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Research Paper

Governing Land Legacy Issues: An Institutional Analysis and Development (IAD) Perspective on the Jatigede Dam

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Abstract

The Jatigede Dam, first conceived in the Dutch colonial era and formally advanced in 1963, was completed only in 2015 after a 52-year development process. This prolonged land acquisition phase gave rise to Land Legacy Issues (LLIs). Using the Institutional Analysis and Development (IAD) framework, this study examines the institutional dynamics and strategies used to address these issues across three action situations: compensation (A1), relocation (A2), and the cultural heritage debate (A3). Data were gathered through literature review and interviews with BBWS (the project initiator), affected communities, and relevant institutions. Findings show that formal actors dominated all action arenas, creating power asymmetries and limiting community participation. The prevailing rules-in-use reflected a technocratic, administrative logic that marginalized local norms and customary practices, generating friction between state-led governance and community values. These impacts can be minimized through corrective action, particularly by optimizing the complaint-handling mechanism established under Sumedang Regent Decree No. 400/KEP.418-HUK/2019.

Keywords: Jatigede Dam; Land Acquisition; Delayed Project; Legacy Land Issues; Institutional Analysis and Development.

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1. Introduction

From the early to the mid-20th century, the construction of reservoirs and dams occurred rapidly and on a massive scale across the globe, driven by socio-economic factors and political pressure to improve the quality and quantity of water availability (Beck et al., 2012). The water-energy-food nexus has long been a global issue. The availability and distribution of water have been considered structural issues that require immediate attention to prevent economic and geopolitical crises resulting from population growth, development, and urbanization (Gebreyes et al., 2020). Additionally, the construction of reservoirs and dams is also recognized as one of the main sources of low-carbon energy, especially in the Global South (also known as the Group of 77 and China, of which Indonesia is a member (Castro-Diaz et al., 2023; Moran et al., 2018). Global pressure to adopt green and renewable energy has driven the rapid development of dams and reservoirs, which have become one of the main sources of hydropower, especially in the Global South, including Indonesia.

Despite their positive impacts on securing water and energy supply as well as food security, this 'hydrological regime' is not free from socio-environmental controversies. Various criticisms of dam construction have emerged, as it is considered to alter landscapes, ecosystems, environments, and societies (Castro-Diaz et al., 2023; Minardi, 2019; Yankson et al., 2018). In Europe, at least 239 weirs and dams (reservoir water barriers) have been demolished to restore more environmentally sustainable conditions. In Norway, the presence of dams and reservoirs has been identified as a cause of the destruction of the living space of the indigenous Sámi people. In the United States, dams on the Corsica River have caused the surrounding water to experience eutrophication, characterized by increased concentrations of nutrients, particularly nitrogen and phosphorus. The construction of dams also disrupts natural river flows and leads to the extinction of local fish and the destruction of biodiversity, as these large dams also submerge forests that are home to various animals and plant species (Beck et al., 2012; Prastica, 2023; Schmutz & Moog, 2018; Yi et al., 2010).

The characteristics of dams, which require extensive and intensive areas, from flooding land for reservoirs to opening transportation access and building supporting infrastructure – often create dual pressures on ecosystems and local communities. The process of dam construction almost always causes socio-cultural problems due to the forced migration of residents from the areas designated as project sites. When a dam project is large in scale and requires an extensive land area, such as in the case of the Kedungombo, Jatiluhur, and Bener dams, the potential of social impacts can be substantial, often resulting in large-scale displacement and increasing the risk of long-term poverty among affected communities (Bayu, 2018; Prastica, 2023).

The social impact of dam construction can be classified into three major categories: economic, cultural, and well-being-related impacts, such as access to education, health services, and infrastructure (Wang, 2012). These issues often persist long after project completion and, if not addressed properly, may evolve into Land Legacy Issues (LLIs), defined as prolonged grievances from affected communities or their descendants over unresolved land acquisition processes (Cotula et al., 2016; The Interlaken Group and Rights and Resources Initiative (RRI), 2017). LLIs typically stem from a combination of factors, including: (1) inadequate development planning; (2) delays in project implementation; (3) weak land governance or outdated land records; and (4) past land acquisition practices involving coercion or human rights violations (CDC Group UK & KFW DEG, 2016; Cotula et al., 2016). A notable example of an unresolved LLI is the construction of the Jatigede Dam. Poor planning and prolonged delays without clear direction led to a range of land acquisition problems, including inadequate compensation, overlooked land parcels, uncoordinated relocations (which caused many displaced residents to return to already cleared areas), cultural heritage concerns, and the absence of clear livelihood restoration measures. These unresolved issues have persisted across generations, leaving behind a complex legacy that remains unresolved to this day.

Previous studies on compulsory land acquisition at the Jatigede Reservoir have mainly focused on the socioeconomic impacts of resettlement (Arofah et al., 2015; Harahap, 2016; Mardiani & Hindersah, 2017; Mustika & Asyiwati, 2017; Putu et al., 2022; Simanjuntak & Mahida, 2015; Wijayanto et al., 2019); conflicts and movements during the land acquisition process and dam construction (Arofah et al., 2015; Opan S. Suwartapradja, 2005; Rachmawan, 2015) and land administration and compensation (Angelina & Jamilah, 2017; Fianda et al., 2023; Wahidah et al., 2019). However, most studies focus on short-term

socioeconomic impacts and procedural aspects of land acquisition, with limited attention to Land Legacy issues (LLIs) and their management. The long-term implications for tenure arrangements, spatial inequality, and post-acquisition governance remain underexplored, particularly regarding how land legacy challenges are addressed within land management systems. Furthermore, research on LLIs and their worldwide implications is limited; to date, only [Cotula and Berger \(2016\)](#) have extensively addressed the topic of LLIs. For projects financed by international financial institutions, addressing legacy issues from prior land acquisitions has become an essential component of due diligence investigations, particularly for subsequent projects that were previously suspended ([Asian Development Bank, 2009](#); [World Bank, 2016](#)). This research employs the IAD framework to critically analyze the enduring LLIs in the Jatigede case, recognizing that traditional approaches have been insufficient for addressing the complex institutional and social dynamics involved. Developed by Elinor Ostrom, the IAD framework is a widely recognized tool for analyzing the interplay between institutional arrangements, actor behavior, and policy outcomes. It emphasizes how formal and informal institutions, referred to as rules-in-use, along with community attributes and biophysical conditions, shape the incentives, constraints, and interactions of actors within a given *action arena*. In the context of the Jatigede Dam, the IAD framework provides a lens to examine the complex dynamics of land acquisition by mapping the interaction patterns among stakeholders, the institutional structures that govern them, and the contextual rules that influence their behavior. The framework is especially relevant for analyzing land governance, given the multi-actor, multi-level, and often contested nature of land-related decision-making processes in agrarian settings. By applying this framework, the study seeks to reveal the underlying governance challenges and actor behaviors that perpetuate the issue, ultimately providing actionable insights for designing more equitable, inclusive, and sustainable institutional arrangements. To achieve this, the study is guided by the following research questions: (1) What is the historical trajectory of the Jatigede Dam project that led to the emergence of LLI?; (2) What measures have been undertaken to address LLIs?; (3) How can the IAD framework be applied to explain actor interactions within the action arena, and how might this serve as a foundation for reflective analysis and actionable recommendations for resolving the LLIs at Jatigede?

