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Integration of Environmental Governance with Economic Policy: Towards a Green Governance Model in Makassar City

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ABSTRACT

Purpose: *This study examines the integration of environmental governance and economic policy toward the development of a green governance model in Makassar amid rapid urbanization and increasing environmental pressures.*

Subjects and Methods: *The study employed a quantitative explanatory approach involving 120 respondents consisting of government officials, environmental stakeholders, academics, and urban development practitioners. Data were collected using structured questionnaires based on a five-point Likert scale and analyzed using descriptive statistics, correlation analysis, classical assumption testing, and multiple linear regression with SPSS.*

Results: *The findings indicate that environmental governance integration in Makassar City was categorized as high, particularly in policy coordination and institutional collaboration. Green governance implementation also demonstrated positive results, especially in sustainability-oriented planning and stakeholder participation. Correlation analysis revealed a strong positive relationship between environmental governance integration and green governance implementation. Regression analysis further confirmed that integrated governance mechanisms significantly influence sustainability-oriented governance practices. The study also identified institutional constraints related to policy coherence, ecological responsiveness, and the tension between economic development priorities and environmental sustainability objectives.*

Conclusions: *The study concludes that environmental governance integration functions as an important foundation for strengthening green governance implementation. Stronger policy coherence, institutional coordination, and administrative capacity remain essential for promoting sustainable urban governance in Makassar City.*

INTRODUCTION

Rapid urbanization and economic expansion have intensified environmental pressures in cities across the Global South, creating complex governance challenges that demand integrated policy responses (Véron, 2010; Sekovski et al., 2012; Patel & Raval, 2024; Swapan et al., 2017). Urban areas increasingly function as engines of economic growth while simultaneously concentrating environmental risks such as pollution, ecosystem degradation, and climate vulnerability. As cities pursue competitiveness and development, the separation between environmental governance and economic policy has often resulted in fragmented decision-making, where short-term economic objectives override long-term ecological sustainability (Kissinger et al., 2011; Nilsson & Persson, 2003; Benn et al., 2009; Yaffee, 1997).

The concept of green governance has emerged as a normative and analytical framework that emphasizes the alignment of environmental objectives with economic policy instruments to promote sustainable urban development. This approach is grounded in the recognition that environmental protection and economic growth are not inherently contradictory but can be mutually reinforcing when governed through coherent, accountable, and inclusive institutional arrangements (Lemos, 2024).

The integration of environmental governance with economic policy has gained increasing attention in both academic and policy debates, particularly in the context of sustainable development and green economy transitions (Mundaca et al., 2016; Razzaq et al., 2023; Bailey & Caprotti, 2014). International frameworks such as the Sustainable Development Goals and the Paris Agreement explicitly call for policy coherence across environmental, economic, and social domains (Coscieme et al., 2021; Kim, 2016; Tosun & Leininger, 2017). Scholarly literature highlights that-cities play a critical role in operationalizing these global commitments, as urban governments possess regulatory authority, planning capacity, and proximity to local stakeholders (Saha, 2009).

Recent studies demonstrate that integrated governance approaches can enhance policy effectiveness by internalizing environmental externalities, fostering green innovation, and encouraging sustainable investment patterns (Saqib et al., 2025; Hamdouch & Depret, 2010; Abdelfattah et al., 2025). However, empirical evidence from developing country cities remains limited, particularly regarding how such integration is negotiated within existing political, institutional, and economic constraints.

Despite growing recognition of the need for integration, many cities continue to experience a persistent disconnect between environmental governance and economic policymaking. Environmental policies are frequently framed as regulatory constraints, while economic policies prioritize growth, infrastructure expansion, and investment attraction with insufficient consideration of environmental impacts (Wolsink, 2010). This fragmentation is often exacerbated by sectoral silos, overlapping institutional mandates, and limited coordination across government agencies (Okunola, 2025).

In the Indonesian context, decentralization has further complicated governance arrangements by reallocating authority to local governments without always ensuring adequate capacity, resources, or policy coherence (Yuwono & Hanani, 2025; Winters, 2012). As a result, environmental considerations are often marginal within local economic development strategies, leading to unsustainable land use, increased pollution, and social-environmental conflicts.

To address these challenges, the literature broadly proposes policy integration as a general solution, emphasizing horizontal and vertical coordination, mainstreaming environmental objectives into economic planning, and strengthening institutional mechanisms for cross-sectoral collaboration (Marín-González et al., 2022). Integrated policy approaches are expected to improve governance outcomes by aligning incentives, reducing trade-offs, and enhancing accountability. In urban contexts, this includes integrating environmental impact assessments into economic planning, adopting green fiscal instruments, and embedding sustainability criteria into public investment decisions.

