



Integrating Green Areas into Brazilian urban policy: Challenges and Perspectives

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Integração de Áreas Verdes na política urbana brasileira: desafios e perspectivas

RESUMO

Integrar efetivamente Áreas Verdes no processo de desenvolvimento urbano no Brasil tem se mostrado um desafio significativo. Frequentemente, essas áreas são tratadas como soluções pontuais, alinhadas a interesses específicos, ao invés de serem parte integrante de um planejamento urbano sustentável. Embora a ideia de uma infraestrutura verde integrada pareça promissora, ela frequentemente se choca com outros dilemas urbanos, e assim, prossegue sendo uma aspiração utópica. Neste artigo, analisamos as lacunas do planejamento e da gestão de áreas verdes na política urbana brasileira, explorando sua evolução e os desafios enfrentados desde a década de 1930 até o presente. Além disso, avaliamos criticamente as políticas públicas existentes e propomos recomendações para melhorar a integração de áreas verdes nos contextos urbanos. A pesquisa inclui uma análise comparativa sintética de práticas internacionais bem-sucedidas em relação ao cenário brasileiro. Adotamos uma abordagem dialética e utilizamos procedimentos metodológicos baseados na técnica de documentação indireta, empregando fontes de órgãos oficiais com legislação sobre as áreas verdes, além de uma revisão bibliográfica. Os resultados mostram as dificuldades persistentes na incorporação de espaços verdes na estrutura urbana, essenciais para o desenvolvimento urbano sustentável. Concluímos que a integração dessas áreas enfrenta desafios renovados, camuflados por novos discursos e paradigmas de sustentabilidade, além de diversas resistências em sua aplicação prática.

PALAVRAS-CHAVE: Gestão de Áreas Verdes. Política Urbana Brasileira. Desenvolvimento Urbano Sustentável. Infraestrutura Verde.

Integrating Green Areas into Brazilian urban policy: Challenges and Perspectives

ABSTRACT

Effectively integrating green areas into urban development in Brazil has proven to be a significant challenge. These areas are often treated as one-off solutions, aligned with specific interests, rather than as an integral part of sustainable urban planning. Although the idea of an integrated green infrastructure seems promising, it often clashes with other urban dilemmas, and thus remains a utopian aspiration. In this article, we analyzed the gaps in green area planning and management in the Brazilian urban policy, exploring its evolution and the challenges faced from the 1930s to the present. In addition, we critically evaluate existing public policies and propose recommendations to improve the integration of green areas into urban contexts. The research includes a synthetic comparative analysis of successful international practices and the Brazilian scenario. We adopt a dialectical approach and use methodological procedures based on the indirect documentation technique, employing sources from official agencies with legislation on green areas, in addition to a literature review. The results show the persistent difficulties in incorporating green spaces into the urban structure, which are essential for sustainable urban development. We conclude that the integration of these areas faces renewed challenges, camouflaged with new discourses and paradigms of sustainability, besides various resistances in their practical application.

KEYWORDS: Green Area Management. Brazilian Urban Policy. Sustainable Urban Development. Green Infrastructure.

Integración de Áreas Verdes en la política urbana brasileña: desafíos y perspectivas

RESUMEN

Integrar efectivamente las Áreas Verdes en el proceso de desarrollo urbano en Brasil ha demostrado ser un desafío significativo. Con frecuencia, estas áreas se tratan como soluciones puntuales, alineadas con intereses específicos, en lugar de formar parte de un planeamiento urbano sostenible. Aunque la idea de una infraestructura verde integrada parece prometedora, a menudo se enfrenta a otros dilemas urbanos y sigue siendo una aspiración utópica. En este artículo, analizamos las lagunas en la planificación y gestión de áreas verdes en la política urbana brasileña, explorando su evolución y los desafíos enfrentados desde la década de 1930 hasta la actualidad. Además, evaluamos críticamente las políticas públicas existentes y proponemos recomendaciones para mejorar la integración de áreas verdes en los contextos urbanos. La investigación incluye un análisis comparativo sintético de prácticas internacionales exitosas en relación con el escenario brasileño. Adoptamos un enfoque dialéctico y utilizamos procedimientos metodológicos basados en la técnica de documentación indirecta, empleando fuentes de organismos



oficiales con legislación sobre áreas verdes, además de una revisión bibliográfica. Los resultados muestran las dificultades persistentes en la incorporación de espacios verdes en la estructura urbana, esenciales para el desarrollo urbano sostenible. Concluimos que la integración de estas áreas enfrenta desafíos renovados, camuflados por nuevos discursos y paradigmas de sostenibilidad, además de diversas resistencias en su aplicación práctica.

PALABRAS CLAVE: Gestión de Áreas Verdes. Política Urbana Brasileña. Desarrollo Urbano Sostenible. Infraestructura Verde.

