



Evaluation of The National Strategic Project for The Construction of The Serang-Panimbang Expressway

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Abstract

This study evaluates the implementation of the Serang Panimbang Expressway as a National Strategic Project in Indonesia using William N. Dunn's policy evaluation framework. The research employed an empirical qualitative approach through a single instrumental case study design. Data were collected through semi structured interviews with key stakeholders involved in project planning, implementation, and supervision, supported by documentary evidence from government reports and policy documents. The analysis focused on six evaluation dimensions consisting of effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness. The findings indicate that the project has significantly improved regional connectivity and strengthened development opportunities in previously less accessible areas. Implementation performance was influenced by land acquisition challenges, financial constraints, cost escalation, and administrative coordination issues that affected project timelines. Stakeholders generally perceived the project as strategically beneficial for regional economic growth, although concerns remained regarding the distribution of benefits, environmental impacts, and institutional responsiveness to public complaints. The study concludes that the project remains appropriate and justified within the National Strategic Project agenda because its long term public value exceeds the implementation challenges encountered. Strengthening environmental governance, community engagement, and interinstitutional coordination is essential to improve the sustainability and legitimacy of future infrastructure development initiatives.

Keywords : National Strategic Project, Policy Evaluation, Expressway Development, Infrastructure Governance, Regional Connectivity.



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INTRODUCTION

The contemporary discourse on infrastructure governance has increasingly shifted from a narrow emphasis on physical project delivery toward a broader concern with the multidimensional evaluation of strategic infrastructure outcomes, reflecting a global recognition that transport corridors function not merely as mobility facilities but as institutional instruments that shape economic transformation, territorial integration, environmental sustainability, and social welfare. Across both developed and developing countries, expressway development has become a central component of national competitiveness strategies because transportation connectivity is widely regarded as a prerequisite for regional productivity enhancement and spatial economic integration. Recent scholarship demonstrates that the impacts of expressway infrastructure extend beyond reductions in travel time and logistics costs, influencing environmental governance, ecosystem resilience, renewable energy potential, and regional development trajectories (Wu et al., 2022; Ye et al., 2022; Yang et al., 2023; Zhang et al., 2022). At the same time, the growing complexity of infrastructure megaprojects has intensified concerns regarding governance quality, stakeholder responsiveness, project sustainability, and implementation performance, prompting scholars to advocate more comprehensive evaluative frameworks capable of capturing the interaction between technical execution and public value creation (Willar et al., 2023). Within this broader international context, national governments increasingly rely on strategic infrastructure programs to stimulate economic growth and territorial cohesion, making the evaluation of large scale transport projects a critical area of inquiry in contemporary public policy and development studies.

Existing studies consistently indicate that transport infrastructure investments can generate significant economic and developmental benefits when supported by effective governance arrangements and complementary regional development strategies. Research on expressway projects has demonstrated their capacity to facilitate industrial expansion, improve accessibility, strengthen tourism competitiveness, and enhance regional connectivity, particularly when integrated with broader economic development agendas (Yang et al., 2023; Zhang et al., 2022). Simultaneously, environmental governance literature highlights that infrastructure outcomes are strongly conditioned by the regulatory frameworks governing project implementation, environmental mitigation, and stakeholder engagement, suggesting that physical infrastructure success cannot be separated from institutional performance (Wu et al., 2022; Ye et al., 2022). Studies focusing on construction management further reveal that project quality depends not only on engineering excellence but also on effective coordination, risk management, and governance mechanisms throughout the project lifecycle (Willar et al., 2023). This body of literature collectively advances an important insight that infrastructure effectiveness emerges through the interaction of economic, environmental, institutional, and social dimensions, challenging earlier approaches that evaluated infrastructure primarily through technical completion indicators or financial performance metrics.