While these solutions are conceptually appealing, their implementation in practice is highly contingent on local political dynamics, administrative capacity, and stakeholder engagement, which remain uneven across cities in the Global South. More specifically, previous studies have identified a range of policy instruments and governance mechanisms that can facilitate the integration of environmental governance with economic policy. Market-based instruments such as environmental taxes, green subsidies, and incentive schemes are frequently cited as tools to internalize environmental costs and stimulate environmentally friendly economic activities.

Strategic spatial planning and sustainable urban development frameworks have also been shown to align economic growth with environmental protection by guiding land use, transportation, and infrastructure investments (Fuseini & Kemp, 2015; Okeke, 2015). Additionally, participatory and collaborative governance approaches can help reconcile competing interests by involving

businesses, communities, and civil society in decision-making processes. These mechanisms collectively form the building blocks of what is increasingly referred to as green governance.

The concept of green governance extends beyond policy instruments to encompass broader institutional and normative dimensions. It emphasizes transparency, accountability, inclusiveness, and long-term ecological responsibility within governance systems. Empirical research suggests that green governance is more likely to emerge where environmental objectives are embedded within economic policy frameworks rather than treated as external constraints. In urban settings, this requires strong political leadership, administrative coordination, and the ability to mobilize financial and social resources toward sustainable development goals (Guarini et al., 2022).

Studies also caution that green governance initiatives risk becoming symbolic or fragmented if not supported by robust institutional arrangements and enforcement mechanisms, particularly in cities facing rapid growth and fiscal pressures. A growing body of literature has examined environmental governance and economic policy separately in Indonesian cities, including issues such as urban environmental management, local economic development, and climate adaptation. However, relatively few studies explicitly analyze how these two policy domains interact and are integrated at the city level.

Existing research often focuses on sector-specific outcomes, such as waste management or industrial regulation, without sufficiently addressing cross-sectoral policy coherence and governance integration. Studies that do address integration tend to emphasize national-level policies, leaving a gap in understanding how local governments operationalize green governance within their specific socio-economic and political contexts. This gap is particularly evident in secondary metropolitan cities, which face significant development pressures but receive less scholarly attention than national capitals.

Makassar City presents a particularly relevant case for examining the integration of environmental governance with economic policy. As a major metropolitan center in eastern Indonesia, Makassar has experienced rapid economic growth, urban expansion, and increasing environmental challenges, including coastal degradation, flooding, and waste management pressures. The city has also articulated ambitions to position itself as a hub for trade, services, and sustainable urban development.

These dynamics create both opportunities and tensions for integrating environmental objectives into economic policymaking. While local policies reference sustainability and green development, the extent to which environmental governance is systematically aligned with economic policy remains underexplored. This context highlights a critical research gap regarding how green governance is conceptualized, implemented, and constrained at the city level in Indonesia.

METHODOLOGY

Research Design

This study employed a quantitative research approach using an explanatory research design to examine the integration of environmental governance and economic policy toward the development of a green governance model in Makassar City. Quantitative research was selected because it enables the systematic measurement of relationships among governance variables, institutional coordination, environmental policy implementation, and economic sustainability indicators through statistical analysis. The explanatory design was particularly appropriate because the study aimed not only to describe governance conditions but also to analyze the influence of environmental governance integration on the realization of sustainable urban development outcomes. The study was grounded in a positivist paradigm, which assumes that social and governance phenomena can be objectively measured and analyzed using empirical data (Creswell & Creswell, 2017). In the context of environmental governance studies, quantitative approaches are widely used to assess institutional effectiveness, policy coherence, and governance performance through measurable indicators (Nilsson & Persson, 2003; Haque & Ntim, 2018). This design enabled the researcher to identify patterns of policy integration, stakeholder coordination, and sustainability-oriented governance practices within Makassar City's urban

administration system. The conceptual framework of the study positioned environmental governance integration as the independent variable, while green governance implementation served as the dependent variable. Several dimensions were operationalized, including policy coordination, environmental policy mainstreaming, institutional collaboration, sustainable economic planning, and stakeholder participation. These dimensions were adapted from previous studies on environmental policy integration and sustainable governance frameworks (Tosun & Leininger, 2017; Marín-González et al., 2022).

Research Location and Context

The research was conducted in Makassar, one of the largest metropolitan cities in eastern Indonesia and a strategic economic center experiencing rapid urbanization and infrastructure expansion. The city was selected because it represents an urban area where economic growth and environmental sustainability increasingly intersect within local governance practices. As explained in the introduction of the study, Makassar faces various environmental challenges, including waste management pressures, coastal degradation, flooding risks, and urban pollution, while simultaneously pursuing economic modernization and investment-driven development. The local government of Makassar has introduced several sustainability-oriented policies related to green open spaces, urban resilience, and environmentally responsive infrastructure development. The degree to which environmental governance is integrated into economic policymaking remains insufficiently explored. Therefore, Makassar provides an important empirical context for evaluating how local governments operationalize green governance principles amid developmental pressures and institutional constraints. The research was conducted between January and March 2026. During this period, data collection focused on government institutions involved in environmental management, regional development planning, economic policy formulation, and urban sustainability programs.

