URBAN AND ENVIRONMENTAL PLANNING IN BRAZIL: BASIC SANITATION

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Abstract: One of the objectives of urban planning is to plan the expansion of the city, taking into account the well-being of its inhabitants, and to structure and organize urban space, making it suitable for the development of human activities, always aiming to improve the quality of life of the population. One of the requirements for territorial development is the existence of basic sanitation services. With the creation of the Ministry of Cities and the enactment of Law No. 11,445 of 2007, issues related to sanitation gained prominence and began to be treated with greater commitment by governments, making universal access to sanitation a mission of the State. However, what is observed in reality is that Brazilian municipalities are moving slowly towards universalization and many challenges still need to be overcome. In this sense, the objective of this research was to analyze the evolution of the main events in the history of basic sanitation.

KEYWORDS:cities, sewage, urban planning, solid waste.

Abstract: One of the goals of urban planning is to plan the expansion of the city taking into consideration the welfare of the people, structure and organize urban space making it suitable for the development of human activities, always aiming to improve the population's quality of life . One of the requirements for territorial development is the existence of basic sanitation services. With the creation of the Ministry of Cities and the enactment of Law No. 11,445 of 2007 sanitation issues to the fore and began to be treated with more commitment by governments, making a state mission to universal access to sanitation.

However, what is observed in reality is that municipalities go the slow pace of the universalization and many challenges remain to be overcome. In this sense, the objective of this research was to analyze the evolution of the main events of the sanitation story.

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1. Introduction

In recent decades there have been many discussions about the concepts of growth and economic development of a nation. Planning urban emerged, basically, with processes of production, structuring and appropriation of urban space in order to promote the expansion of a certain city without sacrificing the well-being of the inhabitants and developing programs that improve the quality of life of the population. With the process urbanization, the city began to exercise political, economic and social, configured in a built environment. Although the space environmental occupied by the city is artificialized – due to the processes of human production – these still have environmental responsibilities and with the public health (RODRIGUES et al., 2011).

In this sense, ALVES and BELLUZZO (2004) report that growth economic should no longer be seen as a solution to problems such as human poverty, that is, growth alone is not a sufficient condition for promotion of human well-being. In this regard, development economic began to include social, environmental, and cultural and political-institutional.

By including environmental issues in city planning, the following emerged: concept of sustainable development, which has gained great momentum at a global level worldwide due to growing concerns about environmental protection, resulting from the indiscriminate use of natural resources essential to various production processes (MOTTA et al. 1994). In this context, the basic sanitation gained great prominence, since it is essential for promoting the population's quality of life, environmental quality and the population's own quality socioeconomic development of a country.

Public sanitation policy in Brazil has been experiencing, since 2003, a new cycle marked by institutional restructuring, resumption of investments and new regulatory frameworks. The creation of the Ministry of Cities and the National Secretariat for Environmental Sanitation, undeniably, allowed greater direction of government actions. The establishment of the National Council of Cities and the holding of the Conferences of

Cities enabled the expansion of dialogue between organized segments of civil society and the State.

The Ministry of Cities comprises four national secretariats, namely: Accessibility and Urban Programs, Housing, Urban Mobility and Sanitation (MINISTRY OF CITIES, 2014). The National Secretariat for Environmental Sanitation - SNSA - has the mission of "ensuring the population the fundamental human rights of access to safe drinking water in good quality and sufficient quantity, and life in a healthy environment in cities and in the countryside, according to the fundamental principles of universality, equity and integrality" (NATIONAL SECRETARIAT OF ENVIRONMENTAL SANITATION, 2014). The main objective of SNSA is to promote significant progress in universalization of the supply of drinking water, sanitation and integrated management of urban solid waste involving collection, treatment and final disposal and, finally, the management of urban rainwater for flood control.

Law No. 11,445 of 2007, which establishes national guidelines for basic sanitation, ended a long period of uncertainty regarding the legal framework, inaugurating a new phase in the management of public sanitation services basic in the country, with planning assuming a central position in the management and guidance of public action (BRAZIL, 2007). The resumption of investments in federal scope, with both non-onerous and onerous resources, points to new strategies of the Brazilian State to face the deficits of sanitation services. From then on, many financial resources were destined to Brazilian states and municipalities for the advancement of universalization of basic sanitation. However, it is observed that this progress is progressing slowly, especially with regard to collection, treatment and final disposal of sewage. In view of the above, the following arises: following question: what is the situation of basic sanitation in terms of Environmental and urban in Brazil?

Due to the non-existence or inefficiency of sanitation services, population is subject to various types of diseases such as diarrhea, cholera, hepatitis A, dengue, yellow fever, schistosomiasis, leptospirosis (COSTA et al., 2012), chikungunya, zika, among others. The literature on public health

shows that the lack of drinking water and sanitation is one of the main causes of infant mortality (ALVES; BELLUZZO, 2004).

This research is justified by the relevance of the existence of services of basic sanitation represents the development and planning of throughout history and the negative impacts and inefficiency of these services. In this sense, the objective of this research was to analyze the evolution of the main events in the history of basic sanitation.

2. The emergence of urban planning

Urban planning emerged with the purpose of trying to reorganize and develop a region, trying to solve urban problems derived from numerous sources. According to Souza (2008a), planning urban is seen as a forecast for future management, with the purpose of avoid or minimize the problems that the city may have. The expression urban planning comes from England and the United States, and marks a change in the way we view the city and its problems. The city does not had adequate housing and sanitation services (Figure 1).

