

## Regimes of Environmental Truth: EIA as a Power/Knowledge Apparatus in the North Kendeng Mining Dispute, Indonesia

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### ABSTRACT

*This study examines the relationship between power and knowledge in the implementation of the Environmental Impact Assessment (EIA) policy in Indonesia, focusing on the case of the cement mining project in North Kendeng Mountain. The research aims to understand how environmental knowledge is produced, legitimized, and contested within the framework of state-led development. Using a qualitative approach, data were collected through semi-structured interviews with activists, government officials, academics, and community members across Rembang, Semarang, Yogyakarta, and Jakarta between August 2023 and April 2024. Thematic analysis was applied to identify key patterns in the discourse and practice of EIA. The findings reveal three major dynamics: first, environmental data in EIA are selectively interpreted to legitimize development; second, public participation functions as a procedural formality that masks power asymmetries; and third, expert authority operates as a technocratic mechanism that transforms political conflict into technical consensus. These results indicate that EIA serves as a power/knowledge apparatus in which science and policy converge to sustain state and corporate legitimacy. The study concludes by conceptualizing EIA as a regime of environmental truth that disciplines both knowledge and participation in environmental governance.*

**Keywords:** EIA, North Kendeng, political ecology, power/knowledge

### INTRODUCTION

Environmental Impact Assessment (EIA) is a mandated instrument of environmental governance, institutionalized across jurisdictions to evaluate development risks before project approval (UNEP, 2018; Pope et al., 2019). Despite its procedural architecture, a persistent gap separates policy design from practice. Studies document recurring failures: ineffective public participation, transparency deficits, and weak institutional capacity which are particularly pronounced in low- and middle-income countries where legislative ambiguity and political pressure on decision-making routinely undermine EIA's stated objectives (Hasan et al., 2018; Kolhoff et al., 2018; Zuhair & Kurian, 2016). Reform proposals such as ranging from follow-up mechanisms and capacity development to legislative strengthening have been advanced in the literature (Khosravi et al., 2019; Loomis & Dziedzic, 2018), yet they largely remain within the technical and managerial register. What such proposals leave unexamined is how power operates within EIA processes: who controls the production of environmental knowledge, whose expertise is authorized to count, and how participatory procedures serve to legitimize predetermined outcomes rather than contest them (Bond et al., 2020; Snow, 2021). This gap motivates the present study.

Numerous studies that have examined EIA are consistently conducted by some scholars. Morgan (2012) detailed maps of EIA studies in the aspects of theory, practice and effectiveness of EIA for approximately 15-20 years. He ensured that the development of EIA will always experience challenges going forward. It has been proven by several research findings that EIA as a model of environmental governance policies at the global level still needs enhancement (Alberts et al., 2019; Fonseca et al.,

2017; Lai & Hamilton, 2020; Loomis & Dziedzic, 2018) and is in line with the corridor of neoliberalism (Bond et al., 2020).

A great deal of previous research of EIA mostly emphasized in technical and managerial issues which was generally the case in environmental policy models (Loomis & Dziedzic, 2018). Yet, the broader contexts, such as social struggles and political-economic pressure were ignored (Li, 2007) whereas EIA is a form of techno-politics in extracting natural resources (Spiegel, 2017). Limited studies have examined EIA policy through the lens of power/knowledge relations. In fact, the power/knowledge is the entry point into the formation of discourse (Michael Foucault, 1980) which then puts pressure on the preparation or evaluation of EIA. Power/knowledge analysis will provide an overview to understand the role of discourse in legitimating exploitation practices for development reasons (Peet & Watts, 1996; Springate-Baginski & Blaikie, 2013).

Most of EIA consultants are scholars with particular themes. They have an important role in the EIA process because they do vote and face pressure from various stakeholders (Khan et al., 2018). In addition, as consultants, they must be independent as the basic principles of EIA's credibility (Smyth, 2021). However, in the Indonesian context, EIA consultants occasionally violated this principle. For instance, the Expert Team from the Ministry of Environment cancelled the results of an EIA study from PT Semen Indonesia in Rembang (North Kendeng Mountain Area) Central Java. EIA results do not describe the actual field conditions. In addition, the EIA decision did not involve the community because they were replaced by NGOs which in many cases were found to lack clarification and consistency regarding their influence and accountability in the EIA process (Lai & Hamilton, 2020). In the meantime, the involvement of citizen groups tends to be more effective in demanding accountability related to environmental management issues (Lai & Hamilton, 2020). For instance, the Expert Team from the Ministry of Environment cancelled the results of an EIA study from PT Semen Indonesia in Rembang, Pegunungan Kendeng Utara, Central Java. The EIA results did not describe the actual field conditions (Tempo.co, 2015). In addition, the EIA decision did not involve the community because they were replaced by NGOs which in many cases were found to lack clarification and consistency regarding their influence and accountability in the EIA process (Lai & Hamilton, 2020). From a power/knowledge standpoint, the exclusion of direct citizen participation forms knowledge recognized as legitimate in environmental decision-making, whereas the involvement of citizen groups is more effective in demanding accountability related to environmental management issues (Lai & Hamilton, 2020).

The North Kendeng case condenses these tensions into a single, prolonged dispute. The Kendeng karst landscape stretches across the northern coast of Central Java and functions as a regional aquifer that sustains paddy agriculture and domestic water supply for tens of thousands of farming households in Rembang, Pati, Grobogan, and Blora (Suharko, 2017). From 2010 onward, several cement firms such as the state-owned PT Semen Indonesia in Rembang and PT Sahabat Mulia Sakti, a HeidelbergCement affiliate in Pati, secured location and environmental permits over portions of this landscape. Local farmers, organized under the Jaringan Masyarakat Peduli Pegunungan Kendeng (JMPPK) and supported by a coalition of legal aid institutions, religious leaders, and university researchers, contested these projects through administrative litigation, sustained on-site occupations at the *tenda perjuangan*, and the symbolic *aksi cor kaki* staged in front of the State Palace in 2016 and 2017 (Asrawijaya, 2021; Hari, 2023; Rokhmad, 2020; Sumarno & Wiratomo, 2019).

