


Urban planning in areas of environmental and flood risks: The Lagoas do Norte program, in Teresina, Piauí

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ABSTRACT

The population growth and the degree of urbanization of Teresina, the capital of the state of Piauí, influenced the disorderly occupation of areas closer to rivers and lagoons, which increased flood events, in addition to constituting areas of precarious infrastructure. This article discusses the relationship between the urban planning of Teresina and the conception of the Lagoas do Norte Program (PLN), highlighting its actions related to the guidelines provided for in the master plans of the municipality and the possible administrative transformations of the Municipality of Teresina. A bibliographic research was carried out on urban planning in Brazil, focusing on Sustainability, Strategic Planning and City Statute, and how such themes influenced the Master Plan of Teresina and the PLN. It was found that the PLN influenced the other subsequent plans and the possible administrative transformations of the Municipality of Teresina, focused on urban planning and the environment. It was also possible to see that the PLN presented conflicts of interest and disagreement between the actors involved, which occurred throughout the process of its implementation, verified through the local press, official documents, speeches by the technical team of the city hall and conversations with residents. It is emphasized, then, the need and importance of urban planning aimed at improving urban, social and environmental living conditions in cities.

Keywords: Urban Planning, Sustainability, Urban Requalification, Lagoas do Norte Program, Master Plan.

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INTRODUCTION

The accelerated process of urbanization experienced by Brazilian cities in the mid-twentieth century, combined with economic and political interests and the absence of environmental awareness, negatively interfered in the dynamics of cities, compromising their functions and spatial configuration, as it harmed the supply of water and energy, caused the degradation of the environment, increased poverty and insecurity (MARTINE; MCGRANAHAN, 2010).

Urban areas in Brazil have presented serious environmental problems, considerable changes in the landscape and critical points of degradation, such as illegal settlements, deficient infrastructure, as well as decharacterized and polluted preservation areas (Jacobi; Fracalanza; Silva-Sanchez, 2015). Teresina, the capital of the state of Piauí, which had an estimated population of 871,126 people for 2021 (IBGE, 2022), is not on the margins of this context. It presents problems that are also a reflection of the accelerated urban growth, evidenced in recent decades, highlighting the lack of housing, which leads the population, with lower income, to occupy public spaces or precarious areas, usually without infrastructure and considered at risk.

For Alvim, Kato and Rosin (2015), facing urban problems is complex, especially those of recovering degraded areas and maintaining housing in preserved areas, as there are political and operational difficulties inherent to the process of formation of Brazilian cities, thus requiring the convergence of urban and environmental policies. According to Coutinho *et al.* (2015), most Brazilian municipalities do not have a specific law that deals with the prevention of floods or landslides, however, they point out that, in some municipalities, the laws of land use and occupation, municipal zoning, or the master plan deal with the issue.

Master plans act as important instruments for city planning. Based on the City Statute, the Teresina Master Plan was created, "Sustainable Development Plan – Teresina Agenda 2015", constituting the normative and guiding instrument of the processes of urban transformation, its political-social, physical-environmental and administrative aspects, within the precepts of sustainability and the City Statute (TERESINA, 2006a), being instituted as the Teresina Master Plan.

Flooding problems are frequent in Teresina, considering that the city is located between two rivers, the Parnaíba and the Poti, and 28 points of flood risk areas in Teresina were mapped by the Civil Defense, concentrated in the North and Southeast zones (TERESINA, 2013). In this sense, some programs were conceived and developed by the Municipality of Teresina, aiming to comply with the guidelines proposed in the Agenda. Among these, the "Teresina Environmental Quality Improvement Program" was created, proposing measures for the environmental improvement of the capital. Thus, the Lagoas do Norte Program (PLN) was elaborated, aiming to improve the living conditions of the population, based on urban improvements and the promotion of socioeconomic and environmental development around the lagoons in the North Zone of Teresina (TERESINA, 2011).



The occurrence of floods or the overflow of watercourses is a natural phenomenon, characteristic of the areas of low course of rivers, and also responsible for the formation of plains and fluvial terraces. It is noteworthy that the dynamics of water in urbanized areas have specificities, where anthropic factors, such as buildings, pavements and intense occupation, determine the path and behavior of the waters (Viola; Nunes, 2014).

The North Zone of Teresina, in addition to occupying lower areas of the city, is formed by many lagoons. The neighborhoods that make up the so-called Lagoas do Norte de Teresina have a natural configuration composed of an extensive floodplain, which, without efficient planning, has undergone changes over the years, through hydraulic interventions, such as dikes, interconnection systems of the lagoons and level control systems, among others (TERESINA, 2007). It is noteworthy that the population growth and urbanization of Teresina contributed to the constant occupation of areas close to rivers and lagoons, enhancing flood events in rainy periods. Such events have worsened over the last 50 years, especially in areas of the North Zone, where the risks of flooding are greater. With this, it can be stated that the risk of flooding, associated with all the inherent losses, is high in the neighborhoods of Lagoas do Norte.

