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Beyond investment attraction: Green investment governance for sustainable regional development in Bantaeng Industrial Estate

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Abstract
Investment in natural resource-based industrial areas has become a key strategy for regional governments to stimulate economic growth and enhance competitiveness. However, investment policies often prioritize capital inflows without sufficient governance mechanisms to ensure environmental sustainability and equitable socio-economic benefits. This study examines investment governance in the Bantaeng Industrial Estate (KIBA) and proposes a Green Investment Governance framework for sustainable regional development. Using a qualitative case study approach through literature review and document analysis, the research analyzes government regulations, policy documents, official reports, and academic publications related to Foreign Direct Investment (FDI), investment governance, and sustainable development. The findings show that investment governance in KIBA remains predominantly growth-oriented, focusing on investment realization, employment generation, and regional revenue. Although this approach has improved investment attractiveness through infrastructure development and regulatory facilitation, it has not fully optimized local economic spillovers or addressed environmental and social risks. The study proposes a Green Investment Governance framework based on sustainability performance-based incentives, life-cycle investment governance, integrated investment monitoring, and strengthened transparency and public participation. This framework offers a policy direction for balancing economic competitiveness, environmental sustainability, and inclusive regional development in resource-based industrial areas.

Keywords
Green Investment Governance, Foreign Direct Investment, Sustainable Regional Development, Nickel Industry, Bantaeng Industrial Estate (KIBA), Environmental-Social-Governance (ESG).

1 | INTRODUCTION

Regional development governance in Indonesia has undergone a profound transformation since the implementation of decentralization reforms (Talitha et al., 2020). Decentralization has not only redefined the distribution of authority between the central and local governments but has also fundamentally reshaped how regional development is conceived and implemented. Within this framework, local governments are no longer viewed merely as administrative agents responsible for executing national policies, instead, they have become key actors with the authority to formulate development strategies that integrate economic, social, and environmental priorities in accordance with local conditions (Bisogno et al., 2023).

Regional autonomy was introduced to improve the effectiveness of public service delivery, accelerate decision-making, and align development policies more closely with local needs (Dick-Sagoe, 2020). In practice, however, decentralization has also intensified competition among local governments, particularly in attracting investment as a critical source of economic growth. Given the persistent dependence of many regions on fiscal transfers from the central government, investment has increasingly become a strategic instrument for financing regional development and enhancing local competitiveness (Wenjuan & Zhao, 2023).

In many regions, investment is regarded as a primary solution to fiscal constraints, encouraging local governments to adopt policies aimed at improving the investment climate through regulatory simplification, fiscal incentives, and the development of industrial estates. Consequently, development performance is frequently measured by investment inflows and short-term economic growth. Such a growth-oriented perspective, however, overlooks the broader implications of investment. Investment is not a neutral economic activity; rather, it generates complex economic, social, and environmental consequences. Its long-term contribution to regional development depends largely on the quality of governance, institutional capacity, and the ability of local governments to align investment with sustainable development objectives (Mohieldin et al., 2023). Within this context, regions endowed with abundant mineral resources have become strategic locations for downstream industrial development.

Bantaeng Regency in South Sulawesi represents one such case through the development of the Bantaeng Industrial Estate (Kawasan Industri Bantaeng or KIBA), which has been positioned as a regional industrial hub for nickel processing, which has been positioned as a regional industrial hub for nickel processing (Arham & Ilhamsyah, 2022). To enhance its investment competitiveness, the local government has implemented a range of policy measures, including the provision of industrial land, infrastructure development, and streamlined licensing procedures. These initiatives are intended to strengthen the region's locational advantages, attract both domestic and foreign investment, and integrate Bantaeng more effectively into global value chains. One of the largest investments in the estate is the development of a nickel processing facility by PT Huadi Nickel-Alloy Indonesia in Papanloe Village. This investment has not only brought substantial capital to the region but has also integrated Bantaeng into the global supply chain of the nickel industry (Zufarulhaq & Damayati, 2025). As a result, the local economy no longer operates in isolation; instead, it has become increasingly embedded within broader global production and value networks.

However, integration into global value chains presents a complex set of opportunities and challenges. On the one hand, the expansion of nickel processing activities has stimulated economic growth through increased investment, employment creation, and infrastructure development (Pylypenko et al., 2024). On the other hand, it has raised significant concerns regarding environmental degradation, shifts in local socio-economic structures, and the unequal distribution of development benefits across communities. These competing outcomes underscore the importance of ensuring that industrial investment is accompanied by governance mechanisms capable of balancing economic development with environmental sustainability and social inclusion (Inshakova et al., 2024).

