal analysis of the previous years and the development of public housing provisions. The continuity of the appraisal study can be traced to the Land Acquisition Plan documents 2016-2021.

as Jakarta's 'heartbeat' of flood control. I nodded to him, sitting on one of the seats surrounding a square wooden table at the front of three whiteboards filled with tables. The space was a makeshift shelter covered by a white tent, a temporary visitor's place to get information about floods, particularly observation of water levels in several flood monitoring sites in the capital city. When I arrived, a group of security team Satpol PP⁵³ gathered at the front of mushola next to the front door. At 10.07, the group jumped into their patrol car, leaving empty spaces.

'Usually, media come and ask various things, also elite politicians or government officers,' Caraka told me when I asked about the routine. This morning, the floodgate of Manggarai was in 'siaga 4'⁵⁴. Last year, on the 2020 New Year's Eve, it was 961, meaning 'siaga 1'. That was a combination of intensive rain in Bogor and Jakarta. There are four floodgates in Manggarai: one to Old Ciliwung, two to West Flood Canal and one to Menteng⁵⁵. The gate was built in 1914 and finished in 1918 to control water flow in the centre of Jakarta. The additional gate to the West Flood Canal was built in 2013.

I began to understand how tedious and dry the interview was about flood history and flood-control mechanisms in the floodgate. Caraka already knew the questions being asked. He could anticipate the flow of the discussion and the boring questions and responses. Things changed when I asked personal questions, like why he chose to work as a flood monitoring officer, being part of public service, the tough times, and his idea of a future career.

Caraka explained that monotonous work of flood monitoring happened in the dry season. Most of the work is concentrated in sediment dredging. He toured me to the floodgates and showed me a 'secret' way for waste pickers to climb

⁵³ Satpol PP refers to Satuan Polisi Pamong Praja, an autonomous local police team under the city government.

⁵⁴ 'Siaga 4' is a reportage based on disaster alarm levels from 'normal', 'alert', to 'danger'. Siaga 4 means '4th alert', where 'siaga 1' or 1st alert equals 'danger' level.

⁵⁵ Menteng is in one of the prominent districts in the capital city, between Senen and Tanah Abang, at the northwest of Manggarai Floodgate, in Central Jakarta. In the early 20th century, the colonial government planned a settlement as an extension of the Old Town Batavia with the Garden City model. Most of the district comprises villa houses, and green corridors are now used as governmental and international embassy offices. Closer to the floodgate is a dense neighbourhood towards the Manggarai station. According to Caraka, the floodgate to Menteng is always closed. The floodgate was closed and filled with waste during the interview and observation.

down the gate structure and complain about the scattered waste they left. Maintaining the cleanliness of the flood-control infrastructure is part of his job, aside from the hourly record and operating the closing and opening of the gate. The waste pickers are not official workers. They occupy one spot to collect waste by putting a wooden bench to rest.

We talked for one-half hour by the floodgate. The atmosphere changed when I sat down at the table of the visitor's shelter, writing. A policeman came and asked for a report number. 'Which one is on date 22?' the policeman asked. 'That is in 4th Alert, not need to be written down,' B responded. B was part of the team on the shift that day. His colleague reminded him to fill up the latest record. 'Oi, it is now 10 AM. Have you filled it down?' B sat down next to my place, looking at the mobile phone in his hand and put the number on the book. He took a pen and started scribbling things on a table of ruled books while looking at another table of seemingly old books.

I was interested and observed, 'How do you fill the table with the numbers?' B explained how to input the number: Peil A, Peil B, the existing number, then fill the table with numbers of opening levels and deviations. Then, they shared the update on the mobile phone with a virtual group of flood-monitoring officers in Jakarta. 'How did this table get numbers?' I picked up the old, thin book filled with a table of numbers in awe (Figure 184).

'Ah, I have no idea.'

'It was like that since long ago.' his colleague joined the table.

The image shows a handwritten table with multiple columns and rows of numbers and text. The table is written on lined paper and includes some headers and footers. The text is somewhat blurry but appears to be a record of water level calculations. The name 'P. Ciliwung' is visible at the bottom of the page.

Figure 184 Table of calculation that conducts the report of marking water level. The calculation operates the opening and closing of floodgate in Manggarai Weir, by Water Agency of Jakarta City Government, 2021.

'Maybe from Haji Van Breen⁵⁶.'

'Yep, there is a saying that he was mualaf⁵⁷ after constructing the Manggarai floodgate in 1918.' A giggle and a cheeky grin.

'It is from the central government. We follow the calculation from the table.' Caraka tried to be serious. He explained a brief history of the office briefly or being maintained officially by a subdivision of the Water Resource Agency; the Manggarai floodgate was managed directly by the Water Planning Agency, even before the Ministry of Public Works managed it. Sensing the confusion and humour, he recommended interviewing Raksa, an expert in the Water Resource Agency. 'She used to be approached by the media to discuss floods in Jakarta. I think you will learn more about floods from her.'

The team chief, the only one with a civil service uniform, also could not tell the story. I asked permission to make a copy of the table that is a 'reference' of the flood monitoring. When I returned with the copy, I met Gibran, another senior staff at the floodgate, wearing sunglasses and an office uniform. He explained how to read the table in the monitoring report in Manggarai, its connection to the old river and new canal networks, and its hydraulic relationship with Katulampa in Bogor and the seafront floodgate in Marina Ancol, including the decision to open the floodgate of the old river (Figure 185). It was the same story about the hydraulic narrative shared by his team.

The fact and truth are situated. Things changed once I ended the facts gathering. They moved into personal stories, humour, and fleeting concern. The bodies I encountered were youths who worked in rotating shifts during the day and night, observing the surface water every hour. One graduated from broadcasting, taking the job as a stepping stone to wider opportunities in a consultant or company. There was a sense of temporality among the

⁵⁶ H. Van Breen is an engineer who led technical protection towards flood damage by making the West Flood Canal distribute water from the Manggarai floodgate. In the conversation, the 'H' is understood as 'Haji', a religious attribution to someone who had a pilgrim in Mecca. Yes, this is just for plain fun.

⁵⁷ *Mualaf* is a person who has accepted Islam or converted to Islam.

operators of infrastructure who make life, just like the temporal being of water itself. (Monday 22 February 2021 10:02 - On writing and thinking as 'feeling the field')

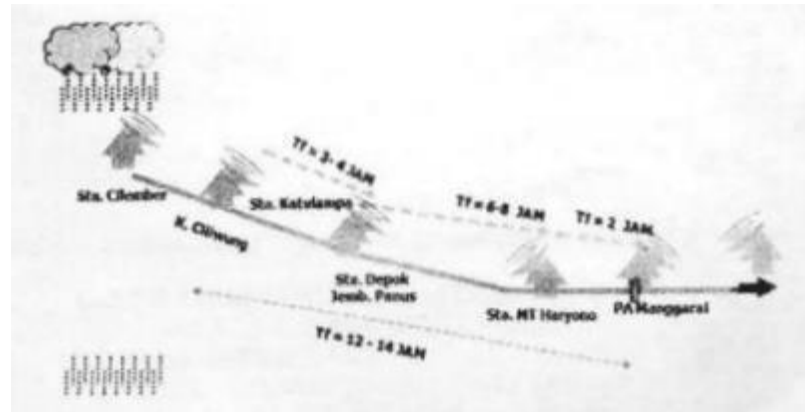


Figure 185 A rough sketch of time of stormwater propagation in Kali Ciliwung from Katulampa Weir to Floodgate in Manggarai Weir, Central Jakarta, 12-14 hours, by West Java Provincial Government, 2021.

The fieldnote sheds light on the memory routine that underpins flood monitoring at the Manggarai floodgate, a process that shapes decisions about floodgate opening and closure. Detailed tables guide this drainage procedure, outlining ongoing irrigation efforts and establishing baselines for "normal" and 'dangerous' water levels, which are crucial for hourly reporting. After conducting interviews and observations, I observed three officers painting blue, green, yellow, and red boards to correspond with these baselines.

The following day, the officers strategically placed these painted boards along one side of the riverbanks, serving as visual indicators of flood alerts based on water metric levels. This practice highlights the tangible manifestation of flood monitoring and its vital role in designating water surface level against potential floods in the wet time. Importantly, the vitality lies on the decision to steer the water flow by opening and closing of the floodgate (Figure 186).



Figure 186 The hydraulic life of river during dry time shows the ground surface of river terrain and material accumulation of sedimentation, by author, Fieldwork 2021.

The ebb and flow of wet and dry times within the hydraulic relationship significantly influence the definition of the 'river' into 'water flow,' 'terrain,' and 'infrastructure.' Initially, the primary purpose of irrigation work at the weir and floodgates was to maintain wet fields for agricultural cultivation. However, its role has evolved to encompass the distribution of water flow across the low-lying plains of urban settlements. Discussions regarding multi-level planning institutions in flood-mitigation policy often overlook the steering and repair aspects, reflecting this shift in function. Consequently, the focus remains on the technical operation of existing infrastructure than dwelling with the water flow.

Simultaneously, a grounded view of dams and weirs in the highlands proposes an ambivalent understanding of what infrastructure can do in valuing the dwellings of urban settlements. For instance, technical drawings of the Katulampa Weir in the field station illustrate a gathering of weir and floodgates that manage depth and flow, a bridge to pass over the river, a roadside that surrounds the dam, and markings for a flood-warning system (Figure 187). This evokes questions about what constitutes irrigation infrastructure, industrial activities, and agricultural society in present-day urban life.

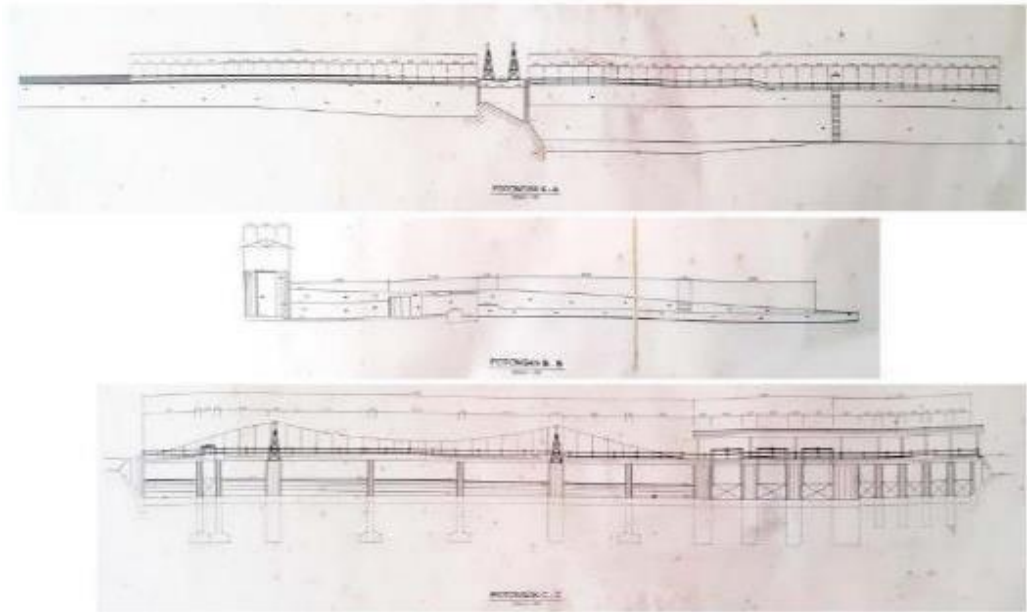


Figure 187 Design drawing of Katulampa Weir in Bogor with additional motorway bridge across the Kali Ciliwung and flood-level monitoring, photo by author, 2021/04/01).

Therefore, it is imperative to elucidate the extent to which the construction of embankments, the establishment of drainage networks, and the regulation of water flow in irrigation systems align with the kinds of living made possible by water and riverine landscapes. Floodgate regulation plays a critical role in orchestrating the forces of water flow from upstream, profoundly influencing the urban landscape. This inquiry is essential to understanding the efficacy of initiatives aimed at safeguarding wetlands, particularly in the prevailing discourse on achieving immediate successes in town planning practices.

Finally, in the next section, I will discuss the hydraulic relationship that shapes more than the physical formation of urban infrastructure and the accumulation of sedimentation. It recalls the spirituality of water in sustaining urban life through the temporal labour involved in repairing and maintaining the materiality of infrastructural settlements. The 'orange troops' spearhead the mundane and perilous waste management during floodgate closures, and they also excavate sediments for reclamation projects. Such security labour becomes a politics of provision that exemplifies housing segmentation.

6.4.2. Repairing Temporary Infrastructure

'Living and being within the field provides a clearer viewpoint in sensing research possibilities. There is a rhythm in the heartbeat of the city during the day that gets slower at night before getting intense again after dawn. I began to see everyday water infrastructure maintenance with a heartbeat. I see people, language, and gestures. I see time and materiality in bodies passing in memory and presence. I see ruined, neglected water infrastructure and abandoned machines of desire for a better future. However, when I see people, from dwellings of human settlement, the mood changes with a series of relational questions. It gives a sense of 'nature' of being in here: two shooters were fishing at an abandoned tunnel, waiting for gabus⁵⁸ to emerge into the surface from greenish water. Different objects, different attitudes, different designations.' (Fieldwork note 04/02/2021)

During wet seasons, the WRA-JPG typically makes efforts to reinforce settlements on water bodies to protect wetlands. While dredging activities may occur during drier periods, the onset of heavy rainfall often intensifies the urgency for immediate repairs, particularly along vulnerable riverbanks. Syarif, a leader of the Water Resources Agency (WRA) field officers in the Jatinegara district, highlights the challenges faced by field officers in responding to erosion events. In a specific instance along the Kali Cipinang, Syarif ordered the construction of gabion structures along steep banks to mitigate erosion (Figure 188). However, he acknowledges the limitations of such measures, noting that they provide only temporary relief and may not suffice to withstand the erosive forces of river water during floods. He emphasises the need for coordinated efforts, including land acquisition initiatives, to address the underlying issues comprehensively.

⁵⁸ Gabus, or snakehead, is a freshwater fish that is one of the diets among Betawi people.



Figure 188 Makeshift structure to retain cracking edge and eroded part of riverbank, by author, 2021/03/02.

