REVEALING THE IMPACT OF REGIONAL GOVERNMENT FUNCTION BUDGET PATTERNS ON ACHIEVEMENTS SDG 11 IN INDONESIA

Rahmi Dwi Novitasari✉, Sugianto
Universitas Tadulako, Palu, Indonesia
✉rahmi.yeoja08@gmail.com

ABSTRACT

This study aims to analyze the influence and effectiveness of local government budget allocations on nine main functions in achieving SDG 11 in Indonesia, focusing on decent and affordable housing. This study uses a quantitative method with 1,424 observations from 356 provinces/districts/cities during 2019–2023 through propositional sampling techniques, and it was analyzed using individual regression. The study results indicate variations in the influence of budget allocations on achieving SDG 11. The budget for public services, housing and public facilities, tourism, and culture negatively affect SDG 11. In contrast, the budget for the environment and education positively affects SDG 11, while the budget for the economy, health, and social protection does not show an effect. Control variables, such as government age and status, positively affect, while geographical location has no effect. The theoretical implications of this study strengthen the theory that appropriate budget allocation can improve access to decent housing, clean water, and sanitation. Practically, this study guides local governments in formulating more effective budget allocation policies to support social development and the achievement of SDG 11 in a sustainable manner.

Keywords: budget, SDG 11, decent and affordable housing, local government.

INTRODUCTION

The sustainable development goals (SDGs), adopted by 193 UN member states in 2015, set out 17 interrelated goals to achieve global well-being. One of these goals is SDG 11, which aims to make cities and human settlements inclusive, safe, resilient and sustainable (Bappenas 2023). SDG 11 is highly relevant in urbanization, where urban development must balance economic, social, and environmental aspects to support a quality life for all urban communities. However, even though the SDGs have been launched for eight years, the implementation of SDG 11 still needs to be improved, especially in Indonesia. The main problem lies in the need for more budgeting that optimally supports the achievement of SDG 11. Rapid urbanization has led to high population density in large cities, while access to decent and affordable housing remains a significant challenge (Beccarello and Di Foggia 2022; Sengupta and Sengupta 2022). In addition, waste management, public transportation, and public facilities often need to be improved to meet the community's increasing needs.

The challenges of budgeting at the local government level significantly hinder the progress of sustainable development, particularly SDG 11, which focuses on making cities and human settlements inclusive, safe, resilient, and sustainable. In Indonesia, these challenges are compounded by corruption,

inefficiency, and the lack of transparency in budgetary practices. Previous research has indicated that although budgets are meant to be a strategic tool for achieving sustainable development, their impact on SDG 11 remains inconsistent. For instance, budget allocations for sectors related to housing and settlements, central components of SDG 11, often fall short of addressing Indonesia's growing urbanization and housing needs (Silvia and Myrna 2023).

Empirical studies have further highlighted the disparities in budget allocation patterns and their implications for achieving SDG 11. David et al. (2024) found that elections for regional heads significantly influence the allocation of budgets, with social functions and public facilities receiving higher funding during election periods. However, this pattern often comes at the cost of economic functions vital for long-term sustainability. Meanwhile, studies by the International Budget Partnership 2021 emphasized the role of budget credibility in achieving SDG, pointing out that while specific social protection programs have seen budget increases, local governments often struggle with inefficient budget execution and planning, further undermining SDG 11 goals.

This problem is compounded by challenges in budgeting practices at the local government level. Although public budgets are supposed to be a strategic tool for achieving inclusive and sustainable development, corruption, inefficiency, and lack of transparency remain significant obstacles (Salmon et al. 2022). Previous research has shown that budgets for different sectors can support sustainable development, but their impact on SDG 11 is often inconsistent. For example, a study by Aliva and Ilhamsyah (2021) found that budget allocations in Indonesia are often insufficient for adequate housing and settlements, which are central to SDG 11. Furthermore, a study by Karyoto, Wiranti, and Putera (2024) also found that despite increased budgets for public infrastructure, housing quality in certain areas remains low, indicating an imbalance in budget distribution and utilization. Another study revealed Arianto and Nantabah (2020) that despite increased budget allocations for the health and education sectors, housing and infrastructure sectors are often neglected, hampering the achievement of SDG 11. Thus, inconsistency in budget allocation and lack of effectiveness in its utilization are significant problems in achieving SDG 11 (Mansir 2019).

Several international studies have discussed the successes and challenges in achieving SDG 11. For example, Cohen (2006) discusses the challenges of urbanization in developing countries, while at the same time, Larsen et al. (2016) highlight the importance of cross-sectoral policy integration for sustainable urban development. On the other hand, it reveals the difficulties policymakers face in designing the proper budget to achieve SDG targets, including SDG 11 (Guariso, Castañeda, and Guerrero 2023). However, these studies mainly focus on the global context or developed countries, with little attention to local government budget patterns in Indonesia. This study is novel in its analytical approach that focuses on the functional budget patterns of local governments, which have not been widely studied in the Indonesian context. Using quantitative data-driven methods, this study aims to identify specific indicators that influence decent and affordable housing and evaluate inconsistent relationships compared to previous studies.

The urgency of this research lies in the fact that, according to data from the BPS website, 63.15% of households in Indonesia have access to decent

housing. However, more than 40% still face significant challenges in meeting these basic needs. Despite various programs and policies, there remains a research gap in understanding how budgetary allocations at the local government level directly influence the achievement of SDG 11, particularly in providing affordable and inclusive housing. This study addresses this gap by employing a novel analytical approach focusing on functional budget patterns, a perspective underexplored in the Indonesian context. This research highlights critical inefficiencies by identifying specific budgetary indicators and evaluating their inconsistencies. It provides strategic policy recommendations to local governments to increase access to decent housing and support the achievement of SDG 11 more efficiently and sustainably.

LITERATURE REVIEW

Agency Theory

Agency theory provides an analytical framework for understanding the relationship between principals and agents in an organizational context, with a primary focus on issues of information asymmetry and goal alignment between the two parties, although principals often face limitations in verifying agents' actions directly (Jensen and Meckling 1976). In the context of local government in Indonesia, this theory can explain how local government budgets are managed by the bureaucracy (as an agent) on behalf of the community (as a principal) to achieve outcomes that are in line with sustainable development policies, incredibly sustainable development goals (SDGs) 11, which focuses on inclusive, safe, resilient, and sustainable cities and settlements (Mitnick 2021).

Sustainable Development

SDG 11 emphasizes the importance of creating inclusive, safe, resilient and sustainable cities and communities, with adequate and affordable housing as a key indicator of success (Jain, Gue, and Jain 2023). T Providing adequate housing is particularly acute in countries facing rapid urbanization, where demand for housing is increasing (Dea, Kaleka, and Ngaku 2024). Adequate housing encompasses not only the physical quality of buildings but also access to essential services such as clean water, sanitation and a healthy environment, which are prerequisites for a quality life (Bedi and Coffie 2020). Affordable housing has a strategic role in reducing social disparities and improving the welfare of urban communities (Prakash et al. 2020). To achieve this, effective government and private sector collaboration is needed to develop affordable housing, especially in cities with significant population growth. In addition, access to adequate housing contributes to social and economic stability by encouraging people to live and work in safe and supportive environments (Feng et al. 2023; Peterson and Rojo-Mendoza 2023). Therefore, achieving the SDG 11 target of adequate and affordable housing requires holistic urban planning policies and the active participation of various stakeholders. This approach will be key in addressing housing challenges and realizing inclusive and sustainable urban development.

Budgeting Effectiveness

Budget effectiveness is one of the keys to achieving sustainable urban development. Appropriate budget allocation allows the optimization of limited resources to achieve predetermined development targets (Pasoloran and Wibisono 2022). Budget effectiveness highly depends on the government's ability to formulate relevant policies and allocate funds proportionally according to development needs (Augustine 2022). Budget allocations across the nine core functions—public services, security, economy, environment, housing, health, tourism, education, and social protection—strategically support development goals. For example, the budget for housing and public facilities directly contributes to providing adequate and affordable housing (Hege, Brimont, and Pagnon 2019). While the budget for the environmental function supports the creation of healthy green spaces and improves air quality in urban areas (Apriani et al. 2023). In addition, budget allocations for security and social protection functions enhance social stability and community well-being, thereby creating inclusive and resilient cities (James et al. 2018). Effective budget management not only improves efficiency but also supports the sustainability of urban development in line with the principles of SDG 11 (David et al. 2024).

Hypothesis Development

The budget for public service functions, which includes investment in basic infrastructure such as roads, lighting, and other public facilities, has a positive influence on the achievement of SDG 11 in Indonesia. Agency theory explains that the relationship between the government (as the principal) and public service providers (as agents) involves the management of resources to meet public interests, including developing basic infrastructure that supports decent housing. A study by Basavalingaiah et al. (2020) reveals that infrastructure investment is important for creating a livable environment and improving the community's quality of life. Goddard and Mkasiwa (2016) found that public infrastructure development improves the quality of sustainable settlements. Based on agency theory, efficient budget allocation for this sector allows SDG 11 to be achieved. H1: The public service function budget positively affects SDG 11 achievement.