2. Methods

2.1. Research Location

This research was conducted in the Jatigede Dam area, Sumedang Regency, West Java Province (see Figure 1). The Jatigede Dam area is located between 6°49'0" S – 7°04'0" S and 107°60'0" E – 108°15'0" E, covering an area of 4,941 hectares, which consists of 1,361 hectares of forest land and 3,580 hectares of community-owned land. This area includes inundated areas, green belt areas, affected villages, and affected sub-districts. The selection of these locations was determined based on their relevance to the main focus of this study. The Jatigede Dam completely submerged six villages and partially submerged 21 villages in five sub-districts: Jatigede, Darmaraja, Cisit, Jatinunggal, and Wado. The inundated area represents the former locations of villages and historical sites (ancient tombs) submerged by the dam project; the green belt area is part of the economic recovery efforts for the affected residents through the development of eco-tourism and environmentally friendly productive cultivation; and the affected villages within the impacted sub-districts include villages that were partially submerged as well as villages designated as relocation sites for residents affected by the dam.

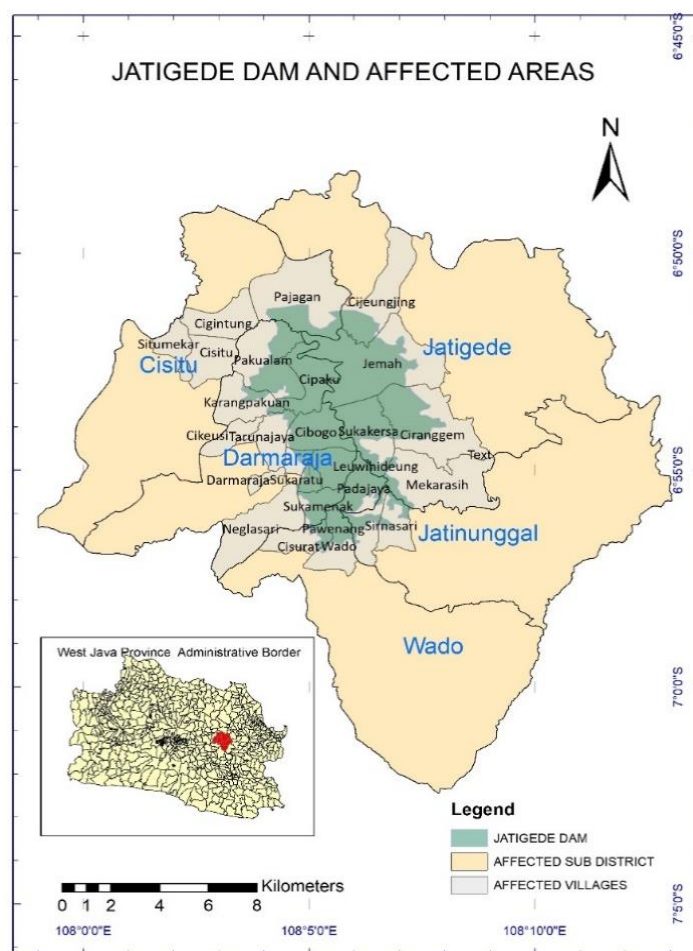


Figure 1. Study Area Location Map (Process by Authors,2025)

2.2. Data Collection

We implemented a qualitative research design with a case study approach. We applied two stages of data collection: a literature review and a field survey. The first stage focused on a literature review to collect data, facts, and opinions related to the construction of the Jatigede Dam, sourced from scientific publications (books and journals) and grey literature (technical reports, seminar proceedings, working papers, policy documents, project reports, and media coverage), as well as statistical data and government publications relevant to various stages of dam construction, including planning, implementation, and reservoir inundation. The literature study was conducted using a narrative review approach to understand the dynamics of the issues, relevant theoretical frameworks, and to map and identify research related to land issues associated with the construction of the Jatigede Dam. The use of this approach enabled the research team to interpret, analyse, and integrate various data sources more flexibly (Rother, 2007; Sukhera, 2022; Wiles et al., 2011). This approach is appropriate because our research involves multiple timelines and actors with varying perspectives, subjectivities, and interpretations, thus requiring a method that can accommodate this complexity within a more flexible, objective, and scientifically rigorous framework. The inclusion criteria included academic publications published between 2008-2025, as well as relevant reports. Grey literature included relevant official reports, laws, and policy documents issued from 1970, when the project was first initiated – through 2025, provided they directly addressed land acquisition, compensation, relocation, cultural heritage, or affected communities in the Jatigede case. Documents were selected based on relevance, institutional credibility, and substantive discussion of land-related issues. The keywords used were (1) "Jatigede Dam" and "social impact handling"; (2) "Jatigede dam" and "Compensation Payment"; (3) "Jatigede dam" and "Relocation"; (4) "Jatigede dam" and "cultural heritage site"; and (5) "Jatigede Dam" and "livelihood restoration". The

search of publications conducted using Publish or Perish resulted in a total of 77 publications. After removing duplicates, we included 34 publications. Of these, 15 publications constituted the primary review corpus and were systematically read, coded, and analyzed as the main analytical basis of this study. The remaining 19 publications met the inclusion criteria but were used as supporting references to provide historical context, policy background, and supplementary factual information.

In the second stage, we conducted interviews with informants and field observations to verify and enrich the data. Informants were selected purposively according to three criteria: (1) direct involvement in, or institutional responsibility for, the land acquisition process and/or the handling of social impacts of the Jatigede Dam; (2) an institutional position relevant to the policy stage under study (planning, implementation, or oversight); and (3) availability and willingness to be interviewed within the research period. The objective of the interviews was to obtain information-rich perspectives from key actors rather than to achieve statistical representativeness. Observations were carried out by directly reviewing several relocation areas established to relocate residents affected by the Jatigede Dam construction project in Cipaku Village.

To identify informants who met these criteria, the researcher initially approached six officials with formal responsibility for land acquisition at the provincial and regency levels. All six independently explained that the officials directly involved during the historical land acquisition process were no longer in office and that archival records from that period were unavailable within their institutions. They therefore recommended contacting BBWS, which subsequently provided access to institutional records and relevant personnel. The Head of BBWS, while not personally involved in the historical acquisition process, facilitated this access and was therefore not included among the substantive informants.