A grounded observation of the repair process emphasizes the tangible impact of erosion on the river terrain. The gabion structures initially appear as makeshift patches akin to cloth on a garment, but upon closer inspection, they reveal layers of previous temporary constructions. As directed by Syarif, field officers navigate through narrow alleys lined with sandbags, serving as makeshift pathways amidst the housing structures (Figure 189). Despite the erosion, remnants of trees remain resilient, contributing to soil defence and bearing the weight of the surrounding terrain and structures. The team clears away debris to make space for the installation of new gabion patches along the riverbank, highlighting the temporary efforts to mitigate erosion and safeguard the land.



Figure 189 Repairing 'temporary repair' of eroding riverbank in Kali Cipinang, by author, 2021/03/03.

The repair of the ruins not only reflects the temporary response to riverbank erosion, but it also highlights the normalization of material degradation during flooding in the riverine landscape, exacerbated by delays in the planning, design, and execution of irrigation projects. Grounded observation of the Kali Ciliwung Embankment project implementation reveals fragmented structures along the embankment, highlighting the implications of delayed maintenance (Figure 190). Despite the precision required in planning and design, it remains unclear how much attention is allocated to implementation once the government secures the terrain of riverine landscape.



Figure 190 Abandoned ruins in building embankment that shaped the wetland and its sedimented terrain, by author, Fieldwork archive in 2017.

The disorderly scene highlights yet another aspect of the immediate responses and temporal complexities involved in realising the embankment's plan and design. One could argue that the field observations illuminate the ambiguous arrangements within historical institutions, primarily focused on irrigation work, as they confront the urbanising landscape of the city. Without seamlessly integrating the waterway into the existing landscape, the wet terrain of the river consistently transforms into a site of ruination amidst the undesirable and uncertain terrain of urban planning.

The ambiguous role of town planning in defining the relationship with water is also evident in the emerging discourse on water-friendly urban development⁵⁹. According to discussions with Syarif, this narrative is circulating among high-ranking officials in governmental institutions. While briefly mentioned by Sidi as part of the 'natural' history of swamps that shaped Jakarta's landscape, the term and its translation still need to be clarified. One interpretation of water-friendly interventions involves the installation of rainwater wells in public areas of the urban landscape, such as the sides of roadways. Additionally, additional wells have been constructed in the yards of government officials' residences and several parts of the roadways (Figure 191). However, a critical evaluation of these settlements highlights concerns about public safety, particularly ground stability and encounters with passersby (AntaraNews, 2023). Again, field conditions influence how ideas and practices for water management are possible.



Figure 191 Field-station teams were drilling house yard of East Jakarta Mayor as a model for installing biopore infiltration, by author, 2021/03/02.

⁵⁹ The translation from *ramah air* or *bersahabat dengan air* refers to micro intervention in the landscape.

The complexity extends to the field station, where preparations for rising water levels are underway. The river embankment, an extension of existing irrigation infrastructure, weaves through the heterogeneous landscape of riverine settlements, fostering interdependence and interconnection between surrounding areas divided by these embankments. It serves as a means to monitor water levels, regulate floodgates, and repair wetland settlements (Figure 192). Moreover, the roadway atop the embankment not only separates the water body but also extends the city's road-based mobility infrastructure, eventually transforming into a parking space for local inhabitants.



Figure 192 The emplacement of road embankment, water pipes, flood monitoring station, and diesel generators set the elevation of dry land to step from the low-lying riverine settlement, by author, 2021/02/21.

During periods of heavy rainfall, field officers must continuously monitor and manage pumps to drain excess water from the wetland into the surrounding neighbourhoods. Field officers sometimes find themselves repairing malfunctioning pumps late into the night (Figure 193). Jaka, the team leader, explained, "We have to wait for third-party mechanics to repair the water pump. It's part of the protocol." Additionally, officers frequently must negotiate with influential settlement residents who may voice concerns about rising floodwaters. The speed of water flow in these settlements frequently challenges the machinery's operational capacity, adding complexity to the situation.



Figure 193 Repairing water pump during the night, by author, 2021/02/26..

The introduction of roadways atop the embankment has transformed the habitual water practices of riverine settlements, particularly concerning wastewater infrastructure. Residents have adopted individualised technologies, such as septic tanks, within their households for daily cleaning purposes. Additionally, the city government has installed public toilets along the river embankment. Consequently, the once-utilised bamboo raft for washing in the river now lies empty and dilapidated amidst these transformations (Figure 194).



Figure 194 Re-arrangement of water practices in the making of septic tanks inside houses of settlements, public toilets, and elevated 'ground' of Rusunawa, abandoned bamboo raft-toilet in Jatinegara, by author, 2017/04/14.

6.5. Conclusion

This chapter critically examines the displacements caused by flood mitigation policies that shape urban infrastructure in the riverine settlements of Kali Ciliwung in Jakarta. It deconstructs the political conditions surrounding irrigation efforts through the analysis of planning records, interviews with officials, and observations of infrastructure repair. It redefines the governmental concept of flood mitigation within the river irrigation system of 'Kali Mati' in the urban landscape. This redefinition revisits the concept of wet and dry terrain in relation to water flow, blurring the boundaries between public and private domains while spreading and consolidating infrastructural interventions in the riverine landscape.

The chapter concludes that urban water infrastructure serves as a tool for systematic displacements within the temporal politics of infrastructure. Simultaneously, it serves security projects by controlling water damage capacity. Firstly, the devaluation of wetness involves implementing irrigation projects to transform the riverine landscape and displace inhabitants rather than revitalising the riverine settlements. This results in the segmentation of physical landscapes and housing processes that prioritise property ownership. Secondly, the politics of steering and repairing infrastructure in maintaining the riverine landscape highlight the challenges of temporary repairs and the distinction between centralised and fragmented infrastructure. This reveals underlying assumptions in hierarchical operations, such as reporting water levels, steering water flows, and dredging sediments for land reclamation, along with lively improvisations on the ground. The chapter concludes with challenges of 'flood mitigation' in responding to the temporary wet and dry settlements on the riverine landscapes. In the next chapter, I will examine the displacements of riverine settlements, as briefly discussed in the fifth chapter, with the goal of delving deeper into the intricate process of ruination and compensation. This entails examining how displacements have impacted the value and labour of wet and dry settlements following embankment implementation.

Chapter 7. 'Our farmland is here': Displacement of Riverine Settlements



Figure 196 Emerging surfaces of flowing water in Kali Ciliwung, in Tanah Rendah, Kampung Melayu District taken from passing train on elevated railway of Jakarta Commuter Line, by Yuliana Paminto, 2021/03/13.

7.1. Introduction

The concluding empirical chapter examines the displacement and reoccupation within riverine settlements across wet and dry seasons, revealing the enduring resilience of inhabitants amidst fluctuating water flow and levels due to delayed implementation of flood mitigation policies. Through the oral history quote, 'Our farmland is here', echoing the agricultural resonance inherent in the historical choreography of wet and dry cycles, the chapter underscores the intrinsic connections between water, memory, and the construction of home within urban life. The alternating wet and dry phases offer insights into the temporal thresholds experienced by riverbank occupants who navigate between periods of stability and upheaval in their settlements (Figure 196). In the delay of displacement and construction, the erratic flow of water and the uneven topography of riverbanks amplify the destabilising impact on the built environment

I structured this chapter into two parts. The first part delves into the wet and dry seasons in the materiality of riverine settlements, illustrating slow ruination and compensation in displacement and embankment construction. It emphasises the cyclical nature of ruin and rebuilding in riverine settlements, shaped by infrastructure provision, speculative occupation, and displacement uncertainty. The section portrays a resilient space and period that allow the possibility of remaining in the riverine landscape.

Then, the second part explores water flow and levels that dictate the timing of reoccupation amidst the openness of the wet river terrain. This section explores reclamation and refuge, expanding the concept of home with repair and renewal, as well as play and leisure in forming childhood memories. These shifting inhabitations in riverine settlements illustrate the endurance of navigating the threshold of living with water throughout changing seasons. Ultimately, the rhythms of wetness and dryness offer a lens to perceive the enduring materiality of urban settlement alongside the rivers.

7.2. Displacements of Riverine Settlements

7.2.1. Slow Ruination

In the low-lying plains, the delayed construction of embankments has unleashed the physical power of water flow from upstream, initiating cycles of destruction and reconstruction in the riverine landscape. This vulnerability exacerbates the deterioration process during recurring floods, affecting settlements on both sides of the river terrain. By further examining settlements during wet and dry times, this section aims to grasp the temporality of dwellings within riverine landscapes. It investigates what happens in the meantime the delayed embankment process in Kali Ciliwung, the implication that exposes the transformative forces shaping inhabitation in these landscapes, extending the concept of 'river time' to understand the rhythmic pattern of river floods.

Moreover, the delayed construction of embankments and the gradual decay of structures not only redefine the concept of hazards and capacity but also set in motion a gradual process of displacement, necessitating governmental intervention. During fieldwork in 2017, Tintin, a member of the disaster emergency team in Tanah Rendah, pointed out that the newly constructed segments of river embankments at higher elevations intensified water flow into the low-lying settlements (Figure 197). Consequently, this altered the timing and magnitude of flood warnings, complicating efforts to predict rising water levels. The displacement of communities upstream also left behind construction debris scattered across the river terrain.



Figure 197 Newly built floodwall and road embankment on the side of Garuda residential cluster, another side of the riverbank of Tanah Rendah, by author, on 2018/10/06.

The delay further exacerbated erosive forces acting upon the terrain structure of the riverbanks. I witnessed the gradual erosion of the river cliff within the Garuda residential cluster, culminating in its collapse onto a low-lying house in Tanah Rendah (Figure 198). This presented a complex situation for resolution, leaving the inhabitants to undertake repairs to the damaged house independently, given the low-lying nature of the landscape. The flowing water not only undermines the capacity to secure territory by eroding the landscape, but also prompts an organic response to cultivate resilience in the absence of embankment construction. It has compelled urban inhabitants to take on the responsibility of securing and nurturing their territorial landscape autonomously.



Figure 198 Continuous ruining and rebuilding of the eroding riverbanks affecting the low-lying settlement, by author, 2017/11/26.

The onset of the wet season marked a pivotal moment in both stabilising and destabilising the river landscape, amplifying the challenges of temporary habitation amidst the delay in governmental intervention. This period often translates into valuable time lost in sustaining the habitability of self-built houses (Tunas & Peresthu, 2010). The transient nature of waterfront structures and the wet season pose fundamental questions about urban planning, challenging conventional perceptions of 'slum' settlements as follows:

'When we were in the middle of a discussion, an old man with a moustache in a pale red shirt approached us and asked what we were doing at the front of the Sub District office. He explained that the study area would be affected by river normalisation. 'Will it be affected by the plan of river normalisation?' I asked. 'It is not a plan; it is fixed, but do not know when. It can be accelerated or delayed. The subdistrict office follows those at the top.'

He continued discussing RW 1,2,3 (Kampung Pulo) that has been 'beaten' and displaced to Rusunawa Jatinegara Barat. Excitedly, he explained the technicalities of displacements that cut through the houses, partly or the whole, the adequate number of units in Rusunawa, material compensation for those who hold certificates of land possession, such as the shophouses at the roadside, while 90% inhabitants in kampung do not have certificates. 'The ones who made a riot were those outside the kampung. The people in the kampung were packing their stuff at home. For the full story, ask Bambang, the Subdistrict leader in Kampung Melayu three years ago, now District leader in Pulo Gadung.'

From the story of displacements, he told a story of the living conditions of inhabitants in Tanah Rendah. 'Kumat,' he said, an abbreviation of 'kumuh nikmat'⁶⁰ to explain the condition of slum areas that made people attached and settled in the area due to its strategic location in the city. He also mentioned 'kuya' as 'kumuh kaya' to explain that despite the 'slum' condition, the people have two motorcycles. Due to the approaching time for Friday Prayer, I ended the discussion. He described his position as one of the neighbourhood leaders of Kebon Pala, located next to Tanah Rendah, which lies on a higher land topography. When I asked about his relationship with the Sub-district office, he said he is a daily staff member.' (Fieldnote 30/03/2018)

The fieldnote excerpt captures a nuanced interplay of temporal uncertainties and hierarchical structures, blending the anticipation of inevitable events with deference to authority. "It is fixed, but we do not know when," alongside "We follow

⁶⁰ As mentioned in Chapter 3, the term 'kumuh' means 'pollution' and 'dirt' in Indonesian (<https://kbbi.web.id/kumuh>). The term is used interchangeably in governmental records, programs, and statistics for slum upgrading projects. The speaker mentioned 'kumuh nikmat' and 'kumuh kaya', which can be interpreted as 'pleasurable slum' and 'wealthy slum'.

those at the top." ⁶¹ This hierarchical dynamic within administrative government contributes to narratives defining slums based on material attributes of housing as a way of life, coupled with uncertainty surrounding governmental intervention, which serves as a pathway for officials to advance their careers.

For instance, Putra, the chief of the sub-district office, perpetuated a myth of public security salvation by prioritising the protection of ten million people over the thousands resisting displacement due to flood-mitigation policies⁶². He then highlighted Rachmat, the secretary of RW 8, as a model for residents facing displacement in the development plan. However, during a separate interview at the community centre, Rachmat expressed a contrasting sentiment: 'The people here are smart at living with floods! Preparation for a fire is more important than embankment.'

Meanwhile, the divergent perspectives on wet time evoke different responses among development practitioners. Rama, who identifies as a sanitarian and has experience designing wastewater processing technology, raised concerns about property values and investment in the capital city. "Land prices in Jakarta can soar up to 300 million per square metre," he emphasised, highlighting the challenge of implementing wastewater technology amidst skyrocketing land prices (Figure 199). He collaborates with government officials and NGOs in providing appropriate technology for wastewater treatment in high-density settlements in the city, such as in Tambora⁶³.

⁶¹ The statement was '*Kami ikut yang di atas*,' which refers to hierarchical position in the governmental administrative institution of Jakarta Provincial Government.

⁶² The statement is pointed out in Shatkin & Soemarwi (2021), which discusses the expression in terms of risk mitigation and state legitimacy.

⁶³ In the interview, he shared concern about the lack of adequate wastewater technology in the city, that drives him to create affordable technology compared to the ones being used by the government. He stated the desire, '*Supaya Indonesia ini bersih*,' which can be translated as, 'So that Indonesia is clean'.