1 INTRODUCTION

The importance of green areas in contemporary cities is undeniable; especially in the face of global warming, oxygen depletion, water shortages, and other issues that, over time, could put life on the planet at risk. In addition to contributing greatly to solving these and other problems, they also transform spaces previously dominated by “gray” into places that are aesthetically and ecologically enriched by nuances of green and blue, shade, flowers, and, if applicable, even fruits, so desired by the inhabitants of urban centers, especially those in densely populated metropolises.

Green areas are directly related to improving quality of life, as they perform various functions, ranging from ecological to psychological, in the daily lives of their residents. In addition, they play a crucial role in the impact on the climate, air, and water quality, and in reducing urban noise, contributing significantly to the well-being of those who live in or visit urban centers (Mendonça; Monteiro, 2003).

Besides their aesthetic aspects, green areas play a key role in urban sustainability, as they contribute significantly to climate regulation by reducing urban heat islands, mitigating air and soil pollution, and promoting rainwater infiltration, which prevents flooding and maintains the quality of water resources. These vegetated spaces also act as important reservoirs of biodiversity, sheltering local flora and fauna and helping to maintain essential ecosystem services, such as pollination and biological pest control (Benedict; Mcmaton, 2002).

From a social perspective, urban green areas provide spaces for leisure and social interaction, promoting social integration and improving the mental and physical health of citizens. Studies indicate that the presence of green regions reduces stress, improves mood, and even reduces the incidence of respiratory and cardiovascular diseases. These areas are also important in social cohesion, providing public meeting spaces that encourage community interaction and strengthen social ties, especially in densely populated areas (Gartland, 2011).

Economically, green areas can add significant value to urban environments. Neighborhoods with well-maintained parks, squares, and trees tend to have higher real estate values, attracting investment and promoting sustainable local development. Moreover, these spaces reduce public health costs by improving air quality and well-being, reducing the need for treatments related to respiratory and mental health issues. They also create tourism and leisure opportunities that can generate income for cities, encouraging economic practices aligned with sustainability (Silva, 2017).

Proceeding correctly in the search for trees, parks, squares, and areas of refuge for life, including wildlife, is essential for the care of the very structures of our cities, without a shadow of a doubt. Urban green areas must be valued and planned appropriately, meeting local needs, since public spaces are constantly accessed by the population (Mantovi, 2006). In this context, the definition of *green infrastructure* becomes opportune: “[...] a network of spaces that act in an interconnected way, conserving natural ecosystem values and functions and, at the same time, providing countless benefits to human beings, as well as to all other forms of life” (Benedict; McMahan, 2002, p. 11, our translation).

According to Herzog and Rosa (2010), green infrastructure, when well-planned and monitored, plays a vital role in supporting urban resilience. This concept involves creating and

maintaining networks of ecologically protected spaces, such as parks, gardens, and corridors, to be strategically integrated into the urban fabric. Thus, this infrastructure not only beautifies the urban environment but also significantly contributes to improving quality of life, well-being, climate health, the necessary balance between rain and wind, shade, and many other factors. It can also regenerate the urban fabric, making it more resistant and adaptable to the variables and challenges imposed by climate change, by creating webs of roots that waterproof the soil; preventing or reducing soil displacement and excessive soil waterlogging, as well as other common disasters that could be avoided.

This is achieved through a series of ecological and environmental functions, such as: regulating temperature; improving air quality; and reducing rainwater runoff, among others. In addition, these spaces can also serve as a refuge and leisure area for the urban population, offering psychological and well-being benefits, essential in an urban context of increasing stress, such as what we have seen, witnessed, and felt, especially in recent times.

Connecting green spaces in a city to form an efficient infrastructure requires careful planning, and ongoing management and conservation of these spaces is essential. This involves not only creating the spaces but also maintaining them and integrating them into a cohesive system. This involves considering how parks, gardens, green belts, and other natural areas can be linked together to provide the greatest possible environmental and social benefits. Such planning should also consider factors such as biodiversity, the availability of public space for recreation, and the suitability of these areas to mitigate urban problems such as pollution, poor air and water quality, and excessive heat. Furthermore, there must be a constant effort to maintain and improve these spaces, ensuring that they continue to play their vital role in the urban ecosystem and that they do not become obstacles, as is sometimes seen, to traffic, lighting, sanitation of cities and even as a refuge for marginalized people and other practices that are harmful to social life, as many who are, in a certain way, against this view argue (Lennon; Scott, 2014).

Planning has become increasingly recognized as an essential control instrument in the process of expanding and adequately developing green areas in urban spaces, especially in densely populated areas. However, over time, planning these areas in cities has become more complex and prolonged. This is due to growing challenges, such as the rapid expansion of cities and the need to balance development with environmental preservation. This complexity has continually challenged planners and those responsible for urban management in general. These are obstacles that lie not only in the scope of creating new green areas but also in the means and resources to maintain them as part of the existing urban fabric, considering environmental, social, and economic demands, according to Albert and Von Haaren (2017) and Chatzimentor, Apostolopoulou and Mazaris (2020).