In this work, the relationship between the urban planning of Teresina and the conception of the Lagoas do Norte Program (PLN) was discussed, highlighting its actions related to the guidelines provided for in the city's master plans, under the influence of the themes Sustainability, Strategic Planning and City Statute.

METHODOLOGY

Research was carried out on urban planning in Brazil, in the light of Sustainable Urban Development, aiming to analyze how the themes of Sustainability, Strategic Planning and City Statute influenced the Master Plan of Teresina – Teresina Agenda 2015 and, consequently, the PLN. From there, it was examined how the PLN influenced the other subsequent plans and the possible administrative transformations of the Municipality of Teresina, focused on urban planning and the environment. in the light of Sustainable Urban Development.

To trace the process of elaboration of the Master Plan of Teresina, a bibliographic review was made on the importance of Brazilian urban planning in the management of cities, highlighting the role of the City Statute, as an instrument of Planning, as well as the role of Sustainability, as a guiding principle of the actions of managers in the city, to, finally, outline the origin of the Master Plan of Teresina – Teresina Agenda 2015, and also from the Lagoas do Norte Program (PLN).

To define the relationship, of approximation or distancing, between the Teresina Agenda 2015 and the PLN, the information, strategies and actions related to the macro objectives of the Teresina Agenda 2015 were compared to the elements and measures proposed in the PLN. Also, the programs,



and their respective actions, of the Teresina Agenda 2015 were compared with the actions of the PLN.

In order to establish possible relationships between the PLN and the other sectoral plans developed by the Municipality of Teresina, the objectives of each of these plans were analyzed, identifying the influences suffered and exerted by the PLN, considering factors that generated or guided the PLN, or the products, resulting from the PLN. While, to identify the transformations or permanences brought by the PLN, in the process of city planning and administrative management of the City of Teresina, official documents of the PLN, newspapers, articles and dissertations were researched.

The synthesis document of the "Teresina Agenda 2015" (TERESINA, 2002) and the article "Strategic planning and the Teresina Agenda 2015 plan" (AFFONSO, 2002) were also analyzed. Regarding this article, it is essential to determine its importance, as it allows the understanding of the decisions made in the realization of the Teresina Agenda, as well as the understanding of the processes adopted in its construction.

Other documents were also consulted, such as the sectoral plans: Urban Drainage Master Plan (PDDrU) (TERESINA, 2010); Teresina Urban Requalification Plan (PRU) (TERESINA, 2011); Master Plan for Urban Transport and Mobility (PDTU) (TERESINA, 2008); Municipal Plan for Basic Sanitation (PMSB) (TERESINA, 2013); Baseline study of NLP (TERESINA, 2002); Environmental Assessment of the Lagoas do Norte Program – Phase II (TERESINA, 2014), in which the results of phase 1 of the PLN are found; Environmental and Social Assessment Report (TERESINA, 2007).

The analysis of the process of elaboration of the Teresina Agenda 2015 involved the identification of its elements, the methodology used, the guidelines, the program proposals and the laws arising from this document, focusing on the pertinent documentation. With these data, the influences exerted by the themes of Sustainability, Strategic Planning and City Statute in the urban planning process of Teresina were compared.

To define the relationship, of approximation or distancing, between the Teresina Agenda 2015 and the PLN, the information, strategies and actions related to the macro-objectives of the Teresina Agenda 2015 were compared to the elements and measures proposed in the PLN. Also, the programs, and their respective actions, of the Teresina Agenda 2015 were compared with the actions of the PLN.

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transformations or permanences brought by the PLN, in the process of city planning and administrative management of the City of Teresina, official documents of the PLN, newspapers, articles and dissertations were researched.

In addition, information and the perception of residents of the neighborhoods affected by the PLN were obtained from three academic meetings, such as extension courses and class disciplines, which dealt with the theme, which took place at the Federal University of Piauí (UFPI), in 2015 and 2016. In these moments, lectures were given by the technical team of the City Hall, both on Phase 1 and Phase 2 of the program, followed by a debate among the listeners, in which residents of Lagoas do Norte, a member of the State Public Prosecutor's Office and other interested parties participated, which was an opportunity for the population to put their demands.

RESULTS AND DISCUSSION

ORIGINS OF THE LAGOAS DO NORTE PROGRAM

From the analysis of the "Teresina Agenda 2015" (TERESINA, 2002) it was found that it was prepared considering the proposals of the strategic plan, using the SWOT analysis, in which the strengths and opportunities, and the weaknesses and their threats were pointed out. From then on, it focused on action, by proposing executable measures to achieve the idealized city, in addition to inserting a longer deadline in the Plan.

According to Affonso (2002), in the 2015 Agenda, scenario technology was used, assuming an integrated and participatory character, according to the City Statute, as it considered the relationships between the various urban functions and activities, in addition to the participation and commitments assumed by individuals, entities and public authorities at the three levels. However, there are authors such as Façanha and Viana (2012), who even agree with the strategic character assumed in the elaboration of the Teresina Agenda 2015, but disagree that it has managed to fully comply with the Statute of the City, especially regarding the participatory character, which according to the authors, did not exist.