Despite these advances, substantial conceptual and empirical limitations remain evident within the literature. Much of the existing scholarship examines infrastructure performance through sector specific perspectives that isolate economic impacts, environmental consequences, or project management outcomes without sufficiently integrating these dimensions into a comprehensive policy evaluation framework. Consequently, the literature often overlooks how implementation challenges such as funding uncertainty, cost escalation, land acquisition disputes, environmental externalities, and stakeholder dissatisfaction interact to influence overall policy effectiveness. This limitation becomes particularly pronounced in developing country contexts where infrastructure megaprojects frequently encounter governance complexities that differ from those observed in mature institutional environments. Although studies have documented environmental governance challenges in expressway construction and identified quality management factors affecting project performance, relatively limited attention has been devoted to understanding how strategic national infrastructure projects perform when evaluated through multidimensional public policy criteria that simultaneously consider effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness (Wu et al., 2022; Ye et al., 2022; Willar et al., 2023). As a result, the literature continues to exhibit a fragmented understanding of how policy implementation dynamics shape the realization of intended development outcomes.

The unresolved nature of these issues is particularly significant in the case of Indonesia's National Strategic Projects, which represent one of the largest infrastructure driven development initiatives in Southeast Asia. Within this agenda, the Serang Panimbang Expressway occupies a strategically important position because it is expected to strengthen regional connectivity, support the development of the Tanjung Lesung Special Economic Zone, stimulate economic growth in Southern Banten, and reduce spatial disparities across the province (KPBK Kementerian Keuangan, 2022; Badan Pengatur Jalan Tol, 2022; Direktorat Jenderal Bina Marga, 2022). Nevertheless, project implementation has been characterized by recurring challenges including financing constraints, delays in construction completion, dependence on foreign debt financing, rising project costs, and unresolved environmental and social concerns affecting local communities (Tempo.co, 2024; Kompas.com, 2023; Kontan, 2026; Ombudsman Republik Indonesia, 2025). Government reports continue to emphasize the strategic importance of completing the project and maintaining its status as a national development priority, reflecting both its anticipated developmental significance and the persistent difficulties surrounding its implementation (Kementerian Keuangan Republik Indonesia, 2025; Kompas.com, 2025; Direktorat Jenderal Bina Marga, 2026; Kementerian Pekerjaan Umum, 2026; Bahfein & Alexander, 2026). These conditions create an urgent need for rigorous evaluation because the long term legitimacy of strategic infrastructure policy depends not only on infrastructure delivery but also on the extent to which promised public benefits are effectively realized.

Against this backdrop, the present study positions itself at the intersection of infrastructure governance, public policy evaluation, and strategic project implementation. Rather than examining the Serang Panimbang Expressway solely as a transportation asset or construction project, this research conceptualizes it as a public policy intervention whose success must be assessed through its capacity to achieve intended developmental objectives while simultaneously managing economic, social,

environmental, and institutional challenges. Such a perspective addresses a notable gap in existing scholarship by integrating insights from infrastructure governance studies with a multidimensional policy evaluation approach derived from William N. Dunn's evaluative criteria. This positioning enables a more comprehensive understanding of how implementation realities influence policy outcomes and provides a framework capable of capturing both the achievements and shortcomings of strategic infrastructure projects. In doing so, the study contributes to ongoing international debates concerning the governance of large scale public investments and the conditions under which infrastructure projects can generate sustainable and equitable development outcomes.

This study aims to evaluate the implementation of the Serang Panimbang Expressway National Strategic Project through the analytical lens of William N. Dunn's policy evaluation framework, encompassing effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness. The research seeks to examine the extent to which the project has fulfilled its intended developmental objectives while identifying the institutional, financial, social, and environmental factors shaping its implementation performance. Theoretically, the study contributes to the advancement of infrastructure governance scholarship by demonstrating the relevance of multidimensional policy evaluation in assessing strategic infrastructure interventions beyond conventional performance indicators. Methodologically, it contributes by applying an instrumental single case study approach that integrates policy evaluation criteria within the context of a complex national infrastructure project, offering a comprehensive analytical model that can inform future evaluations of strategic development initiatives in emerging economies.