The budget for security and order functions that focus on improving the security system and law enforcement can contribute to the achievement of SDG 11 because good security creates a livable environment. In the context of agency theory, the government, as the principal, is responsible for allocating the budget appropriately to ensure public security. A high level of security is associated with improved quality of life and community satisfaction with their place of residence (Frederikse et al. 2016). Increased security improves the housing quality and the sustainability of settlements (Mead and Sarkar 2014). H2: The budget for security and order functions positively affects SDG 11 achievement.

The economic function of the budget, which includes investment in local economic development, job creation, and improving the community's economic conditions, has a positive effect on the achievement of SDG 11. Agency theory explains that the government acts as a principal who manages the budget to ensure the achievement of economic development goals, which improves the community's housing quality and living conditions. Syafitri, Sudirman, and

Sugianto (2020) state that local economic development can improve the quality of life, while Mirzamani, Naderi–Beni, and Mohammadian (2022) emphasize that a growing economy can improve the community's ability to meet housing needs. H3: The economic function budget positively affects SDG 11 achievement.

The budget for environmental functions, which includes investment in environmental management and natural resource protection, has a positive influence on the achievement of SDG 11, given that good environmental quality supports healthy and sustainable housing. Within the agency theory framework, the government (principal) manages the budget to protect the environment and improve the community's quality of life (agent). Naidoo et al. (2021) showed that good environmental management improves housing quality. Aini, Rahmawati, and Sumarsono (2023) state that a healthy environment can reduce disaster risks and support sustainable living. H4: The budget for environmental functions positively affects SDG 11 achievement.

The budget for housing and public facilities functions, including housing construction and providing basic facilities such as clean water and sanitation, play a major role in achieving SDG 11. Agency theory emphasizes the role of government in allocating resources to provide basic community needs, including adequate housing and public facilities. Polzer, Nolte, and Seiwald (2023) state that budget allocation for this sector is important to create a livable environment. Jones and Slack (2010) show that investment in the housing and public facilities sector improves the quality of life. H5: The budget for housing and public facilities functions positively affects SDG 11 achievement.

The budget for health functions that focuses on providing health services and medical facilities can contribute positively to the achievement of SDG 11. Agency theory explains that the government, as the principal, allocates resources to ensure a better quality of life through improving health services. Li, Khalili, and Cheng (2019) found that good health improves the quality of life, which supports healthy and sustainable housing. Menshawy, Shafik, and Khedr (2016) stated that improving health services can improve the socio-economic conditions of the community, which, in turn, impacts the housing quality. H6: The health function budget positively affects SDG 11 achievement.

The budget for tourism and cultural functions, which contribute to the development of attractive cities and increase the attractiveness of residential areas, can play a role in achieving SDG 11. Agency theory suggests that the government, as the principal, manages the budget to improve the tourism and cultural sectors, which, in turn, supports the community's quality of life. The development of the tourism sector can improve city infrastructure and the community's quality of life (Jolly and Budke 2023). Barasa et al. (2017) also stated that the cultural sector can improve the community's quality of life by developing better infrastructure and public facilities. H7: The budget for tourism and cultural functions positively affects SDG 11 achievement.

The budget for education functions that focus on improving access and quality of education can contribute to the achievement of SDG 11 because good education can improve the community's quality of life and support better social development. In Agency theory, the government (as the principal) manages the budget to improve the quality of education, which positively impacts the community's socio-economic conditions. Liu, Jiang, and Liu (2023) show that

quality education can increase economic opportunities, while Tyagi et al. (2021) state that good education can reduce social inequality, increase opportunities for obtaining decent housing, and contribute to the achievement of SDG 11. H8: The budget for education functions positively affects SDG 11 achievement.

The budget for social protection functions, including programs to support vulnerable and poor groups, is essential to ensure everyone has access to adequate housing. Agency theory explains that the government acts as a principal that manages the budget to support vulnerable groups, thereby reducing inequality in access to housing. Zhang, Yan, and Zhang (2023) show that social protection can help reduce poverty and support vulnerable groups in obtaining adequate housing. A strong social safety net can support the achievement of SDG 11 by providing access to adequate housing for all groups. H9: The budget for social protection functions positively affects SDG 11 achievement.
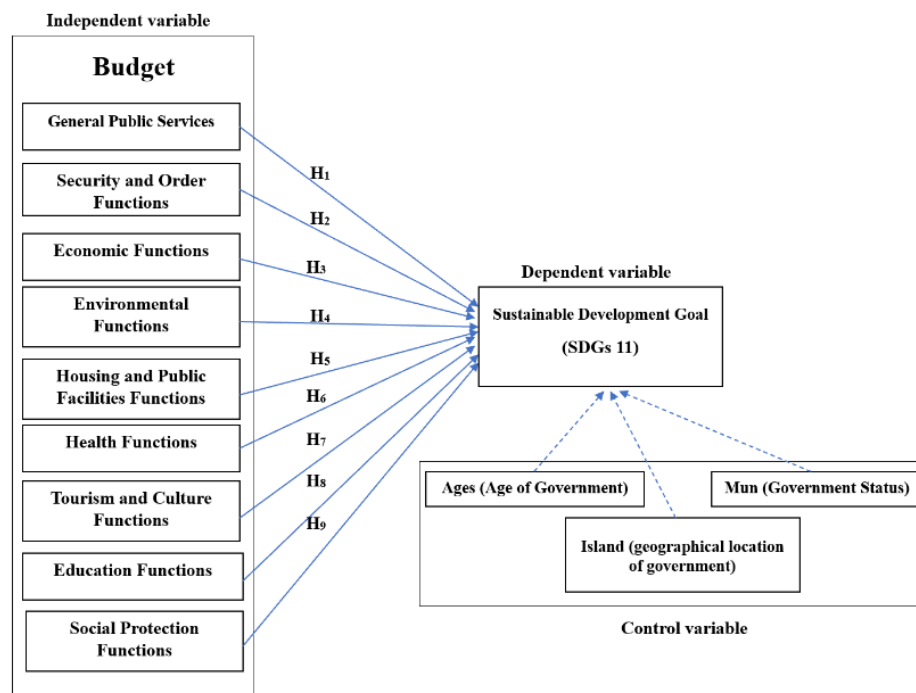

Figure 1 Research Model Framework

METHOD

This study uses a quantitative method with individual regression tests on each indicator of variable x and data normality tests as supporting data to analyze the effect of functional budget spending patterns (x) on the achievement of SDG 11 (y) in Indonesia. A quantitative approach with the collection of numerical data that can be analyzed statistically to test the formulated hypothesis. The propositional sampling technique is used, where samples are selected based on specific criteria relevant to the study. With this method, researchers can obtain more precise and relevant data. In addition, statistical analysis is carried out using Stata as a tool, which allows efficient and accurate data processing and the application of various statistical tests to test the relationship between variables.

The Research Model explains and predicts how changes in one variable will affect other variables. The following is an empirical research model:

$SDG11_{it} = \alpha + \beta Pubserv_{it} + \beta Security_{it} + \beta Econom_{it} + \beta Environ_{it} + \beta Housfac_{it} + \beta Health_{it} + \beta Tourscult_{it} + \beta Educate_{it} + \beta Socialptc_{it} + \beta Ages_{it} + \beta Mun_{it} + \beta Island_{it} + \varepsilon_i.$

Table 1 Research Sample

Information	Amount	Percent
Number of districts/cities/provinces	542	100
No public service budget data available	57	10.51
No security and order budget data available	15	2.76
No economic budget data available	1	0.18
No environmental budget data available	12	2.21
No housing and public facilities budget data available	10	1.84
No health budget data available	0	0
No tourism and culture budget data available	85	15.68
No education budget data available	0	0
No social protection budget data available	3	0.55
Final sample size	356	65.27

Table 1 shows data on local governments in Indonesia, with a population size of 542, 415 districts, 92 cities, and 34 provinces in 2019-2022. Several local governments do not have complete data, namely: public service budgets of 60, security and order budgets of 15, economic budgets of 1, environmental budgets of 12, housing and public facilities budgets of 10, health budgets of 0, tourism and culture budgets of 85, education budgets of 0, and social protection budgets of 3. These data limitations resulted in the final sample used in this study being 356 observations, equivalent to 65.27% of the total local governments in Indonesia in the observation year. The final observation data amounted to 1,424 with the proportional sampling method. The data used came from the Ministry of Finance of the Republic of Indonesia for budget function pattern data and from the Bappenas website for SDG indicator 11.