Rezende and Ultramari (2007) consider that, in the action of planning, the process of elaboration of the municipal master plan or the municipal strategic plan is no less important than the results, considering relevant the learning of popular participation, technical understanding of reality and dialogue between actors with different interests. Therefore, it can be seen, based on Façanha and Viana (2012), that in the Teresina Agenda 2015, it was not possible to articulate this popular participation, defended by the Statute of the City.

For Façanha and Viana (2012), the process occurred in a fragmented and centralized way, because the Teresina society did not participate in the construction, it only became aware of the



Agenda, when the City Congress took place, after the need to carry out its legalization, as a matter of urgency.

After analyzing the Teresina Agenda 2015 document, the elements of the SWOT methodology can be perceived, with "the Teresina we have", "the Teresina we want" and "the Teresina we will make". Initially, he presented the diagnosis of reality, with the chapter "The Teresina we have" (TERESINA, 2002). The chapter "The Teresina we want" was outlined based on the technology of scenarios, the inertial and the desirable (TERESINA, 2002). Considering the desirable scenario, the objectives, strategies, programs and projects that would lead to a sustainable Teresina were outlined, proposing better conditions for citizens, and that could be carried out (TERESINA, 2002).

At the end of the process of elaboration of the Teresina Agenda 2015, in which the guidelines of the city planning were defined, based on the methodology of strategic planning, presenting in its structure several themes related to the urban environment, a set of 11 laws was produced, counting on the law of the Master Plan itself, reinstated by law nº 3.558 of 20/10/2006 (TERESINA, 2006a), according to the new precepts stipulated by sustainability and the City Statute.

In the law of the Master Plan of Teresina, in its article 8, it is defined that for its objectives to be achieved, the following are necessary (TERESINA, 2006a, p. 3):

[...] works, services and standards that comply with guidelines relating: economic development, consolidation of the health center, rural development, job and income generation, the environment, sanitation, use and occupation of urban land, the circulation and transportation system, revitalization of the urban center, housing, social assistance, health services, education, cultural activities and sports and leisure activities.

With the new Master Plan, trends from this historical period were incorporated, adopting the methodology of strategic planning to formulate its Agenda, in addition to inserting sustainability precepts, when proposing intervention programs in the city aimed at this area.

Coutinho *et al.* (2015) highlight that there is a lack in Brazilian municipalities in the use of instruments, such as the mapping of risk areas to support the planning of risk spaces. In this sense, in Teresina, with the institution of the Teresina Agenda 2015 in 2006 (TERESINA, 2006a) and with the mapping of risk areas in 2008 (TERESINA, 2013), several programs began to be conceived and developed by the Municipality of Teresina (PMT), with a view to complying with the proposed guidelines, thus making use of the planning instruments available at that time.

Among the laws created from the Master Plan, Complementary Law No. 3563 of 10/20/2006, which created environmental preservation zones, and instituted standards for the protection of assets of cultural value (TERESINA, 2006b); Complementary Law No. 3562 of 10/20/2006, which defined the guidelines for the occupation of urban land, guiding the occupation of land through densification, structuring and performance of urban functions (TERESINA, 2006c). From the laws arising from the



master plan, it was possible to identify the preservation areas, the zoning and regulation mechanisms of the road system, and also the allotment, which guided the interventions in the PLN.

The PLN consists of three basic requirements: Urban-Environmental Requalification, comprising the construction of sanitary infrastructure works, water supply, water drainage, urbanization, landscape transformation and population resettlement; Social, community and economic development; Municipal Management and Program Management (TERESINA, 2007). These interventions could be configured as urban marketing, which would translate into the revitalization of historic centers, beautification of flowerbeds and facades, serving to promote the "sale" of the city (SILVA, 2012). In addition to being able to identify this bias in the PLN, it is also possible to establish a parallel between the PLN and the first phases of Brazilian urbanism, such as beautification and sanitation and mobility works addressed by Villaça (1999).

The PLN is, therefore, the result of the strategic planning assumed by the city of Teresina, the result of the national context itself, related to the Statute of the City, Sustainability and Brazilian Agenda 21, being part of the urban interventions proposed in the 2015 Agenda, in the search for sustainable urban development, although this may have remained at the document level, without actually materializing in the actions.

URBAN PLANNING AND THE LAGOAS DO NORTE PROGRAM

Alvim, Kato and Rosin (2015) point to the conflict between urban policies, which aim at the territorial planning of cities, and environmental policies, which prioritize the protection and recovery of natural resources, constituting a difficulty in the management of areas of protection of springs or watercourses.

In this sense, it was sought to understand how the PLN planning process occurred, from the perspective of Strategic Planning and the elements of Sustainable Urban Development, and articulating with the other plans of the city of Teresina.

