RELISE

ENVIRONMENTAL MANAGEMENT AS A METHOD OF SUPPORTING DECISIONS IN PUBLIC POLICIES IN THE MUNICIPALITY OF RAUL SOARES[1]

GESTÃO AMBIENTAL COMO MÉTODO DE APOIO ÀS DECISÕES EM POLÍTICAS PÚBLICAS NO MUNICÍPIO DE RAUL SOARES

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ABSTRACT

Environmental management instruments and public policies are crucial for sustainability and environmental protection. These mechanisms allow for effective management of natural resources and ensure that projects minimize negative impacts. Environmental public policies, in turn, are guidelines formulated by governments and institutions to face environmental challenges and promote sustainable development. They define regulations on pollutants, create protected areas and encourage the use of renewable energy, establishing the normative and strategic framework for environmental action. The effectiveness of environmental approaches depends on the integration between these instruments and policies, which must work together to face complex and dynamic problems, which is why, based on a literature review, we sought to better understand this system. Noting that rigorous application, continuous review and adaptation to new challenges are essential. Collaboration between policymakers, managers and civil society is essential to implement effective strategies and achieve sustainable development, ensuring a balanced future.

Keywords: sustainability, environment, legislation, management

RESUMO

Os instrumentos de gestão ambiental e as políticas públicas são cruciais para a sustentabilidade e proteção ambiental. Esses mecanismos permitem uma gestão eficaz dos recursos naturais e garantem que os projetos minimizem impactos negativos. As políticas públicas ambientais, por sua vez, são diretrizes

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formuladas por governos e instituições para enfrentar desafios ambientais e promover o desenvolvimento sustentável. Elas definem regulamentações sobre poluentes, criam áreas protegidas e incentivam o uso de energias renováveis, estabelecendo o arcabouço normativo e estratégico para a ação ambiental. A eficácia das abordagens ambientais depende da integração entre esses instrumentos e políticas, que devem trabalhar em conjunto para enfrentar problemas complexos e dinâmicos, por isso com base em revisão bibliográfica buscou-se entender melhor esse sistema. Observando que a aplicação rigorosa, revisão contínua e adaptação a novos desafios são essenciais. A colaboração entre formuladores de políticas, gestores e a sociedade civil é fundamental para implementar estratégias eficazes e alcançar um desenvolvimento sustentável, garantindo um futuro equilibrado.

Palavra-chave: sustentabilidade, meio ambiente, legislação, gestão.

INTRODUCTION

In recent years, the growing awareness of global environmental challenges has led to an intensified search for effective solutions aimed at environmental preservation and sustainable development. In this context, environmental management instruments and public policies play a fundamental role in coordinating and implementing strategies.

Environmental management instruments are essential tools designed to guide, monitor, and evaluate actions focused on environmental conservation. These instruments can range from regulations and technical standards to economic incentives and control mechanisms, all aimed at ensuring that human activities are conducted in ways that minimize negative impacts on the environment.

On the other hand, environmental public policies consist of sets of guidelines and actions developed by governments and institutions to address environmental issues and promote sustainable development. These policies cto wide range of areas, from pollution regulation and the management of protected areas to the promotion of renewable energy. They are formulated based on scientific evidence, socioeconomic data, and the participation of various social actors, including citizens, non-governmental organizations, and the private sector.

The effective integration of environmental management instruments and public policies is crucial for achieving sustainability goals. The interrelation between these two aspects enables a coordinated and comprehensive approach capable of addressing challenges and promoting a more balanced and sustainable future.

Therefore, the objective of this study is to analyze, through a review of the literature, some environmental management instruments and key actors as a

method to support decision-making in public policies, focusing on the case study of the municipality of Raul Soares.

ENVIRONMENTAL MANAGEMENT TOOLS

Among the main instruments of environmental management are direct regulation, market instruments, and economic instruments, the latter being more recent and increasingly frequently applied.

