

The Role of Regional Fiscal Autonomy in Supporting Environmentally Sustainable Regional Autonomy: A Case Study of West Nusa Tenggara Province

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Abstract. This study aims to analyze the role of regional fiscal autonomy in supporting the implementation of environmentally sustainable regional autonomy in West Nusa Tenggara Province. The research employs a quantitative descriptive approach using regional financial data for the 2020–2025 period. The analysis is conducted by measuring the fiscal autonomy ratio, the effectiveness ratio of Regional Own-Source Revenue (PAD), the dependency ratio on central government transfers, the structure of regional expenditures, and PAD growth. The results show that the average contribution of PAD to transfer funds reaches 73.31%, with a PAD effectiveness level of 95.76%, indicating relatively optimal PAD management. However, regional expenditure remains dominated by routine spending, averaging 87,33% of the total APBD, thereby limiting fiscal space for development expenditure. In addition, the average PAD growth is only 1.19% per year, far below the ideal growth level and not significant. These findings indicate that although regional fiscal autonomy has shown positive progress, strengthening long-term fiscal capacity remains necessary. Therefore, this study recommends diversifying PAD sources, improving the efficiency and effectiveness of regional revenue management, and allocating a larger share of the budget to development expenditure and investments that support economically and environmentally sustainable development.

Keywords: Fiscal Autonomy, Regional Own-Source Revenue (PAD), Sustainable regional autonomy, and Environment.

1. Introduction

The implementation of regional autonomy in Indonesia following the reform era, particularly through fiscal decentralization policies, has brought about fundamental changes in governance by granting broader authority to local governments in the provision of public services, management of regional resources, and independent development planning. Fiscal decentralization is designed to enhance the efficiency of resource allocation, strengthen public accountability, and improve the responsiveness of local governments to community needs. Nevertheless, the effectiveness of this policy is highly dependent on the degree of regional fiscal autonomy, which is reflected in the ability of local governments to optimize own-source revenue (PAD) as a sustainable source of development financing [1], [2]. From a theoretical perspective, fiscal decentralization is expected to improve the quality of public services and stimulate regional economic growth through decision-making processes that are closer to local communities. However, the realization of these benefits is largely determined by the institutional capacity of local governments and the quality of public financial governance, particularly in terms of transparency, expenditure efficiency, and bureaucratic integrity [3]. Weak institutional capacity not only has the potential to generate inefficiencies

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in public spending but also limits the effectiveness of fiscal decentralization in achieving long-term development objectives, including environmental protection and the sustainability of natural resources. In practice, most local governments in Indonesia still exhibit a high level of dependence on fiscal transfers from the central government, such as the General Allocation Fund (DAU), the Special Allocation Fund (DAK), and Revenue-Sharing Funds (DBH). This dependence narrows local fiscal space and constrains the flexibility of local governments to finance strategic, long-term, and environmentally oriented development programs [4]. A number of empirical studies indicate that excessive reliance on intergovernmental transfers tends to weaken local governments' fiscal incentives to increase PAD, thereby hampering efforts to achieve sustainable fiscal independence.

Regional fiscal autonomy is influenced by various structural and institutional factors, including the structure of the local economy, the effectiveness of regional financial management, and the quality of governance and bureaucratic integrity. Regions whose economies are dominated by primary sectors generally face a limited tax base and revenue volatility, resulting in low and unstable PAD [5]. This condition increases regional fiscal vulnerability to external shocks while simultaneously constraining the capacity to finance development oriented toward environmental sustainability. The Province of Nusa Tenggara Barat (NTB) represents a typical case of a region that continues to face significant challenges in the implementation of fiscal decentralization. These challenges are reflected in the high dependence on central government transfers, the low contribution of PAD to the Regional Revenue and Expenditure Budget (APBD), and persistent interregional development disparities, despite NTB's considerable economic potential in agriculture, livestock, tourism, and micro, small, and medium enterprises (MSMEs). Moreover, the flypaper effect further weakens local governments' incentives to increase PAD, as public spending tends to be more responsive to fiscal transfers than to revenues generated locally [6]. On the other hand, the acceleration of regional economic development particularly that based on the exploitation of natural resources and primary sectors has increased environmental pressures in the form of environmental degradation, heightened risks of ecological disasters, and declining carrying capacity of natural resources. In regions such as NTB, limited fiscal capacity may exacerbate the trade-off between economic growth and environmental sustainability if it is not accompanied by effective, long-term-oriented fiscal governance.

