Proceeding of the 3rd International Conference of International Conference on Business and Economics
Faculty of Economy and Business, Universitas Pattimura,
December 11, 2025
PATTIMURA PROCEEDING: Conference of Science and Technology
e-ISSN: 2829-3770 | February 2026 | pp.281-294

Structural Analysis of Key Factors Influencing the Sustainability of Urban Green Spaces in Palembang City Using MICMAC Approach

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ABSTRACT

As a vital component of the urban ecosystem, green open spaces (GOS) play crucial ecological, social, and aesthetic roles in maintaining the balance of the city environment. The importance of GOS is also mandated by local regulations concerning the spatial planning of Palembang City, which affirm the government's commitment to sustainable urban management. In formulating policy foundations related to GOS, regional governments often face strategic challenges in determining where to begin, which actions are most effective, and in what direction the policies should be directed. This study aims to identify and analyze the structural interrelationships among key factors influencing the sustainability of urban green open spaces in Palembang City, in order to provide a comprehensive analysis of the systemic dynamics underlying the effectiveness of GOS management policies. This research employs a structural analysis approach using the MICMAC (Matrix of Cross Impact Multiplication Applied to Classification) method to examine the causal relationships and the patterns of influence and dependence among 20 variables categorized into four dimensions of sustainability: (1) governance and policy, (2) physical and environmental aspects, (3) social aspects and community participation, and (4) economic and financial aspects. The results show that seven variables: urbanization and population density, spatial law enforcement, urban land value, government budget allocation, land-use change, land availability, and inter-agency coordination, constitute the primary driving factors with the highest direct influence on the system. These variables exert strong structural power and therefore form the strategic foundation for strengthening GOS governance and ensuring long-term spatial sustainability. In terms of priority ranking, urbanization and population density emerged as the most dominant factor influencing GOS sustainability. Projection of future priorities indicates rising influence for land availability, spatial law enforcement, GOS accessibility, green investment, and community-level green space provision, reflecting a growing need to safeguard spatial integrity, strengthen legal compliance, and enhance public access to green infrastructure. The identification of these key factors can serve as a valuable reference for stakeholders in making informed decisions and developing integrated strategies for sustainable urban green space management.

Keywords: *Green Open Space, Sustainability, Structural Analysis, MICMAC*

Introduction

Effective urban development planning relies heavily on the formulation of clear policies where the policies should begin, the direction they should take, and the steps required for implementation. In practice, however, the planning and policy formulation process often faces fundamental challenges. Many urban planning policies are developed in an ad-hoc and partial manner, without sufficient analytical grounding in systemic variables. As a result, their implementation becomes inconsistent, vulnerable

DOI: https://doi.org/10.30598/pcst.2026.iconbe.p281-294

to change, and unable to guarantee long-term sustainability (Pratama, I.A. et al., 2021). Therefore, it is essential to conduct research that provides a systemic analytical framework to support more comprehensive policy formulation.

The population growth continues to increase rapidly over time, as reflected in the rising number of people along with their diverse needs (Panayotou, T, 2020). In its development, urban areas in Indonesia function as strategic centers within the national system, serving as hubs for political, legal, defense, economic, sociocultural, and even religious activities (Olivia, S, et al., 2020). Consequently, serious attention is required in spatial planning and land-use management, particularly regarding the provision of public facilities such as residential areas, public and social infrastructure, and urban green open spaces. Pangesti & Dwirani (2018) fuGOSer explains that such public space facilities are essential as they provide areas for social interaction and economic activities that can enhance the quality of life and productivity of urban communities.

Green Open Spaces (GOS) play a critical role in urban areas; beyond their aesthetic function, they serve as a fundamental component of sustainable spatial planning. As the "lungs" of the city, GOS provide areas for recreation, social interaction, biodiversity conservation, and environmental enhancement, including air pollution control and climate mitigation (Pravitasari A.E., et al., 2022). GOS help absorb pollutants such as CO_2, NO_2, and particulate matter, thereby reducing the risk of respiratory diseases and improving public health (Panayotou, T, 2020). Thus, GOS are a prerequisite for environmental health and urban quality of life.

In Indonesia, the ecological and social roles of GOS are regulated under Law No. 26 of 2007 on Spatial Planning, which mandates that each city allocate 30% of its area as GOS, 20% public GOS (government-provided) and 10% private GOS (community/privately provided). Additionally, the Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency No. 14 of 2022 governs GOS provision based on ecological function, water absorption, economic value, social roles, aesthetics, and disaster mitigation.

