Fostering Spatial Justice through Water Management:

Neighborhood Plan for Vila Cristiana, Bauru / Brazil

Politecnico di Torino

Master thesis in Architecture for the Sustainability Design

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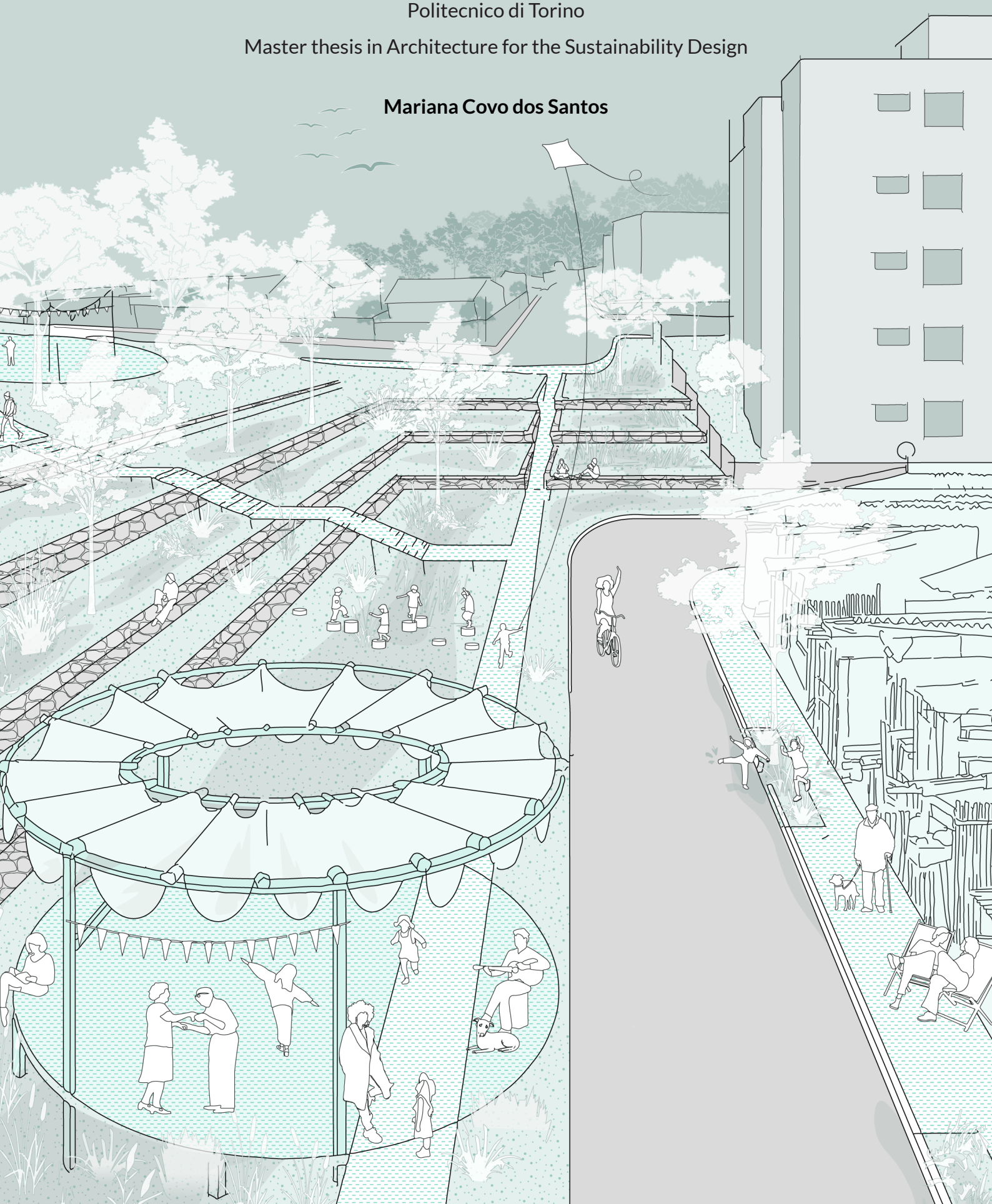

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With heartfelt appreciation,

Mariana Covo dos Santos
Politecnico di Torino,
September, 2023.