A total of seven informants were interviewed. Six had direct involvement in or institutional responsibility for the land acquisition process, while two held institutional positions relevant to the policy stages under study. Three informants fulfilled both criteria, enabling them to provide particularly rich and nuanced insights from both institutional and community perspectives. Consequently, they offered valuable reflections on the land acquisition process from the standpoint of both government institutions and affected communities. Three informants represented the Cimanuk-Cisanggarung River Area Center (BBWS-Cimanci), comprising of one leader and two staff members. The two BBWS staff members were also affected villagers. One informant was from the Department of Tourism, Culture, Youth, and Sport of Sumedang Regency, and three were from the affected community. Among the three community informants, one was the Cipaku Village Secretary, and two were traders who had been relocated and received business premises (food stalls and grocery stores) within the Jatigede Reservoir Area. Although the number of community informants was limited, they were selected because of their direct experience with relocation and livelihood restoration. To mitigate the limited representation of affected residents, interview findings were triangulated with documentary evidence, field observations, and information obtained from government institutions. This triangulation enabled cross-validation of key events, institutional arrangements, and policy implementation. An interview with a representative from the local NGO was initially planned to provide an additional independent perspective. However, no suitable informant could be confirmed during the research period because the land acquisition process had taken place over multiple periods (1980s, 2000s, and 2011), and the relevant organizations and individuals involved during those times were no longer readily identifiable. This represents a limitation of the study.

2.3. Analysis and Interpretation of Data

We employ an adapted Institutional Analysis and Development (IAD) framework ([Adekola et al., 2023](#); [Polski & Ostrom, 1999](#)). The IAD framework is used to describe and analyze contextual factors such as socio-economic and environmental structures and characteristics, formal rules (legislation and regulations), and informal rules (norms and local customs) that act as exogenous factors. Three action situations are identified: Compensation (A1), Relocation (A2), and Cultural Heritage Debate (A3). These were selected based on the literature review and their empirical prominence, frequency in stakeholder narratives, intensity of conflict, and significance in terms of their long-term impacts in the Jatigede case. Rules-in-use were extracted through thematic coding of legal documents, policy reports, and semi-structured interviews, allowing the identification of operational rules, enforcement practices, and informal arrangements shaping actor interactions. Within the Action Arena, we identify the actors involved, the action situations for each action arena, interaction strategies, and the resources involved (including resource exchanges). The results are then evaluated based on evaluative criteria, such as

equity, process efficiency, procedural legitimacy, and socio-environmental sustainability. This evaluation helps facilitate the mapping of conflict-prone areas and obstacles, while also identifying possible policy interventions to resolve the legacy of land issues at the Jatigede Dam. To enhance validity, the analysis applies source triangulation (document analysis, interviews, and field observations), member checking with selected informants, and a documented audit trail to ensure transparency and analytical consistency. The following Figure 2 visualizes the adapted IAD framework used in this research.

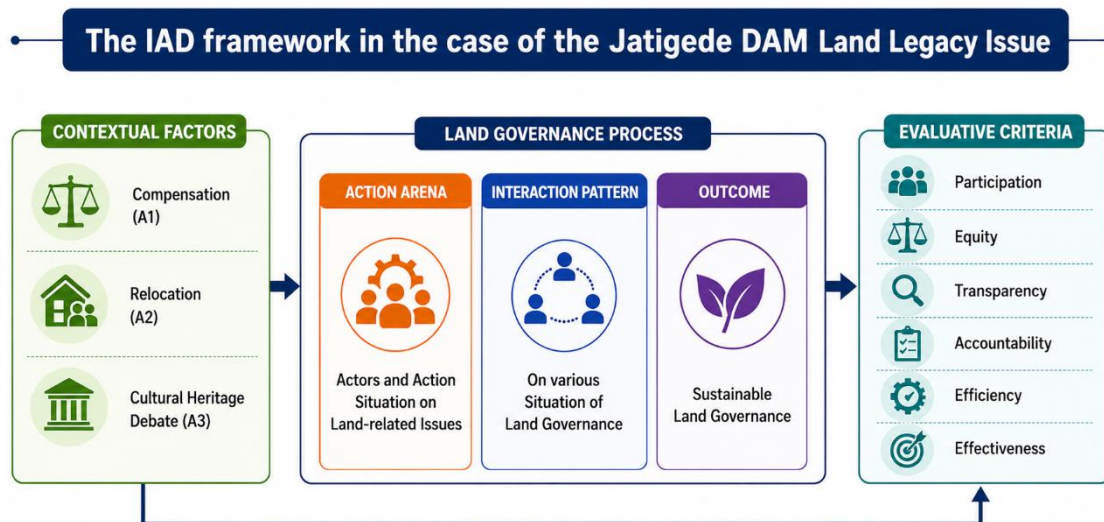


Figure 2. The IAD framework in the case of the Jatigede DAM Land Legacy Issue, adapted from (Polski & Ostrom, 1999) and (Adekola et al., 2023)

3. Results and Discussions

3.1. Historical record of the land acquisition and development of Jatigede Dam

The Jatigede Dam is the second-largest dam in Southeast Asia after the Jatiluhur Dam (Direktorat Jendral Sumberdaya Air, 2015; Supriatin, 2010). Its completion was significantly delayed, extending over a period of almost 52 years. The construction plan began in 1963 (Arofah et al., 2015; Purnama, 2015; Wahidah, 2019). Feasibility and utility studies were conducted from 1963 to 1973, while the detailed design and construction planning were carried out by SMEC Australia in 1975-1978 (Abdulloh et al., 2020; Setianto, 2014). The study results indicated that the most suitable area was the location created by damming the Cimanuk River flow. In 1981, the reservoir location was stipulated by the Minister of Home Affairs Decree No. 593.82/SK.1266-Pem.Um/81, dated September 16, regarding the Land Acquisition Permit for Jatigede (Purnama, 2015), which was followed by the collection of data on residents' land in 1982. Subsequently, from 1982 to 1986, compensation was provided based on the Minister of Home Affairs Regulation Number 15 of 1975 concerning the Procedures for Land Acquisition. During this period, the amount of compensation was unilaterally determined by the Government, and the community was not given the right to participate in determining the amount (Wahidah et al., 2019). The amount, which was deemed too small, caused widespread social unrest and halted the land acquisition process for the Jatigede Dam. In addition, the dam construction was halted because funding from the World Bank was withdrawn due to poor relocation planning (Suwartapradja et al., 2019; Wijayanto et al., 2019).

Furthermore, physical construction was halted from 1985 to 1995 because of budget issues and from 1997 to 2004 because of the Asian financial crisis, leading to the belief that the dam's construction would not continue. As a result, the community members who had already received compensation and been relocated resumed their activities in vacated areas (Makmur K et al., 2014; Suntoro, 2018). The community even returned to the Jatigede Dam construction area to cultivate their land, creating new problems because they occupied land that had already been cleared for the project over the previous two to three generations.

In 2006, when the construction of the Jatigede Dam resumed, social unrest occurred as the community demanded additional compensation. It was also found that some residents had been overlooked during the 1986 data collection and therefore demanded their rights. The conflict over land acquisition for the Jatigede Dam resulted in 420 demonstrations by residents. In 2010, the Governor of West Java formed a Task Force (*Satuan Tugas* or *Satgas*) to expedite handling of the social impacts of the Jatigede land acquisition. In 2013, it was transformed into a One-Stop Integrated Service Unit (*Satuan Manunggal Satu Atap* or *Samsat*) to accelerate the resolution of land acquisition issues related to the construction of the Jatigede Dam (Arofah et al., 2015). This team was formed to accommodate the complaints of the affected communities and to formulate strategies for resolving the legacy issues arising from the land acquisition process, which caused numerous problems from 1982 to 1986.