Two judicial moments anchor the dispute. In October 2016, the Supreme Court, through its review decision No. 99 PK/TUN/2016, annulled the environmental permit issued to PT Semen Indonesia by the Governor of Central Java, holding that the underlying EIA had failed to assess the karst hydrology and the cumulative impact of extraction on local livelihoods. Rather than terminating the project, the provincial government issued a new permit on the basis of an addendum EIA, bypassing the substantive grounds of the Court's ruling. In parallel, the President in 2017 ordered a Strategic Environmental Assessment (*Kajian Lingkungan Hidup Strategis*) of the Kendeng range; its findings, identified the Watuputih Groundwater Basin (CAT Watuputih) as a karst aquifer requiring protection under PP No. 26/2008, were never translated into binding policy (Hadi et al., 2019). The trajectory of the case shows how EIA outcomes can be neutralized through procedural reissuance even when their epistemic foundations have been judicially discredited (Kodir, 2026).

Two features make the Kendeng dispute analytically productive for a power/knowledge reading. First, the conflict is anchored in competing claims about the same biophysical object: state-commissioned EIA studies treated the karst as a manageable extractive resource, while community-led participatory mapping and independent karst science treated it as a hydrological interconnected aquifer system whose

disturbance would propagate across the landscape (Kodir, 2026). Second, the resistance was not framed only in environmentalist terms but in agrarian, religious, and gendered registers: *Sedulur Sikep* cosmology, the politics of Ibu Bumi, and the moral economy of subsistence farming all entered the public discourse. Kendeng, therefore, offers a setting in which the production, legitimation, and contestation of environmental knowledge can be observed as an ongoing public struggle rather than reconstructed in retrospect.

This local dispute unfolds within a national regulatory shift that has restructured the very anatomy of EIA. *The Undang-Undang No. 11 Tahun 2020 tentang Cipta Kerja* (the Job Creation Law, hereafter UUCK), together with its derivative regulation No. 22 of 2021 on Environmental Protection and Management, reorganized the EIA system around a risk-based licensing logic (Hadi et al., 2023). Three revisions matter for the present argument. The EIA Assessment Commission, previously a multi-stakeholder forum in which provincial and district authorities, accredited experts, and community representatives jointly assessed environmental documents, was dissolved and replaced by an Environmental Feasibility Test Team composed of centrally certified technical experts. The legal standing to object to an EIA was narrowed from “the affected community” to parties “directly affected,” tightening the criterion through which dissent enters the process. Public consultation was reframed from a participatory stage shaping the substance of the assessment to a notification mechanism preceding it (Hadi et al., 2023).

The Kendeng case acquires sharper analytical significance against this backdrop. The dispute pre-dates UUCK, yet the procedural strategies deployed within it, addendum EIA, retrospective public consultation, technocratic closure of contested findings, anticipate and now formally institutionalize the post-UUCK design of environmental assessment. Reading Kendeng through the lens of power/knowledge therefore provides more than a case study: it offers a diagnostic of the regulatory direction in which Indonesia’s EIA regime is moving, and of the narrowing space within which counter-knowledge can challenge state-corporate environmental truths.

In this study, a political ecology approach is used. This approach is relevant for analyzing the knowledge represented through policy (Bryant, 1998; Timothy Forsyth, 2003; Leff, 2017). The production of knowledge relating to the exploitation of natural resources is used to legitimize the practices of political economy to be considered reasonable (Forsyth 2003). Thus, the political ecology approach is not only limited to the analysis of the political context of the relationship between humans and nature (Robbins 2011) but also reach on the issue of struggle in the arena of ideas or ideology, the struggle for environmental justice, and issues of environmental governance (Dharmawan, 2007).

Despite extensive studies on the effectiveness and implementation of EIA, there remains limited understanding of how power relations shape the production of environmental knowledge and policy decisions within the Indonesian EIA system. This study seeks to fill that gap by examining the intersection of knowledge, power, and governance in the case of the cement mining in North Kendeng Mountain. Specifically, it investigates how scientific expertise, bureaucratic procedures, and public participation interact to construct environmental “truths” that legitimize development policies (Legg, 2019). Using a political ecology perspective and Foucault’s concept of power/knowledge, this research aims to reveal how EIA operates as a regime of truth in which knowledge production, institutional authority, and public engagement are organized to sustain state and corporate legitimacy. In doing so, this study contributes to the theoretical development of political ecology by extending debates on knowledge politics and refining the conceptualization of EIA as a techno-political apparatus in Indonesia’s environmental governance.

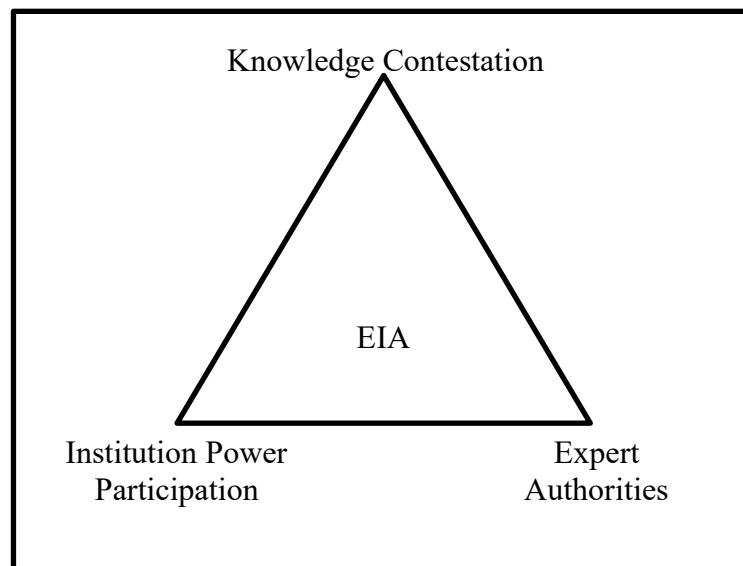
This study is grounded in a critical-interpretivist paradigm, which holds that social reality is constructed through historically situated relations of power rather than objectively given (Denzin & Lincoln, 2018). This position is reinforced by political ecology’s insistence that environmental science and policy cannot be separated from the political economy in which they are produced, and that environmental knowledge is always political rather than value-free (Tim Forsyth, 2020; Leff, 2017). The researcher’s own subject position is therefore part of the knowledge-producing process itself. Three methodological consequences follow: the research prioritizes depth over breadth, focusing on discursive mechanisms in a specific case rather than measuring EIA effectiveness across a broad sample; interview narratives are treated as sites of epistemic contestation, not merely factual reporting; and the analytical process is reflexive, developing interpretive categories iteratively between theory and empirical material (Creswell & Poth, 2016). This distinguishes the study from the dominant positivist-managerial paradigm in EIA research which frames failures as technical deficits requiring technical remedies (Kolhoff et al., 2018;

Loomis & Dziedzic, 2018), and treats EIA instead as a site of power/knowledge production whose political logic cannot be reformed without first being named.

