

Evaluation of Green Open Space Policy in Supporting Sustainable Development

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Abstract

Green Open Space (GOS) plays a crucial role in promoting environmental sustainability, enhancing urban resilience, and improving the quality of life in cities. This study evaluates the effectiveness of green open space policies in supporting sustainable development, focusing on policy implementation, challenges, and best practices. Using a mixed-methods approach, this research examines policy frameworks, land-use regulations, and urban planning strategies in selected cities. Key indicators such as green space coverage, ecological benefits, and social inclusion are analyzed to assess the impact of GOS policies. The findings highlight disparities between policy objectives and actual implementation, emphasizing governance challenges, land-use conflicts, and financial constraints. Furthermore, the study identifies innovative approaches, including smart green infrastructure and community-based green space management, as potential solutions for optimizing GOS policies. The research concludes that a more integrated and adaptive policy approach is essential to enhance the effectiveness of green open spaces in achieving sustainable urban development. Recommendations include strengthening policy enforcement, increasing stakeholder collaboration, and leveraging technology for better monitoring and planning.

Keywords: green open space, sustainable development, urban, policy, environmental governance

1. Introduction

Urbanization has led to the rapid expansion of cities worldwide, bringing both opportunities and challenges to sustainable development (Satterthwaite et al., 2010). While economic growth and infrastructural advancements have improved living standards, they have also resulted in significant environmental degradation, resource depletion, and loss of biodiversity (Hall, 2007; Logan et al., 2005). One of the key environmental concerns in urban areas is the decline of Green Open Space (GOS), which plays a crucial role in maintaining ecological balance, reducing pollution, and enhancing the well-being of city residents. Green open spaces, such as parks, urban forests, and public gardens, contribute to climate change mitigation, improve air and water quality, reduce the urban heat island effect, and provide recreational and aesthetic benefits.

Despite these recognized benefits, many cities face significant challenges in maintaining and expanding green open spaces (Khan et al., 2024; Punia et al., 2023; Roscoe et al., 2019). Rapid population growth, increasing demand for land for residential and commercial development, and weak policy enforcement have led to the diminishing presence of urban green areas. In many developing countries, the implementation of Green Open Space policies is often hindered by competing priorities, lack of funding, and inadequate urban planning frameworks. As a result, cities struggle to meet international and national standards for green space per capita, leading to negative environmental and social consequences, such as higher air pollution levels, reduced access to recreational spaces, and increased urban heat stress.

In the context of sustainable development, green open space policies are essential in achieving the balance between economic progress, environmental conservation, and social well-being. International organizations, such as the United Nations and the World Bank, advocate for cities to integrate green infrastructure into their urban planning strategies to promote resilience and climate adaptation. Several policies and regulations have been introduced at national and local levels to encourage the development and protection of GOS (Cvijović, 2023). However, the effectiveness of these policies varies

significantly depending on factors such as governance structures, institutional capacity, land-use regulations, and community participation.

Moreover, the gap between policy formulation and implementation remains a major issue in many urban areas. While governments set ambitious targets for green open spaces, enforcement mechanisms and urban governance constraints often prevent their realization. The privatization of land, lack of community engagement, and the dominance of commercial interests in urban development further complicate efforts to preserve green spaces. Therefore, a critical evaluation of existing GOS policies is necessary to identify strengths, weaknesses, and areas for improvement in policy implementation.

2. Method

This study employs a qualitative research (Aspers & Corte, 2019) approach to evaluate the effectiveness of green open space (GOS) policies in supporting sustainable development. A qualitative method is chosen to facilitate an in-depth exploration of policy frameworks, governance structures, and implementation challenges by gathering insights from key stakeholders and analyzing relevant documents. The study adopts a case study approach, focusing on selected urban areas where GOS policies have been implemented. This approach enables a contextualized understanding of how policies are formulated, enforced, and experienced by various stakeholders, while also allowing for the identification of best practices, governance challenges, and areas for improvement in urban GOS management.

