



CILIWUNG RIVER NORMALIZATION IN FLOOD CONTROL FOR JABODETABEK: CHALLENGES, EFFECTIVENESS, AND IMPACT

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Abstract

The Ciliwung River normalization project is targeted for completion by 2026 as a response to major flooding in the Greater Jakarta area (Jabodetabek). This paper aims to examine the challenges, effectiveness, and impacts of the Ciliwung River normalization program. The project faces several obstacles, including land acquisition issues and unclear river boundary demarcations. While it has proven effective in reducing flooding in downstream areas – from 702 flood points in 2015 to 68 points in 2018 – normalization has also led to social, economic, and environmental impacts that must be anticipated. DPR RI, particularly Commission V, plays a vital role in ensuring the project proceeds optimally. In its oversight function, the government should be encouraged to evaluate water infrastructure and watershed management. In its legislative function, it is necessary to integrate water management and climate change mitigation into spatial planning regulations. In its budgeting function, it must be ensured that flood control infrastructure development is effective, equitable, and sustainable. These efforts are crucial for strengthening regional resilience, maintaining ecological balance, and ensuring social justice for the people of Jabodetabek amid growing climate risks.

Introduction

Several areas across Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek) were once again affected by flooding between July 6 and 10, 2025. Given the high concentration of economic and social activities in Jabodetabek, flooding has caused significant losses. A three-day flood event in March 2025, for example, resulted in damages and losses amounting to IDR 1.69 trillion (BNPB, 2025).

Various flood mitigation efforts in Jabodetabek have been implemented by both the central and regional governments, one of which is river normalization. River normalization involves straightening, dredging, and/or constructing embankments along riverbanks to accelerate water flow toward downstream areas. This paper aims to examine the challenges, effectiveness, and impacts of river normalization programs in the Jabodetabek region, particularly focusing on the Ciliwung River. The Ciliwung River is selected for analysis because it flows through

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a large portion of Jabodetabek, including Bogor Regency, Bogor City, Depok City, and DKI Jakarta. It also has the widest watershed and the highest peak flow discharge in both Jakarta and West Java (CIBE-ITB, 2020).

Challenges in River Normalization

River normalization through dredging for flood control has been carried out on the Ciliwung River since the colonial era, although the use of heavy equipment only began in 2008. The project was part of a soft loan collaboration with the World Bank, known as the Jakarta Emergency Dredging Initiative (JEDI), valued at IDR 1.2 trillion (INFID, 2010). The initiative was continued by the government through the normalization of a 33.69-kilometer stretch of the Ciliwung River – from TB Simatupang to Manggarai Water Gate – by widening the river from 15–20 meters to 30–50 meters and constructing embankments with 6–8 meter-wide inspection roads (Ministry of Public Works, 2019). The central government, through the Ministry of Public Works (PU), is responsible for physical construction, while the Jakarta Provincial Government handles land acquisition. As of 2017, only 16 kilometers had been completed. The project was halted in 2018 due to limited land acquisition and resumed in 2021 in seven urban villages (Ihsanuddin, 2022). In 2025, the normalization project has been accelerated, targeting the completion of 16.55 kilometers by 2026 (Ministry of Public Works, 2025).

The normalization of the Ciliwung River faces several challenges. First, land acquisition is often hampered by public resistance and unclear land ownership status, while river widening frequently requires residential relocation. Second, normalization efforts remain partial, as work can only be carried out in river segments with clear administrative legality, leaving many flood-prone areas untouched. In some cases, land that has already been acquired is reoccupied by unauthorized parties due to project delays. Third, there is a lack of clarity regarding river boundary demarcation in Indonesia following the issuance of Minister of Public Works and Housing Regulation No. 28/PRT/M/2015 on River and Lake Boundary Zones. Under this regulation, authorized officials (Minister, Governor, or Regent/Mayor as stipulated in Government Regulation No. 38 of 2011 on Rivers) are mandated to define river boundary zones in their respective regions. The absence of clear boundary designations has led to legal uncertainty in the use of land near riverbanks and has resulted in uncontrolled land disputes and land-use changes.

Effectiveness of River Normalization

The Ciliwung River normalization aims to restore the river's width to 35–50 meters and increase its flow capacity from 200 m³/s to 570 m³/s (Ministry of Public Works, 2025). This program has proven effective in reducing flood points in Jakarta by up to 90 percent, from 702 points in 2015 to 68 points in 2018 (Rosalina, 2019). The effectiveness of river normalization in reducing flood risk can be further enhanced through several measures.

First, legal certainty in the planning, implementation, and supervision of river normalization – particularly regarding the establishment of river boundary zones – is crucial to facilitate the legal process of normalization. Second, normal-

ization should focus on downstream areas that are meandering, have high sedimentation, and are prone to erosion. Normalization is appropriate in these areas because natural absorption zones in downstream Jakarta are already minimal (Balitek DAS-BLI KLHK, 2020). Third, integrated governance across institutions is necessary, considering the significant budget allocations—IDR 1.18 trillion from the national budget (APBN, 2013–2016) and IDR 2.85 trillion from the regional budget (APBD, 2024) (Ministry of Public Works, 2015). Fourth, supporting infrastructure must be built in downstream areas to accommodate the increased water discharge following normalization. Fifth, upstream rehabilitation is needed through reforestation and riparian vegetation planting to improve infiltration and reduce runoff. Sixth, to address public resistance to land acquisition for river normalization and issues of unclear land ownership, a comprehensive approach is required—one that involves transparency, community participation, fair dispute resolution, and consistent law enforcement.