This study employs an analytical framework that combines Michel Foucault's concept of power/knowledge with the critical perspective of political ecology to examine how environmental governance (Michel Foucault, 1980; Hajer et al., 2020), particularly through the EIA system in Indonesia, operates as a site of knowledge production, contestation, and control. The central assumption guiding this framework is that knowledge about the environment is not neutral. Rather, it is produced within institutional arrangements, political interests, and socio-economic contexts that determine what can be known, who is authorized to speak, and whose knowledge is excluded. This orientation enables the analysis to move beyond technical and managerial interpretations of EIA toward an understanding of it as a field where scientific authority, bureaucratic procedure, and political power intersect.

Following Foucault's theorization, power and knowledge are not viewed as separate domains but as mutually constitutive forces that shape the boundaries of truth. Knowledge does not merely serve power; it is one of its effects and instruments. Within this study, EIA is conceptualized as part of what Foucault describes as a regime of truth, where particular forms of knowledge, quantified, scientific, and bureaucratically validated, gain legitimacy through institutional authority. Environmental information such as geological surveys, hydrological models, and impact assessments are thus understood not simply as technical findings but as expressions of political rationality that normalize development and natural resource exploitation (Snow, 2021; Spiegel, 2017). Through this lens, the EIA document is seen as both a product of scientific expertise and a discursive apparatus that legitimizes certain truths while silencing others.

This framework also draws on Foucault's notion of governmentality, which focuses on how modern power operates through the management of populations and territories rather than through coercion alone (Lemke, 2015; Li, 2007). EIA, in this sense, can be read as a technology of governance that disciplines the behavior of citizens, consultants, and communities through procedures of documentation, consultation, and certification (Spiegel, 2017). Public participation becomes a controlled exercise that integrates dissent into administrative order, while expert certification functions as a mechanism to secure obedience to state rationalities. Understanding EIA through governmentality allows this research to interpret participation and expertise not as neutral components of environmental policy, but as mechanisms that govern conduct by transforming political disputes into technical procedures.



**Figure 1.** Three Dimension of EIA in Political Ecology Lens

While Foucault's framework illuminates the micro-politics of discourse and institutional control, political ecology provides a broader structural perspective on the political economy of environmental governance. Political ecology is concerned with the ways in which environmental problems are linked to social inequality, economic power, and the contestation over access to and control of natural resources (Robbins, 2012). It argues that environmental science and policy are often shaped by hegemonic

interests that use the language of objectivity and development to legitimize exploitation (Tim Forsyth, 2004, 2020). Within this study, political ecology complements Foucault's insights by situating the production of environmental knowledge within the wider context of Indonesia's development politics, neoliberal reforms, and state-corporate alliances. This combination makes it possible to see EIA not only as a discourse but also as a techno-political apparatus that converts complex ecological realities into manageable data, thus justifying development as both rational and inevitable.

Integrating these theoretical perspectives allows this study to analyze the EIA process across three interrelated dimensions: the construction and contestation of environmental knowledge, the exercise of institutional power through participatory procedures, and the consolidation of technocratic legitimacy through expert authority.

These dimensions are not treated as isolated variables but as manifestations of the same power/knowledge nexus that structures environmental decision-making in Indonesia. By connecting discourse, institutional practice, and political economy, this framework enables the study to uncover how environmental "truths" are produced, stabilized, and challenged in the context of the cement mining project in North Kendeng Mountain. In the final analysis, this analytical approach conceptualizes EIA as a regime of environmental truth, where science, policy, and politics converge to define the limits of what can be known, what can be contested, and what must be accepted as legitimate within the governance of nature.

## **METHODS**

This study adopts a qualitative research, reflecting the researcher's aim to explore the power/knowledge dynamics embedded in the EIA. The qualitative method was chosen because it enables a deep understanding of meaning, discourse, and social interaction within environmental governance, phenomena that cannot be captured through quantitative measures (Bryman, 2016). Rooted in Foucault's theory of power/knowledge and the analytical lens of political ecology, this research positions knowledge production not as an objective process but as one intertwined with institutional, political, and ideological structures (Kim & Arrington, 2023).

Data were collected primarily through semi-structured interviews conducted with key stakeholders involved in or affected by the EIA process. The informants consisted of 27 participants, including 7 government officials, 4 environmental activists, 7 academic experts, 4 legal advocates, and 5 community representatives, who were selected through purposive sampling. This method provided flexibility for probing participants' interpretations while maintaining thematic focus. The fieldwork was carried out across four strategic locations, Rembang, Semarang, Yogyakarta, and Jakarta, to capture diverse institutional and socio-political perspectives at the local, provincial, and national levels. The unit of analysis in this study is the discourse and practice of EIA policy, examined through the narratives, arguments, and experiences of its various actors. Data collection was conducted between August 2023 and April 2024, allowing for multiple interviews and iterative validation of emerging insights.

The data were analyzed using thematic analysis, following a logical framework that combines inductive coding from the empirical material with deductive interpretation through the study's theoretical lens. The analysis proceeded through several stages: initial familiarization with the transcripts, open coding to identify recurring patterns, categorization of codes into themes, and interpretive synthesis aligned with the concepts of power/knowledge and political ecology (Braun & Clarke, 2006). This analytical approach enabled the researcher to move beyond descriptive reporting toward conceptual explanation, revealing how environmental knowledge, participation, and expertise within EIA policy are shaped by and reproduce relations of power.

## **RESULTS AND DISCUSSION**

### **The EIA as an Apparatus: Structure, Process, and Actors**

Before analyzing the discursive and political dynamics that surround the EIA of the Rembang cement project, it is necessary to examine the EIA document itself, its internal architecture, the sequence of its production, and the configuration of actors that shaped its content. Treating the document as a textual artifact rather than a transparent scientific report makes visible the procedural and institutional conditions under which environmental "truth" was assembled.

