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Critical Analysis Of The Green Space Management Policy Of The Cocody Municipality (Abidjan, Côte d'Ivoire)

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Abstract:
Background*: Green spaces designed to ensure the well-being of city dwellers are deteriorating over the years. Beyond the incivism attributed to the population, this article aims to show the difficulties linked to their creation and maintenance, which lead to their mutation, deterioration or abandonment.*
Materiel et Methode*: It is based on an analysis of the legal framework and public policies.*
Results*: The results show that there are 42 public green spaces in the commune of Cocody, comprising public gardens, roadside green spaces, avenue trees and vegetated roundabouts. Their surface area is estimated at 2,290,577 m2, or 0.14 m² per inhabitant. More specifically, the city centre (old districts) has a ratio of 0.44 m² per inhabitant, while the outskirts (new districts) have a ratio of 0.06 m² per inhabitant. These figures are indicative of a shortage of green space, as they are below WHO standards. In addition to this shortage of green spaces, there is a lack of maintenance of existing facilities, with deterioration of the equipment, the presence of rubbish and stagnant water, degraded lawns and so on. The inadequacies and malfunctioning of the legal and institutional framework are at the root of this situation. The law simultaneously entrusts the creation, management and planning of green spaces to the State and to local authorities, represented in the case of Cocody by the mayor's office and the Autonomous District of Abidjan, without clearly specifying the areas of competence; this leads to conflicts of competence, a dilution of responsibilities and even inaction. In addition, financial and human resources remain inadequate and constitute a real constraint in the management of green spaces. To overcome the constraints identified, it is important to establish a clear operational mechanism for coordination between the various players, set up a sustainable funding system and strengthen technical resources, and finally, update the texts governing green spaces.*
Key Word: *Public green spaces, creation, maintenance, legal framework*

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I. Introduction

By 2050, more than half of the world's population will live in cities, and this will bring with it a distinct set of challenges and opportunities in the field of urban development **(UN Habitat, 2014)[1]**. The challenges are due to the fact that cities concentrate many problems that can affect human well-being **(Bolund and Hunhammar, 1999)[2]**. As a result, urban green spaces, often considered as an urban décor, have been the subject of a great deal of scientific research in recent years, not only for their socio-urbanistic value, but also for their ecological value **(Clergeau, 2012)[3]**. Indeed, urban plants play very important ecological, urbanistic, social and economic roles. From town squares to public gardens, the benefits of green spaces are manifold. They are linked to general and psychological health **(Van Dillen et al, 2012)[4],** reducing cardiovascular symptoms and respiratory problems **(Richardson and Mitchell, 2010)[5]**, improving concentration **(Faber Taylor and Kuo, 2009)[6]**, strengthening community attachment **(Arnberger and Eder, 2012)[7]**, conserving biodiversity, regulating temperature **(Mc Pherson, 2005)[8]**, sequestering carbon **(Kouadio 2016)[9]**, reducing the risk of flooding and increasing property value **(Hoshino and Kuriyama, 2010)[10]**. In an increasingly urbanised world, and in the face of the challenges of sustainable development, green spaces appear to be essential to the harmonious development of cities **(Ali-Khodja, 2010)[11]**. However, in most African countries, where urban development is beyond the control of public authorities and planners, green spaces are poorly valued and subject to poor management **(Nassa, 2009; Ngur-Ikone, 2021)[12,13]**. The city of Abidjan, the economic capital of Côte d'Ivoire, and more particularly the commune of Cocody, are no exception to these observations. In the commune of Cocody, public green spaces are under a great deal of pressure and do not always benefit from adequate protection or management **(De Villers**

and Machteld, 2006)[14]. Many public gardens have disappeared due to fragmentation, uncontrolled occupation and the construction of administrative buildings **(Tra and Igbou, 2017)**[15]. This is the case of the public garden of the Lycée Classique, the site of which now houses the Cocody town hall, and the public garden of Radio Télévision Ivoirienne (RTI), which has been allocated to the Angolan embassy. As well as being handed over, public gardens are also occupied in an uncontrolled manner by local people. These spaces are transformed by the local population into places for lucrative activities, toilets and unauthorised rubbish dumps. A number of studies support the idea that the population's lack of civic-mindedness is the main cause of the degradation of public green spaces **(Kouassi et al., 2019; Ngur-Ikone, 2021; Touré et al., 2022)**[16,13,17]. However, this approach seems insufficient to explain the extent of the phenomenon observed today. This study proposes to broaden this interpretation by highlighting another major cause: the absence of a clear legal framework and the weakness of public policies for the protection and development of green spaces. This institutional gap is thought to contribute to the insecurity of land tenure in these areas, making them vulnerable to urban pressure. This raises a central question: How does the management policy for green spaces in Cocody shape their current state, and what adjustments need to be made to ensure sustainable management? Clearly, this study aims to examine the extent to which institutional dysfunction and legal loopholes contribute to the deterioration of public green spaces in Cocody, in order to formulate concrete solutions. More specifically, the aim is to assess the adequacy of public green spaces in the Cocody commune, appreciate the level of maintenance of these green spaces and analyse management policies in order to put forward recommendations for sustainable management.