Population and Sample

The population of this study consisted of government officials, policy implementers, environmental stakeholders, academics, and urban development practitioners involved in environmental governance and economic policymaking processes in Makassar City. These groups were selected because they possess direct knowledge and experience regarding policy integration, governance coordination, and sustainable urban development initiatives. The sampling technique used in this study was purposive sampling. Purposive sampling allows researchers to select respondents based on specific criteria relevant to the objectives of the study (Sugiyono, 2019). The criteria included respondents who had professional involvement in environmental governance, economic planning, public policy implementation, or sustainability programs within Makassar City. A total of 120 respondents participated in the study. The sample consisted of local government officials from environmental and planning agencies, representatives of non-governmental organizations, academics specializing in environmental governance, and professionals involved in sustainable urban development initiatives. The distribution of respondents is presented in figure 1.

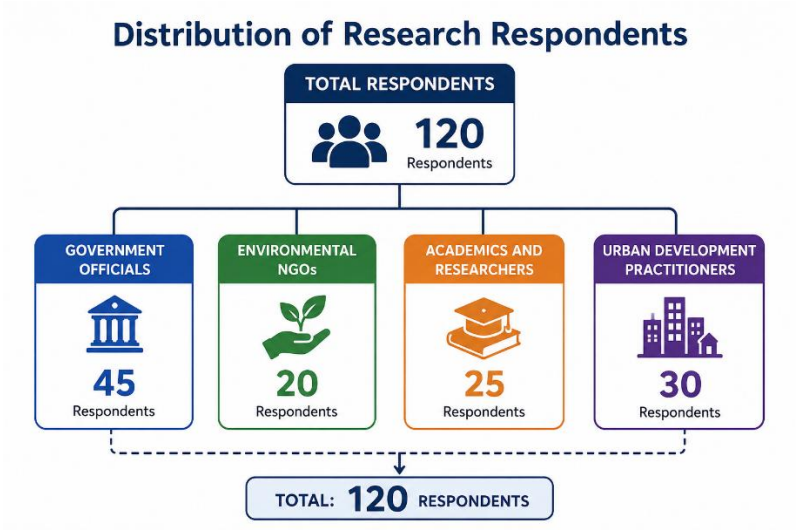

Figure 1. Distribution of Research Respondents

The sample size was considered adequate for quantitative statistical analysis because it exceeded the minimum requirements for regression-based explanatory studies and allowed sufficient variability among respondents.

Data Collection Techniques

Data were collected using structured questionnaires as the primary research instrument. The questionnaire was designed to measure respondents' perceptions regarding the integration of environmental governance and economic policy in Makassar City. The instrument consisted of closed-ended statements using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire items were developed based on theoretical indicators derived from previous literature on environmental governance, sustainable development, and policy integration (Nilsson & Persson, 2003; Guarini et al., 2022). Several indicators included inter-agency coordination, environmental considerations in economic planning, stakeholder participation, implementation effectiveness, and sustainability-oriented governance practices. Prior to large-scale distribution, the questionnaire underwent a pilot test involving 20 respondents to evaluate clarity, consistency, and instrument reliability. Feedback from the pilot test was used to revise ambiguous statements and improve measurement accuracy. Data collection was conducted both directly and online to increase respondent accessibility and participation. Government officials and institutional representatives received questionnaires through official coordination channels, while academics and practitioners were approached through professional networks and digital survey platforms. In addition to questionnaire data, secondary data were obtained from local government reports, sustainability planning documents, environmental policy regulations, and urban development statistics. These secondary sources were used to strengthen contextual understanding and support quantitative findings.

Research Variables and Measurement

The study consisted of two principal variables, namely environmental governance integration and green governance implementation. Environmental governance integration was measured through indicators such as policy coordination, institutional collaboration, environmental mainstreaming, and sustainable economic policy alignment. Meanwhile, green governance implementation was measured through indicators including sustainability-oriented planning, environmental accountability, stakeholder participation, and urban ecological responsiveness. The operationalization of variables is presented in Table 1.

Table 1. Operationalization of Research Variables

Variable	Indicators	Measurement Scale

Environmental Governance Integration	Policy coordination, institutional collaboration, environmental mainstreaming, policy coherence	Likert Scale (1–5)
Green Governance Implementation	Sustainability planning, environmental accountability, stakeholder participation, ecological responsiveness	Likert Scale (1–5)

Source: Adapted from Nilsson & Persson (2003); Haque & Ntim (2018)

The study operationalized two major variables to examine the relationship between environmental governance integration and the implementation of green governance in Makassar. The independent variable, namely Environmental Governance Integration, was measured through four main indicators consisting of policy coordination, institutional collaboration, environmental mainstreaming, and policy coherence. These indicators were selected because they reflect the extent to which environmental considerations are integrated into governance structures and economic policymaking processes.