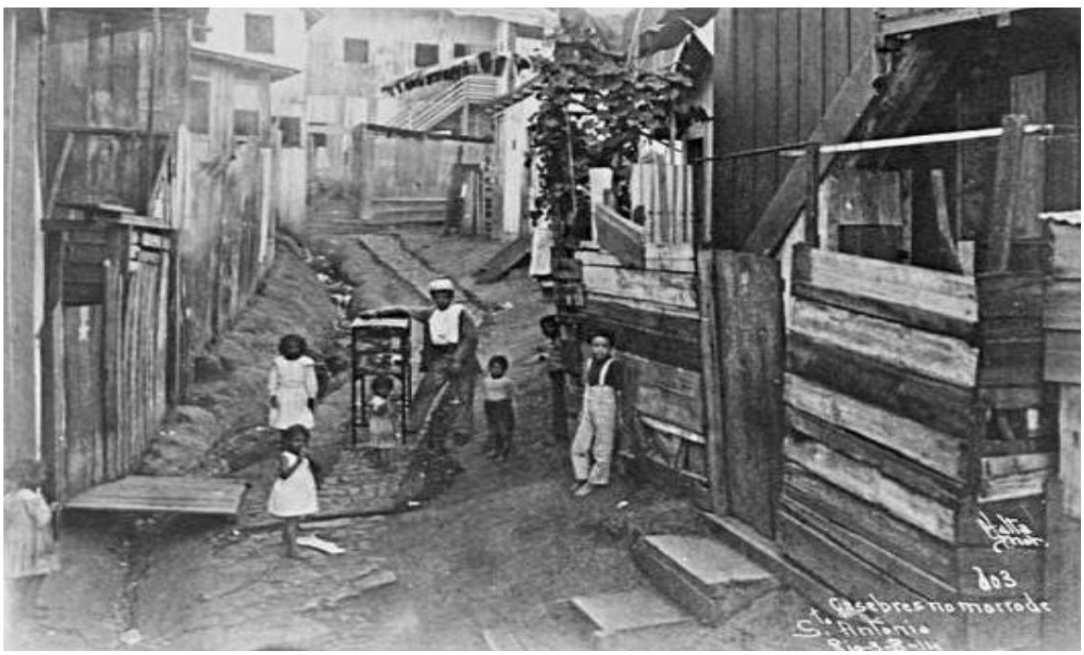

Figure 1– Santo Antônio Hill - Rio de Janeiro, Photo by Augusto Malta, 03.03.1914

Source: Da Costa et al. (2008, p. 87).

An important modification concerns the recognition of the phenomenon urban as something dynamic, which leads to seeing the city as the result of its own history and as something that is somehow evolving in the time. Therefore, the city begins to be seen as the product of a certain historical context, and no longer as an ideal model to be conceived by urban planners (KOHLSDORF, 1985).

3. Urban planning in Brazil

Planning studies the phenomena or processes of development that can happen, aiming to prevent problems and difficulties. And it can provide the best use of opportunities for the development of a project.

According to Lafer (1973), planning has instruments that point out paths for their full development. Among these are tactics, which deal with short-term challenges, and objectives, which deal with long-term issues. Planning can be applied both in the area administrative as well as in the urban area.

From an administrative perspective, strategic planning, according to Cavenaghi (2009), is a possible action of any enterprise, which aims to obtain competitive advantages, based on a good strategy. While that for Cabanillas (2005), strategic planning represents the definition of goals and objectives that can provide good results. The root etymology of the word strategy states that the term originates from the Greek “stratego”, a combination of stratos and ego, which respectively mean exercise and ego.

In the urbanistic view, planning defines how to change or create a better future for the city, as it establishes long-term projects and goals, medium and short term, identifies competitive advantages, enables a vision integral part of urban reality, guides actions through popular participation and of city hall technicians and seeks administrative modernity (SOUZA, 2008). Furthermore, it is from planning that a set of actions emerges, government-led plans or programs aimed at developing the country, state or municipality, to achieve certain interests. Technicians

and coordinators are responsible for preparing these projects and take control of its implementation and monitoring.

Planning urban space means referring to the future of cities, seeking precautionary measures against problems and difficulties, or even, making better use of possible benefits (VILLAÇA, 1998).

Castells (1983), in his classic work “The Urban Question”, considers the urban space is the product of a given social formation, and therefore states that:

> Urban planning is the intervention of the politician on the specific articulation of the different instances of a social formation at the heart of a collective unit of reproduction of the workforce, with the purpose of ensuring its expanded reproduction, of regulating non-antagonistic contradictions, thus ensuring the interests of social class in the whole of the social formation and the reorganization of the urban system, in order to guarantee the structural reproduction of the dominant mode of production. (CASTELLS, 1983, p. 376-377).

Cities are dynamic and undergo changes in their daily lives. spatial organization, this is because the populations that make it up are in constant interaction with the environment, transforming it to adapt it to their needs. Therefore, managers need to be aware of this movement in order to ensure satisfactory conditions for development sustainable and to reduce social inequality, applying the guidelines of City Statute and Master Plan (MARICATO, 2008).