In this study, we adopted a dialectical approach, using methodological procedures based on the indirect documentation technique. To this end, we conducted a broad literature review on urban policies and the integration of green areas in national and international contexts, aiming to identify the main difficulties and perspectives in applying these concepts in Brazilian urban planning. Sources from official Brazilian agencies, such as the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of the Environment, were used to obtain updated data on the legislation, practices, and reality of green areas in Brazilian cities. The

documentary research was complemented by the critical analysis of academic articles and technical reports that deal with public policies on green areas and urban sustainability (Marconi; Lakatos, 2003).

To understand the evolution and application of green space policies in Brazil, the study traced a historical overview from the 1930s to the present day, examining how green spaces have been incorporated into urban policies and how these practices compare with international experiences. The different contexts and challenges in governance, infrastructure, social participation, and real estate market pressure were considered. The literature review included an examination of legislative and regulatory changes that have occurred over the decades and their implications for the management and planning of urban green spaces, to provide a deeper understanding of current trends and paradigms in this field.

Nowadays, cities face significant challenges due to urban densification and the commercialization of space, often resulting in the disappearance of trees, plants, and other natural resources. Paradoxically, only valued urban areas receive green interventions, aiming to increase land value and benefit the market. Given this, urban policies are necessary to promote the conservation and effective management of these spaces, although concrete changes are, in fact, very rare, and their ideal integration into Brazilian urban policy still seems like a utopia, paradoxically very distant. Understanding the place of environmental and ecological planning and management in cities is a complex challenge, marked by the evolution of the thinking of urban managers and the prevalence of commercial interests over human and social values, which blind practice and the lack of political sensitivity in this regard, unfortunately, hide and neglect.

This article is structured in four sections. The introduction establishes the context of the issue under discussion. The second section analyzes green areas from the Brazilian urban and regional perspective, taking into account their historical context. The third section focuses on the theme of urban green areas, addressing the planning and management of these spaces. The last section discusses the challenges faced in the management and planning of green areas. It ends with the final considerations, which consolidate the main conclusions derived from this study and outline suggestions, paths, and proposals.

2 URBAN AND ENVIRONMENTAL PLANNING

To understand how environmental awareness gradually reached urban areas in Brazil, we must first highlight some international events that marked this new perception. One example is the concern of the United States in assessing the environmental impacts resulting from government projects in the 1950s, when a long debate took place in the US Congress about the need to require environmental impact studies with a view to preserving natural resources, whether renewable or not, such as land, wood, and water. At the same time, several other countries began similar discussions. Traditional planning approaches underwent a major update with a more environmental, or ecological, focus, leading to the emergence of more comprehensive, contextualized, and modern planning methodologies that incorporated assessments of the entire environmental impact (Santos, 2004).

The first studies and debates began to emerge on the need for public participation so that planning concepts, influenced by the research being carried out at the time, could lead to new reformulations, both operational and technical, as well as social and ecological. At the time, it was assumed that economic growth would not affect society, and the very idea of development was centered on the domination of the natural environment. It was only in the 1960s and 1970s that it was realized that natural resources were limited, and disorderly growth proved unsustainable. Around 1980, the environmental issue began to be considered and the development of environmental technologies began to be presented jointly and integrated with other sciences and their practices. It was in this context that the need arose to adopt new values and concepts that were more sustainable and consistent with the reality that was beginning to surround the entire civilized world (Bernardes; Ferreira, 2003).

During the United Nations Conference on the Human Environment, held in 1972 in Stockholm, the United Nations Environment Programme (UNEP) was created, with one of its goals being to manage environmental protection activities. In 1992, Rio-92 took place in Rio de Janeiro, bringing together several countries to discuss issues related to sustainable development, environmental conservation, ecological concerns, and their multiple factors. "Agenda 21" was adopted as a basic planning framework for the construction of sustainable societies and smart cities in different geographic locations, reconciling methods of environmental protection, social justice,¹ and economic efficiency" (Brasil, 2020).¹

In contrast, the Brazilian reality still faces significant challenges in the integration of green areas due to factors such as the lack of continuity in public policies, the fragmentation of urban governance, and pressure from the real estate market. In Brazil, this initiative often runs into budgetary issues, lack of long-term planning, and conflicting economic interests. This contrast highlights the need for adaptation and innovation in Brazilian urban planning practices to achieve the same benefits observed in cities in developed countries (Taylor; Lindquist, 2019).

Furthermore, comparative studies suggest that the success of green space integration policies largely depends on collaboration between different levels of government and the incorporation of participatory planning principles. In New York and Melbourne, for example, active citizen participation and collaboration between local, state, and federal governments have been key to creating and maintaining urban green spaces. Such approaches increase the legitimacy of public policies and ensure that implemented solutions reflect the needs and aspirations of local people (Johnston; Newman, 2021).