Abstract

The thesis critically examines the notion of spatial justice within the complex structure of the Brazilian context, which is marked by sharp social, economic and ethnic-racial disparities that are strongly reflected in the urban spaces of its cities. The research delves into this discourse using Vila Cristiana as its focal point, a settlement located on the outskirts of Bauru, a city in the center-west of the state of São Paulo, Brazil.

Vila Cristiana is a community made up of approximately 180 families, who were relocated from the former "Nova Cana" settlement where they had been living informally since 2013. Although the municipal authorities granted them regularized land in 2019, the community faces significant challenges arising from the unsatisfactory conditions of their new location, marked by hazards such as health risks, landslides, water contamination, inadequate sewage systems and susceptibility to torrential rain and flooding. These difficulties are intrinsically linked to difficulties in accessing land and entrenched socio-spatial disparities. The community's struggle transcends the mere formal recognition of their land; it extends to guaranteeing their right to a safe habitat, access to resources and equal opportunities in the urban environment. Their demand encapsulates the essence of the right to the city, echoing their yearning for spatial justice.

The central aim of the thesis is to build a Neighborhood Plan adapted to mitigate the various water-related challenges particular to Vila Cristiana. This local planning instrument, outlined by the Master Plan of the Municipality of São Paulo (PDE - Law 13.050/14), empowers residents with a political tool on a smaller territorial scale - the Neighborhood - delimited by physical, cultural and socioeconomic characteristics. The plan was meticulously designed to exemplify the potential for advancing socio-spatial justice, guaranteeing residents' equitable access to essential public goods, encompassing a healthy environment, natural resources, safety and urban infrastructure.

Methodologically, the study employs a technical analysis of territorial elements to decipher specific challenges arising from geographical arrangement and urban spatiality. This comprehensive analysis yields thematic maps that delineate natural drainage patterns, geomorphological attributes, vegetation systems, and land use. Subsequently, an interactive workshop will be conducted with community members to capture their needs and aspirations - an essential participatory principle to drive the spatial justice agenda in practice.

Keywords: Spatial justice, informal settlement, Neighborhood plan, water management, community engagement

Summary

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1 INTRODUCTION

In the face of pressing global issues like poverty, exploitation, climate safety, the concept of spatial justice emerges as a fundamental approach to tackle these challenges at the local level. Spatial justice recognizes that sustainable development cannot be achieved without taking into account the unique needs and contexts of different places and communities.

This is a crucial aspect that underpins the discourse on sustainability. To ensure the availability of resources for future generations (BRUNDTLAND, 1987), it is necessary to focus on equitable and fair distribution among people in the present generation, which is currently lacking. The equitable allocation of the burdens and benefits of human activities lies at the heart of sustainability, as justice serves to validate decisions and garner greater compliance and support for policies that foster sustainability (ROCCO; NEWTON, 2021).

Roberto Rocco, Associate Professor of Spatial Planning & Strategy from TU Delft, emphasizes the significance of social justice as a critical challenge in today's world, as inequality erodes social fabric, trust in institutions, and democracy. In the realm of cities, growing inequality, limited access to public goods, and socio-spatial fragmentation pose threats to sustainability across social, economic, and environmental dimensions. However, social sustainability remains relatively unexplored in sustainability studies, making it imperative for spatial planning and design to align with both sustainability and social justice movements (ROCCO, 2021).

In the context of cities, growing inequality, socio-spatial fragmentation, and limited access to public goods pose threats to sustainability when considering its three vital dimensions: social, economic, and environmental (DILLARD, DUJON, & KING, 2008). Spatial planning and design need to align with two interconnected yet distinct social movements: sustainability and social justice (CAMPBELL, 2013) to remain relevant. The European Union has taken significant strides in this direction through its European Green Deal (FETTING, C., 2020), which embraces the concept of just transitions as a central princi-

ple for policy-making.

This work delves into the concept of spatial justice from a Global South perspective, with a particular focus on the Brazilian context and urban planning policies. The study aims to explore how spatial injustice perpetuates informal and inadequate living spaces in many communities, highlighting the potential and role of urban planning in rectifying these disparities.

One of the key aspects emphasized in this study is the importance of participatory processes in urban planning. By involving communities in decision-making and design, spatial justice seeks to empower residents to shape their living environments, ensuring that their voices are heard and their needs are met.

Moreover, the study acknowledges the significant role of water in spatial justice. Access to clean water, proper drainage systems, and ecological preservation of water bodies are critical elements in fostering equitable and sustainable development. Water plays a central role in shaping communities and their livelihoods, and integrating water management into spatial justice efforts is essential for long-term resilience.