In the 1990s, Brazilian policy guidelines sought to reduce interurban inequalities and provide public debates for the definition of the guidelines for master plans, as it was found that they problems were shared by the cities such as: the spread across peripheries and conurbation with neighboring municipalities, making actions difficult municipal urban improvement projects; the administrative discontinuity that hindered the implementation of sequenced public policies; pressure from real estate sector through specific changes in zoning, use and land occupation and the need for greater administrative decentralization to promote the democratization of planning (VILLAÇA, 2000).

One of the main difficulties encountered by the regulatory bodies planning to achieve sustainable development of cities is the

existing gap between operational tasks and the process of production of the city (COSTA et al., 2012). Urban management should not be composed purely of urban issues, but also of issues macroeconomic, social and environmental. Many urban plans have few conditions to be applied, because they intend to solve the urban problems from a universalizing vision only transforming the built environment without considering the specificities and aspirations of society, not paying attention to reality and social issues.

The development of a municipality requires control of practices land use planning to keep infrastructure efficient and thus ensure neighborhood development and preserve natural systems seeking to maintain the quality of life of society (PEGARORO, 2010). The association between urban development and quality of life, linked to neighborhood impact study allows the insertion of developments in the urban space valuing not only the land, but mainly the community. It is not enough for the city to grow, the important thing is to know how it is growing and developing, otherwise, there is an accelerated risk of in the future there is no control and solution for the city's social and urban problems (COSTA et al., 2012).

Urban planning developed in Brazil has been manifested by through various modalities such as Zoning, Beautification Plan, Improvement Plan and in recent decades the Master Plan. Others modalities cited by Villaça (1999) are physical territorial planning, planning of new cities, control of land use and occupation and the sectoral planning. Historically, zoning was one of the first tools used in urban planning in some Brazilian cities like Rio de Janeiro and São Paulo, in the mid-19th century, however very rudimentary way.

Urban planning experiences in Brazil have gone through distinct periods with different views and practices. In the current legal framework urban planning in Brazil is dominated by the concept that a city needs to have Master Plan to have some level of urban planning and that the lack of this plan is closely related to the high rates of crime due to lack of urban/community facilities, services and

quality infrastructure. Therefore, the idea prevails that in order to achieve orderly cities, equipped with infrastructure and low rates of violence urban planning, management and effective plans are necessary (VILLAÇA, 2000).

Analyzing the trajectory of urban planning in Brazilian cities, there are few moments when public investments and works in the city move in the same direction. On the one hand, actions and interventions predominate autonomous, public and private, unrelated to planning and plans in force, on the other hand, plans and plans that are not reflected are in force in works and improvements within the territory of the cities. In this way, the Brazilian cities have not achieved orderly, socially inclusive growth and environmentally sustainable because planning without action is so ineffective regarding actions without planning (CYMBALISTA, 2006a).

No matter how much technical quality the Plans have, they alone do not are capable of solving structural urban problems in Brazilian cities such as: floods, occupation of risk areas, traffic jams, absence/inefficiency of public transport, environmental sanitation, housing dignified life for all and urbanization of popular neighborhoods. The discontinuity administrative, and the erratic nature of urban policies, lead to the ineffectiveness of plans and consequently to the disorganization of cities. The lack of investments is a factor that influences the city's disorder and can be more serious than non-compliance with a plan (FELDMAN, 1996).

The development process is an integrated process in the various aspects of a reality. The assumption that social development is resulting from economic development has led to results unsatisfactory, since setting only economic goals leads to transformations limited to the purely economic plane, maintaining the social structure and, consequently, social problems, unchanged (COSTA et al., 2012). The history of Brazilian planning is systematized by Villaça (1999, p. 169 - 244) into five main currents, as shown in Figure 2.

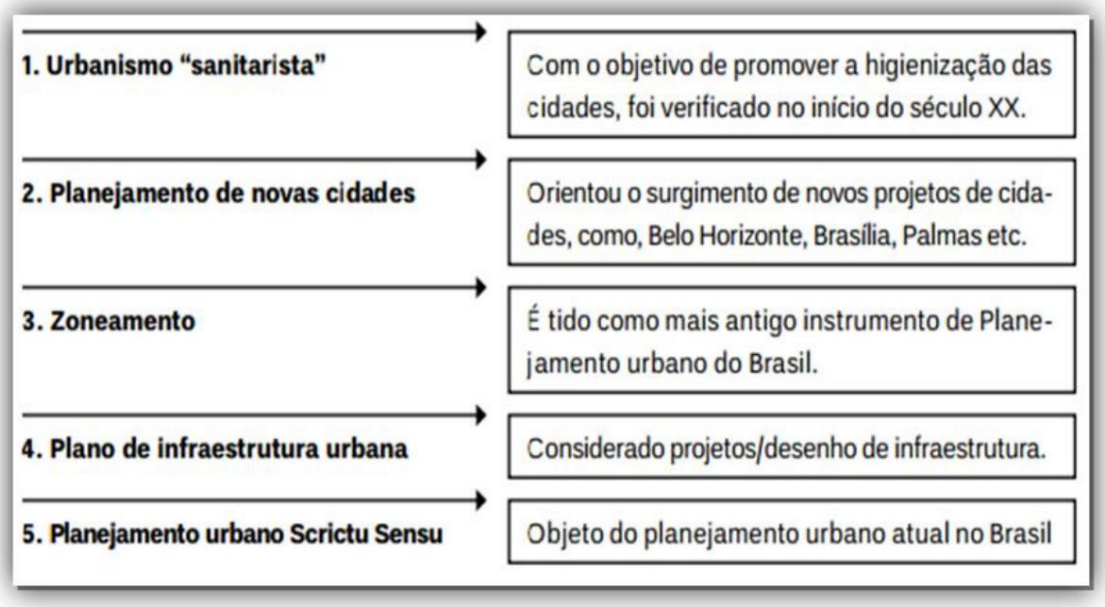

Figure 2- Five main trends in Urban Planning in Brazil as pointed out by Villaça

Source: Villaça, 1999, p. 169.