Palembang City is one of Indonesia’s metropolitan cities, covering an area of 358.55 km² divided into 18 districts and 107 subdistricts. The presence of GOS in Palembang has been integrated into the city planning agenda, as outlined in Regional Regulation No. 15 of 2012 concerning the Spatial Plan of Palembang City for 2012–2032. The document identifies several major challenges faced by the Palembang City Government in ensuring the sustainability of urban green open spaces (GOS), namely:

1) Limited land availability, particularly in the context of spatial planning;
2) Insufficient cross-sectoral integration in environmental management, resulting in environmental improvements that remain partial and fragmented;
3) Weak enforcement of environmental regulations, inconsistencies and overlaps in environmental legislation at both the national and regional levels, as well as inadequate intersectoral coordination;
4) Low levels of public knowledge and awareness regarding environmental management.

Based on data obtained from the Strategic Plan of the Palembang City Environmental Agency for 2024–2026, there are four dimensions and twenty aspects and indicators used as the basis for formulating strategic policy. These dimensions serve as indicators of GOS sustainability and consist of: (1) governance and policy dimension, (2) physical and environmental dimension, (3) social and community participation dimension, and (4) economic and financing dimension. The aspects and indicators within each of these dimensions can be seen in the following table:

Table 1.
Aspects and Indicators of Green Open Space (GOS) Sustainability in Palembang City

No	Aspects	Indicators
Governance and Policy Dimension		
1	Local Government Policies on Green Open Space (GOS)	The existence and consistency of implementing local regulations related to green open space (GOS)
2	Interagency Coordination	Synchronization among relevant government agencies
3	Spatial Planning Law Enforcement	Effectiveness of monitoring against the conversion of green areas
4	Government Budgetary Support	The proportion of the regional budget (APBD) allocated for the development and maintenance of GOS
5	Involvement of Non-Government Stakeholders	The role of the private sector, NGOs, and environmental communities
Physical and Environmental Dimension		
6	Availability of Land for Green Open Space (GOS	Proportion of green areas relative to the total city area
7	Quality of the Urban Ecosystem	Presence of vegetation, biodiversity, and air quality
8	Level of Urbanization and Population Density	Urbanization Rate and Population Density Growth
9	Land Use Change	Rate of conversion of green open space into residential or commercial areas
10	Vulnerability to Flooding and Pollution	Degree of vulnerability to flooding and pollution
Social and Community Participation Dimension		
11	Community Environmental Awareness and Concern	Level of public understanding and action regarding the importance of preserving green open space (GOS) and the environment (campaigns, cleanliness practices, conservation).
12	Public Participation in GOS Management	Community involvement in planning, maintenance, monitoring, and reporting damage to GOS.
13	Availability of Community Green Spaces	Existence of community parks, public gardens, neighborhood green areas (RT?RW

		parks), and other community-based green spaces.
14	Integration of Environmental Education in Schools and Communities	Inclusion of environmental materials in formal education and community activities, such as Adiwiyata schools, training, workshops, and greening movements.
15	Public Accessibility to GOS (distance, facilities, safety)	Ease of public access to GOS based on distance, supporting facilities (pedestrian paths, parking), and safety aspects.
Economic and Financing Dimension		
16	Availability of Funds for GOS Maintenance	Allocation of the regional budget (APBD), special funds, and other financing schemes for the maintenance and development of green open space (GOS).
17	Economic Value of Urban Land (land prices exerting pressure on green areas)	Degree to which rising land prices increase pressure to convert green areas into commercial or residential zones.
18	Economic Incentives for the Private Sector to Provide GOS (CSR, green building)	Availability of incentives such as CSR programs, tax reductions, or green building policies to encourage private sector contributions to GOS provision.
19	Eco-tourism Potential and Economic Value of GOS	Economic value generated from utilizing GOS as destinations for tourism, education, and community activities.
20	Regional Capacity to Attract Environmentally Friendly Investment	The ability of local governments to promote green investments that support the sustainability of GOS and the broader environment.

In formulating policy planning documents for urban green open space (GOS), there is still a tendency to include only a limited set of variables, such as total area, spatial distribution, or facilities, while often overlooking the complex interactions among variables such as regulations, social aspects, economic conditions, demographics, community participation, and ecological dimensions. Such an approach is prone to producing policies that are not comprehensive, difficult to implement, or unsustainable in the long term (Setyowati, Hasibuan & Koestoer, 2020).