Through the analysis of the official documents of the PLN, it was possible to identify the same elements of strategic planning, the use of the SWOT methodology, adapted to urban planning, and also sustainability, explored in the Teresina Agenda 2015. As it is possible to verify, the approximation of the components involved in the PLN to the elements identified by Lourenço (2003), reality (definition of the problem), structuring, alternatives, evaluation, uncertainties, plan (planning, commitment and actions).

The first point identified was the production of the diagnosis, carried out of the neighborhoods of the PLN, showing the location on the map, its area of coverage and the population directly involved, the relief, the history of social, flooding, environmental and urban planning problems, and

which, later, was incorporated and improved in the elaboration of the Urban Drainage Master Plan (PDDrU).

In the other stage, based on scenario technology, the weaknesses to be repaired in the sense of strengthening were identified, highlighting: improvements in environmental conditions, quality of life and income of the population in the intervention area; improvement of the management capacity of the City Hall in the financial, urban, environmental, provision of basic services and economic development (TERESINA, 2007). And also the strengths of the area, such as taking advantage of the landscape and leisure potential of the lagoon area, to achieve an improvement in the quality of life and income (TERESINA, 2007).

In this aspect, it is possible to reconcile urban planning, with a view to the future, with the practices of urban management and governance defined in the City Statute, discussed by Goulart, Terci and Otero (2015) and Faria (2009).

When comparing the goals and strategies focused on the Environment and Sanitation, present in the Teresina Agenda 2015, with the elements and measures contemplated by the PLN, the following relationship is found (Chart 1):

Table 1. Comparison between the proposals of the 2015 Agenda and the objectives and measures of the PLN

Agenda 2015	Elements of the 2015 Agenda contemplated by the PLN	NLP Measures
Macro-objectives	Valuing environmental heritage	Depollution of the lagoons.
		Preservation of its banks.
		Increase in green areas.
	Reduction of flood risk areas	Improvement of the drainage system.
Water supply system for the entire population	The sewage collection system for the entire population	Improvement and reinforcement of the water supply system.
		Expansion of the sewage network.
Strategies	Promote environmental education	Promotion of environmental education in neighborhood workshops.
	Structuring of the public power to execute the municipal environmental policy.	Restructuring and Training of the Municipal Agency for the Regulation of Public Services – ARSETE.
		Preliminary study for the Administrative Reform and Modernization of the City Hall.
		Acquisition of computer equipment and software for the departments involved.
		Assembly of the database with physical and socioeconomic information of the Neighborhoods of Teresina, especially the 13 neighborhoods of the PLN.
	Preparation of some Sectoral Plans	Monitoring of the waters of the lagoons, after the implementation of the first phase.
Monitor the availability and quality of water resources.		
Actions	The promotion of revegetation in river terraces	Urban interventions that included revegetation.
	Recovery of the vegetation of the streams valleys	Cleaning and displacement of houses on the banks
	Relocation of buildings that occupy risk areas	Resettlement of families in the Zilda Arns Residential, located in an area close to the intervention that is part of the Program, or payment of compensation.

Source: Teresina (2002; 2014).

A relationship is observed between what was defined in the Teresina Agenda 2015, referring to the macro-objectives, strategies and actions, and the measures adopted by the PLN, thus confirming the need and importance of urban planning, with a strategic bias, and, in the specific case, the effective articulation between planning and action, as defined in Faria (2009). Although it cannot be said that the measures adopted in the PLN, in fact, have achieved total effectiveness, in the sense of solving the problems diagnosed in the neighborhoods.

The neighborhoods in which Lagoas do Norte are located, at the time of the drafting of the PLN, were marked by inadequate buildings and lack of sanitation. After the implementation of the first phase of the PLN, it is possible to verify, in images from June 2016, the changes brought about by the urban requalification carried out, especially in relation to the cleaning and preservation of the banks (Figure 1) and sanitation works carried out (Figure 2).

Figure 1 – Cleaning and preservation of the lagoons



Source: Photo by the authors (2016)

Figure 2 – Sanitation works



Source: Photo by the authors (2016)

When comparing the previous situation with the situation after the intervention, there were improvements in particular, preservation and expansion of green areas and improved sanitation, although for this, it was necessary to remove some families, which could be considered a negative point, as it involves issues of territoriality, sense of belonging and construction of neighborhood and social relations with the place.

Eight programs were proposed in the Teresina Agenda 2015: Legal Nature Program; Green and Beautiful City Program; Clean City Program; Solar Energy Harnessing Program; Sanitary Sewage Program; Water Supply Program; Solid Waste Management Program; Urban Drainage Program (TERESINA, 2002).

When analyzing the actions proposed in the various programs of the 2015 Agenda, it is possible to perceive an approximation with those of the PLN, in more than one program (Chart 2).