Direct regulation (command and control instruments)

Direct regulation mechanisms, also known as “command and control” instruments used in environmental policies, can be divided into the following categories: the establishment of pollution standards for specific sources; equipment controls, such as the requirement to install certain devices or the mandatory use of available clean technologies; controls over production processes; product controls that establish standards for goods whose production or consumption causes environmental harm; total prohibition or restriction of certain activities in specific areas or periods; and the setting of non-tradable extraction quotas (LEITE, 2001).

These mechanisms are the most frequently applied in international environmental policy and are widely used, being fundamental for the possible implementation of other mechanisms. However, some economists criticize “command and control” policies and highlight several disadvantages, as cited by Almeida (1998, p. 45):

> they are economically inefficient because they do not take into account the different cost structures of private agents in reducing pollution; their administrative costs are very high, as they involve the establishment of norms and technological specifications by official agencies, as well as strong monitoring schemes by regulatory agencies and governments; they create entry barriers, since the granting of non-tradable licenses tends to perpetuate the existing market structure; once the standard or license is achieved and agents are in compliance with the law, the

polluter is not encouraged to introduce new technological improvements; and they may be influenced by specific interest groups.

Market regulation (certification and labeling)

Environmental labeling aims to identify products that have undergone an environmental analysis process, receiving a seal that qualifies them as having low environmental impact. One of the intentions is to incentivize manufacturers to adopt a practice that helps consumers develop an active stance regarding environmental issues. However, this practice is not yet sufficient to resolve environmental problems, as it is voluntary.

Economic regulation (economic instruments)

According to Leite (2001), an economic instrument is one that, through financial incentives, enables agents to adopt behavior that is more environmentally appropriate. Its goal is to promote behavioral change through monetary punishment (fines) or rewards.

The environmental approach of neoclassical economics is based on the concept of “externalities,” that is, environmental impacts whose costs are not considered in conventional economic analyses because they cannot be valued by the market. However, the current economic system is not equipped to capture these effects, as externalities are not accounted for in economic analyses.

To address this deficiency, there are mechanisms that seek to incorporate the costs of pollution and environmental damage into product prices through their “internalization,” so that such costs are borne by producers and consumers. This process allows externalities to be reduced by internalizing their costs. Thus, economic regulation introduces the concept of the “polluter pays” principle, meaning that the polluter must, in some way, bear the costs resulting from the pollution they generate.

The main types of economic instruments are: taxes and fees, subsidies, deposit-refund systems, and market creation mechanisms.

POLITICAL AGENTS

Public policies are viewed as social processes — that is, as processes that take into account how and where people construct their images and perceptions of the world, and how those images and perceptions shape preferences and, consequently, actions and strategies aimed at influencing political processes.

This perspective reflects what has been described as the “ideational turn” in the specialized literature on public policy (PERISSINOTTO and STUMM, 2017). The most basic theoretical-analytical assumption guiding this study is that “ideas matter.” The dimension of “cognitive imperatives” (CÔRTES and LIMA, 2012; CÔRTES, 2013) is articulated with the institutional dimension, in order to understand the construction of the public policy field and its agenda.

A second fundamental assumption is that, to understand the “construction of public policies,” it is necessary to examine agenda dynamics. More than simply the “formation of an agenda,” this involves analyzing the comings and goings — the inclusion and exclusion — of issues from the focus of attention of the actors participating in a subsystem. This path runs from the agenda of the public policy subsystem to the governmental agenda and to high-level decision-makers situated “outside” the public policy arena.

The definition adopted for the concept of “agenda” is based on Kingdon’s (2011) definition. An agenda — whether it belongs to a government, the media, a president, a public policy council, or any other actor involved in a political process — is defined as “the list of subjects or problems to which governmental decision-makers and people closely associated with them are paying serious attention at any given time” (KINGDON, 2011). This definition carries an underlying assumption that must be highlighted: “issues” and “problems” are not given — they are constructed through complex processes involving interests,

beliefs, worldviews, and perceptions about various aspects of social life. In this sense, agenda-setting approaches take into account the role of ideas, knowledge, argumentation, and discourse in the processes that give rise to public policies.

