


**GOVERNANCE IN THE CONTEXT OF THE ATLANTIC FOREST MUNICIPAL PLAN:
APPROACHES AND CHALLENGES FOR ITS IMPLEMENTATION****GOVERNANÇA NO CONTEXTO DO PLANO MUNICIPAL DA MATA ATLÂNTICA:
ABORDAGENS E DESAFIOS PARA A SUA IMPLEMENTAÇÃO****LA GOBERNANZA EN EL CONTEXTO DEL PLAN MUNICIPAL DEL BOSQUE
ATLÁNTICO: PLANTEAMIENTOS Y RETOS PARA SU APLICACIÓN** <https://doi.org/10.56238/sevened2025.021-031>

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ABSTRACT

The aim of this article was to understand how the elements of environmental governance in the municipality of Lavras - MG can enable the implementation of the Atlantic Forest Municipal Plan (PMMA). The methodology took an exploratory and descriptive approach, analyzing the municipality's administrative structure, technical staff, environmental council (CODEMA), resources and legal framework. The results showed the existence of favorable institutional pillars, such as a well-structured Department of the Environment with a robust technical staff, an active council (CODEMA), an Environmental Fund with diversified sources of income and satisfactory environmental legislation. However, the analysis also revealed weaknesses that could limit the PMMA's future effectiveness. The council's agenda prioritizes reactive and palliative issues to the detriment of propositional issues such as the implementation of strategic conservation policies. In addition, there is legislation that needs to be regulated, such as the Payment for Environmental Services and the Municipal System of Conservation

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Units. The conclusion is that, despite the established institutional base, local environmental governance is challenged in terms of conservation and commitment to the application of strategic instruments for the protection and conservation of the Atlantic Forest, signaling possible ways to strengthen environmental policy in medium-sized municipalities.

Keywords: Municipal Environmental Governance. Public Policies. Atlantic Forest Municipal Plan (PMMA). Municipal Environmental Management.

RESUMO

O presente artigo teve como objetivo compreender como os elementos de governança ambiental do município de Lavras - MG podem viabilizar a implementação do Plano Municipal da Mata Atlântica (PMMA). A metodologia partiu de uma abordagem exploratória e descritiva, analisando a estrutura administrativa, o corpo técnico, o conselho ambiental (CODEMA), os recursos e o arcabouço legal do município. Os resultados demonstraram a existência de pilares institucionais favoráveis, como uma Secretaria de Meio Ambiente bem estruturada e com corpo técnico robusto, um conselho (CODEMA) atuante, um Fundo Ambiental com fontes diversificadas de receita e legislações ambientais satisfatórias. No entanto, a análise também revelou fragilidades que podem limitar a futura efetividade do PMMA. A pauta do conselho prioriza questões reativas e paliativas em detrimento de questões propositivas como a implementação de políticas estratégicas de conservação. Além disso, existem legislações que carecem de regulamentação, por exemplo, o Pagamento por Serviços Ambientais e o Sistema Municipal de Unidades de Conservação. Conclui-se que, apesar da base institucional estabelecida, a governança ambiental local é desafiada sobre a conservação e o comprometimento da aplicação de instrumentos estratégicos para a proteção e conservação da Mata Atlântica, sinalizando caminhos possíveis para o fortalecimento da política ambiental em municípios de médio porte.

Palavras-chave: Governança Ambiental Municipal. Políticas Públicas. Plano Municipal da Mata Atlântica (PMMA). Gestão Ambiental Municipal.

RESUMEN

El objetivo de este artículo fue comprender cómo los elementos de gobernanza ambiental del municipio de Lavras - MG pueden permitir la implementación del Plan Municipal de la Mata Atlántica (PMMA). La metodología adoptó un enfoque exploratorio y descriptivo, analizando la estructura administrativa del municipio, el personal técnico, el consejo ambiental (CODEMA), los recursos y el marco jurídico. Los resultados mostraron la existencia de pilares institucionales favorables, como un Departamento de Medio Ambiente bien estructurado con un sólido personal técnico, un consejo activo (CODEMA), un Fondo Medioambiental con fuentes de ingresos diversificadas y una legislación medioambiental satisfactoria. Sin embargo, el análisis también reveló debilidades que podrían limitar la eficacia futura del PMMA. La agenda del consejo prioriza cuestiones reactivas y paliativas en detrimento de cuestiones propositivas como la implementación de políticas estratégicas de conservación. Además, hay legislación que necesita ser reglamentada, como el Pago por Servicios Ambientales y el Sistema Municipal de Unidades de Conservación. La conclusión es que, a pesar de la base institucional establecida, la gobernanza ambiental local presenta desafíos en términos de conservación y compromiso con la aplicación de instrumentos estratégicos para la protección y conservación de la Mata Atlántica, señalando posibles caminos para el fortalecimiento de la política ambiental en municipios de tamaño medio.

Palabras clave: Gobernanza medioambiental municipal. Políticas Públicas. Plan Municipal de la Mata Atlántica (PMMA). Gestión Ambiental Municipal.

INTRODUCTION

The Atlantic Forest is considered one of the global biodiversity hotspots (REZENDE et al., 2018), sheltering a wide range of endemic species and performing important ecological functions. The biome is present in 17 Brazilian states (Alagoas, Bahia, Ceará, Espírito Santo, Goiás, Mato Grosso do Sul, Minas Gerais, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina, São Paulo and Sergipe) (CARDOSO, 2016), however, it has been fragmented over the years (RIBEIRO, 2009).

This ecosystem has faced increasing pressure due to deforestation, urbanization, and agricultural expansion (FERREIRA et al., 2019), which makes its conservation an emerging issue. To contain the advances of fragmentation and promote the recovery of areas of native vegetation, several strategies and public policies have been implemented over the years, one of them being the Municipal Plan for the Atlantic Forest (PMMA), instituted by Federal Law No. 11,428/2006 (BRASIL, 2006).

The public policy of the Atlantic Forest is one of the main mechanisms for the implementation and enforcement of the Atlantic Forest Law, as it reinforces the role of municipalities to act proactively and locally in the conservation and recovery of the biome. The objective and principle of the legal regime of the Atlantic Forest is based on the conservation, protection, regeneration and sustainable use of the biome, being a national heritage (BRASIL, 2006).

The Ministry of the Environment (MMA) initiated support and guidance actions for the preparation and implementation of PMMA in mid-2009 (MMA, 2017). The implementation of the PMMA has great potential to contribute to the implementation of other instruments such as the Rural Environmental Registry (CAR) and the Environmental Regularization Programs (PRA), aiming at the recovery of Permanent Preservation Areas (APP) and the Legal Reserve (RL) on private properties (MMA, 2017).

The Plan opened the possibility for municipalities, whose territory is totally or partially inserted in the biome, to act in the defense, conservation and restoration of the native vegetation of the Atlantic Forest, through the definition of priority areas and actions, contributing to a broader understanding of the dynamics of governance at the local level, guiding public and private actions, as well as for the performance of academic entities, of research and society organizations, committed to promoting the conservation of the remnants (MMA, 2017).

