# Ecological-Economic Zoning and the Master Plan: instruments for sustentainable territorial management in the Bioceanic Route[1]

## Zoneamento Ecológico-Econômico e o Plano Diretor: instrumentos para a gestão territorial sustentável na Rota Bioceanica

## *Zonificación Ecológico-Económica y el Plan Director: instrumentos para la gestión territorial sostenible em la Ruta Bioceánica*

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**Abstract:** Focusing on the approach of the municipal territory, many of the instruments pass on the environmental, economic and legal issues. Perhaps this is an exercise to achieve the goal of an instrument capable of promoting sustainable development at the municipal level. The objective was to identify the permeabilities between urban and environmental instruments in the municipal territory of Campo Grande, capital of the state of Mato Grosso do Sul. The methodological development was carried out in four stages: bibliographic and documentary survey to survey the state of knowledge; characterization of zones and recommendations of use of the Ecological-Economic Zoning of Campo Grande (EEZ/CG); Environmental zoning analysis of the review of the Environmental Urban Development Master Plan (PDDUA) de Campo Grande e; Proposed insertion of EEZ/CG zones in the Master Plan. In view of the instruments that demand Environmental Zoning, present in the Master Plan, zoning and Ecological-Economic Zoning (EEZ), environmental aspect, applied in the municipal scale, this work aims to propose the integration of Environmental Zoning in environmental and urbanistic aspects. The need to municipalize the instruments of territorial management are beyond urban planning and the role of the EEZ/CG in the territorial planning, represents a path without return, and occupying the leading role for the institution of the municipal environment policy, to base the municipal system of conservation units and the management of water resources in the municipality. This essay demonstrates that the legal framework must be strengthened in the moment of positively subsidizing the manager with the purpose of justice and clarity, seeking to ensure the quality of life for all and to promote a healthy and balanced environment.

**Keywords:** urban planning; regional development; environmental relevance; geotechnology.

**Resumo:** Em destaque a abordagem do território municipal, muitos dos instrumentos transitam sobre as temáticas ambiental, econômico e jurídico. Talvez esse seja um exercício para concretizar a anseio de um instrumento capaz de promover o desenvolvimento sustentável no âmbito municipal. O objetivo foi identificar as permeabilidades entre os instrumentos urbanísticos e ambientais no território municipal de Campo Grande, capital do estado do Mato Grosso do Sul-MS. O desenvolvimento metodológico, decorreu em quatro etapas: levantamento bibliográfico e documental para levantamento do estado do conhecimento; caracterização das zonas e recomendações de uso do Zoneamento Ecológico-Econômico (ZEE) de Campo Grande (ZEE/CG); Análise zoneamento ambiental da revisão do Plano Diretor de Desenvolvimento Urbano Ambiental (PDDUA) de Campo Grande e; Proposta de inserção das zonas do ZEE/CG no Plano Diretor. Diante dos instrumentos que demandam Zoneamento Ambiental, presente no Plano Diretor, vertente urbanística e ZEE, vertente ambiental, aplicados na escala municipal, aguça este trabalho em propor a integração do Zoneamento Ambiental nas vertentes ambiental e urbanística. A necessidade de municipalizar os instrumentos de gestão territorial estão além dos urbanísticos e o papel do ZEE/CG no ordenamento territorial, representa um caminho sem retorno, e ocupando o papel balizador para a instituição da política municipal de meio ambiente, fundamentar o sistema municipal de unidades de conservação e balizar a gestão dos recursos



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hídricos no município. Esse ensaio vem demonstrar que o marco legal deve ser aguerrido no momento de subsidiar de forma positiva o gestor com o propósito de justiça e clareza, em busca de assegurar a qualidade de vida para todos e promover um ambiente saudável e equilibrado.

**Palavras-chave:** planejamento urbano; desenvolvimento regional; relevância ambiental; geotecnologias.

**Resumen:** Con énfasis en el enfoque del territorio municipal, muchos de los instrumentos tratan temas ambientales, económicos y legales. Quizás este sea un ejercicio para cumplir el anhelo de un instrumento capaz de promover el desarrollo sostenible a nivel municipal. El objetivo fue identificar las permeabilidades entre instrumentos urbanos y ambientales en el territorio municipal de Campo Grande, capital del estado de Mato Grosso do Sul (MS). El desarrollo metodológico se llevó a cabo en cuatro etapas: levantamiento bibliográfico y documental para relevar el estado del conocimiento; caracterización de las zonas y recomendaciones para el uso de la Zonificación Ecológica-Económica (ZEE) de Campo Grande (ZEE/CG); Análisis de zonificación ambiental de la revisión del Plan Maestro de Desarrollo Ambiental Urbano (PDDUA) de Campo Grande y; Propuesta de inserción de las zonas ZEE/CG en el Plan Director. Frente a los instrumentos que demandan la Zonificación Ambiental, presentes en el Plan Director, aspecto urbanístico y ZEE, aspecto ambiental, aplicados a escala municipal, este trabajo se agudiza en proponer la integración de la Zonificación Ambiental en los aspectos ambiental y urbano. La necesidad de municipalizar los instrumentos de gestión territorial va más allá de los urbanos y el papel de la ZEE/CG en la organización territorial, representa un camino de no retorno, y ocupando el rol rector para la institución de la política municipal de medio ambiente, para fundamentar el sistema municipal de unidades de conservación y orientar la gestión de los recursos hídricos en el municipio. Este ensayo demuestra que el marco legal debe ser respetado al apoyar positivamente al gestor con el propósito de justicia y claridad, buscando asegurar la calidad de vida de todos y promover un ambiente sano y equilibrado.

**Palabras clave:** planificación urbana; desarrollo regional; relevancia ambiental; geo tecnologías.

## 1 INTRODUCTION

The promulgation of the Brazilian Federal Constitution at the end of the 1980s was a significant milestone in the decentralization of actions and responsibilities, recognizing the municipality as an entity of the Federation. With the establishment of a framework of laws, norms and rules, approaches have emerged that highlight the municipal territory, many of which are related to environmental, economic and legal issues. In this context, there is a need to develop an instrument capable of promoting sustainable development at municipal level (Brasil, 1988).

Article 225 of the Federal Constitution plays a central role in environmental issues, assigning responsibilities to the entities of the federation, as provided for in articles 182 and 183, which deal with the urban issue of municipalities. It is worth highlighting the importance of Law 6.938/81, enacted in 1981, which instituted the National Environmental Policy (NEP), Brazil (1981), which, in its 9th article, highlights instruments such as environmental zoning regulated by Federal Decree No. 4.297/02 and establishes criteria for Brazil's Ecological-Economic Zoning (Brasil, 2002).

