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Building A Green Future: Green Budgeting as a Driver of Change

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Abstract

This study investigates the implementation of green budgeting to align fiscal policy with environmental sustainability at the subnational level, focusing on North Toraja Regency, Indonesia. Employing a mixed-method approach, the study combines content analysis of planning documents with SWOT (Strengths, Weaknesses, Opportunities, and Threats) and Analytical Hierarchy Process (AHP) analyses. Results reveal that while environmental goals are acknowledged in strategic plans, their practical implementation is limited due to the absence of regulatory frameworks, environmental performance indicators, and budget tagging systems. SWOT analysis places North Toraja in a moderate strategic position, highlighting both multi-agency involvement and institutional challenges. AHP identifies three priority strategies: establishing local regulations on green budgeting, enhancing performance-based reporting, and improving digital monitoring tools. The study offers a practical framework for local governments to strengthen green budgeting in decentralized contexts.

Keywords: *Green Budgeting, Sustainable Development, Regional Planning, Oecd Framework.*

Introduction

The urgency of implementing green budgeting arises from the escalating environmental crises and the growing need for governments to align fiscal policies with sustainability goals (Stanimirović et al., 2023; , Göksu, 2022). As climate change, biodiversity loss, and pollution intensify, public budgets must serve not only economic growth but also ecological preservation and social equity. In developed countries, green budgeting has proven effective as a driver of systemic change, enabling the integration of environmental considerations into national budget processes through tools such as climate budget tagging, environmental impact assessments, and performance-based funding Yapıcı (2019), (Coganuli & Adhariani, 2023). Countries like France, Sweden, and the United Kingdom have institutionalized green budgeting frameworks that align national expenditure with climate goals under the Paris Agreement, resulting in measurable improvements in carbon budgeting, renewable energy adoption, and resource efficiency.

These examples demonstrate that when implemented with clear regulatory frameworks, robust data systems, and stakeholder engagement, green budgeting can significantly enhance transparency, accountability, and policy coherence. Moreover, its positive ripple effects extend to improved investor confidence, access to green finance, and strengthened governance (Azzahra et al., 2022).

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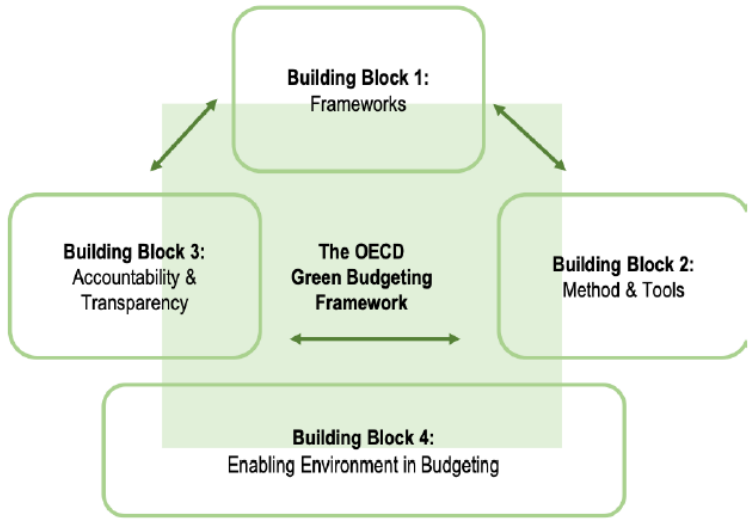
The concept of green budgeting encompasses more than just allocating funds for environmental programs—it serves as a strategic tool to systematically align national and subnational budgetary processes with long-term sustainability objectives. According to the European Commission (2022), green budgeting pursues multiple goals: supporting the design and implementation of effective environmental policies, redirecting public spending toward sustainability priorities, and enhancing transparency and accountability in fiscal governance. This holistic approach transforms budgeting from a purely financial exercise into a cross-sectoral policy instrument that promotes climate resilience, resource efficiency, and just transitions (Pizarro et al., 2021). In alignment with the United Nations' Sustainable Development Goals (SDGs) and the Paris Agreement (United Nations, 2015), green budgeting calls for the integration of climate considerations into every phase of the budget cycle—from planning and classification to execution and reporting. To operationalize this vision, the OECD (2020) has introduced the Green Budgeting Framework, which outlines four foundational building blocks: (1) Strategic Frameworks, (2) Methods and Tools, (3) Accountability and Transparency, and (4) Enabling Environment. These pillars provide governments with a structured methodology to evaluate the environmental impact of budget decisions, incorporate green performance metrics, and ensure stakeholder engagement across institutions (Zhyber, 2022). The framework has been successfully adopted in several OECD countries, leading to more coherent fiscal policies, improved environmental outcomes, and enhanced public trust. For regions like Toraja Utara, adopting such an approach could serve as a transformative shift in governance—turning fiscal planning into a catalyst for sustainable development (Nihayah & Diastuti, 2023).

Annex Figure 1.A.1. OECD Green Budgeting Framework



This study focuses on the application of the OECD Green Budgeting Framework in North Toraja Regency, a region in Indonesia with significant environmental value and agricultural potential Pizarro et al., 2021). As an area rich in natural resources, North Toraja faces dual pressures: to maintain economic growth while preserving ecological integrity (Kurniawan et al., 2020). Green budgeting offers a strategic approach to address these competing demands by ensuring that fiscal policies and development programs align with sustainability goals. However, in Indonesia, green budgeting is still in its infancy—particularly at the subnational level. While national efforts such as low-carbon development planning and climate-responsive budgeting have emerged

(Bappenas, 2019), regions like North Toraja often lack the institutional capacity and technical know-how to operationalize these directives. Strategic documents such as the Renstra and Renja offer a critical entry point to assess the degree to which environmental priorities are embedded in local planning, yet they frequently fall short in translating these priorities into budget-tagged programs with measurable outcomes (Coganuli & Adhariani, 2023).

The core challenge lies in the implementation gap—where political intent and strategic plans do not sufficiently translate into actionable, outcome-oriented programs. According to the Ministry of Finance (2021), subnational governments face structural barriers such as weak reporting systems, limited environmental indicators, and insufficient cross-sectoral coordination. Moreover, research by Miller & Redhead (2020) emphasizes that effective green budgeting is not solely about fiscal reallocation, but also requires robust institutional support, skilled human resources, and strong political leadership. In North Toraja, these constraints manifest in the absence of green budget tagging, underdeveloped monitoring frameworks, and lack of legal instruments (such as local regulations) to guide consistent implementation (Koval et al., 2023). As a result, many environmental programs are either fragmented or lack continuity across fiscal cycles. This study seeks to evaluate how far green budgeting has been implemented in North Toraja, what strategies have been effective, and what systemic gaps need to be addressed to ensure that environmental considerations become an integral and measurable part of local governance (Xamidovna, 2024).