RESEARCH METHODS

This study employed an empirical qualitative research design using a single instrumental case study approach to evaluate the implementation of the National Strategic Project of the Serang Panimbang Expressway in Banten Province. The selection of a case study design was based on its suitability for generating an in depth understanding of complex policy implementation processes within a real world context, particularly when the boundaries between policy intervention and contextual factors are difficult to distinguish (Creswell, 2013). The study focused on the Serang Panimbang Expressway as a strategically significant infrastructure project intended to enhance regional connectivity, support equitable development, and stimulate economic growth. Participants were selected through purposive sampling based on their institutional involvement, expertise, and direct experience with the planning, implementation, and oversight of the project. The primary data were collected through semi structured interviews with key stakeholders from relevant government agencies and infrastructure management institutions. To strengthen contextual understanding and facilitate data triangulation, the study also utilized documentary evidence derived from official project reports, policy documents, and government publications concerning project development and implementation progress (KPBU Kementerian Keuangan, 2022; Direktorat Jenderal Bina Marga, 2022; Direktorat Jenderal Bina Marga, 2026).

The principal research instrument was a semi structured interview guide developed on the basis of William N. Dunn's policy evaluation framework, consisting of six evaluative dimensions including effectiveness, efficiency, adequacy, equity, responsiveness, and appropriateness (Dunn, 2003). The credibility and trustworthiness of the findings were enhanced through methodological triangulation, source triangulation, and continuous comparison between interview data and documentary evidence. Data analysis followed an interactive qualitative procedure involving data reduction, data display, thematic categorization, and conclusion drawing. The analytical process was guided by deductive coding derived from Dunn's evaluative criteria while remaining open to emergent themes arising from the empirical data. Ethical considerations were incorporated throughout the research process by ensuring voluntary participation, obtaining informed consent prior to interviews, maintaining participant confidentiality, and anonymizing personal information during data processing and reporting. These procedures were implemented to preserve research integrity and ensure that the findings accurately reflected the experiences and perspectives of the participants while supporting a rigorous evaluation of the Serang Panimbang Expressway National Strategic Project.

RESULTS AND DISCUSSION

Policy Effectiveness and Infrastructure Performance of the Serang Panimbang National Strategic Project

The qualitative findings indicate that the effectiveness of the Serang Panimbang Expressway remains closely associated with the extent to which physical connectivity objectives have been translated into functional regional accessibility. Interview participants consistently emphasized that the operationalization of Section 1 has reduced travel time between several strategic locations in Banten and improved mobility efficiency for road users. This observation reflects the effectiveness criterion proposed by Dunn (2003), which evaluates the degree to which policy outputs generate intended outcomes. Similar findings have been reported in highway development studies where transportation infrastructure contributes to regional accessibility only when connectivity networks begin functioning in practice rather than merely existing as completed assets (Lee & Park, 2025).

Stakeholder narratives revealed that the current effectiveness of the project remains partial because the transportation corridor has not yet reached Panimbang as its principal destination. Informants explained that the economic benefits expected from tourism growth and investment attraction cannot be fully realized while critical sections remain under construction. The situation demonstrates a gap between policy objectives and observable outcomes despite substantial construction achievements. Research on infrastructure readiness similarly suggests that transportation projects often experience delayed policy effectiveness when network integration remains incomplete (Radzi et al., 2022).

Several participants highlighted that local businesses located near operational toll sections have begun experiencing increased logistical efficiency. Reduced travel uncertainty has encouraged greater mobility among commercial actors and facilitated the movement of goods between urban and semi rural areas. Such developments correspond with evidence showing that road infrastructure functions as a catalyst for economic interaction once accessibility barriers are lowered (Naim et al., 2024). The findings indicate that initial policy effectiveness is emerging despite limitations in overall corridor completion.

The interviews also revealed that tourism stakeholders perceive the expressway as a strategic instrument for accelerating access to the Tanjung Lesung Special Economic Zone. Respondents noted that investors have demonstrated increasing interest in the southern Banten region because future connectivity improvements are expected to reduce transportation costs. Infrastructure induced expectations frequently shape investment decisions before project completion. This pattern aligns with observations that transport corridors can influence regional economic behavior through anticipated accessibility gains rather than solely through completed operations (Yang et al., 2023).