The opportunities and challenges arising from industrial investment call for a broader understanding of regional investment governance (Mahajan et al., 2024). Investment performance should not be assessed solely by the magnitude of capital inflows, but also by its capacity to promote environmental sustainability and generate inclusive socio-economic benefits for local communities (Slimani et al., 2024). Although extensive research has examined Foreign Direct Investment (FDI), nickel downstream industrialization, and sustainable development, relatively limited attention has been given to how subnational governments govern investment in resource-based industrial estates through a Green Investment Governance perspective. Existing studies tend to emphasize investment realization, industrial competitiveness, or environmental impacts separately, while the institutional mechanisms through which local governments integrate economic, environmental, and social objectives within investment governance remain underexplored.

The KIBA provides an analytically relevant case because it represents a rapidly developing nickel-based industrial estate in eastern Indonesia where foreign investment, regional industrial policy, and sustainability challenges intersect within a decentralized governance context. This study addresses the following research question: How does investment governance operate in the KIBA, and how can Green Investment Governance be institutionalized to support sustainable regional development? Accordingly, the study aims (1) to examine the dynamics of investment governance in KIBA through the interaction between FDI and local government policies, and (2) to develop a Green Investment Governance framework that integrates investment competitiveness, environmental stewardship, and social inclusion within a regional governance perspective. By integrating Foreign Direct Investment (FDI) theory with the principles of Green Investment Governance, this study contributes to broader discussions on sustainable FDI, industrial estate governance, and regional sustainability transitions, particularly in resource-based industrial regions (Adam & Amoah, 2025).

2 | METHODS

This study employs a qualitative case study approach focusing on the KIBA as a strategic resource-based industrial area in South Sulawesi, Indonesia. A qualitative case study was selected because the research seeks to understand how investment governance is formulated and implemented within a specific regional and institutional context, rather than to test causal relationships statistically. Accordingly, the study relies on document analysis combined with a literature review to examine the relationship between Foreign Direct Investment (FDI), regional investment policies, and sustainable development governance.

2.1 | Data Sources and Document Selection Criteria

The research is based on publicly accessible documentary sources, including academic journal articles, government regulations, policy documents, official government reports, investment statistics, and publications issued by national and regional institutions related to the establishment and development of the KIBA, foreign direct investment, investment governance, and sustainable regional development. All documentary sources were collected from publicly available materials and used in accordance with academic research ethics.

Documents were selected purposively based on their relevance to the objectives of the study (Pahleviannur et al., 2022). The selection emphasized documents that directly address investment policies, industrial estate development, environmental regulation, regional development, and the relationship between investment and sustainability, particularly in the context of KIBA and resource-based industrial development in Indonesia.

2.2 | Data Analysis

The collected documents were analyzed using a descriptive-analytical approach (Malahati et al., 2023). The analysis involved identifying, organizing, and interpreting information contained in the documentary sources in order to explain the interaction between Foreign Direct Investment (FDI), local government policies, and sustainable development outcomes in the KIBA. The analytical framework integrates the theoretical perspective of FDI with the principles of Green Investment Governance to evaluate the extent to which investment policies balance economic growth objectives with environmental sustainability and social inclusion.

To ensure a structured and rigorous evaluation, the analytical process was conducted through three interconnected stages: content categorization, thematic synthesis, and contextual evaluation. In the first stage, raw textual data from regulatory frameworks, official progress reports, and policy documents were systematically coded based on key parameters of sustainable development, such as environmental compliance, employment creation, and resource management. This step allowed for the thematic extraction of patterns directly aligned with Green Investment Governance indicators, ensuring that qualitative findings could be evaluated consistently against established theoretical benchmarks.

In the second stage, the coded data were synthesized to assess how local regulatory mechanisms facilitate or hinder green practices within the KIBA. By mapping policy mandates against actual institutional performance, the analysis identified systemic gaps between intended economic strategies and environmental enforcement. This descriptive-analytical integration made it possible to construct a nuanced narrative regarding the local government's institutional capacity and political will to balance rapid industrial expansion driven by foreign capital with long-term ecological and social safeguards.

2.3 | Trustworthiness

The credibility of the analysis was strengthened through source triangulation, which involved comparing information across different types of documentary sources, including government reports, international institutional publications, and academic literature. Cross-referencing these sources enabled the study to develop a more comprehensive understanding of investment governance in KIBA. The study acknowledges that it relies primarily on documentary evidence and therefore does not directly capture the perceptions of stakeholders through interviews or field observations. Accordingly, the research is positioned as a document-based institutional analysis aimed at developing a conceptual understanding of Green Investment Governance within the context of resource-based industrial estates (Khan et al., 2023).