The dependent variable, Green Governance Implementation, was measured using indicators related to sustainability-oriented planning, environmental accountability, stakeholder participation, and ecological responsiveness. These dimensions represent the practical implementation of sustainability principles within urban governance systems and public policy practices. All indicators were measured using a five-point Likert Scale ranging from 1 (strongly disagree) to 5 (strongly agree). The use of the Likert scale enabled the researcher to quantitatively measure respondents' perceptions regarding governance integration and sustainability practices in Makassar City. The operationalization framework was adapted from previous studies on environmental policy integration and sustainable governance, ensuring that the measurement indicators possessed theoretical relevance and empirical validity.

Data Analysis Technique

The collected data were analyzed quantitatively using descriptive and inferential statistical methods with the assistance of Statistical Package for the Social Sciences (SPSS). Descriptive statistics were first used to summarize respondent characteristics and identify general trends in perceptions regarding environmental governance integration and green governance practices. Inferential statistical analysis was conducted using multiple linear regression analysis to examine the influence of environmental governance integration on green governance implementation. Regression analysis was selected because it enables researchers to determine the strength and direction of relationships between independent and dependent variables (Field, 2024).

The regression model employed in this study can be expressed as follows:

$Y=a+bX+e$

Where:

YYY = Green Governance Implementation

aaa = Constant

bbb = Regression Coefficient

XXX = Environmental Governance Integration

eee = Error Term

Before conducting regression analysis, several classical assumption tests were performed, including normality, multicollinearity, and heteroscedasticity tests, to ensure the validity of the statistical model. Correlation analysis was also conducted to identify the degree of association among variables. The interpretation of statistical findings was complemented by contextual analysis of Makassar City's governance environment to provide a more comprehensive understanding of the relationship between environmental governance and economic policymaking.

Validity and Reliability

To ensure the quality and credibility of the research instrument, validity and reliability testing were conducted. Content validity was established through expert review involving academics and public policy researchers specializing in environmental governance and sustainable development. Their evaluations ensured that questionnaire items adequately represented the conceptual dimensions of the study. Construct validity was assessed using Pearson Product Moment correlation analysis. Questionnaire items were considered valid if the correlation coefficient exceeded the critical value at a significance level of 0.05. Reliability testing was conducted using Cronbach's Alpha coefficient. According to Hair et al. (2019), an alpha coefficient above 0.70 indicates acceptable internal consistency reliability. The results of reliability testing showed that all variables achieved Cronbach's Alpha values above the recommended threshold, indicating that the instrument possessed satisfactory reliability for quantitative analysis. These procedures ensured that the collected data were both consistent and empirically dependable for examining the integration of environmental governance and economic policy within the context of green governance development in Makassar City.

RESULTS AND DISCUSSION

This section presents the findings of the quantitative analysis regarding the integration of environmental governance and economic policy toward the development of a green governance model in Makassar. The analysis is arranged systematically according to the stages of quantitative data analysis explained in the methodology section, including respondent characteristics, descriptive statistical analysis, instrument validity and reliability testing, classical assumption testing, correlation analysis, and multiple linear regression analysis. The findings are subsequently interpreted to explain how environmental governance integration influences green governance implementation in the urban governance context of Makassar City.

Respondent Characteristics

The study involved 120 respondents selected through purposive sampling based on their involvement in environmental governance and economic policymaking processes in Makassar City. Respondents consisted of government officials, environmental NGO representatives, academics, researchers, and urban development practitioners.