In 2015, this issue was progressively addressed through the allocation of '*kadeudeuh*' or '*panundung*' funds, totaling IDR 122.5 million, to cover replacement housing costs for affected residents who had not yet received compensation. This was in accordance with the Minister of Home Affairs Regulation of 1975 (as stipulated in Minister of Home Affairs Regulation No. 15 of 2015), which required the government to resettle residents impacted by land acquisition, and through the provision of IDR 29 million as compensation for families who had previously received compensation and resided in the sub-districts designated for dam construction. The disbursement of this compensation fund was governed by Presidential Regulation Number 1 of 2015 regarding the Acceleration of Land Acquisition for the Jatigede Dam Project. The land acquisition for the Jatigede Dam construction was finalized, albeit with some unresolved issues remaining. The physical construction of the Jatigede Dam, along with its inundation, was completed in 2015.

In addition to the issue of land compensation amounts, there was also a significant socio-cultural problem due to the existence of cultural heritage sites that would be submerged by the Jatigede Dam (Purnama, 2015). No fewer than 48 cultural heritage sites, including the remnants of the Tembung Agung Kingdom, the precursor to the Sumedang Larang Kingdom and the center of Sundanese cultural civilization, were affected (Makmur K et al., 2014; Zakaria, 2008).

The resolution of land acquisition issues for the construction of the Jatigede Dam in Jatigede, Sumedang, West Java, was relatively better than that of land acquisition issue resolutions for other dam projects, such as the Kedungombo Dam and others. The handling of the socio-economic impacts of the Jatigede Dam construction has been described as the best in Indonesia (Caesario, 2015). Figure 3 illustrates the timeline of the Jatigede Dam construction, which began with its initiation in 1963 and continued with the efforts to resolve the LLIs by 2015.

Timeline of Jatigede Dam Development Project

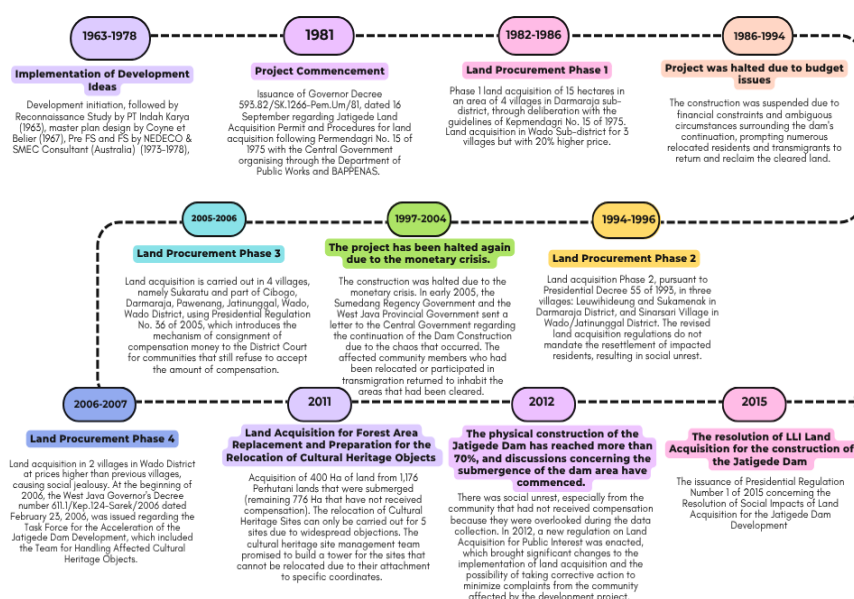


Figure 3. Timeline of land acquisition for the Jatigede Dam construction up to the efforts to resolve the LLI, summarized and processed from several publications.

3.2. Resolution for Land Legacy Issues in Jatigede Dam Development

The Land Legacy Issue (LLI), also known as a land legacy issue or land-related legacy issue, represents a persistent grievance from communities impacted by development or their descendants concerning prior land acquisition procedures that were inadequately or incompletely addressed by former or current project developers (Cotula & Berger, 2016; The Interlaken Group and Rights and Resources Initiative (RRI), 2017). In Indonesia, resolving LLIs is a prerequisite for restarting development projects at locations where previous projects had completed the land acquisition phase but were never completed. The handling of LLI is prioritized in the development of major tourist areas (see the Environmental and Social Management Framework document issued by the Ministry of Public Works in the Tourism Development Program) (Ministry of Public Work and Housing Republic of Indonesia, 2018). While explicit regulations for LLI handlings are limited, proper identification and resolution of legacy issues are essential to prevent disputes, ensure social license, and foster sustainable land governance.

Conceptually, LLIs can be distinguished by several indicators that reveal unresolved or partially addressed land issues. One critical indicator is their cross-generational impact, where displacement, loss of ancestral graves, and disruption of cultural practices affect not only the original landowners but also subsequent generations. In the case of the Jatigede Dam, the inundation of graveyards disrupted cultural and spiritual practices, leaving enduring social and psychological burdens on descendants (Wahidah, 2019; Makmur K et al, 2014; Suntoro, 2018; Purnama, 2015). Another key indicator is documentation and data gaps, as legacy issues often arise from incomplete or inconsistent land records. At Jatigede, overlooked land parcels and insufficient land tenure information complicated the verification of claims and delayed the compensation process (Fatoni et al., 2013; Pangesti, 2023; Purnama, 2015; Rachmawan, 2015; Sonya et al., 2019; Suwartapradja et al., 2019; Wijayanto et al., 2019). Similarly, regulatory and policy changes contribute to legacy issues when past agreements conflict with current legal frameworks. Earlier unilateral compensation decisions and the coercive involvement of the military contrast with today's standards for participatory governance and social and environmental management, necessitating re-evaluation to ensure fairness and alignment with current policies (Asmara, 2022; Mustika & Asyiwati, 2017). Additionally, ambiguity between entitled and affected parties often exacerbates disputes, particularly when it is unclear who is legally entitled to compensation versus who is socially or culturally affected. At Jatigede, conflicts over compensation, resettlement, and cultural heritage loss illustrate the complexity of distinguishing between entitled and affected stakeholders, especially when multiple households or communities are involved.

The manifestation of these indicators at Jatigede was evident in inadequate planning, delayed construction, and multiple disruptions caused by budgetary constraints, highlighting systemic weaknesses in land governance (Fatoni et al., 2013; Pangesti, 2023; Purnama, 2015; Rachmawan, 2015; Suwartapradja, 2005; Wijayanto et al., 2019). Simultaneously, the overlooked land parcels identified during the data collection process provide compelling evidence of the insufficiency of land tenure and ownership data, highlighting deficiencies in land administration. The unilateral decision regarding compensation, excluding community representatives or professional appraisers, along with the coercive involvement of the military, influenced the land acquisition process for the Jatigede Dam construction (Asmara, 2022; Mustika & Asyiwati, 2017).

