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The legal interfaces of urban planning in risk areas of Aracaju, SE

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SUMMARY

The objective of this study was to analyze the National Policy of Civil Protection and Defense – PNPDEC (Law No. 12,608/2012) and Urban Policy as urban planning instruments for disaster risk reduction at the municipal level, with the purpose of understanding the various interactions among land use characteristics, public policies, and disaster risks. The research consisted of a literature review, based on data collection from existing legislation, as well as official publications produced by government agencies and bodies in support of Civil Protection and Defense, as well as at the municipal level. The municipality of Aracaju (SE) was considered as a case study, particularly the Jabotiana neighborhood, which, due to the intensification of urbanization in the last two decades (2000-2020), has been experiencing a serious socio-environmental problem that, coupled with the inefficiency of sanitation, has favored the occurrence of floods. It is noted that the most vulnerable segment of the population suffers the consequences of such events with greater intensity, due to their lower capacity to cope with disasters compared to the more affluent population, since the latter may inhabit the safer parts of the city, less exposed to risks. These conditions result from the lack of restriction through the Urban Development Master Plan (PDDU), which is outdated and incompatible with the urban reality of Aracaju, and from irregular and precarious occupation in Risk Areas and Permanent Preservation Areas.

KEYWORDS: Master Plan; Urban Policy; Protection and Civil Defense.

1 INTRODUCTION

Urban planning aims to minimize the negative consequences of urbanization and ensure quality of life for all citizens. However, often urban processes materialize more rapidly than planning, resulting, for example, in the occupation of areas that should not be inhabited. The residential location of the population in risk areas constitutes one of the most serious spatial challenges that cities have been facing in recent years.

Making cities more sustainable and just is essential for the survival of the planet and humanity. Therefore, topics related to urban life such as urban land use and occupation planning, urban mobility, solid waste management, sanitation, as well as increasing resilience in risk areas, are among the Sustainable Development Goals (SDGs) for 2030 of the United Nations (UN), specifically under SDG 11.

To this end, the target of SDG 11 is, by 2030, to ensure access for all to safe, adequate, and affordable housing, including access to basic services and urbanization of slums. In addition to the need for decent housing, other targets of SDG 11 relate to urban living. This includes reducing water-related disasters, with a focus on protecting the poor and vulnerable; supporting positive economic, social, and environmental relations between urban areas, reinforcing national and regional development planning; as well as implementing integrated policies and plans for climate change mitigation and adaptation, and resilience to disasters.

In Brazil, according to data from the National Household Sample Survey of 2015, 84.72% of the population lives in urban areas. This is a result of what has been happening in the last 70 years, during which the growth of Brazilian cities occurred mainly due to migration from rural areas, driven by agricultural modernization and increased job opportunities associated with industrialization, the consequences of which entail the configuration of an unequal space.

In this regard, Abramo (2009) observes the production of the Latin American city under the following logics: market, state, and need. In the logic of need, the process occurs:

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occupation – self-construction – self-urbanization. This process results in the consolidation of informal settlements. The informal land market, established by the logic of need and the market, is the sum of urban informality and economic informality. In other words, the concentration of the population in cities has not always been the target of adequate planning processes linked to housing policies that serve lower income brackets. Coupled with the lack of adequate housing supply, relaxation of laws, and lack of enforcement, this burgeoning urban expansion leads to irregular occupation and degradation of fragile environmental areas, housing and land deficits, infrastructure bottlenecks (access to public transportation, basic sanitation, security, health, among others), unemployment, and serious environmental problems such as lack of soil permeability, floods, pollution of air and water, and climate change, resulting in lack of quality and dignified living conditions for many, with socio-spatial exclusion and segregation.

In January 2011, in the Mountainous Region of Rio de Janeiro, one of the largest disasters ever recorded in Brazil occurred, resulting from intense rains that triggered large-scale geodynamic and hydrological processes, causing 912 deaths and leaving more than 45,000 people displaced, characterized as the largest disaster recorded in Brazil (BRAZIL, 2012). This event led to changes regarding risk and disaster management in Brazil. The country defined new policies and has been altering the way urban planning is perceived. Following this event, new laws and urban guidelines were created aiming to prevent and minimize socio-economic damages and losses resulting from disasters.

