

# **Beneath the Surface: Water Projects and Politics in Jakarta**

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## **Abstract**

Indonesia's capital is one of the fastest-sinking cities in the world. Increasing demand from urbanization and an inadequate water supply system have led the majority of residents to extract water from below their feet. This paper explores Jakarta's water management projects through the lens of urban regime theory and casts a light on how water policies are made and shaped by colonial history, existing power relationships, and the motivations of key decision-makers. I find that Jakarta's development regime pushes forward solutions that "kill two birds with one stone"—attempting to solve the water crisis while also creating growth via land-use changes. I conclude that this approach is ultimately misconceived and will leave behind the city and its most vulnerable residents.

## Introduction

Jakarta is facing a water crisis. In fact, it is facing multiple water crises. Major flooding events are becoming increasingly common. In the 1600s, 1700s, and 1800s, major flooding events happened twice every hundred years. This increased to five in the 1900s and five in the first 15 years of the 21st century (Abidin et al., 2015). The city also faces a new threat of tidal flooding. In 2007, heavy rainfall and a strong spring tide from the Java Sea resulted in a major flood that inundated three-quarters of the city and displaced 430,000 people (Garschagen et al., 2018; Salim et al., 2019).

Increased flood risk is closely connected to urbanization. Hyper land transformations in the capital region have converted green spaces into built-up areas (Colven, 2022). Between 1984 and 2007, green open space in the Jakarta Metropolitan Area (JMA) has decreased from 28.8% to 6.2% (Ward et al., 2012). The increasing demands of residents exceed the capacity of the environment and as a result, Jakarta is sinking.

Land subsidence and the anthropogenic factors that cause it have led parts of the city to experience the land sinking by up to 4 meters (Mokhtar & Asmara, 2024). The typical rate of subsidence is between 3-10 cm per year but in some areas of Northern Jakarta, that can be as high as 15 cm a year (Abidin et al., 2015). By comparison, the sea level rise caused by climate change is around 5 mm a year (Eight warmest years on record, 2023).

The increasing flood risk from the sea has prompted policymakers to look for new solutions to manage Jakarta's water crises. I investigate this by posing the main research question: How do water management projects operate in Jakarta?

This paper is divided into three sections. Firstly, I look at Jakarta's problem of land subsidence and its root cause—the overextraction of groundwater. Afterwards, I examine the city's responses via water management projects such as water privatization and the plan to build a Giant Sea Wall (NCICD) on the Jakarta Bay. The scope of this paper limits the analysis to the most significant factors rather than all factors—some of those that are omitted include the effects of building loads, construction on ecologically sensitive areas, and runoff from the Puncak Area, which are covered by Salim et al. (2019), Firman and Fahmi (2017), and Batubara et al. (2023) among others.

Secondly, I look at the key actors behind these water projects, their rationales, and involvement with each other using the framework of urban regime theory. I argue that the characters, motivations and power relationships of Jakarta's urban regime incentivizes policies that adhere to a pro-growth development agenda. Finally, I examine how this crisis and the management of it will affect the lives of residents and the development trajectory of Indonesia's capital city. For each of the three operational research questions, I mainly rely on archival research of journal articles as well as news articles. In addition to that, I supplement my research on water management projects by examining project and consultancy websites of those involved in major developments.

## Land subsidence and Jakarta's infrastructural fixes

The literature surrounding Jakarta's subsidence crisis can be separated into two camps: one that looks at natural-anthropogenic factors of subsidence and another that emphasizes sociological processes. While everyone agrees that human actions exacerbate land subsidence, the former camp would place Jakarta's natural endowments in their analysis (Abidin et al., 2015) while the latter focuses almost exclusively on how human actions are responsible for subsidence. Batubara et al. (2023) criticize approaches that emphasize the technical at the expense of the social and political. While acknowledging that Jakarta's natural endowments shape the dimensions and severity of its water crises, this paper takes the view that land subsidence can only be understood in conjunction with the city's urbanization processes.