Data collection is conducted through three primary methods: document analysis, semi-structured interviews, and field observations. The first method, document analysis, involves an extensive review of policy documents, urban planning regulations, and sustainability reports to examine the legal and institutional frameworks governing GOS. This includes an assessment of national and local government regulations, land-use laws, and reports from international organizations such as UN-Habitat and the World Bank. By analyzing city-level sustainability reports and relevant academic literature, this study aims to understand policy intentions, regulatory mechanisms, and strategic objectives related to GOS. The second method, semi-structured interviews, is conducted with policy practitioners, urban planners, environmental experts, and community representatives. These interviews explore perceptions regarding the effectiveness of existing policies, challenges in implementation, and the role of various stakeholders in managing GOS. Additionally, the study examines the extent of community engagement in urban green space initiatives and gathers recommendations for improving policy frameworks. The selection of interview participants follows a purposive sampling approach, ensuring that individuals with relevant expertise and experience are included in the study. The interview data is transcribed and analyzed thematically to identify recurring patterns and key insights.

The third method, field observations, involves direct visits to selected green open spaces to assess the extent of green space coverage, the condition and maintenance of urban green areas, and the level of community utilization. Observations also focus on evidence of policy enforcement, such as zoning regulations and urban planning initiatives. Through these direct observations, the study provides firsthand insights into the practical outcomes of GOS policies, complementing findings from document analysis and interviews.

A thematic analysis approach is used to interpret the qualitative data. The analysis process begins with a familiarization phase, where interview transcripts, documents, and field notes are reviewed to understand key content. The next stage involves coding, where significant themes related to policy effectiveness, governance issues, and sustainability outcomes are identified. These codes are then categorized into broader themes such as policy gaps, enforcement challenges, and best practices. Finally, the interpretation phase draws connections between themes to generate meaningful conclusions about the state of GOS policies. By triangulating data from multiple sources—documents, interviews, and observations—the study ensures the reliability and validity of the findings.

This research adheres to ethical principles by obtaining informed consent from interview participants, ensuring confidentiality and anonymity, and using collected data solely for academic purposes. Participants are also given the opportunity to review and clarify their statements if needed.

While the qualitative nature of this study provides rich insights into GOS policy implementation, some limitations should be acknowledged. The findings are context-specific and may not be fully generalizable to all urban areas. Additionally, the study relies on subjective perceptions from stakeholders, which may introduce bias. Data access limitations may also affect the completeness of document analysis. Despite these constraints, the study offers valuable perspectives on the governance and management of urban green spaces, contributing to policy discussions on sustainability and urban resilience.

3. Results

The evaluation of green open space (GOS) policies reveals a complex interplay between policy design, implementation mechanisms, and on-the-ground realities. Findings from document analysis, interviews, and field observations highlight key issues related to policy effectiveness, governance challenges, and the role of various stakeholders in managing urban green spaces.

Effectiveness of Green Open Space Policies

The analysis of policy documents and urban planning regulations indicates that most cities have established legal frameworks governing GOS, often aligning with national and international sustainability standards (Cvijović, 2023; Venugopal, 2022). These policies emphasize the importance of green spaces for climate resilience, biodiversity conservation, and public well-being. However, despite the existence of these frameworks, implementation varies significantly across different urban areas. While some cities have successfully increased green space coverage through structured planning and community-driven initiatives, others face persistent difficulties due to inadequate enforcement, financial constraints, and competing land-use priorities.

Interviews with urban planners and environmental experts reveal that in cities with well-enforced policies, GOS initiatives have led to improved air quality, reduced urban heat island effects, and greater accessibility to recreational spaces. In contrast, areas with weak governance structures struggle with land conversion for commercial and residential purposes, often leading to the loss of designated green spaces. The divergence between policy goals and practical outcomes underscores the need for stronger enforcement mechanisms and integrated urban planning strategies.

Challenges in Policy Implementation

Thematic analysis of interviews highlights several barriers to effective GOS policy implementation. The most frequently mentioned issue is the competing demands for urban land, particularly in high-density areas where economic development pressures lead to the prioritization of commercial and residential infrastructure over green spaces (Li et al., 2024). In many cases, urban expansion occurs at the expense of existing green areas, with inadequate compensatory measures in place.

Another major challenge is institutional coordination. Responsibilities for GOS management are often fragmented across multiple government agencies, leading to bureaucratic inefficiencies and gaps in policy execution. Interviewees emphasize that the lack of a centralized authority overseeing GOS policies results in inconsistencies in land-use planning, delayed project implementation, and conflicting mandates between urban development and environmental conservation agencies.