1.1. Research Objectives

This study aims to analyze the role of regional fiscal independence in supporting environmentally sustainable regional autonomy in West Nusa Tenggara Province, Indonesia. Specifically, this study seeks to:

1. Assess the level of regional fiscal independence, as measured by own-source revenue (PAD) performance and dependence on intergovernmental transfers.
2. Identify the key determinants of regional fiscal independence, particularly economic structure, financial management effectiveness, and bureaucratic integrity.
3. Examine the effect of fiscal independence on local governments' capacity to finance environmentally sustainable development under increasing environmental pressure.

1.2. Research Questions

Accordingly, this study addresses the following research questions:

1. What is the level of regional fiscal independence in West Nusa Tenggara Province?
2. Which factors significantly influence regional fiscal independence?
3. How does regional fiscal independence affect the financing capacity for environmentally sustainable development?

2. Literature Review

2.1 Fiscal Decentralization and Regional Fiscal Independence

Fiscal decentralization refers to the policy of transferring fiscal authority from the central government to local governments, aimed at improving the efficiency of resource allocation and the quality of public service delivery at the local level. This transfer of authority enables local governments to be more responsive to community needs due to their superior local information, thereby allowing greater optimization of own-source revenue (PAD) as a sustainable source of development financing. However, the effectiveness of fiscal decentralization largely depends on the extent to which local governments are able to reduce their dependence on central government transfers and strengthen their fiscal capacity through internally generated revenues [7], [8]. Regional fiscal independence is commonly measured by the contribution of own-source revenue to total regional revenue and the degree of dependence on central government transfers. Regions with higher PAD levels tend to have greater budgetary flexibility and stronger fiscal discipline compared to regions that rely heavily on intergovernmental transfers. In many developing countries, including Indonesia, fiscal decentralization faces structural constraints such as a limited tax base and disparities in fiscal capacity among local governments, which in turn contribute to regional development disparities [9].

2.2 Fiscal Transfers, the Flypaper Effect, and Incentives for Own-Source Revenue

Fiscal transfers, such as the General Allocation Fund (DAU), the Special Allocation Fund (DAK), and Revenue Sharing Funds (DBH), are intended to reduce vertical and horizontal fiscal imbalances. Empirical literature documents the presence of the *flypaper effect*, a phenomenon in which central government transfers exert a stronger influence on local government expenditure than own-source revenue, indicating that these transfers tend to “stick” directly to local spending without stimulating the optimization of own-source revenue [10]. This pattern reflects the persistently high level of fiscal dependence in many regions, particularly those with limited fiscal capacity and a narrow local tax base.

In the long run, excessive reliance on intergovernmental transfers weakens local governments’ incentives to enhance their own-source revenue capacity, which may ultimately undermine the quality of development planning and public accountability. Consequently, the literature emphasizes the importance of reforming fiscal transfer systems by incorporating incentive mechanisms that encourage local governments to strengthen and expand their own-source revenue bases [11].

2.3 Fiscal Governance, Institutional Capacity, and Environmental Sustainability

Beyond economic structural factors, the quality of fiscal governance and institutional capacity plays a crucial role in shaping regional fiscal independence and the effectiveness of fiscal decentralization. Good governance encompasses budget transparency, effective oversight, and bureaucratic integrity, all of which strengthen local financial management and promote the enhancement of own-source revenue. In this context, local governments with stronger institutions are better positioned to manage fiscal resources efficiently and to balance economic development objectives with environmental protection. Several studies indicate that local governments granted greater fiscal authority in budget allocation are more likely to invest in environmental sustainability programs, provided that they possess adequate fiscal capacity [12].