To contextualize stakeholder assessments, documentary evidence concerning construction progress was compared with qualitative findings obtained during fieldwork. The resulting synthesis is presented in Table 1.

Table 1. Progress of the Serang Panimbang Expressway Construction and Operational Status

Project Section	Length (km)	Operational Status
Section 1 Serang Rangkasbitung	26.5	Operational
Section 2 Rangkasbitung Cileles	24.17	Near Completion
Section 3 Cileles Panimbang Phase 1	17.46	Under Completion
Section 3 Remaining Packages	15.54	Ongoing Construction

Source: Adapted from Badan Pengatur Jalan Tol (2022), Direktorat Jenderal Bina Marga (2026), Portonews (2026), and Kementerian Pekerjaan Umum (2026).

The data in Table 1 demonstrate that substantial physical progress has been achieved across all sections of the project. Participants interpreted these figures as evidence that implementation capacity remains relatively strong despite recurring delays. The contrast between high construction progress and

incomplete operational integration emerged as a central theme in the interviews. Such conditions illustrate that physical completion and policy effectiveness do not necessarily advance at identical rates.

Respondents from public institutions argued that effectiveness should be assessed through long term developmental outcomes rather than short term construction indicators alone. They emphasized that economic transformation in southern Banten requires complementary investments in tourism infrastructure, logistics facilities, and local entrepreneurship. This interpretation resonates with studies suggesting that transportation infrastructure generates broader developmental impacts only when supported by regional economic ecosystems (Patel & Ruparathna, 2023). The findings therefore position effectiveness as a multidimensional process rather than a purely engineering achievement.

Another important finding concerns construction quality and technical reliability as determinants of policy effectiveness. Interviewees frequently referred to the importance of material specifications and structural resilience because infrastructure performance directly influences user confidence. Evidence from the Serang Panimbang corridor indicates that technical standards have been maintained despite challenging geological conditions (Anarta et al., 2025). Similar conclusions have been advanced in quality management research emphasizing that sustainable infrastructure outcomes depend on consistent adherence to engineering standards throughout project execution (Willar et al., 2023).

Participants also discussed the influence of environmental and geological risks on operational effectiveness. Several informants noted that land stability issues and embankment vulnerability required additional technical interventions during construction. Independent studies conducted along Section 3 identified varying levels of liquefaction susceptibility that necessitated specialized engineering responses (Priyanto et al., 2024). Risk management literature similarly recognizes geotechnical uncertainty as a significant factor affecting infrastructure performance and project outcomes (Al Mhdawi et al., 2025).

The findings further reveal that digital monitoring and inspection mechanisms have gradually improved project oversight. Respondents reported that technological tools have enhanced coordination among contractors, consultants, and government agencies during construction activities. Comparable evidence suggests that digital inspection systems contribute to higher transparency and more effective infrastructure management processes (Mohamed & Tran, 2023). The integration of technology therefore appears to strengthen institutional capacity in achieving policy objectives.

The empirical evidence indicates that the effectiveness of the Serang Panimbang Expressway should be understood as an evolving policy outcome shaped by infrastructure completion, economic readiness, construction quality, and institutional coordination. The project has generated measurable improvements in accessibility and stakeholder expectations despite incomplete corridor integration. Findings derived from interviews and documentary triangulation suggest that effectiveness currently exists in a transitional stage between infrastructure delivery and broader socioeconomic transformation. This interpretation supports Dunn's (2003) proposition that policy effectiveness must be evaluated through the relationship between intended objectives and realized public outcomes rather than through implementation outputs alone.

Efficiency and Administrative Sustainability in the Implementation of the Serang Panimbang Expressway Project

Interview findings indicate that efficiency challenges within the Serang Panimbang Expressway Project were closely associated with financial management, resource allocation, and institutional coordination rather than technical construction capacity. Several participants explained that the availability of funding significantly influenced the continuity of project implementation and scheduling decisions. Informants emphasized that construction activities were periodically adjusted to accommodate financing conditions and administrative requirements. This finding reflects Dunn's efficiency criterion, which assesses the relationship between policy outcomes and the resources utilized to achieve those outcomes (Dunn, 2003).