Of the anthropogenic factors worsening subsidence in Jakarta, researchers believe the most significant is the overextraction of groundwater (Chaussard et al., 2013; Colven, 2020; Firman et al., 2011). It is estimated that nearly two-thirds of Jakarta's water consumption comes from the ground (Furlong & Kooy, 2017). This phenomenon occurs because the water in the soil is partially responsible for holding up the ground. When excessive amounts are being taken out, the ground compacts, resulting in the land sinking (U.S. Geological Survey, 2018). Zones of green space meant to be water recharge and flood retention areas have been replaced by built-up areas further exacerbating the subsidence process (Rukmana, 2015; Salim et al., 2019).

This problem is not new: the city has never been able to adequately supply water to its residents. The water network only covers 64% of the capital (Taftazani et al., 2022). This legacy stretches back to Indonesia's colonial history, where piped water was only supplied in parts of the city inhabited by Dutch settlers (Kooy & Bakker, 2008). Water coverage remained dismal after independence under Presidents Sukarno and Suharto.

In the mid-90s, the Suharto government (with advice from the World Bank) proposed privatization as the solution. The government carved Jakarta into two concessionaires for two multinational companies, Thames Water and Suez, to operate the Eastern and Western sections respectively. To secure their contracts, Thames gave a 20% stake to Suharto's son while Suez partnered with Sudono Salim, one of Suharto's closest cronies (Harsono, 2003). Although coverage went up from 45.3% in 1996 to 59% in 2015, prices also went up. Crucially, coverage has fallen far short of their 98% target (Heriyanto, 2018).

Even for residents with piped water, the service is often unreliable. This unwanted variability results in wealthy users disconnecting from the water network. Between 2008 and 2012, 60% of all new connections ended up being disconnected (BRPAM, 2013, as cited in Furlong & Kooy, 2017). Malls, apartments, and even government buildings have their own wells to extract groundwater for everyday use.

The lack of effective action coupled with the rising demand for water as Jakarta grew and urbanized resulted in an explosion in the number of groundwater wells. In 1968, there were 352 wells

in DKI Jakarta. By 1998, there were 3,626. And in 2016, there were 4,551 registered wells although that is believed to be a serious undercount. One engineer estimates the actual number to be 15,000 (Batubara et al., 2023).

Privatization was meant to be the solution to curb current groundwater extraction and render new wells unnecessary. It has failed. Without any meaningful alternatives to solve the groundwater crisis, the government turned its attention to keeping the sea out of Jakarta. This led to the approval of the National Capital Integrated Coastal Development (NCICD) plan—a 30-year, \$40 billion project to build a massive sea wall off the coast of Jakarta. The project calls for the reinforcement of existing coastal protections before moving onto the construction of an enormous sea wall in the shape of Indonesia’s national symbol, the Garuda (“National Capital Integrated Coastal Development (Ncid) Phase a,” n.d.; Colven, 2017).

The sea wall will close off Jakarta Bay and create several lagoons that act as drainage reservoirs for Jakarta’s 13 rivers. Pumps will be used to prevent flooding by transferring water from the lagoons into the bay. The giant sea wall is not just a defense against tidal inundation—the centerpiece is 1,250 hectares of reclaimed land to build a glittering waterfront city. The master plan envisions a deep-water port, retail and office spaces, and housing for 1.5 million people of all incomes (Ncid Jakarta, n.d.; Salim et al., 2019).

Critics, however, point out that the NCICD does not address the root issues that created this crisis in the first place. Why, then, is Jakarta focusing on the NCICD instead of more “obvious” solutions to groundwater extraction?

## **Key actors and action-logics behind water management projects**

The story of Jakarta’s water crisis involves three main actors that are present in all of the most important aspects of this land subsidence crisis—local government, national government, and the private sector.

Local government here refers to tiers of governmental authorities from the provincial government of DKI Jakarta all the way down to the urban suburb level. Competencies of the local government cover land use regulations, granting permits, procuring land for public works, and creating Jakarta’s master plan. Since devolution or Reformasi in the late 1990s to early 2000s, Indonesian local governments have had a lot of power in shaping their own areas’ development trajectories (Phelps et al., 2014).

The second key actor is the national government. Although power is no longer as centralized as it once was under Presidents Sukarno and Suharto, the national government still has the powers to influence Jakarta’s affairs. Herlambang et al. (2019) looked at the “great land transformations” of Jakarta from 1988 onwards and showed that the JMA’s ability to rapidly urbanize depended on the central government’s deregulation of the banking and property sectors. Through laws, regulations,

budget spending, and coordination of foreign investment, the central government continues to shape the city's development.