The EIA for the PT Semen Indonesia limestone mining and cement factory project in Rembang was prepared between 2011 and 2012, commissioned by the project proponent and compiled by a team of accredited environmental consultants. The document follows the standard format prescribed by Government Regulation No. 27 of 2012 (Peraturan Pemerintah No. 27 Tahun 2012 tentang Izin Lingkungan), comprising four components: the Terms of Reference (Kerangka Acuan Analisis Dampak Lingkungan, KA-ANDAL), the Environmental Impact Assessment proper (Analisis Dampak Lingkungan Hidup, ANDAL), the Environmental Management Plan (Rencana Pengelolaan Lingkungan Hidup, RKL), and the Environmental Monitoring Plan (Rencana Pemantauan Lingkungan Hidup, RPL). Together, these components constitute a regulatory package that, once approved, serves as the legal basis for the issuance of the environmental permit (izin lingkungan). The structure presupposes a linear rationality such as scoping precedes analysis, analysis precedes mitigation planning, that renders ambiguity, contestation, and uncertainty as procedural noise to be resolved before the document reaches the assessment stage.

Three features of the document merit attention for a power/knowledge reading. First, the biophysical baseline sections including geology, hydrology, soils, and biodiversity, draw almost exclusively on commissioned field surveys and secondary data from government agencies (the Geological Agency, the provincial environmental office). Independent karst science, including studies by university researchers that had circulated publicly before the EIA was finalized, is either absent or cited without affecting the interpretive conclusions. The result is an epistemic closure in which the document's own data can contain evidence of hydrological connectivity (the tracer test documented in the ANDAL confirmed subterranean flow between boreholes and springs within seven days) while the evaluative synthesis concludes that mining operations pose manageable risks to water resources. This internal contradiction is not a technical error; it is a discursive operation through which ecological complexity is translated into administrative legibility, following what Li (2007) describes as the practice of "rendering technical."

Second, the socio-economic impact section treats affected communities primarily as recipients of compensation and corporate social responsibility programmes. Livelihood systems tied to karst springs such as irrigated rice farming, domestic water use, small-scale aquaculture, are acknowledged descriptively but are not modeled as interdependent with the hydrological functions that the project would disrupt. The agrarian dimension of the conflict, the fact that water loss would undermine the material basis of peasant reproduction in the downstream villages, is converted into a quantifiable "social impact" variable amenable to mitigation through employment opportunities and infrastructure provisions. This framing exemplifies what political ecology identifies as the depoliticisation of distributional conflict: structural questions about who bears the cost of extraction are recast as management problems solvable within the project boundary (Tim Forsyth, 2003; Robbins, 2012).

Third, the process of formulation reveals the distribution of epistemic authority. Under the regulatory framework then in force (PP 27/2012), the EIA was assessed by the EIA Commission Assessment Team at the provincial level, chaired by the head of the provincial Environmental Agency (Badan Lingkungan Hidup/BLH) and comprising representatives from sectoral agencies, district government, accredited environmental experts, and, nominally, community representatives. In practice, the commission's composition privileged technical-bureaucratic perspectives. Community representatives, where they were present, occupied a minority position within a body whose procedural language, evidentiary standards, and decision-making conventions were set by state and professional actors. Public consultation, formally required at the scoping stage, took place under conditions that several informants in this study described as controlled: meetings were convened at times and locations that limited attendance, materials were presented in technical registers inaccessible to non-specialist audiences, and the boundary between "consultation" and "socialization" was routinely blurred, reducing dialogue to one-directional information transfer (Hasan et al., 2018; Zuhair & Kurian, 2016). The environmental permit was subsequently issued by the Governor of Central Java in June 2012.

Reading the EIA through this lens, as a structured artifact whose architecture predetermines the range of permissible conclusions, positions the document not as the origin but as the medium of the power/knowledge dynamics analyzed in the sections that follow. The three dimensions examined below such as knowledge construction, participatory politics, and expert authority, are already inscribed in the document's design: in the selective curation of baseline data, in the procedural containment of public voice, and in the institutional monopoly over evaluative judgement.

## Knowledge Construction and Contestation

The empirical findings reveal that the preparation and assessment of the EIA in the North Kendeng cement project were not purely scientific or technical exercises but processes deeply embedded in power relations, institutional hierarchies, and competing discourses of legitimacy. Informants from civil society, academia, government, and industry consistently described EIA as a document that simultaneously reveals and conceals, presenting environmental data while strategically downplaying its most critical implications. In this sense, EIA is not merely a scientific product but a political artifact, one that constructs environmental “truths” aligned with the interests of state and corporate actors.

Several informants emphasized that the EIA document formally acknowledges environmental risks but reframes them in ways that justify industrial expansion. One of participant from NGO explained related to the hydrological findings that demonstrated underground connections between the proposed mining area and nearby springs (Brubulan and Semen). It stated: *“Those kinds of data show up in the EIA, but the conclusion turns out lousy.”* (ARF, NGO, 23/11/2023)

He elaborated that the EIA itself recorded the results of a tracing test, saltwater injected into boreholes resurfaced in the springs, proving the area’s subterranean connectivity and confirming that the Watuputih karst system plays a crucial hydrological role. Yet, despite this scientific evidence, the report concluded that mining would not endanger local water resources. He summarized the paradox succinctly: *“The analysis is academically rigorous; however, the conclusion is politically neutralized”* (ARF, NGO, 23/11/2023)

This pattern of selective interpretation was widely recognized among civil society actors. One of participant from Legal Aid Institute observed that citizens who eventually accessed the EIA document found inconsistencies between their lived experiences and the official narrative: *“How come the cave count is this low? People don’t trust those data.”* (IW, Legal Aid Institute, 02/02/2024)

In response, the community initiated participatory mapping with assistance from NGOs such as JMPPK and ISS, producing their own empirical data on springs, ponors, and caves. The citizen mapping revealed at least double the number of water sources listed in the EIA report, demonstrating deliberate simplification of environmental information. These participatory mappings functioned as counter-knowledge, challenging the authority of institutional science by asserting local ecological experience as valid evidence.