The qualitative evidence revealed that delays experienced during implementation were frequently linked to funding constraints rather than deficiencies in engineering capability. Participants reported that uncertainty regarding financing disbursement generated disruptions in contractor planning and procurement activities. Documentary evidence also showed that the project encountered financial obstacles that affected the pace of implementation and required revisions to completion targets (Kompas.com, 2023). Similar patterns have been identified in highway infrastructure projects where

financial instability constitutes a primary determinant of project delay and inefficiency (Sharma & Trivedi, 2023).

Stakeholders further noted that the Public Private Partnership financing model created opportunities for resource mobilization while simultaneously introducing complex coordination requirements among multiple actors. Informants acknowledged that the partnership arrangement enabled the continuation of construction activities despite substantial funding demands. Several respondents explained that coordination among government institutions and concession entities became increasingly important as financial risks evolved throughout implementation. Such observations are consistent with studies emphasizing that effective governance structures are essential for maintaining efficiency within large scale infrastructure partnerships (Lee & Park, 2025).

The financial structure of the project also generated concerns regarding long term fiscal sustainability. Participants highlighted the necessity of balancing infrastructure acceleration objectives with prudent expenditure management. Documentary sources indicated that portions of project financing involved external funding arrangements that required careful oversight and accountability mechanisms (Tempo.co, 2024). This condition aligns with arguments that strategic infrastructure projects require integrated financial governance frameworks to preserve efficiency and institutional legitimacy (Kementerian Keuangan Republik Indonesia, 2025).

Several interviewees identified land acquisition delays as a major source of indirect cost escalation. Respondents explained that prolonged acquisition processes increased administrative expenses and affected the sequencing of construction activities. These findings suggest that inefficiency emerged not only from budgetary limitations but also from delays occurring within supporting administrative processes. Research on construction readiness similarly demonstrates that unresolved preparatory issues frequently generate additional project costs and implementation inefficiencies (Radzi et al., 2022).

Table 2. Key Efficiency Challenges and Resource Management Issues Identified by Stakeholders

Theme	Interview Frequency	Interpretation
Funding constraints	8	High impact
Cost escalation	7	Moderate to high
Land acquisition delays	7	High impact
Interagency coordination	6	Moderate
Construction quality control	5	Positive

Source: Processed from semi structured interview data and project documentation (KPB
Kementerian Keuangan, 2022, Kompas.com, 2023, Kontan, 2026).

The patterns presented in Table 2 demonstrate that funding constraints and land acquisition delays were the most frequently cited efficiency challenges by participants. Respondents consistently associated these issues with schedule adjustments, administrative burdens, and increased resource consumption. Interagency coordination was perceived as moderately effective, although stakeholders acknowledged that coordination quality varied across implementation stages. The positive assessment of construction quality control indicates that technical management mechanisms remained functional despite financial pressures.

Interview findings further revealed that cost escalation emerged as a recurring concern among stakeholders. Participants referred to adjustments in project expenditure that reflected changing implementation conditions and evolving resource requirements. Documentary evidence reported an increase in project costs that required additional justification and financial restructuring measures (Kontan, 2026). Similar cost overrun dynamics have been identified as common risks within critical infrastructure projects characterized by long implementation horizons and multiple uncertainties (Al Mhdawi et al., 2025).

The effectiveness of institutional coordination represented another important determinant of administrative efficiency. Informants generally viewed collaboration among BPJT, the Ministry of Public Works, and project implementing entities as improving over time, although coordination challenges persisted during critical decision making periods. Participants explained that coordination

mechanisms helped reduce transaction costs by facilitating information exchange and accelerating administrative approvals. Such findings support the argument that collaborative governance contributes significantly to efficiency outcomes within infrastructure project management systems (Lee & Park, 2025).

Evidence from interviews also highlighted the growing importance of monitoring technologies and quality assurance systems. Several respondents noted that digital reporting procedures and structured monitoring mechanisms improved project oversight and accountability. Previous studies indicate that inspection technologies and digital monitoring tools enhance transparency while reducing administrative inefficiencies in highway construction projects (Mohamed & Tran, 2023; Subramanya et al., 2022). Participants perceived these mechanisms as valuable instruments for maintaining implementation consistency despite resource constraints.