However, the conception of tools for territorial planning can lead to conceptual confusion, such as the discussion around the relationship between zoning and planning in Brazil. This debate is based on North American conceptions that distinguish between "zoing" and "land use planning" and warns of the difference between environmental zoning and urban zoning, as well as the role of the EEZ as a normative or indicative instrument Milikam (1998).

Municipal management was strengthened with the introduction of the City Statute, established by Federal Law 10.257/2001, which regulates urban policy. One of the instruments of this statute is the Master Plan, which gains importance by addressing the creation of Environmental Zoning and raises questions about the articulation between the municipal sphere, the territory, the urban planning aspect and the environmental aspect (Brasil, 2001).

At certain times, the instruments of the Master Plan and the Plan can overlap, generating conflicts and, at the same time, harmonizing environmental and urban contexts in promoting

the management of the municipal territory through guidelines related to use and occupation.

Various instruments are used by public and private actors in the search for alignment between environmental and urban planning instruments. Santos (2012) proposed an essay on the interconnection of these instruments, both environmental and urban planning.

Considering the proximity of approaches to the territory, this study aims to identify the permeability between urban and environmental instruments in the municipal territory of Campo Grande, capital of the state of Mato Grosso do Sul, MS. To this end, the environmental zoning provided for in the Master Plan and the Ecological-Economic Zoning will be analyzed, with a view to proposing the drafting of a synthesis letter incorporated into the Master Plan.

In view of the excess of instruments in land management and planning, it is essential to help instrumentalize them in an integrated way in order to improve the efficiency of public managers in the country's municipalities. In order to help improve the governance of the municipal territory, the text is divided into three parts: the first presents management and land-use planning instruments on a municipal scale for the municipalities on the Bioceanic Route; the second part outlines strategies for management and land-use planning; and the final part presents perspectives on management and land-use planning.

## 2 MATERIAL AND METHODS

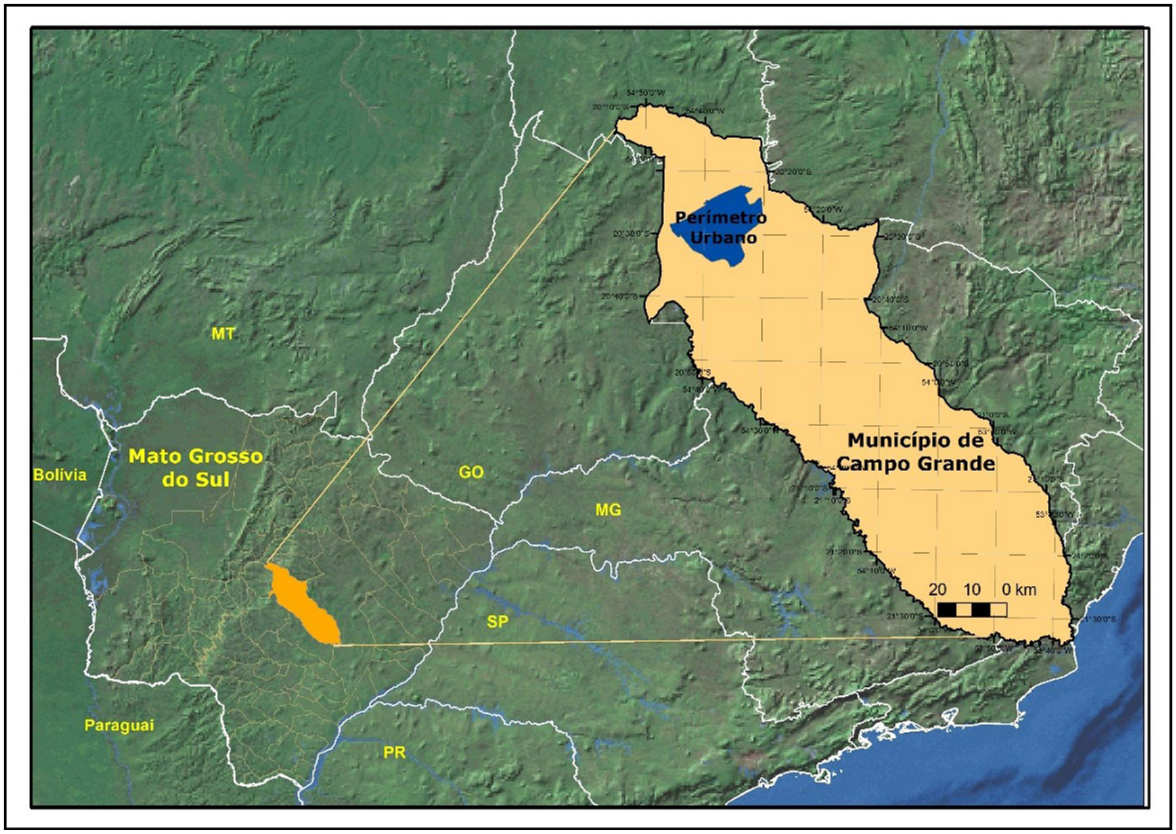
The state of Mato Grosso do Sul has demonstrated its commitment to sustainable development by adopting the EEZ at the state level (Mato Grosso do Sul, 2009). Among the highlights is its capital, Campo Grande, which stood out for drawing up the EEZ in a pioneering way (Campo Grande, 2020). This reality can serve as a model of an efficient management and land-use planning instrument for municipalities located on the Bioceanic Route, i.e. it directs its investments and development actions strategically, seeking economic and social growth without compromising natural resources and the quality of life of its citizens.

In drawing up the EEZ on a state scale, the Mato Grosso do Sul government has shown concern for planning the use of the territory in a sustainable manner, considering the particularities of each region, its strengths and weaknesses in environmental and economic terms. This zoning has made it possible to identify suitable areas for agriculture, livestock farming, the exploitation of natural resources, the conservation of flora and fauna, as well as areas earmarked for environmental preservation and conservation units.

The Bioceanic Route, which connects Brazil to neighboring countries such as Paraguay, Argentina and Chile, is a route for commercial and logistical integration. The implementation of the EEZ as a management tool in this region will allow for the balanced use of the territory along the route, avoiding environmental degradation and territorial conflicts.

The study area is concentrated in the municipal limits of Campo Grande, capital of the state of Mato Grosso do Sul, geographically located in the central portion of the state, on the dividing line between the Paraná and Paraguay river basins, as shown in Figure 1.

Figure 1 – Location of the Municipality of Campo Grande in the national territory and the municipal boundaries and urban perimeter




Source: Prepared by the authors.