Table 2 – Comparison between the Agenda 2015 Programmes and the actions of the PLN

Programs Agenda 2015	Actions	NLP Actions
Legal Nature	Create a body with specific attribution to execute the municipal environmental policy.	Preliminary study for the Administrative Reform and Modernization of the City Hall.
Green and Beautiful City	Create new parks, squares and gardens.	Lagoas do Norte Linear Park: Monumental Square, playgrounds, kiosks, contemplation areas, outdoor gyms, courts, cleaning of lagoons and canals.
	Promote revegetation and containment works on slopes, slopes and river terraces.	Urban interventions that included revegetation.
	Promote the relocation of buildings that occupy risk areas.	Resettlement of families to the Zilda Arns Residential, or payment of compensation.
Clean City	Promote the urbanization of lagoon areas for use with cultural, sports, leisure and tourism activities.	Lagoas do Norte Linear Park: Monumental Square, playgrounds, kiosks, contemplation areas, outdoor gyms, courts, cleaning of lagoons and canals.
	Prevent the deliberate grounding of ponds and their use as domestic or industrial sewage dumping areas.	Creation of the linear park and expansion of the sewage network.
	Develop a specific environmental education program for the population around the lagoons.	Promotion of environmental education in neighborhood workshops.
Harnessing Solar Energy	-	He did not contemplate.
Sanitary Sewage	Develop and implement a new project for the sanitary sewage system for the entire population of Teresina.	He expanded the sewage network. The Zilda Arns residential has already been built with a sewage collection network.
Water Supply	Develop and implement a new project for the water supply system to serve the entire urban and rural population uninterruptedly.	Reinforcement of the water supply network.
Solid Waste Management	Set up selective collection structures.	Construction of the Carroceiros transshipment station for selective collection.
Urban Drainage	Prepare and implement the Urban Drainage Master Plan (PDDrU) for Teresina.	Macro drainage works: expansion of the pump houses, improvement of the rainwater pumping station and construction of the drainage system. He prepared the PDDrU.

SOURCE: Teresina (2002; 2014)

It was also found the presence of elements of Sustainable Urbanism, defined in Farr (2013) and Sustainable Urban Development, contained in United Nations (2015), as it involved environmental requirements such as environmental protection and preservation, represented by depollution actions and increase of the green area. Also, social requirements were found, from the insertion of leisure areas and cultural activities, in addition to the citizenship actions promoted in the

Lagoas do Norte Park; governance requirements verified with the restructuring of some administrative sectors of the Municipality of Teresina, focused on urban planning and environmental policies (Chart 1) and (Chart 2).

It was possible to establish a link between the main documents prepared during the conception and monitoring of the PLN, in its first phase, with the documents of the other sectoral plans, related to or that supported the PLN, and also with those that originated from it, considering, therefore, the factor that generated or influenced the PLN, or the product, resulting from the PLN (Chart 3). In addition, the existence of articulation of the planning, as well as of an integrated process, between the master plan and the sectoral plans, in the process of formulation and execution of the PLN (Chart 1), (Chart 2) and (Chart 3) was identified. Thus, the PLN, as a program, was able to add elements of the various programs proposed in the Teresina Agenda 2015, to the extent that the actions of the PLN addressed the actions present in the Teresina Agenda 2015.

Table 3 – The factors influencing the PLN and the documents produced after the PLN

Document	Year	Factor / Productb	Objectives
Teresina's Sustainable Development Plan, Agenda 2015	2002	Factor	Discuss and chart a course for the future of the city of Teresina, thus elaborating its Agenda 21. Established the Teresina Master Plan
Law No. 3558/2006	2006	Factor	Reinstitute the Teresina Master Plan, called Sustainable Development Plan – Teresina Agenda 2015.
Environmental Assessment Report (AAR)	2007	Factor	Present an environmental assessment of the components of the NLP, in Teresina, PI, aimed at preparing the Project for financing at the World Bank (IBRD).
Urban Drainage Master Plan (PDDrU)	2010	Product	Definition of institutional guidelines aimed at establishing conditions of sustainability for urban drainage policies; Characterization of the hydraulic operating conditions of the existing drainage system; Proposal, at the preliminary project level, of works necessary to solve the urban drainage problems found in Teresina.
Preparation of the Municipal Basic Sanitation Plan (PMSB)	2013	Product	Diagnosis of the basic sanitation situation to consolidate information on environmental health conditions and basic sanitation services, considering current data and projections such as the population profile, the epidemiological and health situation, socioeconomic and environmental indicators, performance in the provision of services and data from other sectors.
Urban Transport and Mobility Master Plan (PDTU)	2008	Product	Establish the guidelines for the organization of the implementation of urban transport infrastructure and services, in accordance with the objectives and assumptions of the Government and society. It aims to formulate public policies on the subject, which will later be implemented.
Urban Requalification Plan (PRU)	2011	Product	To constitute an instrument of planning and management of the municipality containing a set of structuring projects.
NLP Baseline Study	2012	Product	Research in the intervention area of the first phase of the NLP, identifying the housing conditions, urban infrastructure and available urban services.
PLN – Indicators and Targets	2014	Product	Identify the goals and values, in each year of the Program's execution, that remained, or were revised or created during the process.