Despite the growing body of literature on green budgeting practices at the national and international levels, empirical studies that examine its implementation within the context of subnational governments in developing countries remain limited (Putra, 2020). Most existing research focuses on macro-level policy frameworks, climate finance mechanisms, or comparative analyses among developed nations, leaving a gap in understanding how green budgeting is operationalized at the regional or local level—especially in regions with limited institutional and technical capacity like North Toraja (Kurniawan et al., 2020). While national policies in Indonesia have begun to incorporate climate-responsive budgeting and low-carbon development planning, there is a lack of systematic inquiry into how these top-down initiatives are interpreted, adapted, and executed at the district level. This study contributes a novel perspective by applying the OECD Green Budgeting Framework in a localized setting, using a mixed-method approach that combines Krippendorff's content analysis with quantitative prioritization through SWOT and AHP (OECD, 2019). Unlike previous research that often stops at normative assessments, this study generates actionable strategy priorities and evaluates institutional readiness through an integrated matrix of legal, institutional, and stakeholder-based dimensions. The novelty lies in providing an in-depth, evidence-based model for how green budgeting can be translated into practical governance mechanisms in Indonesia's decentralized political landscape Ho et al., 2023)..

To address the urgency of sustainable fiscal governance and to bridge the gap between national environmental policies and local-level implementation, this study aims to evaluate the extent and effectiveness of green budgeting practices in North Toraja Regency. The research is directed by the following objectives:

To analyze the implementation and integration of environmental considerations in regional planning and budgeting documents—including the Strategic Plan (Renstra) and Local Government Work Plan (Renja)—using content analysis based on the OECD Green Budgeting Framework.

To identify internal and external factors that influence the implementation of green budgeting in North Toraja Regency through SWOT analysis, and to map the region's strategic position using the Internal-External (IE) Matrix.

To determine and prioritize strategic recommendations for improving green budgeting implementation at the local level using the Analytical Hierarchy Process (AHP) based on stakeholder input and contextual policy gaps.

Research Method

Research Design

This study employs a mixed-method approach that integrates qualitative content analysis with quantitative strategic tools to comprehensively examine the implementation of green budgeting in North Toraja Regency. The combination of methodologies provides a robust framework for analyzing both the substance of policy documents and the prioritization of strategies using stakeholder insights. Research Design The research utilizes a two-phase design:

1. Qualitative Phase: Guided by Krippendorff's content analysis method, this phase interprets policy and budget documents (Renstra, Renja, and local regulations) through semantic, pragmatic, and semiotic analyses. The purpose is to determine the extent to which environmental considerations are embedded within strategic planning and budgeting processes.

2. Quantitative Phase: This phase involves a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis followed by the Analytical Hierarchy Process (AHP). The SWOT analysis identifies internal and external factors influencing green budgeting. The AHP ranks 20 strategic options based on expert judgment to determine strategic priorities.

Data Collection

1. Primary Data: Obtained from semi-structured interviews with government planners, environmental agency staff, and regional finance officials. Additionally, in-depth FGDs were conducted with stakeholders involved in sustainability programs.

2. Secondary Data: Consists of publicly available documents such as the Strategic Plan (Renstra), Local Government Work Plan (Renja), budget realization reports, and environmental planning documents.

Type of Data	Source Institution	Purpose/Use in Research
Strategic Plans (Renstra)	Bappelitbangda Toraja Utara	To analyze integration of environmental priorities in strategic vision and mission
Local Government Work Plan (Renja)	Regional Development Planning Agency	To assess operationalization of green programs in annual planning
Budget Realization Documents	Regional Finance Agency (BKD)	To evaluate financial allocation consistency with green budgeting
Environmental Planning Documents	Environmental Agency (DLH)	To interpret environmental targets and baseline performance
Interview Transcripts	Bappeda, DLH, BKAD, Dinas Pertanian	To obtain expert opinions on implementation barriers and opportunities

Focus Group Discussion Notes	Cross-sectoral stakeholders (OPDs, NGOs)	To validate and deepen understanding of strategic factors and priorities

Table 1. Data Sources for Green Budgeting Research in Toraja Utara

Data Analysis

This research integrates qualitative and quantitative methods to ensure a comprehensive and multi-dimensional understanding of green budgeting implementation in Toraja Utara Regency.

1. In the qualitative phase, data were analyzed using Krippendorff's (2018) content analysis model, which consists of three layers: semantic, pragmatic, and semiotic analysis. Semantic analysis involved identifying and interpreting the language and terminology used in strategic planning documents such as Renstra, Renja, and environmental policy texts to determine the extent of environmental mainstreaming. Pragmatic analysis examined the application of green budgeting in actual program planning and execution, including the intent behind budget allocations. Semiotic analysis focused on the visual and symbolic cues (e.g., indicators, charts, and environmental program labels) found in reports to understand how environmental value is communicated in bureaucratic language and structure.

2. In the quantitative phase, a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was conducted to identify internal and external factors affecting green budgeting performance. These factors were then quantified using a rating and weighting scale to produce IFAS and EFAS matrices. The results were positioned on the Internal–External (IE) Matrix, which placed Toraja Utara's green budgeting in Quadrant V (Hold and Maintain)—suggesting moderate internal capacity and external opportunity that support a strategy of policy consolidation and gradual reform.

3. Subsequently, strategic alternatives were formulated from the SWOT matrix and evaluated using the Analytical Hierarchy Process (AHP). A pairwise comparison matrix was developed, and the resulting eigenvalues were used to determine the weight priority and rank of each strategy. Consistency Ratio (CR) was calculated to validate the internal consistency of respondent judgments in AHP.

4. To ensure validity and reliability, data triangulation was conducted across sources: strategic documents, financial records, and stakeholder inputs. The findings from document analysis were cross-verified through in-depth interviews and Focus Group Discussions (FGDs). The integration of qualitative insights and quantitative rankings allowed the research to not only explain existing policy frameworks but also to recommend prioritized, actionable strategies for enhancing the effectiveness of green budgeting in Toraja Utara.

Results

Implementation of OECD Green Budgeting in North Toraja

Building Block 1. Strategic Frameworks

The effective implementation of green budgeting must begin with a robust strategic foundation. According to the OECD's Green Budgeting Framework, Building Block 1 emphasizes the necessity of aligning development planning documents, legal instruments, and institutional commitment with environmental objectives. In Toraja Utara, a number of policy instruments and programs demonstrate alignment with sustainability goals, such as the integration of KLHS,

the development of green open spaces (RTH), and pollution control in agriculture. However, a critical analysis of RPJMD, RKPD, OPD RENSTRAs, and performance reports reveals several gaps, particularly in performance measurement and legal mandates. The following table elaborates the application of the seven strategic dimensions under this framework using disaggregated indicators and corresponding implementation analysis.