The size of the territory of the municipality of Campo Grande is 8,092.951 km², a very peculiar geographical configuration that allows for quick identification, thus promoting large linear distances when traveled longitudinally, exceeding 200 km (IBGE, 2022).

The municipality of Campo Grande is characterized by having a large demographic void in its rural area. This figure represents approximately 1.4% of the total municipal population and thus constitutes the highest urbanization rate in Mato Grosso do Sul, where 98.6% of the population lives in the urban area, well above the 85.64% urbanization rate in the state, one of the highest rates in Brazil (IBGE, 2022).

For the sustainable development of the territory, the Master Plan aims to reconcile urban and rural growth with environmental preservation and the population's quality of life. It promotes the rational use of natural resources, prevents disorderly land occupation and environmental degradation, and encourages the creation of green areas, parks and leisure spaces (Ayres, 2018).

In the organization of the territory, the Master Plan defines land use zones, identifies areas destined for housing, commerce, industry, green areas, preservation areas, among others. This provides an efficient organization of the territory, avoiding conflicts of interest and improving urban infrastructure. In other words, the Master Plan is a fundamental instrument for land management and planning, as it aims to promote a more balanced, inclusive, sustainable and harmonious development of urban and rural areas, ensuring an environment conducive to the well-being of the population and the preservation of the environment (Ayres, 2018).

Revisions of the Master Plan are carried out at least every 10 years, imposing a theoretical-conceptual dynamic on each plan drawn up. The municipality of Campo Grande is in the process of its second revision, with innovative proposals to integrate the urban with the environmental, called the Master Plan for Environmental Urban Development (PDDUA) (Campo Grande, 2017).

The revision of the Master Plan was providential for discussing the new aspect of Environmental Zoning proposed by Ecological-Economic Zoning (EEZ), and proposing the inclusion of concepts, definitions and theoretical methodological arrangements of ZEE in the Master Plan.

Considering these aspects, the methodological development of the research took place in 4 stages: i) Bibliographical and documentary survey, to characterize the state of knowledge on the central theme of the research, since "all research implies the collection of data from various sources, whatever the methods or techniques employed" (Lakatos, 2003, p. 173 ); ii) Characterization of the zones and recommendations for use of the Campo Grande EEZ (EEZ/CG); iii) Environmental zoning analysis of the revision of the Campo Grande Urban Environmental Development Master Plan (PDDUA); iv) Proposal to include the EEZ/CG zones in the Master Plan.

## 3 MANAGEMENT AND LAND-USE PLANNING INSTRUMENTS ON THE MUNICIPAL SCALE OF THE BIOCEANIC ROUTE

The strategic combination of these instruments is fundamental for planning the territory, balancing different interests and promoting harmonious and sustainable development in a region of great geopolitical and environmental importance.

The Master Plan is a strategic urban planning tool that is mandatory for municipalities with more than 20,000 inhabitants, as established in the City Statute (Federal Law n. 10.257/2001) (Brasil, 2001). This approach comprises a set of guidelines, objectives, goals and actions that guide urban growth, land occupation and the provision of public services. The active participation of civil society, the private sector and public authorities in its preparation is a crucial element in ensuring the suitability and effectiveness of this instrument.

For the municipalities along the Bioceanic Route, the Master Plan is even more important. It makes it possible to identify priority areas for economic development, the preservation of natural spaces and the promotion of urban mobility. Through clear policies and guidelines, the Master Plan helps to mitigate the impacts of economic growth along the route, while at the same time improving the quality of life of the local population.

The EEZ is a methodology that seeks to integrate ecological and economic aspects to guide the appropriate use of natural resources in a given region. This approach is extremely important for the municipalities along the Bioceanic Route, where there are areas of environmental importance and economic potential. The EEZ makes it possible to delimit zones with different degrees of restriction for land use and occupation, contributing to more appropriate and efficient territorial management (Ayres, 2018).

By considering the different land uses and economic potential of the region, the EEZ offers an integrated view of natural resources and makes it possible to identify priority areas for preservation, such as conservation units, and for sustainable economic development, such as industrial and agricultural zones (Ayres, 2018).

The synergistic combination of the Master Plan and the EEZ is essential for the management and territorial planning of the municipalities along the Bioceanic Route. While the Master Plan

establishes guidelines and policies for urban development, the EEZ provides a holistic view of the region's natural resources and economic potential.

This complementarity makes it possible to reconcile the diverse interests present in the region, ensuring more balanced, inclusive and sustainable territorial management. The active participation of the local community, the productive sectors and government entities is fundamental in drawing up and reviewing these instruments, ensuring that they are appropriate to local demands and specificities (Ayres, 2018).

The municipalities of the Bioceanic Route face significant challenges related to sustainable territorial development. The use of management and land-use planning instruments, such as the Master Plan and the EEZ, is essential to promote a harmonious integration between economic growth, the preservation of natural resources and the well-being of the population. The efficient and participatory application of these instruments will enable a holistic approach to territorial management, consolidating the Bioceanic Route as an exemplary region in the search for a sustainable future.

## 4 STRATEGIES FOR LAND MANAGEMENT AND PLANNING

The research consisted of analyzing data relating to the zoning of the EEZ in Campo Grande in its first stage. Information was retrieved from the ZEE/CG to characterize the zones and proposed use, taking into account the Basic Territorial Units (UTBs) defined by TRICART (1977) and the grouping into zones, based on basins and micro basins (PLANURB, 2015).