II. Material And Methods

This study was carried out in the Cocody district, the most exclusive district in Abidjan, which has a large number of green spaces.

Study location: The Autonomous District of Abidjan is located in the south of the country and will have a population of 632,1017 in 2021. It covers an area of 2,147 km², with a population density of 2,944 inhabitants per km². Cocody is located to the east of Abidjan, and occupies 20.8% of the total surface area of the thirteen (13) Communes of the District of Abidjan. With a population of 692,583 according to the RGPH 2021[18], the commune covers an area of 132 km² and is bordered to the north by the commune of Abobo, to the south by the Ebrié lagoon, to the east by the commune of Bingerville and to the west by the communes of Adjamé and Plateau (Figure 1)**.** The Commune of Cocody is divided into several sectors: Riviera I, II, III, Angré and the II Plateaux. The topography of Cocody is generally low. However, there is a steep slope to the north of the Commune. Housing occupies 15.7% of the municipal surface area. There are just under fifty neighbourhoods.

Figure 1: geographical location of the cocody commune

Data collection method

Inventory of green spaces: A site visit was made to all the green spaces identified. During this phase, the condition of each site was observed in order to check whether or not it was subject to uncontrolled occupation. An area was only taken into account as green space if it was not occupied in an uncontrolled manner. The contours of the sites selected were then digitised using the geographical coordinates of their boundaries. The level of maintenance is then assessed by looking at the condition of the equipment and the cleanliness of the space. The facilities assessed were seating, litter bins, toilets, lighting and footpaths. Each garden was given an overall

equipment score on a scale of 1 to 5, where 1 represents a very poor condition and 5 a very good condition. Cleanliness was rated from 1 (very unhealthy) to 5 (very clean) based on various indicators, including the cleanliness of the premises, the absence or presence of waste, stagnant water and other environmental nuisances.

Literature review and survey of institutions: The study began with a review of the scientific, technical and legal literature on urban green spaces. This stage was completed by consultations with the municipal authorities of the Cocody commune and the Abidjan district authorities.

The documentation consulted included scientific articles, regulatory and legislative texts, policy and strategy documents, etc.

III. Data Analysis Method

Calculation of the green space/inhabitant ratio: The green space per capita ratio is a measure of the amount of green space available for leisure and recreation for each of the territory's residents. This ratio is expressed in square meters (m²) per inhabitant. The World Health Organization (WHO) recommends 10 m² of green space per inhabitant in the city center (old neighborhoods) and 25 m² of green space per inhabitant on the outskirts (new neighborhoods). The ratios of green space per inhabitant in the commune of Cocody were calculated according to the formula:

$$Rev = \frac{Sjp}{Ep}$$

- Rev = ratio of green space per inhabitant
- Sjp = surface area of green spaces
- Ep = population size

Public garden areas were obtained from Google Earth by modeling each garden as a polygon. The software then automatically generated the corresponding areas. According to neighborhood, the ratio was calculated.

City centre (old districts):
- If Rev < 10 m²: the ratio of green space per inhabitant is not met;
- If Rev ≥ 10 m²: the ratio of green space per inhabitant has been reached.

Periphery (new districts):
- If Rev < 25 m²: the ratio of green space per inhabitant is not met;
- If Rev ≥ 25 m²: the ratio of green space per inhabitant has been reached.

Level of maintenance of green spaces: The level of maintenance of public gardens in the Cocody commune was assessed by combining the scores for the state of equipment and the state of cleanliness. The formula used is as follows:

$$S\boldsymbol{g} = \frac{Se}{Ss} \times 2$$

With
- Sg = Overall score for the public garden
- Se = equipment score
- Ss = Student health score

sg values below 3 indicate a poorly maintained public garden. Values between 3 and 4 indicate a moderately maintained public garden. Finally, values above 4 indicate a well-maintained public garden.