Although Federal Law No. 11,428/2006 provided for the creation of the Atlantic Forest Restoration Fund (BRASIL, 2006), this instrument was never effectively created or

regulated, which represents a significant limitation for the financial and operational viability of the Municipal Plans for the Atlantic Forest (PMMA). Considering that municipalities that have delegated competence to authorize environmental interventions in the state of Minas Gerais are required to implement the Plan, this mechanism would be of great value. This gap makes it difficult to mobilize the resources needed for the conservation and restoration of the biome at the local levels.

It is worth mentioning that the Federal Constitution of 1988 recognized the municipality as a federated entity (BRASIL, 1988), consequently decentralizing power, guaranteeing municipal authority and offering the opportunity to municipalities to assume a central role in the process of implementing environmental policies and raising funds. As a federated entity, the strengthening of localities and citizenship shines, guided by the constitutional order (CORRALO, 2015).

Local power is the one that is closest to citizens, denoting the principle of subsidiarity, and can be defined as an attribution of preference to the smaller spheres and closer to the citizen (HERMANY, 2012). When the local power nucleus can solve the demand, there should be no intervention by larger entities, striving for public action that brings the Administration closer to the citizens, in order to grant greater efficiency to the fulfillment of social demands (WISNIEWSKI; HERMANY, 2023).

As the federated entity closest to the population and considering actions for the conservation and recovery of the Atlantic Forest, municipalities have a greater capacity to understand local dynamics, foster social participation and promote solutions adapted to their territorial specificities. It is noteworthy that the success of the Plan depends on aspects related to municipal governance. The effectiveness of environmental policies depends on the articulation between different sectors of society and the public authorities (WEISS, 2016).

This article proposes to analyze the challenges for the implementation of the Municipal Plan for the Atlantic Forest (PMMA) in the municipality of Lavras, located in the southern region of the state of Minas Gerais. Environmental governance mechanisms and the articulation of the PMMA with other environmental management policies will be explored.

The choice of Lavras as the focus of the research is due to a combination of strategic and contextual factors. The municipality has a strategic position, inserted in the mesoregion of Campo das Vertentes in the south of Minas Gerais, an area with great ecological and economic importance. In addition, Lavras stands out as a medium-sized municipality, which implies specific challenges in the management of environmental issues and has a relevant

history of urban growth and agricultural development, which directly impacts environmental management. Another determining factor is the presence of environmental planning and governance instruments at different stages of implementation, allowing an analysis of their effectiveness and application. Thus, Lavras presents itself as an ideal scenario to investigate how the governance mechanisms that are structured, what gaps still persist and how they can be improved to ensure more efficient and participatory environmental management.

There are still few studies that analyze its feasibility based on the institutional reality of the municipalities, especially with regard to local management capacity. In general, approaches to PMMA focus on legal aspects or biophysical environmental diagnoses, with little emphasis on the organizational, operational, and normative dimensions of municipal governance. In addition, there is a gap in the integrated analysis between the different management instruments. In this context, the present research sought to show how these elements are articulated in the municipality of Lavras and how they could subsidize the implementation of environmental policies in the municipality, especially the PMMA.

In view of the above, the objective of this study was to understand how the elements of environmental governance established by the municipality of Lavras would enable the implementation of a PMMA, considering its positive aspects and limiting aspects. Considering the institutional and normative specificities of the municipality. Finally, the present study is organized into the following sections: methodology, presenting the procedures adopted; results and discussions, detailing the findings and their interpretations; and final considerations, which summarize the conclusions and implications.

METHODOLOGY

The research analyzed environmental governance, adopting an exploratory and descriptive approach, with a specific focus on the municipality of Lavras, located in the southern region of the state of Minas Gerais. The analysis focused on examining the administrative structure, the technical staff, the functioning of the environmental council, the resources – as well as the sources of revenue – and the current legal framework that relates to local environmental governance, identifying positive aspects and limiting aspects that can be improved in public management practices.

Initially, searches were carried out in electronic indexing databases such as *Scopus*, *SciELO* and *Web of Science*, and an academic search engine (*Google Scholar*) to identify articles and related studies, using the keywords "governance", "environmental governance", "environmental public policies", "conservation of the Atlantic Forest", in addition to the

English terms "governance", "environmental governance", "environmental public policies", for a Wider coverage of available academic sources. Digital portals of non-governmental entities and government agencies responsible for regulating the environment in the territory of Minas Gerais were also consulted. This effort guided the elaboration of the results and the discussions of this article.

Regarding municipal environmental governance, the main points for an effective implementation of the PMMA in the municipality of Lavras were raised. The diagnosis was based on 5 (five) basic environmental management criteria, based on Leme (2016), as shown in table 1.

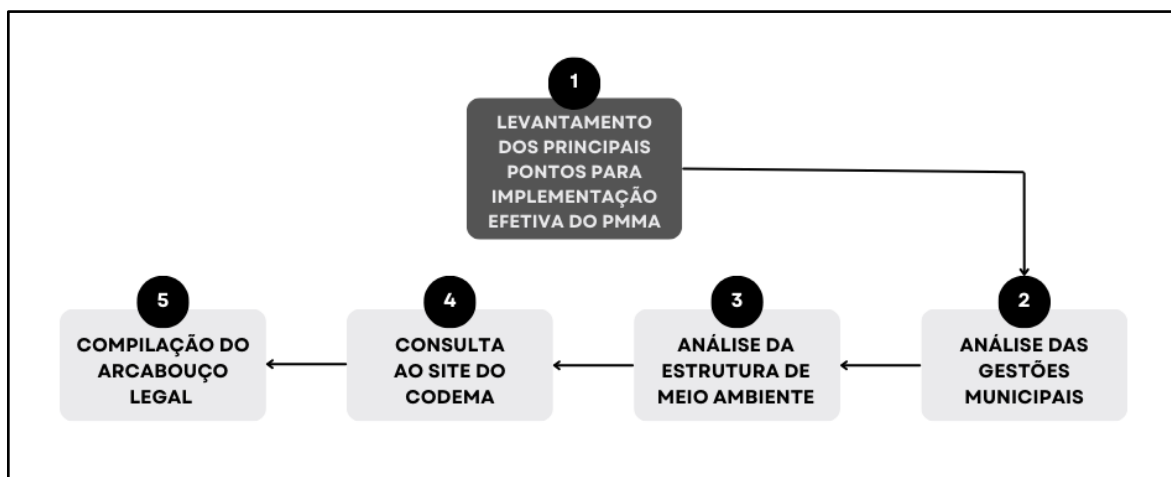
Table 1. Basic criteria of environmental management evaluated on the environmental governance of the municipality of Lavras – MG.