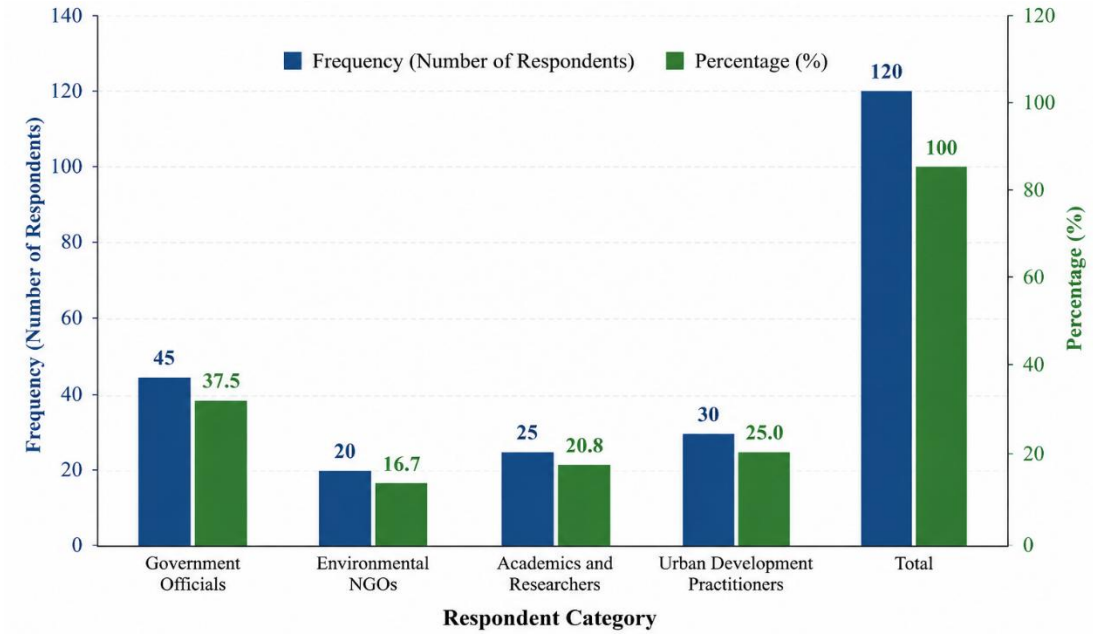

Figure 2. Distribution of Respondents

Government officials represented the largest proportion of respondents at 37.5%. This composition reflects the dominant role of government institutions in urban environmental governance and economic policy formulation. Urban development practitioners constituted 25.0% of respondents, while academics and researchers accounted for 20.8%. Environmental NGOs represented 16.7% of the total sample.

The composition of respondents indicates that the study successfully captured perspectives from various sectors involved in sustainability governance. The involvement of multiple stakeholders is important because environmental governance integration requires collaboration between government institutions, civil society, and professional actors. The diversity of respondents also strengthens the credibility of the empirical findings because perceptions regarding green governance implementation were not limited to governmental perspectives alone.

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to identify respondents' perceptions regarding environmental governance integration and green governance implementation in Makassar City. The descriptive analysis included mean values and standard deviations for each indicator measured in the study.

Environmental Governance Integration

Environmental governance integration was measured through four indicators: policy coordination, institutional collaboration, environmental mainstreaming, and policy coherence.

Table 2. Descriptive Statistics of Environmental Governance Integration

Indicator	Mean	Standard Deviation	Category
Policy Coordination	3.84	0.63	High
Institutional Collaboration	3.77	0.68	High
Environmental Mainstreaming	3.69	0.71	Moderate-High
Policy Coherence	3.58	0.74	Moderate
Average	**3.72**	**0.69**	**High**

Source: Research Data Processed by Authors (2026)

Environmental governance integration in Makassar City was generally categorized as high, with an average mean score of 3.72. Policy coordination recorded the highest score (3.84), indicating that coordination among government institutions regarding sustainability-related programs has become increasingly institutionalized. Institutional collaboration also obtained a relatively high score (3.77), suggesting that cross-sectoral cooperation among environmental agencies, planning institutions, and economic policymakers has developed positively. This indicates that governance actors increasingly recognize the importance of integrating environmental considerations into urban development processes.

Policy coherence obtained the lowest mean value (3.58), indicating that inconsistencies between environmental objectives and economic development priorities still exist. Respondents emphasized that economic growth policies and infrastructure expansion occasionally prioritize investment objectives over ecological sustainability considerations. These findings indicate that Makassar City has made significant progress in strengthening governance integration, although institutional fragmentation and sectoral policy differences continue to present implementation challenges.

Green Governance Implementation

Green governance implementation reflects the extent to which sustainability principles have been incorporated into urban governance practices and public policy implementation in Makassar. In this study, green governance implementation was assessed through four principal indicators, namely sustainability-oriented planning, environmental accountability, stakeholder participation, and ecological responsiveness. These indicators were used to evaluate how local governance institutions integrate environmental sustainability into planning processes, public accountability mechanisms, participatory governance practices, and responses to urban environmental challenges. The descriptive statistical results of green governance implementation are presented in Table 3.

Table 3. Descriptive Statistics of Green Governance Implementation

Indicator	Mean	Standard Deviation	Category

Sustainability-Oriented Planning	3.89	0.60	High
Environmental Accountability	3.66	0.70	Moderate-High
Stakeholder Participation	3.81	0.65	High
Ecological Responsiveness	3.56	0.76	Moderate
Average	**3.73**	**0.68**	**High**

Source: Research Data Processed by Authors (2026)

The implementation of green governance in Makassar City was generally perceived positively, with an overall mean score of 3.73. Sustainability-oriented planning achieved the highest mean value (3.89), reflecting that sustainability principles have increasingly been incorporated into urban planning and development policies. Stakeholder participation also achieved a high score (3.81), indicating that participatory governance involving communities, academics, and environmental organizations has become more visible in local governance practices. This finding suggests that green governance implementation in Makassar increasingly emphasizes collaborative governance approaches.