Analysis of the legal and institutional framework

The analysis of the documentation relating to the legal and institutional framework consisted in identifying, through the regulatory and legislative texts, the expected objectives, the guiding principles and the players involved in the management of public green spaces. This made it possible to clarify institutional responsibilities, verify the effectiveness of provisions on the ground and assess the coherence of the system in place. This analysis also highlighted any gaps, contradictions or overlapping powers between the texts, with the aim of assessing the relevance and effectiveness of the existing framework in relation to the issues at stake.

IV. Result

Typology of green spaces in the Cocody commune

Cocody has a total of 42 public green spaces managed by the municipality. These spaces are divided into three categories: public gardens, linear green spaces (including roadside green spaces and avenue trees) and vegetated roundabouts. These green spaces are distributed across 16 neighbourhoods (Figure 2).

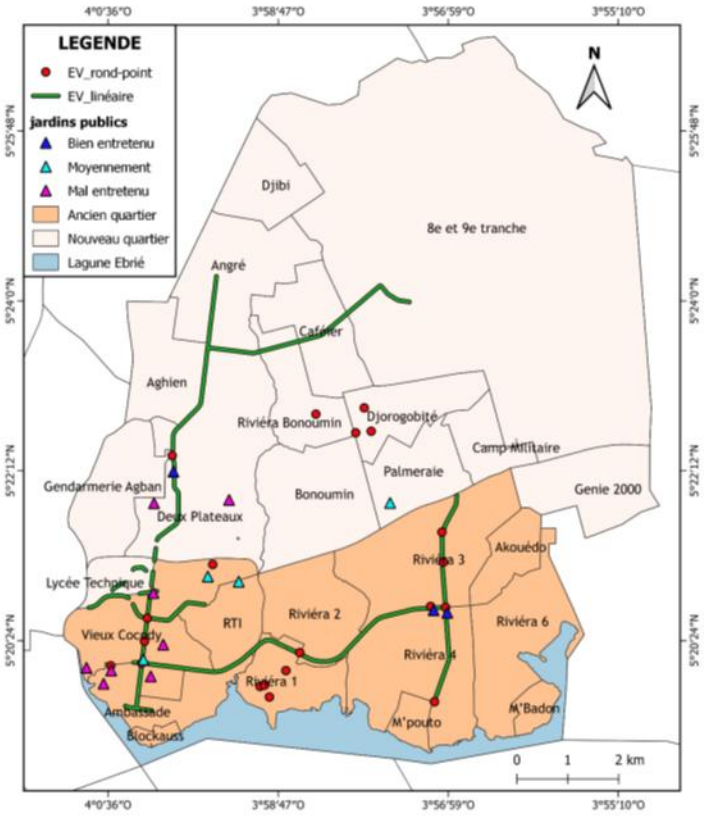

Figure 2: Map showing the distribution of green spaces in the commune of Cocody

Ratio of green space per inhabitant in the Cocody commune

The total surface area of public green spaces in the municipality is estimated at 2,290,577 m², corresponding to a ratio of 0.14 m² per inhabitant. More specifically, the town centre (old neighbourhoods) has a ratio of 0.44 m² per inhabitant, while the outskirts (new neighbourhoods) have a ratio of 0.06 m² per inhabitant. These ratios are still well below WHO recommendations.

State of maintenance of public green spaces in Cocody

Out of a total of fourteen (14) landscaped public gardens, only 2 (14.28%) are well maintained (score above 4), 5 (35.71%) are moderately maintained (score between 3 and 4) and 7 are poorly maintained (score below 3). The best-maintained garden is Dominique Ouattara Garden, with an overall score of 5, while the most neglected gardens are Carrefour la Vie Garden, Corniche Garden and Flamboyant Garden (Table 1). All three have an overall score (sg) of 1.5. The well-maintained gardens have benches in good condition and accessible litter bins. Vegetation is trimmed regularly; paths are clear and litter is rare. On the other hand, unkempt public gardens suffer from deterioration of the basic facilities and insalubrity is expressed by the presence of rubbish and stagnant water, degraded lawns, fountains filled with rubbish, overgrowth, almost dead trees representing a danger to visitors, damaged equipment, etc. Figure 2 illustrates some of the maintenance problems in these different areas.

Institutional framework for the management of green spaces in the municipality of Cocody

Green spaces in Cocody are managed by a number of different players. These include the Abidjan District Parks and Gardens Department, the Cocody Town Hall Environment and Living Environment Department, condominium associations, NGOs, LONACI, etc. The roles of each entity are defined in the table below.