To address these weaknesses, an analytical approach is needed that can systematically map all variables and identify the key factors that truly determine the sustainability of GOS. One analytical method that can be used is MICMAC (Matrix of Cross-Impact Multiplications Applied to a Classification), a structural analysis technique for mapping relationships among variables by identifying their levels of influence and dependency (Ebrahim Nazlabadi et al., 2023). Technically, MICMAC operates through three basic steps: (1) identifying all relevant variables within the system; (2) assessing the direct and indirect impacts among variables; and (3) mapping

the variables into classifications based on their influence and dependency levels, thereby identifying key variables (Mahmood Ahmad et al., 2019).

Based on this rationale, the application of MICMAC in the context of GOS sustainability in Palembang City becomes highly relevant. Through this approach, researchers can comprehensively examine the interconnections among all factors influencing GOS sustainability, from regulatory aspects, spatial planning, ecological and biodiversity considerations, and socio-cultural dimensions, to economic factors and implementation as well as monitoring mechanisms. The results can support the formulation of policies that are more realistic, strategic, and sustainable.

Research Methods

The selection of the research location is focused on the urban areas of Palembang City, particularly regions that contain strategic Green Open Spaces (GOS), such as city parks, green corridors, riverfront areas, and community-based green spaces. The location was selected purposively based on its direct relevance to the issue of GOS sustainability and the involvement of key stakeholders engaged in urban environmental management. This study employs a quantitative approach supported by structural analysis to identify the key factors influencing the sustainability of GOS in Palembang City.

The data used in this study consist of both primary and secondary data. Primary data were obtained through interviews and focus group discussions (FGDs) with stakeholders involved in spatial planning and environmental management in Palembang. The FGD participants included city government officials, the environmental agency, the spatial planning office, academics, environmental observers, community representatives, and other stakeholders directly or indirectly connected to GOS sustainability. Meanwhile, secondary data were collected from official government documents, spatial planning reports, environmental statistics, and relevant scientific publications.

Data analysis in this research employs Prospective Analysis, with MICMAC (Matrix of Cross-Impact Multiplications Applied to a Classification) as the main analytical instrument. This method, introduced by Michel Godet as part of the Strategic Foresight approach, focuses on future scenario analysis, including sustainable development planning (Fauzi, 2019). In this study, MICMAC is used to map the relationships among variables influencing GOS sustainability and to identify the key factors that play the most dominant roles within the system. The MICMAC analytical procedure follows the stages described by Stratigea (2013), beginning with: (1) problem formulation, (2) variable identification, (3) analysis of inter-variable relationships, and (4) scoring the levels of influence and dependency.

The variables used in this analysis are based on the 20 sustainability aspects of GOS in Palembang City (Table 1). The relationships among variables were analyzed by assessing the degree of influence and dependency between them (Benjumea, Castañeda, & Valencia-Arias, 2016; Fauzi, 2019). Through this analytical process, the variables are then classified into four main quadrants (Ahmad, Tang, Qiu, & Ahmad, 2019), namely:

1) **Quadrant I: Key or Crucial Factors**, which possess a strong capacity to drive changes within the system while being minimally influenced by other variables. These factors act as primary drivers and form the foundation for strategic change.
2) **Quadrant II: Relay Factors**, which are dynamic and highly sensitive to change. They exert strong influence but are also highly dependent on other variables within the system. Small changes in these variables may lead to broad consequences, often generating cascading effects.
3) **Quadrant III: Output Factors,** which serve as the results or consequences of system changes. These variables have limited influence on the system but are strongly affected by the conditions of Quadrant I and II variables in a strategic manner.
4) **Quadrant IV: Autonomous Factors,** which are relatively disconnected from the overall system. Changes in these variables neither significantly influence other variables nor are they substantially affected by the dynamics of the system.

MICMAC is a set of structural analysis tools designed to identify key variables within a system. Operationally, this method works using a Boolean matrix that maps both direct and indirect relationships among variables. These interactions are then processed through repeated iterations to obtain a more comprehensive representation of the interconnections. The calculation of relationships among elements in MICMAC is generally conducted using a cross-matrix, as explained by Fauzi (2019) and presented in Table 2 below.

Table 2.
Matrix of Inter-Variable Relationships in MICMAC Analysis

	Var 1	Var 2	Var 3...	Var n	Influence (Y-Axis)
Var 1	0	(V1,2)	(V1,3)...	(V1,n)	$\sum_{j=1}^{n}(Var_1, j)$
Var 2	(V2,1)	0			
Var 3					
.					
.					
Var n	(Vn,1)			0	
Dependence (X-Axis)	$\sum_{j=1}^{n}(Var_1, 1)$			....	