No	Strategic Dimension	Indicator	Implemented Activity / Policy	Description	Alignment Status	Source Document
1	Vision and Commitment	Vision for sustainability stated in RPJMD	RPJMD Misi 6, 7, 10	RPJMD explicitly promotes sustainable development	Achieved	RPJMD 2021–2026
		Integration of SDGs into strategic goals	Integrated into RPJMD & RKPD priorities	SDG narrative included but indicators still general	Partially Achieved	RPJMD, RKPD 2024
		Reference to KLHS in strategic planning	KLHS used in RPJMD formulation	KLHS supports environmental analysis	Achieved	RPJMD, KLHS
2	Legal and Institutional Basis	Presence of local regulation on green budgeting	No Perda/Perbup issued	Absence of formal legal basis	Not Achieved	RPJMD, KLHS
3	Policy-Program Alignment	Program activities reflect environmental targets	RTH management, pollution control, KLHS	Activities support sustainability goals	Partially Achieved	RKPD 2024, RENSTRA
		Environmental issues addressed in OPD RENSTRA	DLH, Disperkim, Dinas Pertanian	Embedded but not synchronized across sectors	Partially Achieved	OPD RENSTRA,
4	Environmental Mainstreaming	Environmental analysis in sector planning	KLHS in housing; sustainable farming in agriculture	Environmental context recognized in development plans	Achieved	KLHS,
5	Performance	Availability	Indicators	Indicators	Not	RKPD

No	Strategic Dimension	Indicator	Implemented Activity / Policy	Description	Alignment Status	Source Document
	Indicators	of KPIs for environmental outcomes	like % emission reduction, RTH/capita proposed	not yet formally adopted	Achieved	
		Standards of environmental performance are defined	Target: RTH ≥ Y m²; Emission ↓ X%	Draft proposals available, but no official baseline	Not Achieved	RKPD
6	Stakeholder Engagement	Involvement of stakeholders in KLHS & planning	Public consulted during KLHS	Limited to one-off consultation	Partially Achieved	KLHS
		NGO/Academic role in environmental decision-making	Invited in KLHS workshops	No routine involvement in budgeting	Partially Achieved	RKPD
7	Strategy in Sectoral Planning	Sectoral integration of environmental priorities	DLH – RTH, Agriculture – pollution prevention	Explicit environmental focus in OPDs	Partially Achieved	OPD RENSTRA
		Green budget tagging in sectoral RKPDs	Found in waste mgmt, RTH, and pollution prevention	Not consistently applied across OPDs	Partially Achieved	RKPD 2024

Table 2. Strategic Framework Analysis for Green Budgeting Implementation in Toraja Utara Regency (Building Block 1 – OECD)

The strategic framework in Toraja Utara shows progress in integrating environmental concerns into planning and budgeting, but significant gaps remain. While the RPJMD includes sustainability goals, clear performance metrics and legal mandates are still lacking. Sectoral initiatives align with green goals but lack cross-sectoral integration. The absence of standardized environmental indicators and regional regulations hinders accountability and evaluation. To strengthen green budgeting, Toraja Utara needs to institutionalize legal instruments, performance-based budgeting, and improve inter-sectoral coordination.

Building Block 2. Methods and Tools

The OECD Green Budgeting Framework identifies Methods and Tools as essential instruments to operationalize environmental goals within public budgeting systems. This second building block includes mechanisms such as green budget tagging, environmental impact assessments (EIA), cost-benefit analysis (CBA) with environmental considerations, and climate risk analysis. These tools help governments to embed environmental objectives in fiscal policies and program evaluations. In Toraja Utara, partial efforts such as tagging green expenditures and the use of KLHS (Strategic Environmental Assessments) have emerged. However, these tools remain fragmented and are not yet institutionalized across all sectors. The following table presents a detailed breakdown of the methods and tools applied, their current implementation status, and critical gaps that need to be addressed.

No	Methods & Tools Dimension	Indicator	Implemented Tool or Activity	Description	Alignment Status	Source Document
1	Green Budget Tagging	Presence of green budget tags in RKPD/APBD	Tagging in waste mgmt, RTH, climate programs	Select activities labeled, but inconsistent	Partially Achieved	RKPD 2024
		Cross-sectoral tagging across multiple OPDs	Only in environmental-related OPDs	No integration in Bappeda's framework	Not Achieved	RKPD 2024
2	Environmental Impact Assessment (EIA)	EIA implemented for infrastructure and housing	Disperkim uses KLHS in settlement planning	KLHS acts as proxy for EIA in development plans	Achieved	RENSTRA Disperkim, KLHS
		Follow-up monitoring after EIA implementation	Not standardized	No consistent post-project environmental audit	Not Achieved	KLHS
3	Strategic Environmental Assessment (SEA / KLHS)	KLHS integrated in RPJMD & RENSTRA	KLHS used in RPJMD as sustainability foundation	KLHS reviewed by stakeholders, included in RPJMD	Achieved	KLHS, RPJMD, & RENSTRA
		Rekomendasi KLHS diadopsi dalam	Partially applied in Dinas Lingkungan	Only select recommendations translated into programs	Partially Achieved	KLHS

No	Methods & Tools Dimension	Indicator	Implemented Tool or Activity	Description	Alignment Status	Source Document
		Renstra OPD	Hidup & Perkim			
4	Environmental Cost-Benefit Analysis	Environmental externalities included in project appraisal	Not applied	No CBA with environmental valuation used	Not Achieved	KLHS Toraja Utara
		Use of shadow pricing or natural capital accounting	Not available	Fiscal valuation does not include eco-costs or services	Not Achieved	KLHS Toraja Utara
5	Climate Risk and Vulnerability Assessment	Identification of local climate risks in planning	Addressed in KLHS qualitatively	No climate vulnerability index or tool used	Partially Achieved	KLHS Toraja Utara
		Disaster and adaptation cost planning in budget	BPBD includes disaster data but not climate trends	DRR linked to budget, but not yet climate-based	Partially Achieved	RENSTRA BPBD, RKPD
6	Indicators and Monitoring Tools	Specific green outcome indicators for budgeting	Proposals in disertasi: emission ↓, RTH ↑	No standard green indicators in SAKIP or RKPD	Not Achieved	LKJIP
		Digital dashboard or public tool for green performance	Not available	No tool for green transparency or public monitoring	Not Achieved	LKJIP

Table 3. Methods and Tools for Green Budgeting Implementation in Toraja Utara Regency (Building Block II – OECD)

The analysis reveals that Toraja Utara has taken initial steps in implementing green budgeting tools, mainly through KLHS and limited green tagging, driven by specific OPDs. However, there is no centralized framework or leadership from financial/planning bodies, weakening coordination. Key tools like environmental CBA, shadow pricing, and climate risk assessments are lacking. Local environmental insights remain underutilized, and green indicators are not integrated into performance tracking. To advance, the region needs a central tagging system,

environmental valuation in budgeting, and digital monitoring tools to enhance transparency and align with sustainability standards.