Table no 1: Breakdown of the roles of the main players in the maintenance of green spaces

Actor	Department	Specific role in maintaining green spaces
Cocody Town Hall	Environment and Quality of Life Department (Parks and Gardens Department)	Responsible for the upkeep of communal public gardens (creation, monitoring and restoration) ; Attribution de contrats aux prestataires d'entretien ; Coordination with local partners (NGOs, businesses, trade unions).
Autonomous District of Abidjan	Parks and Gardens Department	Maintenance and landscaping of roadside planting along major thoroughfares; Supervision of beautification projects.
Partner organisations (NGOs, LONACI, Condominium associations, etc.)	-	Material, financial or logistical support to the Town Hall for the upkeep of public gardens; One-off projects (planting, street furniture, awareness-raising).

Legal and institutional framework for the management of public green spaces in Cocody

The management of urban green spaces in Côte d'Ivoire is based on a well-defined legal and institutional framework that guarantees local players the prerogatives they need to develop, maintain and protect these spaces. The results of our work showed that the municipality of Cocody, like other local authorities, benefits from powers transferred by the State in terms of the environment and town planning. We examined the legislative and regulatory framework defining the roles and responsibilities of local authorities, based on four main texts: law no. 2023-900 of 23 November 2023 on the environment code, law no. 2003-208 of 7 July 2003, decree no. 2005-268 of 21 July 2005 and order no. 2007-586 of 4 October 2007.

Act no. 2023-900 of 23 November 2023 on the Environment Code

Articles 38, 116 and 119 of this law clearly set out the obligations of local authorities in terms of preserving, managing and creating green spaces. They must not only take appropriate measures for their sustainable management (article 38), but also participate, alongside the State, in their creation (article 116). Finally, article 119 introduces an obligation to integrate green spaces into urban planning, specifying that every urban area must include green and recreational spaces, the proportion of which must be harmonised according to urban plans, taking into account urban density, available surface area and population.

Law no. 2003-208 of 7 July 2003: transferring environmental powers to local and regional authorities

This law lays the foundations for the transfer of powers from the State to local authorities, particularly in the areas of the environment and urban development. It gives local authorities the right to intervene in the protection, management and development of green spaces. Article 28 states that local authorities may create and maintain public gardens, combat environmental nuisance and promote urban greening. Article 31 also gives local authorities responsibility for urban amenities, including green infrastructure.

Decree no. 2005-268 of 21 July 2005: practical arrangements for exercising transferred powers

This decree completes the law by detailing the concrete actions that local authorities can undertake. Articles 8 and 9 authorise local authorities to create and maintain parks, gardens and urban woods, to develop green spaces as part of urban development, and to cooperate with the State's technical services on large-scale projects.

It also specifies that local authorities may use external service providers or establish partnerships with NGOs or donors, in order to encourage participative and multi-sectoral management.

Weaknesses identified in the implementation of the legal framework

The transfer of competences as prescribed by the legal provisions causes numerous problems in the Abidjan context. These include overlap, a lack of coordination between levels, insufficient technical and financial resources, and a mismatch between urban planning plans and actual practices. The results of the field survey of municipal services in Cocody confirm these limitations.

Redundant and overlapping roles: the Autonomous District of Abidjan (an autonomous territorial authority) coexists with several communes (decentralised territorial authorities), each with its own decision-making bodies. However, the law simultaneously entrusts the creation, management and planning of green spaces to the State and local authorities, without clearly specifying who does what in a context of overlapping responsibilities. This can lead to conflicts of jurisdiction, dilution of responsibilities and even inaction.

Lack of coordination between levels: the law assumes harmonious collaboration between the levels (district - municipalities - State), but no clear operational coordination mechanism is imposed. As a result, development projects can be blocked or misaligned (e.g. a green space removed by a municipality for a property development, even though it is included in a district plan).

Inadequacy between town planning schemes and actual practices: article 119 of the Environment Code refers to 'harmonious proportions' set by town planning schemes. In practice, however, these plans are sometimes obsolete, not applied or not respected, particularly in the face of land pressure. This makes the requirement difficult to enforce.

Lack of knowledge and poor application of legislation: the survey revealed that some municipal staff are unaware of the existence or exact content of the legislation governing the management of green spaces. In addition, the majority say that there is no formal municipal policy on green spaces, or that one is in the process of being drawn up.