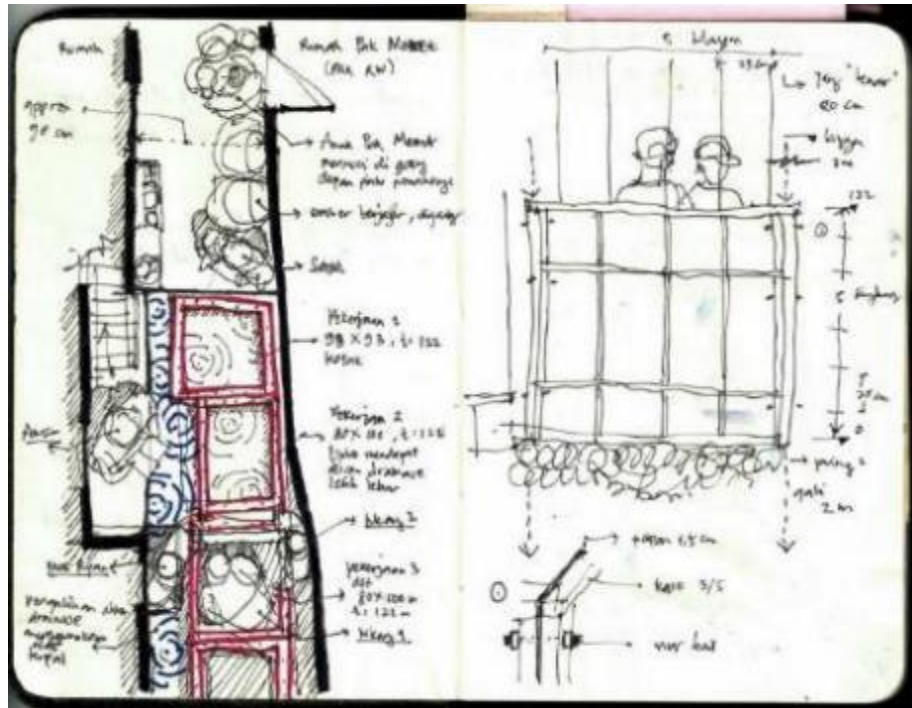


Figure 199 A sketch of the building process of a compact wastewater filtration underneath an alley in a high-density neighbourhood in Tambora, North Jakarta, by author, Fieldwork archive, 2017.

Humanitarian activism has also entwined the portrayal of 'the slum' with narratives of poverty and social movements. Satria, a prominent activist who led a legal challenge against displacement plans, highlights the fluctuating resilience of residents as a collective, particularly when they receive attention from external organizations. For him, collective action involves assumptions about resistance and specific mobilisation practices against displacement. While Rama addressed the challenges faced by development efforts amidst rising property values, Satria underscored the complexities of organising resistance against displacement. He partly attributes these challenges to external factors, such as the media focus on the poverty of slum areas and the prolonged delays in river embankment projects, which have become normalised since the tenure of Governor Sutiyoso (1997–2007).⁶⁴

Indeed, in the late 20th century, the low-lying terrain of the neighbourhood created a dynamic interplay between daytime maintenance efforts and the

⁶⁴ Hillary Clinton visited the area in 1994 to see the splendour of the urban poor, as shown in archival records at <https://www.youtube.com/watch?v=BrFyTva0Xmk>. Several environmental studies have discussed the national river development project named Clean River Programme in the period of President Susilo Bambang Yudhoyono in the post-reformation era (Resosudarmo et al., 1997).

rhythmic ebb and flow of floods. Despite receiving support from sympathisers, shared facilities frequently fell into disrepair over time due to the temporary nature of inhabitation and lacked of organisation. Many residents diverted wastewater from toilets and kitchens into drainage systems, contaminating shallow groundwater with domestic waste. Additionally, flooding's sedimentation and inundation weathered the materiality of settlements, adapting to the escalating flood levels and continuous elevation of ground in the road-based development.

The temporal politics of infrastructure planning appear to be deeply entangled with the symbolic significance attached to the ruin caused by displacements in riverine settlements. This overemphasis on ruination reveals the ambivalence inherent in decision-making processes and the limited range of options available when initiating action (Figure 200). It suggests that living alongside the river may not even be considered a viable option from the outset, and inaction may be seen as inevitable due to the speculative nature of public infrastructure planning. It forecloses historical arrangements of planning institutions that systematically cultivate property value in displacement. Instead, sentiments regarding ecological change highlight technical issues with the river embankment, which inadvertently leads to the accumulation of rainwater in coastal areas rather than allowing it to remain within the riverine landscapes⁶⁵.



Figure 200 The ruination of settlements for building river embankments and roadways on the other side of Tanah Rendah, by Mohammad Yusni Aziz, fieldwork archives 2016.

⁶⁵ Interview with Bayu, an activist of river conservation in Kali Ciliwung, during fieldwork 2021.

The prospect of displacement adds a layer of tension and fosters a shared temporal understanding among residents, shaping the past and future kinship relations within the evolving landscape. Namam, a 'tukang' residing in a one-story house along the riverbank, acknowledged the impending infrastructural changes. He states that boundaries delineating the building project were demarcated, clarifying ownership rights for land, houses, and renters. Conversations about the developments were often exchanged with cautious glances, reflecting the prevailing ambiguity surrounding the situation.

The embankment plan exacerbates the ongoing challenges of the wet terrain, prompting residents to reassess the feasibility of rebuilding and sustaining settlements in the long term. This raises questions about the significance of reconstruction efforts in the temporal context of a material world affected by 'naturalised' flooding conditions, contrary to Steinberg (2010). Repairing and rebuilding, as responses to enduring in the wet terrain, became ambiguous endeavours that pushed the boundaries of labor. During the embankment delay, repair work along designated areas became critical, reflecting the transient nature of the inhabitants and their connection with the river.

Therefore, the spectacle of ruin resulting from displacement perpetuates ongoing housing segmentation in fragmented infrastructural provision. A dichotomy of competing narratives obscures the potential for communal solutions to living with water in the city, with each vying for compensation at the expense of the other. The future becomes fragmented into provisional efforts to establish and maintain a foothold in the city, with outcomes dependent on fleeting moments of attention. Despite the apparent stagnation, there exists a persistent undercurrent of waiting for claims, which sows the seeds for temporary commitments, provisions, and arrangements.

This resilience shapes perceptions of ruins during times of flooding and displacement, serving to validate one's position amidst contradictory evidence of what strategies are effective. Dudung, the leader of RW 7, spoke of his family's lineage of 'jagoan' or "strongmen" tasked with maintaining security in the settlement. With the National Land Agency, he facilitated paperwork for land title

certification, recounting a successful certification story on the riverbank. He advised residents on precautions for potential future displacements for the inhabitants who reoccupied the riverbanks after fire (Figure 201). This narrative underscores the diverse perceptions of the future, influenced by governmental instruments aimed at securing individual positions within the settlement.



Figure 201 Rebuilt riverine settlements after an event of fire in RW 7, by author, 2021/08/16.

Staying resilient amidst the ongoing ruination of wet times feels akin to traversing a dream of the past that seamlessly merges with the tangible reality of the present elsewhere. Dea, leader of RW 5 from Sumedang, West Java, shared anecdotes of abandoned houses repurposed as temporary rental spaces, echoing discussions from Chapter 5. She noted the lack of resistance from inhabitants who vacated their homes following the announcement of the displacement plan (Figure 202). According to her, *“The houses have been marked, and the house owners have already moved out. The Sub-chief asked to ruin them so they would not collapse and hurt anyone. The remaining inhabitants are renters who work at nearby markets.”* While Dudung focused on the risk of rebuilding, Dea emphasised the heterogeneous narrative of resistance to displacement through their temporary presence.



Figure 202 Agus, Dea's assistant in RW 5, pointed to ruined abandoned houses and occupied rental rooms at the upper ground level, by author, 2021/07/23.

In Kebon Pala, an upper-middle-class settlement adjacent to Tanah Rendah and developed by a prominent developer, the wet time takes an opportunistic way of channelling public resources. Kiki, a leader who migrated from Sumatra Island, lamented the unclear land titles and building permits in the new development, which hampered government efforts to repair the deteriorating road surface. He actively lobbied district leaders to allocate public funds for road repairs and negotiated the separation of electrical infrastructure from Tanah Rendah (Figure 203). Kiki also expressed frustration over the community's lack of concern for waste collection, despite their economic status.



Figure 203 Cemented concrete road covered the ruined asphalt surface due to exposure to wetness in the rising surface of river water next to the street, by author, 2021/08/19.

Wet time has been profoundly impactful on riverine inhabitants and settlements, shaping both their present realities and future prospects. While local governments may take steps forward, their progress often seems hindered by setbacks, creating a sense of uncertainty and flux. In the midst of ongoing displacements, wet time cultivates a dynamic landscape where possibilities stretch between claims and chances, offering glimpses of what the future may hold. In the meantime, the openness of the waterfront becomes a stage for the interplay of ruination and rebuilding, waiting and delaying. It captures the vitality of both the temporary past and the future in this prolonged time of ruin. The next section will delve deeper into the dry time in Kali Mati that demonstrates temporal tension in the face of uncertainty.

7.2.2. Slow Compensation

The wetness of the river instilled memories of scattered water bodies in contemporary urban settlements. Importantly, it recalled the imaginary vision of islands and seas in times of flooding (Figure 204). Latu, a senior inhabitant of Arus Dalam, reminisced about the image and vision by interpreting the spirituality of natural forces in the fieldnote as follows:

"This is accurate and direct to the evidence." Drops of water fell from the cloudy afternoon sky as a story of the past unfolded from the lips of an older man, his gaze fixed on a stranger who introduced herself as a student. The man, with white hair and a thick moustache contrasting against his sun-kissed skin, continued, "The natural river curved through this area, then veered towards the cemetery, leading to the patches of water we observed, crossing to the other side of the road, towards the social housing complex we visited."

They stood as two tiny figures amidst an eerie landscape of ruined houses and the remaining urban wilderness. The concrete wall that bordered the landscape indicated landfills and the flood wall's level. In the distance, high-rise offices and apartment buildings merged with the bustling traffic of toll roads and the emerging elevated railway. Above them, grey clouds moved swiftly with the strong wind, shifting in uncertain directions.

"What do you mean by 'natural river'?" My voice quivered against the wind, lost in the vastness of the open field, envisioning the imaginary sound of streaming river water in the tale. "The river was created by God, not by humans," his eyes narrowed. "During the major flood, the river transformed into a vast sea. 'Pulo', an 'island' that emerged amidst the sea, was the settlement's name. I lived there in the 1960s before the houses were sold to private enterprises and resettlement occurred." (19/09/2021)

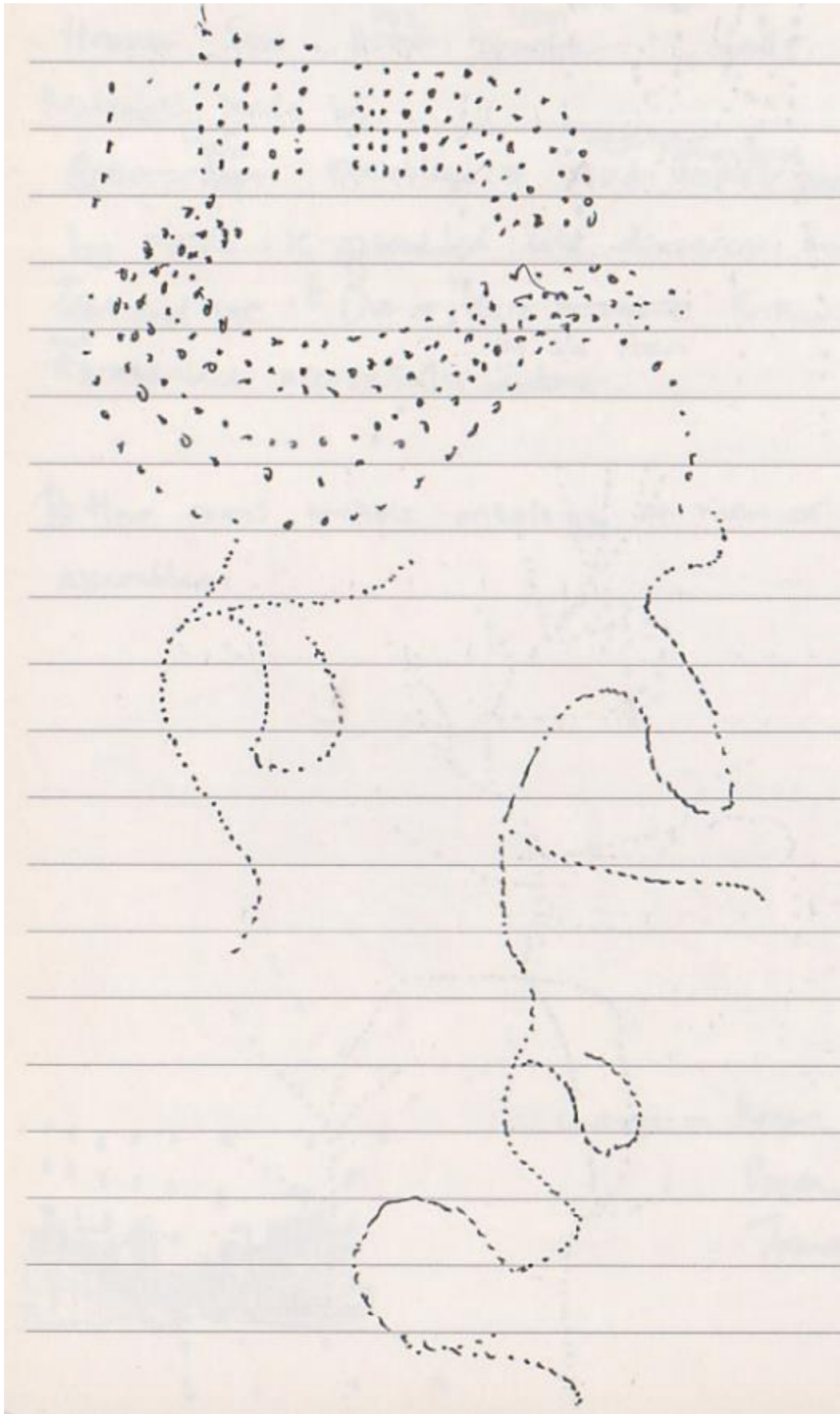


Figure 204 Seeing the 'river land' as settlements made by buried, land-filled, drained water bodies, by author, fieldnote on 18/07/2021.

The encounter unveils a fleeting moment of the swelling river, evoking visions of the sea and an island in Kali Mati. This imaginative leap elevates the 'dead river' of Kali Mati to a dispersed realm of surface water. The river, buried and overlooked in the landfill terrain, endures in memory, its presence lingering in recollections. A reverie of 'riverland' unfolds as Latu guided me to witness the remnants of water bodies and recounts the tale of the sea that bestowed names upon Arus Dalam and Cawang Pulo (Figure 205).