These five currents occur for periods that can be classified in: Urban planning in the period from the 19th century to 1930, from 1930 to 1990 and from 1990 to the present day. In the corresponding period Between the 19th century and the beginning of the 1930s, the currents of zoning, beautification and improvement plans, urban planning "sanitarian" and infrastructure plans. In the subsequent period, from 1930 until the beginning of 1990, the currents of Infrastructure Plans were active urban, *Scrictu Sensu* Planning and the planning of new cities, with emphasis on the city of Goiânia in 1933, the object of this research and the Plan of Brasilia of 1957.

4. Environmental Planning in Brazil

Postmodern urban planning according to Silva's thinking et al. (2013) is increasingly linked to the environmental process and the respective legal instruments, requiring professionals in the field, multidisciplinary knowledge as well as new forms, methods and applications of concepts that tend to accompany the dynamism of society current Rodrigues et al. (2011) shows that with the intense process of

urbanization, the city began to exercise more economic and social functions blunt, configuring itself as a built environment. The author emphasizes that the environment occupied by the city is in a certain way "artificialized" – due to human production processes – the city has environmental responsibilities.

One of the main objectives of urban planning and development is improving the quality of life of the population, in accordance with the Constitution Federal Law of 1988 (BRAZIL, 1988), in article 225, everyone has the right to a good quality of life. The City Statute (BRAZIL, 2001) reinforces this vision, article 1, sole paragraph, which describes the well-being of the citizens and environmental balance. According to the World Health Organization (WHO) quality of life is directly related to certain indicators such as food conditions, education, income, work, employment, freedom, sanitation, housing, environment, transport, leisure, access to land and health. These indicators are influenced by policy and managers public (DI SARNO, 2004). Dias (2005) highlights that the environmental issue is directly related to the quality of life of the population and must be taken into consideration by city planners.

In the last three decades, environmental planning has emerged as a result of dramatic increase in competition for land, water, energy resources and biological, which generated the need to organize land use, make this use compatible with the protection of threatened environments and improve the quality of life of the population. Environmental planning came as a solution to recurring conflicts between environmental conservation goals environment and technological development (ANTONUCCI et al., 2010).

Almeida et al. (1999) describes that environmental planning needs to be seen with a holistic view, because the decision-making and interaction processes related to the environment are complex and involve a diversity of human activities. For Albano (3013) environmental planning is the essential element for socioeconomic development aimed at the best use of a territorial space through the identification of its strengths and weaknesses, a topic addressed in this research by precariousness of basic sanitation in Brazilian cities and especially in city of Goiania.

With environmental planning it is possible for cities to develop more sustainably as researchers show Canepa (2007) and Franco (2001), that is, in harmony with the issues economic, political, social, cultural and environmental. This idea is reinforced by Maria (2013) and Albano (2013) who highlight that one of the great challenges of environmental planning is being able to link the natural environment to processes intercity through the association between planning and environmental analysis, rational use of natural resources and better quality of life for the population.

According to Dias (2005), it is important to emphasize that there is no sustainable development standard applicable to all cities, so it is It is the responsibility of each managing body to assess the real situation of the municipality in order to establish goals, strategies and solutions for the urban problems and achieve good quality of life indicators such as will be shown later in this study.

In the 1980s the term environmental planning was understood as many as the planning of a region, according to Maria (2013 p. 27) “the planning a location with a view to integrating information and environmental investigations, which foresees actions and standards in an ethical line of development”. In view of this aspect, there are those who are concerned about the packaging of utensils and the consequent impacts of the logics socioeconomic that determines a place of interest. In this way, the author establishes “the principles of environmental planning are directly reflected to the term sustainability and interdisciplinarity, which, as far as it is concerned, a holistic view of analysis for application consequences”. In a way simple, it reinforces that planning must be prepared in one aspect the half-man-society triad that begins to be observed as a single unit (MARIA, 2013).

Environmental planning consists of the communication and integration of principles that make up the environment, as Albano (2013) points out, “the function of determine the relationships between ecological measures and processes of community, from sociocultural needs to activities and interests economic” are essentially fundamental, must have the intention of maintaining the concept of possible integrity of its elements and components. The planning that deals from this point of view, in a general, systematic and

holistic, but has a “process of first identifying the space, and then integrate it”, thus made explicit by Albamo.

Environmental planning has a technique for establishing actions within conjuncture and not particularly. Monitoring is the best service of the physical space and natural resources, energy economy, destination and prioritization of resources for the most pressing and prognostic needs among events. Antonucci et al. (2010) have worked with the concept of resource, which admits the natural element as a source of matter for man. It foresees the action of abundant sectors of society, across its representatives, society having the right and duty to think about the issues that concern it. It is necessary to determine three axes: technical, social and political.