To address potential document bias and enhance analytical rigor, a systematic policy content evaluation was applied during the document verification process. Official publication data were consistently counterbalanced with critical peer-reviewed academic studies and third-party reports to detect institutional blind spots, selective disclosure, or potential greenwashing within public relations materials. This critical verification layer ensured that official claims regarding sustainable investment practices were evaluated against objective empirical data and independent environmental audits.

Furthermore, transferability and auditability were maintained through detailed documentation of the source selection process, analytical categories, and logical inferences. By maintaining a transparent chain of evidence from raw document extractions to final institutional interpretations, readers and future researchers can clearly trace how conclusions were drawn. This procedural transparency reinforces the dependability of the findings, ensuring that the study provides a sound and replicable framework for evaluating sustainable investment governance in similar resource-rich industrial regions.

3 | CONCEPTUAL FRAMEWORK

3.1 | Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) has long been recognized in the international political economy literature as a critical mechanism for promoting industrialization, technological upgrading, and regional economic transformation, particularly in developing economies where domestic capital and technological capabilities remain limited (Seyoum, 2024). Beyond serving as a source of financial capital, FDI facilitates the transfer of technology, managerial expertise, production networks, and access to international markets, thereby enhancing the productive capacity and global competitiveness of host economies (Rauf et al., 2023).

A widely accepted framework for explaining the determinants of FDI is Dunning's Ownership–Location–Internalization (OLI) paradigm. The OLI framework argues that multinational enterprises (MNEs) undertake foreign investment when three conditions are simultaneously fulfilled: firms possess ownership-specific advantages, host locations offer favorable locational advantages, and internalizing business activities is more efficient than relying on market-based transactions. Ownership advantages encompass firm-specific assets such as proprietary technology, organizational capabilities, managerial expertise, and established international market networks (Adarkwah & Malonæs, 2022). However, within the context of regional development, the location dimension provides the most relevant analytical perspective for understanding the distribution of investment across subnational regions.

Locational advantages are not determined solely by the presence of natural resource endowments. Rather, they are shaped by institutional quality, public infrastructure, regulatory efficiency, and government policies that collectively influence the investment climate. Under Indonesia's decentralized governance system, local governments have assumed an increasingly important role in creating these competitive conditions through investment promotion policies, infrastructure development, fiscal incentives, and regulatory reforms (Wiryawan & Otchia, 2022). From this perspective, KIBA can be understood as an institutional strategy designed to strengthen regional locational advantages and attract foreign investment, particularly in the downstream nickel processing industry.

The internalization component of the OLI paradigm further explains why multinational enterprises prefer establishing production facilities through direct investment rather than alternative entry modes such as exports, contractual agreements, or licensing. By internalizing production activities, firms are able to reduce transaction costs, protect proprietary assets, and minimize uncertainties arising from imperfect markets. Consequently, institutional stability, legal certainty, and administrative efficiency become critical determinants influencing investors' location decisions and the long-term sustainability of investment projects.

Nevertheless, the application of FDI as a regional development strategy has generated growing debate within the development literature. While increasing investment inflows are frequently regarded as indicators of economic success, quantitative measures alone provide only a partial assessment of development outcomes. The developmental contribution of FDI ultimately depends on its capacity to generate technological spillovers, strengthen local industrial linkages, create quality employment, and deliver broader social and environmental benefits (Zamani & Tayebi, 2022). Without effective governance, foreign investment may reinforce economic enclaves, widen regional disparities, and intensify environmental pressures rather than fostering inclusive and sustainable development.

This perspective is particularly relevant to the development trajectory of KIBA. Although foreign investment has accelerated industrialization and expanded the region's integration into global nickel value chains, empirical evidence suggests that its socio-economic and environmental benefits remain unevenly distributed. Accordingly, this study employs FDI theory not merely as an explanatory tool for the determinants of foreign investment, but also as an analytical framework for examining the extent to which investment governance shapes the developmental outcomes of industrialization (Akhtar et al., 2024). This perspective provides the conceptual foundation for assessing why attracting investment alone is insufficient to achieve sustainable regional development, thereby justifying the integration of Green Investment Governance into the present analysis.

3.2 | Green Investment Governance

The growing global emphasis on sustainable development has fundamentally reshaped the way investment is conceived and governed (L. Yuan & Mähönen, 2024). Investment is no longer regarded solely as a driver of economic growth and capital accumulation; rather, it is increasingly recognized as a process that generates significant environmental, social, and governance (ESG) implications. This shift has given rise to the concept of Green Investment Governance, which provides a framework for integrating sustainability considerations into investment policy and decision-making.