In Table 2 above, for each relationship between variables in Var (n,j), the degree of relationship is assessed on a scale from 0 to 3. A score of 0 indicates no relationship, 1 indicates a weak relationship, 2 indicates a moderate relationship, and 3 indicates a strong relationship between variables. The data were then processed using Microsoft Excel and analyzed using MICMAC software. The analysis results are presented descriptively to identify the various factors influencing the sustainability of green open spaces (GOS) in Palembang City. The identification of these factors provides a crucial foundation for decision-makers in formulating more effective GOS management strategies, considering ecological, social, and economic aspects in the future.

Results and Discussion

The MICMAC analysis of the 20 variables used to assess the sustainability of Green Open Spaces (GOS) in Palembang City provides a structural overview of the driving power and dependency levels among variables within the GOS management system. Through the mapping of variables into four quadrants, a more comprehensive picture emerges regarding the strategic factors that drive change, the variables that are sensitive and dynamic, and those that represent the ultimate outcomes of GOS governance and policy. This mapping serves as an important foundation for identifying priority variables that require policy intervention, anticipating potential instability among variables, and ensuring that the strategic direction for GOS planning in Palembang is accurate, comprehensive, and sustainable.

The factors analyzed in this study demonstrated complete stability of 100% after three (3) iterations. In the first and second iterations, the results showed 93% and 99% for the influence aspect, and 96% and 100% for the dependence aspect, respectively. Overall, the stability test results are presented in Table 3 below.

Table 3.
Variable Stability Test Results

Iteration	Influence	Dependence
1	93 %	96 %
2	99 %	100 %
3	100 %	100 %

Based on the analysis results, the 20 variables used in this study are divided into four quadrants. In this research, the MICMAC analysis maps the variables according to their direct influence. The results of the analysis and the variable mapping based on direct influence, as well as which variables belong to each quadrant, are presented in Figure 1 and Table 4 below:

