An Analysis of the Role of DAK Fisik and PAD in Road Infrastructure Development: An Integrative Review

Farra Hanifah[1], Nurul Istiqomah[2], Suryanto[3]
[1,2,3]Master of Economics and Development Studies, Sebelas Maret University, Surakarta

Abstract

Accelerating road infrastructure development is one of the priorities in strengthening regional connectivity in Indonesia. Infrastructure development is an integral part of achieving the Sustainable Development Goals (SDGs) targets, particularly SDGs 9 which focuses on industry, innovation, and infrastructure, as well as SDGs 11 which focuses on sustainable cities and communities. However, the effectiveness of road infrastructure development in Indonesia highly depends on regional financing structures. This study aims to analyze the impact of the Physical Special Allocation Fund (DAK Fisik) and Regional Original Revenue (PAD) on the provision of road infrastructure in Indonesia. The approach used in this study is a Systematic Literature Review with an integrative review method by examining various relevant empirical research results. The results show that the DAK Fisik has varying effects on the provision of road infrastructure. In some studies, DAK Fisik shows a significant positive effect on capital expenditure that supports road development, but in other studies, DAK Fisik does not show a significant effect. Meanwhile, PAD consistently shows a significant positive effect in supporting the provision of road infrastructure because PAD reflects regional fiscal independence and the flexibility of regional governments in allocating budgets. In addition, the literature indicates that road infrastructure development plays a role in driving economic growth through increased regional connectivity, production mobility, and economic activity. This study implies that increasing the efficiency of DAK Fisik management and optimizing PAD are key factors in supporting the provision of road infrastructure in Indonesia. The results of this study are expected to provide policy recommendations regarding the importance of reforming independent regional budget governance so that SDGs targets in the regional connectivity sector can be achieved without the risk of fiscal vulnerability.

***Keywords*:** Road Infrastructure, DAK Fisik, PAD, Regional Connectivity, Fiscal Decentralization.

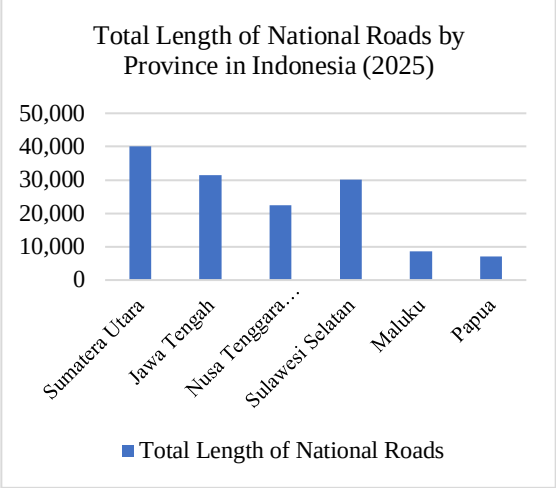
INTRODUCTION

SDGs 9 is based on three main pillars, namely through the provision of infrastructure, information technology, and communication, which constitute essential components in achieving development goals to foster sustainable economic growth for the improvement of public welfare (Singh, Sanjeet, Jayaram, 2023). One of the infrastructure provisions that can be prioritized to achieve SDGs 9 is through the improvement of road infrastructure. The improvement and development of the infrastructure sector in the field of roads is a vital aspect of the driving force in supporting economic growth at both the national and regional levels (Meriana, et al., 2023). Good roads and integrated transportation networks can reduce logistics costs and travel time, thereby increasing product competitiveness in the market (Nugraha & Santoso, 2025). Road maintenance, which includes repaving and repairing existing roads, can be considered a public goods investment that will stimulate economic activity and increase employment opportunities (Gertler et al., 2024).

Based on data obtained from the Central Bureau of Statistics (BPS, 2025), the total road length in Indonesia reaches 538,102 Km, comprising a total Regency/Cityroad length of 431,035 Km, provincial road length of 59,462 Km, and national road length of 47,605 Km (BPS, 2025). However, the condition of road infrastructure in Indonesia remains one of the primary issues. Based on data from the Ministry of Public Works and Public Housing (2024), the percentage of stable roads (*jalan mantap*) in Indonesia stands at 95.22%, while the percentage of unstable roads (*jalan tidak mantap*) is 4.78%, a condition reflecting that slightly damaged to severely damaged road conditions still persist, which indicates that road infrastructure inequality still occurs in Indonesia, particularly regarding the distribution between inter-regional roads in western and eastern Indonesia.

Table 1

Total Length of National Roads by Province in Indonesia



Source: Badan Pusat Statistik (2025)

Based on Table 1, Western Indonesia has the best total length of national roads, where North Sumatra Province has a national road length of 40,085 Km, followed by Central Java Province at 31,469 Km, and East Java Province at 42,976 Km. Furthermore, Central Indonesia, namely West Nusa Tenggara Province has a length of 9,268 Km, followed by South Sulawesi Province at 30,047 Km. Meanwhile, the national road infrastructure with the lowest level of development is located in Eastern Indonesia, where Maluku Province spans 8,667 Km, and Papua Province spans 6,987 Km.