Green Investment Governance refers to the institutional arrangements, policy frameworks, and regulatory mechanisms through which governments guide, monitor, and evaluate investment activities to ensure their consistency with sustainable development objectives. Rather than acting solely as investment promoters, governments assume a broader governance role by establishing regulatory standards, coordinating stakeholders, and creating incentives that encourage environmentally responsible and socially inclusive investment practices. In this regard, Green Investment Governance extends beyond attracting investment by emphasizing the quality, accountability, and long-term developmental impacts of investment on economic, environmental, and social systems.

In contrast to conventional investment approaches that primarily emphasize the volume of capital inflows, Green Investment Governance prioritizes the quality and developmental outcomes of investment (Ristanović et al., 2024). From this perspective, investment quality is assessed not only by its economic contribution but also by its efficiency in resource utilization, its environmental performance, and its capacity to generate inclusive socio-economic benefits for local communities. Consequently, the evaluation of investment extends beyond financial indicators to encompass broader sustainability outcomes.

The implementation of Green Investment Governance requires a fundamental shift in investment policy design. Rather than applying uniform incentives to all investors, governments are encouraged to adopt performance-based policy instruments that link fiscal and regulatory incentives to environmental, social, and governance (ESG) performance (Kossay et al., 2025). This approach ensures that investment decisions are assessed not solely on the basis of capital inflows, but also on their contribution to environmental sustainability, social inclusion, and long-term regional development.

The concept of Green Investment Governance is particularly relevant to the development of KIBA. Empirical evidence from Papanloe Village reveals a clear imbalance between the economic gains generated by industrial investment and the environmental and social costs borne by local communities. These findings suggest that the existing investment governance framework remains predominantly growth-oriented, with limited integration of sustainability principles into investment planning and implementation.

Accordingly, this study employs Green Investment Governance as both a normative and an operational analytical framework (Kossay et al., 2025). From a normative perspective, it provides guiding principles for aligning investment governance with sustainable development objectives. From an operational perspective, it offers a policy framework for designing governance instruments that promote investment quality, including sustainability performance-based incentives, strengthened monitoring and oversight mechanisms, and greater transparency and public participation. Through this integrated approach, Green Investment Governance serves not only as a conceptual lens for evaluating existing investment practices but also as a foundation for developing policy strategies that balance economic competitiveness with environmental sustainability and social inclusion.

The integration of Foreign Direct Investment (FDI) theory and the concept of Green Investment Governance provide a comprehensive analytical framework for examining not only the determinants of foreign investment but also the governance processes that shape its developmental outcomes (Miraz & Soo, 2024). While FDI theory explains the economic and institutional factors influencing investment location decisions, Green Investment Governance extends the analysis by assessing how investment is regulated, monitored, and aligned with broader sustainability objectives. This complementary perspective enables a more comprehensive evaluation of the interaction between foreign investment, public policy, and sustainable regional development. Accordingly, the integrated framework serves as the conceptual foundation for analyzing KIBA and for identifying governance strategies that promote investment quality, environmental sustainability, and inclusive regional development.

4 | RESULTS

4.1 | Growth-Oriented Investment Governance and Institutional Limitations

The document analysis indicates that the principal challenge of investment governance in the KIBA lies not in the absence of investment policies, but in the predominance of a growth-oriented governance approach that prioritizes investment attraction and industrial expansion. Government policies related to KIBA have primarily focused on strengthening regional competitiveness through industrial infrastructure development, regulatory facilitation, and investment promotion measures aimed at attracting domestic and foreign investors, particularly in the downstream nickel-processing industry (Arham & Ilhamsyah, 2022).

Official investment reports from the South Sulawesi Investment and One-Stop Integrated Service Office identify the nickel-based industrial sector, including activities within KIBA, as one of the major contributors to regional investment realization. These documents demonstrate that investment performance is predominantly evaluated through conventional economic indicators such as investment realization, employment generation, and regional own-source revenue (Pendapatan Asli Daerah or PAD). Such indicators reflect the institutional orientation of local investment governance, in which policy success is primarily measured by the volume of capital inflows and economic growth performance.

However, the documentary evidence reviewed in this study suggests that the emphasis on investment realization has not been accompanied by an equally strong governance framework for evaluating the quality and long-term developmental impacts of investment. Studies on extractive and resource-based industries indicate that increasing investment inflows do not automatically translate into equitable welfare improvements, stronger local industrial linkages, or environmental sustainability (Money & Katherine E., 2025). Similar patterns have been reported in studies of nickel industrialization in Sulawesi, where economic gains are frequently concentrated among corporations and external skilled labor, while local communities experience land-use change, environmental pressure, and uneven distribution of development benefits (Adriyanto Syahputra, 2024).