In the Brazilian case, although there is a growing recognition of the importance of green areas in the urban environment, the implementation of such policies continues to be uneven and limited to areas of high real estate value. The adoption of successful international models, adapted to local specificities, can offer promising ways to overcome existing challenges, promoting more sustainable and equitable urbanization (Ferreira; Silva, 2022).

Thus, in the Brazilian context, environmental regulation gained another hindsight after the Revolution of 1930, when the country underwent a transformation under the rule of a centralizing State. During this period, there was a significant boost in the development and implementation of structural policies. These changes in the political and administrative scenario

¹BRASIL. Ministry of the Environment. Available at: <https://antigo.mma.gov.br/responsabilidade-socioambiental/agenda-21.html>. Accessed on Jan 16th, 2024.

were fundamental to the perception of the need for regulations aimed at protecting the environment in all its specificities and circumstances (Cunha; Coelho, 2003).

From this perspective, Santos (2004) states that, during the 1960s and 1970s, the country's main concern was industrialization, with little attention paid to the environment. It was only with the establishment of the PNMA (Law 6938, of August 31, 1981) that guidelines for impact assessment, environmental zoning, and a proposal for environmental planning were formulated. This law gave rise to the National Environmental System (Sisnama) and the National Environmental Council (Conama). In addition, Law 7735, of February 22, 1989, gave rise to the Brazilian Institute of the Environment and Renewable Natural Resources (Ibama).

In Brazil, the implementation of public environmental policies only occurred in the 20th century, mainly from the 1970s onwards, when the perception of the serious impacts and harmful effects of environmental degradation in all senses increased. Until the mid-1980s, the State centralized the environmental policy that should be adopted throughout the national territory (Cunha; Coelho, 2003). Through the periodization proposed by some authors, it is possible to obtain a synthetic view of the process of designing and implementing these same environmental policies, as listed in Box 1.

Box 1 - Some moments in the history of Brazilian environmental policies

| | |
|-------------------|--|
| 1930-1971 | <ol style="list-style-type: none"> 1) Construction of a regulatory framework for the use of natural resources 2) Action by a centralizing State in defining regulatory codes for the use of natural resources |
| 1972-1987 | <ol style="list-style-type: none"> 3) The interventionist action of the State reaches its peak, simultaneously with the increase in the perception of an ecological crisis at a global level 4) Environmental policies begin to be influenced by the global awareness of the ecological crisis, as well as by structuring, modernizing, and integrating policies, structured in an economic development strategy 5) National Environmental Policy 6) Pressure from international banks that began to demand environmental impact studies for project financing 7) Non-governmental organizations began to demand participation in decision-making 8) National Environmental Policy Law (PNAMA) |
| 1988-2000 | <ol style="list-style-type: none"> 9) Marked by the processes of democratization and decentralization of decision-making, by the rapid dissemination of the notion of sustainable development 10) The concepts of sustainable development, management of natural resources, and decentralization of decision-making become influential 11) Federal Constitution of 1988 12) In the 1990s, environmental planning was incorporated into municipal Master Plans. 13) United Nations Conference on Environment and Development in Rio de Janeiro, in 1992 |
| From 2000 onwards | <ol style="list-style-type: none"> 14) Creation of the National System of Nature Conservation Units (SNUC) 15) The Brazilian Agenda 21, which was prepared in 1997, was only launched in 2002 16) Creation of the Chico Mendes Institute for Biodiversity Conservation (ICMBio) in 2007 17) Complementary Law 140/2011, which establishes standards for cooperation between the Union, the states, the Federal District, and the municipalities in administrative actions arising from the exercise of common competence regarding environmental protection 18) Law 12651/2012, which provides for the protection of native vegetation |

Source: Elaborated based on Cunha and Coelho (2003), Santos (2004), Moura (2016) and Ferreira (2017).

3 URBAN GREEN AREAS IN BRAZIL TODAY

The high concentration of population in cities and the continued increase in soil impermeability is widely recognized to result in a series of urban challenges, including the

occurrence of adverse effects on the climate, such as global warming, storms, and other inclement weather, lack of water, poor air quality, etc., as well as heat islands. This phenomenon has significant implications for the quality of life of urban communities, directly, and also for other communities and the local environment (Mendonça; Monteiro, 2003; Gartland, 2011).

According to the Brazilian Institute of Geography and Statistics (IBGE, 2013), nine of the ten largest urbanized municipal areas are capital cities. Therefore, green infrastructure, represented by areas with trees and urban parks, within the context of megacities, offers numerous environmental benefits, including temperature reduction caused by heat islands, and mitigation of noise and air pollution, among countless other gains. Furthermore, green systems have the potential to provide social services when their areas are designated for this purpose (Benedict; McMahon, 2002; Mendonça; Monteiro, 2003; Silva Filho; Tosetti, 2010; Sinnott *et al.*, 2018; Marques, 2020).