Ecological responsiveness obtained the lowest score (3.56). This result indicates that local governance systems still face difficulties in addressing environmental problems such as flooding, waste accumulation, coastal degradation, and urban pollution. Respondents acknowledged that although sustainability policies have been formally introduced, practical implementation remains constrained by financial limitations, administrative capacity, and rapid urbanization pressures. The descriptive findings demonstrate that Makassar City has shown relatively strong commitment toward sustainability-oriented governance, although several governance dimensions still require institutional strengthening and policy consistency.

Validity Testing

Validity testing was conducted using Pearson Product Moment correlation analysis to evaluate whether the questionnaire items accurately measured the intended research variables. Questionnaire items were considered valid if the correlation coefficient exceeded the critical value at a significance level of 0.05.

Table 4. Validity Test Results

Variable	Number of Items	Correlation Coefficient Range	Significance	Result
Environmental Governance Integration	12	0.481–0.792	< 0.05	Valid
Green Governance Implementation	12	0.467–0.811	< 0.05	Valid

Source: Research Data Processed by Authors (2026)

The results in Table 4 demonstrate that all questionnaire items possessed correlation coefficients above the minimum threshold of 0.30 and significance values below 0.05. Therefore, all indicators used in the study were considered valid for measuring environmental governance integration and green governance implementation. These findings indicate that the research instrument adequately represented the conceptual dimensions of the study and was suitable for further quantitative analysis.

Reliability Testing

Reliability testing was conducted to evaluate the consistency and stability of the research instrument used in measuring environmental governance integration and green governance implementation in Makassar. The reliability analysis employed Cronbach's Alpha coefficients to determine the level of internal consistency among questionnaire items within each research variable. In quantitative research, a Cronbach's Alpha value above 0.70 generally indicates that the instrument possesses acceptable reliability and can consistently measure the intended constructs.

Table 5. Reliability Test Results

Variable	Cronbach's Alpha	Reliability Category

Environmental Governance Integration	0.875	Reliable
Green Governance Implementation	0.887	Reliable

Source: Research Data Processed by Authors (2026)

Both variables achieved Cronbach's Alpha coefficients above 0.70. Environmental governance integration obtained a coefficient of 0.875, while green governance implementation achieved 0.887. These results confirm that the research instrument possessed satisfactory internal consistency reliability. Therefore, the questionnaire data were considered stable and reliable for inferential statistical analysis.

Classical Assumption Testing

Classical assumption testing was conducted prior to regression analysis to ensure that the statistical model fulfilled the required assumptions for inferential analysis. The tests included normality testing to evaluate data distribution, multicollinearity testing to identify correlations among independent variables, and heteroscedasticity testing to examine the consistency of residual variances.

Table 6. Classical Assumption Test Results

Test Type	Variable	Statistical Value
Normality Test (Kolmogorov-Smirnov)	Regression Residuals	Sig. = 0.200
Multicollinearity Test	Environmental Governance Integration	Tolerance = 0.764; VIF = 1.309
Heteroscedasticity Test (Glejser)	Environmental Governance Integration	Sig. = 0.286

Source: Research Data Processed by Authors (2026)

The regression model fulfilled all classical assumption requirements. The normality test produced a significance value of 0.200, exceeding the threshold value of 0.05, indicating that the regression residuals were normally distributed. Furthermore, the multicollinearity test showed a tolerance value above 0.10 and a Variance Inflation Factor (VIF) below 10, confirming that multicollinearity was not detected in the regression model. The heteroscedasticity test also produced a significance value above 0.05, indicating the absence of heteroscedasticity problems. Therefore, the regression model was considered statistically appropriate for inferential analysis.

Correlation Analysis

Correlation analysis was conducted to determine the relationship between environmental governance integration and green governance implementation in Makassar. The analysis produced a correlation coefficient (r) of 0.768 with a significance value of 0.000. These results indicate a strong and statistically significant positive relationship between the two variables.

The findings demonstrate that higher levels of environmental governance integration, particularly in terms of policy coordination, institutional collaboration, environmental mainstreaming, and policy coherence, are associated with stronger implementation of green governance practices in Makassar City. The significance value below 0.05 further confirms that the relationship between the variables was statistically meaningful and not caused by random variation.

This result suggests that efforts to strengthen integrated governance mechanisms contribute positively to sustainability-oriented urban governance and improve the effectiveness of green governance implementation.

Multiple Linear Regression Analysis

Multiple linear regression analysis was conducted to examine the influence of environmental governance integration on green governance implementation.