Environmental management criteria		Evaluated information
I	Environment Framework	Verifies the presence of an administrative structure dedicated to environmental issues (secretariat and subdivisions, etc.)
II	Technical staff	Presence of a professional specialized in the area of training. In addition to the number of statutory and commissioned employees
III	Environment Council - CODEMA	Board activities and frequency of meetings
IV	Resources	Existence of the Municipal Environment Fund and application of resources in recent months
V	Laws	Existence of specific legislation capable of dealing with environmental issues and related areas

Source: Leme (2016), adapted by the authors (2025)

In addition, surveys of municipal administrations between the years 2001 and 2024 in the municipality of Lavras were carried out, in order to understand the impact of the continuity or discontinuity of governments. In addition, the website of the Municipal Council for the Defense and Conservation of the Environment - CODEMA (<https://codema-lavras.wixsite.com/codema-lavras>) was also consulted. Finally, for the compilation of the entire municipal legal framework, a search was carried out for keywords, such as "environmental", "afforestation", "environment", "master plan", among others, directly on the website of the Municipality of Lavras, in the section that contains all the legislation valid for the municipality (<https://www.lavras.mg.leg.br/leis>). The flowchart of the steps are represented in Figure 1.

Figure 1. Municipal Environmental Governance Analysis Methodology



Source: From the authors (2025)

RESULTS AND DISCUSSION

ELEMENT OF ENVIRONMENTAL GOVERNANCE (I): ANALYSIS OF THE INSTITUTIONAL STRUCTURE OF THE SECRETARIAT OF THE ENVIRONMENT

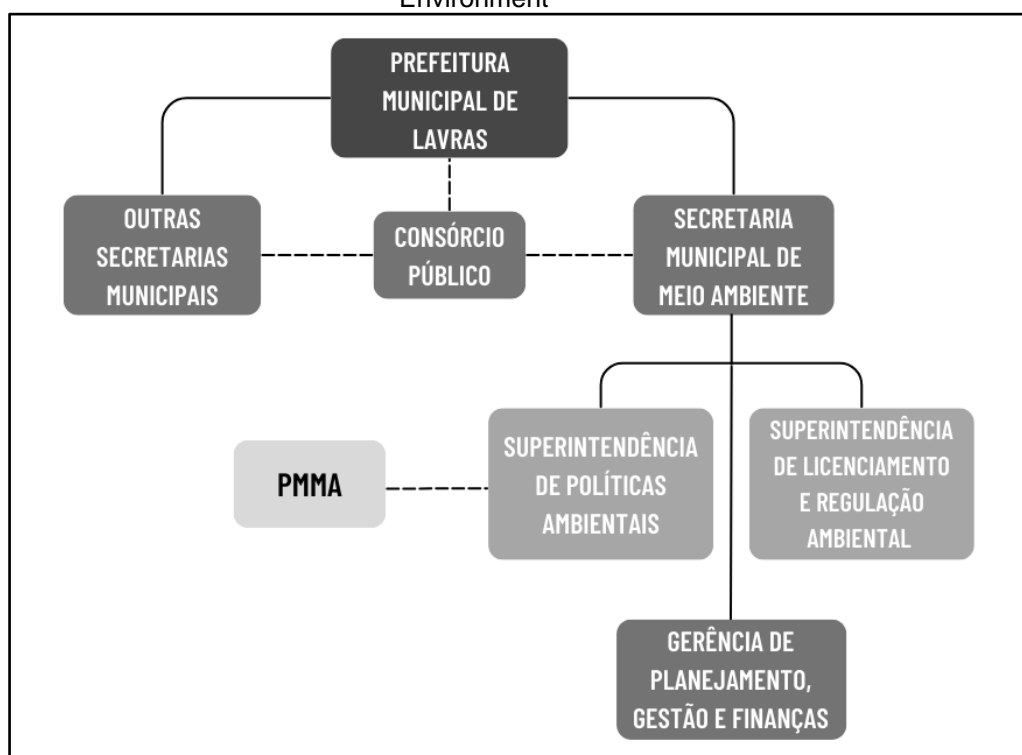
The environmental structure of Lavras is organized through the Municipal Department of the Environment (SMMA). The competencies of the SMMA of Lavras include the formulation, promotion, organization, direction, coordination, execution, evaluation, articulation, definition and implementation of environmental policies, environmental licensing and regulation, and management of water resources in an integrated and intersectoral manner, aiming at sustainable development (LAVRAS, 2022).

In this sense, the municipality's main attributions are (i) to coordinate the preparation of the Municipality's Environmental Policy and implement it in an integrated manner with the other bodies of the Municipal Executive Branch and civil society agents; (ii) carry out planning, management, education, regularization, environmental control and protection of natural resources at the municipal level; (iii) act in the inspection, protection, conservation and promotion of the environment in the Municipality, with regard to the prevention and correction of pollution and/or environmental degradation, in compliance with Environmental Legislation and other pertinent rules and regulations; (iv) issue a technical opinion on Environmental Regularization, subject to the competence of the Municipality; (v) to promote the necessary conditions for environmental management in the Municipality to occur in a participatory manner; (vi) to advise the Municipality in committees, consortiums and associations and organizations of civil society and other entities of public law that aim at the

protection, conservation and promotion of the Environment and (vii) to carry out other related activities that cover the environmental issue.

Figure 2 illustrates the organizational structure of the Municipality of Lavras, highlighting the division into Municipal Secretariats. The Secretariat of the Environment is subdivided into Superintendencies and has administrative autonomy, that is, it is an independent secretariat and not subordinate to the other.

Figure 2. Element (I) of Municipal Environmental Governance - Institutional Structure of the Department of the Environment



Source: Complementary Law No. 440/2022, adapted by the authors (2025)

The preparation of the PMMA should be inserted in the structure of the Superintendence of Environmental Policies of the Municipal Department of the Environment of Lavras, as shown in Figure 2, and this unit will be responsible for management, implementation and monitoring. The superintendence plays a strategic role in the formulation and execution of environmental policies. Within the scope of municipal environmental governance, the Superintendence of Environmental Policies will be responsible for establishing technical and operational guidelines for the PMMA.

In addition to the internal structure of the Municipal Department of the Environment, the municipality of Lavras is part of a multipurpose Public Consortium, as shown in Figure 2, configuring itself as a strategy to strengthen municipal environmental management through intermunicipal cooperation. This modality allows the optimization of resources,

enabling the sharing of infrastructure and technical staff, as well as the execution of projects that would be unfeasible or less efficient within the scope of the isolated administration of a single municipality.

It is a public consortium called Regional Consortium for Basic Sanitation (CONSANE) constituted in the form of an interfederative autarchy, that is, a public entity with its own legal personality, integrated with the Indirect Administration and endowed with administrative and financial autonomy. As provided for in Article 3, item III, of Complementary Law No. 440/2022, the linking of Indirect Administration entities must occur to the Municipal Secretariat, responsible for formulating public policies in the entity's respective area of activity, aiming at the integration of objectives, goals, and results (LAVRAS, 2022).