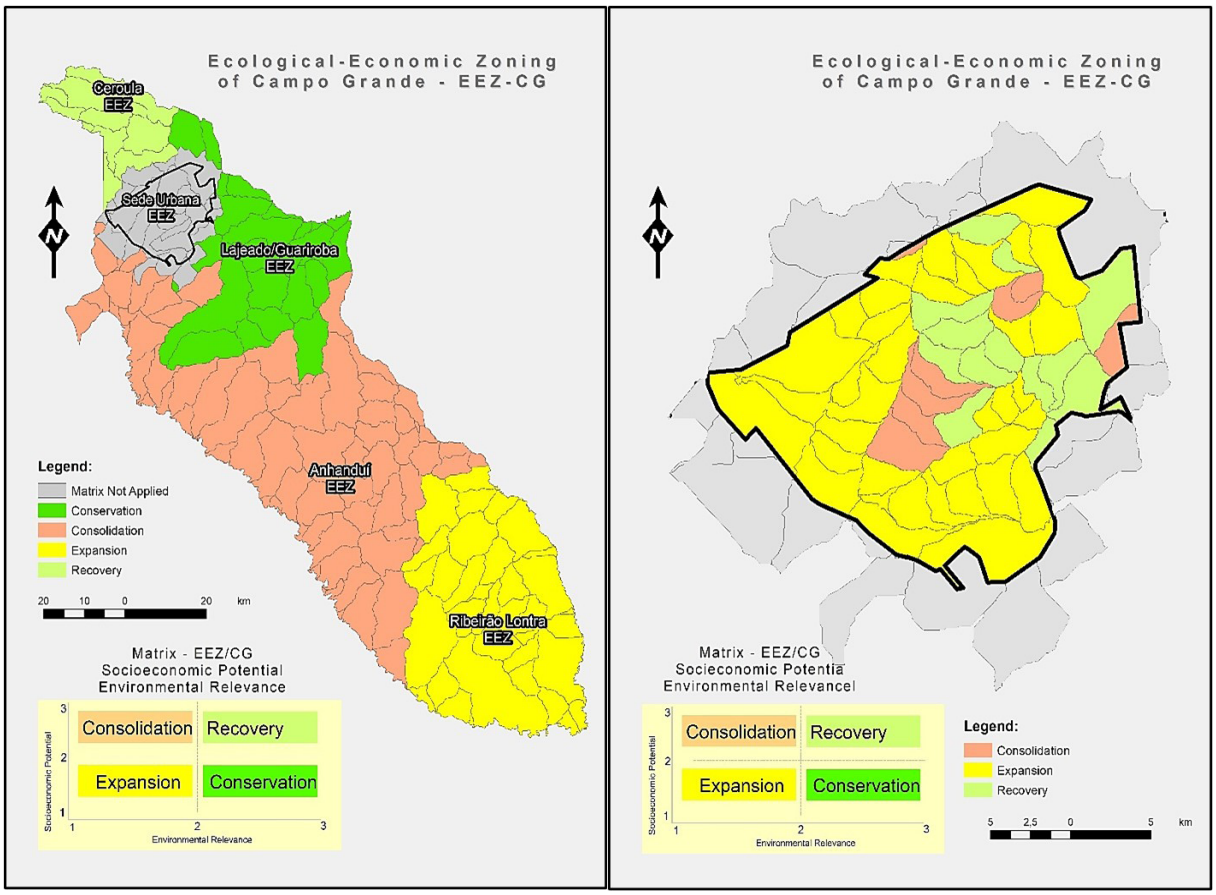
The ZEE/CG divided the territory of Campo Grande into five zones, Figure 2, with similar characteristics in relation to the continuous UTBs. In addition, environmental relevance and socio-economic potential were also considered when classifying the zones.

The zones identified were as follows:

- Ceroula EEZ, classified as (Recovery), occupying 7.04% of the Municipal Area (570.43 km²);
- Lajeado/Guariroba EEZ, classified as (Conservation), with characteristics associated with recovery, occupying 18.06% of the Municipal Area (1,462.87 km²);
- Anhanduí EEZ, classified as (Consolidation), occupying 48.62% of the Municipal Area (3,937.66 km²);
- Ribeirão Lontra EEZ, classified as (Expansion), occupying 26.28% of the Municipal Area (2,128.47 km²), as shown in figure 2 (PLANURB, 2015);

Analysis of the ZEE/CG is relevant for sustainable planning and the rational use of local natural resources. Understanding the characteristics of each zone allows for the adoption of appropriate measures for the conservation, recovery and expansion of natural resources, balancing socio-economic needs with environmental protection.

Figure 2 - Graphical representation of the number of variables required for selection based on the scale of the territory




Source: Municipal law 6.407, establishing the ZEE/CG (Campo Grande, 2020).

The methodology adopted for drawing up the ZEE/CG was unprecedented in the capital and in the state of Mato Grosso do Sul, configuring the municipality into zones based on multi-scalar methodological procedures, consolidated at scales compatible with the proposed recommendations for use. However, due to the complexity of the urban territory, the scale for the Urban Headquarters zone had to be expanded, recognizing the instrument's limitations.

The urban center was incorporated into the study because of its geographical location and the direct influence it has on the municipal territory. This initial stage aimed to begin the holistic configuration of the integration between urban and rural areas on compatible scales. However, it is important to note that the subject was not exhausted at this stage, and the work continues in search of a more comprehensive understanding.

The ZEE/CG filled an essential gap in the municipality's territory, since there was no zoning covering the entire region on a scale suitable for territorial management and planning. The technical-scientific alignment was fundamental to sustaining the proposed configurations, even in the face of some specific group interests (Ayres, 2018).

In the second stage of the study, it was possible to observe that the revision of the master plan took place at a delicate and challenging time, considering the economic and political situation in force during the drafting process. This draft was structured based on a multi-criteria analysis methodology for the urban area, based on the principles of interdisciplinarity and intersectorality,

following Araújo's (2016) proposal. The social participation of public and private agents was also considered in the configuration of the Potential for Densification and Environmental Relevance axes.

Despite the challenges faced during the process of drawing up the Master Plan, the ZEE/CG has proved to be a valuable tool for the territorial management of Campo Grande, providing guidelines based on technical and scientific criteria, with a view to promoting sustainable and integrated development in the municipality.

In this context, multi-criteria analysis allows for the development of analysis and synthesis, permeating the complexity of synthesis cartographies, promoting mutual relationships to represent spatial dynamics (Moura, 2005). The cartographic configuration for the development of the multi-criteria analysis was based on the configuration of the neighborhoods defined in the 1995 Master Plan. The municipal executive's technical staff deliberated democratically on both the territorial configuration and the choice of variables (Ayres, 2018).

The variables were listed considering the axes: social; infrastructure; environment and urban voids. The entire information base is shown in Table 1.

The structure was developed on the Arcgis platform, ESRI (2015) and made compatible with the standards established in the Municipal Geoprocessing System- SIMGEO (CAMPO GRANDE, 2014).

The methodology proposed by Moura (2005) explains the need to raise questions in order to analyze the urban area. The interrelation of the data will show the urban environmental reality of the municipality of Campo Grande.