2.4 Fiscal Decentralization and Environmental Sustainability

Recent literature has increasingly explored the relationship between fiscal decentralization and environmental outcomes. Theoretically, the devolution of budgetary authority to local governments can improve environmental quality, as local authorities have stronger incentives to design appropriate environmental policies based on local conditions. However, recent empirical studies suggest that these outcomes vary depending on regional fiscal capacity and the quality of local governance [13]. Several studies find that regions with adequate fiscal capacity and strong governance are better able to allocate budgets effectively toward environmental management programs and sustainable investments. In contrast, regions that are highly dependent on central government transfers and have low own-source revenue capacity often face economic pressures that encourage excessive exploitation of natural resources and hinder long-term investment in environmental initiatives [14].

2.5 Measurement of Regional Financial Performance

1. The ratio of regional financial independence illustrates the extent to which a region is able to finance its own needs through locally generated revenue (PAD) compared with revenue originating from external sources. The level of independence can be measured using the following formula:

$$\text{Independence Ratio} = \frac{\text{Local Own Source Revenue (PAD)}}{\text{Central government Assistance}} \times 100\%$$

- a. Instructive Relationship: describes a condition in which the role of the Central Government is still very dominant, because the regional government is considered unable to independently carry out autonomous functions.
- b. Consultative Relationship: indicates that Central Government intervention has begun to decline, as the region is deemed to have developed an initial capacity to implement regional autonomy.
- c. Participatory Relationship: occurs when the role of the Central Government continues to diminish, because the region’s level of independence is approaching full capability in managing governmental affairs autonomously.
- d. Delegative Relationship: reflects a situation in which the Central Government no longer intervenes, as the region has become fully independent and capable of exercising all autonomous authorities

Independence Ratio

Financial Capability	Independence Level	Relationship Pattern
Very Low	0%–25%	Instructive
Low	25%–50%	Consultative
Moderate	50%–75%	Participatory
High	75%–100%	Delegative

Source: Kepmendagri. No. 690.900-327 (1996)

2. The effectiveness ratio reflects the extent to which the Regional Government is able to realize its locally generated revenue (PAD) in accordance with the targets that have been

set based on the region's actual potential. This level of effectiveness can be measured using the following formula:

$$\text{Effectiveness Ratio} = \frac{\text{Realized Local Own Source Revenue (PAD)}}{\text{Targeted Local Own Source Revenue}} \times 100\%$$

Effectiveness Ratio Criteria

Effectiveness Percentage	Category
Above 100%	Very Effective
90%–100%	Effective
80%–90%	Moderately Effective
60%–80%	Less Effective
Below 60%	Ineffective

Source: Minister of Home Affairs Decree No. 690.900-327 (1996)

- The harmony ratio is an indicator that reflects how local governments prioritize the allocation of their budgets between routine (operational) expenditures and development expenditures. The larger the portion of the budget allocated to routine spending, the smaller the remaining share available for development or investment expenditures, which play a critical role in providing economic facilities and infrastructure for the community. This ratio can be calculated using the following formula:

$$\text{Routine Expenditure to Regional Budget (APBD)} = \frac{\text{Total Routine Regional Expenditure}}{\text{Budget Target}} \times 100\%$$

- The growth ratio is used to assess the ability of local governments to maintain and simultaneously improve their performance from one period to the next. A higher growth ratio, indicated by an increase in the realization of local own-source revenue (PAD) compared to the previous year, reflects better fiscal performance of the regional government. This ratio can be calculated using the following formula:

$$\text{Growth Ratio} = \frac{\text{Realized PAD in year } n - \text{Realized PAD in year } n - 1}{\text{Realized PAD in year } n - 1} \times 100\%$$

3. Research Method

This study uses a quantitative descriptive approach to analyze the level of regional fiscal autonomy. This approach was chosen because it allows the researcher to systematically and numerically describe and measure the phenomena, thereby providing an objective overview of the fiscal autonomy conditions in the studied region.