Financial constraints also emerge as a recurring theme. Many municipalities allocate limited budgets to green space development and maintenance, relying heavily on external funding sources or private sector investments. This financial limitation affects long-term sustainability, with some green spaces deteriorating due to insufficient maintenance. Public-private partnerships have been introduced in some cases to address this issue, but concerns remain regarding the privatization of green spaces and restricted public access.

Field observations further corroborate these findings, showing disparities in green space conditions across different urban areas. While some parks and public gardens are well-maintained and actively used by communities, others suffer from neglect, inadequate infrastructure, and encroachment. Accessibility also varies, with low-income neighborhoods often having limited proximity to quality green spaces compared to more affluent districts. These observations align with interview findings that

highlight inequitable distribution of green spaces, raising concerns about environmental justice and social inclusion in urban planning.

Best Practices and Innovative Approaches

Despite the challenges, several cities have demonstrated successful strategies in GOS management. Case studies highlight the effectiveness of community-based green space initiatives, where local residents participate in the design, development, and maintenance of urban greenery. Such initiatives not only enhance green space quality but also foster social cohesion and environmental awareness (Porter & McIlvaine-Newsad, 2013).

Smart green infrastructure is another emerging trend. Some cities integrate digital technologies such as remote sensing, geographic information systems (GIS), and real-time monitoring tools to track green space coverage and environmental impact. These technologies improve decision-making processes and enable more efficient resource allocation for GOS projects.

Public-private partnerships have also shown promise in certain urban settings, particularly in cases where private developers are incentivized to incorporate green spaces into their projects. However, ensuring that such partnerships prioritize public interest remains a key concern.

In summary, the findings reveal both progress and persistent challenges in GOS policy implementation. While regulatory frameworks exist, enforcement gaps, institutional fragmentation, and financial limitations hinder their effectiveness. However, innovative solutions, community engagement, and technology-driven approaches offer potential pathways to enhance green space governance and sustainability. These insights form the basis for the policy recommendations presented in the following section.

4. Discussion

The findings from this study highlight both the strengths and weaknesses of existing green open space (GOS) policies in supporting sustainable urban development. While many cities have adopted regulatory frameworks to promote GOS, the effectiveness of these policies remains inconsistent due to governance challenges, land-use conflicts, financial limitations, and varying levels of public engagement. This discussion examines these issues in relation to existing theories of urban sustainability, policy implementation, and environmental governance.

Policy Effectiveness and Implementation Gaps

The results indicate that while GOS policies exist at both national and municipal levels, their implementation is often hindered by weak enforcement and competing urban priorities. This aligns with the broader literature on urban sustainability, which emphasizes the gap between policy formulation and execution in developing cities (Marrucci et al., 2021; Negin et al., 2009). One of the primary challenges is land-use competition, where rapid urbanization drives the conversion of green spaces into commercial and residential areas. This finding supports previous studies that highlight how economic pressures frequently override environmental considerations, leading to a decline in urban greenery and increased environmental degradation.

Institutional fragmentation further exacerbates the problem. Many cities lack a centralized body responsible for overseeing green open space development, leading to inconsistencies in policy application. Urban governance theories suggest that fragmented institutional structures often result in inefficiencies and conflicts between agencies. In the case of GOS management, these structural weaknesses manifest in delays in project approvals, unclear responsibilities among government agencies, and disjointed planning efforts. Strengthening inter-agency coordination and establishing clearer mandates for GOS governance could enhance policy effectiveness and streamline implementation efforts.

The Role of Public Participation in Green Space Management

The study also underscores the importance of community involvement in green space governance. Field observations reveal that community-managed green spaces tend to be better maintained and utilized compared to those managed solely by government agencies (Obeidat et al., 2023). This finding aligns with participatory urban planning theories, which emphasize that citizen engagement enhances policy

legitimacy and fosters a sense of ownership among local communities. In cities where local governments actively involve communities in GOS initiatives, there is a greater likelihood of long-term sustainability and public support for green infrastructure projects.

However, barriers to public participation remain significant, particularly in marginalized communities where access to green spaces is limited. Socioeconomic disparities affect the distribution and quality of GOS, reinforcing environmental inequalities. Prior research on environmental justice has similarly found that lower-income neighborhoods tend to have fewer green spaces, which affects public health outcomes and overall well-being. Addressing these disparities requires targeted policies that prioritize green space development in underserved areas and encourage inclusive urban planning processes.