According to Barcelos (2021), the study of agenda-setting processes involves “tracing the causal trajectory through which public issues travel until they become topics included in government agendas”. In this sense, the methodological approach of process tracing is used to identify the causal chain that connects the explanatory dimension — ideas, beliefs, and worldviews — to the phenomenon being analyzed.

As Kingdon (2011) points out, public policy entrepreneurs are not “superhuman” beings capable of controlling the processes of agenda formation or change. However, their understanding of the importance of ideas in the political process, along with their ability to articulate with other actors, increases the likelihood that an issue will reach the agenda.

Within the Multiple Streams Framework, skillful public policy entrepreneurs exploit “windows of opportunity” to place their issues on the agenda. These key moments are characterized by the confluence of three “streams”: (1) a problem recognized as such by decision-makers, (2) a solution identified as the most appropriate, and (3) the political will to adopt that solution to address the problem. Windows of opportunity open when there is a change in government (or major administrative shifts) or when an issue captures decision-makers’ attention due to large-scale “focusing events” that can shake political structures (KINGDON, 2011).

In the first case — changes in the macro-political environment — new possibilities arise for actors to engage in discussions and debates about public policies. This, in turn, creates conditions for new ideas to be considered, gain space, and become effective public policy issues. In the case of focusing events

— such as catastrophes, crises, accidents, or other impactful occurrences — new perceptions may emerge for addressing problems, allowing new issues to enter the agenda and causing disruptions or shifts in the status quo, thereby enabling the emergence of new public policy conceptions (KINGDON, 2011).

Governance

The actors in global governance have varied, and include everything from intergovernmental organizations, international NGOs, multilateral financial institutions and hybrid entities, global political networks, public-private partnerships, transnational advocacy networks, to private companies and regulatory bodies (SOVACOOL; FLORINI, 2012; VAN DE GRAAF; COLGAN, 2016).

This mosaic of institutions has been conceptualized as a “regime complex.” This complex has been defined as a global governance architecture, a set of partially overlapping and non-hierarchical institutions that govern in a given area of world politics (KEOHANE, VICTOR, 2011).

The role of the judiciary

The process of public policy formation is far more complex and comprehensive than theories once predicted, requiring highly specialized professionals in their respective fields. According to Sabatier (1988), this system can be understood on three levels: a macro level, where policy is influenced by economic and political systems; a meso level, which corresponds to the policy subsystem formed by coalitions; and a micro level, composed of individual actors.

Recognizing that changes in normative behavior are particularly difficult to achieve, and that all actors tend to perceive the world through preexisting beliefs — meaning that different coalitions receive and process the same information in different ways — conflicts naturally arise between coalitions within

the policy subsystem. In this context, the judicial actor plays a fundamental role in the process (SABATIER & WEIBLE, 2007). Thus, public policy decisions are not based solely on laws and doctrines but are directly influenced by each individual's personal beliefs.

The judiciary's role can be understood as that of a mediator — or "policy broker" — seeking to reconcile political conflicts among coalitions within legally acceptable limits. This indicates that the judiciary can, indeed, take part in the formulation of policies, even though this is not its primary function (SABATIER, 1988).

According to Peters (2013), the judiciary's increasing involvement is mainly due to the growth of litigation in cases involving social issues and its willingness to issue rulings that address problems violating constitutional principles.

Birkland (2015) introduces the concept of case law as opposed to statute law. Statute laws are those created by the Legislative branch through its internal processes and sanctioned by the respective Executive representative. Case laws, on the other hand, are laws established through judicial decisions, which create precedents for future rulings and policy developments.

It is therefore evident that the judiciary plays a crucial role in shaping public policies — both directly, by exercising mandatory authority to enforce necessary changes, and indirectly, by affirming the legitimacy of programs in the face of various challenges brought forth by different groups.