In the second part of this thesis, this theoretical approach is applied to develop a just neighborhood plan for Vila Cristiana. By using Vila Cristiana as a case study, the plan seeks to understand the unique challenges faced by this community and explore how spatial justice principles can be applied to address their specific needs.

The settlement known as ”Nova Canaã” emerged in 2013, initially comprising 300 families. By the end of 2018, it had grown to accommodate 670 families. The Ministry of Public Prosecution intervened, leading to the development of a Term of Conduct Adjustment (TAC) that allowed the community to remain in the area for a limited time while the municipality addressed their needs. In 2019, a portion of the community was relocated, establishing the new settlement of ”Vila Cristiana.” Since then, the community has persistently advocated for regularization with the municipality (MAGALHÃES, Kelly Cristina et al., 2022).

However, the community faces significant challenges in its new geographical location. These challenges include hazards and health risks, landslides, water pollution, poor sewage systems, and vulnerability to heavy rainfalls and floods. These issues are considered consequences of land access difficulties and socio-spatial inequalities.

The objective of the thesis is to develop a Neighborhood plan (Plano de Bairro) that provides strategies for addressing the specific water-related challenges found in Vila Cristiana. The Neighborhood plan is a local planning instrument, first enforced by Sao Paulo Municipality Master Plan (SÃO PAULO, 2004), guaranteeing the residents a political tool in the minor territorial scale: The Neighborhood, spatially delimited by physical, cultural and socioeconomic characteristics.

The plan aims to demonstrate a possibility to promote socio-spatial justice, by guaranteeing the residents fair access to public goods, such as a healthy environment, natural resources, safety and urban infrastructure. By understanding that the space arrangement can shape and reinforce social inequalities experienced by different groups of people (often based on factors such as race, class, and ethnicity) the research seeks to examine who are those people and what kind of spatial inequalities do they experience in the case of Vila Cristiana´s community.

The methodology involves a technical analysis of the area’s landscape elements to identify specific challenges related to its geographical position and urban spatiality. This analysis will produce thematic maps describing the natural drainage pattern, geomorphological characteristics, vegetation systems, and land occupation. Additionally, workshops will be conducted with community members to understand their needs and aspirations, understanding that participation is a key-principle for promoting spatial justice.

Through this comprehensive analysis, the project aims to demonstrate the power of spatial justice in creating more equitable and resilient communities. By understanding the intricate relationships between urban planning, participatory processes, and water management, we endeavor to shape a

neighborhood plan that not only addresses the local challenges of Vila Cristiana but also serves as an inspiration for other communities facing similar issues.

The work also acknowledges the limits of this academic work on providing solutions for such complex situations, and approaches the final project as one contribution to the pool of possibilities to address local challenges, also a platform to represent desires and wishes for a more democratic and fair city. According to Soja (SOJA, E.,2009), Spatial Justice transcends mere distribution and procedures, possessing the power for insurgent action capable of challenging and reshaping the existing status quo, by reimagining it.

In summary, this thesis highlights the significance of spatial justice in the context of global anthropocene challenges, by taking action at a local level. By examining the theoretical basis and applying it to a real-world case study, it aims to contribute to a better understanding of how spatial justice can be a driving force in shaping a more sustainable and just future for communities around the world.

2 THEORETICAL CONTEXT

The upcoming chapter will delve into the concept of Spatial Justice, drawing insights from prominent geographers, sociologists, and philosophers such as David Harvey, Edward Soja, and Henri Lefebvre. It aims to explore how urban spaces have been planned or unplanned in the Brazilian south-east region, specifically focusing on the city of Bauru/SP as the study case, to characterize spatial segregation within marginalized communities in urban centers.

In the second chapter of this section, the focus will be on examining the political urban planning tools in Brazil, considering their potentialities and limitations across different planning scales, with a specific emphasis on the neighborhood scale. Additionally, the research will investigate the role of water in shaping urban spaces and producing hydrological justice in the context of the study.

Lastly, the chapter will explore successful reference cases of participatory planning at the local level, aiming to learn from their experiences and demonstrate the possibilities of planning just spaces. These cases will provide valuable insights into the effective implementation of participative approaches in urban planning.