The LLI in the land acquisition process became a complex issue when the decision was made to commence the flooding of the Jatigede Dam area, scheduled for January 14, 2015. Presidential Regulation Number 1 of 2015 was enacted to resolve the issues related to the Management of the social impacts on communities resulting from the Jatigede Dam Development. The identification and management of LLIs are essential tasks that require meticulous attention, as they involve intricate humanitarian and environmental issues; therefore, a comprehensive understanding of the underlying problems is imperative (Quan, 2019). To accurately identify LLIs, the project proponent or the entity necessitating land must consider the legal, social, and historical dimensions of land tenure transfer, along with alterations in land use and governance. Transactions that seem unproblematic in legal documents and official data sources may, in practice, generate considerable tensions on the ground. Genuine concerns regarding land acquisitions can only be discerned through community engagement (The Interlaken Group and Rights and Resources Initiative (RRI), 2017).

The resolution of LLIs must be executed to secure a social license for the development project, ensuring that its implementation genuinely benefits the community and adheres to the principles of sound land governance and responsible land investment (Smyth & Steyn, 2015). The examination of historical land acquisition issues that remain unresolved or only partially addressed, in accordance with the social and environmental management protocols of the Asian Development Bank (ADB), the World Bank (WB), the Japan International Cooperation Agency (JICA), the Commonwealth Development Corporation (CDC), and Land: Enhance Government for Economic and Development (LEGEND), is referred to as a Due Diligence Study (DDS), the results of which are subsequently recorded in a Due Diligence Report. This Due Diligence can be utilized to identify and devise solutions for LLIs, as well as to recognize potential issues that may subsequently evolve into LLIs. The due diligence process for land acquisition is essential for assessing whether a country's land governance practices conform to the principles of good land governance and align with the Sustainable Development Goals (Deininger et al., 2010) (Palmer et al., 2009)

The due diligence process should ideally be conducted during the planning phase, particularly during the preliminary data analysis for spatial planning of the development project (Ministry of Public Works and Housing Republic of Indonesia, 2018). A due diligence investigation typically involves a desk study or document review of land acquisition documents and regulations pertaining to land acquisition and resettlement. To address field issues, interviews were conducted with stakeholders and affected persons (AP), and the findings were corroborated with relevant agencies managing complaints. Field studies were conducted to make observations. Expedited investigations or audits were performed by a designated team. In the context of the Jatigede Dam, due diligence should still be carried out even though the reservoir has already been completed and is operational. This is necessary to minimize the risk of public demands if negative impacts arise in the future, especially those arising from key issues such as compensation, resettlement, and debates over cultural heritage. Accordingly, the Sumedang Regency Regional Government formed a team to handle impact-related complaints by issuing the Regent's Decree Number 400/KEP.242-BAPP/2015 concerning the coordination and facilitation team for handling the social and environmental impacts of the construction of the Jatigede dam, updated with the Regent's Decree Number 400/KEP.418-HUK/2019 concerning the Establishment of the Coordination Team Handling Team and Facilitation of Handling the Social and Environmental Impacts of the Jatigede Dam Development. The team established through the Regent's Decree appointed the Coordinator of the Affected Residents Communication Forum as Vice Chair, ensuring formal representation of displaced communities within the institutional structure. This arrangement reflects a more participatory governance approach to managing post-construction impacts. More broadly, the facilitation team functions as a localized Grievance Redress Mechanism (GRM), providing an institutional platform to receive, coordinate, and resolve complaints arising from long-term land acquisition and resettlement impacts. The team has since been involved in planning programs for the utilization and development of the Jatigede Dam. One notable livelihood restoration initiative was the development of food stalls in the Tanjung Dzuriat tourism area along the reservoir. Beneficiaries now operate small-scale culinary businesses. This initiative illustrates an adaptive institutional response that moves beyond compensation toward longer-term livelihood recovery and socio-economic reintegration. Given Indonesia's decentralized governance system, this institutional arrangement shows how district governments can operationalize grievance management within their jurisdictions while remaining aligned with national development objectives. Although developed in the context of Jatigede, this localized GRM model could be adapted for other National Strategic Projects (PSNs) facing similar land legacy issues. Nevertheless, its effectiveness depends on cooperation across district, provincial, and national government institutions, reflecting the multi-level governance required to manage complex land acquisition and resettlement challenges.

3.3. The arena of actors and interaction patterns in Waduk Jatigede Development

In this research, we categorized LLIs into three primary themes: Compensation, Relocation, and Cultural Heritage. Since the inception of the construction project, the primary issue has been the community's rejection of the compensation amount, attributed to insufficient community involvement, the government's unilateral determination of compensation, and the lack of a mechanism for contesting the awarded compensation. Smyth & Steyn (2015) identified delayed compensation payments and inaccuracies in identifying the "entitled" and "affected" parties as one of the five principal issues in global land acquisition, potentially leading to project delays and perpetuating structural poverty.

The protracted delay in the construction of the Jatigede Dam, spanning over three decades, had additional repercussions, revealing that several residents previously omitted from the data collection were nonetheless eligible for compensation. The delay also created market price discrepancies that could create new issues. Furthermore, the protracted delay in the project's execution for over thirty years resulted in the land, once cleared, being reoccupied by the community, based on the presumption that the dam construction would not proceed. The land that had been cleared and allocated as state property was subsequently occupied by the community; thus, when the physical construction project resumed in 2006, residents who had long established themselves in the area raised objections. Efforts to reclaim the land were challenging due to the absence of definitive records concerning the original inhabitants of the area or the identity of newcomers who may have assumed control following the land's clearance. This frequently occurs in international land acquisition practices. For example, (Kariko, 2009) examines the rise of illegal settlements following land acquisition for a bypass road in northern Nairobi, attributed to delays between the land acquisition and project development phases. This occurs partly because of deficiencies in the land administration system and the regulatory framework governing land acquisition for public purposes, exacerbated by pressures from population growth, poverty, and urbanization. The problem of illegal occupation typically arises from delays in project execution, insufficient security or immediate use of vacated land, inadequacies in relocation planning, and a lack of institutional coordination among the central government, local authorities, and project implementers. Illegal occupation may occur when former owners return to their original properties, when newcomers arrive, or when groups pursue housing or economic opportunities. Within the IAD framework, the cut-off date, or data collection deadline, constitutes a component of the rules-in-use designed to delineate interaction boundaries within the action arena among stakeholders (government, affected communities, or other entities). Nevertheless, the presence of these operational rules necessitates robust institutional arrangements, along with sufficient oversight and law enforcement mechanisms to avert the development of opportunity structures like illegal occupation.

Moreover, the cultural heritage dilemma that has arisen from the LLIs associated with the Jatigede Dam, exemplifies the frequent conflict between developmental interests characterized by structural advancement and assessed through economic growth and enhancements in the community's tangible quality of life and the preservation of cultural and local values, which encompass customs, arts, beliefs, and other intangible elements that are vital for sustaining the identity and social cohesion of the local populace. The Jatigede Dam's historical sites, ancestral graves, and ritual spaces of the indigenous community indicate that the intangible dimensions of cultural heritage remain inadequately incorporated into development planning. This issue illustrates the disparity in values between a technocratic development approach and the more comprehensive viewpoint of the local community regarding space, land, and cultural heritage. Within the IAD framework, this can be interpreted as a result of the conflicts between formal regulations and informal norms and collective strategies.