Building Blok 3. Accountability and Transparency

Accountability and transparency are foundational to the successful implementation of green budgeting, as outlined in Building Block III of the OECD framework. These dimensions require governments to disclose how public funds support environmental objectives, demonstrate performance in achieving results, and ensure that all stakeholders—including the public—have access to understandable, measurable, and timely information. While Toraja Utara Regency has made initial efforts through performance documents such as the RKPD, RPJMD, KLHS, and LKJIP, a closer look at sectoral implementation and reporting reveals considerable gaps in result-based evaluation and environmental performance tracking. The table below presents detailed indicators, specific practices, and status of implementation for each aspect of accountability and transparency.

No	Accountability & Transparency Dimension	Indicator	Implemented Tool or Practice	Description	Alignment Status	Source Document
1	Public Disclosure	Environmental budget information published	Programs mentioned in RKPD & LKJIP	No specific labeling as "green" or environmental expenditure	Partially Achieved	RKPD 2024, LKJIP 2023
		Green spending tagged in public fiscal documents	Not yet implemented	APBD & RKPD lack formal green classification	Not Achieved	RKPD
2	Performance Reporting	Reporting includes environmental results	RTH, KLHS, and pollution control reported as activities only	Output-based, lacking outcome/result indicators	Not Achieved	RENSTRA DLH
		Results-Based Reporting (RBR) implemented	Not applied	No structured evaluation of environmental effectiveness	Not Achieved	OPD Reports

No	Accountability & Transparency Dimension	Indicator	Implemented Tool or Practice	Description	Alignment Status	Source Document
3	Accessibility	Public access to environmental data	RPJMD & RKPD online, but not detailed	Reports available but lacking user-friendly formats	Partially Achieved	Bappeda Web
		Green dashboard or public interface for outcomes	Not available	No visualization or digital tracking of green progress	Not Achieved	LKJIP, Inspektorat
4	Stakeholder Communication	Public engagement in evaluating environmental programs	Not facilitated	No hearings or structured public feedback sessions	Not Achieved	KLHS
5	Performance Auditing	Environmental activities reviewed by Inspectorate	Included in overall program audits	No specific environmental performance audit	Partially Achieved	LKJIP, Inspektorat
		Feedback loops to improve green program design	Not institutionalized	No mechanism to reflect audit feedback into budgeting	Not Achieved	LKJIP, Inspektorat
6	Indicator-Based Accountability	Specific performance indicators used to track environmental goals	Indicators for RTH, emissions, water quality not included	No measurable KPIs applied	Not Achieved	RENSTRA DLH
		Use of impact indicators in OPD reports	RTH and pollution activities not quantified	Outputs described, but no measurement of outcomes	Not Achieved	RENSTRA Pertanian

Table 4. Accountability and Transparency in Green Budgeting Implementation in Toraja Utara (Building Block III – OECD)

The analysis of accountability and transparency in Toraja Utara's green budgeting reveals systemic issues. While several OPDs have implemented environmental programs, their reports lack measurable outcomes, making it difficult to assess real environmental impact. Reporting tends to focus on processes rather than results, with no use of standardized indicators like air quality or green open space per capita. Additionally, there are no dedicated environmental audits or feedback mechanisms to improve program design. The absence of a digital platform also limits public access to performance data. To improve, Toraja Utara must adopt environmental KPIs, enforce results-based reporting, and establish transparent communication and feedback systems.

Building Block 4: Enabling Environment

The fourth pillar of the OECD Green Budgeting Framework, Enabling Environment, emphasizes the importance of institutional, regulatory, and cultural foundations that support the operationalization of green budgeting. This includes legal mandates, inter-agency coordination, capacity building, and data infrastructure. In Toraja Utara, several components of an enabling environment exist—such as coordination during Strategic Environmental Assessment (KLHS) and green-friendly initiatives by various OPDs. However, analysis using Krippendorff's content methodology highlights gaps in semantic clarity (goals and indicators), pragmatic execution (coordination and evaluation tools), and symbolic representation (reporting and transparency). The following table captures these issues and maps them into OECD-based dimensions and indicators.

No	Enabling Environment Dimension	Indicator	Implemented Activity or Mechanism	Description	Status	Source Document
1	Political Commitment	Political narrative includes measurable environmental targets	Stated in RPJMD missions 6, 7, and 10	Sustainability is mentioned as a priority in development goals, but no measurable indicators (e.g., % increase in green open space or emission reduction) are defined.	Partially Achieved	RPJMD
2	Regulatory Support	Local regulations on green budgeting	No regional regulation (Perda/Perbup)	There is no legal mandate requiring OPDs to adopt	Not Achieved	Local Laws

No	Enabling Environment Dimension	Indicator	Implemented Activity or Mechanism	Description	Status	Source Document
		exist	available	environmental budgeting or performance-based environmental reporting.		
3	Institutional Coordination	Cross-sectoral task force for environmental planning is established	Temporary coordination during KLHS drafting	KLHS involved DLH, Housing, and Agriculture agencies, but lacked a formal, permanent cross-sectoral governance mechanism.	Partially Achieved	KLHS
		OPDs have structurally defined environmental responsibilities	No structured coordination mechanism	There is no formal coordination body ensuring that each OPD aligns its actions with environmental sustainability goals.	Not Achieved	KLHS
4	Capacity Building	Environmental and sustainability training conducted regularly	Technical training by DLH and Agriculture Office	Trainings are focused on operational tasks (e.g., tree planting, pollution prevention) but lack emphasis on budgeting and performance monitoring.	Partially Achieved	OPD Reports
		Green budgeting integrated into	No green budgeting training	No technical or managerial staff trained	Not Achieved	OPD Reports

No	Enabling Environment Dimension	Indicator	Implemented Activity or Mechanism	Description	Status	Source Document
		OPD human resource frameworks	available	on green budgeting tools, KPIs, or integration into budget cycle.		
5	Semantic Clarity (Krippendorff)	Goals articulated with specific, measurable, time-bound targets	Goal stated: "Controlled environmental pollution"	The statement lacks clarity on measurement standards, baseline data, or target timeframe—making it ineffective for guiding action.	Not Achieved	RPJMD, RENSTRA
6	Pragmatic Execution (Krippendorff)	Mechanism to track implementation of KLHS recommendations	No monitoring system post-KLHS	There is no follow-up mechanism to evaluate whether recommendations from KLHS are adopted or implemented across planning documents.	Not Achieved	KLHS
7	Symbolic /Reporting Practice (Krippendorff)	Reports include outcome-based environmental indicators	OPD reports describe activities (e.g., planting trees, trainings held)	Reports do not provide indicators that show environmental impact (e.g., air quality improvement, water pollution reduction).	Not Achieved	RENSTRA DLH, KLHS
8	Data &	Integrated	Data kept	No centralized	Partiall	OPD

No	Enabling Environment Dimension	Indicator	Implemented Activity or Mechanism	Description	Status	Source Document
	Digital Infrastructure	environmental data system among OPDs	separately by individual OPDs	environmental database; decisions are made based on fragmented data systems, limiting coordination and budget analysis.	y Achieved	Reports

Table 5. Enabling Environment for Green Budgeting in Toraja Utara Regency (Building Block IV – OECD)

Toraja Utara has begun cross-sector efforts for green budgeting through activities like KLHS and RTH management, showing potential for coordinated governance. However, these efforts lack formal structures, such as a task force or legal mandates, and do not incentivize inter-OPD coordination. Capacity-building is limited, with most staff lacking literacy in green budgeting tools and impact evaluation. Goals are vaguely defined and rarely translated into measurable outcomes. Reporting focuses on activities, not results, and lacks feedback mechanisms or digital transparency tools. Strengthening the enabling environment requires legal frameworks, coordination mechanisms, digital systems, and results-based capacity development.

