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Village Funds and Village Development: The Case of West Java

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Abstract

The Village Fund program has enabled the widespread implementation of village development initiatives that involve local communities as the subjects of development (i.e., Community Driven Development) across various countries, including Indonesia. Despite receiving substantial village funds, West Java, one of Indonesia's provinces, exhibits slow growth in the Village Development Index (IDM). This study examines the effect and impact of Village Funds on achieving the Sustainable Development Goals (SDGs), as measured by the IDM in West Java Province. The methodology employs a panel data regression with fixed effects and a Difference-in-Difference (DiD) analysis on 5,312 villages that received Village Funds between 2018 and 2023. Findings indicate that Village Funds significantly impact the IDM, primarily through infrastructure projects within the village development sector. Furthermore, the regression analysis revealed that all sectors positively and significantly influence the IDM, particularly the village development implementation sector. Conversely, the DiD analysis suggests that the alignment of Village Fund activities with the SDGs has not significantly affected IDM growth in West Java. Thus, to accelerate village development, the government must balance the prioritization of Village Funds. This balance should move beyond solely focusing on infrastructure development to encompass activities in other fields, such as village community empowerment.

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INTRODUCTION

The Village Fund is a central government-allocated fund disbursed to villages across Indonesia to support the development and empowerment of village communities. These funds represent part of the government's efforts to enhance the welfare of rural communities, narrow the development gap between villages and cities, and foster village autonomy (Permatasari et al., 2021). Rural development programs that engage local communities as primary development subjects, known as Community Driven Development (CDD), are implemented in various countries, including Indonesia. CDD initiatives in nations such as Afghanistan and Thailand have successfully improved the economy and welfare of rural communities (Beath, Christia, & Enikolopov, 2017; Boonperm, Haughton, & Khandker, 2013). In Indonesia, the CDD initiative operates under the name Dana Desa (Village Fund), which commenced in 2015 following Law No. 6 of 2014 on Villages (Sutisna & Qibthiyyah, 2023). This program enables village governments to manage funds through village deliberation mechanisms. Despite its focus on village development and community empowerment, the prioritization of Dana Desa funds remains tightly regulated (Permatasari et al., 2021; Rudiarta et al., 2020).

Since its inception, the allocation of Dana Desa has consistently increased, rising from IDR 20 trillion in 2015 to IDR 72 trillion in 2021. However, the budget saw a slight decrease in 2022 due to reduced disbursements in 2021 and a refocusing of funds towards COVID-19 recovery efforts (Kemenkeu, 2022). The allocation methodology for Dana Desa includes a basic allocation, a formula-based allocation, an affirmative allocation, and a performance-based allocation, covering the period from 2015 to 2023, as shown in Figure 1.

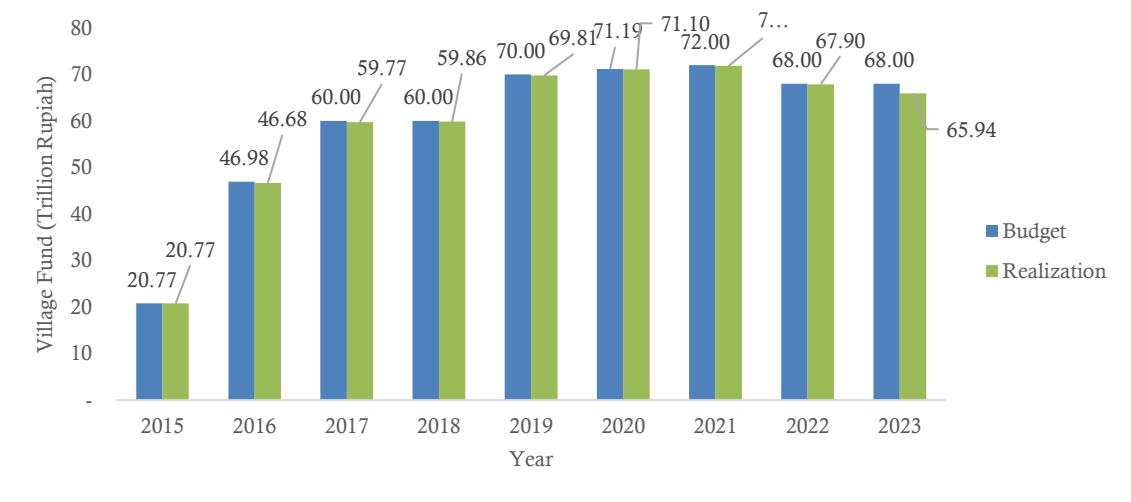

Figure 1. Budget & Realization of Dana Desa 2015-2023 (trillion rupiah)
Source: Ministry of Village, 2015-2023

Additionally, the government developed the Village Development Index (*Indeks Desa Membangun, IDM*) to assess the effectiveness of village development and measure village autonomy. A high IDM score indicates superior social, economic, and environmental conditions within a village (Kementerian Desa, 2016). The Village Development Index (IDM) is a composite index formed from three indices, namely the Social Resilience Index (Education, Health, Social Capital and Settlement), the Economic Resilience Index (Diversity of Community Production, Access to Trade Centers, Logistics Access, Access to Banking, and Regional Access), and the Ecological / Environmental Resilience Index (Environmental Quality, Natural Disasters, and Disaster Response). A higher IDM value will indicate better village conditions in terms of social, economic, and ecological aspects. The IDM value is also used to determine the status of village

progress and independence with 5 (five) classifications, namely: Independent Village or Sembada Village (IDM > 0.8155), Advanced Village or Pre-Sufficient Village (0.7072 > IDM ≤ 0.8155), Developing Village or Intermediate Village (0.5989 > IDM ≤ 0.7072), Underdeveloped Village or Pre-Medium Village (0.4907 > IDM ≤ 0.5989), and Very Underdeveloped Village or Primary Village (IDM ≤ 0.4907) (Haurissa & Dewi, 2023; Hilmawan et al., 2023; Kementerian Desa, 2016)