Table 2 Operational Variables

Name	Formula/Measurements	Scale	Source
Sustainable Development Goals	Percentage data (%) of achievement of SDG 11 indicators residence decent and affordable	Ratio	National Development Planning Agency
Public Services	Pubserv = LN x [Total budget function area]	Ratio	Ministry Finance
Security and Order	Security = LN x [Total budget function area]	Ratio	Ministry Finance
Economic	Econom = LN x [Total budget function area]	Ratio	Ministry Finance

Name	Formula/Measurements	Scale	Source
Environmental	Environ = LN x [Total budget function area]	Ratio	Ministry Finance
Housing and Public Facilities	Housfac = LN x [Total budget function area]	Ratio	Ministry Finance
Health	Health = LN x [Total budget function area]	Ratio	Ministry Finance
Tourism and Culture	Tourscult = LN x [Total budget function area]	Ratio	Ministry Finance
Education	Educate = LN x [Total budget function area]	Ratio	Ministry Finance
Social Protection	Socialptc = LN x [Total budget function area]	Ratio	Ministry Finance
Ages of Government	(Ages) measured with use natural logarithm (LN) of the year stand until year final	Dummy	Ministry of Home Affairs
Government Status	(Mun) is measured with using dummy, "2" if it has province status, "1" if it has city status and "0" otherwise	Dummy	Ministry of Home Affairs
Geographical Location of Government	(Island) is measured using a dummy, namely if "1" regional government status city and "0" otherwise	Dummy	Ministry of Home Affairs

RESULTS AND DISCUSSIONS

Table 3 Descriptive Statistical Results

Variables	Obs	Mean	Std. Dev	Min	Max
SDG11	1,424	56.80	18.52	0.5	93.73
Pubserv	1,424	27.07	0.65	25.8	30.67
Security	1,424	23.22	1.16	17.74	28.68
Econom	1,424	25.57	0.82	23.66	29.91
Environ	1,424	23.50	1.23	17.91	29.64
Housfac	1,424	25.00	1.55	19.12	30.11
Health	1,424	26.29	0.65	24.53	30.25
Tourscult	1,424	22.45	1.43	16.26	27.76
Educate	1,424	26.72	0.81	24.84	30.81
Socialptc	1,424	23.10	1.24	17.17	28.93
Ages	1,424	43.63	23.87	5	72
Mun	1,424	0.30	0.58	0	2
Island	1,424	0.21	0.41	0	1

Source: secondary data (processed, 2024)

Table 3 illustrates the average sample budget of IDR 222.92 trillion, indicating the number of 9 functional budget patterns used with the largest budget in the public service budget function indicator, meaning that budget priorities are allocated to public services, which, of course, are to increase benefits in public services. SDG 11 shows that 56.80% of households have decent and affordable housing in Indonesia, reflecting moderate achievements. The average age of local governments is 43.63 years, indicating the dominance of local governments established before the 1998 reform. Most samples come from districts, with an average of 0.21 islands in the survey area. This information is important for understanding the research context and interpreting the results of further analysis.

Data Normality Test

The standardized normal probability plot (p-plot) is a convenient method for testing normality due to its ability to visually detect deviations from a normal distribution, especially in medium to large data sets. For testing normality, this plot is used by many studies as an effective visual aid in checking the distribution of data against a normal distribution. The plot can detect deviations from normality by comparing the data's quantiles with the normal distribution's quantiles. Chandra (2018) adds that this plot makes it easy to identify whether the data follows a normal pattern, with the data points having to align with the diagonal line. In addition, this plot shows that it is very useful for detecting deviations in the distribution's tails, which formal testing may not detect (Haines and Scheelbeek 2020).
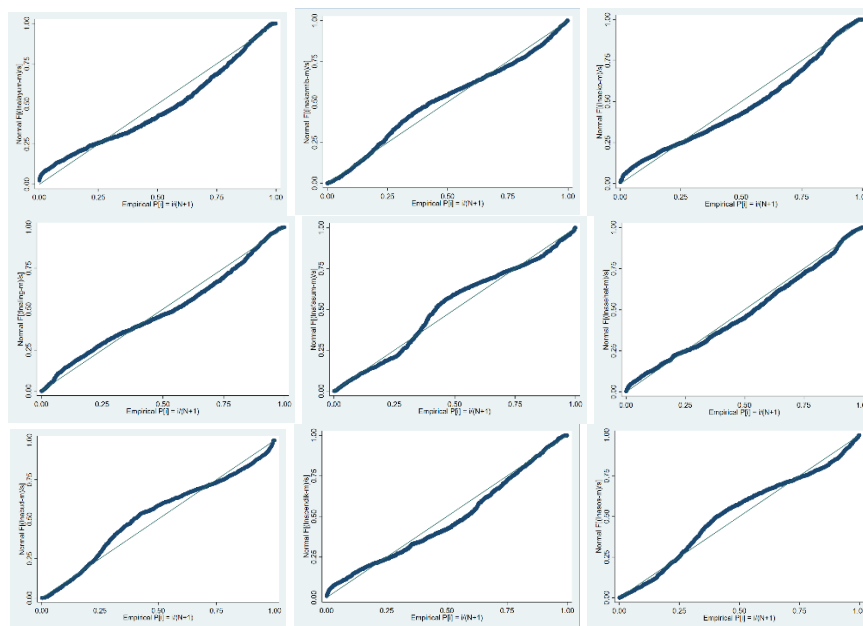

Figure 2 Normality Test of Function Budget Pattern (X)
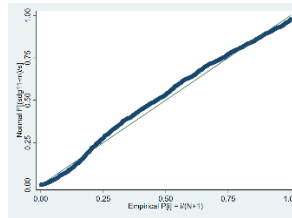*Source: secondary data (processed, 2024)*

Figure 3 Normality Test of SDG 11 (Y)
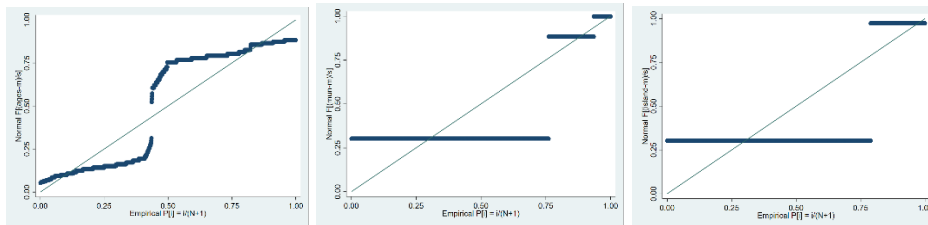*Source: secondary data (processed, 2024)*

Figure 4 Normality Test of Control Variables
Source: secondary data (processed, 2024)

Based on the normality test results of the 10 variables that have been carried out (Figures 2, 3, and 4), most variables follow a normal distribution. This can be seen from the normal probability plot graph, which shows that the data points generally follow a straight line, indicating a normal distribution. However, it should be noted that several variables show slight deviations, especially in the right tail, which indicates the possibility of some extreme data (outliers). While the control variables are categorical (e.g., gender, age group), by definition, these variables do not follow a continuous normal distribution.

Hypothesis Test

Table 4 Hypothesis Test Results

Hypothesis	Coefficient	P-Values	Results
H1: Pubserv → SDG11	-10.826	0.000	Rejected
H2: Security → SDG11	0.228	0.701	Rejected
H3: Econom → SDG11	1.154	0.216	Rejected
H4: Environ → SDG11	2.245	0.000	Accepted
H5: Housfac → SDG11	-1,420	0.002	Rejected
H6: Health → SDG11	-1.294	0.426	Rejected
H7: Tourscult → SDG11	-0.714	0.081	Rejected
H8: Educate → SDG11	6.212	0.000	Accepted
H9: Socialptc → SDG11	-0.162	0.802	Rejected
Ages → SDG11	0.171	0.000	Accepted
Mun → SDG11	7,042	0.000	Accepted
Island → SDG11	2,609	0.059	Rejected

Source: secondary data (processed, 2024)

Table 4 indicates that the function budget variable has a varying influence on the achievement of SDG 11 in Indonesia. The public service budget negatively and significantly affects SDG 11 with a coefficient of -10.826 and a p-value of 0.000, so hypothesis H1 is rejected. While the security and order budget and the

economic budget do not affect SDG 11, with p-values of 0.701 and 0.216, respectively, hypotheses H2 and H3 are rejected. The environmental budget positively and significantly affects SDG 11, with a coefficient of 2.245 and p-values of 0.000, so hypothesis H4 is accepted. However, the housing and public facilities budget negatively and significantly affects SDG 11, with a coefficient of -1.420 and p-values of 0.002, so hypothesis H5 is rejected. The health and tourism-culture budgets do not affect SDG 11, with p-values of 0.426 and 0.081, respectively, so hypotheses H6 and H7 are rejected. On the other hand, the education budget positively and significantly affects SDG 11, with a coefficient of 6.212 and p-values of 0.000, so hypothesis H8 is accepted. While the social protection budget does not affect SDG 11, with p-values of 0.802, hypothesis H9 is rejected. The control variables age and mun positively and significantly affect SDG 11, with p-values of 0.000 and coefficients of 0.171 and 7.042, respectively. In contrast, the island does not affect SDG 11, with p-values of 0.059.