Chart 1- Axes and variables adopted to configure the multi-criteria analysis in the preparation of the PDDUA

| **AXIS - SOCIAL** | | |
|---|---|---|
| **Equipment** | **Liquid Density** | **Economic Activities** |
| Health Units; Social Assistance Units Education units; and Security units. | Real estate registry distributed in the type of property with the residential category. | Real estate registry distributed by type of property, excluding land and residential properties. |
| **AXIS - INFRASTRUCTURE** | | |
| **Water coverage** | **Drainage Coverage** | **Paving** |
| Real estate registry distributed in the type of water service. | Land registry distributed according to the type of sewage service. | Real estate register distributed according to floor type. |
| **AXIS - ENVIRONMENT** | | |
| **ZEE** | **Geotechnical chart** | **Waterlogging hotspots** |
| Results technical report. | Municipal Regulation Agency, Águas Guariroba, Planurb. | Real Estate Registry- PMCG and IBGE Agricultural Census. |

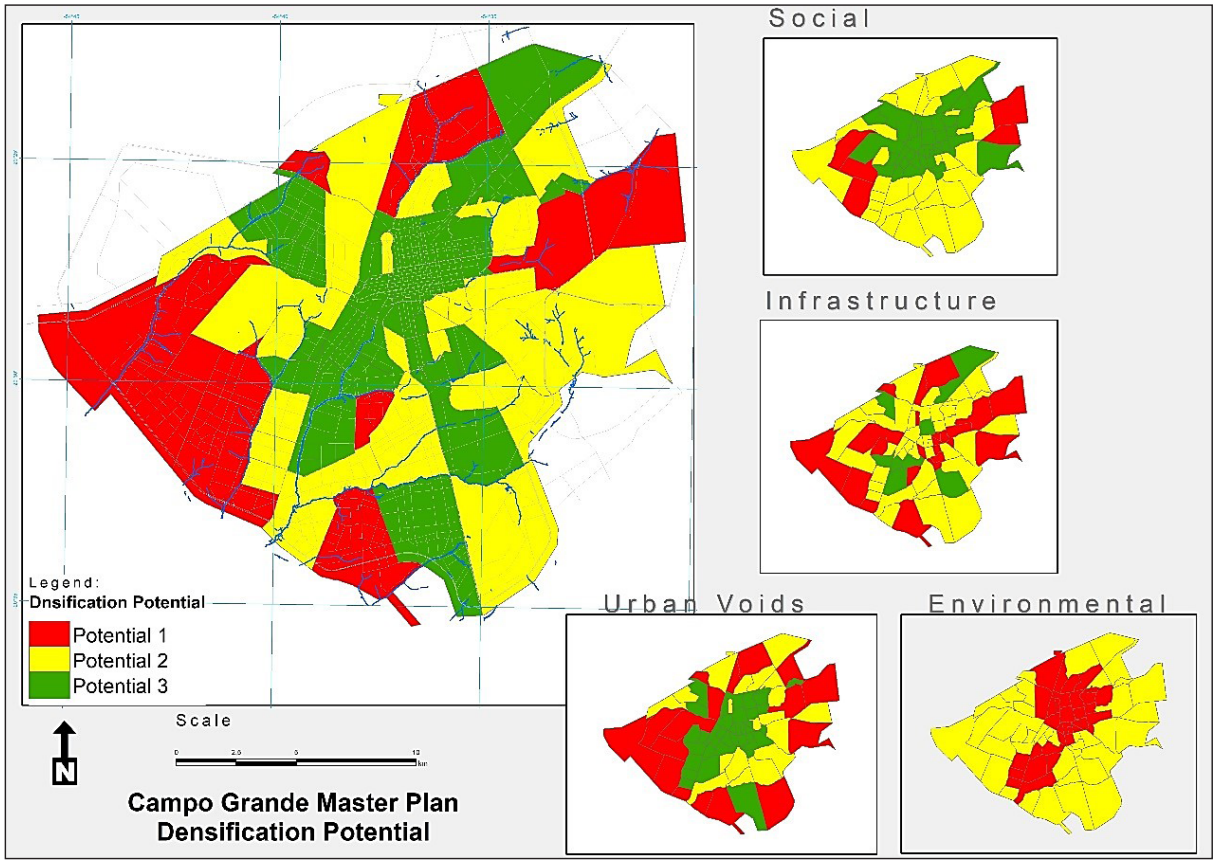
Source: Prepared by the authors.

The analysis of the syntheses, portrayed by the axes, will be interpreted and represented in thematic synthesis maps in order to represent the relationship between each variable and the relationship between the various syntheses to make up the Densification Potential synthesis map. This map is shown in Figure 3, demonstrating the synthesis of the linear expression applied by

map algebra. The social, infrastructure and environmental axes were paired according to Table 1, without qualitative value judgment, merely quantitative.

The set of each axis, when equalized, expresses the situation at three levels: higher, medium and lower. For the spatial configuration of the potential for densification, the axes were counted and represented on the Densification Potential summary map.

Figure 3- Summary map of densification potential and summary maps of the Social, Infrastructure, Environmental and Urban Voids axes