Several planners in the present era speak of the “goal of potentialization of the quality of life of the human being, following as a proposition the maintenance of natural processes and their heterogeneity”. Others argue that the basis of environmental planning should be such that decentralized, with participation of the population *in loco,* with “multiple interlocutors and with maximum participatory activity, being able to introduce the popular councils” (MARIA, 2013, p. 24).

In short, for Albano (2013), environmental planning, at least in Brazil, they do not efficiently describe reality, nor do they reach the ideal to which they advocate. This is a time to reflect on the efficiency of the discourse theoretical, in the same way as on the construction of theory and method. These are, at present, the greatest obstacles and the greatest instigations for this area of knowledge (ALBANO, 2013).

4.1. Environmental Legislation

Brazilian environmental legislation has standards and principles based on in the Federal Constitution (CF) of 1988, and mainly in the National Policy of Environment (PNMA) Law No. 6,938/81. The issue of the environment is addressed especially in the CF, article 225 makes it clear that the environment is a good for the common use of the people, that is, it is an invaluable social wealth that does not can be individualized. Siqueira (2002) emphasizes that these riches can

be concrete (such as forests, rivers, fauna), or immaterial (such as history of a community, culture, religion, rituals, typical foods).

In Brazil, documents of an environmental and naturalist nature can be found even in the time of the Empire, in the first decades of the 1800s, when problems related to impacts from the human activities on natural resources. “The documents written by D. João VI and D. Pedro II who guided the first protection regulations of the environment were written by naturalists, brought to Brazil by Empire”, such as Martius, Mikan, Pohl, Spix, Natterer and Loefgren who were mainly concerned with the protection of forests, “quality and availability of water resources and sanitation of cities” (FELDMAN, 1996).

During the 1950s to 1970s, while Brazil was going through an industrialization process, environmental issues were very trivialized and the government cared little about the pollution of resources natural. However, from the 1960s onwards, the United States grew discourse on environmental impact assessment, planning and environmental management, and after a few years Canada, Japan, New Zealand, Australia and Western Europe also joined the debates environmental issues. Brazil entered these debates after suffering much pressure from international banks that started to require environmental impact studies for project financing, a fact that forced Brazil to create in 1981 the National Environmental Policy (COSTA et al., 2012).

Since the creation of Law 6,938 of 1981 - which instituted the Policy National Environment System (PNMA), created the National Environment System Environment (SISNAMA) and the National Environment Council (CONAMA) - there was integration of bodies and institutions from all spheres of government involved with environmental issues, and the expansion of discussions on the topic to different segments of society (SAULE JÚNIOR, 2004). One of the PNMA's objectives were to reconcile economic and social development with the preservation of the quality of the environment and ecological balance and preservation of environmental resources (BRAZIL, 1981). Before the PNMA, legal guidelines were sectorized, linked to an aspect of the environment such as

preservation of forests, protection of fauna, conservation of water resources or pollutants (Table 1).

Table 1 – Environmental Legislation: Main Legal Documents

TYPE OF STANDARD	DATE	SUBJECT
Decree No. 24,643	10.07.1934	Institutes the Water Code.
Law No. 4,771	09/15/1965	Institutes the New Forest Code.
Law No. 5,197	03.01.1967	Provides for the Protection of Fauna.
Decree-Law No. 221	28.02.1967	Provides for the protection and incentives for fishing and other measures.
Law No. 6,513	12/20/1977	Provides for the creation of Special Areas and places of Tourist Interest: on the inventory for tourist purposes of assets of cultural and natural value.
Law No. 6,938	08/31/1981	Provides for the National Environmental Policy, its related aspects and mechanisms for formulation and application, and contains other provisions.
CONAMA Resolution No. 001	03/23/1986	Establishes guidelines for environmental impact assessment.
CONAMA Resolution No. 303	03/20/2002	Provides parameters, definitions and limits for Permanent Preservation Areas.
Decree No. 4703	21.05.2003	Provides for the National Biological Diversity Program and the National Biodiversity Commission
Law No. 11,105	03/24/2005	Established monitoring systems for the various activities involving genetically modified organisms
Law No. 11,428	12/22/2006	Provides for the use and protection of native vegetation of the Atlantic Forest Biome
Decree No. 6,288	12/6/2007	Consolidates criteria for the ZEE
Law No. 12,305	02.08.2010	Establishes the National Policy on Solid Waste
Law No. 12,651 (Forest Code)	05/25/2012	Provides for the protection of native vegetation, having repealed the Brazilian Forest Code of 1965. Since the 1990s, the proposal to reform the Forest Code has sparked controversy among ruralists and environmentalists.

Source: Prepared by the author based on data from SANTOS dos, RF, p. 22, 2013.

In 1986 another extremely important legal document was approved. importance: CONAMA Resolution 001/86, which created the obligation to environmental impact studies in Brazil for a wide range of activities human rights. This resolution established definitions, responsibilities, criteria basics and general guidelines for the use and implementation of the Assessment

Environmental Impact (BRAZIL, 1986). The resolution not only defined environmental impact environmental, as it also described the companies required to present the Environmental Impact Study (EIA) and created the Reports of Environmental Impact as an expression of the results of the EIA, but with simpler language that is accessible to the general community. Subsequently, CONAMA Resolution 06/1987 emerged, establishing rules for environmental licensing of large-scale works related to generation of electrical energy, establishing prior licensing of these activities for the preparation of the EIA (COSTA et al., 2012).