Another issue is the alteration of rules-in-use resulting from the postponement of project implementation. The challenges associated with the Jatigede Dam project evolved through multiple phases from its initial proposal in 1963 to its completion in 2015. During that period, numerous changes to the regulatory framework (formal rules-in-use) occurred, affecting the execution of land acquisition. These alterations pertain not only to the formal legal framework (for instance, the shift from Law No. 20 of 1961 to Law No. 2 of 2012 concerning land acquisition) but also influence the interactions, negotiations, and interpretations of land rights and compensation among stakeholders within the action arena.

As the project faced extended delays, local participants, including impacted residents and village stakeholders, established informal institutions and collaborative strategies that diverged from the original project planning assumptions. For instance, certain community members resumed occupying the formerly cleared land, cultivating new social, economic, and cultural dynamics and establishing a new institutional reality that had not been previously recognized. The alterations in rules-in-use resulting from this temporal gap present challenges for project execution, as they may complicate the identification of legitimate rights holders and land parcels, obscure the distinctions between legal and social claims, and generate conflicts between outdated policies and present-day realities. From the IAD perspective, this condition illustrates the dynamic and adaptive nature of the action arena, underscoring the necessity of accommodating institutional evolution in addressing LLIs. Table 1 then delineates the IAD components,

including actors, principal rules employed, resource flow, and interaction patterns observed in the three domains of LLIs at the Jatigede Dam.

Table 1. IAD elements regarding Land Legacy Issues in Jatigede Dam Development

IAD Element	A1. Compensation	A2. Resettlement	A.3. Cultural Heritage
Actor	- Central Government - West Java Provincial Government - Government of Sumedang Regency - Task Force for Addressing the Socio-Economic Impacts of the Jatigede Dam Development - BBWS Cimanuk-Cisanggarung - Affected communities or residents - NGOs (non-governmental organizations)	- Central Government - West Java Provincial Government - Government of Sumedang Regency - Task Force for Addressing the Socio-Economic Impacts of the Jatigede Dam Development - BBWS Cimanuk-Cisanggarung - Affected communities or residents - NGOs (non-governmental organizations)	- Central Government - West Java Provincial Government - Government of Sumedang Regency - Task Force for Addressing the Socio-Economic Impacts of the Jatigede Dam Development - BBWS Cimanuk-Cisanggarung - Task Force for Handling and Accelerating the Relocation of Cultural Heritage Sites in Jatigede - NGOs (non-governmental organizations)
Key-rules used	- Regulation of the Minister of Home Affairs Number 5 of 1975 - Presidential Decree No. 55 of 1993 - Presidential Decree No. 35 of 2005 - Presidential Regulation No. 65 of 2006 - Presidential Regulation Number 1 of 2015 - Law No.2 of 2012 on land acquisition for public interest	The Minister of Home Affairs Regulation Number 15 of 1975 mandates the provision of monetary compensation and requires relocation. The policy of compensation in the form of relocation was abolished with the enactment of Presidential Decree No. 55 of 1993, and Presidential Regulation 36 of 2005 jo Presidential Regulation 65 of 2006. Law No. 2 of 2012 introduced the possibility of compensation being in the form of money, relocation, and shares. However, in practice, the replacement land is only intended for waqf land or forest replacement areas, while for other land categories such as community land and village treasury land, monetary compensation remains the preferred option.	Law Number 11 of 2010 on Cultural Heritage mandates that cultural heritage objects must be protected and preserved.
Resource flow	The government uses regulatory authority resources and formal legal instruments to carry out land acquisition and relocation, positioning itself as the dominant actor controlling the formal structure of the action arena. However, an approach that solely relies on administrative legal legitimacy generates resistance as a form of a survival mechanism.	The government uses regulatory authority resources and formal legal instruments to carry out land acquisition and relocation, positioning itself as the dominant actor controlling the formal structure of the action arena. However, an approach that solely relies on legal and administrative legitimacy generates resistance as a form of a survival mechanism.	The government uses regulatory authority resources and formal legal instruments to carry out land acquisition and relocation, positioning itself as the dominant actor controlling the formal structure of the action arena. However, an approach that solely relies on legal and administrative legitimacy generates resistance as a form of a survival mechanism.
Interaction pattern	Phase 1 (1982-1986): Land acquisition proceeded quite smoothly, and the amount of compensation based on deliberation in accordance with Regulation of the Minister of Home	Phase 1: Government dominance through intimidation and the deployment of the military to force residents to relocate.	In every phase of the Jatigede Dam timeline, cultural heritage issues have not been explicitly accommodated within the framework of formal institutions, either in technical

IAD Element	A1. Compensation	A2. Resettlement	A.3. Cultural Heritage
	Affairs No. 15 of 1975 was acceptable to the community. However, there were instances of measurement errors, incorrect payments, and land parcels that were overlooked during data collection process due to a lack of coordination and weak land data. Phase 2 (1987 – 1997): The pattern of asymmetric interaction became more pronounced during this period. Presidential Decree No. 55 of 1993 abolished the obligation for the Government or project initiator to carry out resettlement. The community was forced to accept compensation and relocate from the acquired area independently. Phase 3 (1997 – 2006): The government was highly dominant through the consignment policy, which involved unilateral compensation determination through the deposit of compensation funds with the District Court for residents who refused to accept the compensation. Phase 4 (2006 – 2015): In this phase, there was a correction to the government's dominance over the compensation policy. In 2010, the One-Stop Integrated Administration Unit (SAMSAT) was established to resolve compensation issues related to overlooked land parcels and to facilitate compensation payments for the third phase of land acquisition. In 2012, a Task Force (Satgas) was formed to address various complaints with a more humanistic approach.	Phase 2 - 3: Project delays and a weak regulatory framework caused the government to lack adequate monitoring mechanisms to prevent the informal occupation of land that had previously been cleared, prompting the community to take informal initiatives, such as returning to their original homes and developing community institutions in the area. Phase 4: The government began implementing measures to resolve these issues through legal channels, including the issuance of Presidential Regulation No. 1 of 2015.	land acquisition regulations or in relocation policies. In response to the lack of formal recognition, the affected community developed patterns of interaction based on informal rules. The rescue of 33 cultural heritage sites out of 48 designated sites began in 2013 with the formation of the Cultural Heritage Site Handling and Relocation Acceleration Team in for Jatigede.
Outcomes	- The dissatisfaction of the community with the difference in the amount of compensation money was caused by differences in the rules applied. - Community members who returned to land for which compensation had already been paid decades earlier were unable to afford relocation.	- Many people who had received compensation returned to the project area to start their lives again, and their settlements have since expanded over two generations. - The government experienced difficulties in re-identifying the affected communities, leading to dissatisfaction among community members.	There was a widespread sense of grievance among much of the Sundanese community, and to address this, Regional Regulation Number 11 of 2020 on Sumedang Paser Budaya Sunda was issued, committing to the revitalization of Sundanese cultural values, under which the Sundanese people and their land are expected to provide benefits to the wider community.