The perception of deliberate omission was echoed by academic experts. One of the participants from academic institution (professor) noted on the EIA document. He stated that: *“At the moment, the EIA process isn’t able to deal with the social side, since the springs are what they rely on to live”* (S, Academics from University, 15/09/2023)

Similarly, other academics from university pointed out the logical contradiction in the EIA’s hydrological data: *“After introducing salinity, it appeared at the spring one week later, indicating a connection.”* (SA, Academics, 20/12/2024)

Both statements from academics underscore how field-based knowledge was present but politically neutralized during interpretation and approval. The experts agreed that the EIA’s analytical methods were sound but its conclusions were governed by political expediency rather than empirical rigor.

Industry representatives, however, narrated a contrasting version. He emphasized the company’s compliance and technical reliability: *“We are the oldest players in the cement industry, and we are state-owned.”* (AW, Company Representative, 12/03/2024)

For him, EIA represents an instrument of legality and procedural legitimacy, proof that the company operates within established environmental frameworks. This corporate perspective reflects how EIA’s scientific authority is mobilized to reinforce state-backed industrial rationalities.

The conflicting narratives between community, academic, and corporate actors demonstrate how EIA becomes a site of epistemic struggle. The state and industry use institutionalized expertise and legal authority to stabilize their version of environmental reality, while citizens and critical scholars contest these truths by producing alternative data and discourses. The resulting contestation is not merely technical but epistemological: it is about who has the right to define, measure, and speak for the environment.

From a Foucauldian perspective, this dynamic illustrates how EIA operates as a regime of truth (Legg, 2016), a discursive system in which knowledge is both an effect and an instrument of power. Through procedural validation, official documents acquire epistemic authority that marginalizes other forms of

knowing. The EIA process institutionalizes certain truths (scientific, quantifiable, managerial) while rendering others (local, experiential, moral) invisible. This is what Foucault describes as the disciplining of discourse, where the power to define environmental risk also determines the boundaries of legitimate knowledge. Within this regime, expertise becomes a political resource (Tim Forsyth, 2020). The credibility of EIA lies not in the transparency of its data but in the institutional legitimacy of those who produce it, consultants, certified assessors, and government reviewers. As pointed out by one of the participant: *“Yes, karst experts assessed the EIA, but the conclusion wasn’t driven by science; it was driven by interests.”* (ARF, NGO, 23/11/2023)

The transformation of scientific observation into bureaucratic endorsement illustrates how knowledge in environmental policy is continuously filtered through relations of authority. The production of “environmental truth” thus follows a governmental logic, where knowledge is shaped to maintain policy coherence and administrative stability rather than ecological accuracy. From a political ecology standpoint, this process aligns with Forsyth’s (2003) and Spiegel’s (2017) arguments that environmental assessments are inherently techno-political. Scientific data in such systems are never neutral; they are produced within power-laden institutions that prioritize development imperatives.

In North Kendeng Mountain as a main project area for cement mining, EIA functioned as a technological instrument of legitimation, transforming complex ecological interdependencies into simplified technical indicators. By converting environmental uncertainty into calculable metrics, the state could claim that ecological risks were “manageable,” thus maintaining the appearance of control. The knowledge encoded in EIA, therefore, performs a dual function: it disciplines nature through science and disciplines society through bureaucratic procedure. At the same time, the counter-knowledge produced by citizens and sympathetic academics exposes the fragility of this regime of truth. Participatory mapping, local testimonies, and advocacy efforts represent not only resistance to environmental degradation but also resistance to epistemic domination. These forms of knowledge production contest the monopoly of expert authority and reassert the legitimacy of experiential, place-based knowledge. Such practices align with the political ecology emphasis on plurality of knowledge, where understanding of nature emerges from social struggle rather than technocratic consensus (Gutiérrez-Zamora, 2023).

Furthermore, the contestation surrounding EIA knowledge reflects a broader struggle over environmental truth and authority (Spiegel, 2017). On one side, state and corporate actors use science as a language of control, deploying technical data, formal procedures, and expert validation to legitimize development. On the other, communities and independent researchers mobilize local knowledge to challenge the narrow epistemic framework imposed by the state. This tension reveals that environmental governance in Indonesia is not simply a process of managing ecosystems but of governing truth itself, determining whose knowledge counts, whose interests prevail, and whose voices are silenced (Sahide et al., 2023). In this sense, EIA exemplifies how knowledge and power are mutually constitutive: power shapes what can be known, and knowledge reinforces the authority of those who govern. Understanding this dynamic is essential to rethinking environmental governance beyond procedural compliance toward a more inclusive epistemic justice, where the making of environmental knowledge becomes a shared, democratic endeavor rather than a technocratic monopoly

### **Institutional Power and the Politics of Participation**

The second major finding concerns the nature of public participation in the EIA process, which emerges as highly procedural, hierarchical, and politically managed. While formal environmental regulations in Indonesia position participation as a mechanism to ensure transparency and accountability, the empirical data reveal that this process often functions as an instrument of control rather than empowerment (Muchlis, 2023). Across interviews, community activists, lawyers, and NGO representatives described how EIA’s participatory mechanisms, originally designed to democratize decision-making, have been reduced to bureaucratic rituals that validate pre-existing decisions.

One of the representatives from Legal AID Institution that the official public consultation in the cement project in Watuputih Area (North Kendeng Mountain) took place after the EIA and environmental permit had already been approved: *“In 2013, the public consultation was only held after the permit and the EIA had been approved... there were even residents recorded as present who did not actually attend.”* (IW, Legal Aid Institute, 02/02/2024)

This illustrates how community involvement became retrospective rather than anticipatory, transforming what should have been deliberated into post hoc endorsement. Similarly, one of the

participants from lawyer described manipulation of attendance lists: *“There was collusion: signatures from a rice distribution event were apparently used as consent for the EIA.”* (M, Lawyer, 28/11/2024) These accounts demonstrate how participation was simulated through administrative documentation, transforming dissent into an image of consent.

The problem was not simply exclusion, but the strategic inclusion of citizens in ways that neutralized their agency. As activist from legal aid institution explained, citizens were invited to sign attendance sheets but rarely informed about the content or implications of EIA documents. In many cases, local residents only accessed the EIA report after the project had begun, forcing them to mobilize independent efforts such as participatory mapping to challenge official data. These acts of “counter-documentation” represent attempts to reclaim participation from below, yet their outcomes were often marginalized by formal institutions that prioritized procedural over substantive legitimacy.