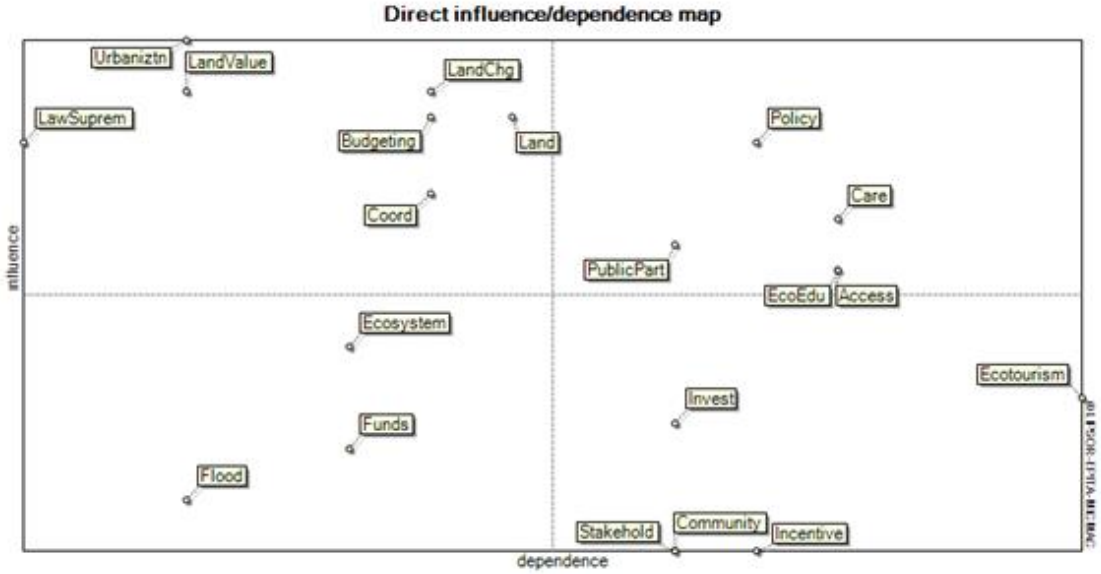


Figure 1.
Results of Variable Mapping Analysis Based on Direct Influences

Table 4.
Variable Mapping for Each Quadrant

Quadrant I (Upper Left) Key / Crucial Variables	Urbanization and Population Density (Urbaniztn), Spatial Planning Law Enforcement (LawSuprem), Economic Value of Urban Land (LandValue), Government Budget Support (Budgeting), Land Use Change (LandChg), Availability of Land for GOS (Land), Interagency Coordination (Coord)
Quadrant II (Upper Right) Relay / Dynamic Variables	Public Participation in GOS Management (PublicPart), Local Government Policies on GOS (Policy), Community Environmental Awareness and Concern (Care), Environmental Education in Schools and Communities (EcoEdu), Public Accessibility to GOS (Access)
Quadrant III (Lower Right) Output Variables	Eco-tourism Potential and Economic Value of GOS (Ecotourism), Environmentally Friendly Investment (Invest), Availability of Community Green Open Spaces (Community), Engagement of Non-government Stakeholders (Stakehold), Economic Incentives for the Private Sector Providing GOS (Incentive).
Quadrant IV (Lower Left) Autonomous Variables	Urban Ecosystem Quality (Ecosystem), Vulnerability to Flooding and Pollution (Flood), Availability of Funds for GOS Maintenance (Funds).

Based on the results of the analysis visualized in Figure 1 and Table 4, Quadrant I represents the key factors that have a high level of direct influence on the system while exhibiting relatively low dependency. This indicates that even small changes in these variables can generate substantial impacts on the success of GOS provision, whether in terms of regulations, spatial planning, or development policies. Variables such as Spatial Planning Law Enforcement (LawSuprem), Urbanization and Population Density (Urbaniztn), Economic Value of Urban Land (LandValue), Government Budget Support (Budgeting), Land Use Change (LandChg), Availability of Land for GOS (Land), and Interagency Coordination (Coord) serve as the primary determinants of the dynamics of the urban spatial system. The position of these variables in this quadrant underscores that key variables must become the priority for intervention due to their strategic nature. If not properly managed, these variables may trigger instability within the spatial planning system. Therefore, strategies for GOS development should be grounded in interventions directed at these key variables..

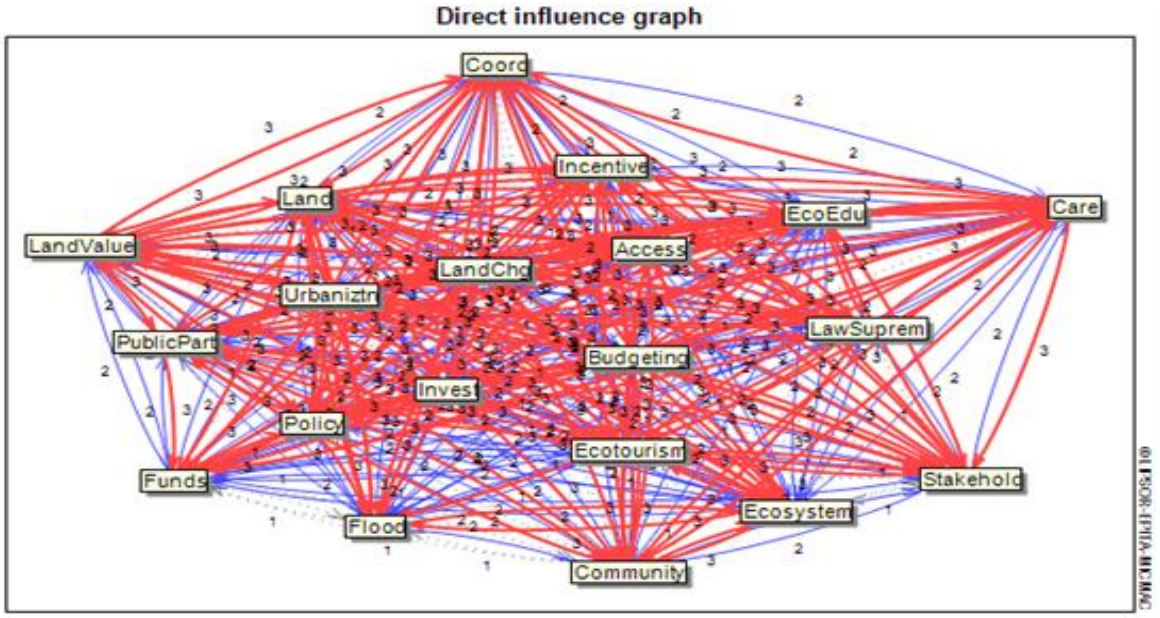
The variables located in Quadrant II are categorized as relay or dynamic factors because they exhibit both high influence and high dependency. Variables in this quadrant, such as Public Participation in GOS Management (PublicPart), Local Government Policies on GOS (Policy), Community Environmental Awareness and Concern (Care), Environmental Education in Schools and Communities (EcoEdu), and Public Accessibility to GOS (Access), serve as intermediaries between key variables