Impact of Public Service Function Budget on Achieving SDG 11

The public service function budget negatively affects SGD 11, meaning that the higher the public service budget function, the achievement of SGDs11, exceptionally decent and affordable housing, will decrease. The public service function budget can have a negative effect; even though the public service budget should improve the quality of services, inefficient or inappropriate allocations can hinder the achievement of decent and affordable housing. Worrall (2009) revealed that the broad scope of public services makes the budget not specifically prioritize decent and affordable housing. These results indicate that in addition to budget effectiveness, it is essential and must be in line with the accuracy of its targets. This analysis aligns with agency theory, where the government, as an agent, allocates resources according to public interest. If the allocation is carried out ineffectively, the impact is reflected in the delay of strategic projects.

The reality on the ground supports these findings. Bureaucratic constraints and weak coordination between institutions often trigger delays in infrastructure projects. This research data confirms that low budget absorption in several regions is correlated with declining achievement of SDG 11. This condition further emphasizes the importance of budget transparency and strict supervision to minimize the risk of project failure (Semuel et al. 2019). The study also shows the negative impact of weak budget management on the accessibility of public services. This supports the findings of Maizunati (2017), who emphasizes that poor budget targeting will hinder the realization of decent and affordable housing for local communities. From the perspective of variable theory, the relationship between budget management and the achievement of SDG 11 illustrates a direct relationship between input (budget) and output (public infrastructure). However, its impact is influenced by the effectiveness of implementation in the field. This shows that bureaucratic reform and community participation are fundamental in increasing accountability and efficiency of budget use.

Impact of Security and Public Order Function Budget on Achieving SDG 11

The security and order function budget does not affect SDG 11, meaning that there is no direct impact of the security and order budget on achieving SDG 11, which is exceptionally decent and affordable housing. The security and order

function focuses on social stability and law enforcement, which, although important, do not directly impact decent housing and urban infrastructure indicators. This finding is to the results of the study by Wijayanti and Mingus (2022) showing that although cybersecurity spending is important for stability, its relatively small allocation in Indonesia has not had a significant impact on other sectors such as housing and urban infrastructure; this causes the budget not to affect the achievement of SDG 11. In this case, agency theory is relevant; where the government as an agent is responsible for ensuring that budget allocations are used efficiently to serve the public interest, in line with the fact that the security and order budget has no effect, then its achievements are by its actual function (Olanrewaju and Adegun 2021).

In the field of implementation, many security initiatives tend to focus on traditional aspects, such as procurement of equipment or improvement of facilities, but pay less attention to prevention programs that involve the community. This is an obstacle to creating inclusive and safe cities, which is one of the goals of SDG 11 indicators of decent and affordable housing. Tsekeris (2012) highlights that urban safety issues are a priority for the security and order budget, so they do not contribute to SDG 11 indicators of decent and affordable housing. This study also supports Ramadhan, Prabowo, and Sadik (2021) findings that indicate the main priorities in the urban security management approach. Community-based programs, such as community-based neighborhood patrols or security education for vulnerable groups, are more effective in creating safe and inclusive urban environments but not specifically for decent and affordable housing indicators. Therefore, to achieve SDG 11, a more targeted budget is needed, and its implementation is optimized.

Impact of the Economic Function Budget on Achieving SDG 11

The economic function budget does not affect SGD 11, meaning that this budget has no direct impact on achieving SDG 11, especially decent and affordable housing. The economic function budget may be more focused on general economic growth, such as increasing GRDP, without specifically supporting the development of decent housing infrastructure (Hanushek and Woessmann 2015). Budget allocation and government spending have a positive effect on economic growth (GRDP) as well as affecting the Human Development Index (HDI), especially related to aspects of education and health, but not directly on decent housing (Fitramadhana 2022). These findings support the view of Siburian (2020) that economic investment without a structured, sustainable development program is not enough to support the achievement of inclusive, safe, resilient and sustainable cities. In the context of agency theory, governments have a responsibility as agents to ensure that economic spending promotes growth and supports sustainable infrastructure. The study also found that the success of the budget's economic function depends largely on the extent to which its programs support sustainable development principles (Usman, Usman, and Sugianto 2016). Budgets focusing on green infrastructure development, community-based economic development, and inclusive job creation have proven to be more effective in supporting SDG 11 than budgets geared solely towards improving aggregate economic growth indicators.

Impact of Environmental Function Budget on Achieving SDG 11

The environmental function budget positively affects SGD 11, meaning that the higher the environmental function, the higher the achievement of SGD 11, especially decent and affordable housing. Research by Kanlayanatam, Kongsin, and Kittipongvises (2022) found that the environmental function budget positively impacts environmental quality, which is in line with the objectives of SDG 11. This is because investment in environmental functions supports urban sustainability through water management, sanitation, and climate change mitigation, thereby supporting the goal of decent housing (Rasul 2016). This study reveals that a larger budget allocation for environmental functions significantly impacts achieving SDG 11, particularly in creating inclusive, safe, resilient and sustainable cities. This finding is consistent with research by Basha-Jakupi, Kuleta, and Navakazi (2022), which shows that increasing budget allocation for environmental programs contributes to improving environmental quality and sustainable infrastructure, such as reducing pollution and providing green open spaces.

In the context of agency theory, governments have a responsibility as agents to manage environmental budgets efficiently to meet the interests of society. The study also found that budgets supporting green infrastructure projects, such as city parks and eco-friendly transport routes, can improve mobility and sustainable livability in urban areas. Cities that invest in climate change mitigation programs, including renewable energy and sustainable urban design, show more significant success in achieving SDG 11 targets (Congge, Bahri, and Nurhidayat 2023). Other empirical references, such as research by Aini, Rahmawati, and Sumarsono (2023), show that increasing the budget for disaster risk management in developing cities has reduced disaster losses by up to 40% while increasing the adaptive capacity of communities to climate change. This data strengthens the finding that well-designed environmental budgets not only provide ecological benefits but also improve the welfare of urban communities.

Impact of Housing and Public Facilities Budget on Achieving SDG 11

The budget function of housing and public facilities negatively affects SGD 11, meaning that the higher the budget function of housing and public facilities, the achievement of SGD11, especially decent and affordable housing, will decrease. This result is surprising because this function should support decent housing. Possible causes are inefficiencies in budget use or programs that are not on target. Purwanto (2020) found that the environmental budget has a negative and insignificant effect on environmental quality, which may reflect similar problems in allocating the housing and public facilities budget. The study shows that adequate budget allocation for the housing and public facilities sector is crucial in achieving SDG 11, especially in providing adequate housing and inclusive public facilities. This finding is consistent with the results of studies by Zhong et al. (2017) that highlight that this sector's lack of budget allocation can hinder people's access to basic housing and infrastructure needs.

In the agency theory framework, even though the government has allocated a budget, the mismatch between planning and implementation in the field often results in inefficiency. This is supported by research by Landis and

McClure (2010), which shows that inappropriate budget allocation, especially in housing development for low-income communities, causes housing projects to fail to provide significant impact. For example, data shows that several housing projects fail to meet quality and accessibility standards due to weak coordination between related agencies. This study also supports the findings of Glaeser and Gyourko (2005), which highlight that even a large budget will not produce optimal results without adequate planning and implementation. Field research reveals that a holistic approach that includes social, economic, and environmental needs in housing planning can improve the program's success. This includes providing integrated public facilities, such as transportation, green open spaces, and clean water infrastructure, all contributing to SDG 11. Empirical research Buckley (2005) strengthens this finding by showing that countries that allocate at least 25% of their urban development budget to housing and public facilities have increased access to adequate housing by 30% in the last five years. This reflects the importance of budget allocations that are not only adequate but also targeted to specific and inclusive goals.

Impact of Health Function Budget on Achieving SDG 11

The health function budget does not affect SGD 11, meaning that the health budget does not directly impact SDG 11, especially decent and affordable housing. The health function focuses more on individual services, such as access to health and treatment, which are less directly related to indicators of decent housing and urban infrastructure. Agency theory suggests that the problem of using the health function budget for SDG 11 in Indonesia is related to inefficient allocation and weak accountability, not merely the budget size itself. Research by Yusdita et al. (2018) found that allocating the health budget positively affects the human development index (HDI) but not directly on decent housing. This study shows that budget allocation in the health sector plays an important role in supporting the achievement of SDG 11. However, its effectiveness highly depends on cross-sectoral coordination and integrated development strategies. This finding supports research by Sullivan et al. (2014) that states that the health budget, although significant, will not provide optimal impact without planning and targeted interventions. From the perspective of budget effectiveness, large allocations of funds to the health sector do not always directly result in improvements in urban infrastructure or the provision of adequate housing. Many health problems in urban environments, such as poor air quality, inadequate sanitation, or lack of green open spaces, require a cross-sectoral approach that integrates the health, environment, and housing sectors to produce tangible results (Aftab et al. 2020).