SWOT Analysis of Green Budgeting in Toraja Utara Regency

Internal Factor Analysis Summary (IFAS) – Green Budgeting in Toraja Utara Regency

Internal factors are essential components in assessing an organization's readiness and strategic capacity to implement green budgeting. The Internal Factor Analysis Summary (IFAS) provides a structured evaluation of the strengths and weaknesses that either support or hinder the success of environmental budgeting practices. Based on the four OECD Green Budgeting Building Blocks, this IFAS analysis for Toraja Utara Regency reflects both progressive aspects such as political alignment and environmental programming, as well as significant institutional and regulatory gaps that need to be addressed. The weighted scores help identify which factors contribute most critically to internal performance.

IFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
1. Strengths (Internal, Positive Attributes	Strategic Alignment	1	Sustainability vision integrated into RPJMD Missions 6, 7,	4	0.080	3	0.240

IFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
of Green Budgeting in Toraja Utara Regency)			and 10				
	Multi-OPD Participation	2	Environmental activities (RTH, pollution control, KLHS) conducted by multiple OPDs	4	0.080	3	0.240
	Integration of KLHS	3	Strategic Environmental Assessment (KLHS) conducted and partially integrated into planning	3	0.060	3	0.180
	Community Training	4	Technical training (eco-farming, urban greening) conducted by DLH and Dinas Pertanian	3	0.060	3	0.180
	Environmental Data Availability	5	Environmental data exists within OPDs though not centralized	3	0.060	4	0.240
	Baseline Environmental Programs	6	Basic programs for waste management, pollution control, RTH, etc. included in RKPD	3	0.060	3	0.180
	Initial Stakeholder	7	Public consultation	3	0.060	3	0.180

IFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
	Inclusion		in KLHS formulation conducted				
	TOTAL STRENGTHS			23	0.460		1.440
2. Weaknesses (Internal, Negative Attributes of Green Budgeting in Toraja Utara Regency)	Legal and Regulatory Gap	1	Basic programs for waste management, pollution control, RTH, etc. included in RKPD	4	0.080	3	0.240
	Absence of Environmental KPIs	2	Public consultation in KLHS formulation conducted	4	0.080	3	0.240
	Lack of Green Coordination Task Force	3	No Perda/Perbup mandates green budgeting practice	3	0.060	3	0.180
	Green Budgeting Literacy Gap	4	No standard KPIs in SAKIP, Renstra, or LKJIP to track environmental outcomes	3	0.060	3	0.180
	Activity-Based Reporting Only	5	No formal institutional mechanism for inter-OPD coordination	3	0.060	2	0.120
	Lack of Budget Tagging Mechanism	6	No training or frameworks on green budgeting for OPDs	2	0.040	3	0.120

IFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
	Low Digitalization for Environmental Tracking	7	Reports focus on outputs (activities), not environmental impacts (outcomes)	3	0.060	3	0.180
	Weak KLHS Follow-Up	8	No tagging of green programs in OPD budgets	2	0.040	2	0.080
	Poor Institutional Memory	9	No digital dashboard or integrated platform for environmental reporting	3	0.060	3	0.180
	TOTAL WEAKNESSES			27	0.540		1.340
TOTAL IFAS				50	1.000		2.78

Table 6. Internal Factor Analysis Summary (IFAS) – Green Budgeting Implementation in Toraja Utara Regency

The IFAS analysis shows that green budgeting in Toraja Utara has a moderately strong foundation, supported by sustainability integration in policies, environmental programs across OPDs, and available technical training. However, major internal weaknesses persist, including the lack of a legal basis, standardized KPIs, inter-agency coordination, and digital tracking tools. With a total score of 2.78, internal strengths slightly outweigh weaknesses. To advance, the Regency must focus on legal formalization, digital system development, and capacity building to build a more integrated and effective green budgeting framework.

External Factor Analysis Summary (EFAS) of Green Budgeting in Toraja Utara Regency

External factors represent the broader socio-political, economic, environmental, and technological environment in which green budgeting is implemented. Through the EFAS framework, the opportunities that could accelerate the adoption of green budgeting practices in Toraja Utara are identified alongside the threats that could hinder its progress. This matrix evaluates the external landscape in terms of its potential to influence policy success, drive institutional readiness, and support environmental outcomes.

EFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
1. Opportunities (External, Positive Attributes of Green Budgeting in Toraja Utara Regency)	National Green Agenda	1	National policy aligns with SDGs and mandates environmental mainstreaming (e.g., RPJMN 2020–2024)	4	0.089	4	0.36
	Climate Finance Access	2	Availability of national and international climate finance (Dana Alokasi Khusus Lingkungan, etc.)	3	0.067	4	0.27
	Decentralization Trend	3	Local governments encouraged to innovate through fiscal decentralization and autonomy	3	0.067	3	0.20
	SDGs Monitoring Demand	4	Growing pressure to localize and monitor SDG achievements at sub-national level	3	0.067	3	0.20
	Public Environmental Awareness	5	Rising demand from civil society for transparency and sustainable practices	3	0.067	3	0.20
	Digital Government	6	Push for e-government	3	0.067	3	0.20

EFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
	Push		enables potential digitalization of green budgeting				
	Cross-Sector Collaboration	7	Opportunity for synergy with NGOs, universities, and donor institutions	3	0.067	2	0.13
	Green Investment Trend	8	Increased interest from private sector in ESG-based and sustainable investment	2	0.044	2	0.09
	TOTAL OPPORTUNITIES			24	0.533		1.64
2. Threats (External, Negative Attributes of Green Budgeting in Toraja Utara Regency)	Political Change	1	Local leadership changes often shift priorities away from sustainability	3	0.067	3	0.20
	Fiscal Dependence	2	Reliance on national transfers limits flexibility in green budget allocation	3	0.067	2	0.13
	Technical Skill Gap	3	Lack of technical expertise at local level to manage environmental KPIs and digital tools	3	0.067	3	0.20
	Low Law Enforcement	4	Weak enforcement	3	0.067	2	0.13