According to the Public Consortium Agreement between CONSANE, ratified through Municipal Law No. 4,650/2021, the Consortium aims to plan and execute projects and programs aimed at sustainable regional development, the improvement of the administrative management of its consortium members and the formulation of regional public policies (LAVRAS, 2021). The adhesion of the municipality of Lavras to the Consortium can overcome possible structural limitations faced by the municipality, especially with regard to the technical and operational capacity for the full execution of environmental public policies, starting to have access to specialized technical support.

The participation of a municipality in an intermunicipal consortium is directly related to governance, considering the relational patterns of articulation and cooperation established between political and social actors in the constitution of space and arrangements to mediate interests, participation, and monitoring of public policies (HENRICHS, 2020).

Changes in municipal governments, especially during election periods, can contribute to the interruption, abandonment or modification of projects, programs and legislation initiated by previous administrations. Environmental public policies are associated with lasting changes, and consequently require time to consolidate (CLEVELAND, 2002), therefore, they are particularly vulnerable to changes in municipal environmental managers.

The constant change of leadership and the restructuring of municipal environmental agencies can weaken the institutional capacity to conduct policies. The administrative dynamics of the municipality of Lavras can be seen in Table 2, which presents the chronology of municipal administrations since 2001 and already allows us to glimpse their continuity until 2028.

Table 2. Presentation of managers, administrators and their respective political parties between the years 2001 and 2028.

Management	Mayor	Political party
2001 - 2004	Carlos Alberto Pereira	Brazilian Social Democracy Party (PSDB)
2005 - 2008	Carlos Alberto Pereira	Brazilian Social Democracy Party (PSDB)
2009 - 2012	Jussara Menicucci	Brazilian Social Democracy Party (PSDB)
2013 - 2014	Marcos Cherem	Social Democratic Party (PSD)
2014 - 2016	Silas Costa Pereira	Brazilian Social Democracy Party (PSDB)
2017 - 2020	José Cherem	Social Democratic Party (PSD)
2020 - 2024	Jussara Menicucci	Brazilian Socialist Party (PSB)
2025 - 2028	Jussara Menicucci	Social Democratic Party (PSD)

Source: From the authors (2025)

This alternation and change in public administration can exemplify how the management of mayors can interfere in the existence and consistency of environmental policies, in addition to the permanence and autonomy of environmental technicians and managers in the municipality. The temporality of the positions occupied by professionals linked to environmental issues, often influenced by changes in municipal leadership (LEME, 2016), can limit the progress of initiatives that required long-term continuity. Municipal management can result in significant variations in environmental approaches, which can directly influence the effectiveness of plans and projects, especially those aimed at the conservation of the Atlantic Forest.

Similarly, the municipality of Extrema - MG has experienced over the years an administrative continuity that is rare in the Brazilian scenario, which has favored the evolution of environmental management mechanisms (PEREIRA, 2017). In this sense, the trajectory and institutional interrelations determined the existence and development of the project aimed at Payment for Environmental Services - PES (CHIODI, 2013), mainly highlighting the influence of political continuity on the effectiveness of public policies of an environmental nature.

ELEMENT OF ENVIRONMENTAL GOVERNANCE (II): RELEVANCE OF THE TECHNICAL STAFF

The composition of the technical staff of the Municipal Department of the Environment (SMMA) of Lavras is essential for the performance of the functions and responsibilities assigned to the sector. Table 3 is presented below, detailing the positions

and functions currently occupied in the Secretariat, with information on the number of civil servants and their academic backgrounds.

These data are important to understand the structure of human resources available for environmental management in the municipality, providing an overview of the technical capacity of the team involved in the Secretariat's activities.

Table 3. Element (II) of Municipal Environmental Governance - Technical staff of the SMMA of Lavras currently

Position/Function	Number of servers	Training
Secretary of the Environment	01	Right
Superintendent of Environmental Licensing and Regulation	01	Forest Engineering
Environmental Inspector	04	Life Sciences Life Sciences
Environmental Policy Advisor	03	Environmental Technician Environmental Management
Evaluation and Control Advisor	01	Right
Environmental Engineer	01	Environmental Engineering
Planning, Management and Finance Management	01	Industrial Chemistry
Secretary	02	Pedagogy Administration
Executive Secretary of CODEMA	01	Graduating in Law
Veterinarian	01	Veterinary medicine

Source: SMMA of Lavras (2025)

The structure of the SMMA in the municipality of Lavras stands out positively for the composition of its technical team, currently formed by 16 (sixteen) employees distributed in 10 (ten) different positions. This number is significant when compared to the reality of many municipalities of similar size, which often operate with lean, overloaded teams and in some cases do not have sufficient technical training to perform these assignments (ABREU & FONSECA, 2017; PAGOTTO, M. E., PIZELLA, 2017; PACHECO et al, 2023). The analysis of the table shows the presence of professionals with varied backgrounds (ten different areas), which can contribute to the Secretariat's performance in different areas of environmental management.

The presence of three civil servants occupying the position of Environmental Policy Advisor is a positive point, especially when considering the complexity of environmental

public policies, such as the Municipal Plan for the Atlantic Forest (PMMA). In this way, these professionals can strengthen the capacity for development, implementation and monitoring of actions linked to public policies.

The existing positions in the SMMA of the municipality of Lavras are composed of both permanent and commissioned positions. The predominance of commissioned positions within the Municipal Secretariats of the Environment, in general, aggravates the challenges of administrative continuity, with the exchange of positions, jobs and space within the public administration being common. Therefore, commissioned positions should represent the smallest possible number within the secretariats (SANTANA, 2023) since, as they are directly linked to political appointment, the positions are often occupied by professionals who can be replaced at each change in management, which contributes to a high turnover in the teams.

On the other hand, it is important to highlight that commissioned positions can also have positive aspects, such as the diversification of personnel and the improvement of communication between sectors and agencies, and the main basis of these positions is precisely the trust of those who appoint (SANTANA, 2023). However, the absence of permanent technical teams compromises administrative continuity, weakens local environmental governance and makes it difficult to achieve consistent results, especially in the face of staff turnover and the loss of efforts already invested in training (LEME, 2016).

ELEMENT OF ENVIRONMENTAL GOVERNANCE (III): PERFORMANCE OF THE ENVIRONMENTAL COUNCIL

CODEMA is a local body, of an advisory and deliberative nature, with a collegiate composition with elected and appointed members (LAVRAS, 2002). The Municipal Council for the Conservation and Defense of the Environment (CODEMA) of Lavras was created through Law No. 1,224, of March 24, 1980 and has undergone some restructuring over the years.

The CODEMA of Lavras is composed of representatives of the Public Power (President, members linked to other Municipal Secretariats and members of State and Federal Public Administration Bodies) and representatives of organized sectors of Civil Society (Regional Council of Engineering and Agronomy - CREA/MG, Brazilian Bar Association - OAB, Sanitation Company of Minas Gerais - COPASA, Association of Engineers and Agronomists of Lavras and region – ASSEAL, Abraham Kasinski Foundation

and members of notorious knowledge). The basic structure is composed of the presidency, vice-presidency, plenary and executive secretariat.