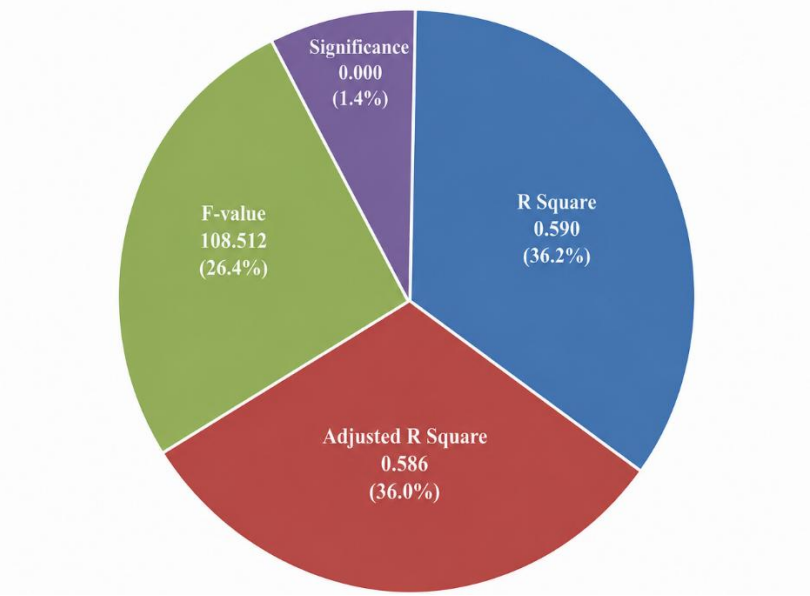

Figure 3. Model Summary of Multiple Linear Regression Analysis

Figure 3 illustrates that the regression model demonstrates a strong relationship between environmental governance integration and the implementation of green governance in Makassar. The findings generally indicate that stronger integration between environmental considerations and economic policymaking contributes positively to the development of sustainability-oriented urban governance practices.

The statistical results suggest that governance mechanisms such as policy coordination, institutional collaboration, and environmental mainstreaming play an important role in supporting the effectiveness of green governance implementation. The model also confirms that integrated governance approaches are capable of strengthening institutional responsiveness toward environmental sustainability challenges within urban development processes. The regression analysis highlights that environmental governance integration represents a significant foundation for promoting sustainable urban governance in Makassar City. These findings reinforce the importance of cross-sectoral coordination and policy coherence in achieving long-term environmental and developmental objectives.

Discussion

Environmental Governance Integration as a Determinant of Green Governance Implementation

The findings of this study demonstrate that environmental governance integration significantly influences the implementation of green governance in Makassar. The correlation and regression analyses confirmed a strong and statistically significant relationship between governance integration and sustainability-oriented governance practices. These findings indicate that the integration of environmental considerations into economic policymaking contributes positively to strengthening urban sustainability governance. The descriptive statistical analysis showed that environmental governance integration achieved a high average score, particularly in the dimensions of policy coordination and institutional collaboration (Tan & Geng, 2020; Jager et al., 2020; Zhang et al., 2024). This finding suggests that government institutions in Makassar have increasingly recognized the importance of integrating environmental objectives into development planning and economic policy processes. The existence of relatively strong institutional coordination reflects a transition from fragmented governance toward a more integrated governance framework.

The findings support the theoretical perspective proposed by Nilsson & Persson (2003), which emphasizes that environmental policy integration is essential for achieving sustainable development outcomes. In the context of Makassar City, policy coordination among environmental agencies, planning institutions, and economic policymakers appears to function as a strategic mechanism for reducing governance fragmentation and improving sustainability-oriented decision-making. The

regression analysis demonstrated that environmental governance integration substantially contributed to green governance implementation. Governance systems capable of integrating environmental considerations into economic planning are more likely to produce effective sustainability-oriented policies. The result also confirms that governance integration is not merely a normative concept but functions empirically as a determinant of sustainable urban governance performance.

Institutional collaboration emerged as another important dimension within the study. Respondents perceived that collaboration among governmental institutions, environmental organizations, academics, and development practitioners has strengthened environmental governance implementation. This finding reflects broader governance trends emphasizing collaborative governance and cross-sectoral partnerships in addressing complex urban sustainability challenges. The findings are consistent with previous studies highlighting that sustainable urban governance requires coordination across sectors rather than isolated policy approaches (Tosun & Leininger, 2017; Marín-González et al., 2022). In rapidly urbanizing cities such as Makassar, governance integration becomes increasingly important because environmental challenges are closely interconnected with economic development pressures, infrastructure expansion, and population growth.

Policy coherence recorded the lowest score among the environmental governance integration indicators, indicating that inconsistencies between environmental objectives and economic development priorities remain evident. Infrastructure expansion and investment-oriented policies continue to create tensions between economic growth ambitions and environmental sustainability objectives. This condition illustrates that sustainability integration has not yet been fully institutionalized across all governance sectors. The governance situation identified in Makassar reflects conditions frequently experienced by metropolitan cities in developing countries, where local governments are required to balance economic competitiveness with environmental protection. Sustainability discourse has increasingly become part of policy narratives, yet implementation frequently encounters institutional fragmentation, sectoral silos, and administrative limitations.

The findings confirm the proposed hypothesis that environmental governance integration positively influences green governance implementation in Makassar City. Integrated governance mechanisms, particularly policy coordination and institutional collaboration, function as important foundations for strengthening sustainable urban governance. Stronger policy coherence and more consistent institutional integration remain necessary to ensure that sustainability principles are fully embedded within local economic development strategies.