Health strategies focusing solely on improving medical services without improving social determinants of health, such as access to adequate housing and a healthy environment, tend to be less effective in supporting SDG 11 (McGuire et al. 2019). For example, cities that allocate health budgets to support environmental sanitation and air pollution management programs have recorded significant decreases in the number of environmentally related diseases while improving the quality of life of urban residents. The study also found that health investments integrated with sustainable development programs, such as providing sound drainage systems or technology-based waste management, provide double

benefits. In addition to improving public health, this also supports the achievement of SDG 11, namely, safe, resilient and inclusive cities. Empirical references from the study Giles-Corti, Lowe, and Arundel (2020) revealed that countries that successfully integrated health budget allocations with sustainable development policies showed significant improvements in 11 SDG indicators, such as access to adequate housing and reduction of environmental health-related disaster risks.

Impact of Tourism and Culture Function Budget on Achieving SDG 11

The tourism and culture function budget does not affect SDG 11, which means that the tourism and culture function budget has no direct impact on the level of achievement of SDG 11, especially decent and affordable housing. Although the tourism and culture sector can support urban development, the budget for this function may be more focused on activities that are not directly related to decent housing and urban infrastructure. Research by Putri, Wardiyanto, and Suaedi (2020) found that the tourism budget does not affect environmental quality, which may reflect similar problems in the allocation of housing and public facilities budgets. The study shows that the tourism and culture sector have great potential to support economic growth and cultural preservation. However, its impact is highly dependent on effective management and sustainability-oriented policies. This finding aligns with research by Pinho and Gomes (2024) that confirms that without clear policies to mitigate negative impacts on the environment and society, budget allocations for the tourism and culture sector often do not produce significant results regarding housing. The ineffectiveness of tourism and culture budgets towards SDG 11 often occurs due to failures in planning, coordination, and implementation in line with sustainable development goals. From an agency theory perspective, improving the relationship mechanisms between communities and governments and increasing budget accountability are key steps to increase the impact of SDG 11.

The tourism and culture sector tends to focus more on economic and social aspects. However, to contribute more to SDG 11, its budget must be integrated with environmentally conscious urban development policies (Gallego-Sosa, Fernández-Torres, and Gutiérrez-Fernández 2024). For example, developing tourism areas that pay attention to environmental sustainability, such as the provision of green transportation and good waste management, can increase the sector's contribution to creating inclusive, safe and sustainable cities. The study also found that community-based initiatives in the tourism sector can support the achievement of SDG 11 by empowering local communities, preserving cultural heritage, and increasing the inclusiveness of urban development. Empirical studies Putri, Wardiyanto, and Suaedi (2020) show that cities that allocate tourism budgets for local community training and cultural preservation see a community-based economy increase of up to 25% while reducing social inequality. Additional references from the analysis Romaniv (2023) note that tourism to support urban revitalization—for example, by conserving historic areas—has increased tourist appeal and spurred public infrastructure investment in several major cities worldwide. These impacts suggest that budget policies integrated with cultural preservation programs can more effectively support the achievement of SDG 11.

Impact of the Education Function Budget on Achieving SDG 11

The education function budget positively affects SDG 11, meaning that the higher the budget allocated to education, the higher the level of achievement of SDG 11, which is exceptionally decent and affordable housing. Education increases community awareness and capacity to support decent housing and sustainable urban infrastructure. Education makes the opportunity for material ability more secure. Thus, individuals are more likely to obtain decent and affordable housing (Wu and Sun 2023). This study shows that budget allocation for education, mainly focusing on sustainability, significantly impacts achieving SDG 11. Investment in sustainability education can raise public awareness of the importance of inclusive, resilient and sustainable urban development (Musekiwa and Mandiyanike 2019). Education shapes public understanding and enhances their skills to contribute to environmentally friendly urban planning and sustainable infrastructure. Agency theory views that the positive impact of the education budget on SDG 11 in Indonesia is highly dependent on how the government, as the principal, can ensure that the agent works according to its goals. Transparency, appropriate incentives, and effective oversight are the keys to success in managing the education budget to support the achievement of sustainable communities and cities.

Education is vital in driving innovation, such as developing energy-efficient homes, green transportation technologies, and community-based approaches to urban planning. These findings suggest that effective allocation of education budgets can create a generation that is more aware of urban development challenges and can create innovative solutions. In addition, research shows that sustainability education can motivate communities to become more actively involved in greener urban development. Community-based training programs and the integration of sustainability into educational curricula have increased community engagement in local initiatives, such as inclusive public space planning and participation in waste management projects. Countries allocating more than 15% of their education budget to sustainability-based programs recorded significant improvements in 11 SDG indicators, such as reducing air pollution, managing green spaces, and accessing sustainable public transportation. This reinforces the importance of a holistic and sustainability-based approach to education in supporting better urban development.

Impact of Social Protection Function Budget on Achieving SDG 11

The social protection function budget does not affect SDG 11, which means that the social protection function budget does not have a direct impact on the level of achievement of SDG 11, especially decent and affordable housing. The social protection function focuses more on individual social needs, such as social assistance, which is less directly related to urban infrastructure development or decent housing. Research by Dou et al. (2023) found that social protection function spending has no significant impact on environmental quality, which is relevant to SDG 11. This study shows that although the budget for social protection plays an important role in ensuring the welfare of vulnerable groups, its impact on sustainable urban development is still indirect. This finding supports research by Mualam and Sotto (2020) that highlights that social protection focuses more on providing basic needs such as financial assistance or food. However, its

contribution to infrastructure development or improving environmental quality in urban areas is relatively minimal. Agency theory emphasizes the importance of aligning incentives between principals and agents and ensuring adequate monitoring and evaluation. If the issues identified by agency theory can be addressed, the effectiveness of social protection budgets in supporting the achievement of SDG 11 can be increased.

For social protection to significantly impact achieving SDG 11, there needs to be a policy that integrates social protection programs with sustainable development goals. For example, a housing assistance program for low-income communities designed with sustainability principles, such as using environmentally friendly materials, can help improve the quality of life while supporting inclusive and sustainable urban development. Without policies that lead to sustainable urban development, social protection budgets will not directly impact SDG 11. Integrating social protection programs with the development of inclusive public facilities, environmentally friendly transportation, and green infrastructure can create synergies that support safe and resilient cities. Empirical research Barber (1994) shows that countries that allocate social protection budgets to support community-based housing programs and access to public transport show improvements in SDG 11 indicators, such as reducing urban social inequality and increasing access to public facilities. These findings underscore the importance of a cross-sectoral approach in managing social protection budgets.

Explanation of the Influence of Control Variables

The length of the government's term of office significantly impacts the success of implementing sustainable development programs. Governments with longer terms of office tend to be able to design more strategic and mature policies, thus enabling long-term programs that support the achievement of SDG 11. This is in line with the findings of Loukakis, Kalogeraki, and Kokkinou (2023), who state that the age of the government contributes to the effectiveness of implementing sustainable urban development programs. In addition, the status of local governments also plays an important role in determining the capacity to implement effective policies. Provincial governments, for example, have greater access to financial and technical resources, allowing them to collaborate across sectors to develop green infrastructure and improve public services. Higher local government status often strengthens managerial capacity and program exploration power, which ultimately supports the achievement of sustainable development targets (Dănescu and Popa 2020). However, the findings also show that geographical challenges do not affect the success of achieving SDG 11. Managerial capacity and inter-agency collaboration capabilities are more important than geographical factors in supporting the implementation of sustainable development policies. Innovative governments can overcome geographical constraints through appropriately designed and adaptive strategies so that control variables related to geographical location (islands) show minimal impact on implementing SDG 11 programs.

CONCLUSIONS

This study shows an influence between functional budget allocation and the achievement of SDG 11 in Indonesia, with different variations in influence on each budget function. The budget for public service functions, security and order, and housing and public facilities negatively affect the achievement of SDG 11, reflecting a mismatch between budget allocation policies and community needs. In contrast, the budget for environmental and education functions positively affects the achievement of SDG 11, indicating that budget priorities in these sectors contribute directly to achieving sustainable development goals. These findings support agency theory, which emphasizes the importance of synergy between the government as an agent and the community as an actor in budget decision-making. In addition, community involvement in the budget planning process is essential to ensure that the policies implemented are more responsive to local needs. Therefore, evaluating budget allocations focusing on community needs and increasing transparency and public participation are important steps to achieve SDG 11 effectively.