The definition of environmental impact brought by CONAMA Resolution No. 001 of 1986 is described in article 1 “environmental impact is considered any change in the physical, chemical and biological properties of the environment environment, caused by any form of matter or energy resulting from human activities” (...) (BRAZIL, 1986). Sánchez (2006, p. 30) points out that This definition is more related to the concept of pollution, not the impact environmental, because it mentions “any form of matter or energy” as a determining factor for the “change in physical, chemical or biological aspects of the environment”. The author defines environmental impact as “change in a natural or social process resulting from human action”.

Before Law 6.938/81, the Brazilian government controlled the use of natural resources with the creation of the Water and Mining Code and the first Forest Code Law No. 4771/1965. Concerning the urban environment, a important progress occurred with the Code of 65 which demarcated the areas of preservation and with the enactment of the Land Statute Law No. 6,453/1964 which created conditions for the public authorities to interfere in economic activities that transform the environment, thereby enabling the emergence of new laws environmental (ROLNIK, 2003). The Brazilian Forest Code has undergone several modifications and came into force through Law No. 12,651 of 2012.

4.2. Structure and Instruments of Environmental Planning

In the 1990s, environmental planning was incorporated into municipal master plans and from then on the planning bodies obtained more accurate information about city developments,

quality of life of the population and the environment. But despite the advances, in planning decision process, the interests of engineering and economics are still predominant, there are still great challenges to be overcome to build a plan based on environmental conservation and social quality (CYMBALISTA, 2006).

Environmental planning is organized within a process that involves research, analysis and synthesis. Research aims to gather and organize data for better understanding. Organized data is evaluated for understanding the study, with its successes and hostilities, constituting the analysis phase. The synthesis refers to the application of the knowledge gained for decision making. And to fulfill these stages, in general, planning presents itself as a system, elaborated in phases that evolve gradually: the result of one is the basis or the principles for the development of the next phase as explained by Maria (2013).

Frequent phases in environmental planning are definition of objectives, diagnosis, survey of alternatives and decision making. But in practice, it is not that simple. Although planning starts from a same ideology – to evaluate and point out sustainable paths towards a more sustainable destination appropriate and environmentally balanced. For Souza (2008) this happens because there are different conceptions of environmental planning, different objects and various methodological structures for project development and implementation.

According to Rodriguez (1991), environmental planning consists of five phases that aim at: methodological and operational implementation; analysis and systematization of environmental indicators; diagnosis of the environment with identification of impacts, risks and efficiency of use; preparation of a model of territorial organization; proposal of measures and instrumentation of management mechanisms. Santos (1998) presents a process of planning divided into eight phases: definition of objectives, definition of organizational structure, diagnosis, assessment of successes and conflicts, integration and classification of information, identification of alternatives, selection of alternatives and decision making, guidelines and monitoring. In this proposal, the eighth phase refers to public opinion.

In order for these environmental quality indicators to be achieved, the environmental planning has several instruments, namely: Zoning (environmental, ecological-economic) Environmental Impact Studies (EIA), Plans of Water Basins, Water Resources Management Plan, Environmental Licensing, Solid Waste Management Plan, Sanitation Plans, Management Plans or Environmental Protection Area (APA), Environmental Master Plans, Risk Map, Environmental Education, Grants and Concessions and others.

Zoning consists of the inventory and diagnostic phases, which result in the definition of areas that compartmentalize the different systems environmental components of the space studied. The zones supposedly homogeneous refers to areas identified in a landscape (e.g., hydrographic basins) capable of being delimited in space and scale adopted and that have similar structure and operation. It should be highlight that, in Brazil, zoning is used by the public authorities as legal instrument, rules for the use of national territory (SILVA, 2003).

The City Statute (BRAZIL, 2001) standardized articles 182 and 183 of the Federal Constitution of 1988, on urban policy, and should point out the social function of the city and urban property and what its purpose would be fulfillment. However, this task, as Rolnik (2001) explains, was delegated this function to municipalities, together with other innovative tasks for intervention in the territory, as included and approved in the plans directors, which becomes an urban planning instrument of great value for the urban policy of any city with more than 20,000 inhabitants.

The Master Plan is a basic instrument of development policy and ensuring quality of life in the municipality. Santos (2004) stands out for apply and create planning instruments together with society in order to harmonize land use and occupation, economic and development processes city infrastructure. It plays a relevant role when it identifies the aspirations of the community and creates means to guarantee and encourage participation popular in municipal management processes.

The Master Plan in Fidalgo's view (2003) should be considered as planning instrument when it aims to improve relations between man and nature, when they have clear and well-defined political objectives and goals

consolidated through the proposed guidelines and actions and when preparing a diagnosis concerned with natural resources and man.

It is also important to highlight that when the procedure occurs urbanization over natural systems, without planning and management adequate, with mitigation of failures, prevarication happens strongly environmental, reducing sustainability implementation capabilities of cities. Consequently, sustainable urbanization is one of the greatest instigation of current affairs (CARRERA, 2005 apud CANEPA, 2007).

According to Agenda 21, determined in Rio-92, in chapter 7 (BRAZIL, 1992), on human settlements, there are several areas to be adopted, of which the following can be highlighted: the appropriate bidding for housing all; the progress of land use planning and management of records humans on sustainable bases, with their improvement; and the promotion of planning and management of human settlements in areas susceptible to disasters. This results in the priority of implementing public policies aimed at sustainable urban development.