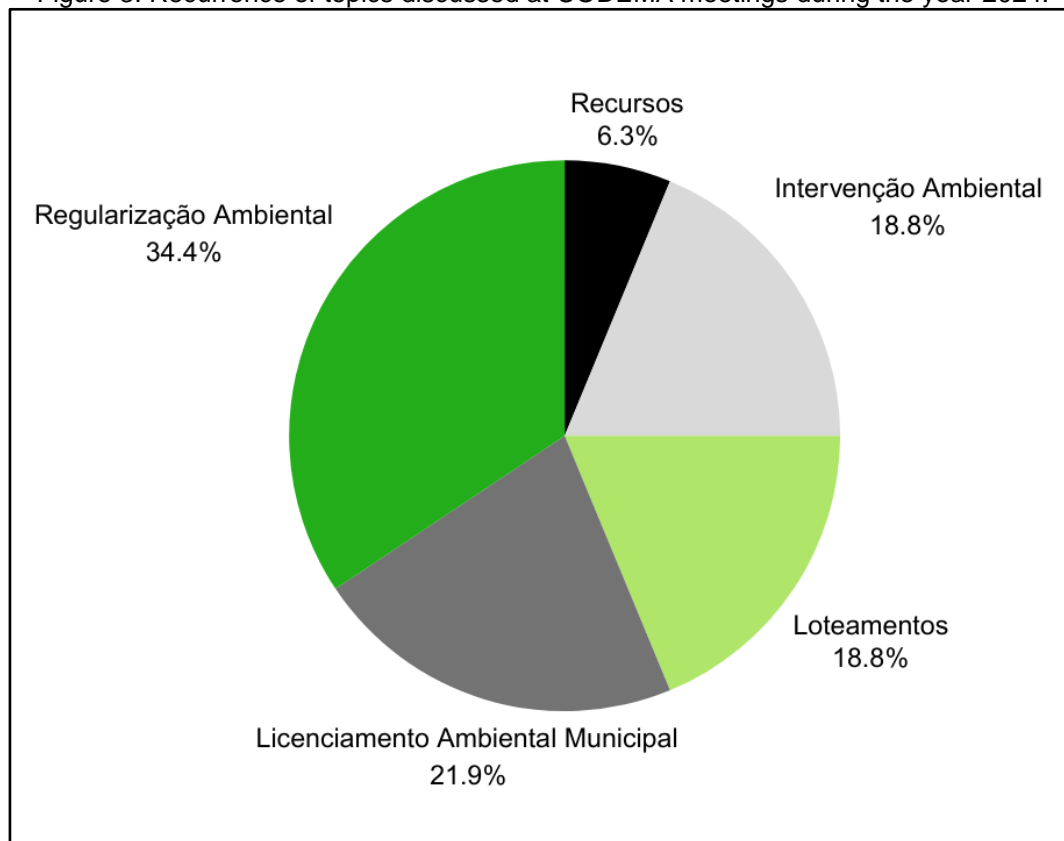
The composition of the councils must be balanced, bringing together qualified professionals and representatives of different segments of society and the Government in equal proportion (NUNES et al., 2012). In the municipality of Lavras, 7 councilors were appointed considered as representatives of municipal, state, and federal public administration bodies and 7 members representing civil, environmental, and non-governmental organizations, according to the classification of the appointment decree itself (LAVRAS, 2023), corresponding to a parity composition.

In a favorable manner, the municipality of Lavras has beneficial conditions: good attendance and participation of members, in addition to continuous meetings, ordinarily occurring 1 (one) time a month, and extraordinarily at the initiative of the President or the majority of the members.

The CODEMA website stands out for its transparency, making publicly available all agendas and minutes of the meetings, which allows broad access to the body's decisions. In addition, the council meetings are open to the participation of society, ensuring space for community involvement in environmental discussions. Anyone who wishes to follow the debates can participate, just by showing interest in advance through contact via email.

The CODEMA meetings of the municipality of Lavras have addressed a variety of topics related to local environmental management, including licensing processes, interventions in environmentally sensitive areas, issues related to the implementation of allotments, among others. In order to provide a clearer visualization of CODEMA's performance, a graphic summary was prepared containing the main agendas discussed between January 2024 and December 2024, evidencing the deliberative role of the collegiate in the face of the municipality's environmental demands. The representation of the data in a summarized form allows the observation of the percentage of certain subjects and evidences patterns in the municipality, as shown in figure 3.

Figure 3. Recurrence of topics discussed at CODEMA meetings during the year 2024.



Source: From the authors (2025)

The analysis of the agendas discussed at CODEMA meetings throughout 2024 reveals a constant presence of the theme related to Environmental Regularization (Figure 3), especially with regard to the Environmental Protection Zone (ZAP), with records in practically every month of the year (totaling 11 occurrences, about 34.4%), demonstrating that although ZAPs are foreseen as areas of restriction in the Master Plan, There are still significant demands for interventions, regularizations and legal adjustments in these regions.

The constancy of environmental regularization processes in these areas can be interpreted as a reflection of the advance of urban expansion and the pressure for land use in the urban fabric of the municipality. Even though they are legally protected, Environmental Protection Zones (ZAPs) continue to be the target of private interests, which seek to make their initiatives compatible with the legislation through regularization processes with CODEMA.

Most of the topics addressed during CODEMA meetings during 2024 were of a regulatory nature, that is, of a reactive stance, with a great recurrence of environmental regularization of protected areas, environmental interventions, environmental licensing and allotments. A worrying factor is the lack of discussion of topics such as forest restoration policies, land regularization, soil and water conservation, Payments for Environmental

Services, carbon credits, among others, limiting the understanding and participation of the Council with a proactive character. In the study by Pradella (2024), unlike the context of Lavras, the scenario with the prevalence of economic interests aimed at obtaining immediate profits, articulated at the local level by real estate agents and landlords, is often favored by a strategic alliance between sectors of the public power that act in a coordinated manner to make the rules more flexible.

The regulation of the territory via municipal urban legislation has promoted the liberation of areas previously subject to environmental restrictions, through the expansion of urban perimeters and the redefinition of guidelines for land use and occupation, as pointed out by Santoro (2014) for the context of the state of São Paulo, in which agrarian and environmental legislation establishes the rural module as a minimum unit of subdivision. However, the State has records of flexibility in favor of urbanization regardless of the population size of its municipalities.

In the context of the municipality of Lavras, this tension is equally observable. The expansion of the urban territory has been formally guided by instruments such as the Municipal Master Plan and the Zoning, Land Use and Occupation Law, which define the growth and conditions for the conversion of rural areas into urban or urban expansion. Although necessary for territorial planning, these mechanisms can facilitate the incorporation of new plots into the rural perimeter, putting pressure on local ecosystems and traditional agrarian activities.