Moreover, to promote sustainable village development, the government has outlined goals through the Village SDGs (SDGs Desa) framework (Permatasari et al., 2021), which are expected to contribute significantly to national SDGs achievements. This is particularly relevant given that 43% of Indonesia's population and 91% of its land area are rural (Iskandar, 2020).

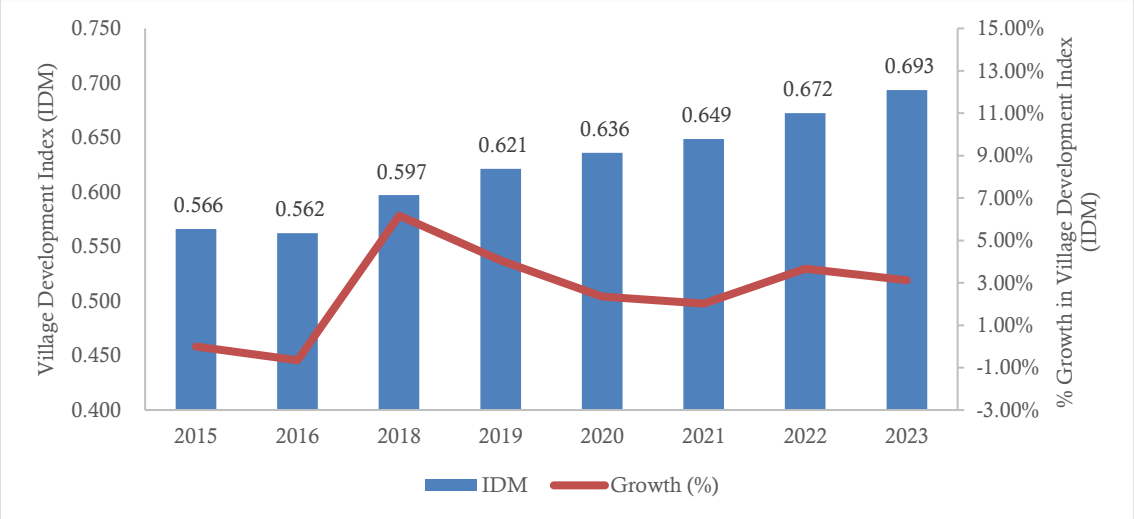

Figure 2. Village Development Index (IDM) of Indonesia 2015-2023
Source: Ministry of Village, 2015-2023

As shown in Figure 2, at the beginning of the Village Fund distribution in 2015, the average value of Indonesia's IDM was 0.566 (MoV, 2015). This value subsequently increased annually, paralleling the rise in the distributed Village Fund amount, reaching an average of 0.693 in 2023. The Village Development Index (IDM) experienced significant growth between 2015 and 2023, with the most substantial rise occurring between 2016 and 2018. This period coincided with a considerable increase in the Dana Desa (Village Fund) budget. This overall upward trend signifies a shift toward a more developed and independent village status (Astika & Sri Subawa, 2021).

However, IDM growth decelerated during the 2019–2020 period, a downturn likely influenced by the economic impacts of the COVID-19 pandemic. The pandemic significantly affected various aspects of life, including community economic and social activity. Reduced economic activity, social restrictions, and changes in behavior during the pandemic presented numerous challenges for village development (Halim & Taryani, 2023). Nevertheless, the IDM demonstrated renewed growth from 2021 onwards. The authors attribute this resurgence to the effective implementation of the Village SDGs (SDGs Desa).

According to the data presented in Figure 3, the largest accumulations of Dana Desa are concentrated in the more populous provinces on the island of Java. This concentration is primarily a result of the fund's basic and formula-based allocation methodology, which considers population size. This methodology naturally favors provinces with larger populations and a higher number of villages, such as those in Java (Badan Pusat Statistik, 2023).