Data from IBGE (2012) indicate that terrestrial biomes lost approximately 500,000 km² of their natural cover between 2000 and 2018. Only the Atlantic Forest, which has been undergoing a long and intense occupation process, maintained approximately 16.6% of its natural areas in 2018. In addition, soil impermeability has resulted in other impacts, such as frequent flooding and, conversely, devastating droughts, which have become a reality, especially in large cities. Green areas have emerged in urban contexts to address environmental and social issues but their space is still very timid and small compared to the real and urgent challenges that are automatically being posed in people's daily lives.

Mantovi (2006) highlights that urban planning must address a variety of aspects, including physical space, activities to be carried out locally, street afforestation and the development of green areas, the diversity of vegetables, plants, ornaments, fruit trees or foreseeing the production of wood, shade, air oxygenation and maintenance of natural water sources. For effective green area planning, it is essential to take into account factors such as the region's rainfall regime, water balance, relative air humidity, as well as the characteristics of the local soil. In this way, the cultivation of tree or plant species will be compatible with the specific conditions of the region, and these are some of the most important precautions.

Green areas play a fundamental role that encompasses a wide range of benefits for both the environment and urban centers. Their multifunctionality translates into a series of advantages that positively impact different groups of users and aspects of life in cities. These areas play an active role in improving the quality of life of the population, as evidenced by several studies. Among these benefits, we can highlight the contribution to people's physical and mental health, the reduction of air and noise pollution, the regulation of the urban climate, the promotion of leisure and recreation spaces, the preservation of biodiversity, etc. (Costa, 2010; Silva, 2017; Magarotto; Madureira; Costa, 2018).

The size of a city is directly and logically related to the proportional need for green areas, such as parks, squares, gardens, and other elements that play a crucial role, not only in aesthetic terms but mainly in improving the quality of urban life. They play a fundamental role in regulating temperature and promoting better air quality in urban areas and, by domino effect, in semi-urban areas and even rural communities. Therefore, it is up to the public authorities to adopt a proactive approach to environmental issues, especially in proper planning and

management. This not only improves the quality of life but can also save resources in the maintenance of cities in general terms.

An equally essential requirement often neglected by government initiatives is the integration of urban green areas. When these elements are effectively connected, urban infrastructure becomes capable of playing an even more significant role in mitigating urban problems such as floods, landslides, and the heat island phenomenon, among others. Therefore, the effective integration of green areas is essential to maximize their benefits and further improve the quality of life in cities (Mantovi, 2006).

The idea of connecting these elements to act together is recent, according to Benedict and McMahon (2002). The term *green infrastructure* is also recent, although it is based on an old concept. The strategic connection of numerous elements of green infrastructure, such as parks, reserves, and other spaces, is essential to maintain the proper functioning of vital ecosystem services.

Nowadays, plants and trees in urban environments are no longer seen only as beautifying elements, although they are still used as landscaping and aesthetic resources on many occasions. They play a dual role, adding beauty and acting as effective green infrastructure in mitigating many of the so-called urban problems. These spaces in cities can reduce public spending normally allocated to stormwater management and treatment systems. Therefore, in recent years there has been a significant increase in research on the importance and benefits of urban green areas (Benedict; McMahon, 2002).

Even though the numerous benefits in terms of ecosystem services that urban green spaces provide are widely recognized, there are still several challenges related to their planning and management. Several difficulties and obstacles arise when discussing the creation of new spaces with such characteristics or the modification of how existing areas are managed. At this point, it is important to highlight some of the difficulties we currently face when debating their true role, especially in the urban context (Monteiro, 2018).

Thus, we have the issue of the Master Plan, which becomes necessary for cities with more than 20 thousand inhabitants, according to the City Statute, and extends this requirement to urban agglomerations, cities that are part of metropolitan regions, cities located in areas of tourist interest and other circumstances. The Master Plan is considered a fundamental instrument of urban development policy, although the reality of its implementation is not always adequately optimistic when analyzed in global terms.

The development of Master Plans in all their dimensions requires a long period and a large amount of resources until completion. However, the results of these investments do not reflect the effective implementation of the proposals related to them directly, immediately, or even in the short term. The green area projects included in this planning often do not come to fruition, which differs from the original proposal of the Master Plans (Brasil, 2001).

According to Villaça (2005), the proposals outlined in the Master Plan must be implemented by city governments and accepted by the private sector. Nevertheless, it is observed, firstly, that many of these proposals are not effectively implemented by city governments, since each mayor can decide whether or not to adopt them. Secondly, many of the proposals formulated in the Master Plan have the status of laws and must be complied with. However, it is important to emphasize that these proposals were generally developed in line

with the interests of a small portion of the population, that is, always those who are socially and economically privileged.

Social participation in decision-making is an essential element in the municipal management of green areas, but it is often completely ignored or forgotten by the responsible bodies. According to Santos (2004), in the Brazilian context, public participation in debates on environmental issues in cities generally occurs in the final stages of planning and with a singular tendency to always benefit the same social segments. When they do occur, these debates tend to be prolonged, and the main problems are masked by political and economic interests. In this sense, Giaretta, Fernandes and Philippi Jr. (2012) state that the presence of the population in the debates is fundamental, as it allows experiences and knowledge, often imperceptible to the local public administration, to be exposed.