and output variables. Consequently, changes in these variables may trigger either positive or negative feedback within the GOS governance system. In the context of green open space management, relay variables function as catalysts that may accelerate or hinder policy achievement if not managed consistently. Their significance is amplified by their sensitivity to social dynamics, community behavior, and governmental policy direction. Therefore, variables in this quadrant require continuous monitoring to prevent system instability. Relay factors can shift their role to either drivers or inhibitors if interventions are not appropriately implemented. Thus, managing these variables demands a participatory and adaptive approach. The position of these variables also indicates that the success of GOS provision is influenced by a combination of social, institutional, and accessibility-related factors. Overall, this quadrant reflects the dynamic interplay of behavioral and governance changes that strongly determine the effectiveness of GOS policies.

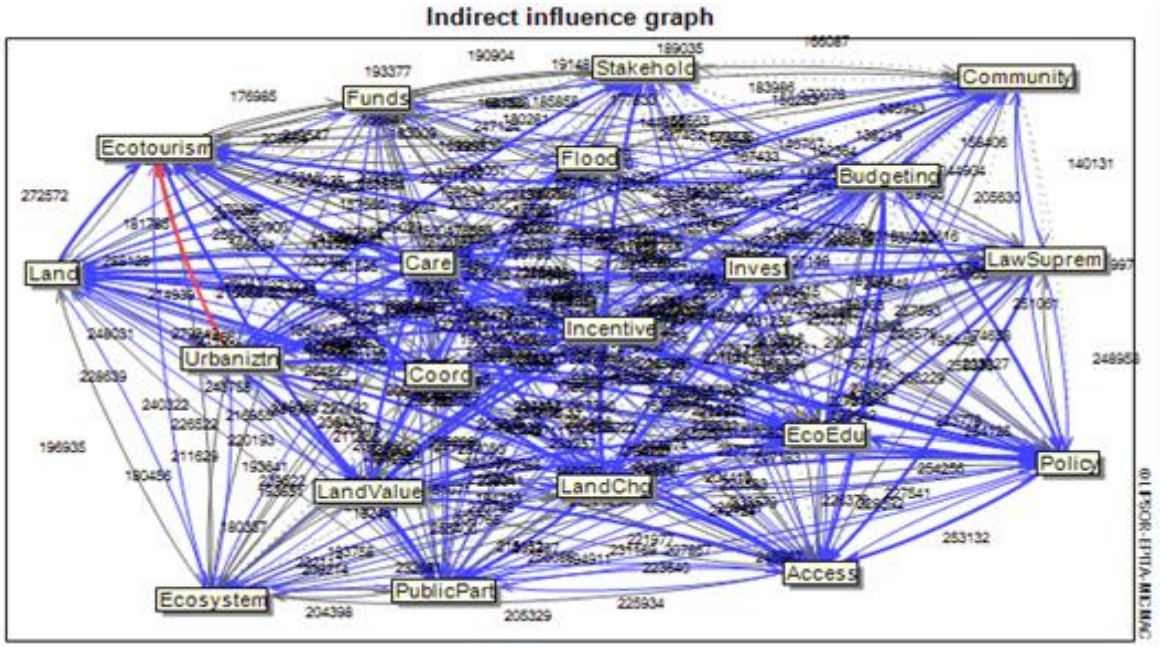
Based on the MICMAC analysis, the variables included in Quadrant III are categorized as output factors because they have relatively low influence but high dependence. These variables are: Ecotourism Potential and the Economic Value of Urban Green Spaces (Ecotourism), Environmentally Friendly Investment (Invest), Availability of Community Green Spaces (Community), Involvement of Non-Governmental Stakeholders (Stakehold), and Economic Incentives for Private Entities Providing Urban Green Spaces (Incentive). These variables are the result of interactions among various key and dynamic variables that have been analyzed previously. This quadrant reflects the final condition or "impact" that will be achieved when the variables in Quadrants I and II move optimally. MICMAC positions output variables as indicators of the performance of the urban green space governance system, so changes in these variables are used to assess policy effectiveness. Although their influence on other variables is minimal, the conditions in Quadrant III are crucial because they reflect the extent to which the urban environment can achieve sustainability. Due to their highly dependent nature, output variables can change significantly in response to small variations in driving variables. Therefore, monitoring the variables in Quadrant III is essential for evaluating the system's long-term success.