2.1. SPATIAL JUSTICE

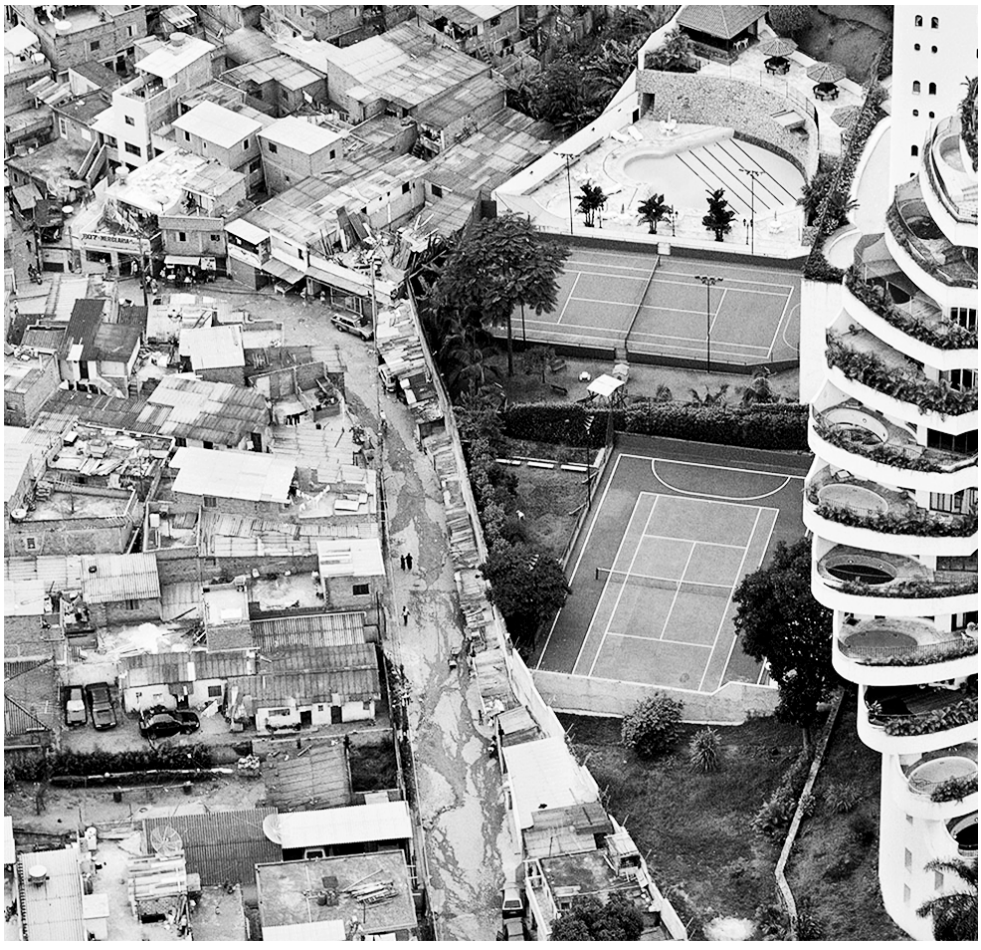


Figure 01. Paraisópolis, São Paulo. Ph. Tuca Vieira. 2004

Definition

Defining spatial justice has been a challenge, with most existing definitions relying on anthropocentric, distribution-focused, and locality-based understandings. However, in the context of the Anthropocene, a more nuanced definition is required. It should consider the posthuman nature of spatial justice, recognizing it as an emergent property grounded in complex assemblages. Spatial justice should also be understood in relation to excess, affect, and constant revision, rather than as a fixed destination. (WATSON, S. (Ed.). 2020)

Early conceptions of spatial justice primarily focused on the fair distribution of resources and services, aiming to achieve equity. These conceptions also emphasized the importance of procedural justice, which seeks to empower individuals through fair decision-making processes in urban planning and development. Distributional aspects of spatial justice highlights the equal distribution of spatial resources and accessibility as crucial for establishing a more just society, but not only, it is also related to financial, environmental and social benefits and burdens issued from urban development (RAWLS, John, 1971). Procedural dimensions of spatial justice, on the other hand, emphasizes inclusive planning and design processes that grant authority and representation to all stakeholders.