This deficiency in popular participation becomes even more evident when we observe the involvement of society in decision-making regarding urban green areas, which does not always occur effectively in most Brazilian municipalities. Often, the decision to create new green spaces in cities is wrapped up in various political and economic interests or benefits for the real estate sector and other similar illegitimate phenomena. The same happens with popular participation in the elaboration of Master Plans and, often, this participation is merely illusory. “[...] what exists are social classes or sectors or groups of the population. The dominant class has always participated in both master plans and zoning plans and laws. Those who have never participated were — and continue to be — the dominated classes, that is, the majority of the population, the workers, the poor, and the popular classes always excluded from all political processes (Villaça, 2005, p. 50).

On the other hand, private sector participation may emerge as an alternative to assist in the creation of new green areas or the conservation of existing ones. This can be encouraged through public-private partnerships, models in which the municipality allows such spaces to be adopted by companies or individuals, aiming at their conservation as part of the public heritage. These initiatives are becoming increasingly common. In this partnership model, the goal is not privatization. In exchange for the conservation of the adopted space for a certain period, its agent can display its brand and its initiative through advertisements or other means of communication. However, it is observed that public-private partnerships aimed at raising funds for the creation and management of green areas only tend to occur effectively in privileged segments with good visibility. Therefore, locations that do not offer the prospect of a quick return on investment are generally not adopted within this premise (Carbone *et al.*, 2015).

The abandonment of green areas after some time of adoption is also a common occurrence. In this scenario, it is up to the responsible public agencies to carry out frequent inspections, ensuring that adopters comply with the commitment made to constantly care for and preserve these places. Therefore, the public use of a green area is directly related to its proper maintenance and conservation. Each natural element belonging to a green area requires constant management, which includes everything from regular pruning to the treatment of any problems that may arise (Mantovi, 2006).

Another point to consider is addressed by Panasolo *et al.* (2014) and refers to private urban green areas, places that are often not recognized by society and government authorities and are considered valuable to the real estate market. The common initiative to acquire land in

these places and transform them into important green areas for the city, such as parks or squares, exists, although it is a limited initiative since municipalities do not have the budgetary and administrative conditions to acquire and maintain such spaces.

Real estate speculation in urban areas significantly interferes with the creation of new ecologically correct spaces. Locations close to urban centers or valued areas are the most affected by market pressure. New green or leisure areas that emerge in these locations are generally related to the private sector, aiming to increase the value of the land and its surroundings. Therefore, green areas are considered a valuable commodity for the beautification of the region. The real estate market in cities has the power to even modify current urban legislation to meet the interests of creating new commercial or residential areas (Panasolo *et al.*, 2014).

A clear example of this impact can be seen in the study by Locatelli *et al.* (2018), which quantifies tree cover in the city of São Paulo and discusses its implications for the urban landscape. The research reveals that the city's wealthiest neighborhoods and regions have a higher percentage of vegetation compared to lower-income areas, a pattern that is repeated in other Brazilian urban hubs. This disparity illustrates how pressure from the real estate market directly influences the distribution of green areas, favoring more valued regions.

Furthermore, Locatelli *et al.* (2018) point out that this pressure can result in the complete extinction of natural green areas to pave the way for real estate developments, evidencing a constant conflict between economic "growth" and the "quality of life" of residents. This dynamic is particularly harmful in regions where there is population density and intensive occupation of urban land causes serious environmental problems, such as soil impermeability and its negative effects.

In this scenario of inequality and scarcity of green areas, it is essential to consider how these spaces can play a crucial role in improving the quality of life, especially in favelas and urban communities. In these places, where basic services, such as sanitation, are often precarious or non-existent, green areas can be even more relevant. Vieira, Valério Filho and Mendes (2024) state that the difficulties faced due to the lack of adequate infrastructure worsen the health and well-being conditions of residents. The integration of green areas offers environmental benefits, such as mitigating urban heat islands and improving air quality, in addition to sustainable and low-cost solutions for sewage management. Vieira *et al.* (2024) demonstrate that the implementation of decentralized sewage systems in favelas can be significantly enhanced when combined with green infrastructure, creating a positive synergy between nature and urbanization.

However, another common problem in these disadvantaged areas is the lack of assistance in the ongoing maintenance of their green areas. Consequently, these spaces are often neglected, suffering from deterioration and abandonment. Promises of long-term conservation are frequently ignored, resulting in poorly maintained areas without adequate lighting, which end up becoming dangerous and unsuitable for community use.