Government officials, on the other hand, articulated a markedly different understanding of participation. The Central Java Environmental Agency (DLH) emphasized that environmental feasibility is determined by technical criteria, not public approval: *“Whether it is deemed feasible or not does not depend on residents’ objections... it may be environmentally feasible, but the project proponent is required to conduct public consultation.”* (W, Government Representative, 09/09/2023)

From this perspective, social conflict is treated as a form of impact, a variable to be managed through outreach or compensation, not as a signal of deeper policy failure. Governor of Central Java defended this stance, asserting: *“Do you think EIA assessors are just random people (unqualified people) off the street? They’re all certified.”* (GP, Government Representative, 12/08/2023)

His statement reframes environmental governance as a domain of experts and administrators, implying that political legitimacy stems from professional certification rather than democratic deliberation.

These divergent perspectives reveal a deep asymmetry of power in defining what “participation” means (Bond et al., 2020). For communities, participation signifies genuine inclusion in decisions that affect their livelihoods and environment. For state and corporate actors, participation is a legal formality, a procedural checkbox necessary to secure project approval. This discrepancy produces what can be described as technocratic participation: a practice that transforms political negotiation into bureaucratic compliance (Glimmerveen et al., 2022). In such contexts, documents such as attendance lists, meeting minutes, and socialization reports serve as technologies of evidence, instruments that make participation appear complete and legitimate, even when it has been hollowed of substance.

Viewed through Foucault’s (1991) concept of governmentality, this bureaucratization of participation exemplifies how power operates not through coercion but through the management of conduct. Participation becomes a technology of governance that disciplines citizens into compliant subjects. By inviting communities into regulated forums and documentation processes, the state converts potential resistance into controlled dialogue. As Li (2007) argues, in her analysis of development governance, inclusion often masks exclusion: communities are “included” as data points but excluded as decision-makers. Within EIA, this logic is visible in how opposition is translated into “social impact,” thereby depoliticizing collective protest and reconfiguring it as a technical issue to be solved through outreach, consultation, or compensation.

From a political ecology perspective, this pattern highlights the persistence of hierarchical environmental governance in Indonesia. Participation, rather than redistributing authority, often consolidates it by reaffirming the bureaucratic and expert dominance of the state (Glimmerveen et al., 2022). This mirrors Forsyth’s (2003) argument that environmental participation frequently serves to stabilize power relations instead of challenging them. The EIA framework, while outwardly participatory, thus functions as a mechanism of legitimation, producing the appearance of dialogue while maintaining control over the discourse, agenda, and outcomes of environmental decision-making.

This performative participation has tangible implications for communities. Local activists and residents interviewed in Rembang described feelings of disempowerment, frustration, and distrust toward government institutions. For them, participation in EIA was not a pathway to influence but an administrative trap. The involvement was required to validate the process, yet their input rarely shaped the decisions. The resulting erosion of trust reinforced perceptions that environmental governance serves political and corporate interests rather than public welfare (Enríquez-de-Salamanca, 2018; Lai & Hamilton, 2020).

Finally, participation within the EIA process embodies a fundamental paradox (Johnson, 2020). It is mandated by law as a democratic safeguard, yet operationalized as a bureaucratic instrument of control.

Rather than opening space for negotiation, participation is used to normalize development by transforming social conflicts into managerial routines. This contradiction reflects the intersection of power and knowledge where governance operates not through overt coercion, but through the disciplined production of procedural “truths” that render political conflict administratively manageable. Participation thus becomes both the language and the technique of power, an apparatus that legitimizes state and corporate authority while silencing alternative visions of environmental justice (Leifsen et al., 2017).

### **Expert Authority and Technocratic Legitimacy**

The third major theme emerging from the empirical data concerns the role of experts, consultants, and academics in the construction and validation of EIA. Across interviews from participants, it became evident that scientific expertise, presented as objective and apolitical, operates as a key source of technocratic legitimacy in Indonesia’s environmental governance system. Experts function simultaneously as producers of knowledge and as mediators of power, reinforcing what Foucault (1980) calls a regime of truth: a system through which certain actors are authorized to define reality while others are excluded from doing so.

One of the participants from NGO highlighted this dynamic when discussing the 2012 EIA for the Rembang cement project. He acknowledged that the identification and data collection were scientifically credible, led by qualified geologists, yet criticized the interpretive process: “*The identification is good, but the conclusion says it’s fine to proceed with mining.*” (ARF, NGO, 23/11/2023)

According to him, while the EIA document acknowledged the karst characteristics of the Watuputih area and its hydrological importance, the conclusion neutralized those findings by declaring the project environmentally feasible. This demonstrates how expert analysis was reframed to fit institutional and economic objectives, transforming a potentially critical assessment into a legitimizing narrative. Similar concerns were expressed by academic informants who directly engaged with the EIA process. One of the informants from academics questioned the geological assumptions used by the consultants, pointing to empirical inconsistencies.

This hydrological tracing experiment, which proved subterranean water flow between boreholes and springs, was included in the EIA document but dismissed in its conclusion. SA’s observation underscores how expert findings can be selectively interpreted to maintain the coherence of a development agenda, rather than to reflect scientific uncertainty.

This reliance on expert authority reveals the technocratic character of environmental governance in Indonesia. As explained by an Energy and Mineral Resources agency, explained: “*The EIA itself is straightforward; it’s the implementation that sometimes isn’t.*” (B, Provincial Official, 15/02/2024)

His remark reflects a bureaucratic confidence in the process’s theoretical sufficiency, even when its application in practice is contested. Here, expertise functions less as a means of discovering ecological truth and more as an instrument for stabilizing the political order surrounding development projects.

From a Foucauldian perspective, this illustrates how disciplinary power operates through scientific institutions. The EIA apparatus disciplines what counts as legitimate knowledge and who is authorized to produce it. Dissenting scientists and critical academics, those who challenge the official conclusions, are marginalized or dismissed as politically motivated. This mirrors Foucault’s argument that modern power functions through the normalization of knowledge rather than through coercion; the EIA process becomes a site where expert discourse produces environmental “truths” that sustain the authority of the state and industry alike.

Viewed through the lens of political ecology, these findings reveal the entanglement between knowledge production and economic interest. As Bond et al. (2020) argue, EIA systems in neoliberal contexts often operate as political technologies, mobilizing technical expertise to facilitate investment and resource extraction while maintaining the appearance of environmental responsibility. In the North Kendeng case, the invocation of scientific authority served precisely this purpose: to depoliticize environmental conflict and to legitimize the continuation of industrial operations under the guise of compliance and professionalism.