Another topic widely addressed in CODEMA meetings is Municipal Environmental Licensing. Based on Complementary Law No. 140, of December 8, 2011, regulated in the State of Minas Gerais, by Copam Normative Deliberation No. 213, of February 22, 2017, the decentralization of environmental licensing in Minas Gerais is allowed (BRASIL, 2011; MINAS GERAIS, 2017). The municipality of Lavras has qualified to take over the management of activities with local impact (Law No. 4,694, of March 25, 2022). Therefore, as of April 2024, this decentralization became more effective, redefining the competencies of municipal bodies. CONSANE began to play a central technical role in the analysis of licensing processes. Concomitantly, the Municipal Council for the Defense and Conservation of the Environment (CODEMA) reoriented its performance to the deliberative function on the environmental regularization of the enterprises and their activities, consolidating a new institutional arrangement for the control of urban expansion and its environmental impacts in the territory of Lavrense.

ENVIRONMENTAL GOVERNANCE ELEMENT (IV): RESOURCES

Municipalities may have a special fund, aiming to support projects aimed at the rational and sustainable use of the natural resources of their territory, provided that it is authorized by specific legislation, as recommended by the Federal Constitution (BRASIL, 1988). Federal Law No. 4,320/64, which provides for the General Rules of Financial Law for the preparation and control of the budgets and balance sheets of the Union, the States, the Municipalities and the Federal District, establishes:

Article 71. A special fund is the product of specified revenues that, by law, are linked to the achievement of certain objectives or services, with the possibility of adopting specific rules of application.

[...]

Article 74. The law that establishes a special fund may determine peculiar rules for control, rendering and accountability, without, in any way, eliminating the specific competence of the Court of Auditors or equivalent body. (BRAZIL, 1964)

In addition, Law No. 9,605, which provides for criminal and administrative sanctions derived from conducts and activities harmful to the environment, also known as the Environmental Crimes Law, determines that the amounts collected in payment of fines imposed by the City Hall for environmental infractions be reverted to the Municipal Environment Fund or related (BRASIL, 1998).

In general, the creation of Special Municipal Environmental Funds is economically motivated (CARVALHO, 2005). The Environmental Defense Fund (FDMA) of the municipality of Lavras was cited for the first time through Law No. 1,811/1990. However, the Law underwent some restructuring, culminating in Law No. 3,258/2006. With the creation of the Fund, it is expected that it will facilitate the capture, transfer and application of resources intended for the development of actions for the protection, conservation and improvement of the environment, in the process of local economic and social development.

In 2020, the current Law underwent some changes. Among them, CODEMA is now informed about the application of resources, in addition to bimonthly access to the Fund's revenues and expenses (LAVRAS, 2020). It is worth mentioning that the institution of the Municipal Fund for Environmental Defense is not conditioned, by legal requirement, to the existence of an Environmental Council. Thus, its creation can occur regardless of the structure of this body. However, in the municipality of Lavras the Fund was established with CODEMA as the Management Council. The performance of CODEMA and the resources from the FMDA significantly strengthen the environmental governance mechanisms in the municipality.

The efficient and targeted management of resources, made possible by the institutional arrangement, allows the implementation of practical and strategic actions aimed at improving the environment. Finally, the same amendment to the Fund Law culminated in

the addition of some more revenues, such as fees arising from requests for land subdivision and fees for compensatory measures for the purposes of land subdivision and implementation of lots, simple condominiums and controlled access subdivisions (LAVRAS, 2020).

The inclusion of these new revenues shows a strategic response by the municipality to the growing dynamics of urban expansion. By recognizing that the subdivision of the land, as well as the implementation of new real estate developments, are inevitable and recurrent processes in the territory of the municipality of Lavras. Therefore, the municipal administration sought to integrate this scenario into local environmental policy, transforming potential impacts into opportunities to strengthen the Fund.

Searching the literature and experiences of other municipalities, it is observed that the direct linking of revenues from land subdivision processes and implementation of real estate projects to the Municipal Environment Fund is not yet a widely disseminated practice. In general, municipal environmental resources are concentrated in transfers of legal compensations, environmental fines and specific fees, and it is less common to allocate urban revenues for environmental purposes. In this sense, the initiative adopted in the municipality of Lavras can be considered innovative, as it integrates urban and environmental management instruments, strengthening municipal environmental governance.

By linking urban development to environmental responsibility, the municipality establishes an important governance instrument, which can contribute to an expansion model aligned with the principles of economic, social and environmental development. With the requirement of compensatory measures and the inclusion of fees related to land subdivision as sources of revenue, Lavras starts to use the available legal instruments to mitigate the effects of urbanization and direct resources to the environment.

ELEMENT OF ENVIRONMENTAL GOVERNANCE (V): MUNICIPAL LEGISLATION

It is essential to analyze the municipal legislation that sustains public policies, as regulation is a stable and lasting tool, regardless of administrative changes. The creation of specific municipal legislation is a fundamental pillar for inducing and sustaining local development, by providing the necessary regulatory framework for territorial management and the promotion of socioeconomic and environmental advances (DOS SANTOS et al. 2021). Therefore, Chart 1 presents the main legislations of the municipality of Lavras, showing how these regulations structure the environmental and urban governance of the

municipality over the last few years, in addition to elucidating the periods of the main environmental instruments, laws and programs were instituted.

Table 1. Legal framework in force in the municipality of Lavras - MG

Reference	Description	Current status	Observations/ Recommendations
Law No. 4,672, of November 29, 2021	Establishes the Multiannual Government Action Plan - PPA for the four-year period 2022-2025	Current	Establishes the guidelines and goals of the administration, guiding resources and the execution of public policies
Law No. 4,694, of March 25, 2022	Policy for the protection, conservation and control of the environment and the improvement of the quality of life and the Municipal Environment System	Current	The law must undergo constant revisions in order to meet the needs.
Decree No. 17,099, of May 25, 2023		Effective, with changes	Regulates Municipal Environmental Licensing
Law No. 97, of April 17, 2007	Master Plan	Effective, with changes	It aims at territorial planning and municipal growth
Law No. 4,445, of March 20, 2018	Municipal Plan for Basic Sanitation (PMSB)	Current	Sectoral plan, as well as the PMMA. Plans must be interconnected and articulated in order to maximize actions
Law No. 1,224 of March 24, 1980	Municipal Council for the Defense and Conservation of the Environment (CODEMA)	Effective, with changes	Constant restructuring is necessary, in addition to changes in the composition of the members
Law No. 3,258, of December 15, 2006	Municipal Environmental Defense Fund (FMDA)	Effective, with changes	Enables the application of resources by providing support for environmental management
Law No. 4,725, of October 10, 2022	"Água dos Ipês" Project (Payment for Environmental Services - PES)	Current	Awaiting the elaboration of a Decree aiming at the regulation of the Law
Law No. 4,659, of August 17, 2021	Landscaping and Urban Afforestation Program	Current	Instrument aimed at the policy of planting, replanting, pruning, suppression and urban afforestation
Decree No. 17,716, of May 02, 2024			Manual of Urban Forestry
Law No. 156, of September 22, 2008	Land Use and Occupation	Effective, with changes	Provides for zoning and regulates the Use and Occupation of Urban Land
Law No. 155, of August 28, 2008	Urban Land Subdivision Law	Effective, with changes	Due to the high demand for urban land subdivision, it is necessary to constantly update the Law
Law No. 4,786, of September 29, 2023	Municipal System of Conservation Units of Lavras (SMUC)	Effective, with changes	Awaiting the elaboration of a Decree aiming at the regulation of the Law
Law No. 452, of	Regularization of properties in	Current	It provides opportunities for