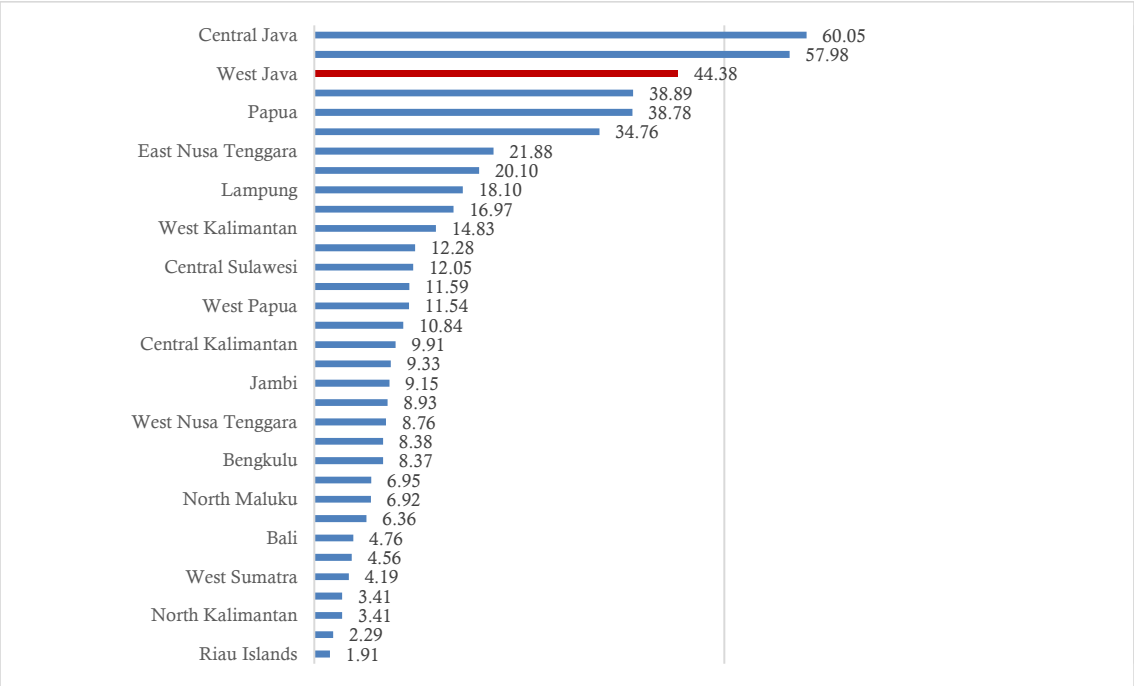

Figure 3. Accumulation of Village Fund per Province 2015-2023 (Trillion Rupiah)
Source: Badan Pusat Statistik (2023)

Meanwhile, from the average growth data of IDM per province from 2015 to 2023, as shown in Figure 3, several provinces in Java experienced low growth in IDM values, even below the national average. In this case, the problem in this research is that West Java Province has the third-highest accumulated Village Fund budget nationally and the fifth-highest IDM value nationally, but is ranked 24th for provincial IDM growth and below the national average.

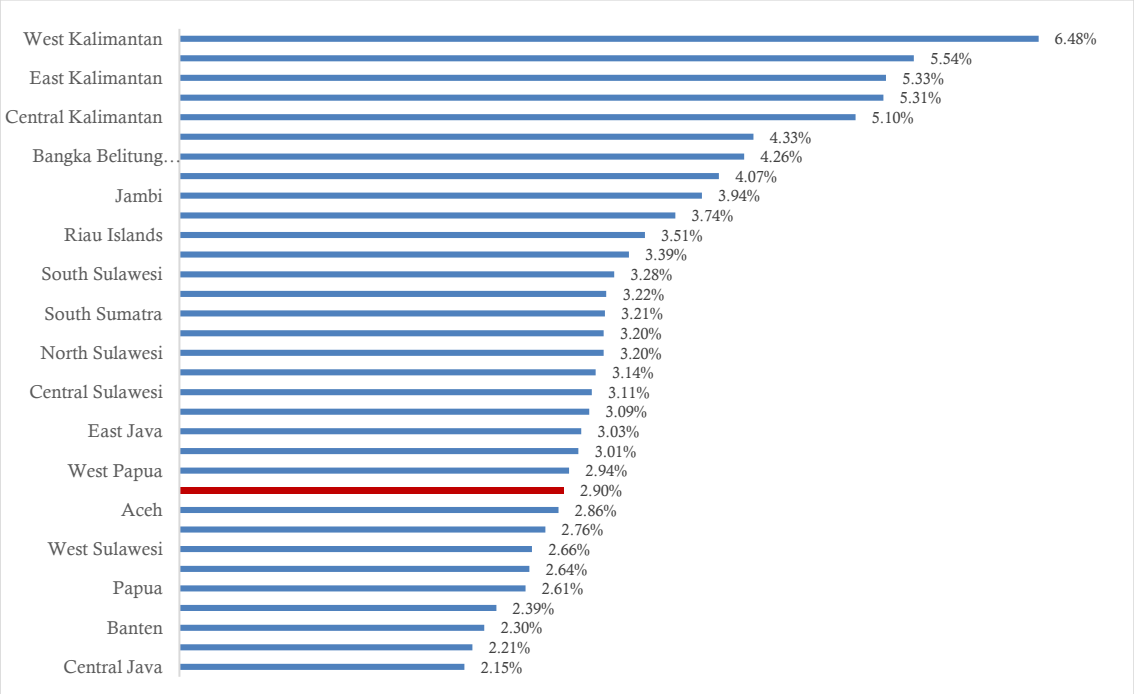

Figure 4. Average IDM Growth per Province 2015-2023
Source: Badan Pusat Statistik (2023)

The situation in West Java warrants closer examination, particularly following the implementation of the Village SDGs (SDGs Desa) policy (post-2020). One of the goals of the *SDGs Desa* is to expedite village development, ideally leading to higher IDM growth in West Java (Kemendesa, 2020). Theoretically, intergovernmental transfers like the Dana Desa are expected to bolster rural development as measured by IDM (Rosen & Gayer, 2014). However, empirical studies in Indonesia have shown mixed outcomes.