The exploration of spatial issues within discussions of justice dates back to the 1960s, but G.H. Pirie was the first to use the term ”spatial justice” in 1983 (PIRIE, G. H., 1983), calling for the inclusion of spatial considerations in discussions of social justice. Spatial justice connects social justice concerns to the spatial realm, recognizing that both justice and injustice are visibly manifested through the interaction between society and space (WATSON, S. (Ed.). 2020).

The concept of spatial justice gained prominence through the works of Henri Lefebvre, Edward Soja, and David Harvey, who all emphasized the importance of spatial approach in achieving social justice. They argued that social justice cannot be achieved

“Spatial justice links social justice concerns to space; it is based on the understanding that both justice and injustice are visible in space as manifestations of the interaction between society and space”

(Schwa, Eva. 2018)

in an abstract sense since social relations occur within specific spatial contexts. Therefore, spatial justice and social justice are intertwined because spatial relationships both shape and are shaped by social justice.

For Lefebvre, the spatial notion of justice took place in his notion of ”Right to the city” , defining it as a “demand .... [for] a transformed and renewed access to urban life” (LEFEBVRE, 2001)”.

David Harvey popularized the concept of ”right to the city” introduced by Lefebvre, and advocated for a production-side approach to justice, emphasizing the structural inequalities stemming from global and local capital-labor relations. This Marxist urban geography perspective highlights the role of spatial dynamics in creating spatial injustices (HARVEY, D. 2008).

The right to the city, then is the right to ‘urban life, to renewed centrality, to places of encounter and exchange, to life rhythms and time uses, enabling the full and complete usage of these moments and places’ (LEFEBVRE, 2001). This right should be extended to all, and Lefebvre lists ‘workers, immigrants, […] the “marginal” and even […] the “privileged” who should have access to the privileged space of the city center, instead of being stuck in their respective “ghettos”’ (LEFEBVRE, 2001). This perspective of understanding spatial justice has practical implications for urban planning, design, and interventions aimed at addressing social inequality in cities.

The definition of spatial justice is given by Edward Soja as “an intentional and focused emphasis on the spatial or geographical aspects of justice and injustice” and the “the fair and equitable distribution in space of socially valued resources and the opportunities to use them” (SOJA, 2009). In this way, spatial justice connects the issues of social justice taking place in space. It recognizes that justice and injustice are visibly expressed in space, reflecting the interplay between society and its spatial dimensions.

The concept of spatial justice holds particular relevance when examining the challenges posed by informal settlements in Latin America. These settlements, often characterized by inadequate housing, limited access to basic services, and precarious living conditions, sum up the spatial manifestations of social injustice (SCHWAB, E., 2018). By analyzing informal settlements through the lens of spatial justice, it becomes evident that these marginalized communities bear the brunt of spatial inequality, where unequal power relations, exclusionary urban policies, and economic disparities converge to perpetuate social exclusion.

Informal settlements in Latin America emerge from self-help and self-build initiatives of the residents but are also influenced by state interventions. As a result, these settlements represent a combination of informal and formal socio-spatial strategies (SCHWAB, E., 2018).

Distributive spatial justice, or equity, is often cited as a key motivation for government interventions in informal settlements. However, a significant body of literature raises concerns about whether claims for justice in these fragmented and unjust environments can be adequately addressed solely through arguments of distributive justice alone (SCHWAB, E., 2018). Scholars question the effectiveness of distributive justice in resolving the complex challenges of informal settlements.

Procedural aspects of spatial justice encompass the processes, mechanisms, and strategies employed to ensure that planning, development, and decision-making related to land use, urban design, and infrastructure development are inclusive, participatory, and transparent. In essence, procedural aspects of spatial justice emphasize the importance of involving all stakeholders, including marginalized and vulnerable communities, in the decision-making process to enable their voices and perspectives to be heard. This involves promoting democratic practices, engaging in community consultation, and fostering collaborative partnerships between government authorities, civil society, and residents to co-create solutions that address the needs and aspirations of diverse populations. By incorporating procedural aspects of spatial justice into urban planning and governance, societies can work towards creating more just, inclusive, and sustainable spaces where

every individual has the opportunity to thrive and lead a fulfilling life, regardless of their socioeconomic background or cultural identity.