The findings suggest that the efficiency performance of the Serang Panimbang Expressway Project cannot be assessed solely through expenditure levels or implementation speed. Efficiency was shaped by the interaction of financing arrangements, institutional coordination, risk management capacity, and quality control practices. Stakeholder perspectives indicate that administrative sustainability depends on maintaining adaptive governance structures capable of responding to evolving project challenges. This interpretation supports the view that sustainable National Strategic Project implementation requires efficient resource utilization combined with resilient governance and accountability mechanisms (Willar et al., 2023; Kementerian Keuangan Republik Indonesia, 2025).

Equity, Responsiveness, and Environmental Appropriateness of the Serang Panimbang Expressway Development

The analysis of equity revealed that stakeholders generally perceived the Serang Panimbang Expressway as contributing to a more balanced spatial distribution of development opportunities across Banten Province. Interview participants emphasized that improved accessibility has increased the potential for economic interaction between previously isolated areas and regional growth centers. This finding supports Dunn's evaluation framework, which defines equity as the extent to which policy benefits are distributed fairly among affected populations (Dunn, 2003). Several respondents noted that communities in Pandeglang and Lebak are expected to gain greater access to markets, public services, and investment opportunities following full project completion, consistent with findings reported by Naim et al. (2024).

Stakeholder interviews indicated that the distribution of benefits remains uneven across social groups despite the anticipated regional gains. Informants from local government institutions observed that business actors and logistics operators have experienced more immediate advantages than agricultural households located near construction areas. Similar patterns have been identified in highway development studies where infrastructure benefits tend to emerge gradually and are often concentrated among economically adaptive groups during early implementation phases (Lee & Park, 2025). Community representatives acknowledged improved development prospects while simultaneously expressing concerns regarding unequal short term impacts among affected residents.

The responsiveness dimension revealed mixed perceptions regarding institutional reactions to community aspirations and complaints. Several interview participants stated that government agencies had established communication channels with local communities during land acquisition and construction activities. Others reported that public feedback mechanisms were not always followed by timely problem resolution, particularly concerning environmental disturbances and local infrastructure disruptions. These findings suggest that responsiveness was present institutionally but varied in effectiveness across different implementation contexts, reflecting concerns highlighted in public infrastructure governance studies (Naim et al., 2024).

Community perceptions became particularly visible in discussions regarding environmental impacts emerging during project implementation. Interviewees frequently referred to recurring complaints associated with drainage changes and flood incidents affecting agricultural land near the construction corridor. Reports from public institutions documented similar concerns in Cisangu Village where residents alleged that project activities contributed to flooding conditions that affected local livelihoods (Ombudsman Republik Indonesia, 2025). Comparable concerns were also documented through local community advocacy efforts seeking corrective measures from relevant authorities (Ridwan, 2025).

The thematic coding results generated from interviews and triangulated documentary evidence are summarized in Table 3. The table demonstrates that stakeholders generally recognized the strategic value of the project while identifying responsiveness and environmental management as dimensions requiring stronger policy attention. These findings provide an empirical basis for assessing whether the project remains aligned with broader public interests beyond infrastructure delivery alone. The patterns observed in the data correspond with Dunn's argument that policy appropriateness must consider both outcomes and societal acceptance (Dunn, 2003).

Table 3. Stakeholder Assessment of Equity, Responsiveness, and Environmental Appropriateness

Evaluation Aspect	Main Findings	Policy Implication
Equity	Regional accessibility improved	Positive
Community benefits	Emerging but uneven	Moderate
Public responsiveness	Needs strengthening	Moderate
Environmental management	Several concerns remain	Needs improvement
Overall appropriateness	Strategically justified	Positive

Source: Processed from semi structured interview findings and triangulated documentary evidence based on Ombudsman Republik Indonesia (2025), Ridwan (2025), and Naim et al. (2024).