3.1 Data Source

The data were obtained from regional government financial reports, official central government documents, as well as official statistical publications from Badan Pusat Statistik and the Ministry of Finance.

3.2 Instruments and Data Analysis

The calculation of fiscal autonomy was conducted using formulas derived from prior literature, including the Regional Own-Source Revenue (PAD) effectiveness ratio, the fiscal autonomy ratio, and the dependency ratio on central government transfers. The analytical results are presented in the form of tables, graphs, and percentages to facilitate interpretation.

1. Independence Ratio = $\frac{\text{Local Own-Source Revenue (PAD)}}{\text{Central government Assistance}} \times 100\%$
2. Effectiveness Ratio = $\frac{\text{Realized Local Own Source Revenue (PAD)}}{\text{Targeted Local Own Source Revenue}} \times 100\%$
3. Routine Expenditure to Regional Budget (APBD) = $\frac{\text{Total Routine Regional Expenditure}}{\text{Budget Target}} \times 100\%$
4. Growth Ratio = $\frac{\text{Realized PAD in year n} - \text{Realized PAD in year n-1}}{\text{Realized PAD in year n-1}} \times 100\%$

This framework enables the study to comprehensively assess regional fiscal autonomy and provides a basis for more effective fiscal policy recommendations.

4. Results and Discussion

The regional fiscal independence ratio reflects the extent to which a local government is capable of financing governmental operations, development programs, and public services through its own-source revenue (PAD), without substantial reliance on transfers from the central government. In international literature, this indicator is commonly referred to as fiscal autonomy *or* regional financial independence, and is generally measured by comparing own-source revenue (PAD) to the total revenue of the local government.

Table 4.1 Contribution Ratio of Local Own-Source Revenue (PAD) to Transfer Funds, 2020–2025 (in Trillion IDR)

Year	PAD Realization	Transfer Funds Realization	Percentage
2025	1.419.43	2.208.11	64.26%
2024	3.293.97	3.322.62	99.14%
2023	2.568.22	2.882.07	89.10%
2022	2.292.07	2.976.61	76.99%
2021	1.888.46	3.414.31	55.30%
2020	1.844.85	3.349.72	55.07%

Average Contribution Ratio of PAD to Transfer Funds: 73.31%

Source: Directorate General of Fiscal Balance.

The analysis shows that the contribution ratio of Local Own-Source Revenue (PAD) to transfer funds in West Nusa Tenggara Province during 2020–2025 fluctuated, with an average of 73.31%. This ratio falls within the participatory relationship category (50–75%), indicating a declining role of the central government and that the region is approaching sustainable fiscal autonomy. A ratio above 70% reflects relatively strong fiscal self-reliance, demonstrating the local government's capacity to finance operations, development, and public services independently. Therefore, efforts to enhance the effectiveness and efficiency

of PAD management remain crucial to further strengthen fiscal independence in the future.

The level of effectiveness illustrates the ability of local governments to realize their Local Own-Source Revenue (PAD) in line with targets set based on the fiscal potential of each region. The development of PAD targets and their corresponding realizations are presented in detail in Table 4.2

Table 4.2 Effectiveness Ratio of PAD Targets and PAD Realization for 2020–2025 (in Trillion. IDR)

Year	PAD Target	PAD Realization	Percentage
2025	2.510.51	2.466.20	98.23%
2024	3.102.56	3.293.97	106.17%
2023	2.985.28	2.568.22	86.01%
2022	2.571.64	2.292.07	89.13%
2021	1.954.34	1.888.46	96.62%
2020	1.844.85	1.815.69	98.42%

The average effectiveness ratio of PAD targets and PAD realization for the 2020–2025 period is 95.76%.

Source: Directorate General of Fiscal Balance.