Several previous studies in Indonesia demonstrated mixed results regarding the influence of Village Funds on IDM values. Andari & Fitria (2023) analyzed the influence of Dana Desa on IDM values across Indonesia during the 2018–2022 period using the Fixed Effect Model SUR PCSE. Their findings suggested that a 1% increase in Dana Desa leads to a 0.0013 increase in IDM values. Aji & Qibthiyyah (2023) also observed a significant impact of Dana Desa on village status changes in Indonesia, utilizing IPD data and employing panel regression with the first difference fixed effect method. Their model accounted for various covariates, including Village Fund Allocation (ADD), Revenue Sharing Funds (Dana Bagi Hasil), Village Original Income (PADes), financial assistance, GRDP per capita, population, employment, GRDP deflator, and island dummy variables. They concluded that Dana Desa significantly affects village status, though the regression coefficient indicated a relatively small economic impact. Other studies using different methods corroborate these findings. Nadia & Mahi (2023) used OLS cross-sectional multiple linear regression, Ekawati et al. (2022) conducted qualitative in-depth interviews, and Yusuf & Khoirunurrofik (2022) applied qualitative mapping and tagging techniques. All concluded that Dana Desa significantly impacts village progress and IDM values in Indonesia. At the provincial, district, and subdistrict levels, studies such as those by Halim & Taryani (2023) in East Nusa Tenggara Province, Iftitah & Wibowo (2022) in Gowa District, and Rezkia & Yunani (2023) in Barabai Subdistrict consistently found significant contributions of Dana Desa to IDM improvement using various regression models.

In contrast, Hilmawan et al. (2023) analyzed the interplay between Dana Desa, Village-Owned Enterprises (BUMDes), and PADes, employing OLS, Difference in Difference (DiD), and Structural Equation Modelling (SEM). While OLS results indicated a positive correlation, DiD results suggested that increased Dana Desa funding has not fully supported IDM improvement. The SEM analysis highlighted the critical role of PADes as a mediator in enhancing Dana Desa and IDM values. Similarly, Yulitasari & Tyas (2020) found that Dana Desa did not significantly contribute to village progress in Central Java Province, suggesting that factors other than Dana Desa were more influential. In summary, empirical evidence generally supports the positive contribution of Dana Desa to village development, as measured by IDM. However, the impact has been less significant in some regions, a finding closely tied to local Dana Desa management practices.

Meanwhile, concerning Southeast Asian countries, Boonperm et al. (2013) examined the Thai Village Fund program, initiated in Thailand in 2001, focusing on the income and expenditure of rural communities. The study utilized the fixed effects model regression method on panel data from the 2002 and 2004 socioeconomic surveys. The study's results demonstrated that the Thai Village Fund program successfully increased the household expenditure rate by 3.5% and the income rate by 1.4%. Bank and cooperative loans had a more substantial influence on income than expenditure. Furthermore, the effect of Village Fund loans was most significant for low-income households, which is consistent with the program's "pro-poor" objective.

In contrast to the findings of Boonperm et al. (2013), Srisuksai (2021) researched the Village Fund's effect on poverty in rural Thailand, characterizing the effect through the community's financial performance. This study utilized data from four provinces in Thailand, comprising 423 respondents. The results indicated that the Village Fund in Thailand did not increase savings, income, consumption, or community assets. This

suggests that the Thai Village Fund is ineffective in improving the welfare of low-income individuals in rural Thailand.

Given the differences in the empirical results discussed above, this study aims to provide an empirical contribution by disaggregating the independent variable of Village Fund realization into five (5) Village Fund Fields. This approach seeks to identify which specific Village Fund Fields have the most significant influence on the IDM value in West Java Province, an analysis that has not been previously conducted. Therefore, this study examines the influence of Village Funds on IDM values and assesses the impact of the Village SDGs policies on changes in IDM in West Java. Additionally, this study's results contribute the latest empirical findings on the influence of Village Funds and Village SDGs on village development in West Java Province. The findings provide actionable recommendations for both the central government and villages regarding the prioritization and utilization of Village Funds in West Java Province.

RESEARCH METHODS

This study adopts a quantitative analysis approach, utilizing statistical methods for data examination. Linear regression and Difference-in-Difference (DiD) are the primary techniques employed, focusing on panel data spanning 2018 to 2023. The 2018 starting point was selected because it marks the implementation of standardized expenditure classification by activity codes across the five *Dana Desa* sectors. Statistical computations are facilitated using data processing software, specifically Microsoft Excel 2021 and Stata 17.0.

The dataset includes all villages in West Java Province that receive *Dana Desa* funding. Data collection involves compiling information from various authoritative sources, including the official websites of the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (*Kementerian Desa PDTT*), the Central Statistics Agency (*Badan Pusat Statistik*), and the Online Monitoring SPAN (OMSPAN) application of the Ministry of Finance. These sources provide comprehensive and reliable data, underpinning the analysis and ensuring the study's accuracy and relevance to current village development dynamics.

Furthermore, to analyze the effect of Dana Desa on the Village Development Index (IDM) in West Java, this study employs a panel data regression model, referencing the methodology used by Hilmawan et al. (2023). The selection of explanatory variables or covariates for the regression equation is informed by the comprehensive research conducted by Aji & Qibthiyyah (2023), which identified several key factors influencing village development.These variables include:

$$IDM_{it} = \alpha + \beta vill\_fund_{it} + \sum_{j=i}^{n} \delta cov_{it} + \varepsilon_{it} \quad (1)$$

In this model, IDM represents the Village Development Index. Vill_fund denotes the logarithm of Village Funds per sector (in rupiah), encompassing five specific categories: village governance, village development implementation, village community development, village community empowerment, and disaster management, emergencies, and village urgent needs. Cov represents the logarithm of the covariates (in rupiah), which consist of revenue sharing from local taxes and levies, village original income, and financial assistance. i is the cross-sectional unit representing all villages in West Java. α is the constant/intercept, β is the regression coefficient of the Village Fund variable, δ is the regression coefficient of the covariate, t is the time-series unit, and ε is the error term.