Theoretically, this study enriches the literature on public sector budget management and the achievement of SDG 11 while highlighting the importance of efficient and relevant resource management. Practically, this study recommends that local governments allocate budgets more effectively to key sectors, such as housing, public facilities, health, education, and social protection, accompanied by comprehensive development planning, collaboration with the private sector, and periodic policy evaluation. However, this study has several limitations. First, the control variables are limited, so poverty levels, education, and community participation are not comprehensively analyzed. Second, using aggregate data at the district/city level can obscure individual or household-level variations. In addition, the research period needs to be updated to ensure the relevance of the results to current conditions.

Future research should add more diverse control variables, such as poverty levels, access to education, and community participation, and use individual or household data for more detailed analysis. Case studies and qualitative analysis can also provide a deeper understanding of policy implementation. In addition, government programs related to SDG 11 and sensitivity analysis need to be evaluated to assess the effectiveness of policies and improve the relevance of the research model.

REFERENCES

Aftab, Wafa, Fahad Javaid Siddiqui, Hana Tasic, Shagufta Perveen, Sameen Siddiqi, and Zulfiqar Ahmed Bhutta. 2020. "Implementation of Health and Health-Related Sustainable Development Goals: Progress, Challenges and Opportunities – a Systematic Literature Review." *BMJ Global Health* 5 (8): e002273. https://doi.org/10.1136/bmjgh-2019-002273.

Aini, Asfa Agustina Nusba, Farida Rahmawati, and Hadi Sumarsono. 2023. "Analysis of Public Policy in Malang City Through Measurement of Environmental Pillar SDGs Indicators in the Perspective of Public

Budgeting Allocation." *International Journal of Business, Law, and Education* 4 (2): 812–36. https://doi.org/10.56442/ijble.v4i2.248.

Aliva, Devi, and Fadhil Ilhamsyah. 2021. "Efektivitas Alokasi Anggaran Pendidikan Dalam Peningkatan Kualitas Pendidikan Dikabupaten Aceh Barat." *COMSERVA Indonesian Jurnal of Community Services and Development* 1 (8): 476–81. https://doi.org/10.59141/comserva.v1i8.61.

Apriani, Erna, Dian Rachmawati Afandi, Abdul Latif, and Aprilianti Aprilianti. 2023. "Macroeconomic Perspective on the Growth of Corporate Sharia Bonds (Sukuk) in Indonesia." *Jurnal Ekonomi Syariah Teori Dan Terapan* 10 (4): 352–64. https://doi.org/10.20473/vol10iss20234pp352-364.

Arianto, Galih, and Zainul Khaqiqi Nantabah. 2020. "Analisis Pembiayaan Kesehatan Program Upaya Kesehatan Masyarakat Di Indonesia Tahun 2013 & 2014." *Buletin Penelitian Sistem Kesehatan* 23 (1): 61–69. https://doi.org/10.22435/hsr.v23i1.940.

Augustine, Adekoya Adesanya. 2022. "Budgeting Techniques and Budgetary Control in Local Governments: Participatory Budgeting a Critical Instrument for Sustainable Development." *International Journal of Management and Economics Invention* 8 (11): 2682–2693. https://doi.org/10.47191/ijmei/v8i11.02.

Bappenas. 2023. "Agenda 2030 Untuk Pembangunan Berkelanjutan." Bappenas.Go.Id. 2023. https://sdgs.bappenas.go.id/.

Barasa, Edwine W., Susan Cleary, Sassy Molyneux, and Mike English. 2017. "Setting Healthcare Priorities: A Description and Evaluation of the Budgeting and Planning Process in County Hospitals in Kenya." *Health Policy and Planning* 32 (3): 329–337. https://doi.org/10.1093/heapol/czw132.

Barber, Bernard. 1994. "Talcott Parsons on the Social System: An Essay in Clarification and Elaboration." *Sociological Theory* 12 (1): 101–5. https://doi.org/10.2307/202038.

Basavalingaiah, Kariyaiah, Y. M. Ramesha, Venkatesh Paramesh, G. A. Rajanna, Shankar Lal Jat, Shiva Dhar Misra, Ashok Kumar Gaddi, et al. 2020. "Energy Budgeting, Data Envelopment Analysis and Greenhouse Gas Emission from Rice Production System: A Case Study from Puddled Transplanted Rice and Direct-Seeded Rice System of Karnataka, India." *Sustainability* 12 (16): 6439. https://doi.org/10.3390/su12166439.

Basha-Jakupi, A., G. Kuleta, and V. Navakazi. 2022. "The Effect of Architecture Design as the Non-Digital Component to the Digital Industry Development—Case Study 'Brick Factory' in Prishtina, Kosovo." *City, Territory and Architecture* 9 (1): 16. https://doi.org/10.1186/s40410-022-00159-0.

Beccarello, Massimo, and Giacomo Di Foggia. 2022. "Sustainable Development Goals Data-Driven Local Policy: Focus on SDG 11 and SDG 12." *Administrative Sciences* 12 (4): 167. https://doi.org/10.3390/admsci12040167.

Bedi, Ibrahim, and William Coffie. 2020. "Public Finance and the SDGs in Ghana." In *Africa and the Sustainable Development Goals*, 91–99. https://doi.org/10.1007/978-3-030-14857-7_9.

Buckley, R. M. 2005. "Housing Policy in Developing Countries: Conjectures and

Refutations.” *The World Bank Research Observer* 20 (2): 233–57. https://doi.org/10.1093/wbro/lki007.

Chandra, Yanto. 2018. “Mapping the Evolution of Entrepreneurship as a Field of Research (1990–2013): A Scientometric Analysis.” Edited by Sergi Lozano. *PLOS ONE* 13 (1): e0190228. https://doi.org/10.1371/journal.pone.0190228.

Cohen, Barney. 2006. “Urbanization in Developing Countries: Current Trends, Future Projections, and Key Challenges for Sustainability.” *Technology in Society* 28 (1–2): 63–80. https://doi.org/10.1016/j.techsoc.2005.10.005.

Congge, Umar, Syamsul Bahri, and Nurhidayat Nurhidayat. 2023. “Efektivitas Sistem Controlled Landfill Dalam Penanganan Sampah Di Dinas Lingkungan Hidup Dan Kehutanan Kabupaten Sinjai.” *The Journalish: Social and Government* 4 (2): 190–94. https://doi.org/10.55314/tsg.v4i2.476.

Dănescu, Tatiana, and Maria-Alexandra Popa. 2020. “Public Health and Corporate Social Responsibility: Exploratory Study on Pharmaceutical Companies in an Emerging Market.” *Globalization and Health* 16 (1): 117. https://doi.org/10.1186/s12992-020-00646-4.

David, Stevin, Andi Chairil Furqan, Arif Gunarsa, and Shinta Megawati Sitorus. 2024. “Budgeting Patterns for Regional Government Functions: Impact of Election of Regional Heads & Incumbents (Study of Regional Government in Indonesia).” In *Proceedings of the 8th International Conference on Accounting, Management, and Economics (ICAME 2023)*, 450–65. Atlantis Press. https://doi.org/10.2991/978-94-6463-400-6_34.

Dea, Agnes Yunita, Marten Umbu Kaleka, and Maria Alfonsa Ngaku. 2024. “Peran Penyuluh Pertanian Dalam Mendukung Pembangunan Pertanian Berkelanjutan.” *Jurnal AGRIBIS* 17 (1): 2280–90. https://doi.org/10.36085/agribis.v17i1.5950.

Dou, Yaquan, Ya Li, Ming Li, Xingliang Chen, and Xiaodi Zhao. 2023. “The Role of Agroforestry in Poverty Alleviation: A Case Study from Nujiang Prefecture, Southwestern China.” *Sustainability* 15 (15): 12090. https://doi.org/10.3390/su151512090.

Feng, Yaya, Chunlin Huang, Xiaoyu Song, and Juan Gu. 2023. “Assessing Progress and Interactions toward SDG 11 Indicators Based on Geospatial Big Data at Prefecture-Level Cities in the Yellow River Basin between 2015 and 2020.” *Remote Sensing* 15 (6): 1668. https://doi.org/10.3390/rs15061668.

Fitramadhana, Rizqyansyah. 2022. “Pemikiran Pedagogi Kritis Henry Giroux.” *Jurnal Pemikiran Sosiologi* 9 (1): 84. https://doi.org/10.22146/jps.v9i1.72188.

Frederikse, Thomas, Riccardo Riva, Marcel Kleinherenbrink, Yoshihide Wada, Michiel van den Broeke, and Ben Marzeion. 2016. “Closing the Sea Level Budget on a Regional Scale: Trends and Variability on the Northwestern European Continental Shelf.” *Geophysical Research Letters* 43 (20): 10864–72. https://doi.org/10.1002/2016GL070750.