Historically, views on informality tended to denigrate both the physical characteristics of informal settlements and the urban poor more broadly. These views revolved around binary and marginalizing discourses, such as formal/informal, legal/illegal, and planned/unplanned. However, more recent literature challenges these beliefs by portraying informal settlements as sources of inspiration for planners and designers worldwide. They are seen as manifestations of cultural resistance, alternative ”autonomous geographies,” and sources of new urban paradigms based on unique relationships between people and place, alternative forms of social organization, and a human-scale urbanity (SCHWAB, E., 2018).

The geographer Ann Varley warns against overly heroic narratives of informality, arguing that they can perpetuate binary distinctions between the formal and informal, overlooking the deprivation and struggles faced by residents of informal settlements. Varley suggests that such narratives may ”sugarcoat” the realities of informal settlements. It is important to avoid discursively homogenizing Latin American settlements, which overlooks their material diversity and the diverse lived experiences of their residents. While acknowledging the problematic aspects, this perspective challenges the traditional association of informality with poverty, marginality, and crime, and recognizes it as a distinct way of living and organizing communities (SCHWAB, E., 2018).

Spatial segregation in brazilian context

The struggles of social inequalities in Brazil are as old as the country itself and it is rooted in the first ways of appropriation of the land by dominant classes, once colonizers. During the colonial period, the Portuguese crown granted vast tracts of land to wealthy landowners, who used slave labor to cultivate crops such as sugar and coffee. This created a highly unequal distribution of land ownership, with indigenous and Afro-Brazilian populations pushed to the margins of society (RIBEIRO, Darcy 2006). .

Maricato (2011) associates the origins of illegal occupations with the peripheral capitalist condition rooted in a history of slavery, marked by profound social inequalities in the territory and a lack of control over land use and occupation (MARICATO, 2011). The Land Law, established in 1850, and the abolition of slavery in 1888, along with the longstanding social inequalities that have always characterized the country, are the most significant historical aspects that led to the emergence of favelas in Brazil.

> "The Law of the Lands, from 1850, stipulated that all procedures for obtaining land would be governed in the form of duly registered purchase, recognition of the owner is disconnected from the condition of effective occupation and is established through the mediation of money, becoming a commodity" (CARRIL, 2006).

The abolition of slavery was not accompanied by policies to integrate newly freed black individuals into society, and "the reproduction of their livelihoods was conditioned by forms of super-exploitation, and housing options were the tenements and favelas, as they had no possibility of producing their means of subsistence or their housing" (CARRIL, 2006). Especially in the capitals, favelas became racialized spaces, predominantly inhabited by black populations, described by the author as "urban quilombos."

The Proclamation of the Republic in 1889 did nothing to change the monopoly of land in Brazil. The first decades of the 20th century were marked by the phenomenon of "coronelismo" and the political and local power of the large landowners, who dominated the land and the lives of the peasants. The mass of former slaves, now free and landless workers, expanded with the arrival of European immigrants who came to work on Brazilian plantations and found themselves subjected to exploitation of their labour by the landowners. This legacy of inequality and exclusion persisted through the centuries, with a large concentration of land ownership in the hands of a small number of large landowners, and by the mid-twentieth century, Brazil was facing a severe housing crisis.

Socio-spatial segregation has marked the urbanization process in Brazil throughout the 20th century, driven by the national-developmental model in the latter half of this period. This characteristic was not unique to the Brazilian reality, as it became common among underdeveloped countries in Latin America that experienced different developmental patterns, reflecting the rapid late industrialization of this cycle.

> "The urban reforms carried out in several Brazilian cities at the end of the 19th century and the beginning of the 20th century laid the foundations for a modern urbanism "in the style" of the periphery. The legal bases for a capitalist real estate market were established, while the population excluded from this process was expelled to the hills and the outskirts of the city. Manaus, Belém, Porto Alegre, Curitiba, Santos, Recife, São Paulo and, above all, Rio de Janeiro are cities that underwent changes in this period that combined environmental sanitation, beautification and territorial segregation."
>
> (Translated from MARICATO, E. 2000).

In the middle of the 20th century, the Peasant Leagues emerged - associations of rural workers initially created in the state of Pernambuco, but which would become present in other states of the federation, confer-

ring a national character to the land access struggle in the countryside. The leagues exercised intense activity during the 1950s and 1960s, providing legal and medical assistance to their members, organizing meetings and national congresses to debate the agrarian question, besides carrying out massive occupations. Their actions unified the land struggle, until then more specific and localized, into a larger agenda that would involve all of society: an agrarian reform project that would address peasant demands as a whole (GOV.BR, 2021).