Lack of technical and financial resources: article 21 of decree 2005-268 stipulates that the State transfers the resources required to exercise these powers. The majority of survey respondents cited a lack of funding and a shortage of qualified personnel as the main constraints on the management of green spaces. This severely limits the ability of local authorities to exercise the powers legally conferred on them.

Lack of citizen participation and consultation mechanisms in management: current legislation allows for the participation of local residents through participatory committees or projects. However, the data collected indicate that these mechanisms are not very operational. Few of the agents interviewed acknowledge the existence of formal participatory mechanisms.

V. Discussion

The study shows that the number of green spaces in Cocody is insufficient, and varies considerably from one district to another. The ratio of surface area per inhabitant is 0.14 m², with 0.44 m² per inhabitant for the town center and 0.06 m² per inhabitant for the outskirts. These values remain well below the standards set by the World Health Organization, which are 10 m² per inhabitant for the city center and 25 m² per inhabitant for the suburbs. This situation could be explained by the fact that municipalities lack the financial resources to develop and manage more green spaces. In Ivory Coast, despite legislative texts stating that the State guarantees the necessary resources, there is no sustainable financing system dedicated to the management of urban green spaces. This observation was also made by **Kassay (2010)[19]** in his study of urban vegetation in Kinshasa. **Polorigni et al, (2015)[20]** also mention the inadequacy of financial and human resources in the management of green spaces in the city of Lomé in Togo, where each inhabitant of the city has only 0.75 m2 of green space. In addition, the municipalities of Greater Nokoué (an agglomeration of communes in southern Benin) lack the financial resources to develop and manage more **Amontcha (2017)[21]** green spaces.

The lack of the necessary financial resources is also due to the fact that in many African cities, infrastructure planning accords little importance to the integration of vegetation, relegating green spaces to the back burner of development priorities. In contrast, in developed countries where public green spaces are considered an urban amenity, some cities stand out by meeting or even exceeding these standards, thereby ensuring the well-being of city dwellers. For example, with 211 m² of green space per inhabitant, Besançon is recognized as one of France's leading green cities. Tours and Strasbourg offer over 100 m² of green space per inhabitant, well above the national average of 48 m².

In addition to the lack of funding, which hinders the creation of new green spaces, there is also the issue of maintaining the few existing sites. This is due to dysfunctions and shortcomings linked to institutional and legal frameworks. Conflicts of jurisdiction caused by the legal framework create a blurring of responsibilities, sometimes leading to a lack of concrete action. There is no clear mechanism for coordination between the Autonomous District of Abidjan and Cocody Town Hall. This incoherence of actions leads to situations where, while the mayor's office is developing green spaces, the district intervenes to transform them into paved surfaces, in accordance with its own action plan. This lack of coordination between structures is also observed in Togo, precisely in the management of urban vegetation in Lomé. According to **Kombaté (2004)[22]**, the services in charge of green spaces in the Togolese capital intervene without concertation or harmonization, creating a veritable crisis of nature in the city.

These institutional constraints are compounded by legal provisions that are not respected in practice. Although Article 119 of the French Environment Code stipulates that all urban areas must include recreational and green spaces in a harmonious proportion defined by urban development plans, this requirement is largely ignored in reality. In fact, urban planning rarely takes these requirements into account, resulting in a glaring imbalance between built infrastructures and green spaces.

VI. Conclusion

This study assessed the state of public green spaces in the Cocody commune and analyzed their management policy. The results show that the commune's 42 public green spaces are made up of public gardens, roadside green spaces, avenue trees and vegetated traffic circles. The total surface area of these green spaces is estimated at 2,290,577 m2, equivalent to 0.14 m² per inhabitant. More precisely, the city center (old districts) has a ratio of 0.44 m² per inhabitant, while the periphery (new districts) has a ratio of 0.06 m² per inhabitant. These

values attest to a shortage of green space, as they are below WHO standards. In addition to the lack of green spaces, there is a lack of maintenance of existing facilities, with deterioration of equipment, garbage and stagnant water, degraded lawns and so on. Inadequacies and malfunctions in the legal and institutional framework are at the root of this state of affairs. The law simultaneously entrusts the creation, management and planning of green spaces to the State and to local authorities, represented in the case of Cocody by the mayor's office and the Autonomous District of Abidjan, without clearly specifying their areas of competence; this leads to conflicts of competence, dilution of responsibilities and even inaction. In addition, financial and human resources remain insufficient and constitute a real constraint in the management of green spaces. To overcome the constraints identified, it is important to establish a clear operational mechanism for coordination between the various players, set up a sustainable financing system and strengthen technical resources, and finally, update the texts governing green spaces.

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