The third major player is the private sector. Over the past decades, successive national and local governments have pulled back to allow more space for capital. Firman and Fahmi (2017, p. 69) argue that in Jakarta's fringes, there has been a redistribution of power "from the public to private sector in land development decisions". Yet this is not a simple case of neoliberalization but a form which has to evolve alongside oligarchic structures and "contestations by the urban majority" (Herlambang et al., 2019, p. 627).

On their own, these actors cannot achieve their overarching goals. Urban regimes are created as collaborative arrangements to "assemble the capacity to govern" (Mossberger and Stoker, 2001, p. 812). Regimes seek the "power to" act rather than having the "power over" another (Stone, 1993). For these key actors to have a common agenda to strive for, their rationales have to overlap. While national and local governments are concerned with improving economic growth and well-being, the private sector is driven by profits. This arrangement of local government, national government, and the private sector creates an urban development regime with an agenda to pursue growth through land-use changes.

This development regime can be traced as far back as the 1980s when falling oil prices led President Suharto to incentivize the construction of peri-urban new towns (Herlambang et al., 2019; Shatkin, 2016). Since that time, Jakarta's urbanization moved towards shopping malls and then to "superblocks", Suharto was ousted, and there has been a "big bang" of decentralization to local governments (Phelps et al., 2014, p. 42).

Through all of this, one can argue that the past forty years constitutes one single urban regime. A steady stream of deregulation has continued from Suharto allowing private banks to operate alongside state banks to President SBY's efforts to attract foreign investment to President Jokowi's relaxing of foreign ownership limits on real estate (Herlambang et al., 2019; Shaffer, 2015). Governments regardless of party seem to reach a consensus in accordance with the urban regime's agenda to achieve growth through urbanization.

Water privatization in Jakarta was an initiative between Suharto's national government and the private sector. Although privatization did not succeed in its service provision goals, it was very profitable for the businesses involved (Colven, 2022). This project was ostensibly about providing clean water to the city's residents but why privatization was chosen over additional public investment follows the regime logic: with governmental budget constraints, the private sector is better suited to provide financing for much-needed expansion.

However, the way Suharto parceled Jakarta's water system to his insiders suggests that an agenda for growth and a preference for market involvement were not the only factors at play. I propose corruption as an additional point of analysis in Jakarta's urban regime. Oligarchs and business empires that grew from Suharto's patronage are still immensely powerful today (Hager, 2013). These oligarchs, drawn from Suharto's family, cronies, and officials, were able to resist

democratic reforms and co-opt Indonesia's reformed institutions to preserve their own social and political power (Hadiz & Robison, 2013). Corruption did not go away but it became more diffuse and decentralized.

Unsurprisingly, 92% of Indonesians believe that "government corruption is a big problem" (Vrushni, 2020). While regime theory typically focuses on institutional power, we see in Jakarta and elsewhere that individuals can shift and straddle multiple positions in both the public and private sectors. The social order is one in which wealth and power reinforce one another and the "revolving door" between the state and the private sector means that a small number of individuals hold enormous political and economic power in Indonesia (Herlambang et al., 2019).

The NCICD is run by a consortium of Dutch and Indonesian firms in cooperation with Jakarta's provincial government, the Indonesian government, and the Dutch government (Garschagen et al., 2018). Financing for the project will be split between the national government, local government, and private investors. The swaths of reclaimed land will then be developed and used to cross-subsidize Jakarta's coastal defense plan. Several government ministries are involved in the planning (Colven, 2017) and former President Jokowi is a big supporter both as Jakarta governor and president (Salim et al., 2019). His successor, Prabowo Subianto has vowed to continue the project (Hadi, 2024).

The hope for the NCICD is that it represents fixes to other issues beyond tidal flooding such as the widely held perception that land in Jakarta is scarce because of the difficulties in acquiring large tracts for development (Colven, 2022; Hudalah et al., 2013). The sea wall project creates new space for development that delivers growth and profits while also getting approval from the public through the project's visibility and "world-class" aesthetics. The project shows that the government is protecting its people even if they are not dealing with the problem at heart.