Finally, the interviews across the participants demonstrate that expertise in the EIA process is not merely technical but profoundly political (Spiegel, 2017). Experts occupy a dual position, both as agents of scientific assessment and as instruments of state and corporate legitimacy. Their knowledge practices are embedded within broader networks of governance, law, and capital that determine which truths are

permissible and which are suppressed. In this way, technocratic legitimacy operates as a subtle yet powerful form of domination, transforming environmental assessment into an apparatus for managing dissent, controlling narratives, and reproducing authority (Bond et al., 2020; Snow, 2021).

### **Implications: Environmental Governance and Epistemic Justice**

The three empirical dimensions examined above, the selective construction of environmental knowledge, the bureaucratic management of participation, and the mobilization of expert authority, converge on a single analytical proposition: EIA, as currently configured and practiced, operates less as an instrument of environmental protection than as a technology of governmental control. This section draws out two sets of implications that follow from this proposition: one concerning the structure of environmental governance in Indonesia, and the other concerning the epistemic justice claims embedded in the Kendeng resistance.

***EIA as an Instrument of Control.*** The findings confirm that EIA's regulatory architecture produces a systematic asymmetry between those who author environmental knowledge and those who are subjected to its consequences. The document's format channels complex ecological and social realities into standardized categories such as biophysical baseline, impact significance, and mitigation measures, that are legible to bureaucratic and corporate actors but opaque to affected communities (Li, 2007). Its assessment process concentrates evaluative authority in state-accredited bodies whose institutional mandate is not ecological precaution but administrative clearance. Furthermore, its participatory provisions, as demonstrated in the Rembang case, function less as arenas of deliberation than as procedural mechanisms that convert potential opposition into documented consent.

This control function is structural, not incidental. It derives from the position EIA occupies within Indonesia's licensing regime: as the formal threshold between a proposed project and its legal authorization, EIA bears the burden of rendering development environmentally permissible. That institutional function predisposes the document toward affirmative conclusions. Rejection of an EIA does not merely delay a project; it disrupts planning cycles, investment schedules, and inter-agency coordination, generating bureaucratic costs that the assessment system is not designed to absorb (Loomis & Dziedzic, 2018). The result is what Spiegel (2017) calls the "techno-politics" of environmental assessment: a field in which scientific method and political imperative are fused at the level of procedure, producing outcomes that are simultaneously technical and predetermined.

The passage of UUCK in 2020 intensified rather than corrected this control logic. By dissolving the multi-stakeholder EIA Commission Assessment Team, narrowing the legal definition of affected communities, and reframing public consultation as informational rather than deliberative, UUCK formalized the procedural strategies that had already been practiced in the Kendeng case. The regulatory trajectory thus confirms that the failures observed in Rembang were not aberrations within an otherwise functional system but expressions of a governance logic now codified in national law. Any reform agenda that treats EIA's shortcomings as capacity deficits or implementation gaps, without addressing this structural orientation toward investment facilitation, will reproduce the same pattern of epistemic and political exclusion.

***Epistemic Justice and the Politics of Environmental Knowledge.*** The Kendeng case also exposes a deeper problem that procedural reform alone cannot resolve: the systematic privileging of technocratic knowledge and the corresponding marginalization of local, experiential, and place-based ways of knowing the environment. This is, at its core, a problem of epistemic justice that the question of whose knowledge is recognized as valid within governance systems and whose is dismissed, ignored, or actively suppressed (Fricker, 2007; Gutiérrez-Zamora, 2023).

The EIA framework instantiates what Fricker (2007) terms testimonial injustice and hermeneutical injustice simultaneously. Testimonial injustice is visible in the procedural devaluation of community testimony: farming households who observed declining spring flows, shifting water tables, and changes in soil moisture over decades were not treated as holders of relevant evidence but as objects of social impact management. Their knowledge, rooted in sustained interaction with the karst landscape, was categorically subordinated to the consultant's field survey conducted over a compressed time frame and interpreted through standardized parameters. Hermeneutical injustice operates at a structural level: the conceptual vocabulary available within the EIA framework such as impact significance matrices, risk ratings, and mitigation hierarchies, has no category for the agrarian, spiritual, and intergenerational

meanings that Sedulur Sikep communities attach to the Kendeng Mountains. These meanings do not register as “impacts” because the interpretive framework itself was not built to accommodate them.

The counter-knowledge practices documented in this study, participatory mapping by JMPPK and allied organizations, independent karst surveys by sympathetic geologists, and the mobilization of Sedulur Sikep cosmology as an alternative epistemological frame, represent responses to this double injustice. They contest both the specific conclusions of the state-commissioned EIA and the broader epistemic regime that determines which forms of environmental knowledge qualify as legitimate (Leifsen et al., 2017; Sahide et al., 2023). These practices do not reject science per se; the community mapping, for instance, used GPS technology and geological observation. Rather, they reject the institutional monopoly over the interpretation of scientific evidence and assert that the meaning of environmental data cannot be separated from the social worlds that depend on the ecosystems being assessed.

The implications for environmental governance extend beyond the Kendeng case. If EIA is to function as a mechanism of environmental protection rather than a technology of administrative legitimation, its epistemic architecture must be restructured to accommodate plurality. This means recognizing community-generated data as admissible evidence within assessment processes, instituting independent review mechanisms that are not captured by sectoral interests, and creating procedural space in which disagreements about knowledge, not merely about mitigation measures, can be articulated and adjudicated (Bond et al., 2020; Gutiérrez-Zamora, 2023). Without such restructuring, environmental governance in Indonesia will continue to operate as a regime of truth that disciplines both nature and society in the service of capital accumulation, while foreclosing the democratic possibilities that the language of participation nominally promises.