Participation of stakeholders

As established by Abbott (2012), the concept of the "governance triangle" applies to public policy processes. This framework encompasses state organizations, businesses, and civil society, offering a broader perspective for analyzing these processes when states are the main actors. The author seeks to

systematize governance through structures that include three main categories, represented at the vertices of the triangle: (i) the State, (ii) businesses, and (iii) civil society organizations. Abbott emphasizes that the greater the role played by actors of a specific type, the closer the governance scheme is located to that vertex. The Advocacy Coalition Framework (SABATIER, 1988), on the other hand, challenges this “iron triangle” — composed of executive agencies, legislative committees, and interest groups — by proposing the inclusion of a wider range of stakeholders, such as think tanks, academia, and the media.

The emergence of regime complexes and the growing plurality of actors in governance (ABBOTT, 2012) illustrate how governance increasingly occurs through complex structures. These structures span global and subnational levels and involve both formal and informal policy networks and channels (BULKELEY et al., 2014), where a broader range of non-governmental organizations have become active participants in governance processes. As Bevir (2011) notes, a defining characteristic of governance is the expanding scope and diversity of stakeholders involved in policymaking.

Although public participation is not a new phenomenon, in recent decades studies have shown an increase in “new governance” practices. These recent governance trends have created opportunities for new, previously marginalized stakeholders to participate more actively in addressing public issues (BENITES-LAZARO & MELLO-THÉRY, 2019). In recent years, governments in several countries have sought to expand opportunities for public participation in decision-making. These efforts are closely tied to concepts of political legitimacy and democratic ideals.

Thus, there is no ideal solution that perfectly balances the legitimate demand for public participation, the need for technical and economic rationality, the necessity of compromise, and accountability for poor decision-making habits. However, the internal political dynamics within the state are not static. Political

disputes take place within the channels of power that circulate through the state bureaucracy. These channels may lack strong democratic institutionalization, allowing only certain actors access to the political bargaining process underlying regulatory action.

Most participatory mechanisms have been consultative in nature. In Brazil, for instance, public consultation has, for the past 20 years, been a legally established mechanism of popular participation designed to support public activities in general, with the potential to improve the quality of administrative decision-making (MONTEIRO, 2018). One of its main goals is to create a direct communication channel with the population, enabling citizens to express their views on specific issues. Although such consultations are not binding — meaning that opinions expressed are not necessarily adopted — they represent a governmental effort to better observe the concerns and suggestions of those interested in the policy agenda.

Studies by Aamodt (2018) and Santos (2020) demonstrate that, within Brazil's political system, interest groups often succeed in electing representatives to political and administrative positions. In this context, these groups secure access and channels of influence among formal policymakers, facilitating the legitimization of their demands and specific interests. The results of these studies also reveal that the dominance of the private sector in Brazil's public consultation processes deserves further investigation, as some organizations may refrain from participating in consultations and public hearings due to a lack of trust in these processes — which are predominantly technical (SANTOS, 2020) — or for other reasons. Genuine deliberation supported by participatory processes involving multiple actors and sectors could help correct potential bias caused by the dominance of a few stakeholders. This approach brings competing and interdependent issues to the forefront of decision-making.

Although public consultation processes may be considered an improvement over traditional clientelist and authoritarian bureaucratic practices in Brazil, they contribute only marginally to social and political empowerment or to transforming existing power relations (FREY, 2009). As Frey (2009) explains, participatory forms are meant to effectively transform the prevailing logic of power. Therefore, it is important to examine the scale or degree of social participation, since there is a significant difference between strategies in current policy development that promote or require consultation or information-sharing with the public, but ultimately leave it up to political leaders to decide to what extent such contributions will actually be considered.

PUBLIC POLICIES

Lopes (2016) shows that the broad exposure of society to the sustainability agenda, focused on the integration of public policies, has ultimately demanded a more comprehensive thematic approach of a federative and territorial nature; that is, just like efficiency and equity, sustainability will always be a project under construction, following a set of tangible attributes. From this scenario arises the idea of progress, development, the State, public policies, and the main political-administrative processes that characterize decisions in the formulation, implementation, and evaluation of development programs and projects, with sustainable development increasingly being the goal of government strategies.