<p>Environmental Assessment of the Lagoas do Norte Program – Phase II, environmental and social assessment report.</p>	<p>2014</p>	<p>Product</p>	<p>Evaluate the implementation of the interventions of the Lagoas do Norte I Program regarding compliance with the Environmental and Social Management Plan (PGAS); Identify critical moments, benefits, alternatives and environmental risks in order to prevent and/or mitigate them; Ensure that environmental issues are assessed in the decision-making process; Understand and characterize the legal and institutional context in which the Program is inserted; Provide mechanisms for social control and dissemination of information about the Program;</p>
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SOURCE: Teresina (2002; 2006a; 2007; 2008; 2010; 2011; 2012; 2013; 2014).

^a Fator – Taxable or influencing event of the Lagoas do Norte Program.

^b Product – Subsequent product, deriving, or resulting from PLN.

The constant presence of references made to the Lagoas do Norte Program in the sectoral plans indicates a probable influencing role of the PLN, thus assuming a possible modifying character, which guides the actions of the City Hall. This can be evidenced from the analysis of the various sectoral plans: Urban Requalification Plan (PRU), Urban Drainage Master Plan (PDDrU), Municipal Basic Sanitation Plan (PMSB), Urban Transport and Mobility Master Plan (PDTU), produced or commissioned by the Municipality of Teresina. It should be noted that there are also legal determinants, belonging to the national policy, that define the existence of these sectoral plans, such as the Sanitation Law No. 11,445/2007 (BRASIL, 2013), the City Statute itself (BRASIL, 2001), the Manual for the Rehabilitation of Central Urban Areas (BRASIL, 2015), as well as the national considerations and studies on urban mobility.

By introducing a new form of urban requalification intervention, based on the sustainability criteria inserted by international organizations – the World Bank, an agency linked to the UN, and which finances the PLN – in those established by the national sanitation policy, in project management, and in the modification of urban governance, the PLN enabled a connection between the other sectoral plans and programs of the Municipality of Teresina.

The experience with the PLN allowed the Municipality of Teresina to insert new approaches and new principles used in other sectoral plans and intervention programs, even though it remained at the level of documents, without necessarily presenting actual results.

This can be perceived, for example, from the reading of the Teresina Urban Requalification Plan (PRU), which was based on Teresina's plans, prior to the City Statute, such as the Integrated Local Development Plan (PDLI), Teresina's Structural Plans (PET) and in the post-City Statute plan, the Sustainable Development Plan (PDS) – Teresina Agenda 2015, and that it constitutes an instrument of planning and management of the municipality, in which there are numerous structuring projects (TERESINA, 2011).

It was identified, in the ongoing programs of the Urban Requalification Plan (PRU), that the PLN was framed in the level of importance and local interest, embedded in the thematic axis of urban



requalification, in addition to the implementation of urban infrastructure and institutional services (TERESINA, 2011).

The document of the Urban Drainage Master Plan (PDDrU), carried out within the scope of the PLN, contains the physical characterization of the entire hydrographic basin, in which Teresina is inserted, in addition to other information of a social and environmental nature, referring to the sub-basins of Lagoas do Norte (LDN) and Mocambinho (MOC) (TERESINA, 2010). Direct information about the PLN area can be found in Tomo 3 and 5 of the Urban Drainage Master Plan (PDDrU) (TERESINA, 2010).

The Master Plan for Urban Transport and Mobility (PDTU), although it does not mention the PLN, included it in component 1 – within the strategic environmental attributes identified, such as the environmental quality of the waters of the Parnaíba River – defined in the PLN Evaluation Report, as a measure achieved (TERESINA, 2014).

The Municipal Plan for Basic Sanitation (PMSB) alludes to the PLN, when it characterizes the municipality, under the social, economic, cultural and environmental aspects. The PLN is treated as an intervention that will correct the damage caused by the extraction of clay, an economic activity characteristic of the region (TERESINA, 2013). In the diagnosis of the sewage system and in the projects in progress that deal with basic sanitation, the NLP is framed in the item of current investments in basic sanitation (TERESINA, 2013).

Regarding the first phase of the program, it was reported that there was difficulty in articulating, due to the separate contracting of the basic and executive projects, and that therefore in the next phases, the procedure should be remedied (TERESINA, 2014). The difficulty in complying with the planning provided for in the PLN shows that, even with the planning, the bureaucratic organization, represented by the separate contracting of the projects, and the political structuring, adopted by the government, directly interfere in the implementation of the plan.

TRANSFORMATIONS AND PERMANENCES IN THE MUNICIPAL MANAGEMENT OF TERESINA

According to Travassos (2012), administrative restructuring is a fundamental part of interventions involving urban drainage, and must be adequately addressed. And for this to occur, first of all, institutional changes must be made.

In order for the actions of the PLN, related to drainage and all others involved, to have support, technical guidance, and influences on other decisions, based on the principles of Sustainable Urban Development, it was necessary to reformulate the form of public management of the Municipality of Teresina. And that was what the PLN tried to promote, even though the program did not have the necessary strength to, in fact, change municipal governance.