The determination of control variables representing other village income aspects, as referenced in the study by Aji & Qibthiyyah (2023), is based on the premise that components like Revenue Sharing from Local Taxes and Levies, Village Original Income, and Financial Assistance can expand the budgetary capabilities of village governments. This expanded capacity enhances their ability to provide public goods, thereby potentially increasing IDM values. To address the research question regarding the

impact of Village Funds aligned with *SDGs Desa* on accelerating IDM growth in West Java, we utilize a Difference-in-Difference (DiD) regression model. This model references the methodologies employed in studies such as Hilmawan et al. (2023).

$$idm_{it} = \alpha_i + \beta Treat_{it} + \delta_t + \gamma(Treat_{it}.t) + \varepsilon_{it} \quad \text{.....(2)}$$

with:

$$\gamma = \left(idm_{treat.after} - idm_{control.after}\right) - \left(idm_{treat.before} - idm_{control.before}\right) \quad \text{...(3)}$$

In the Difference-in-Difference (DiD) model, idm is the Village Development Index. $Treat_{it}$ is the treatment variable group, measured using a dummy variable (value of 1 for villages receiving treatment and 0 otherwise). T is the time dummy variable group, set to 1 for the after-treatment period (2021–2023) and 0 for the before-treatment period (2018–2020), where the time parameter δ captures the time effect. $Treat_{it}.t$ is the interaction variable, which represents the interaction between the treatment and time dummy variables, capturing the differential impact of the policy (Village SDGs or *SDGs Desa*) on IDM growth before and after its implementation. ε is the error term.

The criteria for determining the treatment and control groups are based on mapping *Dana Desa* activities that support *SDGs Desa*, as outlined in the study by Permatasari et al. (2021). Consequently, the treatment group includes villages where the realization of *Dana Desa* in support of *SDGs Desa* achievements exceeds the average for all villages in West Java Province. The control group comprises those villages that do not meet this criterion. The post-treatment period in this study begins with the implementation of the *SDGs Desa* policy in 2021 and extends through 2023, while the pre-treatment period ranges from 2018 to 2020.

RESULTS AND DISCUSSION

An overview of the data structure and the variables involved in West Java Province can be described using descriptive statistics. As presented in Table 1, the average Village Development Index (IDM) value for a village in West Java is 0.7356, which typically classifies it as a Developed Village, with a standard deviation of 0.0929.

The lowest recorded IDM value is 0.4919, categorizing Bangbayang Village in Sukabumi Regency as a Backward Village during the 2017–2018 period. However, data from the Ministry of Village Development (Kemendesa) indicate that, since 2021, no villages in West Java have been classified as Backward or Very Backward. According to the most recent data, of the 5,312 villages in West Java Province, 508 villages (9.57%) are categorized as Developing Villages, 2,356 villages (44.34%) as Developed Villages, and 2,448 villages (46.09%) as Independent Villages. This distribution highlights the substantial social, economic, and ecological resources available to villages in West Java, along with their capacity to leverage these resources for community welfare (Kementerian Desa, 2016).

Table 1. Descriptive Statistics

Variable	Obs.	Min	Max	Mean	Std. Dev
Village Development Index (IDM)	31,872	0,4919	1.0000	0.7356	0.0929
Total Village Fund (vill_fund)	31,872	0	3,853,224,000	1,063,278,502	302,918,336
Village Governance Administration (vill_gov)	31,872	0	967,403,000	967,403,000	36,561,834
Village Development Implementation (vill_dev)	31,872	0	2,682,348,491	2,682,348,491	588,091,160
Village Community Development (vill_comdev)	31,872	0	1,174,563,500	1,174,563,500	43,524,193
Village Community Empowerment (vill_comemp)	31,872	0	1,052,083,000	1,052,083,000	96,819,087
Village Disaster Management Sector (vill_disas)	31,872	0	2,750,771,300	2,750,771,300	280,821,252

Source: Ministry of Finance and Ministry of Village (processed)

The descriptive statistics for Village Funds (vill_fund) reveal that villages in West Java have an average Village Fund allocation of IDR 1.06 billion, with a standard deviation of IDR 302.92 million. This considerable variation underscores the diverse allocation of Village Funds across different villages in the province. Notably, the villages with the highest Village Fund realizations, approximately IDR 3 billion, include Babelankota and Bantarjaya Villages in Bekasi Regency and Cisarua Village in Bogor Regency.

Regarding fund allocation by sector, the Village Development Sector (vill_dev) and the Disaster Management Sector (vill_disas) receive the highest average funds compared to other sectors. They are followed, in descending order of allocation, by the Village Empowerment Sector (vill_comemp), the Village Community Development Sector (vill_comdev), and finally, the Village Government Sector (vill_gov). The Village Development and Disaster Management Sectors also exhibit significant variations in funding, with standard deviations of IDR 292 million and IDR 281 million, respectively. This variation highlights a particular emphasis on disaster management in West Java villages, especially evident during the COVID-19 pandemic, notably in the distribution of the Village Direct Cash Assistance (BLT) program.