In this sense, in 2012, the Federal Government established throughout the federation, through Law 12,608, the National Policy of Protection and Civil Defense (PNPDEC), which encompasses prevention, mitigation, preparation, response, and recovery actions aimed at reducing disaster risks and Civil Protection and Defense of the Union, States, Federal District, and Municipalities, in order to integrate with territorial planning policies, urban development, health, environment, climate change, water resources management, geology, infrastructure, education, science and technology, and other sectoral policies, with a view to promoting sustainable development.

The main objectives of the National Policy of Protection and Civil Defense are to reduce disaster risks, provide assistance and support to populations affected by disasters, and resiliently recover affected areas. Also, part of the actions guided by the National Policy of Protection and Civil Defense is the incorporation of civil protection and defense actions for disaster risk reduction into territorial management and planning, promoting greater urban space organization, thus avoiding occupation in areas susceptible to disasters, identifying and monitoring occupied areas with susceptibility and vulnerability aspects continuously to prevent their expansion and enable the development of resilient cities and sustainable urbanization processes.

This policy establishes responsibilities at the federal, state, and local (municipal) levels for various specific activities, but municipalities are responsible for incorporating civil protection and defense actions into municipal planning. Thus, the PNPDEC is directly linked to Urban Policy as a way of thinking and planning the city, so that they have synergy in reducing disaster risks. Urban Policy, mainly through the Urban Development Master Plan (PDDU), begins to define risk areas and to inhibit occupation and allotment of these areas, being a

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necessary initiative to prevent and minimize disasters and promote the creation of more resilient cities.

Risks have always been present in the minds of men and trigger concerns for human societies since the dawn of humanity. Beck (2011) argues that risks are not a modern invention, citing when Christopher Columbus set out in search of new lands and continents, he took risks. The risks of that time were personal risks, associated with daring and adventure, and not situations of global threat and possible self-destruction of Earth's life. According to Mendonça and Buffon (2021), whenever an individual or a given social group feels or perceives to be in danger under some threat to their physical, psychological, or cultural security, they are in a condition of risk, even if they have not conceived it as such. Still, demonstrating its undeniable omnipresence, for Almeida (2011), risk is present at the moment of conception of human life, and can be considered as something inherent to life itself.

In the context of disasters, risk is the potential for loss of lives, damage, or destruction of assets that could occur in a system, society, or community within a specific period of time, probabilistically determined as a function of hazard, exposure, vulnerability, and capacity (UNISDR, 2017). According to the Glossary of Civil Defense (BRAZIL, 2020), produced by the National Civil Defense Secretariat/Ministry of National Integration, there are five definitions of risk, where the first brings an interpretation that seeks to relate the probability of an event to its consequences: 1. Measure of potential damage or economic loss expressed in terms of the statistical probability of occurrence and the intensity or magnitude of foreseeable consequences. It is an interpretation that coincides with the definition of the United Nations International Strategy for Disaster Reduction (UNISDR), which states that risk is the combination of the probability of occurrence of an event with its negative consequences.

This concept of risk reflects the concept of hazardous events and disasters as a result of continuously present risk conditions. Disaster risk comprises different types of potential losses that are often difficult to quantify. However, with knowledge of predominant hazards and patterns of population and socioeconomic development, disaster risks can be assessed and mapped, at least in broad terms. It is important to consider the social and economic contexts in which disaster risks occur and that people do not necessarily share the same perceptions of risk and its underlying risk factors.

The Master Plan of a city is the basic instrument of urban development policy, established by Federal Law No. 10,257/2001 known as the City Statute. Based on it, the executive should guide its actions through participatory planning and management, seeking to maximize the social function of urban land in order to provide urban quality of life equitably. The Master Plan is mandatory for all municipalities with more than twenty thousand inhabitants and regardless of the number of inhabitants for municipalities that belong to the metropolitan area or are in tourist interest areas or inserted in the influence area of large impact enterprises.

Environmental or, additionally, included in environmentally sensitive areas. Furthermore, according to the City Statute, it is essential that the Master Plan be revised every ten years.