Challenges and Institutional Constraints in Developing Green Governance

The findings also reveal several structural and institutional constraints that continue to limit the effectiveness of sustainability-oriented governance in Makassar City. These constraints primarily relate to ecological responsiveness, policy consistency, institutional capacity, and the tension between environmental protection and economic development priorities. Ecological responsiveness recorded the lowest score within the green governance implementation variable (Wang et al., 2018; Nasution et al., 2025). Respondents perceived that local governance systems still face substantial difficulties in responding effectively to environmental problems such as flooding, waste accumulation, coastal degradation, and urban pollution. This finding indicates that sustainability principles have increasingly been incorporated into policy frameworks, yet practical environmental management remains insufficiently responsive to urban ecological pressures.

The limited ecological responsiveness identified in this study reflects broader environmental governance challenges in rapidly urbanizing cities across the Global South. Rapid infrastructure expansion, population growth, and investment-driven development frequently generate environmental externalities that exceed the capacity of local governance systems to manage them effectively. In Makassar City, urban expansion and coastal development have intensified environmental vulnerabilities, particularly in relation to waste management and flooding risks. Environmental accountability mechanisms also remained within the moderate-high category rather than reaching a very high level. This result indicates that transparency, monitoring systems, and enforcement mechanisms related to environmental governance still require improvement.

Respondents acknowledged that sustainability policies often exist formally within planning documents but are not always implemented consistently at the operational level.

The findings support arguments proposed by Wolsink (2010) and Guarini et al. (2022), which emphasize that green governance initiatives risk becoming symbolic if they are not supported by strong institutional arrangements and enforcement mechanisms. In the context of Makassar City, sustainability-oriented policies continue to encounter implementation gaps caused by overlapping institutional mandates, administrative fragmentation, and limited coordination capacity. Economic development priorities were also identified as an important challenge affecting environmental policymaking (Ahmed et al., 2020). Respondents indicated that investment-oriented policies and infrastructure development programs occasionally prioritize economic growth objectives over ecological sustainability considerations. This finding reflects the continuing dominance of growth-oriented development paradigms within local governance structures.

The tension between economic expansion and environmental sustainability represents a major governance challenge for developing metropolitan cities. Local governments are often required to pursue economic competitiveness, attract investment, and stimulate urban growth while simultaneously addressing environmental degradation and sustainability demands. Environmental governance integration therefore encounters political and institutional constraints that limit policy consistency and implementation effectiveness. Stakeholder participation emerged as one of the stronger dimensions within green governance implementation. The relatively high score for stakeholder participation indicates that communities, academics, environmental organizations, and development practitioners have become increasingly involved in governance processes. Participatory governance mechanisms contribute positively to policy legitimacy, collaborative problem-solving, and sustainability awareness (Blühdorn & Deflorian, 2019).

The findings demonstrate that collaborative governance approaches may function as strategic instruments for strengthening green governance implementation in Makassar City. Cross-sectoral participation enables governance systems to incorporate diverse perspectives, improve policy transparency, and strengthen public accountability regarding environmental sustainability issues. The study illustrates that the development of green governance in Makassar City remains characterized by institutional progress alongside persistent structural constraints. Governance integration, stakeholder participation, and sustainability-oriented planning have developed relatively positively, while ecological responsiveness and policy coherence continue to present significant challenges. Stronger institutional coordination, administrative capacity, enforcement mechanisms, and long-term political commitment remain essential for strengthening sustainable urban governance practices in Makassar City.

CONCLUSION

This study demonstrates that the integration of environmental governance and economic policy plays a significant role in strengthening green governance implementation in Makassar. The quantitative findings indicate that policy coordination, institutional collaboration, environmental mainstreaming, and policy coherence positively contribute to sustainability-oriented governance practices, including sustainability planning, environmental accountability, stakeholder participation, and ecological responsiveness. The regression analysis further confirms that environmental governance integration significantly influences the effectiveness of green governance implementation, indicating that integrated governance systems are essential for promoting sustainable urban development. The study also identifies several institutional challenges, particularly related to policy coherence, ecological responsiveness, and the tension between economic growth priorities and environmental sustainability objectives. These findings imply that local governments require stronger cross-sectoral coordination, more consistent policy alignment, and improved institutional capacity to ensure that sustainability principles are fully integrated into urban development strategies. The study contributes theoretically by reinforcing the importance of integrated governance approaches within urban sustainability frameworks and contributes practically by providing empirical evidence relevant to sustainability policymaking in Indonesian metropolitan cities. The research remains limited by its focus on a single city and reliance on perception-based quantitative data, suggesting that future studies should incorporate

comparative regional analysis and mixed-method approaches to obtain broader and deeper insights into green governance implementation.

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