EFAS	Component	No	Statement	Average Value	Weight	Rating	Total Score
			of environmental violations at the local level				
	Limited Private Sector Involvement	5	Private sector not yet fully engaged in green program partnership	3	0.067	3	0.20
	Climate Vulnerability	6	High exposure to flood, drought, and erosion risks without corresponding adaptation mechanisms	3	0.067	2	0.13
	Data Fragmentation	7	Inconsistent and scattered environmental data across institutions	3	0.067	2	0.13
	TOTAL THREATS			21	0.467		1.13
TOTAL EFAS				45	1.000		2.78

Table 7. External Factor Analysis Summary (EFAS) – Green Budgeting Implementation in Toraja Utara Regency

The external environment for green budgeting in Toraja Utara is highly supportive, with an opportunity score of 1.64 and an overall EFAS score of 2.78. National SDG commitments, climate-related funding, and digital governance platforms create strong momentum for reform. However, threats such as political instability, fiscal dependency, weak law enforcement, limited technical capacity, and lack of private sector involvement may hinder progress. To institutionalize green budgeting successfully, the local government must strengthen regulatory enforcement, invest in capacity building, integrate digital systems, and foster collaboration with the private sector and academia.

IE Matrix Analysis of Green Budgeting Implementation in Toraja Utara Regency

The Internal–External (IE) Matrix serves as a strategic diagnostic tool that positions the current state of green budgeting in Toraja Utara within a defined strategy zone. It synthesizes the weighted scores from the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) to determine the most suitable strategic approach—whether the region should focus on growth, maintenance, or retrenchment. This matrix assists policymakers

in aligning internal capacities with external environmental dynamics.

Coordinate Calculation

Based on IFAS:

1. Strengths Total Score = 1.440
2. Weaknesses Total Score = 1.340
3. X-axis (Internal Factors) = 1.440 + 1.340 = 2.780 → Rounded to 2.78

Based on EFAS:

1. Opportunities Total Score = 1.64
2. Threats Total Score = 1.13
3. Y-axis (External Factors) = 1.64 + 1.13 = 2.77 → Rounded to 2.77

Matrix Positioning

1. X-axis (IFAS Total Score: 2.78) → Category: Medium (2.0 – 2.99)
2. Y-axis (EFAS Total Score: 2.77) → Category: Medium (2.0 – 2.99)

Strategic Position: Quadrant V (Hold and Maintain)

Strategic Implication: Quadrant V – Hold and Maintain

Green Budgeting in Toraja Utara is currently positioned in Quadrant V of the IE Matrix, indicating a stable yet moderately dynamic strategic posture. This quadrant implies that while the region has foundational strengths and external opportunities, internal weaknesses and external threats still persist—requiring cautious optimization rather than aggressive expansion. Therefore, the recommended strategic direction is "Hold and Maintain." This involves consolidating existing environmental programs such as KLHS implementation, urban greening (RTH), and pollution control while sustaining stakeholder momentum through training, awareness campaigns, and continued alignment with national SDG mandates. Simultaneously, attention should be given to gradually closing internal gaps such as the absence of green budgeting indicators, lack of inter-OPD coordination structures, and fragmented digital reporting systems. Policymakers are advised to maintain current initiatives, institutionalize successful pilots, and build capacity progressively across departments. By doing so, Toraja Utara can stabilize its internal management systems and lay a stronger foundation for future upward movement toward "Growth and Build" (Quadrant IV) once capacity, legal frameworks, and stakeholder alignment are better reinforced.

TOTAL WEIGHT SCORE IFAS				
TOTAL WEIGHT SCORE EFAS	4,0	3,0 Strong 3,0 – 4,0	2,0 Medium 2,0 – 2,99	1,0 Weak 1,0 – 1,99
	3,0 High (3,0 - 4,0)	I (Growth)	II (Selective Growth)	III (Divest or Minimize)
	2,0	IV (Grow &	V (Hold &	VI (Harvest)

	Medium (2,0 – 2,99)	Build)	Maintain)	
	1,0 Low (1,0 – 1,99)	VII (Protective)	VIII (Stability)	IX (Exit Strategy)

Table 8. IE Matrix – Green Budgeting in Toraja Utara Regency

SWOT Matrix of Green Budgeting in Toraja Utara Regency

The SWOT Matrix synthesizes insights from the Internal Factor Analysis Summary (IFAS) and External Factor Analysis Summary (EFAS) to formulate strategic recommendations that reflect the alignment between Toraja Utara's internal capabilities and external environmental conditions. The region's commitment to sustainability through policy inclusion in the RPJMD, cross-sectoral environmental initiatives, and stakeholder participation are identified as key strengths. Conversely, the absence of green budgeting regulations, weak inter-agency coordination, and underdeveloped digital infrastructure remain critical weaknesses. The matrix below categorizes strategic options into four quadrants: S-O (using strengths to exploit opportunities), W-O (overcoming weaknesses through opportunities), S-T (leveraging strengths to mitigate threats), and W-T (addressing weaknesses to avoid external risks).

	Strengths (S)	Weaknesses (W)
	Sustainability vision integrated into RPJMD Missions 6, 7, and 10 Environmental activities (RTH, pollution control, KLHS) conducted by multiple OPDs Strategic Environmental Assessment (KLHS) conducted and partially integrated into planning Technical training (eco-farming, urban greening) conducted by DLH and Dinas Pertanian Environmental data exists within OPDs though not centralized Basic programs for waste management, pollution control, RTH, etc. included in RKPD Public consultation in KLHS formulation conducted	Basic programs for waste management, pollution control, RTH, etc. included in RKPD Public consultation in KLHS formulation conducted No Perda/Perbup mandates green budgeting practice No standard KPIs in SAKIP, Renstra, or LKJIP to track environmental outcomes No formal institutional mechanism for inter-OPD coordination No training or frameworks on green budgeting for OPDs Reports focus on outputs (activities), not environmental impacts (outcomes) No tagging of green programs in OPD budgets No digital dashboard or integrated platform for