Figure 205 Remains of Kali Mati in Cawang Pulo, East Jakarta, by author, 2021/09/19.

The materiality of the remaining water bodies amidst concrete walls, soil landfills, ruins of houses, and empang disperses the constitution of the 'river' into wet time within the historiography of riverine settlements. This sentiment resonates with a statement from Ambu, a senior inhabitant in Tanah Rendah in RW 7, who recalls, 'The people before said that the river was once huge.' On the one hand, it revisits the history of swamps establishing agricultural settlements during the early stages of port town development, blending highland and lowland settlements with seasonal labour between villages and towns. Subsequently, it juxtaposes the cosmopolitan formation of settlements in the low-lying plain of the port town with the emerging coastal development. However, it also reveals the riverine landscape's openness to heterogeneous gatherings and encounters, redefining the riverine landscape's surfaces and the practices of living with water. The openness of the landscape that remains amidst the piecemeal urban settlement proposes another language of dwellings in wet and dry times along the river.

Still life of Kali Mati transforms the complex process of displacement into an opportunity to reconsider the translation and interpretation of wet time as the origin of settlement in urban life. The presence of lush, tall grass, growing trees, and bare grounds in a serene graveyard slows down the passage of time. It imbues a sense of allure, delaying the urge to move hastily and instead focusing on the time of ongoing and continuous renewal in the delay of building process in the new development project.

This perspective also repositions the ordinary assertion of possession, inscribed on the boards placed beside each other as they etch their letters into something more profound (Figure 206). These boards not only symbolise the labour involved in securing and maintaining the territorialized landscape but also represent the potential for envisioning alternative interpretations of what the wet time can create in 'river land'. It brings an open sociality to the living landscape, with recurring times of potentiality and expectation for the kinds of life possible with the presence of water in the city.



Figure 206 Land claims in the plots of Kali Mati established presence with notification board, bordering wall, pavilion of land guards, and graveyard, by author, 2021.

In the preceding section, the emergence of infrastructure during fire incidents in Tanah Rendah underscores the deep connection between riverine settlements and the surface water of the river, particularly in light of the lack of government involvement in the housing process. Conversely, the abandoned settlements of Kali Mati represent a regression, questioning the wisdom of inhabitation in the river's vicinity. The decision to stay despite the challenges posed by the wet time evokes intimate memories of a life intertwined with water, between the river and the sea, echoing ancient beliefs about the spiritual significance of different terrains and their impact on settlements and inhabitants.

At the same time, the dry time recalls the urban lineage of 'Kali' as part of irrigation infrastructure, rooted in the historical context of the capital cities of ancient kingdoms and the veneration of rain goddesses in cultivating arid landscapes. The collective memory of rivers in the landscape reflects a generosity in allowing the flow of water to shape the historiography of settlements. It speaks to both the fragility and resilience of water in sustaining and revitalising riverine communities across the cycles of life, transcending the constraints of the present moment.

In the midst of ruins, the dry time unveils a scene frozen in time within the forsaken settlement of Kali Mati, nestled in Arus Dalam⁶⁶, Cawang, East Jakarta. Here, the slowed passage of time reveals poignant details amidst the wreckage of abandoned homes and the encroaching landfills earmarked for new development. Amidst this stillness, blades of grass peek through the ruins, while the remaining inhabitants linger at their doorsteps, seemingly awaiting a signal to depart and move on. Yet beneath this tranquil facade lies a veil of secrecy, shrouding the displacements wrought by the river embankment and the looming presence of "Jakarta River City,"⁶⁷ a sprawling residential project.

Unlike the relentless force of wet time, the pace of ruination in the dry season unfolds with a different rhythm. Here, the liminal landscape evokes reflections on the potential forms of settlement, both present and future, caught between past memories and aspirations. For Fajar, a guardian of the ongoing development, memories of the vanishing inhabitants linger like ghostly echoes, casting a haunting aura over the desolate surroundings of Kali Mati, as follows:

"Yes, this area was once called Kali Mati, a name passed down through generations before my time. The river used to wind inland before bending towards Cawang and the grojogan⁶⁸ area near the rental flats in Bidara Cina. You might find out more about its history from the oldest resident here, a Haji Betawi. My family rented one of his houses. However, after his passing, his family sold a large part of the land to a developer, and since then, this place has become desolate, especially at night. Other residents gradually followed suit, selling their homes to the developer and moving away, though some stayed until they received compensation.

⁶⁶ The name of area is 'Gang Arus Dalam' which translated as 'Deep Stream Alley' in English. The upper contoured neighbourhood is named 'Stream Alley'.

⁶⁷ 'Jakarta River City' is a name of urban development that made use of the notion of 'Transit-Oriented Development' in the plan of Cawang LRT Station. The project took part in the river normalisation project as an entry point to gain floor area ratio, land use change, and building permit (Azzam, 2020; Gujo Architects, 2023; Mayasari and Wikanto, 2020)

⁶⁸ In Indonesian, *grojogan* is falling water in the Javanese language. The term refers to an underground tunnel connecting the water flow from Tarum Canal and East Flood Canal to Ciliwung River.

The city government relocated squatters from the riverbanks to public housing. Along this stretch, transvestites and the homeless, among 'untouched'⁶⁹ groups, frequently faced marginalization. I remember one incident during a flood, when they returned from their nightly work to find their belongings swept away by the raging water. All they had left was what they carried with them." (Fieldnote, 2021/09/16)

The narrative of displacement and continuity of settlement in Tanah Rendah is steeped in nostalgia and reflection on changing societal values in the process of displacements. Ali, a neighbourhood leader at RW 4, reminisces about the 1970s and 1980s, when the area was populated mostly by early-generation Betawi settlers. He recalls how many of them eventually relocated to Cilebut, a district located in the upper stream of Kali Ciliwung, and laments the shift in Betawi values over time. Ali, who identifies as a 'jagoan'⁷⁰, emphasizes the importance of gathering and mutual solidarity among early Betawi settlers, values he feels are not adequately represented in contemporary Betawi organizations.

Within such disruption, the riverine settlement redefines plantation and industrialisation altogether through the governmentality of infrastructure provision amidst the dissonance of abandoned 'slum' in income-bracket housing policy. The transition from wet to dry time marks a shift in the ruination in riverine settlements. While wet time sees a gradual decay due to the lack of government intervention in irrigation infrastructure, dry time presents opportunities for speculative returns for those who choose to remain. However, this process of ruination can also be understood as a complex exchange of materials and values amidst the changing landscape of the river and its surroundings. Property transactions, such as reoccupying abandoned riverbanks, and momentary

⁶⁹ The statement in Indonesian is '*ngga disentuh*', which is literally translated as 'untouched'. In the interview, the term is associated to socially excluded group in the city.

⁷⁰ *Jagoan* here refers to embedded history of neighborhood leader in his family that managed security in the area. In the contemporary life of Jakarta, the term may be easily associated with *preman*, but the presence of *jagoan* has heroic nuances who perform martial arts to secure underworld life in colonial history of Batavia (see Sutherland, 2012).

endurance, become integral aspects of the historical narrative of riverine settlement.

Through closer observations and interviews with the remaining inhabitants of Arus Dalam, the intricate process of seeking compensation becomes apparent. Ida, a self-identified Betawi resident, shared her experience of staying in the area to receive government compensation. She explained that she once lived in the upper part of the neighbourhood and had relatives buried in a nearby graveyard. During our last meeting, Ida was helping her relatives, who had also participated in the displacement process, pack their belongings. Despite having found a new place to live, she remained involved in helping others transition from the area.

Ida's house served as a microcosm of life amidst the sedimented landscape. When the river waters surged and reached the upper floors, a bamboo ladder and styrofoam board stood poised on the balcony, ready to serve as a makeshift refuge (Figure 207). A makeshift kiosk stood adjacent to the house, while a small garden housed roosters in a stilted cage. As she prepared to leave, Ida recounted her experiences living there with her husband, who hails from Madura, and their daughter. Reflecting on the imminent move after securing compensation from the government, she remarked, 'It's okay, especially for her,' casting a glance at her brother and sister-in-law. 'They say this area is in Jakarta's golden triangle.' That afternoon, she sat by the front door with a contemplative gaze, pondering the transition ahead.



Figure 207 The sedimented landscape of the house and makeshift settlements that denotes wet and dry time, by author, Fieldwork 2021.

When riverine settlements are dry, the delay in displacements takes on a new dimension. It reveals a time of cultivating hidden costs alongside the allure of potential gains, often referred to as 'gold' in the context of material valuation and the expansive landscape. This period underscores the various strategies employed by inhabitants to navigate the shifting tides, embracing a mindset of making the most of the circumstances presented to them. The remains of the houses are more than 'ruins'. Rather, it is a site of possibility, vitality, and radicality on what riverine landscape could offer in the urban life of the city. Importantly, it is also a site of potential encounter as well as a momentary connection. In a brief encounter during fieldwork, Ida told me to one day make a visit to her new place, as she would not be staying any longer in Arus Dalam.

Wen, Ida's neighbour, echoed similar sentiments regarding participation in the displacement game. He recounted a bureaucratic ordeal spanning five years and costing approximately twenty million rupiah (around 1,415 USD as of October 2021) to navigate the administrative hurdles required to secure compensation from the government. Reflecting on the process, he lamented, 'I am a fool, I know.' He described, 'I am a fool, I know. So, I asked them (the staff in a meeting for compensation) individually. Who are you? Who are you? Who are you? What do you want? Why do things proceed like this? However, they only said that they did what was being told to them by their seniors. I followed what was told to be included in a group of people who got compensation.'

Despite expressing a detachment from the process, Wen complied with the prescribed steps to ensure inclusion in the group eligible for compensation. Similar with Ida, he carefully mapped the changing landscape of the riverine settlement. He was aware of the uncertainty in the displacements and the ongoing endurance and resistance by staying put in Kali Mati. Together with the inhabitants who remains in the settlement, he recognised the necessity of playing along to secure future benefits. His house is undoubtedly an inherent part of the tactical inhabitation in such contested territory and dynamic terrain. Attention to the orientation of the house and the arrangements of the inhabitation revealed a careful calculation towards multiplicity of what the future events could be.

Much like Ida's dwelling, Wen's house illustrated the seamless integration of the surrounding landscape with the interior space. The ground floor's layout facilitated an easy flow between the makeshift kiosk, the alley, fence, and front room (Figure 208). While Wen focused on preparations for their relocation, his wife and daughter remained at the house during the day, tending to the kiosk, watching television, and caring for their children. During the night, the light from the house tore the darkness of the abandoned landscapes in Arus Dalam as the family gathered while watching TV in the living room.



Figure 208 Tarpaulin roofing and lighting that blurred the space in the exterior and interior of a landscape in Wen's house during daytime (2021/03/31) and nighttime, by author, 2021/08/04.

The layout of the house also reflects anticipation of the wet season and potential flooding. The staircase gradually ascends to the "main" house. It is where bedrooms, toilets, and the kitchen are situated on the upper floor (Figure 209). Similar to Ida's dwelling, the attic serves as a semi-open space on the second floor, providing refuge during flooding events. Wen attributed the detailed arrangement of materials in his house to his experience as a builder, which ensured functionality of the room with light structure and materials. Together with Ida's house, the twin house remained stood still in the Arus Dalam until the time of ruination.



Figure 209 Kitchen sink and toilets on the upper floor with steep ladder that links the ground floor to the second and third floor, by author, 2021/08/04.

During my encounter with Wen, the renters occupying his house had already vacated. In their absence, graffiti adorned one of the rental rooms on the ground floor, bearing the message, “THIS LIFE IS LIKE A WHEEL. NOW AT THE TOP. TOMORROW AT THE BOTTOM” (Figure 210). The graffiti, adorning the wall next to a steep wooden ladder that leads to the upper floor, symbolised the fleeting essence of life and the unpredictable nature of fate.



Figure 210 A graffiti of two connected wheels saying, in Indonesian, “HIDUP INI SEPERTI RODA. SEKARANG DIATAS. BESOX DIBAWAH. BANGG-“with two rolling wheels written with “RODA-BERPUTAR”, by author, 2021/08/04.

Therefore, the upper floor emerged as the nucleus of the house's design, serving as a sanctuary and haven for its inhabitants. With its raised structure and interconnected staircases, the upper floor facilitated movement between the ground level and the upper reaches. During my visit, I observed personal touches that imbued the upper floor with warmth: Ida's bony tongue fish and Wen's cat added to the sense of domesticity and affection that permeated the space (Figure 211). In contrast, the ground floor seemed to embody a realm of activity, resilience, and adaptability amidst the ever-changing landscape. The juxtaposition of these two levels captured the tranquillity and dynamism, restfulness and endurance that defined life in the riverine settlements.



Figure 211 Movements of animals from the openness of the landscape to the interiority of the house, by author, 2021/08/07.

Despite the ongoing cycles of settling and unsettling, life in Kali Mati persists. After their displacement to Rusunawa Rawa Bebek in 2016, Ganesh and Jaya, a couple who arrived in the 1980s, returned to the riverbank to set up makeshift stalls selling food. Reflecting on their decision, Ganesh expressed their attachment to the area, stating, "Our 'farm' is here. We must stay here." Jaya echoed his sentiments, lamenting the increasing precarity of housing policies and comparing the lack of support they received in recent displacement processes to previous experiences.

Jaya, Ganesh's wife, expressed concern about the increasing precarity of housing policy. She compared the entitlements to compensation with the housing provision and the mechanism of displacement. While serving food and caring for

her grandchild, Jaya talked about the affordability of buying a house during the Suharto period in the 1990s and contrasted it with the lack of compensation for the recent displacement along the river embankment. She also contrasted the rental scheme in Rusunawa as the only option compared to the previous relocation scheme. Echoing her husband's sentiments, she asserted, 'The house was built with our own hands. We bought a wooden house frame and then renovated it. I prepared the concrete and sand while my husband laid layers of bricks. How can we sleep well at night? We worked tirelessly to reinforce it as much as possible so that it could withstand floods. (...) People have said that counting trees and materials is important. A marble floor has a different value.'

Hence, overemphasizing the mechanism of displacement overlooks the inherent exclusion in the classification of settlers. It also disregards the efforts involved in inhabiting the riverine landscape as a housing process for heterogeneous migrants who work in the city. Again, the remains are more than ruins of riverine settlement. The historical presence of water and growing settlements in the city intersect with intergenerational process of displaced, illegitimate inhabitants 'ware housed' in Rusunawa (see Tadiar, 2022). The remains turned into a site of abode for the 'untouched' groups living and working in the city while being excluded from the land and housing market.