RESULT AND DISCUSSION

In accordance with the objectives proposed in the work to develop a socio-environmental diagnosis for the municipality of Raul Soares – MG, as a method to support decisions in public policies, it was possible to obtain the following discussions:

Socio-environmental diagnosis of the municipality of Raul Soares / MG

Based on information provided by IBGE (2022), the city of Raul Soares, according to the regional division established in 2017, is a Brazilian municipality located in the Immediate Geographic Region of Caratinga, within the Intermediate Geographic Region of Ipatinga, in the state of Minas Gerais. It also belongs to the microregion of Ponte Nova and the mesoregion of Zona da Mata. The municipality is part of the Matipó River sub-basin, which belongs to the Doce River Basin. The main watercourses in the region are the Santana and Matipó Rivers, and its geographical position is defined by the coordinates 20º06’15” S latitude and 42º27’45” W longitude.

The municipality has a population of 23,423 inhabitants, of which approximately 66% live in urban areas and 34% in rural zones. Raul Soares covers a total area of 763.364 km², with about 4.2 km² being urbanized. The municipal seat is located at an altitude of 294 meters, and it borders the municipalities of São Pedro dos Ferros, Córrego Novo, Abre Campo, Caputira, Vermelho Novo, Santa Bárbara do Leste, Manhuaçu, and Caratinga. The average annual temperature is **21.1°C. Around 75% of the terrain is mountainous, and the highest point is the spring of the Sacramento Stream, at 1,094 meters above sea level. The Matipó and Santana Rivers form the main hydrographic system (IBGE, 2022).

Raul Soares has a diversified economy, primarily based on commerce and agriculture, though the industrial and tourism sectors also show significant potential due to the city’s strategic location, natural beauty, energy potential, and favorable terrain.

According to IBGE (2022), in 2021 the municipality’s GDP per capita was R$ 17,893.53. The Gross Domestic Product (GDP) is the most common indicator for analyzing the macroeconomic structure of a municipality, state, or country, as

it represents the total (in monetary values) of all final goods and services produced within a specific period. The Municipal Human Development Index (MHDI), on the other hand, measures development based on indicators beyond economic growth. The index ranges from 0 to 1 — representing no human development to full human development, respectively. For Raul Soares, the 2010 MHDI was 0.655, classifying it as medium.

Among the municipality's main economic activities are public administration and the service sector, which account for 34.8% and 45.8% of the Gross Value Added, respectively. Other notable activities include industry (5.5%) and agriculture (13.8%).

From an environmental perspective, Raul Soares is located within the Atlantic Forest biome. The region's native vegetation — a transition between the Atlantic Forest and the Semi-Deciduous Seasonal Forest — has been almost entirely cleared for agricultural purposes. Within the municipality's urban perimeter flow the Matipó and Santana Rivers, both tributaries of the Doce River Basin. These rivers are crucial water resources used for water supply and sewage disposal. Water supply and wastewater collection are managed by the municipal government through SAAE (Serviço Autônomo de Água e Esgotos). Approximately 56% of households have adequate basic sanitation, while around 50% of public roads have adequate urban infrastructure. The region has an average annual rainfall of 1,860 mm.

A natural attraction and potential energy resource is the Cachoeira do Emboque Reservoir, located between the districts of Bicuda (Raul Soares) and Granada (Abre Campo), approximately 9 km from Raul Soares. It covers an area of 675 hectares, with 300 hectares of flooded area and 375 hectares for reforestation. The flora is being restored through tree-planting efforts, and the fauna includes monkeys, otters, and capybaras. The reservoir's native fish

species include piaus-vermelhos, lombares, catfish, trahiras, timbres, mandis, and acarás.

Regarding urban legislation, Raul Soares has an Organic Law and a Master Plan, as well as a Municipal Environmental Council and a Municipal Environmental Fund. The municipality also follows applicable state and federal laws.