In this section, I have shown how water management projects operate within the same structures that govern the city of Jakarta. Just as governments have encouraged FDI and capital involvement in the broader economy, water projects from stopping groundwater extraction to the sea wall follow this same trajectory that ultimately stems from the urban regime. The NCICD became the solution to address coastal flooding because it is the one that most realizes the goals of key decision-makers, with the trade-off being that Jakarta will continue sinking without much intervention.

## **Impacts on residents and Jakarta's development trajectory**

While groundwater continues to be extracted at an unsustainable rate and the plan for the sea wall goes ahead, Indonesia's government is moving its capital to a new city called Nusantara on the island of Borneo. The new city will allow the government to project Indonesia's global

aspirations while sidestepping Jakarta-specific problems of overcrowding and subsidence (Beech, 2023).

The demand for water in Jakarta will not decrease because the city is not being abandoned—certainly not by those residents without the means to relocate voluntarily. It will continue to be an engine of growth for Indonesia. Hotels, malls, factories, and office buildings will remain. Wells will continue to be used until the piped water system is better, cheaper, and widely adopted by all residents.

None of the interventions by the state will be able to halt the sinking of Jakarta. Andreas et al. (2018) found long-term and damaging consequences of subsidence that go far beyond coastal flooding. When the ground sinks, it creates a cone of subsidence that water can flow into, resulting in a flood zone. Jakarta's natural position already makes it prone to frequent flooding and it is projected that subsidence will make rain-induced floods deeper and wider over time. Subsidence also causes infrastructural cracks that damage roads, bridges, and buildings. These cracks will not just be expensive long-term hindrances, they will endanger lives.

The effects of subsidence on drinking water are variegated and highly uneven for the rich and poor. Of the 4,551 registered wells in Jakarta, 2,606 are deep groundwater wells used by industries and the elite, and 1,945 are shallow wells used by poorer residents (Batubara et al., 2023). As the ground continues to sink, saltwater intrusion reaches further inland and along with insufficient wastewater management, contaminates the shallow aquifer. Groundwater in parts of Northern Jakarta has already been rendered useless by salinization, forcing residents to rely on freshwater sellers for clean drinking water (Kooy et al., 2018; Rinaldi, 2022). Although deep wells extract five times the amount of water (Batubara et al., 2023), the poor bear the brunt of privatization's failure.

The urban regime's focus on the NCICD takes resources and attention away from investments in the water network. Moreover, a 2015 study by the Maritime Affairs and Fisheries Ministry warned that the plan would have massive environmental and social impacts on Jakarta including the disappearance of islands, damage to ecosystems, and the relocation of 24,000 fishermen who live along Jakarta's northern coast (Elyda, 2015). Over 70% of those who were displaced by Jakarta's coastal adaptation measures experienced negative socioeconomic outcomes (Garschagen et al., 2018), giving further credence to the claim that Jakarta's current policies overlook societal harms in favor of economic growth.

Land subsidence and the urban regime's preferred solutions lay out the costs on the backs of the poor. All of this means that even if the NCICD manages to stop Jakarta from going underwater, the ramifications of subsidence will be dramatic and most keenly felt by those who are left behind in Indonesia's sinking metropolis.

## Conclusion

This paper examined how Jakarta addresses its land subsidence crisis through water management projects. I contend that the driving factors behind this subsidence are urbanization coupled with a centuries-long problem with its splintered water network. Furthermore, I find that these water projects are inadequate and not designed to fix the root cause of the problems they're addressing.

I introduce urban regime theory to frame Jakarta's pursuit of projects like water privatization and the NCICD as solutions that satisfy the interests of key decision-makers— the national government, local government, and the private sector. Although the planned reclamation and sea wall project does not halt Jakarta's sinking, it provides a stopgap to avert catastrophe while meeting the urban regime's agenda for economic growth through development. Furthermore, I offer corruption as a component to adapt urban regime theory to Jakarta and potentially other cities in the Global South. Finally, I look at the disproportionate effects borne out on the disadvantaged versus that of the middle class and wealthy, whose interests have been overrepresented and have led to Jakarta being on its current path.

As Jakarta continues to sink under the toll of rapid urbanization, turning the tides on land subsidence will require altering the fundamental discourses and power relationships within the city and between local, national, and private interests. Even as we discuss these key actors, it should be remembered who bears the consequences of Jakarta's sinking—the people at the margins who are excluded from policymaking but shoulder the severity of the costs.



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