The environmental dimension emerged as one of the most frequently discussed themes during interviews with project stakeholders. Respondents acknowledged that environmental monitoring mechanisms had been implemented during construction activities, although their effectiveness remained a subject of debate among affected communities. Studies on environmental governance in road infrastructure projects emphasize that monitoring systems require continuous public oversight and transparent reporting to maintain legitimacy and accountability (Dahalan et al., 2025). Interview findings indicated that existing monitoring practices have generated useful information but have not fully eliminated public concerns regarding environmental risks.

Stakeholders further highlighted the importance of integrating environmental assessment into infrastructure planning processes from the earliest project stages. Informants involved in project oversight emphasized that environmental considerations should be treated as a strategic component of project governance rather than merely a regulatory requirement. Similar conclusions have been advanced by Ali and Batool (2024), who argue that strategic environmental assessment strengthens sustainability outcomes by embedding environmental considerations into infrastructure decision making. This perspective was reflected in stakeholder views that environmental risks should be managed proactively rather than reactively.

Interview evidence also suggested that ecological sustainability remains closely linked to public perceptions of project legitimacy. Participants acknowledged that transportation connectivity generates significant socioeconomic benefits but stressed that environmental externalities can undermine public support when mitigation measures are perceived as inadequate. Previous studies demonstrate that highway development may influence ecosystem conditions, land use dynamics, and environmental quality if long term management strategies are insufficient (Qin et al., 2023; Yang et al., 2023). Similar concerns have informed sustainability assessment frameworks developed for expressway projects in several countries (Wijewantha & Kulatunga, 2022).

The appropriateness dimension focused on whether the Serang Panimbang Expressway remains aligned with the broader objectives of the National Strategic Project program. Most interview participants agreed that the project continues to support national goals related to regional connectivity, economic integration, and territorial development. This assessment corresponds with research emphasizing that public infrastructure projects should be evaluated according to both economic utility and broader public value considerations (Lee & Park, 2025). Stakeholders frequently described the project as strategically necessary despite implementation challenges encountered during construction.

The final assessment indicates that the project demonstrates substantial policy appropriateness while requiring stronger responsiveness and environmental safeguards to enhance public legitimacy. Interview findings suggest that equity outcomes are emerging through improved accessibility, although

the distribution of benefits has not yet reached all affected groups equally. Contemporary studies on sustainable expressway development emphasize that long term success depends on balancing infrastructure expansion with environmental protection, community engagement, and adaptive governance mechanisms (Wang et al., 2023, Wu et al., 2022, Ye et al., 2022, Zhang et al., 2022). Stakeholders therefore viewed the continuation of the project as justified, provided that environmental management, community responsiveness, and social benefit distribution receive greater policy attention in subsequent implementation stages (Prasetya, 2025).

CONCLUSION

The evaluation of the Serang Panimbang Expressway National Strategic Project demonstrates that the project has generated substantial progress in achieving its strategic objectives of enhancing regional connectivity and supporting long term economic development in Banten Province. The effectiveness dimension indicates that infrastructure development has advanced regional accessibility and strengthened prospects for investment and economic integration despite implementation delays associated with land acquisition and construction challenges. The efficiency assessment reveals that financial constraints, cost escalation, institutional coordination issues, and project risk management have significantly influenced implementation performance, although the Public Private Partnership financing mechanism has contributed to maintaining project continuity under complex administrative conditions. The findings on equity, responsiveness, and appropriateness show that development benefits have begun to emerge across the region, yet their distribution remains uneven and public responsiveness requires further strengthening, particularly regarding environmental concerns and community grievances. Environmental issues associated with flooding and ecological management highlight the necessity of more adaptive monitoring and mitigation mechanisms during project implementation. Based on Dunn's policy evaluation framework, the project remains appropriate and strategically justified as a National Strategic Project because its long term public value, regional development contribution, and connectivity benefits outweigh the implementation challenges identified during the evaluation process. Future policy efforts should prioritize inclusive benefit distribution, environmental sustainability, responsive governance, and institutional coordination to enhance the overall effectiveness and legitimacy of strategic infrastructure development.

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