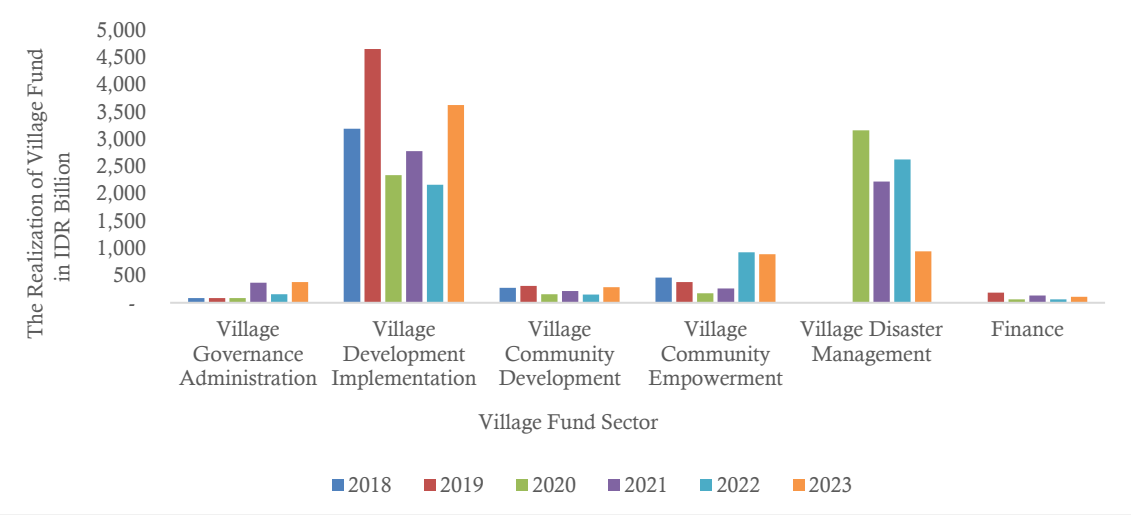

Figure 5. The realization of the Village Fund by sector in West Java from 2018 to 2023

Source: Ministry of Finance, 2018-2023

Furthermore, Figure 5 details the yearly allocation of the Village Fund by sector from 2018 to 2023. Data indicate that the majority of funds in West Java Province were directed to the Village Development Sector, accounting for approximately 55.31%. While this sector consistently received the highest allocations, a slight decline occurred from 2020 to 2023 due to funds being reallocated for COVID-19 management through the BLT Desa program. The primary focus of the Village Development Sector is the construction and maintenance of physical infrastructure, including neighborhood roads, alleys, residential roads, bridges, culverts, drainage systems, and other related infrastructure. The Village Community Empowerment and Community Development sectors received smaller, stable allocations over the years. Figure 5 illustrates how the priorities of village government expenditures can shift over time, often influenced by urgent needs or new central government policies.

The analysis included a panel data regression, starting with model selection using the Chow, Hausman, and Lagrange Multiplier Tests. According to the results displayed in Table 2, the Fixed Effect Model (FEM) was identified as the most suitable model. Subsequently, classical assumption tests were performed to ensure the regression equation meets the BLUE (Best Linear Unbiased Estimator) criteria. These tests—comprising the Normality Test, Multicollinearity Test, Autocorrelation Test, and Heteroscedasticity Test, and shown in Table 3—revealed issues with autocorrelation and heteroscedasticity. These issues commonly arise when the panel data structure has more cross-sectional units than time-series units. To address these problems, as suggested by Gujarati & Porter (2008) and Wooldridge (2018), the Fixed Effect Clustered/Corrected Standard Error method was applied.

Table 2. Model Selection

Test	Hypothesis	Prob. Chi-Square	Decision
Chow	H_0: CEM H_1: FEM	0.0000	FEM
Hausman	H_0: REM H_1: FEM	0.0000	FEM
Lagrange Multiplier	H_0: CEM H_1: REM	0.0000	REM

Source: Data Processed, 2025

Table 3. Classical Assumption Test

Test	Hypothesis	Prob. Chi-Square	Decision
Multicollinearity	H_0: vip>10 H_1: vip<10	1.01	No multicollinearity
Autocorrelation	H_0: p<5% H_1: p>5%	0.0000	Autocorrelation occurs
Heteroscedasticity	H_0: p<5% H_1: p>5%	0.0000	Heteroscedasticity

Source: Data Processed, 2025

Subsequently, after selecting the appropriate model and addressing the issues of autocorrelation and heteroscedasticity, regression analysis was conducted, with the results presented in Table 4. According to the regression results in equation (1), it is evident that village funds in West Java Province have a positive and significant effect on the IDM score, with a significance level of $\alpha < 1\%$. The regression coefficient for village funds in the equation is 0.0113, indicating that a 1% increase in the realization of village funds leads to a

0.0113-point increase in the IDM score. From these findings, it is clear that the realization of village funds significantly enhances the IDM score in West Java Province, leading to the rejection of the null hypothesis (H_0) in Hypothesis 1 and the acceptance of the alternative hypothesis (H_1).