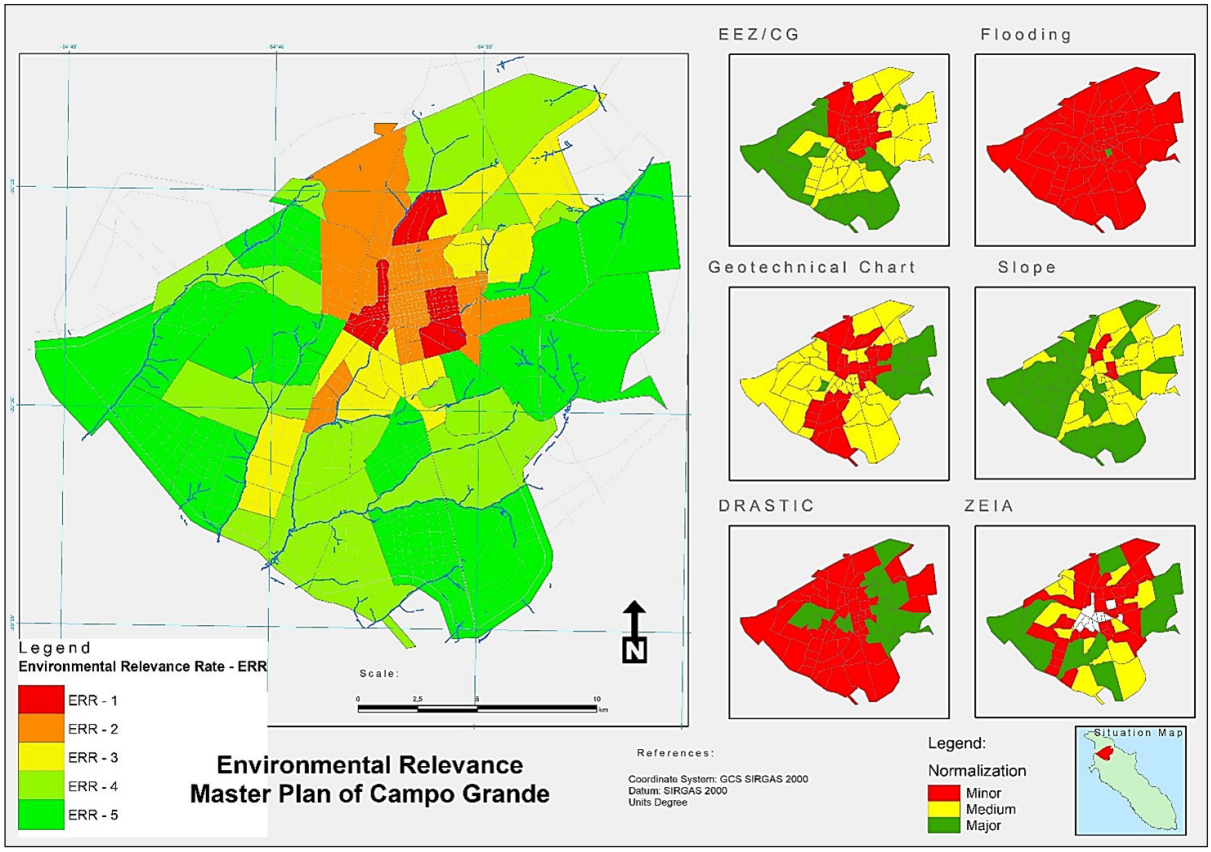

Source: Draft PDDUA (Campo Grande, 2017).

Campo Grande's urban voids, i.e. the demonstration of areas free of occupation within the city's urban perimeter, were part of the multivariate analysis, seeking to represent the areas likely to be densified with the existing infrastructure (Arruda, 2016).

Environmental Relevance, on the other hand, was the aspect adopted to compose the Master Plan in the municipality of Campo Grande, whose environmental zoning follows the same multi-criteria method and was the basis for drawing up the synthesis map of densification and protection, as shown in Figure 4.

The environmental zoning provided for in the drafting of Master Plans is limited to representation in Special Zones, such as that existing in the current plan, in Annex II- Description of Perimeters, of Complementary Law no. 94/2006. 94/2006, which specializes in areas of environmental interest - Zones of Environmental Interest (ZEIA) - the purpose of which is to guarantee areas of environmental quality, made up of linear reserves, distributed over the three macro-zones (Priority, Secondary and Restricted Density Macrozones), seeking to protect these areas that are unsuitable for urbanization (Campo Grande, 2006).

Figure 4 – Summary map of environmental relevance and summary maps of the EEZ/CG axes, flooding points, geotechnical map, slope, DRASTIC and ZEIA, Campo Grande, MS




Source: Draft PDDUA (Campo Grande, 2017).

As can be seen, the organization of spatial and non-spatial information on the municipality of Campo Grande was structured in a Geographic Information System (GIS) architecture, which allowed the variables to be compiled in the configuration of the axes, making it possible to transparently highlight all the criteria adopted. The summary maps were made available and presented to society at public meetings held throughout 2017 (Ayres, 2018).

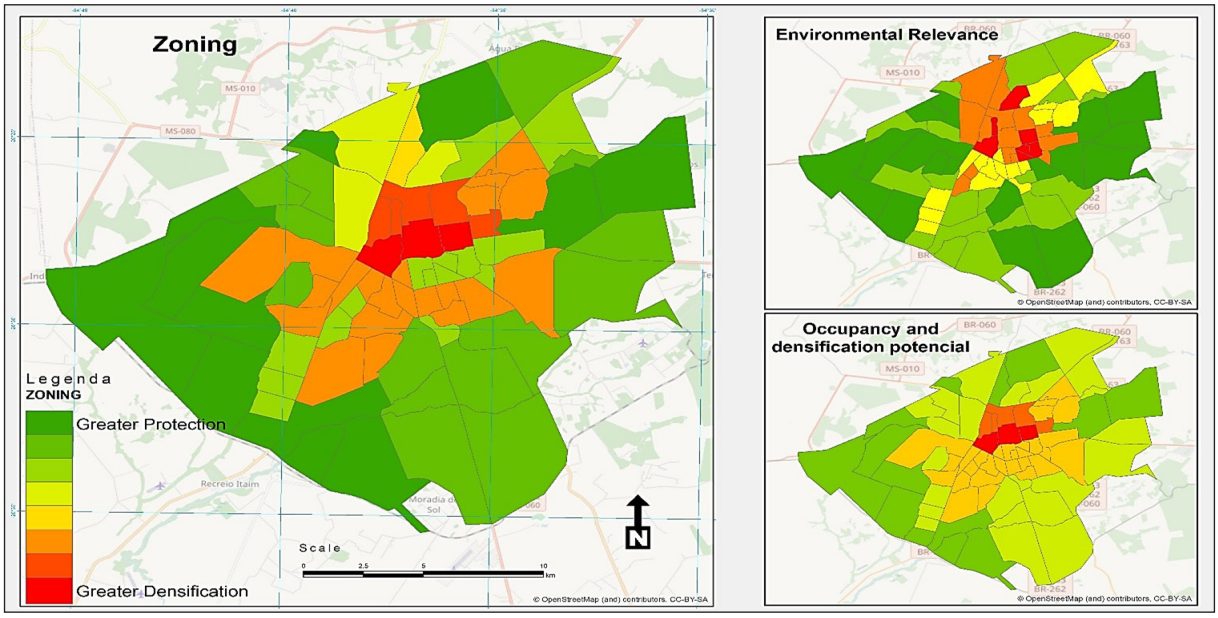
The axes were defined after selection and deliberation by the municipal executive's technical group. In the case of the ZEE/CG, the composition of the summary map was defined as Environmental Relevance. In this composition, points of flooding were established, records of occurrences, without qualitative character in the period of five years, represented as the great environmental problem of the urban headquarters (Ayres, 2018).

The geotechnical map and the slope of the terrain were axes that have a direct influence on the urban drainage process. The first, the capacity for water infiltration in the soil, made up this axis, for slope, the degree of inclination of the terrain promotes the speed of surface runoff (Ayres, 2018).

The axis called DRASTIC represents the methodology for representing the vulnerability of groundwater contamination and finally the special zones of environmental interest, established by Complementary Law 94/2006 in its Annex II, mostly representing the permanent preservation areas and conservation units existing in the urban headquarters (Campo Grande, 2006).

Once the variable configurations had been completed and the map algebras applied, the Environmental Relevance and Occupation Potential summary maps were composed to establish the zones of greatest protection and greatest densification (Figure 5).

Figure 5 – Summary map of the zoning and the Environmental Relevance and Socioeconomic Potential maps




Source: Draft PDDUA (Campo Grande, 2017).