Along with urban policy instruments, such as the Land Use and Occupation Law and Risk Management Plan, the Master Plan can prevent situations resulting from urban problems (pollution, floods, irregular occupations, slum formation, violence) by providing mechanisms to

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promote a balance in city growth. Through it, the municipality can map areas at risk of landslides and floods, and establish restrictions for some urban interventions that could worsen pre-existing conditions.

2 OBJECTIVES

The objective of this study is to analyze the National Policy of Civil Protection and Defense – PNPDEC (Law No. 12,608/2012) and Urban Policy as urban planning instruments for disaster risk reduction at the municipal level, with the purpose of understanding the various interactions among land use characteristics, public policies, and disaster risks. To this end, the municipality of Aracaju (SE) was considered as a case study, which, due to the intensification of urbanization in the last two decades (2000-2020), has been experiencing a serious socio-environmental problem that, coupled with the inefficiency of sanitation, has favored occurrences of floods, canal overflows, and streets filled with water and sewage.

3 ANALYSIS METHOD

The most vulnerable segment of the population suffers the consequences of such events with greater intensity, due to their lower capacity to cope with disasters compared to the population of the upper and middle classes, which are less vulnerable, as they inhabit the safer part of the city, less exposed to risks. Castelhano et al. (2021) point out that the severity of the socio-environmental problem is perceived as a result of the inefficiency of public administration regarding planning for the disorderly use and occupation of land. In this sense, these conditions result from the lack of restriction through the Urban Development Master Plan, which is outdated and incompatible with the urban reality of Aracaju, and from irregular and precarious occupation in Risk Areas and Permanent Preservation Areas.

The study is based on a literature review, based on the National Policy of Civil Protection and Defense (Law No. 12,608/2012), Urban Policy (Articles 182 and 183 of the Federal Constitution 1988), the City Statute (Law No. 10,257/2001), and the Urban Land Parceling Law (Law No. 6,766/79), as well as analysis of the Urban Development Master Plan (2000) of Aracaju, focusing on urban expansion and macro-zoning, the State Civil Protection and Defense Plan (2021) of Sergipe, and the Mapping of areas at risk of natural disasters in Aracaju – Sergipe (SEMDEC, 2020).

3.1 The National Policy of Civil Protection and Defense and Urban Policy in the city of Aracaju

Law No. 12,608, of April 10, 2012, instituted the National Policy of Civil Protection and Defense (PNPDEC), in an attempt to minimize the impacts of disasters in Brazil. For this purpose, it amends important laws at the municipal level, such as the City Statute and the Urban Land Parceling Law (Figure 1).

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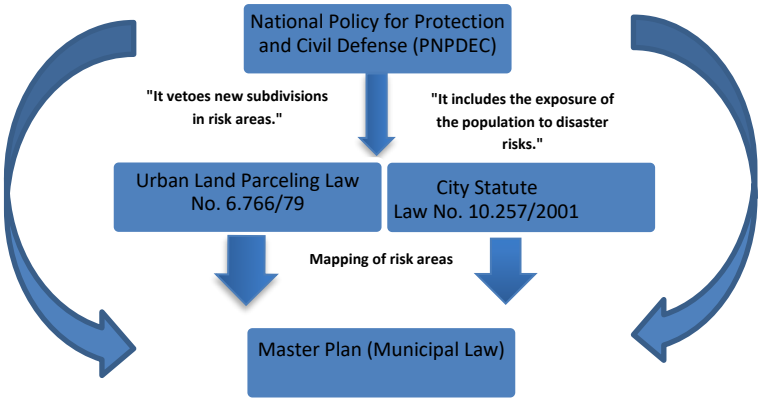
Figure 1 - Interfaces of the National Policy for Protection and Civil Defense, Urban Policy, and Urban Land Parceling.



Source: Developed by the authors (2023).

With the aim of reducing disaster risks in the country, Federal Law No. 12,608/2012 (PNPDEC) presents a series of norms and guidelines for civil protection and defense actions, which directly impact urban planning activities. Among its objectives, it is noteworthy to highlight: the incorporation of disaster risk reduction and civil protection and defense actions among the elements of territorial management; the promotion of the development of resilient cities and sustainable urbanization processes; the control of occupation in environmentally vulnerable and risk areas, and the promotion of the relocation of the population residing in these areas (Art. 5).