The analysis further reveals an institutional mismatch between investment promotion policies and sustainability-oriented governance mechanisms. Three governance limitations can be identified from the reviewed policy documents and supporting literature. First, sustainability principles, particularly Environmental, Social, and Governance (ESG) considerations, remain only partially integrated into local investment evaluation and decision-making processes. Second, economic, environmental, and social information is managed through fragmented administrative systems, limiting the government's capacity to conduct integrated assessments of investment outcomes. Third, monitoring mechanisms remain concentrated at the investment approval stage, while relatively limited attention is devoted to the operational and post-operational phases of industrial activities, thereby reducing the effectiveness of long-term investment governance (Raymond et al., 2022).

These findings indicate that KIBA has been relatively successful in enhancing its locational attractiveness for industrial investment, particularly in the nickel-processing sector, but less successful in institutionalizing governance mechanisms capable of ensuring local economic spillovers, environmental accountability, and inclusive regional development. From the perspective of Foreign Direct Investment (FDI) theory, KIBA has strengthened important locational advantages; however, the developmental outcomes of these investments remain constrained by limited governance capacity and insufficient integration of sustainability considerations into regional investment management (Akhtar et al., 2024).

4.2 | Local Economic Spillovers and Investment Policy

The documentary analysis suggests that one of the principal limitations of investment governance in the KIBA is the weak integration between large-scale industrial investment and the surrounding local economy. Although KIBA has been developed as a strategic industrial estate to attract foreign and domestic investment in the downstream nickel industry, the reviewed policy documents and supporting literature indicate that the broader developmental benefits of investment remain unevenly distributed across local economic actors.

According to the United Nations Conference on Trade and Development (UNCTAD, 2022), the developmental impact of Foreign Direct Investment (FDI) depends largely on the strength of its backward and forward linkages with the domestic economy (Dinga et al., 2025). In the context of KIBA, the available documentary evidence indicates that these linkages remain relatively limited. Industrial activities are primarily concentrated within the enclave structure of the industrial estate, while the participation of local micro, small, and medium-sized enterprises (MSMEs) in industrial supply chains remains weak. In addition, technology transfer and knowledge diffusion to local economic actors appear to be limited, reducing the capacity of investment to stimulate broader regional industrial upgrading (Loo et al., 2023).

The reviewed documents also indicate that employment creation has not necessarily translated into inclusive local economic development. While industrial investment has contributed to regional economic growth, skilled and technical positions are frequently filled by workers recruited from outside the region, thereby limiting the extent to which local communities benefit from industrial expansion through income generation, skill accumulation, and entrepreneurial participation. This pattern suggests that investment governance has been more effective in attracting capital than in strengthening local productive capacity and regional economic resilience (Sensier & Uyarra, 2021).

These findings are consistent with broader assessments of resource-based industrial development, which emphasize that economic growth alone does not automatically generate equitable welfare improvements unless supported by inclusive institutions and effective governance mechanisms. Similar concerns have been identified in studies of regional development and ecological transformation, where industrial expansion may increase aggregate economic performance without producing proportional improvements in local livelihoods and social well-being (D. Yuan & Dong, 2024).

Beyond economic linkages, the documentary evidence reviewed in this study indicates that environmental governance remains institutionally fragmented. Environmental Impact Assessments (AMDAL) constitute a mandatory component of Indonesia's environmental regulatory framework; however, available policy and regulatory documents suggest that environmental oversight remains concentrated at the project approval stage, while continuous monitoring during the operational phase of industrial activities is comparatively limited (Fathoni et al., 2025). Consequently, environmental regulation tends to function primarily as an administrative compliance requirement rather than as part of a comprehensive governance system capable of managing the long-term environmental consequences of industrial investment.

The spatial relationships among industrial facilities, surrounding settlements, and coastal areas underscore the importance of integrated environmental governance in KIBA (Fig. 1). The close proximity between industrial operations and local communities suggests that investment governance cannot be evaluated solely in terms of investment realization or industrial output, but must also consider environmental risk management, ecosystem protection, and community welfare. In this regard, the findings indicate that the current investment governance framework remains predominantly oriented toward investment attraction and industrial growth, while mechanisms for generating local economic spillovers, strengthening environmental accountability, and promoting inclusive regional development remain comparatively underdeveloped (Fu et al., 2023; Uwaga, 2024).

Fig. 1. Aerial view of the Bantaeng Industrial Estate (KIBA), illustrating the spatial proximity between nickel-processing facilities, surrounding settlements, and the coastal area. **Source:** Eko Rusdianto, Mongabay Indonesia, 2022.