The variables in Quadrant IV are categorized as autonomous factors, possessing relatively low levels of direct influence and dependence compared to variables in other quadrants. Variables in Quadrant IV, such as Urban Ecosystem Quality (Ecosystem), Vulnerability to Flooding and Pollution (Flood), and Availability of Urban Green Space Maintenance Funds (Funds), do not significantly drive systemic changes, yet they remain important as they reflect conditions that arise as consequences of policies or spatial dynamics. Although their influence is not dominant, in the context of large cities, these variables serve as environmental signals that must be consistently monitored. Small changes in these variables do not directly affect key variables, but they can still disrupt spatial balance. Therefore, municipal authorities need to treat autonomous variables as indicators whose development should be monitored specifically.

The complex relationships among variables in the MICMAC analysis are illustrated in a visual model that shows cause-and-effect connections, including both direct and indirect influences between the various variables. This can be seen in Figure 2 below.



(a)



(b)

Figure 2.
Complex Relationships Among Variables Affecting GOS Sustainability: (a) Direct Influence, (b) Indirect Influence

In Figures 2a and 2b, outward-pointing arrows indicate that a variable "influences" other variables, while inward-pointing arrows indicate that the variable is "influenced" by other variables. Red lines represent strong relationships between variables, whereas blue lines, which become progressively lighter, indicate weakening relationships, whether direct or indirect. This complexity suggests that formulating sustainable green open space policies in Palembang City requires strategies in which factors are interconnected and mutually reinforcing.

To facilitate the identification of priority factors within the complex relationships among variables shown in Figure 2, the MICMAC analysis also provides a classification of which variables are currently prioritized based on their level of influence. The analysis fuGOSer predicts changes in the priority of factors in the future, based on the indirect influence of variables on others. In Figure 3 below, the left side presents the current ranking of variables with the greatest direct influence, while the right side shows the predicted changes in the ranking of variables in the future. Green lines indicate that a variable's priority ranking is expected to increase, whereas red lines indicate that the variable's priority ranking is expected to decrease over time.

Based on the analysis results shown on the left side of Figure 3, the Urbanization Rate and Population Density (Urbaniztn) variable is the most influential factor affecting GOS sustainability. This indicates that the continuously increasing urbanization exerts significant pressure on spatial planning in Palembang City, making green open spaces increasingly constrained by the demands for housing, commerce, and infrastructure. Following urbanization, the factors with the next highest influence, in order, are Land Use Change (LandChg), Urban Land Economic Value (LandValue), Government Budget Support (Budgeting), and Land Availability for GOS (Land). These five variables are considered current priorities because they directly determine the city's capacity to maintain and expand GOS areas. The higher the land pressure and economic value, the greater the challenge for the government to preserve an ideal proportion of GOS. Therefore, a combination of spatial planning policies, fiscal capacity, and the availability of physical space becomes central to efforts aimed at sustaining GOS in Palembang City.

The analysis results on the right side of Figure 3 also indicate that several variables are predicted to experience shifts in priority in the future. The variables expected to rise in priority ranking are: Land Availability for GOS (Land), Enforcement of Spatial Planning Laws (LawSuprem), GOS Accessibility for the Public (Access), Environmentally Friendly Investment (Invest), and Availability of Green Open Space for Communities (Community). The increasing importance of these variables highlights that future challenges in GOS management include physical pressure on space, the need for law enforcement in spatial planning, investment requirements, and ensuring public accessibility to green open spaces, even at the community level. This suggests a future shift in focus from merely maintaining GOS area size to the urgency of ensuring compliance, funding, accessibility, and the functional role of GOS as public space in Palembang City.