Table 4. Regression Results

Variables	Dependent Variable: IDM	
	(1)	(2)
Constant (C)	0.4496***	0.5675***
	(0.0327)	(0.0087)
Total Village Fund (ln)	0.0113***	-
	(0.0010)	
Village Governance Administration (ln)	-	0.0011***
		(0.0002)
Village Development Implementation(ln)	-	0.0030***
		(0.0003)
Village Community Development (ln)	-	0.0001**
		(0.0001)
Village Community Empowerment (ln)	-	0.0008***
		(0.0001)
Village Disaster Management Sector (ln)	-	0.0023***
		(0.0001)
Revenue Sharing of Taxes and Regional Levies (ln)	0.0010***	0.0011***
	(0.0002)	(0.0002)
Village-Owned Revenue (ln)	0.0010***	0.0013***
	(0.0001)	(0.0001)
Financial Assistance (ln)	0.0008***	0.0008***
	(0.0002)	(0.0002)
Obs.	31.872	31.872
R-Squared	0.6328	0.6232
Prob.	0.0000	0.0000

Significance at *α<10%, ** α<5%, *** α<1%
Source: Data Processed, 2025

When examining the results in Equation (2), it is clear that the IDM score in West Java Province is most significantly influenced by activities in the Village Development Sector, with a primary focus on physical infrastructure development. This is underscored by the sector's regression coefficient, which is the highest at 0.0030 and is statistically significant. These results emphasize the critical role that infrastructure development continues to play in enhancing the IDM score and overall rural development in West Java, despite funding limitations imposed by the Village BLT program during the COVID-19 pandemic.

Gibson & Olivia (2008) noted that the development of road and electricity infrastructure can drive rural economic growth by improving the quality of life for farmers and reducing expenses for non-farmers. Additionally, using village funds for infrastructure development can increase the efficiency of goods distribution and enhance transportation access, improving the Rural Access Index (RAI), which measures the proportion of rural people living within 2 kilometers of an all-season road (Sasmito, Studi, Administrasi, Tribhuwana, & Malang, 2017; Wahyuni, Ikhsan, Damayanti, & Khoirunurrofik, 2022). However, Gansauer et al. (2024) caution that infrastructure projects that fail to consider local social needs can lead to inefficiencies, especially if the projects do not align with community values and needs.

Furthermore, the limited capacity of village officials to manage and oversee infrastructure spending can hinder the quality and utilization of these projects by the villagers.

The results from equation (2) also reveal that the Village Disaster Management Sector positively and significantly impacts the IDM score, with a coefficient of 0.0023. This relates closely to the social safety net policies introduced during the COVID-19 pandemic and efforts at poverty reduction through the Village BLT program initiated in 2020. However, the distribution of social assistance aimed at income equality must be accurately targeted to avoid exacerbating inequality (Ramdani, 2024).

Moreover, the Community Development and Village Community Empowerment Sectors significantly influence the IDM score, with coefficients of 0.0001 and 0.0008, respectively. These sectors focus on improving knowledge, behaviors, skills, and resource utilization, including initiatives in fisheries, agriculture, governance, women's empowerment, SMEs, and village-owned enterprises (BUMDes) (Kemendagri, 2018; Wicaksono et al., 2019). Marthalina (2018) suggests that women's empowerment and SME development can significantly enhance rural welfare and development.

Based on equations (1) and (2), village funds and other variables like revenue-sharing funds (BHPRD), financial aid (bankeu), and original village revenue (pades) also contribute positively and significantly to IDM scores, though with smaller coefficients. BHPRD funds allow villages discretion in spending, while financial aid often has predetermined uses, such as operational costs and salaries for village officials (Mucharomah, 2013; Purbasari, Wardana, & Pangestu, 2018).

Overall, all sectors funded by village funds positively impact IDM scores, demonstrating that, despite constraints in infrastructure spending, development opportunities are present in other sectors. Beyond physical infrastructure, rural development efforts can also emphasize social capital and community empowerment, including education and skills development. Balancing physical infrastructure with social capital is vital for accelerating rural development (Anam et al., 2023; Bachrein, 2016). Empowering communities through education and training improves quality of life and resource efficiency, supporting a comprehensive, holistic, balanced approach to sustainable development and community awareness (Sobczyk, 2014).

This research aligns with studies by Aji & Qibthiyyah (2023), Andari & Fitria (2023), Halim & Taryani (2023), and Nadia & Mahi (2023), which found significant contributions of village funds to IDM scores in Indonesia, contrasting with Yulitasari & Tyas (2020), who found no significant impact in Central Java. This highlights the complexity of village funds' impact on IDM scores, underscoring that while they are intended to drive rural development, poor management and lack of community participation can diminish their effectiveness.

The difference-in-differences (DiD) method was utilized to assess the impact of the Village SDGs policy on the IDM score in West Java Province. To establish the criteria for the treatment and control groups, village fund activities that support Village SDGs achievements were mapped based on the research conducted by Permatasari et al. (2021). This mapping showed that, on average, villages in West Java allocated IDR 634 million of village funds to support SDGs achievements. The results of this mapping process were then used to categorize villages into treatment and control groups, as detailed in Table 5.

Table 5. Determination of Treatment and Control Groups

Description	***Treatment***	***Control***
Village Criteria	Realization of Village Funds for Village SDGs ≥Rp634 million	Realization of Village Funds for Village SDGs <Rp634 million
Before (2018-2020)	7,834 Villages	8,102 Villages
After (2021-2023)	7,037 Villages	8,899 Villages
Total	14,871 Villages	17,001 Villages

Source: Data Processed, 2025

The DiD results in Table 6 show that before the Village SDGs (2018-2020) implementation, the average IDM score difference between the control and treatment groups was -0.013. After implementing the Village SDGs (2021-2023), this difference decreased to -0.003, resulting in a DiD value of 0.010, which was not statistically significant. This outcome suggests that aligning village fund usage with Village SDGsdid not positively and statistically significantly impact IDM scores in West Java Province. Therefore, the null hypothesis (H0) for Hypothesis 2 was accepted, and the alternative hypothesis (Ha) was reject.