4.3 | Green Investment Governance Strategies for Bantaeng Industrial Estate (KIBA)

The documentary analysis indicates that the principal challenge of investment governance in KIBA extends beyond the attraction of investment and concerns the capacity of local government institutions to direct investment toward long-term economic, social, and environmental development. The policy documents, investment reports, and supporting literature examined in this study consistently suggest that the development of KIBA has been dominated by an investment-attraction governance paradigm, in which investment realization, industrial infrastructure development, and regulatory facilitation constitute the primary objectives of regional industrial policy.

From the perspective of International Political Economy (IPE), industrial estates function as institutional arenas in which global capital accumulation, state development strategies, and local governance capacity intersect in shaping investment trajectories. In the case of KIBA, the development of the downstream nickel industry has strengthened the region's integration into global value chains and enhanced its locational attractiveness for industrial investment. However, the findings presented in the previous sections demonstrate that these achievements have not been accompanied by governance mechanisms capable of ensuring local economic spillovers, environmental accountability, and a more equitable distribution of development benefits.

The findings suggest that investment governance in KIBA remains in a transitional stage between attraction-based governance and sustainability-oriented governance. Consequently, the transformation of investment governance should not be understood merely as an administrative reform of investment licensing procedures, but rather as an institutional reorientation that embeds sustainability principles within the broader governance of industrial development. The literature on resource-based industrialization consistently indicates that dependence on extractive growth models tends to generate environmental externalities, unequal distribution of economic benefits, and limitations in state capacity to govern investment over the long term (Awoa et al., 2024).

Based on the documentary analysis, this study identifies four institutional transformation pathways that constitute the foundation of a Green Investment Governance framework for KIBA. The first is the strengthening of sustainability-based investment evaluation, involving a shift from investment assessment based primarily on investment value toward evaluation that incorporates environmental, social, and governance (ESG) performance. The second is the strengthening of life-cycle investment governance, whereby regulatory oversight extends beyond project approval to include the construction, operational, and post-operational phases of industrial investment. The third is the integration of investment, environmental, and social information systems to support evidence-based governance and cross-sectoral policy coordination. The fourth is the institutionalization of transparency and public participation, ensuring that local communities become active participants in investment oversight and evaluation rather than merely recipients of industrial development impacts.

These four transformation pathways are not presented as independent policy recommendations, but as a conceptual synthesis derived from the documentary evidence concerning the governance limitations of KIBA. In this respect, the proposed Green Investment Governance framework differs from conventional ESG-oriented approaches that primarily emphasize corporate compliance, because it positions local government as the central coordinating actor responsible for integrating investment policy, environmental governance, and regional development within a unified institutional framework. From a sustainable development governance perspective, this framework provides a conceptual foundation for balancing investment competitiveness, environmental sustainability, and inclusive regional development in resource-based industrial estates (Papenfuß & Wagner-Krechlok, 2025).

5 | DISCUSSION

The findings presented in Sections 4.1-4.3 suggest that investment governance in the KIBA reflects a broader governance pattern commonly observed in resource-based industrial regions, where investment attraction and industrial expansion are prioritized over the governance of long-term development outcomes. Rather than indicating a simple deficiency in investment promotion, the KIBA case demonstrates a structural imbalance between the capacity to attract capital and the capacity to govern investment in ways that generate sustained economic, social, and environmental value. Interpreted through the perspectives of Foreign Direct Investment (FDI) and Green Investment Governance, these findings suggest that strengthening locational advantages alone is insufficient to ensure investment quality, local economic spillovers, and environmental sustainability (Khdir & Cieślik, 2025). Accordingly, this discussion argues that addressing the governance limitations identified in the KIBA case requires a transition from investment-attraction governance toward Green Investment Governance (GIG), a governance framework that embeds sustainability considerations within the design, implementation, monitoring, and evaluation of regional investment policies. The following sections elaborate four mutually reinforcing institutional pillars through which Green Investment Governance can be operationalized in KIBA and other resource-based industrial regions.

5.1 | Transitioning from Conventional Investment Incentives to Sustainability Performance Based Incentives

In regional investment governance, incentive schemes have traditionally been designed within the framework of location-based competition, whereby local governments compete to attract Foreign Direct Investment (FDI) through streamlined licensing procedures, fiscal incentives, and infrastructure development (Johnson & Toledano, 2023). This approach is theoretically consistent with Dunning's Ownership–Location–Internalization (OLI) paradigm, which identifies location advantages as a critical determinant of multinational enterprises' investment decisions.