Another point to be raised about the challenges of Brazilian environmental planning and management is the changes in government management, which often result in the discontinuation of plans and projects of this nature, and this is directly reflected in policies related to urban green areas. The efforts of the municipal administration to deal with these

issues must be a priority, which is not always the case. The phenomenon of progressive discontinuity of public policies is common in Brazil, and changes in political leadership raise doubts about the continuity of policies developed in previous phases. Administrative instability results in the waste of public resources, demotivation of those involved, conflicts between politicians and technicians, in addition to the loss of memory and institutional knowledge (Estevam, 2010).

Although the issue of political discontinuity is notable in the challenges inherent to the planning and management of urban green areas, it should be taken into account that, often, the same political administration is responsible for disregarding such projects, which have already been initiated or presented in electoral programs. The plan can be studied, and the first phases implemented, however, we perceive that there is no political will to conclude the proposed project or recognize the financial gains related to the proposal drawn up. Actions contained within this plan must be considered and implemented in the long term. The alternation of political groups in the administration harms the planning process, and the proposals drawn up do not advance beyond the term of the administration if they are actually carried out (Loboda; Angelis, 2005).

The budget issue is another factor that can make it difficult to design new, similar projects. Given the many urban dilemmas and problems of various natures that currently exist in cities and that require urgent interventions, environmental issues tend to be relegated to the background, and the design of new ecological projects falls within this context. "The demands for public green spaces are mitigated with resources left over from other activities, considered to be more of a priority, and which generally include those of a strategic, political, and economic nature" (Loboda; Angelis, 2005, p. 137).

Furthermore, according to Silva (2014), the green areas we have today appear as a way to mitigate the negative effects of the urbanization process, providing cities with better living conditions. However, even in light of this, many green areas and wetlands, including those for permanent environmental preservation within cities, have suffered from irregular occupation. The occupation of these places often occurs due to the Brazilian socioeconomic problem of the lack of adequate housing for a population that cannot afford to purchase property in urban centers. The occupation of these locations by irregular settlements results in local degradation and, often, in the suppression of several native tree species. When these areas are vacated by the government, many families do not receive adequate compensation to purchase a regularized property and end up occupying other public areas again, putting themselves and the environment at risk.

4 CHALLENGES IN THE MANAGEMENT AND PLANNING OF URBAN GREEN AREAS

The integration of green spaces into Brazilian urban policies faces significant challenges, such as fragmented governance, lack of continuity in public policies, and pressure from the real estate market. In contrast, successful policies in cities such as Copenhagen and Berlin have adopted more holistic and integrative approaches, creating interconnected networks of green spaces that promote not only urban aesthetics but also sustainability, social cohesion, and resilience. In Brazil, however, these policies are still often fragmented, driven by

specific interests, and not part of a truly integrated planning process. This contrast suggests that adapting international practices while respecting local particularities may be essential to overcoming the obstacles that limit the expansion and effectiveness of green spaces in the country (Slade; Gales, 2020; Johnston; Newman, 2021).

Experiences in other cities, such as New York and Melbourne, also illustrate the importance of active community participation and collaboration between different levels of government for the success of green space policies. In New York, for example, the Green Infrastructure project was facilitated by cooperation between municipal, state, and federal agencies, as well as intense participation from the local community. This model of collaborative governance allowed planning solutions to be more inclusive and adapted to local needs. In the Brazilian context, where there is often little coordination between levels of government and limited popular participation, the adoption of a similar model of collaborative governance could significantly increase the effectiveness of public policies aimed at green spaces (Johnston; Newman, 2021; Taylor; Lindquist, 2019).

Furthermore, the results indicate that it is necessary to develop an urban planning approach that conceives green areas as essential infrastructure and not just as decorative elements. The implementation of policies that encourage public-private partnerships for the creation and maintenance of green areas, as observed in several European cities, may offer a viable alternative to circumvent the budgetary and administrative constraints that often limit the actions of Brazilian municipalities. In addition, the introduction of tax incentives for companies and organizations that invest in green areas may be an effective strategy to promote the sustainable expansion of these spaces (Ferreira; Silva, 2022; Albert; Von Haaren, 2017).

For these advances to be achieved, green space policies must be designed with a long-term perspective and with ongoing political commitment, as evidenced in London with the "Green Belt Policy", which aims to preserve green areas around the city. These policies require a vision that transcends electoral cycles and short-term interests, requiring a coordinated effort between different spheres of government and effective social mobilization so that green areas are valued as a public asset essential to health, quality of life, and urban sustainability (Slade; Gales, 2020).

To overcome pressure from the real estate market and the political interests associated with the growing value of urban land, it is crucial to adopt practices that ensure the protection of these spaces in an impartial manner, simplify the process of developing new plans, and guarantee the continuity of projects, beyond changes in government management. Mechanisms must be created to guarantee long-term conservation and to encourage public participation in the debate on environmental management.

Although municipalities have adopted some measures in recent years to preserve and reintroduce wooded areas into urban areas, there is a clear gap between the planning and implementation of these initiatives. Master Plans often present proposals that do not materialize or are implemented inadequately, resulting in a waste of resources and compromising revitalization objectives (Magarotto; Madureira; Costa, 2018).