Although river normalization is considered effective, its effectiveness tends to decline over time and should therefore be evaluated periodically. For instance, flood reduction projections have declined from 70 percent in 2008 (INFID, 2010) to 40 percent in 2025 (Ministry of Public Works, 2025). The physical characteristics of rivers are highly dynamic, depending on surrounding land use and human activity, which influence water discharge, sedimentation, and water quality. Therefore, the effectiveness of normalization should take into account community participation, the actual benefits to residents, reduction in flood discharge levels, sedimentation, and improvements in water quality.

Impacts of River Normalization

River normalization has social, economic, and environmental impacts. Several studies—such as those by Jatiningrum (2018) and Subangkit (2017)—highlight that the social effects of community relocation include changes in patterns of interaction, daily activities, community structures, and interpersonal relationships, due to the need to adapt to new living environments such as apartment housing.

Economically, river normalization can foster the development of tourism and creative industries, generate new employment opportunities, and reduce household spending on health-related issues. A study by Yusuf (2017) showed that normalization in Kampung Melayu reduced household expenses by 18.74 percent of income, as families no longer suffered flood-related property damage.

From an environmental perspective, normalization of the Ciliwung River has damaged riparian ecosystems, reduced vegetation cover, and displaced wildlife such as long-tailed macaques (Maryono, 2014). In the long term, environmental impacts from river engineering—if not followed by watershed rehabilitation—may lead to declining groundwater reserves, accelerated land subsidence, and increased risk of seawater intrusion. Land subsidence exacerbates flooding, particularly in coastal areas, while seawater intrusion raises groundwater salinity, rendering it unsuitable for consumption, damaging agricultural crops, and degrading aquatic habitats.

Thus, while downstream river normalization—such as in Jakarta—has proven effective in reducing flooding, the resulting impacts of such interventions are

substantial. Therefore, in addition to downstream normalization, the government must adopt anticipatory measures, including performance evaluations of water infrastructure. High-cost projects such as the Sukamahi and Ciawi dams in Bogor Regency, as well as the Ciliwung Diversion Tunnel, have not yet resolved flood problems during extreme rainfall events. Dams can only retain upstream rainfall, and the diversion tunnel has capacity limitations that prevent it from handling very large water discharges. Revitalizing and constructing small-scale water retention infrastructure, such as embung (ponds), along the river from upstream to downstream has proven to be more effective (Matanzima, 2019).

Drainage systems should also be evaluated, as they have not accounted for increased rainfall intensity due to climate change and evolving land use. Presidential Regulation No. 60 of 2020 on the Spatial Plan for the Jabodetabek, Puncak, and Cianjur Urban Area does not yet comprehensively regulate inter-regional cooperation in managing water and soil conservation. Future revisions of this regulation should prioritize early application of the precautionary principle and the environmental protection principle (WALHI, 2020), while incorporating infrastructure mitigation and adaptation to climate change.

The normalization of the Ciliwung River has demonstrably reduced flooding in Jakarta by 90 percent between 2015 and 2018. Given that river conditions are influenced by surrounding land use and human activity, the effectiveness of this program can still be improved. Key considerations to ensure greater effectiveness include: legal certainty; focus on downstream locations; integrated inter-agency governance; construction of supporting infrastructure in downstream areas; upstream rehabilitation; and enhanced public participation through a comprehensive approach. In addition, to minimize the socio-economic and environmental impacts of normalization, complementary flood mitigation efforts are needed – such as evaluating the performance of water infrastructure, revitalizing and constructing small-scale water retention systems, and rehabilitating watershed areas.

Conclusion

The 16.55-kilometer normalization of the Ciliwung River is targeted for completion by 2026 as a response to major flooding in the Greater Jakarta area (Jabodetabek). While it has proven effective in reducing flood risk, the project faces challenges related to land acquisition, uneven construction, and unclear river boundary demarcation. Without a sustainable approach, the project risks generating social disparities, damaging ecosystems, and fostering dependence on short-term solutions that fail to anticipate climate change.

Commission V of DPR RI plays a strategic role in overseeing the government's management of water resources. This role includes evaluating the performance of water infrastructure, optimizing watershed management, clarifying river boundary designations, and revising Presidential Regulation No. 60 of 2020. In its legislative function, there must be greater emphasis on integrating water management into the Law on Spatial Planning and Climate Mitigation. Commission V of DPR RI can also oversee funding for flood control infrastructure that is both effective and participatory.

Long-term success depends on the ability to build a climate-resilient society, maintain ecological balance, and ensure fair and inclusive distribution of benefits.

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