In terms of transport infrastructure, Raul Soares is primarily accessible by road and has a bus terminal. It is served by MG-329, which connects to BR-120, located 231 km from Belo Horizonte, the capital of Minas Gerais, and close to Ponte Nova (70 km) and Caratinga (69 km). Intermunicipal transportation is provided mainly by the companies Viação Raulsoarense and Pássaro Verde. Rail transport is available through the Vitória–Minas Railway Station in Ipatinga, while USIMINAS Airport, also in Ipatinga, is the nearest air transport option.

Raul Soares has established strategic partnerships with several entities to promote environmental preservation and sustainability initiatives. Notable collaborations include Guardiões da História (Cornélio Alves), Sítio dos Pinheiros (PREFAC), SAAE, the Intermunicipal Regulatory Agency for Sanitation Services of Zona da Mata and Surrounding Areas (ARIS-ZM), the Intermunicipal Consortium for Basic Sanitation of Zona da Mata (CISAB Zona da Mata), the Intermunicipal Consortium of the Vale do Aço (CIMVA), the Intermunicipal Multisectoral Consortium of the Vale do Piranga (CIMVALPI), the Ministry of the Environment and Climate Change, and the State Secretariat for Environment and Sustainable Development (SEMAD). These partnerships, coordinated by the Municipal Secretariat for the Environment, play a crucial role in providing technical, financial, and regulatory support for environmental preservation projects, water resource management, environmental education, and sustainable development — strengthening local and regional initiatives. Collaboration with these institutions significantly contributes to improving quality of life and

promoting sustainable socioeconomic progress in Raul Soares and its surrounding region.

Thus, when these parameters are compared with those of other cities in Minas Gerais, Raul Soares occupies intermediate positions, suggesting that the data obtained in this study may be used or extrapolated in future research. Moreover, based on its characteristics, the municipality shows strong potential for the use of biomass-based energy sources, which remain underexplored in the region.

Assessment of the potential uses of biomass in the municipality of Raul Soares / MG

To determine the potential for biomass use in the city of Raul Soares, MG, it is important to consider several factors, including the availability of raw materials, existing infrastructure, local energy demand, and related public policies. This analysis must also take into account technical, economic, and environmental feasibility, as well as consultations with the local community and collaboration among different stakeholders.

Noting that legislation and incentives for municipal, state, and federal public policies can influence the use of biomass in the city, through tax incentives, financing programs, and specific regulations that promote the generation and use of renewable energy.

Analysis of the potential for biomass energy generation from:

- Forestry

In areas of reforestation or plantations of forest species in the region, the biomass from these areas can be used for the generation of thermal or electrical energy, provided that the management is done sustainably.

- Utilization of agricultural and livestock waste

Agriculture and Agroindustry: Raul Soares is located in a region with significant agricultural activity. The availability of agricultural residues, such as corn straw, sugarcane bagasse, and various crop residues, can represent a viable source of biomass for energy production.

- Livestock

Considering the presence of livestock farming activities in the region, organic waste from animal manure can also be used to produce biogas through biodigesters, contributing to local energy generation.

- Utilization of urban waste
- Others

The installation of biodigesters on rural properties can be an interesting option for the production of biogas from organic waste, contributing not only to energy generation but also to wastewater treatment and the reduction of environmental impacts.

Analysis of the potential for energy use from biomass based on:

It is important to consider the energy demand of the city and local activities to determine the potential for biomass use. This includes demand for electricity, thermal energy, and even alternative fuels such as biofuels.

- Current use of biomass
- Replacement of other sources with biomass

Analysis of potential improvements / energy efficiency

- Reduction of energy consumption;
- Energy reuse;
- Energy efficiency;

Analyze public policies of the municipality of Raul Soares / MG

Within the Public Policies for the municipality of Raul Soares – MG, the existing framework was first analyzed, verifying the possibility of utilizing existing measures, which could later be implemented and/or reinforced and/or adapted.

Law 2.307 of April 2017

This law establishes the Municipal Environmental Fund of Raul Soares, through municipal law, being indispensable to actions for the defense and development of the environment of the Municipality of Raul Soares, with indefinite validity.