However, contemporary developments in the global political economy have exposed the structural limitations of this investment-attraction model. An excessive emphasis on increasing investment inflows often encourages a race to the bottom, in which jurisdictions compete by lowering regulatory standards or expanding incentives without adequately considering the quality and long-term sustainability of investment. As a consequence, environmental performance, social responsibility, and broader developmental outcomes are frequently treated as secondary considerations rather than integral criteria for evaluating investment success.

The findings of this study suggest that KIBA reflects this broader pattern of attraction-based investment governance. As demonstrated in Section 4.1, local investment policies have been relatively successful in strengthening locational advantages and attracting nickel-related industrial investment, yet these achievements have not been accompanied by equally strong mechanisms for evaluating investment quality and long-term developmental outcomes. This indicates that the effectiveness of regional investment governance cannot be assessed solely by investment realization or industrial expansion, but must also be evaluated in terms of the extent to which investment contributes to environmental sustainability, local economic linkages, and inclusive regional development.

Under this perspective, fiscal and non-fiscal incentives should be linked to measurable Environmental, Social, and Governance (ESG) performance indicators. Relevant indicators may include carbon emission intensity, energy and water efficiency, environmental compliance, local employment generation, and the participation of micro, small, and medium-sized enterprises (MSMEs) in industrial supply chains. In this way, investment incentives function not merely as administrative facilities for attracting capital, but as governance instruments that align investment activities with the broader objectives of sustainable regional development.

5.2 | Strengthening Life-Cycle Governance in Investment Licensing

The study suggests that the governance limitations observed in KIBA are not solely the result of weak environmental regulation, but of a broader fragmentation between investment licensing and long-term regulatory oversight. This pattern reflects a common institutional challenge in resource-based industrial regions, where investment governance is often concentrated on facilitating project approval and attracting capital, while comparatively little attention is devoted to monitoring environmental and socio-economic outcomes throughout the operational life of investment projects (Arifuddin, 2025).

One way to address this challenge is through the adoption of a life-cycle governance approach, which integrates investment licensing, implementation, monitoring, and evaluation into a continuous and adaptive governance framework. Rather than treating investment approval as the primary regulatory objective, life-cycle governance emphasizes the need for sustained oversight across all phases of industrial development. This approach is particularly relevant to KIBA, where the expansion of nickel-processing activities has generated long-term economic, environmental, and social implications that extend well beyond the initial investment stage.

In practice, a comprehensive life-cycle governance framework encompasses four interrelated stages: (1) pre-investment assessment, including feasibility studies and environmental impact assessments (AMDAL); (2) regulatory oversight during the construction phase; (3) continuous monitoring throughout operational activities; and (4) post-operational evaluation as a mechanism for institutional learning and policy improvement. Viewed from an International Political Economy (IPE) perspective, this approach reflects an effort to strengthen state capacity in governing capital through adaptive regulatory institutions. It is consistent with the concept of the embedded regulatory state, whereby public institutions maintain effective oversight of investment activities while simultaneously preserving an attractive environment for productive investment.

When interpreted in light of the KIBA case, life-cycle governance represents a shift from administrative investment facilitation toward development-oriented investment governance, in which regulatory institutions are responsible not only for attracting investment but also for ensuring that industrial development generates measurable environmental accountability, local economic linkages, and long-term regional sustainability.

5.3 | Strengthening Data Integration for Evidence-Based Investment Governance

The findings of this study indicate that one of the structural limitations of investment governance in KIBA is the fragmentation of economic, environmental, and social information across different institutional actors. As discussed in Sections 4.1 and 4.2, investment performance is primarily assessed through economic indicators, while environmental monitoring and local development outcomes are managed through separate administrative and regulatory systems. This fragmentation limits the capacity of local governments to evaluate investment comprehensively and to formulate coordinated, evidence-based policy responses.

From the perspective of state capacity theory, this institutional fragmentation reflects broader governance constraints in managing the multidimensional impacts of resource-based industrial development. The Organisation for Economic Co-operation and Development emphasizes that integrated information systems are fundamental to improving governance quality, policy coordination, and public sector accountability, and that digital governance more broadly enhances state capacity by enabling real-time monitoring, inter-agency coordination, and the strategic use of data in public decision-making. Strengthening investment governance in KIBA therefore requires not only regulatory reform but also the development of institutional infrastructures capable of integrating investment, environmental, and socio-economic information within a unified decision-making framework.