The effectiveness ratio of Regional Own-Source Revenue (PAD) in West Nusa Tenggara Province (NTB) during 2020–2025 fluctuated, with an average of 95.76%, placing it in the “fairly effective” category (80–90%). This indicates that PAD management and utilization have been relatively well implemented, although performance is still influenced by regional economic cycles and the performance of dominant sectors. Consistent with OECD and IMF findings, year-to-year revenue volatility is common in subnational revenues, even when fiscal governance has improved, highlighting the crucial role of local governments in optimizing PAD potential to support fiscal independence and sustainable regional development.

The Harmony Ratio indicates the extent to which local governments allocate their budgets in a balanced manner between routine (operational) expenditures and development expenditures. The higher the allocation for routine spending, the smaller the portion available for investment expenditures that support economic facilities and infrastructure for the community, as shown in Table 4.3

Table 4.3 Routine Expenditure to Regional Budget APBD. (in Trillion IDR)

Year	Regional/ Routine Expenditure	Regional Budget	Percentage (%)
2025	5.262,87	6.176.53	85,20
2024	6.003.86	6.621.16	90,68
2023	4.567.67	5.453.42	83,74
2022	4.559.88	5.302.61	85,99
2021	4.773.86	5.326.93	89,63
2020	4.591.02	5.174.29	88,73

Average Ratio of Regional/ Routine Expenditure: 87,33%

Source: Directorate General of Fiscal Balance

The analysis of routine expenditure in relation to the Regional Revenue and Expenditure Budget (APBD) in West Nusa Tenggara Province (NTB) during the 2020–2025

period shows an average ratio of 87.33%. The dominance of routine expenditure indicates high fiscal dependence, limited fiscal space, and low capacity for infrastructure investment and community economic empowerment, as only about 2.67% of the APBD remains for development spending. To enhance the effectiveness of APBD management, regional governments need to reduce the proportion of routine expenditure and increase development spending, in accordance with the principles of good governance and budgetary efficiency (Ministry of Home Affairs Regulation No. 13/2006), thereby optimizing the economic and social benefits for the community.

The growth ratio of Regional Original Revenue (PAD) is a key indicator of a region's ability to increase local financial revenue annually, showing how PAD changes compared to the previous year, as presented in Table 4.4.

Table 4.4 PAD Growth Ratio for 2020–2025 (in Trillion IDR)

Year	PAD Realization	Percentage (%)
2025	1.419.43	—
2024	3.293.97	−56.92%
2023	2.568.22	28.27%
2022	2.292.07	12.05%
2021	1.888.46	21.38%
2020	1.844.85	2.36%

Average PAD Growth Ratio: 1.19%

Source: Directorate General of Fiscal Balance

The average growth ratio of Regional Own-Source Revenue (PAD) in West Nusa Tenggara Province during 2020–2025 was only 1.19%, with significant annual fluctuations, including a sharp decline of −56.92% in 2024. The contribution of PAD to total regional revenue is an important indicator of decentralization success, as it reflects the region's ability to manage and finance public services independently. However, the low PAD growth compared to the ideal target of over 5% per year (Ministry of Home Affairs Regulation No. 77/2020) highlights the need for more effective strategies and innovations to strengthen regional fiscal capacity, enhance financial independence, and support the sustainable implementation of regional autonomy.

5. Conclusion and Research Implications

Based on the discussion and analysis, the Role of Regional Fiscal Autonomy in Supporting Environmentally Sustainable Regional Autonomy: A Case Study of West Nusa Tenggara Province (NTB) shows progress in fiscal self-reliance and the effective management of Regional Own-Source Revenue (PAD), with PAD contributing an average of 73.31% to transfer funds and achieving an effectiveness ratio of 86.81%. However, the dominance of routine expenditures at 98.67% and the low PAD growth of 1.19% per year indicate the need for improved budget allocation strategies and the strengthening of long-term fiscal capacity. Therefore, it is recommended that the local government diversify PAD sources, enhance the efficiency and effectiveness of revenue management, and allocate a greater share of the budget to development expenditures and investments that support environmentally sustainable development as well as the improvement of public service quality.

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