Table 6. Difference in Differences Results

Outcome var. (1)	**Idm**	**S. Err.**	**|t|**	**P>|t|**
Before				
Control	0.700			
Treated	0.687			
Diff (T-C)	**-0.013*** **	**0.003**	**-4.05**	**0.001**
After				
Control	0.779			
Treated	0.776			
Diff (T-C)	**-0.003**	**0.006**	**0.45**	**0.658**
DiD	**0.010**	**0.006**	**1.61**	**0.125**
Obs. (n)	Before	After	Total	
Control	8,102	8,899	17,001	
Treated	7,834	7,037	14,871	
Total	15,936	15,936		
R-Square	0.21	Obs.	31,872	

Significance at *α<10%, ** α<5%, *** α<1%
Source: Data Processed, 2025

The DiD findings in this study align with those of Hilmawan et al. (2023), who, after analyzing data across Indonesia and specifically within the Java-Bali and non-Java-Bali regions, found no statistically significant impact of village funds on IDM scores. They concluded that local culture, village sociology, and unobserved village assets might influence outcomes rather than the funds acting as a direct statistical "cause" for increased IDM scores. Several practical reasons might explain these findings. For instance, village fund absorption in 2016 reached 99.4% (IDR 46.98 trillion allocated, IDR 46.68 trillion spent), but by 2020, the absorption rate dropped to 83.05% of the IDR 71.19 trillion allocated, primarily due to the COVID-19 pandemic. Additionally, in 2020, the Ministry of Finance redirected much of the village fund allocation toward social safety net programs through direct cash transfers (BLT) for village households,

significantly limiting village governments' flexibility in allocating resources for other programs.

Moreover, studies by Permatasari et al. (2021), Ramdani et al. (2024), and Nadia & Mahi (2023) highlight the crucial role of village leaders' understanding and education level in the success of programs in villages. Permatasari et al. (2021) noted that many village heads lacked awareness and comprehension of SDGs programs, often focusing predominantly on infrastructure development supporting SDGs 9 and 11 while neglecting other SDGs targets. Nadia & Mahi (2023) found that village funds are more effective in improving village status and economic growth when village heads have education levels above high school. According to data from West Java's PMD Office in 2022, only 35.70% of village heads in West Java had an education above high school, suggesting that the majority had a high school education or lower. These factors likely contributed to the suboptimal implementation of the Village SDGs program to accelerate IDM improvements in West Java.

CONCLUSION

Based on a descriptive statistical analysis in West Java Province, a significant portion of village fund realisation is allocated to physical infrastructure expenditures in the Village Development Sector. Panel data regression results further confirm that Village Funds positively and significantly affect the IDM score. Specifically, the implementation of physical infrastructure development activities, which receive the highest funding, has the most substantial influence on the IDM score in West Java. Additionally, the Village Disaster Management Sector, which includes the Village BLT program, has had a positive and significant effect on the IDM score, particularly due to COVID-19. Meanwhile, despite relatively low funding, activities in the Community Development and Village Community Empowerment sectors positively and significantly impact the IDM score. However, allocating village funds, while sufficient for various rural development activities, requires a more balanced prioritisation. The focus should not be solely on physical infrastructure, but also on enhancing social capital and building the capacity of village officials and community members.

Furthermore, the DiD analysis concludes that the SDGs Village program implemented in West Java has not significantly improved the IDM score. This outcome suggests that village governments in West Java may not fully and effectively implement the SDGs Village program, contributing to the slow growth in the IDM score. Factors such as limited fiscal space due to reallocating funds to the Village BLT, inefficiencies in physical infrastructure expenditures, the relatively low education level of most village heads, and a general lack of understanding among village officials about SDGs implementation contribute to suboptimal outcomes. In contrast, DiD results at the district level, particularly in Bogor and Cianjur within West Java Province, show that the SDGs Village policy positively and significantly impacts the IDM score. This variance is likely due to the higher education levels of village heads in these districts, which facilitate better understanding and implementation of the SDGs Village program.

Policy recommendations include encouraging central and Village governments to allocate village funds across various sectors, such as the Village Community Empowerment Sector, to ensure more balanced and holistic rural development. Enhancing the capacity of village officials and community members is crucial for increasing the efficiency of physical infrastructure projects and ensuring that high infrastructure expenditures have a more effective impact on rural development. Additionally, aligning village fund activities with the SDGs Village framework should continue to provide more targeted and sustainable rural development.

This study implies that policy changes by the central and Village governments in West Java may be needed to prioritize annual village fund allocation more effectively. It might also lead to limitations on village fund activities in sectors deemed insignificant to rural development and an increase in training programs to enhance the capacity of village officials and community

members. However, the study's limitations include not accounting for the impact of the COVID-19 pandemic from 2020 to 2023 and the effects of natural disasters that may have damaged village infrastructure in some areas of West Java. Additionally, the study focuses solely on the characteristics and conditions of villages in West Java, which may differ from those in other provinces in Indonesia. Future research incorporating these factors could provide a more comprehensive analysis of the impact of village funds on rural development.

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