Take Tika, for example, a senior citizen who rented a tiny house. Because of her ageing condition, staying put is a negotiation for the right to care. She is originally from Yogyakarta, another region of Java, and lives apart from her spouse and daughters in different cities. Tika retired from her job as a cleaner at a retail store due to physical limitations. She had been moving around several rental rooms in Arus Dalam, including one located on the grassy area around a large cotton tree that had been displaced. Eventually, she rented a house belonging to a deceased Haji. Despite undertaking various repairs, her position as a renter excluded her from receiving compensation. This time, relying on social support from the government, she chose to remain in the house, while considering an offer of a place in Rusunawa. Tika is one example amongst many aging inhabitants targeted by humanitarian rescue of the government-led subsidised housing (Putri, 2019).

7.3. Reoccupation of Riverine Settlements

7.3.1. Reclaim and Refuge

The persistent wetness in the river landscape fosters a distinct presence, showcasing the enduring vitality as it interacts with the moisturised surroundings. Rainfall transforms the wetness into a spectrum of emotions, ranging from shelter and solace to joy and festivity in temporarily occupying urban life. The fluid movements and rhythms of the streets undergo a subtle yet perceptible shift, embracing a different tempo and ambience. In the wet season, atmospheric forces across the urban landscape alter routes, prompting pauses, delays, turnarounds, or cancellations. The immersion in the humidity of pouring rain disperses flows, drawing people together under the shelter of shades for fleeting refuge, as depicted as follows:

'I met Lema at Jembatan Perwira, finding him squatting on the sidewalks of Istiqlal Grand Mosque, near the basecamp of waste pickers. He barely noticed me but then remembered our short meeting. He is now working in Tanah Abang, Roxy area. I then talked further with him and exchanged numbers. He said he wished not to be rotated to different locations with different teams because working with Toya suits him. Lema is quite old, and the young Toya knows how to respect him.

"Today is not my working day. I came here to walk away from my house. Staying there got me a headache! Mumet!⁷¹" he sighed. We then discussed a brief story about his family, who once lived near Manggarai. Her father was from Indramayu, West Java, and married his mother from Betawi. In 2014, he joined the team to work in the Manggarai floodgate, the most complicated location for waste collection in Jakarta. Back then, he lived nearby at Tebet, riding a bicycle to work. Then, it was moved to the Istiqlal area.

When I asked him what he thinks of the homeless under the elevated railway next to the diverted Ciliwung River, he noted the regular visit of people

⁷¹ *Mumet* is an expression of headache due to mental exhaustion of too many things to think about. It can be interpreted as an exposure to too many problems as the participant moved away from home to the riverbanks.

from church who give them food. He seems annoyed by how people experiencing homelessness defecate at the waterways where he works, picking scattered waste. This everyday endurance of waste collectors facing human waste is shared by his peers who work in neighbourhoods that rely on open waterway for wastewater outlets from toilets.

On that day we met, tiny drops of water poured into the city. A day before, the water level reaches up below the bridge. One participant who lived at the banks of the river sent me a video of river water reaching up the halfway level of the front door. I ordered an online motorbike to move to another place, absorbing tiny drops of water. Stopping at Kebon Pala market in Jatinegara, I bought a 30k push-on umbrella at a toy shop. A Sundanese song filled the small room of the shop. In the alleyway of the market towards steep hills of dense settlements of riverbanks, three kids were playing, running with drops of rainwater, soaked wet from hair to toe. Every colour changed slightly darker, bathed in the rain. Wet asphalt on the alley surface reflects the coloured paint of the brick wall of the house.’ (20211108_on temporal positions of research).

The fieldnote excerpt demonstrates the spectrum of heterogeneous experiences with affections and sentiments, as well as the pace of urban life in the rainy season. It brings the liveliness of shelter and downpour together with the thrown togetherness of urban life, slowing down the frenetic pace of city life and offering moments of respite and escape amidst the dampness. For Lema, wet time means a slowdown in his working pace due to the safety and security of his work in the rushing flow of the waterway. Even the storm flushed away trash from the waterway to the edges of floodgates. As the rainfall persists, street vendors engage in emerging activities of the informal economy, such as selling raincoats, offering hot food, and patiently waiting for the passing rain (Figure 212). Spirits in the rain harmonise, intertwining with the essence of wetness.

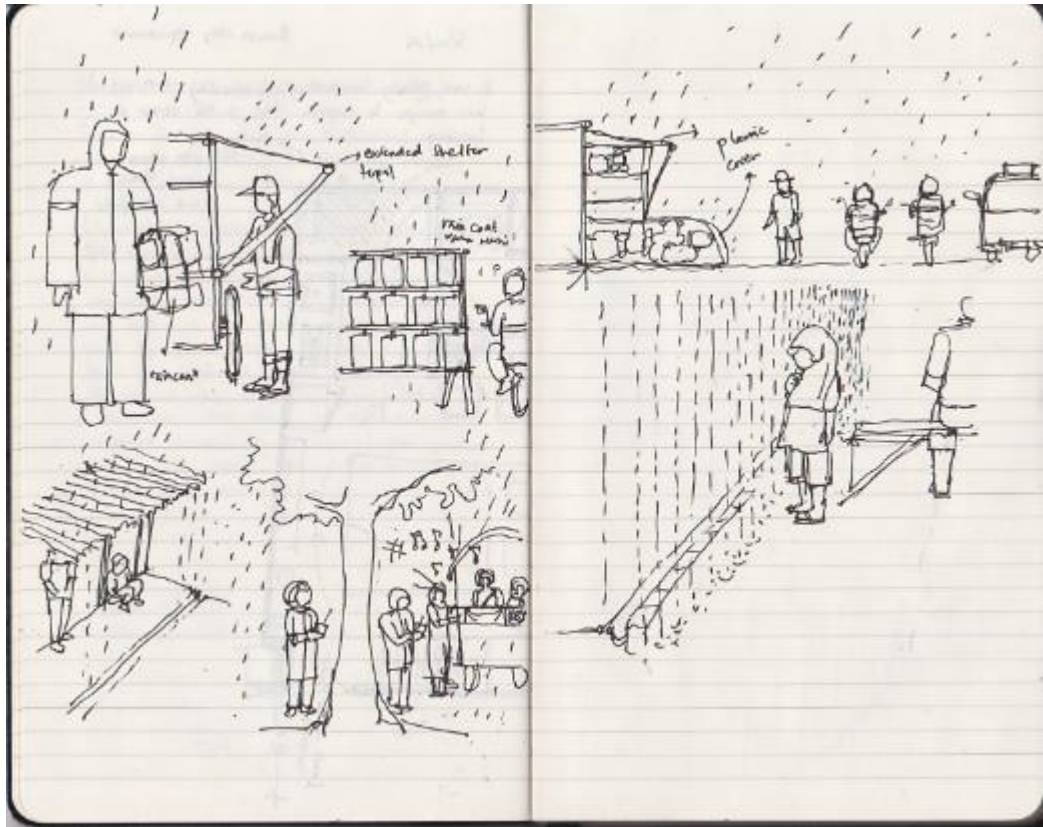


Figure 212 Emerging activities in the street life during the wet time of the rain, by author, 05/02/2021.

The rainy season brings diverse encounters to the urban settlements. Daus, a Betawi busker in Kebon Sirih, recalls how the area around Sarinah no longer floods due to floodgates directing water flow away from the National Palace. In the past, Daus assisted people stuck in floodwaters by offering umbrella rides or pushing carts. During these interactions, he often received invitations for lunch from stranded passengers who couldn't risk their laptops and important data getting wet (Figure 211). "The passengers couldn't fathom being caught in the rain with laptops and important data," he shared. "He'd invite me for lunch, saying, 'Don't worry, just stay here for a while' I said, 'But I needed to work.'"

These anecdotes highlight the social settings shaped by the presence of water in riverine settlements, as well as the improvisational responses to its unpredictable effects on urban life. This exchange also sheds light on the lively outdoor interactions in riverine landscapes, evoking memories of a dynamic living environment. The urban landscape transforms during the wet season, fostering seasonal labour and encounters.

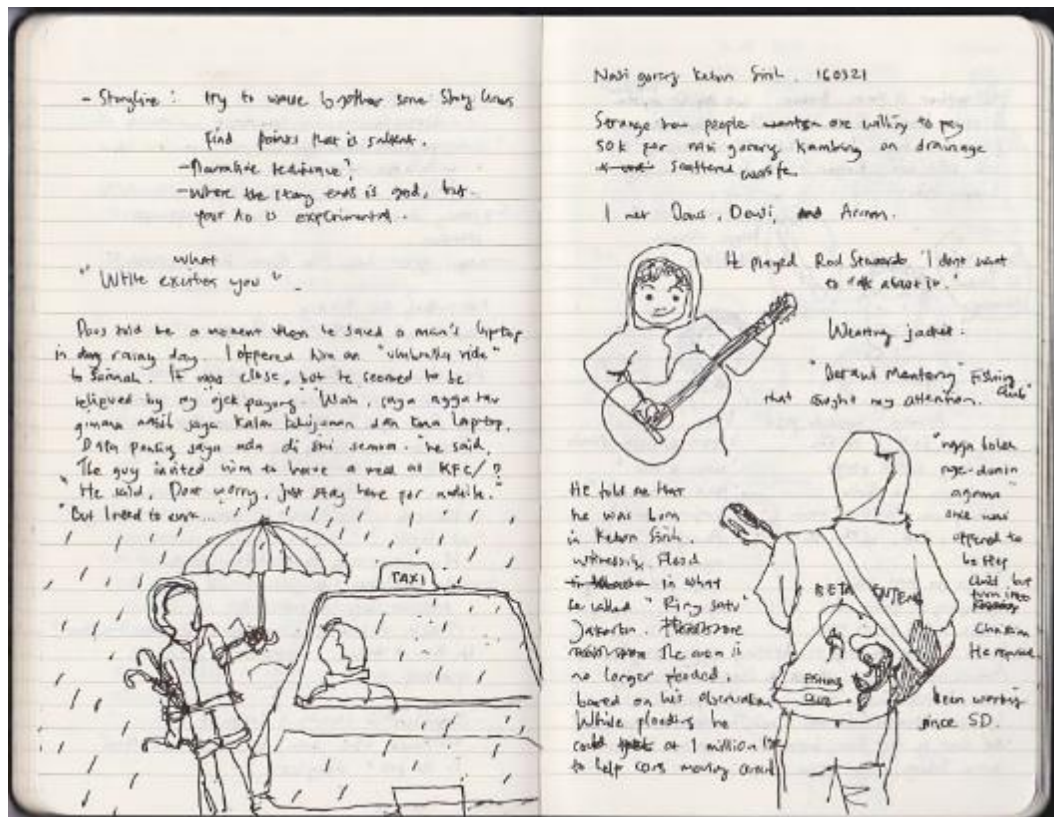


Figure 213 The memory of the encounter during rain in Sarinah, by author, fieldwork on 16/03/2021.

The dwelling also revisits the kinds of living that are valued and counted in attending to the spirituality of water. The transient rainfall disrupts the cadence of city life, intertwining encounters with moisture. As the air shifts and the wind blows amidst the rain, the atmosphere undergoes a palpable transformation, offering cooler temperatures, fleeting droplets, and dampened surroundings.

Along the banks of Kali Cipinang, birds take flight and glide amidst the downpour (Figure 214), seemingly celebrating the wetness. Their presence exemplifies diverse ways of inhabiting the temporary moisture of the open air, blurring the boundaries between moments of ruination and moments of spontaneous existence in the rain. They offer a different perspective on bodies in home and landscape, highlighting the ecological interconnectedness of rivers, open spaces, and human habitation. While the mangrove park development in Jakarta Bay reshapes coastlines into wetland and residential areas, the birds suggest the potential for varied forms of inhabitation across the urban landscape.

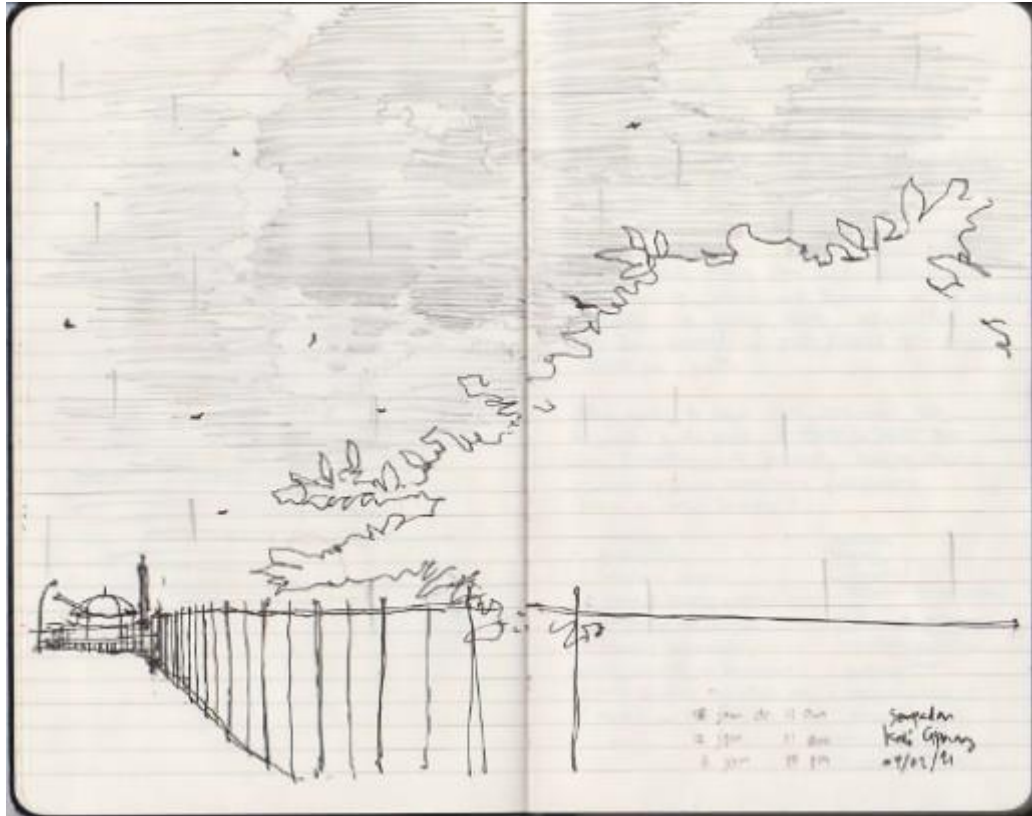


Figure 214 Birds fly and glide during the rain, surrounding a tree on Kali Cipinang, by author, fieldwork on 04/02/2023.