Financial and Technological Innovations in Green Space Management

Financial constraints are a major barrier to GOS expansion and maintenance, as indicated by both interview data and document analysis. Many cities allocate limited budgets for green space initiatives, resulting in deteriorating infrastructure and inadequate maintenance (De et al., 2024; Ly & Ly, 2024; Subramanian & Suresh, 2022). One potential solution is the adoption of public-private partnerships (PPP), which has been successfully implemented in some urban areas to enhance green space financing. However, concerns about the privatization of public spaces and restricted access for lower-income groups highlight the need for regulatory safeguards to ensure that green spaces remain accessible to all residents.

Technological innovations present another promising avenue for improving GOS management. The integration of smart green infrastructure, such as geographic information systems (GIS), remote sensing, and real-time monitoring, allows for more efficient tracking of green space coverage and environmental benefits. Some cities have begun using AI-driven urban planning tools to optimize green space distribution and predict areas most vulnerable to environmental stressors. These advancements align with the emerging concept of smart sustainable cities, where technology is leveraged to enhance urban resilience and ecological conservation.

Policy Recommendations for Strengthening Green Open Space Governance

Based on the findings, several policy recommendations emerge to improve GOS governance and enhance its role in sustainable urban development (Yang & Green, 2010). First, strengthening policy enforcement mechanisms is critical to ensuring that designated green spaces are protected from urban encroachment. Governments should establish clearer legal mandates and introduce stricter penalties for non-compliance with zoning regulations.

Second, improving inter-agency coordination can help address institutional fragmentation and streamline urban green space initiatives. Establishing a dedicated governing body responsible for overseeing GOS policies could facilitate more integrated and strategic planning.

Third, enhancing community participation in green space governance is essential for fostering sustainable urban environments. Local governments should implement participatory planning mechanisms that engage residents in decision-making processes related to GOS development and maintenance.

Fourth, securing sustainable funding mechanisms through innovative financial models, such as green bonds and PPPs, can help mitigate budgetary constraints. However, safeguards must be in place to ensure that private sector involvement does not compromise public accessibility.

Finally, leveraging technological solutions can improve monitoring, planning, and management of green spaces. The adoption of smart urban planning tools and GIS-based mapping systems can enhance data-driven decision-making and optimize the allocation of green infrastructure.

5. Conclusion

This study evaluates the effectiveness of green open space (GOS) policies in supporting sustainable urban development, highlighting key challenges and potential strategies for improvement (Green et al., 2021). The findings reveal that while most cities have established regulatory frameworks for GOS, the implementation of these policies remains inconsistent due to governance inefficiencies, land-use conflicts, financial constraints, and limited public participation. The gap between policy formulation

and execution underscores the need for stronger enforcement mechanisms and integrated urban planning approaches.

One of the most pressing challenges identified is the competition for urban land, where rapid economic development often takes precedence over environmental sustainability. Many green spaces are either reduced or poorly maintained due to the increasing demand for commercial and residential expansion. Institutional fragmentation further exacerbates this issue, as multiple agencies with overlapping responsibilities struggle to coordinate GOS-related initiatives. Strengthening policy enforcement and improving inter-agency collaboration are essential steps to address these governance challenges.

The role of community engagement in green space management emerges as a critical factor in ensuring policy sustainability. Cities that actively involve local residents in the planning, development, and maintenance of green spaces tend to have better-preserved and more accessible urban greenery. However, socio-economic disparities influence the distribution and quality of GOS, leading to environmental injustices, where low-income communities have limited access to well-maintained green spaces. Implementing inclusive urban planning strategies that prioritize underserved areas is crucial for promoting equitable access to urban greenery.

Financial constraints remain a major barrier to the expansion and maintenance of GOS, with many municipalities allocating insufficient budgets for these initiatives. Public-private partnerships (PPPs) have shown promise in addressing funding gaps, but concerns over commercialization and restricted public access need to be carefully managed through appropriate regulatory frameworks. Additionally, integrating technological innovations, such as geographic information systems (GIS), remote sensing, and smart monitoring tools, can enhance data-driven decision-making and improve the efficiency of green space management.

To enhance the effectiveness of GOS policies, this study recommends five key strategies: strengthening policy enforcement, improving inter-agency coordination, fostering community participation, securing sustainable funding mechanisms, and leveraging technology for green space governance. By adopting these approaches, cities can create more resilient, inclusive, and environmentally sustainable urban landscapes.

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