Reference	Description	Current status	Observations/ Recommendations
September 15, 2022	consolidated urban areas inserted on the banks of watercourses		construction in APPs "that have lost their environmental functions", being divergent from the conservation of springs and protected areas
Decree No. 16,811, of December 20, 2022			

Source: Lavras City Council, adapted by the authors (2025)

With regard to the environmental agenda, the Multi-Year Plan (PPA) plays a fundamental role in defining strategies aimed at the sustainable management of the territory, and may include actions related to the conservation of natural resources. The inclusion of these guidelines in multi-year planning ensures greater predictability and continuity of environmental actions. Therefore, a PPA can be considered an instrument that favors environmental governance, as it shares the making and decisions about government actions (PINHEIRO, 2022).

The Multi-Year Plan is a normative planning and budgeting instrument instituted in the Federal Constitution of 1988 with the objective that the federative entities can execute the planning of their programs and actions in a period of 4 years (BRASIL, 1988). In the sustainable development axis, the implementation of environmental preservation actions that ensure that the municipality grows in a sustainable way, constitute the guidelines and strategic objectives of the Plan (LAVRAS, 2021). Some of the strategic projects planned correspond to "Environmental Education" and "Modernization of Environmental Legislation".

With regard to Environmental Education, the PPA of Lavras listed "to create a program of integrated understanding of the environment in its multiple and complex relationships, involving ecological, psychological, legal, political, social, economic, scientific, cultural and ethical aspects for the perspective of inter, multi and transdisciplinarity". And in relation to the modernization of environmental legislation, emphasis was placed on "creating a municipal environmental policy that establishes the Municipal System, linking it to the environmental policies of companies (LAVRAS, 2021).

The strategic indicators of the PPA 2022-2025 correspond to performance indicators and targets, such as "Index of green areas and preserved urban springs" and "Percentage of Urban Road Afforestation". Among the programs instituted for the environment, the "Creation of the Municipal Park in the Jardim Campestre neighborhood and partnerships for the construction of other urban parks" and "Plant for the manufacture of civil construction waste" were specified. The programs aim to achieve the objectives defined in the PPA and are developments of the subfunctions of the Public Administration. In this sense,

sustainable development depends on the participatory elaboration and implementation of public policies that advance from the theoretical to the practical field (PINHEIRO, 2022).

The municipality of Lavras has the competence to carry out the Municipal Environmental Licensing, an attribution that reinforces its autonomy in the management of activities of local impact (BRASIL, 2011). Licensing is one of the instruments of the National Environmental Policy - PNMA, and consequently, an instrument of sustainable development (BRASIL, 1981). In this sense, it is necessary to support sustainable development through institutional arrangements that improve the environment within the scope of public policies (PAULSEN, 2018).

According to Paulsen (2018), understanding the institutional arrangements in force in the definition and implementation of public policies is crucial to propose alternatives that can complement the existing instruments to better integrate natural capital and the environment. Therefore, Environmental Licensing in Lavras represents a significant example of how decentralization can strengthen local environmental management. However, for this competence to result in real benefits, it is essential that it be supported by the principles of governance, with transparent practices, social participation and articulation.

From the analysis of municipal legislation, it was possible to infer the need for actions aimed at environmental education, considering that the municipality lacks guidelines and guidelines in this context. In view of this, governance is related to the institutionalization of mechanisms and instances of social control, participatory management, and environmental education (TCU, 2020). In the context of Critical Environmental Education, however, this participatory management occurs when the population contributes, influences and enjoys, in a more effective and direct way, in the construction and transformation of its reality, through organized actions (BRASIL, 2003).

It can be seen that some laws still lack decrees aimed at regulating what was provided, ensuring its full effectiveness. These decrees are essential to detail operational and regulatory aspects, providing clear guidelines on how policies should be implemented in practice. Without regulation by decree, laws can be vulnerable to ambiguous interpretations, making their application inconsistent or ineffective, so general acts can be edited to complement laws and allow their effective application (CARVALHO FILHO, 2024). As an example, the "Água dos Ipês" Project, the Payment for Environmental Services (PES) Law in the municipality of Lavras, does not have a specific Decree, and therefore, has not yet been regulated.

Payment for Environmental Services (PES) is a mechanism to encourage the sustainable management of natural resources, aimed mainly at environmental service

providers (WUNDER, 2007), which is conditional on agreed management rules, aiming to generate environmental services (WUNDER, 2015). Considering that one of the main economic activities in Brazil, and especially in the municipality of Lavras, is agricultural activities, it is necessary to raise awareness among rural producers who provide ecosystem services about the natural resources available on their properties. Agriculture is a vector of pressure that originates from factors that are not directly environmental, but which, through its expansion and intensification, cause negative impacts on the environment (SAMBUICHI, 2012). It is interesting to intensify actions aimed at controlling other urban areas/issues that may interact negatively with the Atlantic Forest.

In this sense, Law No. 4,725/2022 that instituted PES in the municipality could have been regulated, aiming to offer economic incentives and promote the adoption of good practices, ensuring the conservation of natural resources and the balance between agricultural production and sustainability of natural resources in the municipality of Lavras.

In addition, the Law that establishes the Municipal System of Conservation Units (SMUC) states that it is the duty of the Municipal Department of the Environment to survey the existing preservation areas in the rural area of the municipality to define the creation of UCs, in addition to offering tax or financial incentives in financing projects for the creation of municipal RPPNs (LAVRAS, 2023) but there was no publication of a Decree that carries out its regulation. The aforementioned Law could have been of great value to the municipality, meeting the criteria of Federal Law No. 11,428/06, in terms of conservation of remnants of native vegetation of the Atlantic Forest (BRASIL, 2006), in addition, it could also have acted as an impasse in another vector of pressure on land parceling.

Brazilian forest legislation, from the perspective of sustainable development, imposes limits on the economic exploitation of the land to the detriment of environmental protection (BRASIL, 2012). Thus, the first wording of the SMUC Law of Lavras, valued the allocation of an area for the implementation of a Conservation Unit as a requirement for the approval of new subdivisions, as provided below:

Article 33. For the approval of new subdivisions, it will be mandatory to allocate an area for the implementation of one of the categories of conservation units.

Paragraph 1 - In the existence of a green area with relevant natural resources and a high level of natural conservation of its own, the entrepreneur must designate it as a natural conservation unit.

Paragraph 2 - In the creation of conservation units, anthropized spaces must be recovered or restored, and their use for institutional public areas is not allowed.