Conversely, the wet season along wider waterways such as the East Flood Canal offers a wide range of experiences within the vast waterscape (Figure 215). Here, fast-paced urban life converges with the tranquil existence of plants and animals in the riverine settlements. Once again, the configuration of river embankments shapes the atmospheric conditions and potential for collective inhabitation within the waterfront landscape.



Figure 215 Birds fly over the East Flood Cana, by author, fieldwork on 17/01/2021.

The rainy season facilitates momentary encounters with the spiritual forces of rainwater. Furthermore, it prompts a reassessment of material valuation within individual buildings in light of emergent relational conditions. As an illustration, birds glide with the breeze, reaching into the open doors of high-rise apartments (Figure 216). This aerial crossing revisits the diverse inhabitation movements that seeded and flourished within the urbanising landscape. It underscores the potential for gatherings within the openness of habitation, facilitated by the layout of riverbank apartments, which often feature balconies and openings allowing birds to enter. This encounter fundamentally challenges conventional notions of air as merely an element of the landscape. It emphasises the limitations of current building assessments, which fail to account for the dynamic movements that inhabit the environment. The towering structures of high-rise buildings during wet times prompt a reconsideration of the presence of air, the stable ground, and the elevated vista from atop the building.

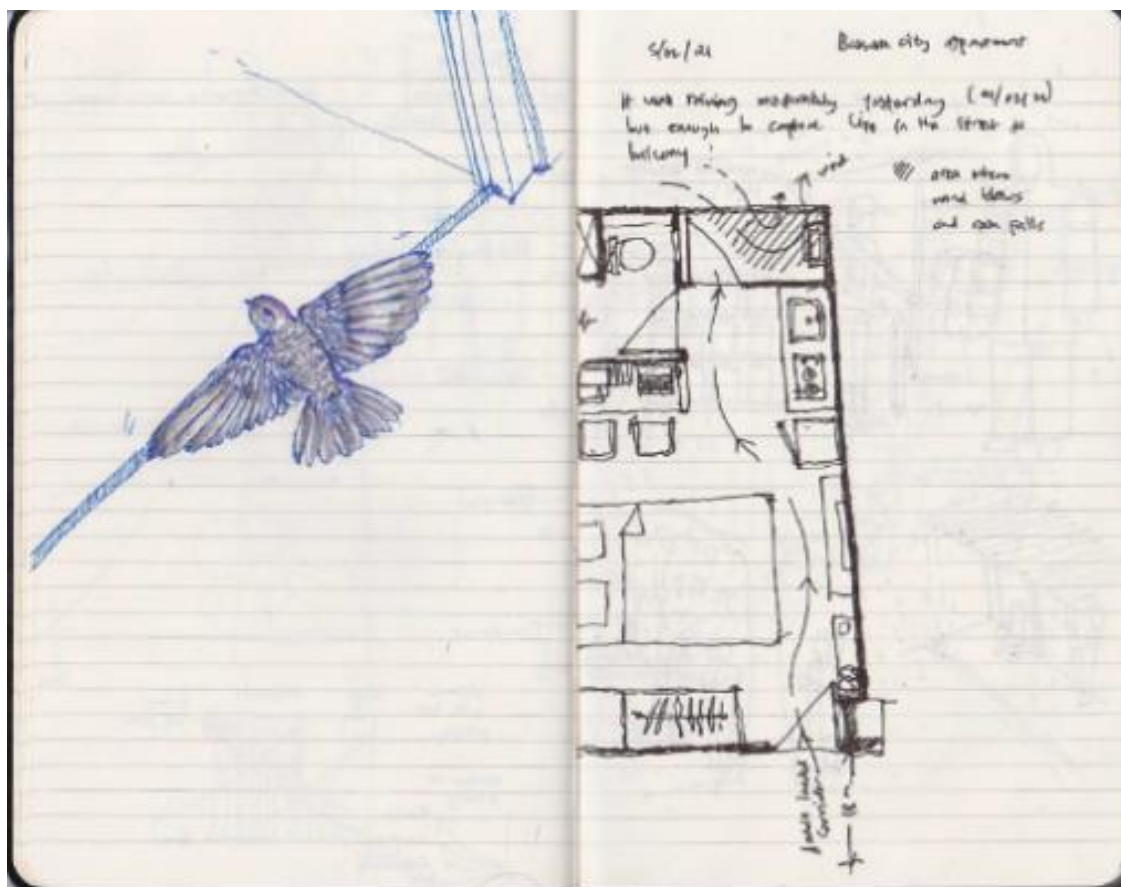


Figure 216 During the rain, a bird came into a high-rise apartment unit in East Jakarta, by author, fieldwork on 05/02/2021

Abdul, tending to the embankment along the East Flood Canal, revealed how inhabitants used sediment from the embankment for nurturing outdoor activities (Figure 217). Reflecting on his own experience of displacement, he pointed to a papaya tree standing and said, 'My house used to be there—where the papaya tree stands. Some got much compensation, then something happened... that is not blessed'. With a sense of solemnity, Abdul recounted the fate of a neighbour who received substantial compensation but then faced misfortune. His reluctance to elaborate further spoke volumes, but he ultimately described the concept of 'berkah', indicating a blessing from a higher power.



Figure 217 Occupying the banks of East Flood Canal, Jatinegara, by planting on sedimented banks and feeding livestock, by author, fieldwork on 2021/01/25.

Arguably, the wet time of open water in the river brings imagination to the possibility of seeding and growing urban waterfronts. Seasonal rhythms transform the wet time into moments of gathering and encountering. The arrangement of the river terrain into interiority of the urban settlements revisits the connections between living landscape and the living house. The vitality of water in the wet season also makes visible heterogeneous kinds of settlements for urban life. The next section will discuss the turn of dry time that signals the time of repair and renewal.

7.3.2. Repair and Renewal

To initiate the discussion on the dry season of riverland, it is essential to revisit the definition of a dry riverine landscape as perceived by river inhabitants. It evokes the memory of water flow on the occupied terrain, contrasting with the flooding experienced during rainy periods. Initially, I encountered difficulty comprehending the term 'kali kering' or 'dry river' as mentioned by inhabitants 'during my fieldwork in 2016. They used this term to describe the tranquil, almost motionless water and dry terrain of the settlement. In contrast, 'kali naik' or 'rising river' referred to instances where water encroached upon settlements. In other words, the name refers to the appearance and disappearance of water flows on the ground floor of the settlements.

The concept of the dry river sheds light on how the riverine landscape is interpreted. For example, observing the construction of a bamboo raft known as a 'getek' over the tranquil water flow of the river (Figure 218) illustrates an awareness of the serene conditions during dry times, where the dry air and calm water surface create ideal buoyancy for the raft. This simple act of renewing the raft reveals a moment of expression, emphasising the significance of opportunities, communal activities, and the rarity of resources in their ongoing use and circulation within the community, as described in the fieldnote excerpt:

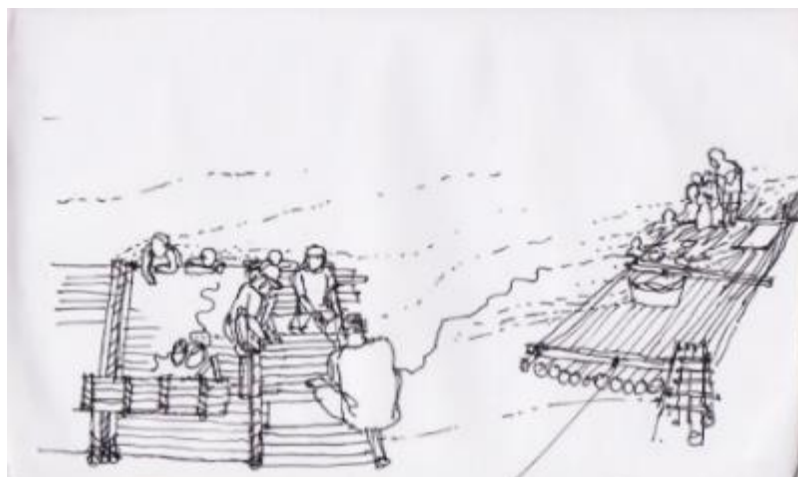


Figure 218 Making a bamboo raft over the river during the dry weather, by author, 12/05/2018.

'Watch out for the trash!' one of the kids cried out. A woman arrived with a trash bin, a rare occurrence. The kids swiftly emerged from the water and climbed on to the raft as the water carried away the trash. Once it was cleared, they promptly jumped back into the river. Similarly, when someone needed to relieve themselves, they moved to swim to the other corner of the raft. In the absence of an enclosed squatting toilet board, people improvised by using with a piece of wood board to cover their front bodies while squatting. The designated spot for squatting remained unchanged. 'Some people only use a sarung⁷² to cover themselves,' Ambu explained, 'There are various ways to manage it! It is a necessity.'

Bhanu continued assembling the bamboo step, joining part of it with a bamboo plank. As Zuhr's prayer filled the air, Bhanu tied a knot in the bamboo raft using the spotted 'hole' of two bamboo pieces. After washing his hands and face with river water, he climbed up to the pavilion for lunch. That day, Ambu cooked yellow rice for the neighbor who organized a feast. 'Last night, people said there was a meeting to discuss displacement,' Bhanu mentioned as he enjoyed the yellow rice. 'But I didn't attend. It ended at eight, and I haven't heard the outcome of the discussion; I haven't seen the RT.'

I listened to him carefully. He continued, 'The discourse has been like that since long ago. However, what has happened until now? Anyway, what is important for the people is to stand firm, like the activist said. My house stands as the final structure on the riverbank, surrounded by newly constructed homes. If feasible, we can redesign it and widen the river. Rita approached us, bringing some wood joists. 'I'm untung⁷³ that I don't need

⁷² *Sarung* is a traditional piece of woven cloth used to cover half parts of the body. The piece is used daily in villages in Indonesia and many parts of the globe with hot and humid climate.

⁷³ I keep the original word '*untung*' here, which has more than one interpretation. In Indonesian, the word is translated as 'luck' in a play of chance and 'profit' in trading and exchanges. In the fieldnote, the '*untung*' can be interpreted as the first one that he got the chance to use wood joists or both in an opportunist way, as he rationalises the act of receiving with the assumption that he did not need to buy one.

to buy a new one. He just finished repairing the roof, so there must be something that can be used,' said Bhanu.

He tossed four wood joists into the river near the raft. After Friday prayer, Bhanu began assembling bamboo steps. I offered to saw and nail the wooden plank to the bamboo piece. The seemingly simple task of crafting requires practice and determination. As I assisted Bhanu, a boy named Babang joined us to observe closely. He had been playing with other kids on the old bamboo raft since this morning. I invited him to help with my work. At times, Bhanu teased him, 'So, are you in a relationship with Mimi?' Babang remained silent for a moment before replying, 'I'm still too young.' Bhanu chuckled as he exhaled smoke from his cigarette, remarking, 'Ah, very wise.' He found it amusing, adding, 'But age is just a number. Here, I'll include yours with mine.' We laughed together.

The afternoon prayer marked the completion of the intricate work of crafting bamboo steps. "Yeah, now it looks splendid," Bhanu said with satisfaction as he gazed at the bamboo raft from the pavilion on the riverbank. He instructed his sons to transfer the new bamboo steps to the old raft, and they complied.

'Come on, everyone, lend a hand! Ladies too!' The youths, who had been repairing motorcycles in the alleyway and lounging on the riverbanks of RT 13, swiftly made their way into the river to hoist the new raft over the old one in a matter of seconds. The design principle of the raft involved simultaneously knotting the 'head' and the 'foot,' merging the old and the new into one. Suddenly, there was a need for people to enter the river. Some removed their t-shirts and entrusted their mobile phones before plunging into the water. Each person positioned themselves along the lengthy side of the raft, lifting it towards the centre for the knotting. In the meantime, Bhanu acted as a conductor, directing the work.

'Headfirst! All to the head! All to the foot!'

'Still exceeds!'

'Pull!'

'OK!'

The youths formed lines on both sides of the raft. The new raft was positioned on top of the partially submerged old one. After precisely aligning the new raft with the old one, the youths swiftly knotted them together. In a matter of moments, the task was completed, and they naturally resumed their previous activities.' (Fieldnote 13/05/2018)

The intricate process of repairing the raft serves as a metaphor for life in the riverine settlements during dry spells. The fieldnote excerpt illustrates how each action and moment is imbued with significance, reflecting the resilience and adaptability required to cope with the challenges of hot and humid weather. As inhabitants unite to work on the raft, they engage in a silent exchange of knowledge, assistance, and mutual support, reaffirming the deep interconnectedness of their lives. It emerged spontaneously and simultaneously in times of necessity, transforming the work of assembling the raft into collective movements for a specific and temporary task.

Bhanu's assertion regarding the historical significance of his house as a waterfront property underscores the complex narratives surrounding displacement and occupation in the community. His claim not only reflects a sense of pride in his home but also speaks to larger discussions about land ownership and community identity. Furthermore, his encounter with Rita, which leads to the acquisition of wood joists, exemplifies the role of chance in shaping individual fortunes in uncertain circumstances. This serendipitous moment highlights the residents' resourcefulness and resilience in navigating the challenges of displacement and rebuilding their lives in the face of adversity.

7.3.3. Play and Leisure

The dry season serves as a period of restoration for the soil, allowing it to replenish and renew. This restoration period, known as ‘fallow time’ is crucial in agricultural settlements as it helps maintain the balance of the landscape ecosystem by limiting the growth of various animals and plants⁷⁴. In rural villages, the vast, open fields during fallow time often become playgrounds for children to fly kites and engage in outdoor activities. Likewise, the dryness of waterfront areas transforms them into recreational spaces. For instance, the seawall in Muara Baru, North Jakarta, becomes a pathway for people to jump into the water, disregarding the narrative of the sinking city as they find joy and pleasure in gathering by the waterfront⁷⁵ (Figure 219). Meanwhile, at Katulampa Dam, the dry terrain gathers children who play, climb, and explore the gentle water. The slope of the weir becomes a makeshift slide, and the accumulating sediments form mounds for climbing and exploration (Figure 220).