On the official website of the Municipality of Teresina, it was possible to identify as a product of the PLN, elements of modernization of Municipal Management, Urban Development and Project Management, based on the following actions (TERESINA, 2011a):

- 1) Preparation of the Urban Drainage Master Plan (PDDUr), the Urban Transport and Mobility Master Plan (PDTU) and the Municipal Water and Sewage Plan (PMAE);
- 2) Restructuring project of the Municipal Superintendence of Transport and Traffic (STRANS);
- 3) Restructuring and training of the Municipal Agency for the Regulation of Public Services (ARSETE);
- 4) The study of the "Baseline" of the NLP area to measure economic, social and environmental impacts;
- 5) Acquisition of computer equipment and software for the Municipal Secretariat of Planning and Coordination (SEMPPLAN), Municipal Secretariat of Finance (SEMF), Municipal Secretariat of Administration and Human Resources (SEMA), Municipal Secretariat of Education (SEMDEC), Teresinense Data Processing Company (PRODATER), Superintendencies of Urban Development (SDU's);
- 6) Preliminary study for the Administrative Reform and Modernization of the City Hall (to be implemented in the second Phase) and for the Database with physical and socioeconomic information of the Neighborhoods of Teresina, highlighting the 13 Neighborhoods of the PLN.

The PLN is a program with several partners, the World Bank and the Federal Government, which allowed the modernization of municipal planning, considered by the Technical Team of the Municipality of Teresina, as one of the points of improvement in the performance of the City Hall itself, because in the PLN, several consultancies were developed, which led to the elaboration of other plans, such as the Master Plan for Urban Transport and Mobility (PDTU) and the Master Plan for Urban Drainage (PDDUr).

The fact that the Municipality of Teresina organizes the social, economic and physical data of the neighborhoods, present in Teresina (2015a), would already be a step to instrumentalize the administrative management of the city, providing diagnostic material to support the essential and priority interventions of the city, thus designing programs of urban interventions.

Goulart, Terci and Otero (2015) identified that there is a limitation of participatory experience when preparing Master Plans. This fact occurs due to the inability of institutions to absorb this new model, or due to the lack of articulation of the majority of the population in exercising their citizenship. The authors also state that this finding contradicts the expectations created throughout the process of Brazilian redemocratization, that participation would automatically be adopted and would



represent democracy, by attenuating the political weight of the ruling elites and sufficient for the distribution of goods and services.

In Brazil in general, in programs of this nature, which involve environmental issues, housing and administrative reformulation of management agencies, conflicts occur. As found by Castro (2016), when he identified the need for greater discussion on the instruments used in the intervention of communities, in studies of involuntary resettlements in urbanization and sanitation programs, such as PROBACANGA, in São Luís, Maranhão, financed by the International Bank for Reconstruction and Development (IBRD); PROMABEN, in Belém, Pará, and PROSAMIM, in Manaus, Amazonas, programs supported by the Inter-American Development Bank (IDB).

These findings were used as a guide, as they allowed the analysis of the PLN, also financed by the IBRD, under the same arguments. Considering popular participation as one of the elements of the current urban planning model, adopted by Brazilian cities, under the bias of strategic planning and based on the City Statute, it is possible to identify some conflicts regarding this element in the elaboration and execution of the PLN.

For the Municipality of Teresina, there has always been constant dialogue, represented by the Lagoas do Norte Committee, created in 2008, and by the Lagoas do Norte Forum, created in 2011 (TERESINA, 2015b), both of which monitor and supervise the actions of the program, both with the City Hall team and with the World Bank's technical team. Despite this, part of the residents complain about the lack of information, clarification and discussions (TERESINA, 2015c). It is observed, then, that although the city hall maintains an open channel for dialogue, it may not have been enough to meet the expectations of the population involved.

The presence of the Socio-Environmental Project Unit (UPS) is considered an essential element in the dialogue with the local community, because according to the city hall it allowed dialogue, and continuous monitoring by community representatives, in the decisions and execution of interventions (TERESINA, 2014).

The incipient character of popular participation in the urban planning actions and policies developed by the Municipality of Teresina, still during the formulation of the Teresina Agenda 2015 (Façanha; Viana, 2012), was also found in the PLN. Popular and institutional resistance was identified through conversations with residents and also evidenced by reports at the local level, at the time of implementation of the actions proposed by the PLN and other plans.

It was reported by residents of the PLN neighborhoods that the technical team of the Teresina City Hall responsible for the PLN, even providing information about the Program, still does not all points are clarified or are not accepted by residents, requiring more discussions and adaptations of the interventions



Other points of disagreement were identified in the meetings, held to address essential issues that needed clarification, related to the PLN, such as the public consultation of November 2014 (TERESINA, 201-b), and the public hearings of April 2010 (CÂMARA..., 2010), February 2015 and March 2015 (TERESINA, 2015b). These hearings were motivated by interference, from residents and the State Public Prosecutor's Office, in search of answers, clarifications and positions on the actions of the PLN.