Environmental licensing is the administrative procedure by which the competent environmental body licenses the location, installation and operation and expansion and/or renovation of enterprises and activities that use environmental resources. It is regulated by laws nº 6.938/81, 9605/98, Decree 3.179/99 and 99.274/91, in addition to several Council resolutions National Environment Agency (CONAMA).

The environmental impact study is an instrument for assessing impact that systematically demonstrates the consequences of the implementation of a project in the environment. The study points out the environmental impacts, economic and social aspects of the project in a given place as well as the compensatory, mitigating and environmental monitoring measures. In addition to the EIA still exists the Neighborhood Impact Study (EIV), Control Plan Environmental and Environmental Management, Traffic Impact Study (EIT) between others. Sánchez (2006, p. 161) states that the EIA “is the most important document in the entire environmental impact assessment process. It is based on where the main decisions regarding environmental viability will be made of a project”.

Water resource plans leave aside the technical perspective restricted and economic, becoming more comprehensive and, using structures similar to environmental aspect planning. For such learning, the river basin is the territorial space of consensus among planners. From this point of view, many names have been given to these studies, such as environmental water resources planning, river basin plan (PBH), water resources planning, river basin management, or master plan for the management of river basins (SANTOS dos, 2013).

It is necessary to note that each name is attributed a concept, linked, especially, the objective, aspect and action expected by the process. In this way, way, it is inevitable to reflect on whether planning is responsible for managing the resource, order the space, perform tasks, manipulate the environment, propose alternative, implement projects, monitor, control events, explore resources associated with water or supplying population centers, among others actions. In this way, taking as an example, management is a pronunciation linked to the act of intervening based on the thought of programmed action and directed to objective. If environmental, planning must promote and ensure protection to natural criteria. However, this reflection is not always made, generating many disagreements (ALMEIDA et al., 1999).

Management plans for conservation units are tools aimed at preserving natural resources, in the same way as the use of these resources for scientific research and for public visitation in conformation of ecotourism and environmental education, incorporated into neither one space pre-established by a legal document. The aim is to ensure the maintaining the potential of natural foundations to the detriment of causes, conservation to the detriment of abusive use or management and the participation of society, in addition to ensuring compliance with legal environmental standards.

The preservation of biodiversity refers to the resolution of conflicts that are important and antecedents for defining procedures planning. Territorial systematization through zoning and establishment of action programs in the form of environmental standards are essential fragments of the plan.

5. Final Considerations

Planning is usually harmonized and idealized within a systemic, integrated and frequent analysis, with proposals for a horizon of a few years.

A crucial expression that planners must observe is that, whether whatever environmental planning instrument is established, always works with a cutout of the reality of space and, consequently, the complexity and the relationships of the environment are simplified and generalized. To Albano (2013) the best performance is in identifying objectives comprehensive and tangible, of the variables that most faithfully affect the main existing relationships and fundamental difficulties in the real and future scenario of planned space.

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REFERENCES

ABIKO, Alex Kenya; ALMEIDA, Marco Antonio Plácido de; BARREIROS, Mario Antonio Ferreira. **Urbanism:** History and Development. São Paulo: EPUSP, 1995.

ALMEIDA, JR, MARQUES, T., MORAES, FER, Bernardo, J. (1999). **Environmental planning:** a path to popular participation and environmental management for our common future – a necessity, a challenge (2nd ed.). Rio de Janeiro: Thex Ed.

ALVES, D.; BELLUZZO W. Infant **mortality and child health in Brazil, Economics & Human Biology,** 2004.

ANTONUCCI, A., Alvim, ATB, Zioni, S., & Kato, VC (2010). **UN-Habitat:** from declarations to commitments. New York: Oxford University Press.

BRAZIL. Participatory Master Plan: guide for preparation by municipalities and citizens. Brasília: Ministry of Cities; Confea, 2007.

BRUMES, Karla Rosário. **Cities:** (Re)Defining Their Roles Throughout History. Paths of Geography, v. 2, n. 3, p. 47-56, March 2001.

CABANILLAS, Rolando Elí Quispe. **Presentation – Strategic planning of cities:** an alternative for the people of South America and developing regions. Campinas – São Paulo, Nov 2005. Website: www.cori.unicamp.br/ct/latinos-apres/seminariointernacional.pppt accessed: November 15, 2015.

CANEPA, C. (2007). **Sustainable cities:** the municipality as a locus of sustainability. São Paulo: RCS Editora. Brazil. Ministry of the Environment (1992). Agenda 21. United Nations Conference on Environment and Development (UNCED). Rio de Janeiro: Ministry of the Environment.

Retrieved from http://www.mma.gov.br/responsabilidadesocioambiental/agenda-21/agenda-21-global. 04 of July of 2015.

CASTELLS, M. (1972). **The urban question.** Rio de Janeiro: Paz e Terra, 1983. 4th Ed.

CAVINATTO, VM **Basic sanitation:** source of health and well-being. São Paulo: Ed. Moderna, 1992.

COSTA, HSM; MENDONÇA, JG **Novelties and permanence in the production of metropolitan space:** a look from Belo Horizonte. In: OLIVEIRA, FL; COSTA, HSM; CARDOSO, AL; VAINER, CB (Org).

Major Metropolitan Projects: Rio de Janeiro and Belo Horizonte. Rio de Janeiro: Letra Capital, 2012.