Figure 219 Children climb, jump, and swim from the seawall to water near an abandoned musholla at Muara Baru, an ‘icon’ of the sinking city in North Jakarta, by author, fieldwork on 23/01/2021.

⁷⁴ Several anthropological literatures discuss the connection between the maintenance of the fallow period and the risk of plague. For example, Lansing (1987) draws the claim of High Priest in Water Temple in Gianyar regarding the plague of rodents in 1979. The growing numbers of rats is believed to be the problem of irrigation management in upsetting the fallow periods.

⁷⁵ As depicted by international media Wired UK (Guest, 2019) uses headline ‘The impossible fight to save Jakarta, the sinking megacity’, while New York Times (Kimmelman, 2017) uses ‘Jakarta is Sinking So Fast, It Could End Up Underwater’.

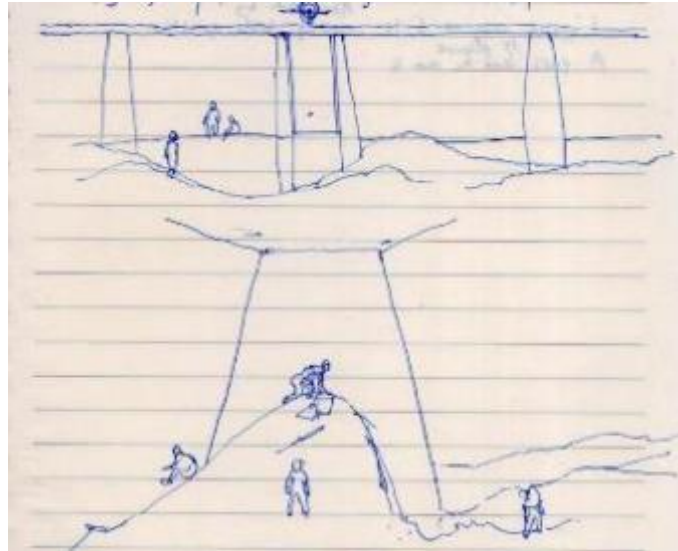


Figure 220 Children played on the landscape of dry Katulampa Dam, by author, fieldwork on 28/08/2021.

The play during dry times also evokes childhood memories shared in the oral history of senior inhabitants. Rachmat, a leader of RW 8 in Tanah Rendah who was born and raised in the area, reminisced, ‘The water back then was clean, the slope was steep, and the water was deep. Kids played in the river between study sessions at the ‘madrasah’⁷⁶. Today, it's very different. I can't imagine swimming in the river like we used to.’ These memories of engaging with the ‘dormant’ life of water reflect the changes in the landscape of settlements.

During the dry season, the heat intensifies in the wet terrain of the river. The open water becomes a gathering place for joyful collective activities, as seen in the celebration of National Independence Day on August 17th in Jatinegara, including areas like Tanah Rendah and Kampung Pulo (Figures 221 and 222). However, ongoing river embankment projects have impacted the openness of the landscape, hindering opportunities for communal play and gatherings. An event organiser noted the change of river terrain, ‘The riverbed is now filled with various debris from embankment construction after displacements occurred.’

⁷⁶ Madrasah is a school for children that is organised to teach basic education about Islam. The school is commonly found in a neighbourhood with predominant Betawi, such as in riverine settlements in Jatinegara.



Figure 221 'Panjat pinang' game to celebrate Independence Day 2015, by Pak Subhan Tanah Rendah, 2015.



Figure 222 'Panjat pinang' game at Kampung Pulo, Jatinegara, before the construction of floodwall and roadway in river normalisation project, by archives of Ciliwung Merdeka, date between 2012-2016.

The light-heartedness observed during the dry season challenges the traditional perception of wetlands solely as a framework for irrigation purposes under governmental control. It prompts a reassessment of the role of dry periods in wetland utilisation and management, emphasising the importance of balancing wet and dry phases within the ecosystem (Figures 223-230). Furthermore, it highlights the oversight in wetland planning and development processes, which often prioritise speculative water management measures over the diverse forms of inhabitation reliant on these ecosystems. This oversight fails to consider the experiential aspects of home and community in relation to the temporary presence of water during dry seasons.



Figure 223 Children play in the dry Katulampa Dam, by author, fieldwork 2021



Figure 224 Children swim in the wet Katulampa Dam, by author, fieldwork 2021.



Figure 225 Children swim in wet terrain of East Flood Canal, by author, fieldwork 2021.



Figure 226 Children play on the banks of East Flood Canal, by author, fieldwork 2021.



Figure 227 Children play on a floating raft in Cawang, by author, fieldwork 2021.



Figure 228 Children play on a bamboo raft in Tanah Rendah, by M. Yusni Aziz, fieldwork 2016.



Figure 229 Children climbed the sea wall in Muara Baru, by author, fieldwork 2021.



Figure 230 Children swam on the waterfront of seawall in Muara Baru, by author, fieldwork 2021.

The quietude of dry time settles upon the waterfront, creating a tranquil spot under the bridge where various activities unfold at a leisurely pace. The bridge provides shelter from the sun and offers a contemplative vantage point away from the surrounding crowds and noises. It offers a space to appreciate the riverine landscape through passive activities such as fishing, tending plants, and simply resting, cultivating the experiences and rhythms of urban life (Figure 231).



Figure 231 People fishing at riverbanks underneath the road and train bridge, by author, fieldwork on 23/01/2021.

Furthermore, paying attention to dry time reveals the interconnectedness of labour movements from agricultural fields to riverine settlements. For instance, two boat riders navigating the West Flood Canal hail from Brebes, Central Java, where they engage in planting shallots during the dry season (Figure 232). Their daily mobility across the river sustains the flow of goods and people as they traverse the gentle waters back and forth along the waterfront.

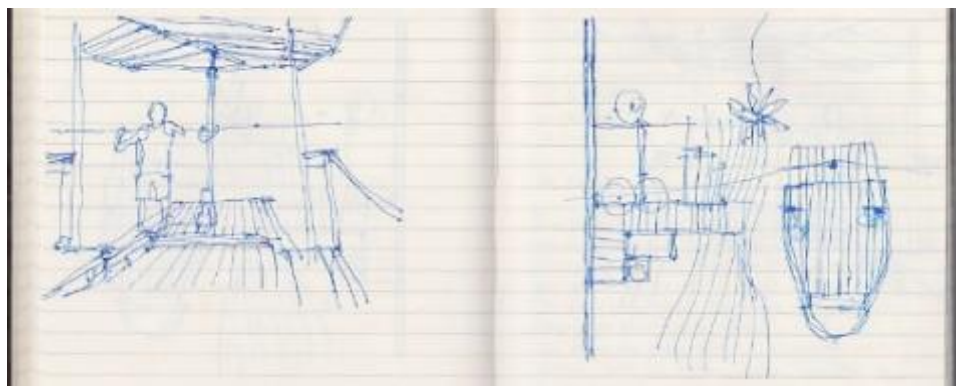


Figure 232 A floating wood boat called 'eretan' in West Flood Canal, by author, fieldwork on 21/05/2021.

The observations made in the riverine landscape have influenced the arrangements and orientations of longing to belong at the relocation site of rental housing units in Rusunawa. The absence of distinct wet and dry seasons in the open riverine landscape has transformed the perception of 'home', leading to a sense of extended enclosure and disconnection from the environment (Figure 233). The continuous corridor leading from the street to the elevator and through the housing units creates a sense of displacement and unsettles the feeling of becoming 'at home' in the absence of the surface water of the river.

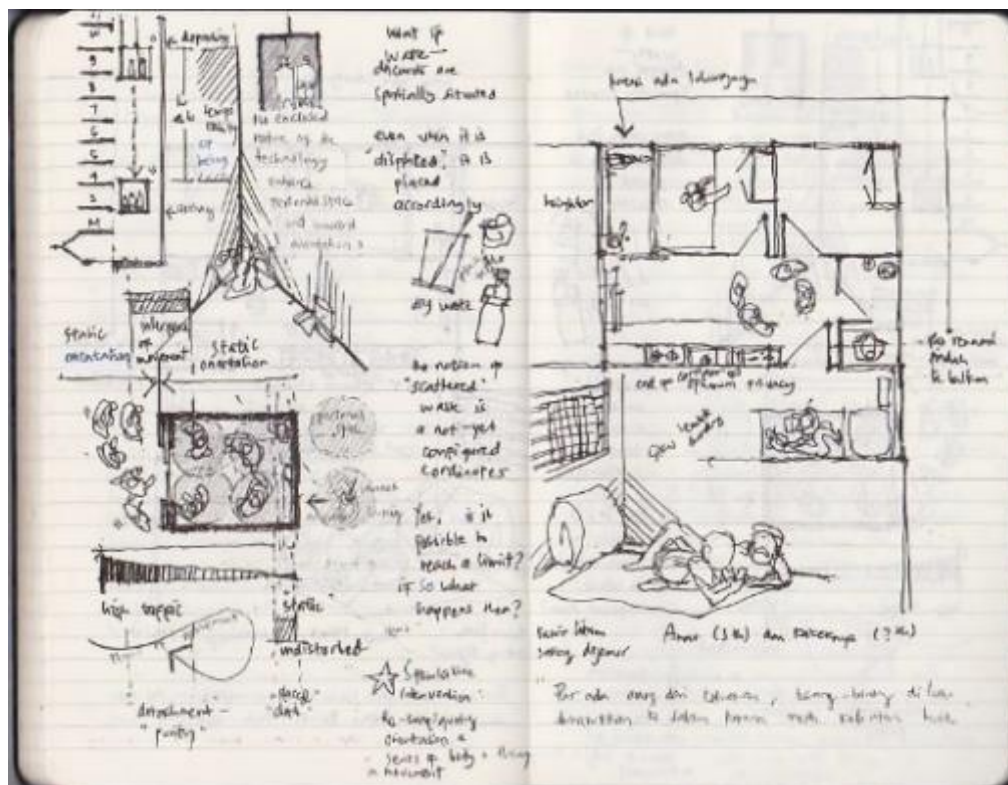


Figure 233 Continuous extension of home beyond the housing unit of Rusunawa, by author, fieldwork on 2021/03/29.

Yet, amidst this displacement, there is also a sense of embracing temporariness and allowing things to unfold naturally, rather than resisting predetermined arrangements. This subtle acceptance of waiting, slowing down, and improvising possibilities reflects the ongoing game of claims and chances seen in the everyday occupation of riverine settlements. The terms and conditions of paying rent become a form of resistance, challenging the governmental intervention in both the water bodies and the lives of the inhabitants.

7.4. Conclusion

The concluding empirical chapter illustrates the displacement of riverine settlements across wet and dry seasons due to recurring occupations. Through oral history accounts and meticulous observation, the chapter underscores the interplay of water, memory, and homebuilding within these communities. It elucidates fluctuating water levels due to delayed flood prevention measures that drive cycles of destruction and rebuilding in riverine settlements. Additionally, the chapter delves into the cyclic inhabitation of wet and dry phases, shedding light on the temporal interface between the urban landscape and its dwellings. In essence, the riverine landscape is inseparable from the fabric of occupation and activity in these settlements.

The displacements of riverine settlements underscore the deep-rooted connection between residents and the dynamic nature of water flow, which shapes their lives throughout the year. Despite adversity, riverine communities persist in the slow destruction and compensation of flood mitigation policies and various urban developments. Additionally, the chapter examines the fluctuating water flow in determining wet and dry time thresholds for dwelling on river terrain. These thresholds reveal practices of reclamation and refuge, expanding the concept of home through activities such as repair, restoration, play, and leisure, all intertwined with childhood memories. Thus, the chapter revisits the history of the 'Kali Mati'/dead river again, showing how it encapsulates the complex way that geomorphology, the history of irrigation, and geology have shaped the shifting landscape, with people living in both wet and dry terrain of 'Tanah Kali'/river land.

Chapter 8. Conclusion



Figure 234 Starting the night time shows the flows of traffic on the main roadway and toll road with emplacement of the elevated Light Rapid Transit (LRT) in Cawang Ciliwung, covering the river beneath them (Photo by author, 04/01/2021).

8.1. Introduction

The conclusion chapter of this thesis aims to address the research questions outlined in the introduction, thereby establishing a connection between the research objectives and the findings derived from the data collected and analysed across the chapters. Additionally, the chapter examines the significant research findings in terms of their impact on the conceptual framework, empirical insights, methodology, and their broader contribution to the existing body of literature. Lastly, it delineates the limitations, strengths, and implications for future research endeavours.

8.2. Key Research Findings

The research aims to understand the process of displacement in riverine settlements due to flood mitigation policy. By investigating the seasonal patterns of water flow in both wet and dry riverine landscapes, the study seeks to elucidate the interconnectedness of time in riverine settlements. Additionally, it aims to dissect the history of town planning and water management in rivers articulated in flood-mitigation policy. Through historical research and direct observation of riverine settlements in Jakarta, the goal is to illuminate the significance of rivers as sites of urban occupation and as key components of governmental infrastructure. The research question (Q) is formulated as follows:

1. How are the relationships between displacements of river inhabitants reflected in urban historiography, particularly concerning urban infrastructure?
2. How do flood policy and associated river and infrastructure development relate to the contemporary displacement of riverine settlements?
3. How do river inhabitants resist existing urban development and articulate an alternative way of dwelling with the water?

This thesis explores the significance of Kali, revered as a village goddess during dry times in South and Southeast Asia, which becomes a central focus within the historiography of spirituality in dwelling landscapes spanning across villages and towns. Chapters 3 and 4 delve into the intricate interplay of multiple histories yet interconnected through the liveliness of water, with a particular emphasis on intersecting resonances within monsoon-influenced societies (Q1). These chapters propose a nuanced

understanding of time in landscape cultivation, moving beyond simplistic dichotomies such as 'debt' and 'gift' to explore the complexities inherent in the spiritual belief and provision of water infrastructure within the mobility of inhabitants of villages and towns. They illustrate how river inhabitation remains in both villages and towns, continuously reshaping the materiality of ruination within displaced communities while also emphasising the ongoing processes of revitalising waterfront settlements.

The thesis also extensively explores the pivotal role of water in sustaining labour and livelihoods, particularly within the context of the emergence of Kali Mati within a river-based irrigation system shaped by governmental water management. The study investigates how river irrigation systems used as infrastructure in agricultural and industrial settlements intersect with 20th century urbanisation trends and colonial trading networks. It accomplishes this by examining settlements along the Kali Ciliwung in the first part of Chapter 5 and delving deeper into flood mitigation policy in Chapter 6. This examination highlights that town planning initiatives embody the values associated with flooding during wet times, resulting in the devaluation of riverine settlements and the implementation of housing projects aimed at ensuring security, segmenting populations, and expanding territory in waterfront areas (Q2).