## CONCLUSION

This study set out to examine how power and knowledge intersect in Indonesia’s Environmental Impact Assessment policy, using the cement mining project in North Kendeng Mountain as its empirical site. The findings demonstrate that EIA functions not as a neutral scientific procedure but as a power/knowledge apparatus in the Foucauldian sense: a structured ensemble of institutions, procedures, and discursive practices through which certain environmental truths are produced, authorized, and stabilized while others are rendered inadmissible. Three mechanisms sustain this apparatus. Environmental data are selectively curated and interpretively closed so that biophysical evidence of ecological risk, such as the confirmed hydrological connectivity of the Watuputih karst system, coexists with evaluative conclusions that declare extraction permissible. Public participation is procedurally contained, converted from a deliberative arena into a documentation ritual that generates the appearance of consent without redistributing decisional authority. And expert certification operates as a gatekeeping device that concentrates evaluative legitimacy in state-accredited actors, insulating the interpretive process from independent scientific challenge. Together, these mechanisms constitute what this study conceptualizes as a regime of environmental truth: a governance arrangement in which science, bureaucracy, and political economy converge to define the boundaries of legitimate environmental knowledge.

The theoretical contribution of this research lies in reframing EIA from an object of policy evaluation to an object of political analysis. The dominant literature treats EIA shortcomings including weak participation, biased expertise, and selective data use, as implementation deficits amenable to technical correction (Kolhoff et al., 2018; Loomis & Dziedzic, 2018). This study argues, instead, that these features are constitutive of the apparatus itself. They are not failures of environmental governance; they are the means through which environmental governance exercises control. The EIA framework disciplines what can be known (by restricting admissible evidence to commissioned surveys and standardized matrices), who can speak (by channeling participation through bureaucratically regulated forums), and what counts as resolution (by translating political conflict into technical consensus). Recognizing this control function repositions the analytical task: the question is no longer how to make EIA work better within its existing logic, but how that logic itself reproduces the power asymmetries it claims to mediate.

This reframing carries implications for epistemic justice. The Kendeng case reveals a double exclusion: affected communities are marginalized both as political subjects (their objections are procedurally absorbed rather than substantively addressed) and as epistemic agents (their knowledge of the karst landscape, accumulated through generations of agrarian practice, is categorically subordinated to the consultant’s compressed field survey). The counter-knowledge practices that emerged in response such

as participatory mapping, independent karst science, the articulation of Seduler Sikep cosmology as an alternative environmental ethic, did not reject scientific reasoning but contested the institutional monopoly over its interpretation. These practices assert that the meaning of environmental data cannot be adjudicated solely within the administrative apparatus that commissioned them. In theoretical terms, the case extends Fricker's (2007) framework of testimonial and hermeneutical injustice into the domain of environmental governance, showing how the EIA's standardized categories systematically exclude forms of knowledge that do not conform to its technocratic vocabulary. Political ecology scholarship has long argued that environmental knowledge is plural and situated (Forsyth, 2003; Gutiérrez-Zamora, 2023); the Kendeng case provides empirical grounding for this claim by documenting the specific institutional mechanisms through which plurality is suppressed.

Several policy implications follow from this analysis. First, the evidentiary basis of AMDAL assessment should be broadened to include community-generated data such as participatory mapping, longitudinal ecological observation, and local hydrological knowledge, as formally admissible inputs rather than supplementary information appended after the document is finalized. This requires amending the procedural regulations that govern the composition of baseline studies and the terms of reference for environmental consultants. Second, the dissolution of the multi-stakeholder of EIA Commission Assessment Team under UUCK should be revisited. The replacement body, the Environmental Feasibility Test Team, concentrates assessment authority in centrally certified technical experts and eliminates the institutional mechanism through which non-state actors could participate in evaluative judgement. Restoring or redesigning a multi-stakeholder assessment forum, with binding representation from affected communities, independent scientists, and civil society organizations, would partially counteract the technocratic closure that this study documents. Third, an independent environmental ombudsman or review mechanism, structurally separated from the licensing agencies that commission and approve EIA documents, is needed to adjudicate disputes over the interpretation of environmental evidence. Without such institutional separation, the conflict of interest inherent in a system where the same governmental apparatus that promotes investment also assesses its environmental permissibility will persist. These recommendations do not presuppose that procedural reform alone can dismantle the power/knowledge apparatus described in this study; structural change requires shifts in political economy that exceed the scope of regulatory design. They do, however, identify concrete entry points through which the epistemic architecture of environmental governance can be made more plural, more contestable, and less amenable to capture.

This study has several limitations that qualify its findings and suggest directions for further inquiry. The analysis is grounded in a single case, the Rembang cement project in North Kendeng Mountain, selected for its analytical richness but not its representativeness. The power/knowledge dynamics identified here may manifest differently in extractive projects located outside Java, in sectors other than cement mining, or under the post-UUCK regulatory regime that this study discusses but does not empirically examine. Future research should test whether the mechanisms of epistemic closure, participatory containment, and technocratic gatekeeping observed in Kendeng operate similarly across different commodity chains, administrative levels, and regional political configurations. The study relies primarily on interview data, supplemented by documentary analysis of the EIA and legal texts. It does not include systematic ethnographic observation of assessment commission proceedings or consultant fieldwork, methods that could yield finer-grained insight into the micro-practices through which environmental knowledge is negotiated in real time. The temporal scope of fieldwork (August 2023–April 2024) captures retrospective accounts of a dispute that began over a decade earlier; the narratives collected are shaped by memory, advocacy experience, and the political positions informants currently occupy. Triangulation with archival materials and contemporaneous media reporting partially mitigates this limitation, but a longitudinal research design would offer a more processual account of how the regime of environmental truth evolved over the life of the conflict.

Taken together, these findings and their limitations point toward a broader research agenda. If environmental assessment is to serve ecological and social protection rather than administrative legitimation, its knowledge architecture must be opened to contestation, its participatory mechanisms must be restructured to redistribute rather than contain voice, and its relationship to the political economy of extraction must be made an explicit object of governance rather than an unexamined premise. The conceptualization of EIA as a regime of environmental truth, advanced in this study, offers one analytical vocabulary for that task, a vocabulary that insists on asking not whether environmental governance works, but for whom and through what epistemic means it operates.

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**Declaration of Generative AI Use.** During the preparation of this work, the author(s) used Grammarly in order to ensure the clarity and grammatical accuracy of the manuscript's sentence structures, while NVivo was utilized to support the coding process and facilitate systematic data analysis. After using this tool, the author(s) reviewed and edited the content as needed and take full responsibility for the content of the published article.

**CRedit Contribution.** AK: Conceptualisation, Formal Analysis, Funding Acquisition, Methodology, Writing – original draft.

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