The purpose of the Municipal Environmental Fund is to mobilize and manage resources for the financing of plans, programs and projects aimed at the rational use of environmental resources, the improvement of environmental quality, the prevention of environmental damage and the promotion of environmental education.

The financial resources of the Municipal Environmental Fund will be applied according to the guidelines, priorities and programs established by the responsible environmental agencies. The annual budget of the Municipal Environmental Fund will observe the Resource Application Plan, as well as the Multi-Year Plan, the Budget Guidelines Law and the Annual Budget Law of the Municipality.

Law 2.448 of December 16, 2021

This law establishes the Intermunicipal Integrated Solid Waste Management Plan through municipal law.

It determines the responsibility to proceed properly with the management of waste, as well as to establish the appropriate system for collection, transportation, treatment, and final disposal of waste.

Within this legislation, it already leaves open the possibility of addressing the issue of biomass from waste, as well as implementing management

measures, public policies, management plans, and the implementation of technologies.

Law 2.497 of October 24, 2022

Municipal Law No. 2,497 of 2022 establishes the Municipal Policy for the Protection, Preservation, Conservation, Control, and Restoration of the Environment in the municipality of Raul Soares – MG, and provides other related measures.

This recently updated legislation institutes the Municipal Environmental Policy of Raul Soares, outlining its normative foundations as well as its objectives and regulatory mechanisms. The law respects the competencies of both the Federal and State Governments, with the main goal of ensuring a balanced and sustainable environment.

Among its objectives, the legislation provides for cooperation between the public and private sectors; the implementation and adjustment of norms, criteria, and environmental quality standards; the promotion of cleaner environmental technologies; the encouragement of research and sustainable use of natural resources; and the development, implementation, and management of Municipal Environmental Plans. Thus, it is within the municipality's competence to establish environmental policies that are consistent with social, economic, and ecological considerations, at the local, regional, state, and federal levels.

The law also establishes the Municipal Environmental System (SISMAM) and the Municipal Council for Environmental Development (CODEMA), under the Municipal Secretariat for the Environment, defining the duties and responsibilities of each public body.

Through this legislation, standards, criteria, zoning regulations, and environmental quality parameters were defined, along with procedures for environmental assessment and resource use.

Furthermore, the Executive Branch is authorized to create, through specific laws, environmental incentive programs, including municipal tax exemptions and environmental education initiatives.

Sorting and Composting Plant (SCP)

The Sorting and Composting Plant is a municipal facility designed for processing solid waste, where the process involves sorting and properly disposing of different recyclable materials and organic waste.

Directly linked to the municipal SCP and coordinated by the Municipal Department of the Environment, there is also the Municipal Nursery and the Arborization project, which promotes the planting of suitable trees and the management of municipal green areas.

Through these programs, it seeks to raise awareness and provide environmental education, encourage collaboration and engagement from the population, and contribute to strengthening a culture of environmental conservation and sustainability. Serving as a gateway to new programs, public policies, and management focused on an environmentally conscious city.

Ambassadors for the Environment

The Ambassadors of the Environment project is a collaborative initiative of the Municipal Secretariats of Environment, Education, and Culture and Tourism, which helps raise students' awareness of environmental responsibility.

The project plays a fundamental role in promoting environmental awareness, encouraging reflection on sustainable practices, with the potential impact on the adoption of more responsible behaviors and the multiplier capacity of those involved.

In this way, this program serves as a basis/model for the implementation of future programs that involve both popular participation and the diversity of municipal secretariats in the pursuit of an efficient public policy.

Agricultural Clubs

Agricultural clubs are transformative initiatives, coordinated by the Department of Agriculture, that aim to empower and engage local farmers in innovative and sustainable agricultural practices.

The actions of these clubs seek to create spaces for learning and knowledge exchange, encouraging the adoption of modern techniques and the diversification of agricultural production. Conceived as change-inducing projects in the area of reference of agriculture, the Agricultural Clubs promote the continuous improvement of agricultural practices through courses, lectures and practical activities in the field. They play a fundamental role in strengthening the technical capacity of farmers, enabling them to face emerging challenges and adopt sustainable approaches to cultivation and resource management. By empowering farmers with up-to-date knowledge and innovative practices, the clubs contribute to the sustainable development of local agriculture, promoting economic prosperity and social well-being in rural communities.