One of the means of action of the National Policy of Civil Protection and Defense (PNPDEC - Federal Law No. 12,608/2012) for disaster risk reduction, under the competence of the Union, is to establish and maintain the National Register of Municipalities with areas susceptible to major landslides, flash floods, or related geological or hydrological processes. This legislation also provides, in its article 6, that it is the responsibility of the Union to establish and maintain an information and disaster monitoring system, and to produce alerts about the possibility of disaster occurrences.

It is the Municipality's responsibility, among others, to: incorporate civil protection and defense actions into municipal planning; identify and map disaster risk areas; promote oversight of risk areas and prohibit new occupations in these areas (Art. 8). According to a survey conducted by the Municipal Secretariat of Social Defense and Citizenship of Aracaju (SEMDEC, 2020), the municipality currently has 45 flood risk areas, totaling 3,267 properties located in risk areas, and 10,637 people impacted by floods. The Jabotiana neighborhood stands out, as shown in figure 2, mapped with 14 flood risk areas, with two areas classified as low risk, five areas as medium risk, five areas as high risk, and two areas as very high risk, totaling 14 areas, with 626 households and 3660 people at risk.

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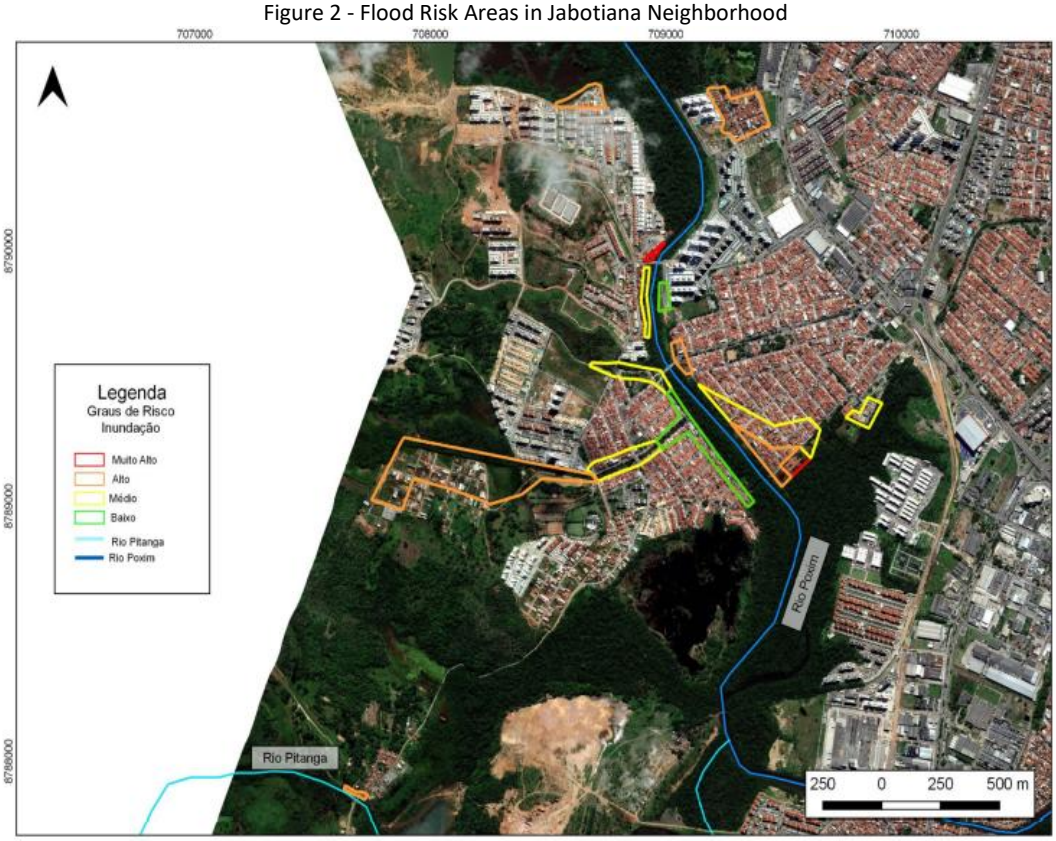
Figure 2 - Flood Risk Areas in Jabotiana Neighborhood



Source: SEMDEC, 2020.