Building on this premise, this study proposes the establishment of an Integrated Investment Monitoring System (IIMS) as a data-driven governance infrastructure that consolidates investment-related indicators into a single institutional platform. Such a system would enable a more comprehensive assessment of investment performance by integrating economic, environmental, and social variables within one governance framework. Rather than functioning merely as a statistical database, the IIMS would support strategic investment governance by connecting investment realization with sustainability outcomes and regional development objectives serving three interrelated functions: (1) supporting evidence-based policymaking through reliable and integrated information; (2) enabling continuous monitoring of industrial and environmental performance; and (3) functioning as an early-warning mechanism for identifying potential social and ecological risks associated with industrial investment.

5.4 | Transparency and Public Participation in Investment Governance

The findings of this study indicate that the transformation of investment governance in Kawasan Industri Bantaeng (KIBA) requires not only stronger regulatory and monitoring mechanisms but also greater social legitimacy through transparency and public participation. As demonstrated in Sections 4.1–4.3, investment governance in KIBA remains predominantly oriented toward investment attraction and industrial expansion, while mechanisms for public oversight, stakeholder engagement, and community participation remain comparatively limited. This institutional imbalance suggests that long-term investment sustainability depends not only on administrative efficiency, but also on the extent to which local communities are incorporated into governance processes.

Within contemporary governance studies, particularly through the concept of social license to operate (SLO), social legitimacy has become a critical determinant of long-term investment sustainability (Glückler & Gutiérrez, 2025). Industrial investment projects increasingly require continuous acceptance and trust from affected communities, especially in resource-based regions where environmental and socio-economic impacts are directly experienced by local populations. In this context, transparency and participation function not merely as procedural requirements but as institutional mechanisms for strengthening governance legitimacy and reducing conflict between investors, governments, and communities.

Accordingly, investment governance in KIBA would benefit from stronger institutional mechanisms for public disclosure of environmental performance, information on investment incentives, and the socio-economic impacts of industrial activities. Public participation should also be institutionalized through regular stakeholder consultations, accessible grievance mechanisms, and participatory monitoring arrangements that allow local communities to contribute to the oversight of industrial development. Such mechanisms would strengthen accountability and improve the responsiveness of local institutions to environmental and social concerns.

From an International Political Economy (IPE) perspective, these institutional arrangements represent a transition from state-centric investment governance toward multi-actor governance, in which policy legitimacy is shaped through interactions among government institutions, investors, local communities, civil society organizations, and other stakeholders. When interpreted through the KIBA case, transparency and public participation should therefore be understood as integral components of Green Investment Governance, because they enable local governments to balance investment competitiveness with environmental accountability and inclusive regional development. This perspective reinforces the argument that sustainable investment governance cannot rely exclusively on market incentives or administrative regulation, but requires institutional arrangements that embed investment within broader processes of democratic governance and community engagement.

6 | CONCLUSION

The findings of this study demonstrate that investment governance in KIBA remains predominantly characterized by a growth-oriented paradigm that emphasizes investment attraction through industrial infrastructure development, regulatory facilitation, and investment incentives. These strategies have successfully strengthened the region's locational advantages and integrated KIBA into Indonesia's downstream nickel industry and global value chains. However, the analysis indicates that improvements in investment realization, regional own-source revenue (PAD), and employment have not been consistently accompanied by stronger local economic spillovers, environmental sustainability, or inclusive socio-economic development. Weak integration between large-scale industries and local MSMEs, limited technology transfer, fragmented investment monitoring, and the predominance of economic indicators in policy evaluation demonstrate that the existing governance framework remains insufficient to ensure the long-term quality and sustainability of investment outcomes.

This study argues that the principal challenge lies not in attracting investment, but in governing investment more effectively. By integrating Foreign Direct Investment (FDI) theory with the concept of Green Investment Governance, the study demonstrates that sustainable regional development requires investment governance that extends beyond increasing capital inflows toward improving investment quality. Accordingly, the proposed framework emphasizes four strategic pillars: sustainability performance-based incentives, life-cycle investment governance, integrated investment monitoring, and strengthened transparency and public participation. Beyond its contribution to understanding investment governance in KIBA, the framework provides a broader policy perspective for resource-based industrial regions seeking to balance economic competitiveness with environmental sustainability and social inclusion. Future research should further examine the practical implementation of Green Investment Governance through empirical field studies and comparative analyses across industrial estates to assess its effectiveness in promoting sustainable regional development.

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Disclosure Statement

The authors report there are no competing interests to declare.

Data Availability Statement

This study is based entirely on publicly available documentary sources, including government regulations, policy documents, official investment reports, and peer-reviewed academic publications, as cited throughout the manuscript. No new primary data were generated or analyzed during this study. All documents used are publicly accessible through the respective issuing institutions or through the academic databases cited in the reference list.

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