CYMBALISTA, R. **The recent trajectory of territorial planning in Brazil:** bets and points to observe. Paranaense Development Journal, n. 111, p. 29-45, Jul./Dec. 2006.

DA COSTA, AVF; ; MAMEDE-NEVES, MA **Photographic Images of Teachers:** a visual trajectory of teaching in municipal schools in Rio de Janeiro in the late 19th and early 20th centuries. Rio de Janeiro, 2008, 243 p. Doctoral Thesis – Department of Education, Pontifical Catholic University of Rio de Janeiro.

DI SARNO. DCL **Elements of urban law.** Barueri, SP: Manole, 2004.

FELDMAN, S. São Paulo, **1947-1972:** planning and zoning, Doctoral thesis presented to the Faculty of Architecture and Urbanism of USP, 1996.

FIDALGO, ECC **Criteria for the analysis of environmental methods and indicators used in the diagnostic stage of environmental planning.** Doctoral Thesis – UNICAMP. Campinas, 2003.

GROSTEIN, Marta Dora. **Metropolis and Urban Expansion:** the Persistence of “Unsustainable” Processes. São Paulo Perspec., v.15, n. 1, p. 13-19, Jan./Mar. 2001.

JORGE, Karina Camarneiro. **Urbanism in Imperial Brazil:** Public Health in the City of São Paulo in the 19th Century (Hospitals, Lazarettos and Cemeteries). 2006. 226f. Dissertation (Master's in Urbanism) - Pontifical Catholic University of Campinas - Center for Exact, Environmental and Technological Sciences.

Campinas, 2006.

KOHLSDORF, ME (1985). **Brief history of urban space as a disciplinary field.** In The space of the city – contribution to urban analysis (pp.
15 –72). New York: University of Chicago Press.

LAFER, Betty Mindlin. Planning in Brazil. São Paulo, Ed. Perspective, 1973.

MARIA, YR (2013). **Urban solid waste and public environmental education policies:** the case of Pontal do Paranapanema-SP (Master's dissertation). Universidade do Oeste Paulista, Presidente Prudente.

MARICATO, E. **Brazil, cities:** alternatives for the urban crisis. Petrópolis: Vozes, 2008.

MONTEIRO, Circe Maria Gama. **Planning:** Some Considerations.
Space, Time and Criticism, v. 1, n. 1(2), p.40-54, 2006.

MOTTA, APC; BAUMAN, CM; BRUNES, RR **Homeless population:** contextualization and characterization, Virtual Magazine Textos & Contextos, nº 4, Dec. 1994.

PEGARORO, DB **The institutional implementation of the Neighborhood Impact Study and the consolidated practices of other impact studies.**
Dissertation (master's degree). Postgraduate Program in Urban and Regional Planning, Federal University of Rio Grande do Sul, 2010.

RODRIGUES, LPOS; FILHO, NBB **Control of urban activities and climate change:** focus on the future metropolitan region of São Luís do Maranhão. In: Research Notebook, Federal University of Maranhão, São Luís, v. 18, n. 1, Jan/Apr. 2011, 14p. Available at: < http://pppg.ufma.br/cadernodepesquisa/upload/files/Artigo%203%2822%29.pdf

>. Accessed on: December 22, 2015.

RODRIGUEZ, JM **Apuntes de Geography of Landscapes.** Havana: Imprenta Andre Voisin, 1991.

ROLNIK, R. (2001). **City Statute – an instrument for cities that dream of growing in justice and beauty.** In: N. Saule Jr., & R. Rolnik (Eds.), City Statute: new horizons for urban reform (Pólis Notebook, n. 4, p. 5-9). São Paulo: Pólis. Retrieved on February 6, 2016, from www.polis.org.br/obras/arquivo_92.pdf.

ROSEN, George: **A History of Public Health.** São Paulo: Ed. UNESP, 1994. p. 223.

SANTOS dos, RF, **Construction of scenarios in a GIS environment to evaluate land use changes induced by hydroelectric plants in the agricultural region of Andradina (SP).** Master's Dissertation – UNICAMP. Campinas, 2013.

SIQUEIRA, DJ **Environmental Impact Study – EIA/RIMA.** (Handout). Londrina: Federation of Engineering and Architecture Associations of Paraná /CREA PR, 2002.

SOUZA, Marcelo Lopes de. **Changing the City:** A Critical Introduction to Urban Planning and Management. Rio de Janeiro: Bertrand Brasil, 2008.

SOUZA, Marcelo Lopez de. **Changing the city:** a critical introduction to urban planning and management. 5th edition, Rio de Janeiro – RJ: Bertrand Brasil, 2008a.

VIGIL, Percy Acuña. **La Ciudad en La EdadModerna.** Lima (Peru): UNI/FAUA, 2003.

VILLAÇA A contribution to the history of urban planning in Brazil. In: DÉAK C.; SCHIFFER, SR (Org.). The Urbanization Process in Brazil. São Paulo: FUPAM/EDUSP, 1999. p. 169-244.

VILLAÇA, F. Interurban space in Brazil. São Paulo: Studio Nobel, 1998.

VILLAÇA. **Perspectives on Urban Planning in Brazil Today.** In: II Seminar on Brazilian Cities - Desires and Possibilities, organized by the City Hall of Campo Grande, MS. Campo Grande. 2000. Available at: <http://www.flaviovillaca.arq.br/pdf/campo_gde.pdf>. Accessed on: Accessed on: April 13, 2016.