Despite the disparities occurring between Western, Central, and Eastern Indonesia, road infrastructure development in Indonesia increases every year. Data from the Ministry of Public Works and Public Housing (2024) indicates that the percentage of roads

in stable condition in 2022 was 92.2%, increasing to 94.18% in 2023, and further increasing to 95.22% in 2024. This demonstrates that there is an increase in efficiency as well as national road infrastructure development.

The disparity in road infrastructure conditions occurring in Indonesia reflects that road development and infrastructure efforts still face various challenges, both in terms of funding, regional fiscal capacity, and budget management. Since the implementation of the fiscal decentralization policy under Law Number 1 of 2022 concerning the Financial Relations between the Central Government and Regional Governments, the authority for infrastructure provision relies on two primary funding sources, which include transfers from the Central Government in the form of the Physical Special Allocation Fund (DAK Fisik) as well as regional fiscal capacity reflected through Regional Original Revenue (PAD).

The central government has an authorized program to reduce financing disparities between regions through DAK Fisik. DAK Fisik is a fund from the central government derived from the State Budget (APBN) to be transferred to regions, allocated to support the development and procurement of regional public service facilities and infrastructure in order to achieve national priorities, accelerate regional development, reduce public service gaps, and/or stimulate the economic growth of autonomous regions.

Regional Revenue is the right of regional governments recognized as an addition to net asset value (Law No. 33 of 2004 concerning the Financial Balance between the Central Government and Regional Governments). Regional revenue includes all receipts of money through regional general cash accounts that increase current fund equity, which constitutes the region's right within one fiscal year and does not need to be repaid by the region (Government Regulation No. 58 of 2005 concerning Financial Management).

Within the framework of fiscal decentralization, the provision of road infrastructure is not only the responsibility of the central government but is also highly dependent on the fiscal capacity of local governments. Conceptually, the DAK Fisik is designed to reduce fiscal disparities between regions and support national development priorities, while PAD reflects the level of local fiscal independence and flexibility in determining expenditure priorities. Nevertheless, the effectiveness of these two instruments in driving the provision of road infrastructure does not always operate optimally.

A number of studies show inconsistencies in findings regarding the effect of DAK Fisik and PAD on infrastructure development. On one hand, the DAK Fisik is reported to be capable of increasing capital expenditure and infrastructure quality, especially when there is alignment between central policies and local needs. On the other hand, various studies also reveal that DAK often does not provide a significant impact due to its earmarked nature, limited flexibility of use, as well as weak planning and implementation capacities at the local level. Meanwhile, PAD tends to show a more consistent influence on infrastructure development because it provides a more flexible space for regional governments to allocate budgets.

This inconsistency indicates that the relationship between fiscal instruments and the provision of road infrastructure is complex and contextual. Based on this, there is a literature gap indicating the need for an approach capable of integrating various empirical findings to understand more deeply the relationship between DAK Fisik, PAD, and the provision of road infrastructure in Indonesia. To address this gap, this study employs an integrative review approach. This methodology is particularly suitable as it allows for the integration of diverse empirical findings both qualitative and quantitative thereby providing a more holistic and nuanced understanding of how DAK Fisik and PAD influence road infrastructure outcomes in Indonesia.

RESEARCH METHODOLOGY

This study employs an integrative literature review approach to synthesize empirical findings, critically evaluate previous studies on the related topic, and provide a comprehensive understanding of the current state of knowledge (Neuman, 2014). This integrative approach aims to identify and map the impact of the Physical Special Allocation Fund (*Dana Alokasi Khusus Fisik* or DAK Fisik) and Regional Original Revenue (*Pendapatan Asli Daerah* or PAD) on road infrastructure.

The data used in this study consists of secondary data gathered from reputable international journals (Scopus-indexed) as well as accredited national journals (Sinta-indexed) relevant to the research topic. This study utilizes 20 selected research articles to be systematically reviewed and analyzed. The restriction to 20 articles is justified by the principle of data saturation, as expanding the literature sample beyond this number yielded repetitive empirical findings and no longer provided novel conceptual insights into the investigated variables.

RESULTS AND DISCUSSION

Based on the literature synthesis conducted through an integrative review of 20 journal articles, the empirical findings demonstrate varied outcomes regarding the impact of the Physical Special Allocation Fund (DAK Fisik) and Regional Original Revenue (PAD) on road infrastructure provision.