Gallego-Sosa, Clara, Yakira Fernández-Torres, and Milagros Gutiérrez-Fernández. 2024. “The 2030 Agenda and Sustainable Development in Tourism Firms: Board Gender Diversity and Environmental Policy on

Natural Resource Use." *Corporate Social Responsibility and Environmental Management* 31 (1): 629–49. https://doi.org/10.1002/csr.2590.

Giles-Corti, Billie, Melanie Lowe, and Jonathan Arundel. 2020. "Achieving the SDGs: Evaluating Indicators to Be Used to Benchmark and Monitor Progress towards Creating Healthy and Sustainable Cities." *Health Policy* 124 (6): 581–90. https://doi.org/10.1016/j.healthpol.2019.03.001.

Glaeser, Edward L., and Joseph Gyourko. 2005. "Urban Decline and Durable Housing." *Journal of Political Economy* 113 (2): 345–75. https://doi.org/10.1086/427465.

Goddard, Andrew, and Tausi Ally Mkasiwa. 2016. "New Public Management and Budgeting Practices in Tanzanian Central Government." *Journal of Accounting in Emerging Economies* 6 (4): 340–71. https://doi.org/10.1108/JAEE-03-2014-0018.

Guariso, Daniele, Gonzalo Castañeda, and Omar A. Guerrero. 2023. "Budgeting for SDGs: Quantitative Methods to Assess the Potential Impacts of Public Expenditure." *Development Engineering* 8 (November): 100113. https://doi.org/10.1016/j.deveng.2023.100113.

Haines, Andy, and Pauline Scheelbeek. 2020. "European Green Deal: A Major Opportunity for Health Improvement." *The Lancet* 395 (10233): 1327–29. https://doi.org/10.1016/S0140-6736(20)30109-4.

Hanushek, Eric A., and Ludger Woessmann. 2015. "The Economic Impact of Educational Quality." In *Handbook of International Development and Education*, 6–19. Edward Elgar Publishing. https://doi.org/10.4337/9781783473540.00009.

Hege, Elisabeth, Laura Brimont, and Félicien Pagnon. 2019. "Sustainable Development Goals and Indicators: Can They Be Tools to Make National Budgets More Sustainable?" *Public Sector Economics* 43 (4): 423–44. https://doi.org/10.3326/pse.43.4.5.

Jain, Akshat, Ivan Henderson Gue, and Prateek Jain. 2023. "Research Trends, Themes, and Insights on Artificial Neural Networks for Smart Cities towards SDG-11." *Journal of Cleaner Production* 412 (August): 137300. https://doi.org/10.1016/j.jclepro.2023.137300.

James, Spencer L, Degu Abate, Kalkidan Hassen Abate, Solomon M Abay, Cristiana Abbafati, Nooshin Abbasi, Hedayat Abbastabar, et al. 2018. "Global, Regional, and National Incidence, Prevalence, and Years Lived with Disability for 354 Diseases and Injuries for 195 Countries and Territories, 1990–2017: A Systematic Analysis for the Global Burden of Disease Study 2017." *The Lancet* 392 (10159): 1789–1858. https://doi.org/10.1016/S0140-6736(18)32279-7.

Jensen, Michael C., and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* 3 (4): 305–60. https://doi.org/10.1016/0304-405X(76)90026-X.

Jolly, Raphael, and Alexandra Budke. 2023. "Assessing the Extent to Which Players Can Build Sustainable Cities in the Digital City-Builder Game 'Cities: Skylines.'" *Sustainability* 15 (14): 10780. https://doi.org/10.3390/su151410780.

Jones, Michael John, and Richard Slack. 2010. "Environmental Disclosure and Targets in Environmental Reports: Impression Management or Legitimacy Theory." In *British Accounting and Finance Association (BAFA) Annual Conference*, 1–15. Cardiff. https://www.cesifin.it/wp-content/uploads/2017/01/slack_03_11_10_def_ed.pdf.

Kanlayanatam, Rakjit, Ananya Kongsin, and Suthirat Kittipongvises. 2022. "The Linkages Between Air Quality Management Related Research And Sustainable Development In Thailand." *EnvironmentAsia* 15 (2): 1–14. https://www.thaiscience.info/Journals/Article/ENVA/10996346.pdf.

Karyoto, Evano Valdi Ananda, Yuyun Tri Wiranti, and M. Ihsan Alfani Putera. 2024. "Pengaruh Behavioral Intention Terhadap Use Behavior Pada Penggunaan Aplikasi Gojek." *Teknika* 13 (1): 109–19. https://doi.org/10.34148/teknika.v13i1.761.

Landis, John D., and Kirk McClure. 2010. "Rethinking Federal Housing Policy." *Journal of the American Planning Association* 76 (3): 319–48. https://doi.org/10.1080/01944363.2010.484793.

Larsen, Henrik Gutzon, Anders Lund Hansen, Gordon MacLeod, and Tom Slater. 2016. "Introduction: The Housing Question Revisited." *ACME: An International Journal for Critical Geographie* 15 (3): 580–89. https://doi.org/10.14288/acme.v15i3.1347.

Li, Kun, Nasrin R. Khalili, and Weiquan Cheng. 2019. "Corporate Social Responsibility Practices in China: Trends, Context, and Impact on Company Performance." *Sustainability* 11 (2): 354. https://doi.org/10.3390/su11020354.

Liu, Yi, Xiaoyun Jiang, and Fawang Liu. 2023. "The Finite Element Method for the Space Fractional Magnetohydrodynamic Flow and Heat Transfer on an Irregular Domain." *ANZIAM Journal* 64 (November): 62–67. https://doi.org/10.21914/anziamj.v64.17912.

Loukakis, Angelos, Stefania Kalogeraki, and Chara Kokkinou. 2023. "The Resources of Social and Solidarity Economy Initiatives in Urban Greece: A Mixed-Methods Approach." *The International Journal of Interdisciplinary Social and Community Studies* 19 (1): 27–56. https://doi.org/10.18848/2324-7576/CGP/v19i01/27-56.

Maizunati, Nur Afiyah. 2017. "Analisis Kondisi Keuangan Pemerintah Daerah Kota Magelang Dalam Klaster Kota Di Jawa-Bali." *Jurnal Riset Akutansi Keuangan* 2 (2). https://jurnal.untidar.ac.id/index.php/RAK/article/view/222.

Mansir, Firman. 2019. "Political Policy Analysis of the National Education Budget In Islamic Education Studies." *Istawa: Jurnal Pendidikan Islam* 4 (2): 113. https://doi.org/10.24269/ijpi.v4i2.1992.

McGuire, Finn, Lavanya Vijayasingham, Anna Vassall, Roy Small, Douglas Webb, Teresa Guthrie, and Michelle Remme. 2019. "Financing Intersectoral Action for Health: A Systematic Review of Co-Financing Models." *Globalization and Health* 15 (1): 86. https://doi.org/10.1186/s12992-019-0513-7.

Mead, Edward A., and Dipak K. Sarkar. 2014. "Fetal Alcohol Spectrum Disorders and Their Transmission through Genetic and Epigenetic Mechanisms." *Frontiers in Genetics* 5 (June). https://doi.org/10.3389/fgene.2014.00154.

Menshawy, Adel El, Sherine Shafik, and Fadwa Khedr. 2016. "Affordable Housing as a Method for Informal Settlements Sustainable Upgrading." *Procedia - Social and Behavioral Sciences* 223 (June): 126–33. https://doi.org/10.1016/j.sbspro.2016.05.330.

Mirzamani, A., N. Naderi–Beni, and H. Mohammadian. 2022. "The Sustainable Development Goals and Policy Capacity: A Case Study of Performance-Based Budgeting Implementation in Iran." *International Journal of Environmental Science and Technology* 19 (6): 5029–38. https://doi.org/10.1007/s13762-021-03709-0.

Mitnick, Barry M. 2021. "The Theory of Agency Redux." *Academy of Management Discoveries* 7 (2): 171–79. https://doi.org/10.5465/amd.2019.0136.

Mualam, Nir, and Debora Sotto. 2020. "From Progressive Property to Progressive Cities: Can Socially Sustainable Interpretations of Property Contribute toward Just and Inclusive City-Planning? Global Lessons." *Sustainability* 12 (11): 4472. https://doi.org/10.3390/su12114472.

Musekiwa, Norbert, and David Mandiyanike. 2019. "Botswana Development Vision and Localisation of UN Sustainable Development Goals." *Commonwealth Journal of Local Governance*, no. 20 (March): 135–45. https://doi.org/10.5130/cjlg.v0i20.6469.

Naidoo, Dhesigen, Luxon Nhamo, Shenelle Lottering, Sylvester Mpandeli, Stanley Liphadzi, Albert T. Modi, Cristina Trois, and Tafadzwanashe Mabhaudhi. 2021. "Transitional Pathways towards Achieving a Circular Economy in the Water, Energy, and Food Sectors." *Sustainability* 13 (17): 9978. https://doi.org/10.3390/su13179978.