The second half of the 20th century in Brazil was characterized by rapid and intense urbanization, with the urban population increasing from 44.7% of the total population in 1960 to 55.9% in 1970 and 81.2% in 2000. These numbers become even more significant when considering the population growth that accompanied this transformation, as the urban population went from 31 million in 1960 to 137 million in 1996 (IPEA, 2016).

During this period, academic studies shed light on the precarious housing conditions and exploitative labor practices that characterized the urban context, particularly in relation to the dictatorship that ruled Brazil from 1964 to 1985. These studies emphasized the correlation between the logic of accumulation driving Brazilian development and the depletion of the workforce (KOWARICK, 1979).

The military takeover in 1964, amplified the agrarian question in Brazil. The peasant leagues were harshly repressed and the movement disbanded. However, the struggle for land would never cease and the military period was responsible for the greatest land concentration in Brazil up to that time. The government's option for capitalist agriculture, with the modernization and industrialization of the agrarian sector, was responsible for the great number of rural workers expropriated and expelled from the countryside. As a direct consequence of the rural land issue, the increase and expansion of urban conflicts throughout the national territory.

Following the end of the dictatorship, the causes of land access and housing rights were revived within the National Movement for Urban Reform (MNRU). The MNRU played a crucial role in proposing an amendment that resulted in the inclusion of the Urban Reform chapter in the 1988 Constitution, recognizing the social function of property, the right to adequate housing, and the importance of land reform (MARICATO, E., 2000).

Notably, in the late 1970´s, the Landless Rural Workers Movement (Movimento dos Trabalhadores Rurais sem Terra - MST) has emerged as a powerful force, fighting for the housing rights of low-income families and advocating for land access for the most vulnerable populations. MST has become a vital link between marginalized communities excluded from social housing systems and urban life. Their strategy revolves around occupying public lands to expedite the regularization of land use and occupancy. These settlements are formed through the expropriation of certain unproductive large estates, where plots or lots are allocated to families of farmers or rural workers who do not have the financial means to acquire property (FERNANDES, B. M., 2008). These occupations not only create immediate opportunities for land regularization but also act as catalysts for further occupancy, championing the fundamental right to adequate housing.

According to the Ministry of Agrarian Development, an "assentamento", translated as settlement, is a set of agricultural units established by the National Institute for Colonization and Agrarian Reform (Incra) on a rural property. The settlements are formed through the expropriation of certain unproductive large estates, where plots or lots are allocated to families of farmers or rural workers who do not have the financial means to acquire property. The eligible families must reside on and manage the plot, engaging in various productive activities. These settlements result from struggles and demands by social movements and individuals seeking housing and work, representing a political gesture by those who are excluded from the urban fabric.

Within this context, the occupation of settlements by socially vulnerable groups, particularly the Black and peripheral population, deserves special attention. The histo-

ry of land access struggles has resulted in a society marked by socio-spatial segregation, with distinct divisions between the "places of the rich" and the "places of the poor" (ROLNIK, 2015). The legacies of colonisation and slavery are evident in the spatiality of the country's territory: the "places of the poor" are often defined in racial terms, with the black population representing a significant portion of the socially excluded. Black and brown people constitute the largest social group present in peripheral areas and on the streets, according to the Brazilian Institute of Geography and Statistics (IBGE, 2010), seven out of ten Brazilians living in housing with some kind of inadequacy are black. It is worth pointing out that, according to the Institute, among the inadequacies are the absence of exclusive bathrooms, the use of non-durable materials in the external walls, excessive overcrowding (more than three residents per room), the excessive weight of the rent and the lack of documentation of the property. This segregation also results in a disparity of rights, as the State's assistance is lacking for these marginalized communities (CARNEIRO, 2011).

The division between the center and periphery is inseparable from the historical role that urban land has played in the production of urban space and territorial configuration, becoming the subject of intense disputes among different social groups. While it has gained more visibility in capitals and large metropolitan regions, the complex processes of urbanization and industrialization have not unfolded uniformly, but have varied over time and across different territories. Thus, since the 1960s and 1970s, the interior of São Paulo has been a privileged stage for various policies aimed at expanding the national economy through industrial deconcentration and the internalization of development.