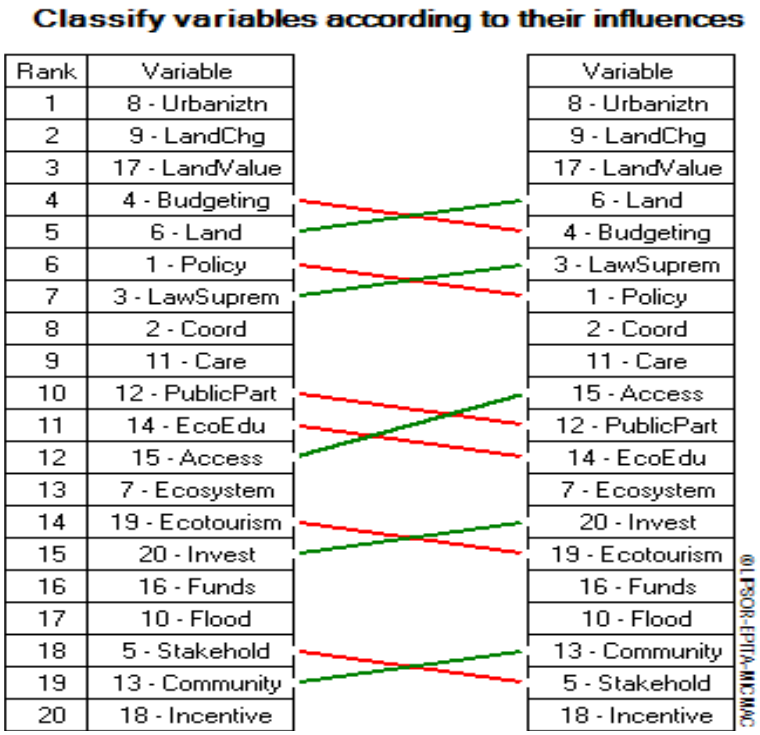


Figure 3.
Classification of Variable Influence Priorities

Conversely, several variables are predicted to experience a decrease in priority, including Government Budget Support (Budgeting), Local Government Policies on GOS (Policy), Public Participation in GOS Management (PublicPart), Environmental Education in Schools and Communities (EcoEdu), Ecotourism Potential and GOS Economic Value (Ecotourism), and Involvement of Non-Government Stakeholders (Stakehold). The declining influence of these variables suggests that their roles tend to follow the dynamics of core policies and the more fundamental spatial conditions in Palembang City. For example, government budget support becomes less critical if green open spaces involve environmentally friendly investments for ecotourism, which generate economic value. Similarly, public participation and environmental education remain important, but their effectiveness heavily depends on the availability of adequate space and strong legal certainty. The role of stakeholders is more responsive to the existing conditions of GOS rather than acting as a primary driver of change.

These findings provide an important insight that the sustainability of GOS in Palembang will increasingly be determined by the government's capacity to manage pressures from urbanization, secure land availability, and strengthen the enforcement of spatial planning laws. Meanwhile, other factors such as public participation, environmental education, and economic incentives are effective only insofar as the more fundamental structural conditions are in place. By understanding the dynamics of these variable priorities, the government can formulate spatial planning and GOS management policies that are more comprehensive, targeted, effective, and sustainable.

Conclusion & Policy Recommendations

Based on the analysis results, the key factors for the sustainability of Green Open Spaces (GOS) in Palembang City are Urbanization Rate and Population Density (Urbaniztn), Enforcement of Spatial Planning Laws (LawSuprem), Urban Land Economic Value (LandValue), Government Budget Support (Budgeting), Land Use Change (LandChg), Land Availability for GOS (Land), and Interagency Coordination (Coord). These variables exert a high direct influence on the GOS system and can trigger significant changes if altered, suggesting that policy interventions for GOS sustainability in Palembang City should focus on these factors.

Additionally, factors that have dynamic relationships with others, such as Public Participation in GOS Management (PublicPart), Local Government GOS Policies (Policy), Public Environmental Awareness and Concern (Care), Environmental Education in Schools and Communities (EcoEdu), and GOS Accessibility for the Public (Access), serve as connectors sensitive to social dynamics and community behavior. These factors need to be managed in a participatory and adaptive manner to ensure positive feedback that supports GOS sustainability. Meanwhile, output factors such as Ecotourism Potential and GOS Economic Value (Ecotourism), Environmentally Friendly Investment (Invest), Availability of Green Open Space for Communities (Community), Involvement of Non-Government Stakeholders (Stakehold), and Economic Incentives for Private GOS Providers (Incentive) act as performance indicators of GOS sustainability. Autonomous factors, including Urban Ecosystem Quality (Ecosystem), Vulnerability to Flooding and Pollution (Flood), and Availability of GOS Maintenance Funds (Funds), require continuous monitoring to ensure ongoing GOS sustainability.

Policy recommendations derived from these findings emphasize the need to prioritize interventions and management on key/crucial factors and those predicted to increase in importance in the future. The Palembang City Government is advised to integrate spatial planning strategies that are responsive to urbanization pressures, enhance legal certainty in spatial planning, and promote investment and cross-sector collaboration while maintaining GOS integrity, accessibility, and functionality. In order to enhance public participation, environmental education, and economic incentives for GOS sustainability, their effectiveness will heavily depend on the underlying structural conditions.

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