Ultimately, the wet terrain of settlements along Kali Ciliwung serves as a critical artefact for understanding the vitality of water in influencing the spirituality of living in riverine settlements. Throughout this thesis, I have illuminated the historiography of riverine settlements, drawing from the emerging narrative of Kali as recounted in the oral histories of displaced inhabitants. The ebb and flow of water disrupt fixed notions of labour, gradually reshaping the temporal and spatial orientation of these settlements. Furthermore, these settlements embody collective memories that encompass both ecological and social dimensions, reflecting the experience of dwelling amidst the ever-changing wet and dry conditions of the river landscape. These memories contribute to the construction of what constitutes 'home' here and somewhere, influenced by the dynamic interplay between the shifting horizons of 'seas' and 'islands' during flooding events. In Chapters 5 and 7, observations of riverside settlements enrich the existing narrative, altering the discourse surrounding debt and charity and highlighting how communities collaborate to navigate the fluctuating seasons of rain and drought in urban areas (see Table 9).

Table 9 Research Questions and Findings

No	Research Questions	Findings
1	How are the relationships between displacements of inhabitation in riverine landscapes reflected in historiography, particularly concerning urban infrastructure?	Attention to rivers brings forth a historiography of spirituality in dwelling landscapes spanning across villages and towns. Despite the changing urban landscape, the thesis illustrates how agricultural practices in both villages and towns remain interconnected, continually reshaping the materiality of ruination within displaced communities while also emphasising the ongoing processes of revitalising waterfront settlements.
2	How do flood policy and associated river and infrastructure development relate to the contemporary displacement of riverine settlements?	The narrative of spirituality is sidelined in the emerging use of rivers as infrastructure in agricultural and industrial settlements. Specifically in Indonesia, it intersects with 20th-century urbanisation trends and colonial trading networks. Town planning initiatives embody the values associated with wet times, leading to the fragmentation of riverine landscapes and the implementation of housing projects aimed at ensuring security and expanding territory in waterfront areas.
3	How do river inhabitants resist the development and articulate an alternative way of dwelling with the water?	Collective memories on spirituality of water amongst inhabitants encompass both ecological and social dimensions, reflecting the experience of residing amidst the ever-changing wet and dry conditions of settling in riverine landscape. These memories contribute to the construction of what defines 'home,' influenced by the dynamic interplay between the shifting horizons of 'seas' and 'islands'. The present narrative reframes the discourse of indebtedness and beneficence, redirecting attention towards the collective effort to navigate the fluid cycles of wet and dry times within urban landscapes.

The research contributes to three key areas. Firstly, it enhances scholarship by showcasing how a temporal approach facilitates an analysis of spirituality in the 'oceanic' horizon of water to better understand displacements within riverine settlements for flood mitigation policy. Through an examination of wet and dry times in these settlements, the study considers the diverse and embodied realities of living landscapes. This approach aligns with relational and assemblage thinking, as well as feminist studies, by highlighting the interconnectedness of multiple dimensions in shaping urban spaces.

Secondly, the research offers empirical insights by exploring the intersection of historiographies related to 'dead river' and 'river land,' demonstrating how these narratives influence riverfront development globally. By investigating entangled slow ruination and rebuilding processes observed in waterfront areas, the study links displacements with ongoing urban infrastructure development and the everyday struggles of housing, particularly in capital cities like Jakarta. This empirical insight deepens the complexities surrounding displacement and urban development with the 'outlaw' of water in sustaining urban life.

Lastly, the study presents a methodological contribution by proposing complementary methods of historiography and sketching as visual ethnography. This methodological framework addresses empirical challenges posed by uncertain times, such as the COVID-19 pandemic, and supplements analysis of contemporary practices within historical trajectories. By adopting this approach, the research has gained a comprehensive understanding of the temporality and materiality of urban life.

8.3. Broader Contributions

I reflect on the research findings through a temporal lens, which elucidates how displacement disrupts and establishes riverine settlements through the narrative of urban water infrastructure in colonial government and state formation. The wet terrain of North Java Island goes beyond an icon of multi-scale displacement; it provokes a narrative of a spatially bound register in the globalisation of the city and the state (Amin, 2002, 2004). Rather than merely representing a spatial aspect of planetary gentrification in urban development studies (Lees et al., 2016), it illustrates the vitality of transient life, underscoring the layered histories inherent in everyday place-making (Massey, 1993, 2004). Furthermore, it sheds light on emerging depictions of Jakarta as a 'sinking city'

due to its geographical configurations, sparking discussions about relocating the capital city (Bendix, 2019; Lakritz, 2019). These findings recontextualize the narrative surrounding the 'threat' of flooding to the urban landscape with the continuity of life that the water brings into the process of settlement.

It is crucial to contextualise the relationship between rivers and settlements to fully appreciate the contributions of this research. I introduced the concept of 'dead river' and 'river land' to explore the intersection of temporality and materiality in the recurrence of rivers and the resurgence of settlements. Throughout the thesis, I emphasised the significance of translating and interpreting a 'living landscape', particularly in understanding the term 'Kali' in dead river/Kali Mati and river land/Tanah Kali. I successfully integrated literature and geography to analyse the resonance of language and landscape (Harris, 1999; Noxolo, 2016). However, while I explored the unique spiritual aspects in the recurrence and emergence of settlements, it also became part of the broader generalisation in the interpretation of settlements worldwide. The concept of 'seas' and 'islands' amidst the ruins of capital cities demonstrates common experiences of emerging wet terrain. Materiality intertwines with spirituality to expose the vulnerability of historical riverine settlement trajectories, shaping urban life between ports and villages. This research thus contributes to geography and town planning studies by shedding light on historiography of dwelling culture and water policy.

Firstly, employing an open-ended approach to translation and interpretation in ethnographic studies facilitates a nuanced understanding of time within settlement historiography. Through an exploration of intersecting lines such as 'Kali', 'Kali Mati', and 'Kali Ciliwung', I have traced historical trajectories related to economic factors such as surplus water and surplus population. This multifaceted perspective demonstrates how people across different times and locations have interpreted living near water, drawing on records of labour for irrigation work (Kanumoyoso, 2011), studies of geomorphology for bay and island formation (Verstappen, 1958), examinations of spirituality in the formation of dwelling terrains (Gunawan, 2012), discussions about the desire for industrialization (van Bemmellen, 1949b), and investigations into river-based migration. The open-ended nature of this approach is crucial in recognising rivers as 'commons', where uneven yet reciprocal conditions enable diverse forms of livelihoods (Simone, 2013). Consequently, flooding in riverine settlements not only offers a nuanced

understanding of the translation and interpretation of temporality between humans and landscape (Ho, 2019) but also provides a generative framework for comprehending their roles in cultivating urban life (McNamara and Gibson, 2009).

Secondly, the translation and interpretation of 'Kali' have identified the historical legitimacy of temporary buildings on the wet terrain of river occupation. Rather than solely focusing on 'emergency' times, the wet terrain exemplifies the 'majority time' during which inhabitants cultivate the flowing water as vital infrastructure in urban life. Structures and materials are designed to respond to floods, including ladders for manoeuvring through mud, sand, plants, and animals across the landscape. This perspective offers a nuanced understanding of the intimate memories and realities associated with 'home' and 'chances' during periods of waiting and belonging (Brickell et al., 2017; hooks, 2009; Lancione, 2016). In turn, the occupation of wet and dry terrain in riverine settlements redefines governmental infrastructure provision and challenges assumptions regarding structural inequalities in addressing the notion of 'home' (Millington, 2018; Tuitjer, 2019).

Thirdly, the thesis reconsiders the concept of 'river time' as a fluctuation between wet and dry phases within urban cultivation. The thesis acknowledges the spiritual connection to abundance experienced across seasons in agricultural settlements, a sentiment that persists in moments of joy derived from the lively atmospheric conditions. This sense of joy and playfulness emanates from the openness of the river corridor and the interconnectedness between upstream and downstream areas, which extends daily life to encompass the emergence of wet and dry periods in the dwelling landscape (Da Cunha, 2019; Mathur & Da Cunha, 2001, 2009, 2014). Owing to its close proximity to the water flow, the presence of wet terrain serves as both a breathing space and an imaginative hub for learning and social gatherings. Riverine settlements also provide a refuge from the urban hustle and bustle, fostering open-ended activities that blend 'quiet resistance' with a spirit of recreational enjoyment (Bayat, 2007, 2010; Simone, 2022). This openness further offers an avenue for 'modern wanderers' from villages to establish themselves within the material context of 'islands' and 'seas,' thereby nurturing the potential for urban living (Singh & Joshi, 2023).

Finally, I advocate for a reassessment of the material dimensions of dwelling that influence geographical processes, prompting a reconsideration of temporal politics within town planning and flood-mitigation policy (Sharp, 2017). The riverine settlements exemplify the labour inherent in river occupation as they normalise cycles of rebuilding and ruination, stemming from incomplete planning and deferred governmental intervention in flood-mitigation policy. Furthermore, the fluctuating wet and dry periods reveal the evolving significance of water flow within the riverine landscape, particularly in relation to adaptive practices in coastal cities (Renou and Ba, 2022). This perspective highlights the transition towards a narrative that prioritises heterogeneous material considerations, especially in the transformation of agricultural cultivation into 'urban cultivation' (Batubara, 2022; Padawangi, 2012; Ranganathan, 2015). Consequently, the management of water bodies for contemporary settlement raises questions about addressing historical injustices stemming from relationship between people and water.

8.4. Limitations and Strengths

This chapter has succinctly outlined the key findings and broader contributions to existing literature, particularly at the intersection of geography, housing, and town planning. The research started in November 2019 and concluded in April 2024, amidst the backdrop of the global pandemic policy, recurring floods in the northern areas of Java Island, Indonesia's presidential election transition, and the Israel's occupation of Palestine. The temporality of the research and its contextual conditions significantly influenced the delineation between methodology, analysis, and outcomes. While the study possesses both limitations and strengths, it is noteworthy that these aspects may be subject to interchangeability in subsequent studies outlined in the final section.

In terms of limitations, the temporal approach to understanding the materiality of displacements necessitates a series of methods ranging from archival studies to oral history, aimed at complementing and critically situating each other's analyses. While gathering information from each method yields a textured and nuanced reading of the empirical findings, it also underscores the specificity of time in lived experiences, global historical projects, and the ephemeral nature of 'the present'. However, the translation and interpretation processes require further scrutiny to avoid falling into the trap of naive empiricism and necessitate critical reflection on the methodologies used. The thesis

does a good job of connecting geography and literature through the idea of 'Kali' as a way to translate and understand how riverside settlements have changed over time. However, there is a chance that it will lose focus on displacements and instead look at other aspects of life near rivers. Moreover, while the research briefly introduces the concepts of 'debt' and 'gift' to connect the realms of economy and spirituality in the landscape cultivation process, a more comprehensive discussion is required to clarify the importance of incorporating both terms into the analysis.

The sensitive issue of displacements, land acquisition, and environmental policy intersects with socio-political history, a topic that I only tangentially explored in this thesis. For instance, this thesis only touches on the emergence of housing policy in state-led initiatives in the middle of the 20th century that responded to the process of industrialization and agrarian land policy. While Chapters 2, 3, and 6 briefly discussed methodologies for engaging with governmental institutions responsible for securing resources and planning urban infrastructure, it is important to recognise the broader socio-political context that influences how these institutions perceive and respond to their responsibilities. The combination of interviews and archival analysis provides a brief illustration of the continuity of irrigation work within flood-mitigation policy and its influence on institutional town planning. This combination reveals a shared language among intersecting historiographies that facilitates dialogue, transcending the mere physical conditioning of the river terrain itself.

In conclusion, I emphasise the need for a thorough reassessment of the material aspects of dwelling that significantly influence geographical processes, urging a re-evaluation of temporal politics within town planning and flood-mitigation policy. Throughout the thesis, I provide an example of how to translate and interpret the emerging terms 'dead river' and 'river land', which describe riverine terrain, based on participant observation during fieldwork. The river land illuminates the labour involved in 'urban' settlement, normalising the temporary status of rebuilding and ruination stemming from incomplete planning and deferred governmental intervention in flood-mitigation policies. Furthermore, the fluctuating wet and dry periods reveal the changing significance of water in the landscape, particularly with regard to traditional practices within governmental institutions. This perspective shifts the narrative towards a focus on material considerations, especially in the transformation of agricultural cultivation

into a heterogeneous cultivation of value with water. As a result, managing water bodies for modern-day cultivation raises critical questions about recognising certain forms of life while neglecting others in addressing historical injustices.

8.5. Implications for Further Research

According to the previous discussion, this study opens up three intertwined avenues for further research. Firstly, future investigations could delve deeper into the historiography of riverine settlements, particularly focusing on the materiality of traditions within dwelling landscapes. This endeavour would involve a critical analysis of the landscape and infrastructure within the prevailing narrative of 'gift' and 'debt' in settlement historiography. It would seek to identify how the temporary ruination of buildings both settles and unsettles, shedding light on the environmental history within the urban renewal process (Cairns & Jacobs, 2014; Stoler, 2008).

Secondly, there's potential for a historical investigation into plantations and industrialization, which have shaped migration flows and settlement formation. This research would explore the various life stages of inhabitation and highlight the multiplicity of lived migration experiences that redefine the concept of 'home' (Lancione, 2023). The exploration will map out households' arrangements in the town planning framework, examining aspects such as the displacement of burial grounds, gardens, ponds, and granaries. This study has the potential to contribute to feminist studies by delving into temporal aspects of labor in enduring urbanization and globalization infrastructure (Sharma, 2014a; Tadiar, 2023).

Thirdly, future research endeavours could delve into the realm of aesthetics, particularly exploring how aesthetics signal and shape perceptions of security and risk within a city (Zeiderman, 2013, 2016, 2021). Detailed investigations into historical records of geographical processes and building responses in river landscapes could offer nuanced insights into discussions surrounding security. This line of inquiry would focus on the intersection of history and labour flows that inform the emergence of settlements, as well as the processes of ruin and renewal. Such research could address emerging concerns regarding the ontology of 'war' in the context of responses and time of expectations to climate emergencies (Simone & Benjamin, 2022).

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