Source: Process by Author, 2025

3.4. Evaluative Criteria for Land Legacy Issues in the Land Acquisition for the Jatigede Dam Development

The evaluative criteria in the case of the Jatigede Dam LLIs are divided into six criteria, which include participation, equity, transparency, accountability, efficiency, and effectiveness, and are applied to the three components of the LLIs. These evaluative criteria are applied based on the IAD framework elements discussed in the previous subsection and form part of the reflection on the development journey of the Jatigede Dam, which has taken place over more than three decades.

An important point in the implementation of these evaluative criteria is how institutional evolution, both in the formal realm (regulations, institutions, and policies) and the informal realm (norms and beliefs), leads to different consequences across evaluation components. For example, in the participation component, changes in land acquisition regulations create different action arenas for each actor—from repressive, unilateral, and top-down to more participatory and transparent in component A1. Similarly, in component A2, the absence of formal rules during the project suspension due to the project delay (1987-2006) caused community institutions to adjust by applying local norms when resettling in areas that had previously been vacated. For example, the indigenous people returned and occupied areas that had once been their land, inheriting them through generations, which was considered fair and justified because they were the original owners of the land, and the land had not been used for a long time. Meanwhile, in the context of cultural heritage (A3), the absence of clear formal rules actually benefited the Government. By prioritizing the principle of "public interest" and development to improve the welfare of society, the existence of cultural heritage is considered subordinate to the logic of physical and technocratic development. Cultural heritage was not included in the official considerations for planning or land acquisition. The ambiguity of these formal regulations creates an institutional grey area, leading the community's interpretation of space (as a place for rituals, historical sites, or sacred locations) to be seen as lacking sufficient legal legitimacy to reject or delay the land acquisition process. Finally, Table 2 provides a further illustration of the evaluative criteria results for the three contextual components of the the Jatigede dam LLIs.

Table 2. Evaluation criteria for the contextual element in the Land Legacy Issue of the Jatigede Dam Development

Evaluative Criteria	A1	A2	A3
Participation	In the initial phase of the project implementation, community participation was almost non-existent, leading to unrest that caused delays in land acquisition and the emergence of community conflicts. Subsequent institutional evolution provided space for community participation, as well as efforts to provide fairer and more adequate compensation, but this also created conflicts and difficulties, especially in identifying those who were legally "entitled" and "affected".	In the initial phase of project implementation, community participation was almost non-existent, leading to unrest that caused delays in land acquisition and the emergence of community conflicts. In subsequent phases, due to the absence of formal rules during the delay in project implementation, the community acted independently and adaptively based on local norms. This legal vacuum provided space for the formation of informal rules and adaptive practices by the local community.	Community participation in the resolution of cultural heritage preservation issues is relatively limited, and there are almost no channels for participation. Participation primary occurs informally through protests by certain community groups. In several excavations conducted by the Task Force for Handling and Accelerating the Relocation of Cultural Heritage Sites in Jati Gede, there was minimal community participation, and some activities even faced opposition from the community.
Equity	There is inequity between formal institutions (the government and project proponents) and informal institutions (community groups). Mechanisms that rely too heavily on formal	There is inequity between formal institutions (the government and project proponents) and informal institutions (community groups). Mechanisms that rely too heavily on formal rules	The absence of formal rules for the protection and recognition of local culture and heritage leads to a lack of acknowledgment and protection of symbolic values, collective identity, and the cultural rights of local communities.

Evaluative Criteria	A1	A2	A3
	rules and neglect informal interactions create differing perceptions of interactional and interpersonal justice.	and neglect informal interactions create differing perceptions of interactional and interpersonal justice.	
Transparency	Transparency in compensation is almost non-existent; the government and project proponents have nearly absolute formal power.	Transparency in relocation is almost non-existent, the government and project implementers have nearly absolute formal power.	Transparency in the resolution of cultural heritage issues is almost non-existent, the government and project implementers have nearly absolute formal power.
Accountability	Institutional weaknesses occur due to a lack of information transparency, limited complaint and evaluation mechanisms, the absence of strong and digitized documentation, and power imbalances in the action arena.	Weak accountability arises from non-participatory planning processes, poor documentation and monitoring, weak complaint mechanisms, and regulatory gaps during project delays.	The weakness of accountability arises from the absence of recognition of cultural heritage in formal regulations, minimal involvement of cultural communities, and the lack of specific supervisory institutions or clearly designated entities responsible for the loss of local cultural heritage.
Efficiency and effectiveness	Community rejection and the resulting conflicts reduced the efficiency of project implementation, in addition to issues related to limited funding and minimal planning.	The power vacuum during the postponement period, which led to illegal settlements, caused delays in project implementation and increased the costs of resolving these issues.	After extensive deliberation with the Sundanese customary leaders, 42 sites were relocated to a four-hectares area in Cisitu District. Meanwhile, six sites, including the tombs of Prabu Geusan Ulun and Guru Ajiputih, as well as the remnants of the Tembung Agung Kingdom, which was the precursor of the Sumedang Larang Kingdom and the epicenter of Sundanese culture, were not relocated due to their historical ties on their location coordinates. There was a request from the community to create an underwater tunnel for the conservation of these sites, but this would require considerable financial resources. The adopted approach to preserving these immovable cultural heritage sites was the construction of pillars/monuments at the original coordinates of the cultural heritage sites, including information on the coordinates of the cultural heritage sites, including information on the coordinates and a brief description of each cultural heritage site.

Source: Process by Author, 2025

3.5. Policy Interventions Derived from IAD Diagnosis

The case of Jatigede Dam highlights several institutional shortcomings and governance gaps in the handling of LLIs in compulsory land acquisition. First, participation was initially almost non-existent during the early implementation phase of the project, causing delays in land acquisition and generating community unrest. Subsequent institutional evolution allowed for greater engagement of communities, but challenges remained in determining compensation amounts and clarifying the legal distinction between “entitled” and “affected” parties. In cultural heritage preservation, community participation was minimal, with informal protests being the primary channel for engagement. Policy interventions should therefore focus on formalizing participatory mechanisms, creating structured consultation processes, and integrating local norms and knowledge into decision-making.

Second, equity concerns emerged from the imbalance between formal institutions (government and project implementers) and informal community groups. Relying excessively on formal rules neglected the social and the cultural dimensions of justice, particularly in the recognition of symbolic values and collective identity. To address this, interventions should aim to balance formal and informal institutions, establish equitable compensation frameworks, and ensure the recognition and protection of local cultural and heritage rights.

Third, transparency was almost entirely absent in compensation, relocation, and cultural heritage management, granting nearly absolute discretionary power to the government and project implementers. Policy responses should include transparent information-sharing protocols, public disclosure of land acquisition decisions, and clear grievance reporting channels, ensuring affected communities are informed and able to monitor implementation.