		environmental reporting
Opportunities (O)	S-O Strategies	W-O Strategies
National policy aligns with SDGs and mandates environmental mainstreaming (e.g., RPJMN 2020–2024) Availability of national and international climate finance (Dana Alokasi Khusus Lingkungan, etc.) Local governments encouraged to innovate through fiscal decentralization and autonomy Growing pressure to localize and monitor SDG achievements at sub-national level Rising demand from civil society for transparency and sustainable practices Push for e-government enables potential digitalization of green budgeting Opportunity for synergy with NGOs, universities, and donor institutions Increased interest from private sector in ESG-based and sustainable investment	Institutionalize KLHS integration with SDGs and RPJMD. Use cross-OPD programs (e.g., RTH, pollution control) to access national green funding. Align stakeholder training with national e-government push. Promote RPJMD's green agenda via digital public engagement.	Develop green budgeting training modules using national e-learning platforms. Seek NGO support for KPI standardization and data integration. Use decentralization momentum to initiate OPD coordination forums. Implement pilot-based green budgeting in programs already funded through climate finance.
Threats (T)	S-T Strategies	W-T Strategies
Local leadership changes often shift priorities away from sustainability Reliance on national transfers limits flexibility in green budget allocation Lack of technical expertise at local level to manage environmental KPIs and digital tools Weak enforcement of environmental violations at the local level Private sector not yet fully engaged in green program partnership	Use strategic alignment of RPJMD and SDGs to shield programs from leadership changes. Expand stakeholder involvement to mitigate coordination instability. Leverage existing programs (RTH, KLHS) to attract donor support for climate resilience.	Advocate for local green budgeting Perda to stabilize practice across administrations. Create an environmental data warehouse using open-source platforms. Develop green budgeting guidelines with multi-stakeholder validation. Build OPD capacity in ESG-related public-private partnerships.

High exposure to flood, drought, and erosion risks without corresponding adaptation mechanisms Inconsistent and scattered environmental data across institutions		

Table 9. SWOT Matrix – Green Budgeting in Toraja Utara Regency

Toraja Utara is well-positioned to capitalize on its internal strengths, such as sustainability integration in the RPJMD, OPD-level environmental programs, and ongoing community training, to take advantage of opportunities stemming from national policies and global green economy trends. Strategies such as digital public engagement on green initiatives, optimizing access to national climate finance, and embedding green principles in RPJMD evaluation are crucial S-O approaches to maintain momentum and unlock additional resources. Meanwhile, internal weaknesses—including the lack of formal green budgeting regulations, absence of standard environmental KPIs, and underdeveloped coordination structures—can be mitigated through opportunity-driven reforms (W-O strategies). These include establishing technical partnerships with NGOs and national agencies for digital tools and KPI design, piloting green budgeting within climate-funded projects, and institutionalizing inter-OPD environmental planning task forces under decentralization mandates. In response to external threats, the S-T strategies suggest leveraging RPJMD alignment with SDGs to safeguard program continuity and enhance legitimacy across electoral cycles. The expansion of stakeholder engagement and use of existing green programs as platforms for donor collaboration also provide buffers against environmental and fiscal instability. On the other hand, W-T strategies are critical to address systemic vulnerabilities—such as legal gaps, data fragmentation, and skill deficits—by pushing for regulatory innovation, coordinated data governance, and ESG-driven private sector partnerships. Collectively, this matrix provides a roadmap for adaptive and resilient green budgeting governance in Toraja Utara.

AHP Analysis for Strategy Prioritization for Green Budgeting Implementation in Toraja Utara Regency

In order to identify the most effective strategic interventions to accelerate the implementation of green budgeting in Toraja Utara Regency, the Analytical Hierarchy Process (AHP) method was employed. AHP is a robust multi-criteria decision-making tool that allows for the comparison of various strategy options through pairwise judgments. Each strategy—drawn from the SWOT matrix (S-O, W-O, S-T, W-T)—was systematically evaluated in relation to others to determine its relative contribution toward the achievement of a sustainable, accountable, and inclusive green budgeting framework. The result of the AHP includes eigenvalues, weight priorities, and a ranking for each strategy, providing a rational basis for prioritizing policy actions.

Integrated Comparison Matrix																Eigen Val	Weight Prio	Rank
	SO1	SO2	SO3	SO4	WO1	WO2	WO3	WO4	ST1	ST2	ST3	WT1	WT2	WT3	WT4			

																ue	rity	
SO1	1.00	5.000	5.000	0.333	4.000	2.000	0.333	0.500	3.000	0.500	2.000	0.25	0.50	3.000	3.000	1.27	0.083	3
SO2	0.20	1.00	5.000	1.000	2.000	2.000	2.000	2.000	0.50	3.000	0.50	0.50	3.000	0.20	4.000	1.19	0.078	6
SO3	0.20	0.20	1.00	5.000	3.000	0.14	5.000	0.20	3.000	7.000	0.14	5.000	0.14	0.20	3.000	0.86	0.056	9
SO4	3.000	1.000	0.20	1.00	0.14	0.20	5.000	1.000	0.14	0.20	0.50	0.50	3.000	0.50	4.000	0.69	0.045	14
WO1	0.25	0.50	0.333	7.000	1.00	5.000	3.000	0.50	3.000	0.50	0.25	0.50	0.50	0.50	0.50	0.82	0.054	10
WO2	0.50	0.50	7.000	5.000	0.20	1.00	0.50	3.000	2.000	0.25	0.50	2.000	0.333	3.000	3.000	1.10	0.072	7
WO3	3.000	0.50	0.20	0.20	0.333	2.000	1.00	5.000	0.333	3.000	7.000	0.333	0.50	0.333	0.333	0.78	0.051	12
WO4	2.000	0.50	5.000	1.000	2.000	0.333	0.20	1.00	1.000	5.000	0.50	0.333	0.333	0.50	0.50	0.81	0.053	11
ST1	0.333	2.000	0.333	7.000	0.333	0.50	3.000	1.000	1.00	5.000	0.14	2.000	0.25	2.000	2.000	1.01	0.066	8
ST2	2.000	0.333	0.14	5.000	2.000	4.000	0.333	0.20	0.20	1.00	3.000	0.333	3.000	0.333	0.333	0.76	0.050	13
ST3	0.50	2.000	7.000	2.000	4.000	2.000	0.14	2.000	7.000	0.333	1.00	1.000	0.50	1.000	1.000	1.27	0.083	4
WT1	4.000	2.000	0.20	2.000	2.000	0.50	3.000	3.000	0.50	3.000	1.000	1.00	5.000	1.000	0.14	1.26	0.082	5
WT2	2.000	0.333	7.000	0.333	2.000	3.000	2.000	3.000	4.000	0.333	2.000	0.20	1.00	5.000	3.000	1.50	0.098	1
WT3	0.333	5.000	5.000	2.000	2.000	0.333	3.000	2.000	0.50	3.000	1.000	1.000	0.20	1.00	3.000	1.31	0.086	2
WT	2.0	0.5	0.3	0.5	0.3	0.1	2.0	2.0	4.0	0.3	0.2	0.2	1.0	0.2	1.0	0.6	0.04	15

4	0	0	3	0	3	4	0	0	0	3	0	0	0	0	0	3	1	
Total	21.32	21.37	43.74	39.37	25.34	23.15	30.51	26.40	30.18	32.45	19.74	15.15	19.26	18.77	30.81	15.28		

Table 10. Integrated Comparison Matrix and Weight Priorities

The results of the integrated comparison matrix show that WT2 (establishing a regional regulation/Perda on green budgeting) ranks highest with a priority weight of 0.0983, indicating its strategic significance in ensuring institutional continuity amidst political transitions. WT3 and SO1 follow closely behind, emphasizing the importance of digital public communication on green budgeting and cost-efficiency measures. Strategies like SO3, WO3, and WO4 fall into middle-low priorities, suggesting that while they are supportive, they should complement more structural and legal interventions.