Fields of Interest by Educational Territory (CITE)

The Fields of Interest by Educational Territory (CITE) were initially defined in community meetings held in 2018 and 2019, in the schools of each district. The choice of CITEs took into account the desires and dreams of the local members present at these meetings. This participatory approach made it possible to identify relevant points for each district, establishing a solid basis for the development of specific initiatives.

Subsequently, from 2022 to 2023, the CITEs underwent adaptations and adjustments to remain aligned with the new realities and needs of the communities. These changes reflect the responsiveness of the Agricultural Clubs, as a policy, and the Department of Agriculture to constantly evolving demands, ensuring that efforts are always directed towards the most relevant and significant areas in order to guarantee sustainable agricultural development in each locality.

These Fields of Interest by Educational Territory seek to improve the specific practices and techniques of each sector, encouraging the exchange of knowledge among local farmers and promoting the sustainable development of their respective cultivation areas.

Analyze current public policies aimed at the use of biomass.

Public policies concerning biomass may vary depending on a country's energy and environmental priorities. However, some common policy practices include:

1. Tax Incentives and Subsidies: Many governments offer tax incentives — such as tax credits or exemptions — for companies that invest in biomass energy projects. Direct subsidies are also common to promote the use of biomass as a renewable energy source.

2. Renewable Energy Standards: Policies that establish targets for the share of renewable energies, including biomass, in a nation's energy matrix. These may require that a certain percentage of electricity be generated from renewable sources, thereby encouraging the use of biomass for power generation.

3. Certification and Sustainability Programs: Programs that certify the sustainable origin of biomass, ensuring that its production does not cause significant harm to the environment or local communities. Such certifications can

be used to ensure compliance with environmental regulations and to access markets that demand sustainable products.

4. Ecological-Economic Zoning (EEZ): The EEZ is a land-use planning tool designed to balance economic development with environmental conservation. It can be used to identify suitable areas for cultivating forest species intended for biomass production while protecting sensitive ecosystems.

5. Reforestation Programs: Governments may implement incentive programs for the reforestation of degraded or deforested areas, promoting the planting of forest species intended for biomass production.

6. Solid Waste Management Policies: Governments can introduce policies to encourage the separation and proper treatment of organic solid waste, such as food scraps and garden residues. These may include selective collection programs, community composting initiatives, and the installation of biodigesters on rural and urban properties.

FINAL CONSIDERATIONS

Environmental management instruments and public policies play crucial roles in building a sustainable future. While environmental management instruments provide the tools and mechanisms necessary for the practical implementation of strategies, public policies establish the normative and strategic framework that guides these actions.

Management instruments enable organizations and administrators to monitor and adjust their activities to minimize negative impacts on the environment. These instruments are essential to ensure that economic and social development occurs in a responsible and sustainable manner. However, the effectiveness of these mechanisms depends on their proper application, oversight, and continuous updating.

On the other hand, environmental public policies, formulated by governments and institutions, are essential for creating a favorable environment for sustainability. They provide the necessary guidelines to coordinate efforts, set priorities, and mobilize resources. The integration of scientific evidence, public participation, and interinstitutional collaboration is crucial for developing effective policies that meet both environmental and social needs.

The synergy between management instruments and public policies is fundamental to the success of environmental initiatives. Well-designed policies and effective instruments must work together to address complex and dynamic problems. Furthermore, the constant review and adaptation of these mechanisms are essential to respond to new demands and emerging challenges.

It is observed that the municipality of Raul Soares is on the right path to addressing these challenges, as it already incorporates environmental considerations into its policies. However, there is still much to understand and develop, including the creation of new, truly effective mechanisms. To achieve truly sustainable development, it is imperative that policymakers, managers, and civil society collaborate in improving and implementing these instruments and policies.

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