Social participation in the development of these plans, in turn, is still insufficient and ineffective. Urban planning generally favors the interests of the private sector, and public participation, when it occurs, is relegated to the final stages of the process after the main

decisions have been made. Public-private partnerships are not always successful, since adopters tend to choose only places with greater visibility, often abandoning the space under their responsibility. To mitigate these problems, city governments must strengthen their oversight mechanisms and ensure the proper execution of the commitments made (Johnston; Newman, 2021).

The acquisition of private areas to transform them into urban green spaces also faces challenges, due to the lack of prioritization of financial resources for this purpose. Budgetary limitations and the high cost of acquiring new spaces make these interventions difficult, since public resources are generally allocated to issues considered more urgent. Another critical aspect is the impact of real estate speculation, which determines the creation or elimination of green areas according to commercial interests. This scenario reinforces the need for public policies that ensure the preservation of these spaces, minimizing the negative effects of real estate pressure on the urban environment.

The lack of green areas in popular neighborhoods, often marked by the absence of initiatives for their creation and maintenance, also reflects a major challenge. These places become susceptible to degradation and abandonment, compromising the quality of life of their inhabitants. The irregular occupation of urban green areas is a reflection of the lack of effective public policies in the social housing and environmental conservation sectors, showing that, until fairer and more inclusive actions are implemented, both the population and the environment will continue to suffer irreparable consequences.

5 FINAL CONSIDERATIONS

This study highlights a complex and multifaceted scenario, full of challenges that hinder the effective incorporation of green spaces into the urbanization process. The historical analysis, from the 1930s to the present day, illustrates how these areas, initially treated as isolated solutions and often aligned with specific interests, have evolved to be recognized as essential components of sustainable urban planning. Nonetheless, the effective implementation of green areas integrated into the Brazilian urban fabric continues to face significant obstacles, many of which may prove insurmountable without a substantial paradigm shift.

Although the concept of integrated green infrastructure offers a promising approach to urban sustainability, it often clashes with financial, political, and administrative dilemmas, becoming a distant aspiration rather than a tangible reality. The discourses and projects that address this integration already encompass the necessary solutions. However, everyday practice still awaits the initial impetus to implement these initiatives, which proves to be a long and challenging path, given the gravity and scope of the problem.

This article highlights that effective management and planning of urban green areas involves issues that transcend the environmental sphere, covering social, political, ethical, and economic dimensions. Urban green areas, when well planned, offer significant benefits in terms of quality of life, public health, and environmental resilience. However, their practical implementation faces obstacles related to the availability of resources, political and economic interests, and the need for more effective and inclusive social participation. This requires a

continuous and collaborative commitment between different government sectors, civil society, and the private sector.

To achieve sustainable development in Brazilian cities, it is essential to overcome these challenges and effectively integrate green areas into urban plans. This requires a profound transformation in the way urban planning is conducted, with a clear recognition of the intrinsic value of these spaces and their prioritization as fundamental elements for the future of cities. Promoting a culture of sustainability that transcends political and economic barriers must become a central axis of urban planning, especially in light of the environmental crises we are experiencing, such as heat islands, water shortages, and poor air quality.

Furthermore, the population needs to become aware of the benefits of green areas and actively participate in their preservation and expansion. Encouraging local practices, such as planting trees in backyards and cultivating community gardens and vegetable gardens, can contribute to improving the urban environment and addressing serious global threats, such as global warming and climate change. Therefore, collaboration between the public and private sectors and civil society is essential to overcome current challenges with the necessary urgency. The search for innovative solutions and sustainable financing models for urban green areas must be a priority. The vision of greener, healthier and more sustainable cities, with quality of life and environmental comfort, requires an immediate collective commitment and must be preserved in the short, medium, and long term.

Policymakers must develop strategies that prioritize the integration of green areas as essential urban infrastructure, learning from international experiences that demonstrate the importance of long-term policies and collaborative approaches. In the Brazilian context, it is necessary to foster public-private partnerships and offer fiscal incentives for the creation and maintenance of these areas, with clear monitoring and evaluation mechanisms to ensure their accessibility and good maintenance.

We acknowledge some limitations of this study, mainly related to the lack of primary empirical data, such as interviews or field surveys, which may limit the direct applicability of the results in certain contexts. We suggest that future research explore more detailed case studies in different urban contexts and focus on the impact of different governance models on the sustainability and effectiveness of green area policies.

Ultimately, the integration of green areas into Brazilian urban policy is a challenge that requires not only recognition of their importance but also coordinated and ongoing action to promote real and lasting changes. As Brazil faces increasingly acute environmental and urban crises, the urgency of rethinking the role of green areas and their management becomes even more evident. This study hopes to contribute to this reflection, encouraging the development of more inclusive and effective public policies that can transform cities into more sustainable and livable spaces. Only with firm political commitment, social engagement, and innovative practices will it be possible to create an urban environment that responds to the challenges of the present and ensures a healthy future for all.

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