Rank	Strategy Code	Strategy Description	Weight Priority
1	WT2	Establish regional regulation (Perda) on green budgeting to ensure program continuity	0.0983
2	WT3	Implement cost-efficiency and transparent budgeting systems across OPDs	0.0860
3	SO1	Institutionalize KLHS integration with RPJMD and SDGs	0.0833
4	ST3	Use existing OPD programs to attract national and international climate finance	0.0833
5	WT1	Develop legal-institutional guidelines for multiyear green budgeting frameworks	0.0823
6	SO2	Leverage national green finance (DAK Lingkungan) through cross-sectoral programs	0.0782
7	WO2	Collaborate with NGOs for dashboard development and KPI alignment	0.0717
8	ST1	Strengthen cross-OPD coordination based on RPJMD climate objectives	0.0659
9	SO3	Promote RPJMD green budgeting initiatives via digital public storytelling	0.0565
10	WO1	Develop green budgeting e-learning modules for internal training in OPDs	0.0537

Table 11. Summary of Top Priority Strategies (Green Budgeting)

The prioritization results reflect a clear focus on regulatory reinforcement, cross-sectoral integration, and digital transformation as key levers for green budgeting success. The top-ranked strategies highlight the importance of embedding green budgeting into local legal instruments, improving transparency and efficiency, and mobilizing climate finance. By institutionalizing KLHS and enhancing cross-OPD coordination, the government can ensure that green budgeting principles are not only planned but also executed consistently across development sectors. Furthermore, the presence of several W-T strategies in the top positions indicates that external threats—such as political shifts and fragmented data systems—must be strategically managed

through internal reform. These strategies demonstrate a proactive, resilience-building approach that goes beyond technical improvements. The strategic pathway suggested by the AHP output aligns with both national policy priorities and local operational capacities, offering a realistic and actionable roadmap for green fiscal transformation in Toraja Utara.

Discussion

The implementation of green budgeting in North Toraja Regency reflects early efforts to align fiscal policy with environmental goals, following the OECD Green Budgeting Framework (OECD, 2020). Within the Strategic Frameworks (Building Block I), local planning documents such as the Renstra and Renja have begun to include environmental objectives; however, these often lack measurable Key Performance Indicators (KPIs), making it difficult to evaluate actual progress (Pratama & Rachmawati, 2021). This aligns with general findings that developing regions tend to set broad environmental goals without concrete indicators (Choi et al., 2022). In the area of Methods and Tools (Building Block II), North Toraja has not yet implemented green budget tagging or cost-benefit analysis, both of which are essential tools for evaluating environmental programs (OECD, 2020). This gap limits evidence-based decision-making and financial accountability (Nurfadilah & Riyadi, 2022). Regarding Accountability and Transparency (Building Block III), environmental achievements are often reported in terms of outputs, such as the number of trees planted, instead of outcomes like improved air or water quality (Indriani et al., 2020), which weakens trust and stakeholder engagement. Lastly, the Enabling Environment (Building Block IV) remains underdeveloped; coordination among local agencies is fragmented, and there is a lack of capacity building and a central task force to oversee green budgeting (Fitriani & Iskandar, 2023). Though programs like eco-farming exist, they are insufficient in scope to bring systemic change.

A SWOT analysis shows that North Toraja has foundational strengths, including early integration of environmental goals into planning documents and existing programs that support environmental sustainability (Setiawan & Kusumawardhani, 2022). However, internal weaknesses such as the absence of local legal instruments, inadequate KPIs, and poor coordination reduce the effectiveness of these efforts (Nurfadilah & Riyadi, 2022). External opportunities lie in alignment with national SDG policies, growing public awareness, and access to international climate funds (Bappenas, 2021). Yet, these are threatened by leadership turnover, dependency on central government resources, and limited private sector involvement (Choi et al., 2022). Based on its position in the IE Matrix, North Toraja falls into the "Hold and Maintain" category, suggesting the need to continue current initiatives while strengthening legal and technical frameworks.

Results from the Analytical Hierarchy Process (AHP) indicate that the most strategic priority is the establishment of a regional regulation (Perda) on green budgeting, which provides legal certainty and institutional direction (Fitriani & Iskandar, 2023). This is followed by strategies such as implementing cost-efficiency measures and integrating environmental assessments (KLHS) into long-term planning. Additional strategies, including climate finance mobilization, digital performance dashboards, and enhanced cross-sector collaboration, highlight the need for improved data infrastructure and stakeholder engagement. These priorities suggest a phased implementation, starting with legal and institutional consolidation, followed by progressive investment in governance, technology, and behavioral change—aligning with OECD's recommendation that green budgeting be an evolving and integrated part of public financial management reform (OECD, 2020).

Conclusion

The implementation of OECD Green Budgeting in Toraja Utara Regency has demonstrated a promising yet fragmented institutional foundation. While sustainability objectives are explicitly integrated within regional development plans (RPJMD), and environmental programs have been initiated across various OPDs—such as green open space (RTH) management and KLHS studies—the absence of structured KPIs, legal mandates, and performance-based reporting limits the effectiveness of these efforts. The SWOT analysis further highlights that Toraja Utara possesses substantial internal potential supported by external momentum from national green finance, decentralization, and growing public awareness. However, institutional weaknesses such as lack of inter-OPD coordination, fragmented data systems, and low green budgeting literacy remain critical barriers. AHP analysis emphasizes that the most urgent strategic priorities involve legal formalization (e.g., Perda), regulatory instruments, and integration of digital tools and indicators to ensure accountability, efficiency, and resilience in green fiscal policy. These results reaffirm that green budgeting must be more than an aspirational concept; it requires operational clarity, structural enforcement, and data-driven governance.

To strengthen the green budgeting framework in Toraja Utara, a phased and integrated reform strategy is recommended. In the short term, the local government should enact a regional regulation on green budgeting and establish a multi-stakeholder task force to coordinate implementation across OPDs. Medium-term priorities should include developing a green budgeting dashboard, integrating environmental KPIs into Renstra, SAKIP, and LKJIP, and ensuring routine capacity-building for public officials. Partnerships with civil society organizations, donor agencies, and research institutions can help fill technical and knowledge gaps. Furthermore, embedding public transparency through digital platforms will enhance stakeholder trust and support behavioral change. Ultimately, green budgeting in Toraja Utara should be approached as a transformative governance innovation—aligning fiscal policy with sustainability principles, supported by legal, institutional, and participatory mechanisms to ensure its long-term effectiveness and impact.

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