The application of territorial management instruments in environmental zoning was carried out in the third stage. This effort is due to the technical and scientific nature of innovating and resisting political discussions.

## 5 PERSPECTIVES ON MANAGEMENT AND PLANNING

As can be seen, the EEZ is an instrument for organizing the territory that must be followed in the implementation of plans, works and public and private activities, establishing environmental protection measures and standards designed to ensure environmental quality, water resources, soil and biodiversity conservation in order to promote sustainable development and improve the population's living conditions (Brasil, 2002).

At its core is the organization linked to agents to carry out plans, programs, projects and activities that use natural resources, ensuring the full maintenance of ecosystem services (Brasil, 2002). According to the Ministry of the Environment (Ministério do Meio Ambiente, 2016), all the states in the country have already drawn up or are in the process of doing so, with the exception of the state of Alagoas. Among the various EEZ studies, most of them cover the state sphere, moving on to regional EEZs with scales varying from 1:10,000 to 1:1,500,000.

In the state of Mato Grosso do Sul, Law No. 3.839/09 instituted the Mato Grosso do Sul State Territorial Management Program (PGT/MS); approving the First Approach to State Ecological-Economic Zoning (ZEE/MS), and makes other provisions (Mato Grosso do Sul, 2009).

The methodological scope led to the structuring of the ZEE/MS, technically in 3 approximations, where the first worked on the scale of 1:1,000,000 with secondary data and information and broad participation of public and private actors, leaving for the second approximation the technical detailing to fill in the gaps and present the zoning on the scale of 1:250,000, completed in 2014 and for the third approximation the ZEE/Municipal are reserved (Neves; Sauer, 2017).

The initial concept for drawing up the ZEE on a municipal scale was already linked to the production of a draft law, which was also provided for in the terms of reference for contracting the service. Contemporary, multi-scalar territorial planning involves the relationship between rural and urban areas, as pointed out by Abascal and Abascal Bilbao (2016). In this respect, it points to an adequate integration of these border boundaries, requiring new challenges to provide load support in the face of environmental conditions.

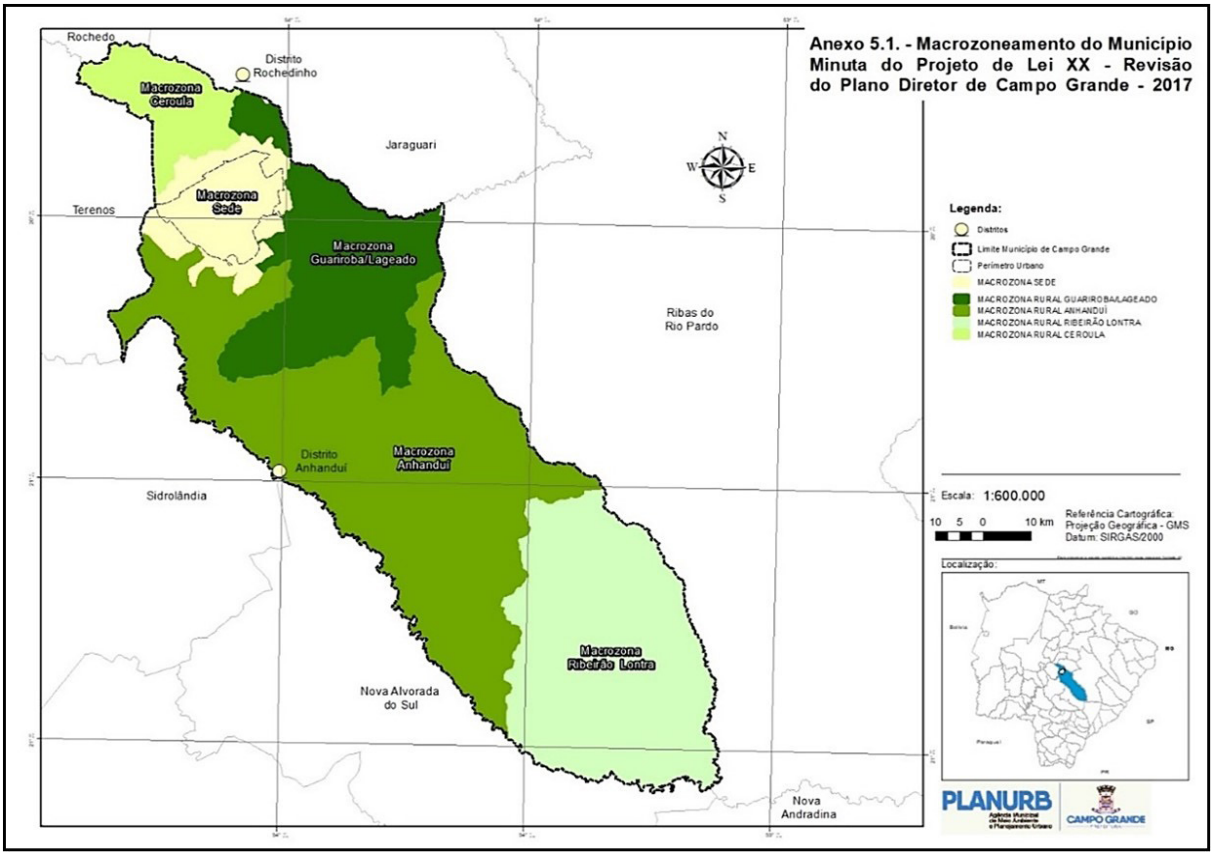
For this to happen, there is a need to municipalize territorial management instruments that go beyond urban planning aspects, as they play a guiding role in the establishment of municipal environmental policy, based on the municipal system of conservation units and the management of water resources in the municipality.

In the case of the ZEE/CG, it is present in the wording of item b) implementation of Ecological-Economic Zoning – ZEE, of item II – Environmental Preservation and Conservation Policy, of Art. 9 The policies will indicate plans, programs, projects and actions and must be implemented by the Municipality in compliance with this PDDUA, being defined as a priority (Campo Grande, 2020).

As a result, in 2020, the Municipality published Law 6.407, of January 14, 2020, which institutes the Ecological-Economic Zoning of the Municipality of Campo Grande – ZEE CG, approving the first approximation (Campo Grande, 2020), structuring municipal land management and planning throughout the municipality, establishing legal, social and environmental security.

The lack of an instrument capable of covering the entire municipality led to the zones of the ZEE/CG being incorporated in their entirety, making up the macro-zoning of the Urban Environmental Development Master Plan (PDDUA). The revision of the Master Plan took place during the period when the ZEE/CG technical report was finalized, allowing the zoning to be integrated into the draft revision of the PDDUA, in Chapter III of the macro-zoning and macro-areas, Articles 14 and 15, Annex 5.1- Macro-zoning of the Municipality of Campo Grande, shown in Figure 6 (Campo Grande, 2017).