In this survey, SEMDEC suggests interventions such as the relocation of the resident population, containment, and monitoring to prevent new constructions in the area, as well as lectures and pamphlets on environmental awareness regarding risk areas, improper disposal of solid waste and debris on the banks and streets.

The Jabotiana neighborhood, mapped with larger flood areas, represents, according to França (2019), one of the most evident expansion vectors of Aracaju, as can be seen in Figure 3, despite presenting fragmented occupation and offering incipient basic sanitation conditions, especially drainage, combined with precarious road infrastructure.

Figure 3 - Images of Jabotiana Neighborhood.

Source: Authors (04/2022).

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The drainage system in the city of Aracaju has been implemented over the years with piecemeal solutions and inadequate planning, according to the Integrated Basic Sanitation Plan of Aracaju - PISBA (2015). As a result, the system presents problems of undersizing, improper use (solid waste and sewage disposal), and lack of maintenance. These factors are exacerbated by the low permeability rate of 5% according to the Master Plan (2000), coupled with deforestation of green areas and improper occupations of locations influenced by water (mangroves, valley bottoms, secondary riverbeds, and hillsides).

It is important to note that PISBA (2015) identifies four axes (water, sewage, solid waste, and drainage), highlighting that among these, the main problem to be addressed is drainage and stormwater management. Therefore, it is necessary to analyze the risks associated with human occupation and flooding in Aracaju as a way to contribute to a fairer, more equitable, sustainable, and resilient city, where actions transform cities into safer places to protect and improve people's lives, leaving no one behind.

Thus, the city of Aracaju is subject to changes in its legislation, as Federal Law No. 12,608/12 imposes new guidelines on urban planning and land use for municipalities with risk areas, aiming to prevent and minimize the impacts caused by disasters in Brazil.

The Legislation provides that municipalities must: develop mapping containing areas susceptible to major landslides, flash floods, or related geological or hydrological processes; elaborate a Contingency Plan for Civil Protection and Defense; develop a plan for the implementation of works and services to reduce disaster risk; create mechanisms for control and inspection to prevent building in areas susceptible to these disasters; elaborate a geotechnical suitability map for urbanization, establishing urban guidelines focused on the safety of new land divisions (Art.22). The law also prohibits the granting of licenses or construction permits in risk areas indicated as non-buildable in the master plan or legislation derived from it (Art.23).

Regardless, as a general consequence of the requirement for planning to avoid and reduce disaster risks, all Master Plans must incorporate measures in this regard, considering local peculiarities. For municipalities without a Master Plan, this should be stipulated in the legislation.

Regarding urban land division, Federal Law No. 12,608/12, in its Art. 27, determines that municipalities included in the National Register of Municipalities with areas susceptible to disasters will only have subdivision projects approved if they meet the requirements set forth in the geotechnical suitability map for urbanization. The Law also prohibits the approval of subdivision and parceling projects in risk areas defined as non-buildable in the Master Plan or legislation derived from it.

Regarding risk prevention and urban planning, Federal Law No. 6,766/79 (Urban Land Parceling Law), already emphasizes in its Art. 3 that land division for urban purposes will only be admitted in urban areas, urban expansion areas, or areas of specific urbanization, as defined by the master plan or approved by municipal law. The same article complements that land parceling will not be allowed under the following conditions:

> [...] I - In marshy lands and those subject to flooding, before measures are taken to ensure water drainage;
> II - In lands that have been filled with material harmful to public health without being previously sanitized;

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> III - In lands with a slope equal to or greater than 30% (thirty percent), unless specific requirements of the competent authorities are met;
> IV - In lands where geological conditions do not advise construction;
> V - In ecological preservation areas or in those where pollution prevents tolerable sanitary conditions until correction. (BRAZIL, 1979).