1. The Impact of DAK Fisik on Road Infrastructure Provision

   Previous studies examining the impact of DAK Fisik on road infrastructure exhibit mixed results. On one hand, Pambudi (2024) demonstrates that DAK Fisik has not fully influenced infrastructure provision. This missing link occurs because the allocation of DAK Fisik often misaligns with regional priorities, leading to suboptimal development planning. Similar findings are reported by Robbani and Chadir (2022), who find that DAK Fisik has no significant effect on infrastructure development due to disbursement processes that are highly sensitive to policy shifts; hence, rigorous planning, human resource capacity building, and cross-stakeholder coordination are strongly required. Furthermore, Santoso, Dewi, and Pardanawati (2020) state that DAK Fisik does not significantly affect local government capital expenditure in Municipalities/Regencies across West Java. The earmarked nature of DAK Fisik restricts fiscal flexibility, limiting local governments from utilizing these funds comprehensively for broader capital expenditures, including road construction.

   The insignificant impact of DAK Fisik found in several regions points to a deeper structural issue in Indonesia's fiscal decentralization, often theorized as the *flypaper effect* or bureaucratic rigidity. Because DAK Fisik is strictly earmarked by the central government, local authorities possess zero flexibility to reallocate these funds when sudden obstacles, such as land acquisition disputes or localized geographical challenges, arise during road construction (Pambudi, 2024). Furthermore, the strict timeline of State Budget (APBN) disbursements often clashes with complex local procurement processes. This administrative mismatch results in high silpa (unspent budget anomalies) and substandard, rushed road completions at the end of the fiscal year (Robbani and Chaidir, 2026).

Consequently, while DAK Fisik successfully injects capital volume, it fails to guarantee infrastructure utility and longevity due to weak institutional capacity and flawed bottom-up planning integration at the regional level.

2. The Impact of PAD on Road Infrastructure Provision

   Previous studies discussing Regional Original Revenue (PAD) demonstrate relatively uniform findings, converging on a positive impact. A study conducted by Novianti and Ishak (2022) shows that PAD significantly influences the Financial Independence of the Bandung City Government. Furthermore, research by Sari and Armelly (2024) indicates that PAD exerts a significant effect on capital expenditure in Jambi Province. In this context, PAD serves as the primary backbone for regional financing, when PAD increases, the funds available to the local government expand accordingly. This expansion directly contributes to enhanced regional independence and a larger fiscal capacity for capital expenditure, a major portion of which is channeled into infrastructure development. Aligning with these findings, a study by Komang (2023) asserts that PAD has a positive and significant impact on capital expenditure. When local governments successfully maximize their regional revenues through PAD, the volume of capital expenditure that can be allocated and realized will automatically increase. The consistent positive impact of PAD on road infrastructure provision highlights the critical role of fiscal autonomy in regional development. Higher PAD grants local governments the financial leverage to execute multi-year infrastructure projects and immediate road rehabilitations without relying heavily on top-down mandates (Sari and Armelly, 2025). From an economic standpoint, local infrastructure funded by independent revenues creates a robust *multiplier effect*. When local governments optimize their taxing power to build better roads, it directly reduces inter-regional logistics costs, accelerates supply-chain mobility, and opens up access to isolated commercial markets (Nugraha and Santoso, 2025). This enhancement in regional connectivity ultimately stimulates the local economy, creating a sustainable fiscal

cycle where economic growth feeds back into higher local tax revenues and expanded PAD capacity (Febriyanti and Dewi, 2024)

Nevertheless, these relationships do not apply universally. The effectiveness of DAK Fisik in providing road infrastructure heavily relies on policy and program synchronization between the central and local governments. In general, the impacts of DAK Fisik and PAD on infrastructure provision, specifically roads are highly complex and highly contextual. Optimizing the role of DAK Fisik requires integrated policy planning across government levels alongside institutional capacity building within local governments. Meanwhile, the mobilization of PAD must be strengthened to prevent widening fiscal disparities. Given that regional fiscal capacities vary significantly, optimal PAD management is crucial to avert infrastructure development imbalances and to ensure sustainable regional financing in the long run.

CONCLUSION

The Physical Special Allocation Fund (DAK Fisik) and Regional Original Revenue (PAD) play a crucial role in supporting infrastructure provision, particularly road infrastructure in Indonesia. Overall, the relationship between DAK Fisik, PAD, and road provision is highly complex and contextual. Its effectiveness is determined not merely by the volume of funds allocated, but significantly by the quality of governance, institutional capacity, and the unique characteristics of each region. Therefore, strengthening policy synergy between central and local governments, optimizing budget planning and management, and enhancing PAD mobilization are imperative. This study further underscores that improving road infrastructure quality exerts positive implications on regional economies. Consequently, reinforcing the strategic roles of DAK Fisik and PAD serves as a vital pathway to foster inclusive and sustainable economic growth.

Nevertheless, this study is subject to several limitations, primarily its reliance on the integrative review method, which depends heavily on the availability and publication bias of existing literatures. This dependency potentially leads to divergent and inconsistent findings across different studies. To address these limitations, future research is expected to utilize broader empirical datasets and employ more diverse analytical methods, such as quantitative approaches or mixed-methods. Such advancements are essential to yield a

more comprehensive, precise, and generalizable analysis of fiscal decentralization impacts

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