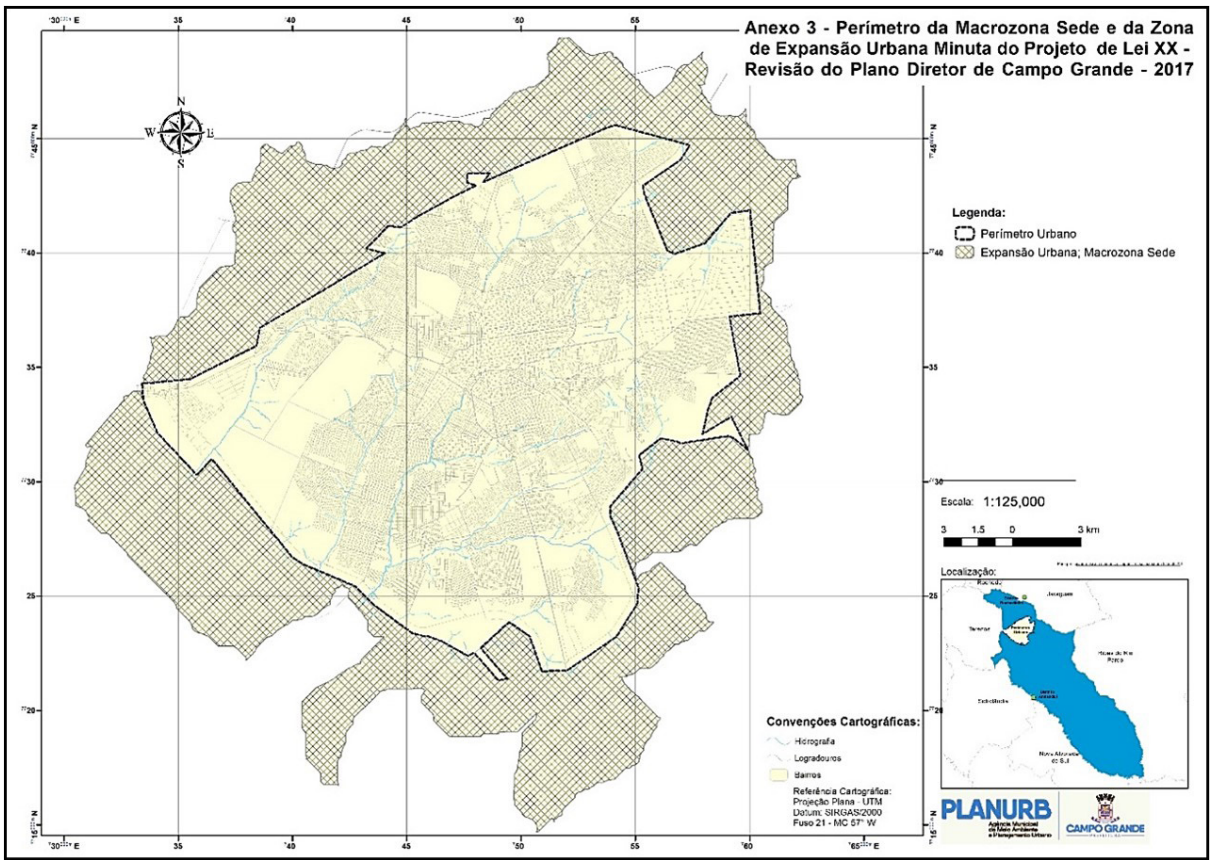
Figure 6 – Annex 5.1.- Macro zoning of the Municipality Draft Law XX- Revision of the Campo Grande Master Plan – 2017




Source: Minuta PDDUA (Campo Grande, 2017).

The configuration of the watersheds, the basis for the preparation of the ZEE/CG, defined as UTB, were incorporated into the draft of Bill XX- Revision of the Campo Grande Master Plan-2017, in Annex 3, present in Art. 12 The Urban Expansion Zone (ZEU) consists of areas contiguous to the urban perimeter, dedicated to rural activities, protection of the springs of the Paraná and Paraguay basins and destined as a reserve for urban expansion and the implantation of large equipment, of Chapter I of the urban perimeter of Campo Grande, as shown in Figure 7.

Figure 7 – Annex 3.- Perimeter of the Macrozone Sede and the Urban Expansion Zone, Draft Bill XX- Revision of the Campo Grande Master Plan – 2017




Source: Minuta PDDUA (Campo Grande, 2017).

As has been shown so far, the construction of environmental planning and management instruments, disciplined by Environmental Zoning, when configured with technical-scientific rigor, is capable of integrating territorial planning instruments in order to support public and private agents and subsidize decision-makers.

## 6 FINAL CONSIDERATIONS

Environmental planning on a municipal scale is based solely on the Master Plan and Environmental Zoning, and we are now moving towards the construction of Municipal Ecological-Economic Zoning, with the aim of strengthening the environmental instrument set up for urban planning.

It is clear that it is difficult for organized civil society, public managers and private companies to assimilate the issue of a new instrument or the addition of yet another environmental instrument that can be used to discipline land use and occupation. The decision-maker is left with the prerogative as to how to conduct this request, whether it should be absorbed into the existing Master Plan, institute a Municipal Basin Plan, a Municipal Environmental Policy, or simply a new complementary law.

This essay demonstrates that the integration of Ecological-Economic Zoning as a legal framework can positively subsidize the manager with the aim of justice and clarity, in order to ensure quality of life for all and promote a healthy and balanced environment.

Believing in this integration of legislation, the municipality of Campo Grande can positively soak up the number of instruments available for its management. In other words, the integration between the ZEE/CG planning instruments and the PDDUA demonstrates the importance of developing guiding concepts to break paradigms, believing in the viability of being integrated in every municipality in the country.

Faced with the prospect of territorial planning and management via the ZEE, proven in the capital of Mato Grosso do Sul, the gateway to the Bioceanic Route, which will take development to the ports of Iquique in Chile, it is an assertive way of generating sustainable actions. In addition to mapping out the vulnerabilities and potentialities provided for in the methodology, it will be possible to identify areas for expansion, consolidation, preservation and recovery, in other words, to point out ways for governance to invest resources in improving multimodal infrastructure, harmonizing health standards, integrating the freight and goods transport system, improving highways and roads, traffic and safety legislation and standards, as well as stimulating the local productive arrangements that will be generated by the increased flow of people on the Route.

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