The Master Plan is the main instrument for orderly urban planning used to direct the growth of cities. Although it is a technical document, it should be the result of a political discussion about the city, incorporating political, social, economic, cultural, physical-territorial, and environmental elements in its proposals. It should guide the actions of the government to reconcile the interests of the population and ensure the fair distribution of the benefits of urbanization, the principles of urban reform, the right to the city and citizenship, and democratic city management.

According to the City Statute, in its Article 4, the process of elaborating the master plan and overseeing its implementation, the municipal Legislative and Executive branches shall ensure:

> [...] I – the promotion of public hearings and debates with the participation of the population and representative associations of various community segments;
> II – the publicity of the documents and information produced;
> III - the access of any interested party to the documents and information produced. (BRAZIL, 2001).

In this sense, the Master Plan's main function is to ensure general well-being, preserve the environment, promote quality of life for the population, and ensure sustainable urban development for the city. The participation of the population in the elaboration of the Master Plan is of utmost importance, aiming at identifying, studying, and improving various aspects.

Like any type of planning, urban planning guides us to the future. According to Souza (2004, p. 15), "[...] it's a way for men to try to predict the evolution of a phenomenon or process and, based on this knowledge, try to prevent problems and difficulties, or even better take advantage of possible benefits." With effective planning (and not serving the dominant classes – as has been witnessed, en masse, in Brazil), there is a greater chance for the State to fulfill its role as a representative and in service to the various layers of the population, in each Brazilian city.

4 RESULTS

4.1 Urban planning instruments in the city of Aracaju

In Aracaju, Municipal Complementary Law No. 42, of October 4, 2000, establishes the Urban Development Master Plan and creates the Urban Planning and Management system with the aim of ensuring the right to the city, fulfilling the social function of property, fair distribution of public services, infrastructure, and urban equipment, zoning of land use and occupation, and production of urban space, including expansion areas, and preserving environmental and cultural heritage.

The Urban Development Master Plan is a strategic instrument of Urban Development Policy, guiding the action of public and private agents in the production and management of

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urban space (Art. 2). In this sense, the plan highlights its aim to guide the management of urban development in Aracaju, through the coordination and complementarity of actions by municipal, state, and federal administrations, as well as to improve the standard of living of the urban population, particularly regarding poverty alleviation and actions for leisure, education, health, housing, and public services, in order to reduce inequalities affecting different income groups (Art. 3).

To achieve these objectives, guidelines are established to intensify land occupation in proportion to the expansion of infrastructure support, accessibility conditions, and support for the physical environment; provide incentives for the production of social interest housing, including the allocation of specific areas for this purpose; establish building regulations that preserve the thermal balance and natural healthiness of urban streets and blocks, ensuring the environmental quality of the built environment; define areas that should be subject to special treatment based on environmental fragility, scenic, historical-cultural value, and social interest; and establish guidelines for the environmental development of preservation and protection areas, including notable landscapes, parks, squares, and the like.

Due to disorderly occupation and a culture of environmental unsustainability, many rivers in urban areas in Aracaju are currently canalized, silted, and settled by human occupation. The increasingly impermeable soil, accumulation of solid waste, and nonexistent riparian vegetation greatly contribute to the process of flooding and inundation. The low-income population, considered more vulnerable, occupy areas along watercourses because, in the production of urban space, these areas do not have significant market value due to environmental restrictions, inadequate housing, and basic services and infrastructure that are often lacking, thereby increasing the risk of flooding (vulnerability).

Human settlements in risk areas are negative consequences of the phenomenon of urban concentration and, primarily, of the lack/insufficiency of control and regulation over land use, which also results in the lack of integration and coordination among the various sectoral policies that, in their own way, regulate the matter. (MENEGAT, 2004). The occupation of these areas, which for a variety of reasons, whether environmental, cultural, or regulatory, should not be occupied, thus constitutes irregular occupations.

According to Aracaju's Urban Development Master Plan (2000), Risk Areas are considered those that are actually or potentially subject to hosting or being affected by natural or induced geological phenomena, as well as those that have already suffered harmful effects from soil degradation, through extraction or predatory urbanization processes. (Article 31).

For planning and administrative purposes, the areas defined in the previous article are classified as follows:

> I – Potential rink areas – incidents in unoccupied land;
> II – Effective risk areas – incidents in land that has already been divided, occupied or not, and has undergone significant modifications to the natural landscape, resulting from harmful actions by humans or natural phenomena. (ARACAJU, 2000).