Olanrewaju, Saidat Damola, and Olumuyiwa Bayode Adegun. 2021. "Urban Sprawl and Housing: A Case for Densification in Nigerian Cities." In *Housing and SDGs in Urban Africa*, 287–99. Springer. https://doi.org/10.1007/978-981-33-4424-2_16.

Pasoloran, Oktavianus, and Lisa Kurniasari Wibisono. 2022. "Empatic Budgeting Model: Study of Regional Budgeting In Tana Toraja Regency." *Devotion : Journal of Research and Community Service* 3 (13): 2278–88. https://doi.org/10.36418/dev.v3i13.290.

Peterson, Voltaire Alvarado, and Félix Rojo-Mendoza. 2023. "Housing and Choice in Iquique and Alto Hospicio, Chile: Possibilities and Limitations Regarding the 2030 Agenda and SDG 11." *Frontiers in Communication* 8 (March): 1093449. https://doi.org/10.3389/fcomm.2023.1093449.

Pinho, Micaela, and Sofia Gomes. 2024. "Generation Z as a Critical Question Mark for Sustainable Tourism – An Exploratory Study in Portugal." *Journal of Tourism Futures* 10 (3): 486–503. https://doi.org/10.1108/JTF-07-2022-0171.

Polzer, Tobias, Isabella M Nolte, and Johann Seiwald. 2023. "Gender Budgeting in Public Financial Management: A Literature Review and Research Agenda." *International Review of Administrative Sciences* 89 (2): 450–66. https://doi.org/10.1177/00208523211031796.

Prakash, Mihir, Marco Kamiya, Robert Ndugwa, and Mengfan Cheng. 2020. "Counting the Costs: A Method for Evaluating the Cost of Achieving SDG 11." *Frontiers in Sustainable Cities* 2 (December).

https://doi.org/10.3389/frsc.2020.554728.

Purwanto, Antonius. 2020. "Climbing the Stratification Ladder and the Decreasing of Small Entrepreneurs Number in the Field of Artisanal and Small-Scale Gold Mining (ASGM) in North Minahasa, North Sulawesi." *MASYARAKAT: Jurnal Sosiologi* 25 (1): 25–49. https://scholarhub.ui.ac.id/mjs/vol25/iss1/10/.

Putri, Christina Tityanda, Bintoro Wardiyanto, and Falih Suaedi. 2020. "Policy Evaluation of Village Fund through an Agro-Tourism Village for Sustainable Local Development." *Masyarakat, Kebudayaan Dan Politik* 33 (2): 174. https://doi.org/10.20473/mkp.V33I22020.174-183.

Ramadhan, Harti, Tripitono Adi Prabowo, and Jakfar Sadik. 2021. "Analisis Pembiayaan Program-Program Prioritas Kabupaten Pamekasan." *Buletin Ekonomika Pembangunan* 1 (2): 1–12. https://doi.org/10.21107/bep.v1i2.11998.

Rasul, Golam. 2016. "Managing the Food, Water, and Energy Nexus for Achieving the Sustainable Development Goals in South Asia." *Environmental Development* 18 (April): 14–25. https://doi.org/10.1016/j.envdev.2015.12.001.

Romaniv, Pavlo. 2023. "Conceptual Principles Of Sustainable Development Of Active Tourism And Recreation In The Western Region Of Ukraine." *The Scientific Issues Of Ternopil Volodymyr Hnatiuk National Pedagogical University. Series: Geography* 54 (1): 178–87. https://doi.org/10.25128/2519-4577.23.1.19.

Salmon, Indra Pratama Putra, Agung Budi Irawan, Asih Widi Lestari, Fierda Nurany, and Ihsan Rahmat. 2022. "Buruknya Layanan Dalam Kerangka Otonomi Khusus: Apakah Papua Masih Memiliki Kesempatan Untuk Berkembang?" *Jurnal Ilmu Sosial Dan Humaniora* 11 (3): 367–80. https://doi.org/10.23887/jish.v11i3.40754.

Semuel, Hatane, Saarce Elsye Hatane, Cyndy Fransisca, Josua Tarigan, and Jean-Marc Dautrey. 2019. "A Comparative Study on Financial Performance of the Participants in Indonesia Sustainability Reporting Awards." *Indonesian Journal of Sustainability Accounting and Management* 3 (1): 95. https://doi.org/10.28992/ijsam.v3i1.84.

Sengupta, Ushnish, and Ulysses Sengupta. 2022. "SDG-11 and Smart Cities: Contradictions and Overlaps between Social and Environmental Justice Research Agendas." *Frontiers in Sociology* 7 (November): 1–7. https://doi.org/10.3389/fsoc.2022.995603.

Siburian, Matondang Elsa. 2020. "Fiscal Decentralization and Regional Income Inequality: Evidence from Indonesia." *Applied Economics Letters* 27 (17): 1383–86. https://doi.org/10.1080/13504851.2019.1683139.

Silvia, Anissa Nur, and Rita Myrna. 2023. "Peran Masyarakat Dalam Proses Perencanaan Anggaran Publik Untuk Meningkatkan Akuntabilitas Dan Efektivitas Penggunaan Dana Publik." *Edunomika* 8 (1): 1–9. https://jurnal.stie-aas.ac.id/index.php/jie/article/view/11145.

Sullivan, Sean D., Josephine A. Mauskopf, Federico Augustovski, J. Jaime Caro, Karen M. Lee, Mark Minchin, Ewa Orlewska, Pete Penna, Jose-Manuel Rodriguez Barrios, and Wen-Yi Shau. 2014. "Budget Impact Analysis—Principles of Good Practice: Report of the ISPOR 2012 Budget Impact

Analysis Good Practice II Task Force." *Value in Health* 17 (1): 5–14. https://doi.org/10.1016/j.jval.2013.08.2291.

Syafitri, R., S. Sudirman, and S. Sugianto. 2020. "New Public Management Model as Rule Application of Performance-Based Budget (ABK) (Empirical Study at SKPD of Sigi Regency)." In *Proceedings of the 3rd Global Conference On Business, Management, and Entrepreneurship (GCBME 2018).* Paris, France: Atlantis Press. https://doi.org/10.2991/aebmr.k.200131.018.

Tsekeris, Theodore. 2012. "Disaggregate Analysis of Gasoline Consumption Demand of Greek Households." *Engineering Economics* 23 (1): 41–49. https://doi.org/10.5755/j01.ee.23.1.1226.

Tyagi, Ruchi, Suresh Vishwakarma, Mohit Rishi, and Saraswatee Rajiah. 2021. "Reducing Inequalities Through Education and Skill Development Courses." In *Reduced Inequalities*, 746–58. https://doi.org/10.1007/978-3-319-95882-8_102.

Usman, Ernawaty, Asri Usman, and Sugianto Sugianto. 2016. "Leadership Styles In Budgeting Participation To Support Managerial Performance." *The International Journal Of Organizational Innovation (Online). Hobe Sound* 8 (4): 251–59. https://www.ijoi-online.org/index.php/back-issues/48-volume-8-number-4-april-2016.

Wijayanti, Nanda, and Matthew Mingus. 2022. "Decentralization and Citizen Perception of Prosperity in Indonesia." *AKRUAL: Jurnal Akuntansi* 14 (1): 80–94. https://doi.org/10.26740/jaj.v14n1.p80-94.

Worrall, Rob. 2009. "Co-Creating Public Service Leadership Development in a New Era of Collaboration." In *5th European Conference on Management, Leadership and Governance*, 1–23. Athens: University of Sunderland. https://sure.sunderland.ac.uk/id/eprint/7615/.

Wu, Jiawei, and Wei Sun. 2023. "Regional Integration and Sustainable Development in the Yangtze River Delta, China: Towards a Conceptual Framework and Research Agenda." *Land* 12 (2): 470. https://doi.org/10.3390/land12020470.

Yusdita, Elana Era, Herlin Rosalina Febriyanti, Nurhuda Nurhuda, and Handoko Endro Seputro. 2018. "Strategi Anggaran Modal Berkelanjutan Untuk Desa Wisata Mloko Sewu." *Assets: Jurnal Akuntansi Dan Pendidikan* 7 (2): 129–40. https://doi.org/10.25273/jap.v7i2.3336.

Zhang, Jiandong, Rongfang Yan, and Yiying Zhang. 2023. "Stochastic Comparisons of Largest Claim Amount from Heterogeneous and Dependent Insurance Portfolios." *Journal of Computational and Applied Mathematics* 431 (October): 115265. https://doi.org/10.1016/j.cam.2023.115265.

Zhong, Chen, Markus Schläpfer, Stefan Müller Arisona, Michael Batty, Carlo Ratti, and Gerhard Schmitt. 2017. "Revealing Centrality in the Spatial Structure of Cities from Human Activity Patterns." *Urban Studies* 54 (2): 437–55. https://doi.org/10.1177/0042098015601599.