Paragraph 3 - The areas of permanent environmental preservation existing in the formation of the new subdivision shall be maintained and destined to conservation units with the restoration of anthropized spaces. (LAVRAS, 2023, emphasis added)

However, in less than one (1) year, this article was revoked with the publication of Law No. 4,841/2024, preventing this beneficial provision, with the potential to limit environmental interventions for the purpose of disorderly urban expansion, and consequently, collaborating for the conservation of the remnants, from coming into force (LAVRAS, 2024). On the other hand, the resources from the Municipal Environmental Defense Fund can be used in the management, management, creation and maintenance of municipal conservation units, green areas, parks, squares and remaining areas (LAVRAS, 2011).

Law No. 11,428/06 makes it clear that environmental characteristics (type of vegetation and stage of development/regeneration) and especially urban conditions (urban limits) impact the potential use of the property, when composed of vegetation belonging to the Atlantic Forest Biome (BRASIL, 2006).

In this sense, when a property is inserted in an urban area or in urban expansion, it is necessary to balance environmental protection with the socioeconomic development needs of the municipality (MONTEIRO, 1990). The definition of urban zoning and the parameters established in the master plans of the municipalities directly affect the use and occupation of the land (ROGERS, 2001). Therefore, in consolidated urban areas, the possibility of using the property can be expanded, as long as the environmental compensations required by law are respected.

These two factors (environmental and urban) are determinant for the potential use of the property. Therefore, the legislation reinforces the need to reconcile development with conservation, considering that the Atlantic Forest Biome, even in urbanized areas, continues to be the object of protection (BRASIL, 2008). This emphasizes the role of municipalities in environmental governance, especially in the definition of urban guidelines that integrate the protection of forest remnants with the responsible/sustainable use of real estate.

POSITIVE ASPECTS IDENTIFIED IN ENVIRONMENTAL GOVERNANCE

The analysis of Lavras' environmental governance also made it possible to recognize important institutional advances, which contribute to the consolidation of a more structured and efficient management. These positive aspects demonstrate the municipality's effort to strengthen its environmental planning and management instruments, even in the face of the operational and financial limitations that mark the reality of most local administrations. Table 4 highlights some of these advances and their possible implications for the effective implementation of the Municipal Plan for the Atlantic Forest (PMMA).

Table 4. Main positive aspects identified in the environmental governance of Lavras - MG

Rated Element	Positive aspect identified	Implications for PMMA
Environment Framework	Municipal Secretariat with good performance and well structured with partnerships with other Secretariats of the City Hall and with a Public Consortium	Ensures minimum institutional structure for the execution of the PMMA and facilitates intersectoral articulations
Technical Staff	Large and diversified team, in addition to technical support with participation in the Public Consortium	The personnel structure strengthens the capacity of municipal environmental management to act in the preparation and implementation of the PMMA
Environment Council	CODEMA established by law and in operation, with equal composition and regular meetings	It strengthens social control, ensures participatory deliberation, and legitimizes decisions related to environmental policy
Resources	Existence of the Municipal Environment Fund, with its own revenues and the possibility of raising other resources	Increases the financial capacity to implement the mechanisms for implementing PMMA actions
Legislation	Existence of a set of municipal environmental standards, including the creation of the Municipal Environment Fund, CODEMA and other pertinent legislation.	The legal basis favors the institutionalization of the PMMA, legitimizes the actions and enables alignment with environmental management guidelines

Source: From the authors (2025)

The presence of these structuring elements indicates an institutional scenario favorable to the consolidation of environmental policies in the municipality, especially with regard to the execution of the PMMA. Although there are still points to be improved, the advances identified work as pillars on which to build an environmental agenda, in addition to valuing local efforts, but also to guide future actions to strengthen governance.

LIMITING ASPECTS IDENTIFIED IN ENVIRONMENTAL GOVERNANCE

From the analysis of the five elements of environmental management (structure, technical staff, council, resources and legislation), it was possible to identify institutional and operational obstacles that compromise the effectiveness of municipal environmental governance. These limiting aspects can directly impact the implementation of instruments such as the Municipal Plan for the Atlantic Forest (PMMA). Table 5 summarizes the main challenges identified throughout the research.

Table 5. Main limiting aspects identified in the environmental governance of Lavras - MG

Rated Element	Limiting aspect identified	Implications for PMMA
Environment Framework	Secretariat with an autonomous and specialized structure, however, with the potential to improve intersectoral articulation	It can improve institutionalization, through the articulation of the PMMA with other public policies of the municipality
Technical Staff	Absence of occupation of the position of Superintendent of Environmental Policies	The lack of a specific person responsible for coordinating and implementing environmental policies can compromise the execution
Environment Council	Outstanding performance in technical and administrative deliberations of a daily nature. Limited action on issues that fall within rural areas.	It points to the possibility of expanding its activities to strategic themes, proposing guidelines and discussing broader public policies
Resources	The Municipal Environment Fund is regulated and active, and may have its revenues and applications discussed in a more systematic way at monthly meetings	The periodic monitoring of the fund by CODEMA can contribute to defining environmental strategies in the short, medium and long term
Legislation	Unregulated laws (e.g., PES and SMUC) and repeal of relevant environmental provisions	It indicates the relevance of consolidating the normative framework as a basis for support for PMMA and other public policies

Source: From the authors (2025)

From the systematization presented, it is observed that some aspects of the environmental management of Lavras are in the consolidation phase. This does not necessarily represent a fragility, but rather a common condition in institutionalization processes at the local level. Elements such as the administrative structure, the strategic use of resources from the environmental fund and the legal framework demonstrate important advances, although they require improvements to ensure greater stability in environmental management. Thus, the consolidation of these elements can represent a promising path for the effective implementation of public policies, especially the PMMA.

FINAL CONSIDERATIONS

The elements of environmental governance and their relationship with the potential implementation of the Municipal Plan for the Atlantic Forest (PMMA) in the municipality of Lavras, Minas Gerais, were analyzed. From the descriptive and qualitative approach, institutional, legal, technical and administrative aspects that make up the local environmental management were investigated.

The analysis showed how several components of environmental governance are in a consolidation phase, revealing a context of advances. The existence of a regulated Environmental Fund, an active council and a consistent normative basis indicated a favorable scenario for the institutionalization of the PMMA. On the other hand, specific aspects such as the need to regulate legal provisions and the ability to expand the use of resources in actions aimed at strengthening environmental management point to future opportunities.

The systematization of this information allows a deeper understanding of the local conditions that can influence the effectiveness of the PMMA, expanding the understanding of the relationship between institutional capacity and environmental policy in the municipal context. As a contribution, this work is inserted in a gap that is still little explored in the literature that lacks analyses applied to environmental governance in municipalities, with emphasis on institutional arrangements and local planning instruments.

It is hoped that the results presented here can support future comparative research, as well as reflections aimed at improving environmental policy at the local level. It is also suggested that future studies deepen dimensions not explored in this work, such as social participation and the integration between environmental and urban instruments.

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