At the beginning of 2014, according to information from the local press, the Lagoas do Norte Committee, composed of the 13 neighborhoods, social organizations of potters, carters, collectors, artisans and others, through a report generated after inspections carried out in the works, requested interventions by the City Hall, in order to adapt the Program to the economic and cultural characteristics of the region (COMMITTEE..., 2014). Among other demands, the construction of the "Praça dos Orixás", the installation of ecological signs, training of carters, construction of more popular academies and regional characterization of markets were requested (COMITÊ..., 2014). The report also found that only eight requests were met, while 11 were partially met and 35 have not yet been met (COMMITTEE..., 2014).

The residents' claims reflect what Penna and Ferreira (2014) argued, about the need for incentives through public policies and resource allocation, aimed at information, professional training, income and work formation, education, health, exercise of citizenship, so that this population has access to professional and technical skills, equipping themselves to overcome social vulnerabilities.

The residents' claims, contained in the public hearings, and the negative effects may represent failures in the process of developing the PLN proposals, or the absence of conversations, in which the residents' demands have been defined, at the time of PLN planning.

Even though the program is important for the population, it is necessary to reach an agreement between the parties in order to make the intervention actions compatible with the community's desires, that is, that the relationships performed over the years by that community are respected, and that the recreated space contemplates neighborhood, economic and cultural relations. and that the population understands and appropriates the benefits acquired. These actions were highlighted by Penna and Ferreira (2014), when analyzing the interventions promoted by the Social and Environmental Program of the Manaus streams (PROSAMIM), which are areas similar to the neighborhoods of the PLN.

In this sense, it is important to highlight, as stated by Duarte and Malheiros (2012), that the population involved does not always recognize the existing environmental problems, relating them to the form of occupation, as well as do not realize that anthropic actions cause an impact on water resources. Therefore, in order for there to be popular acceptance, the confrontation of the



environmental problem, which also involves the housing issue, involves the adoption of an integrated strategy with other sectors (Duarte; Malheiros, 2012),

For Gadens, Hardt and Frey (2012), the relationship between politics and society is a challenge for urban managers in the search for legitimacy, especially in large urban projects, in which the insertion of participatory practice is essential for minimizing the risks involving this type of intervention, as well as its externalities and negative impacts.

Thus, it is understood that there is much to be developed and built, in order to reconcile the desires of the population with the management practices of the public power, at least at the municipal level, in the city of Teresina, both in the practices of construction of master plans and in the execution of intervention programs.

FINAL CONSIDERATIONS

The Lagoas do Norte Program (PLN) is the result of the Teresina Agenda 2015, which in turn followed the trends of the moment experienced in the country, redemocratization, strategic urban planning, the influences of Global Agenda 21 on public policies, the approval of the City Statute and the elements of Sustainable Urban Development.

The process of elaboration of the Teresina Agenda 2015 explains the origin of the PLN. As well as, from the laws arising from the master plan, it was possible to identify the preservation areas, the zoning and regulation mechanisms of the road system, and also the allotment, which guided the interventions in the PLN.

The PLN used the same methodology as the Teresina Agenda 2015, in addition to fitting into the guidelines of the master plan, related to the environment and sanitation. The phases implemented by the PLN have been contemplating exactly these guidelines, through the execution of urban drainage actions, sanitation, requalification of degraded areas, creation of a linear park around some lagoons and removal of buildings on the immediate banks of the lagoons. There is, therefore, a relationship of approximation between the Teresina Agenda 2015 and the PLN, which corroborates the influence of the City Statute, Strategic Planning and Sustainability.

It should be noted that the experience and importance assumed by the PLN influenced the preparation of later plans for the city of Teresina, among them the Urban Transport and Mobility Master Plan (PDTU) and the Urban Drainage Master Plan (PDDUr). The PLN also contributed to the process of modernization of municipal planning, as it restructured administrative sectors, focused on planning and finance, in addition to producing a database, social, economic, urban and risk area information, which can be used to support future decisions and interventions.

At the same time, it was observed that the PLN presented conflicts of interest and disagreement between the actors involved, to the extent that, throughout the process of its



implementation, it was possible to make this finding, through the local press, official documents, speeches by the technical team of the city hall and conversation with the residents.

The proposals and actions promoted by the PLN involved elements of Sustainable Urban Development, to the extent that urban planning aimed at facing the urban, social and economic problems of poor neighborhoods and with environmental problems in the city of Teresina was present, seeking to mitigate the negative effects of human occupation.

It was possible to verify in the PLN the existence of proposals and actions that contemplated transformations of adverse situations involving environmental, social and governance issues, finding, then, elements of Sustainable Urbanism.

The importance of the NLP is associated with its potential to contribute to the solution of problems not only of urban drainage, but also of sanitation, environmental degradation and also those related to the social area.

It is emphasized the need and importance of urban planning and initiatives such as those being implemented in Teresina, which aim to improve urban, social and environmental living conditions in the city. Although the popular participation in the planning and decision-making process, of the PLN and the city hall, still needs to have its approach improved and effectively adopted, starting to play the role expected and guided by the City Statute and Sustainable Urban Development.



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