Fourth, accountability weaknesses were observed in all aspects of the project, including planning, compensation, resettlement, and heritage preservation. The lack of digitized documentation, limited complaint mechanisms, and unclear responsibility for cultural heritage loss undermined institutional credibility. Interventions should establish robust accountability structures, including digitized record-keeping and the clear assignment of responsibilities for the oversight of social and environmental impacts.

Finally, community conflicts, funding limitations, and procedural inefficiencies compromised efficiency and effectiveness. For cultural heritage preservation, lengthy negotiations with customary leaders and the high cost of site relocation exemplified the challenges of balancing cultural sensitivity with practical feasibility. Policy interventions should focus on proactive conflict resolution, adequate resource allocation, adaptive planning, and innovative technical solutions, such as the construction of monuments for immovable heritage sites, to preserve cultural values while ensuring cost-effective implementation.

Overall, linking the IAD diagnostic insights with targeted policy interventions creates a pathway for enhancing governance in land acquisition. These interventions also directly support the Sustainable Development Goals, particularly SDG 8 (Decent Work and Economic Growth), SDG 10 (Reduce Inequalities), SDG 11 (Sustainable Cities and Communities), and SDG 16 (Peace, Justice, and Strong Institutions). Table 3 presents these diagnostic results with the corresponding SDG linkages.

Table 3. IAD diagnostic linking with SDGs

Problem	IAD Diagnosis	Intervention	SDG Linkage
Low community participation	Formal project processes excluded local communities; community participation was largely informal.	Establish structural participatory mechanisms and community consultation forums.	SDG 10, SDG 11, SDG 16
Inequity between formal and informal institutions	Formal rules dominated; local norms and cultural rights were overlooked.	Balance formal and informal governance; recognize cultural and heritage rights; establish fair compensation frameworks.	SDG 10, SDG 11, SDG 16
Lack of transparency	Information on compensation, relocation, and heritage management was not disclosed.	Establish public disclosure protocols, grievance channels, and regular reporting mechanisms.	SDG 16
Weak accountability	Limited complaint mechanisms, poor documentation, and unclear responsibilities.	Develop digitized record-keeping, monitoring and evaluation systems, and clearly assign oversight responsibilities.	SDG 16

Problem	IAD Diagnosis	Intervention	SDG Linkage
Inefficiency and delayed project implementation	Conflicts, budget constraints, and high costs associated with heritage relocation.	Strengthen conflict resolution, adaptive planning, innovative technical solutions, adequate budgeting.	SDG 8, SDG 11

Conclusion

Although compensation, relocation, and cultural heritage issues in the Jatigede Dam project have distinct contextual challenges, they share a common pattern: an action arena dominated by formal actors that created imbalances in power and access, limiting meaningful participation by affected communities. The top-down planning and implementation process of the project without deliberative mechanisms made its execution seem to ignore local aspirations and the socio-cultural dynamics inherent in the living spaces of the affected communities. The dominance of formal actors also shaped the rules in use: the rules tended to follow the project's administrative and technocratic logic of the project, while social norms and unwritten rules at the community level lacked adequate channels for expressing community aspirations. As a result, friction emerged between the state's value system and the values of the local community, as seen in the handling of cultural heritage sites. In the evaluative framework of the IAD, this asymmetrical power situation creates an imbalance in the dimensions of procedural and substantive justice.

Additionally, the institutional evolution during the long gap in project implementation changed the structure of the rules-in-use, social norms, and community expectations, which were no longer aligned with the project planning framework. The time gap from the initial planning in the 1960s to the project's completion in 2015 caused various transformations, both in terms of formal regulations, the demographic and institutional structures of society, as well as changes in values and social practices. The numerous formal rules that were no longer relevant or failed to reflect the actual conditions of society caused socio-economic impacts that could not be anticipated, especially in systems that prioritize formal rules-in-use, such as land acquisition. This situation creates tension between legality and legitimacy, as many community actions are legally considered "illegal" (for example, reoccupying vacated areas) yet are socially and morally deemed legitimate due to decades of unclear rules and a lack of institutional protection.

To address these legacy issues effectively, several policy interventions are recommended. First, the establishment of a grievance redress mechanism (GRM) can provide an accessible and participatory system for resolving disputes over land, compensation, and cultural heritage. Second, structured consultation protocols and community forums are essential to ensure inclusive participation and representation. Third, the digitization and reconciliation of land tenure data can enhance the implementation of land acquisition in a more sustainable manner. Fourth, adaptive compensation mechanisms that adjust for inflation, land value changes, and socio-economic conditions can enhance fairness. Lastly, implementing heritage protection protocols by creating clear procedures for documenting, relocating, or conserving cultural heritage, as well as integrating community input and technical feasibility, is important for strengthening cultural heritage value. These interventions enable procedural and substantive justice, promote equitable outcomes, and improve project efficiency in land acquisition, supporting the SDG agenda, particularly SDG 8, SDG 10, SDG 11, and SDG 16.

Limitations

Although this study provides a valuable institutional perspective on the persistence of LLIs in the Jatigede Dam project, it has limitations. First, the project's unusually long duration of the project, spanning nearly 52 years, makes it challenging to capture consistent narratives. The extended timeline may introduce retrospective bias, as the perspectives of stakeholders are shaped by shifting roles, memory constraints, or evolving political and institutional contexts. Second, regulatory and political changes throughout the project have shaped the decision-making process in ways that are difficult to trace and may influence current interpretations. In addition, the limited availability of early project documentation restricts a comprehensive reconstruction of key land acquisition events and decisions related to land

acquisition, resettlement, and compensation. Furthermore, the number of affected community informants was limited, and no suitable NGO representative could be identified because of the project's long historical timeline. Consequently, the study may not fully capture independent civil society perspectives, whose views could have provided additional insights into the mitigation of land legacy issues. Nevertheless, this limitation was mitigated by triangulating interview findings with documentary evidence, field observations, official records, and the relevant literature. Public discourse and published accounts of the Jatigede Dam, especially during its earlier stages, may also have been shaped or constrained by political interests, which may have introduced narrative bias in the available literature and potentially favored certain stakeholders. However, despite these limitations, the study provides valuable insights into the institutional roots of LLIs and offers a framework for designing more just, inclusive, and sustainable interventions.

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Declaration of Generative AI Use

We confirm that Artificial Intelligence (AI) tools were used in a limited capacity in this study, solely to assist with data visualization and language editing (grammar, clarity, and readability), to enhance the clarity and informativeness of the presented results. AI was not involved in data collection, substantive analysis, interpretation of findings, or scholarly writing.

Author Contributions

WW initiated the study, formulated the research objectives, coordinated the overall study process, supervised the recruitment and data collection phases, and made significant contributions to the data interpretation and manuscript preparation. SP played an active role in formulating the research objectives, refining the methodology, contributing to data analysis and manuscript revision, and providing expert input on the theoretical frameworks. WW and NDL guided the interpretation of the complex findings and conducted a thorough critical review to enhance the clarity and robustness of the manuscript. All authors have read and agreed to the published version of this manuscript.

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Conflict of Interest

The authors declare no conflict of interest in the writing of this paper. Politeknik Agraria STPN, as the funder, had no role in the study design, data collection, analysis, or interpretation of findings presented in this article.

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