Thus, according to Article 35, the use and occupation of risk areas must comply with the following guidelines:

> I – Adoption of mitigating measures, in accordance with the nature and intensity of the declared rink;

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> II – Allocation that excludes densification in areas where risk conditions cannot be mitigated;
> III – Settlement compatible with technically identified risk situations. (ARACAJU, 2000).

In the case of Aracaju, França (1999) comments that the city has been marked by the intensification of urbanization, worsening the housing situation and social inequality, pointing to the lack of planning as one of the causes for the emergence of slums, occupations in environmentally risky areas, violence, and environmental pollution.

More recently, França (2019, p.93) points out that today, "[...] Aracaju is expanding, driven by real estate production, through the verticalization of neighborhoods located from south to west," especially in areas with low infrastructure supply, as well as the increase in precarious settlements towards environmental areas.

Thus, faced with this process of dispersed and fragmented expansion that the capital has been experiencing, according to França (2019), the sustainability process has become challenging. Araújo (2006, p.41) clarifies the environmental complexity that, "[...] settled in an area of intense environmental fragility, the city of Aracaju expanded due to the landfilling of lagoons, mangroves, hills, and dunes, resulting in a high process of environmental degradation throughout its historical evolution."

It is important to note that this process of irregular occupation in environmental areas has been highlighted since the foundation of the city of Aracaju. Known as the city of waters and landfills, Aracaju was built with significant environmental impact, due to the fragility of its natural conditions (mangroves, dunes, lagoons, and restingas), with emphasis on the landfilling in the expansion of the Treze de Julho neighborhood and the Coroa do Meio project (FALCON; FRANÇA, 2005; FRANÇA, 2019). In addition to landfills, the city has been marked by the dismantling of dunes and degradation of the mangrove, siltation of rivers, and channeling of streams used for the drainage of rainwater and sewage, compromising the life of these water bodies and the urban environment.

This municipal law should have undergone an initial review to comply with the guidelines brought by the City Statute, which came into force in 2001, aiming to regulate the growth and implementation of urban centers, through the proper distribution of the population and urban interest activities, in order to prevent and correct distortions in the city's growth, with the purpose of preventing risks and disasters resulting from urban problems, and promoting balance in the city's growth. From it, the municipality can map areas at risk of landslides and floods and establish restrictions for some urban interventions that could worsen pre-existing conditions.

According to Alves (2018), the sanctions provided for in §4, of art. 182, of the Federal Constitution of 1988 were never implemented by the Municipal Government of Aracaju, nor was there even a delimitation of the areas of application of each of them in the current Master Plan for Urban Development (2000), which deprives the municipality of Aracaju of using the main coercive means to preserve the usefulness of urban space, thus preventing real estate speculation and the concentration of urban voids, as well as the disorderly growth of the city, with the peripheralization of the lower classes to regions far from the capital.

In 2019, IBGE (2020) estimated that 53,203 households in Sergipe, located in so-called subnormal agglomerates, which are forms of irregular occupation of land belonging to

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others (public or private), for housing purposes in urban areas and, in general, characterized by an irregular urban pattern, lack of essential public services, and location in areas with occupation restrictions. The Metropolitan Region of Aracaju concentrates 92.8% of the households in subnormal agglomerates in the state, and Aracaju estimated that more than half of these households, 33,187, house populations in more precarious socioeconomic, sanitation, and housing conditions (Figure 4).

Figure 4 - Subnormal Agglomerates in Aracaju/SE.

Source: Authors (04/2022).

The city of Aracaju, between the late 20th century and the early 21st century, underwent an expansion without accompanying socio-environmental planning. Recently, the city's neighborhoods have been divided and experiencing a shift away from the city center, which can be referred to as the Urban Zone and the Urban Expansion Zone. This form of division has favored certain sectors of the city, strengthening real estate speculation, increasing the number of residential condominiums, and consequently raising the standard of living. Therefore, and also due to population growth and housing deficits, families with lower purchasing power did not remain in these areas, having to occupy areas lacking the said legal urban planning, significantly lacking infrastructure, such as hillsides, permanent preservation areas, and riverbanks. This is the case of the Jabotiana neighborhood, which despite having an urban organization determined by housing complexes, its urbanization process began through urban agglomerations and the construction of the first housing complexes, such as Sol Nascente, Juscelino Kubitschek, and Santa Lúcia.

Legislation was of great importance for directing urban expansion in the city of Aracaju at the end of the 20th century, encouraging verticalization in neighborhoods of greater interest to the real estate market. However, it was not sufficient to control informal occupations; the urban space in this neighborhood is characterized in a fragmented and segregated manner, with occupations on environmentally protected areas such as mangroves and lagoons, as well as areas considered at risk according to the Mapping of the Municipal Secretariat of Social Defense and Citizenship of Aracaju (SEMDEC, 2020).

The road interventions connecting this area with other neighborhoods have increasingly accelerated the occupation of these spaces, without infrastructure and with fragile environmental conditions (FRANÇA, 2019). Socio-environmental conflicts arise, such as flooding during rainy periods (Figure 5), degradation of environmentally fragile areas, neighborhoods with high rates of impermeability, and irregular occupations.

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Figure 5 - Floods in Jabotiana neighborhood.

Source: SEMDEC (2019).

Therefore, the inefficiency of urban planning and management, the fragility of the application of municipal legislation, and the absence of infrastructure and basic sanitation bring serious damages as previously mentioned. Therefore, it is of great importance that human occupation in urban areas occurs in a controlled manner, and more sustainable measures are adopted to minimize damages. Additionally, human occupations need to be aligned with other public policies, such as the Aracaju Urban Development Master Plan, which is currently outdated.

However, there have not yet been effective actions or changes in municipal legislation, as envisioned by the City Statute and the National Policy for Protection and Civil Defense (PNPDEC). Currently, a new Master Plan is being developed. It is important that the new document meets current guidelines for risk reduction, as Aracaju has dozens of mapped risk areas with many people exposed to risk in the municipality.

5 CONCLUSION

After 12 years of the largest disaster recorded in Brazil, which led to changes in risk and disaster management in the country, instituting the National Policy for Protection and Civil Defense (PNPDEC) by Federal Law No. 12,608/2012, the Serrana Region of Rio de Janeiro experienced a scenario of catastrophe and destruction caused by landslides, floods, and flash floods. According to the National Center for Monitoring and Alerts of Natural Disasters (CEMADEN), it was the second largest storm in the history of Petrópolis.

It is important to highlight that the impact resulting from major contemporary problems affects not only the inhabitants of these areas but also burdens the entire city's population with social and economic costs, whether it be removal/resettlement, when necessary, control or removal of risk, or the impact that irregularity causes on the environment, basic sanitation, and public services in general.

The National Policy for Protection and Civil Defense, combined with housing, urban planning, and land partition policies, especially with the Master Plan, plays a fundamental role in municipal planning and growth, being an important tool for disaster risk reduction on a local scale, contributing to the construction of resilient cities, minimizing the damages and losses caused by disasters in the country.

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Despite all the legislation, the repetition of tragedies in Brazil resulting from extreme natural events stems from the inefficiency of urban planning and management, and the fragility of the application of municipal legislation. In other words, it is the result of the lack of public policies that guarantee safe housing for citizens, the absence of preventive investment, and the lack of prompt action in the face of alerts issued by responsible agencies.

The fragmentation and dispersal of space, due to the lack of infrastructure and public services, as also occurs in the Jabotiana neighborhood, exacerbating serious environmental obstacles, should be subject to urgent analysis in municipal management urban planning processes.

It verifies how the absence or inadequacy of urban planning in Aracaju/SE, linked to interventions carried out to seek a better quality of life for residents and better conditions of urban functions – housing, circulation, leisure, and work, has impacted environmental, social, economic, cultural, and technological issues, contributing to (un)sustainability.

It is essential to analyze the urban socio-environmental problems that areas at risk represent for the city and its population, focusing on the multiple dimensions of sustainability, as a way to contribute to a fairer, more equitable, sustainable, and resilient city, where actions transform cities into safer places, to protect and improve people's lives, leaving no one behind.

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