The historical process of urbanization incorporated the logic and rationality of capitalism, and thus the basis of urban space production was established through private land ownership (CARLOS, 2018). In this context, urbanized land becomes a fundamental element and object of interest for different social groups. Economic groups interested in urban land for their narrow economic activities are involved in this dispute. On the other hand, marginalized populations view it as a basic condition for their livelihood, particularly as a place for housing (HARVEY, 1982). As a reflection of this contradiction, "the struggle that takes place in the city [...] is the very expression of class struggle over urban space" (MARICATO, 2004). This aspect is reinforced by late industrialization with low wages, where the lack of wage regulation separates housing costs from the reproduction costs of the workforce.

In light of this and the absence of effective public housing policies capable of addressing the needs of vulnerable social segments (BONDUKI, 2003), access to housing has occurred informally and outside the capitalist relations of production (MARICATO, 2002). The alternative found was the proliferation of slums and illegal settlements on the outskirts of cities, outside the priority areas of interest for the market and real estate speculation. Selective municipal and state investments in urban management resulted in urban infrastructure radiating from the center to the periphery, becoming increasingly scarce as the radius increased (SINGER, 1982; MARICATO, 2002). According to Marques (2005), these spaces combine three elements: housing areas for the workforce, state absence, and housing and urban precariousness.

The issue of inadequate housing and the lack of inclusive public policies regarding housing access has gained significant attention, sparking nationwide debates. The absence of sufficient government intervention has paved the way for the rise of social movements advocating for housing rights, reshaping the urban landscapes of medial cities like Bauru in the western regions of São Paulo.

In summary, "the spatial distribution of the population reflects the social condition of city dwellers, mirroring the prevailing segregation in economic relations at the spatial level" (KOWARICK, 1979). Not coincidentally, since the second half of the 20th century, these same areas have been chosen for the implementation of social housing projects, whether initiated by public or private initi-

atives, further reinforcing the ongoing socio-spatial segregation process. In this regard, land acquisition, urbanization processes, and industrialization have played an important role in the organization and territorial configuration of Brazilian cities since the last century (SURIANO; RESCHILIAN, 2012).

In the case of São Paulo, Caldeira (2003) identified three distinct patterns of urban spatial organization and spatial segregation throughout its urbanization. The first extends from the late 19th century until 1940 when there was a concentrated city organizational model that allowed different social groups to live in the same area but separated socially, economically, and by housing patterns. The next pattern, between the 1940s and 1980s, is characterized by center-periphery division, where different social groups became clearly separated as the middle and upper-income populations concentrated in consolidated urban centers, while the lower-income population settled in precarious peripheries. The third pattern, characterized by fortified enclaves and ”walled cities,” has been emerging since the 1980s and overlaps with the historical pattern, as high-income segments have also begun occupying the peripheries. According to Caldeira (2003), this latest cycle bears some resemblance to the first period analyzed, as these groups, despite being physically close, are now separated by walls and security technologies, preventing them from sharing common areas. However, housing patterns and access to infrastructure remain differentiating factors among various social groups.

The consequences of these processes are still felt today, directly influencing the formation of common urban problems in our cities, such as uneven spatial occupation, income concentration, selective access to services and basic infrastructure, population density, social vulnerability indicators , and so on. However, among the various urban and social issues that have arisen or intensified as a result of urbanization and industrialization processes, the ”housing problem as a social issue” (MARICATO, 2004) emerges as the most challenging and widespread. While the literature points out that these processes have been more intense in the capital city of São Paulo, they have also been occurring, albeit on a smaller scale, in medium-sized cities in the interior of São Paulo (GOULART, et al., 2017).

In the case of Bauru, it is possible to observe settlements in dispersed areas that have intensified the horizontal sprawl towards the edges of the cities, aggressive action of the real estate market, inequalities in the supply of urban infrastructure (sanitation, mobility, etc.), lax urban legislation and public developments of low architectural quality, (sanitation, mobility, etc.), lax urban legislation, and public developments of low architectural quality.

Urban development in Bauru/SP

As a reflection of the structure shaped by the ”coffee complex,” an economic and social system developed around the production and exportation of coffee during the late 19th and early 20th centuries, the interior of São Paulo state - where the city of Bauru is located- was one of the few sets of interconnected intermediate centers (NEGRI, 1996). As a consequence of these factors, industrial deconcentration primarily occurred in the medium-sized cities of the state's interior, establishing urban agglomerations with different connections and spatialities (GOULART, et al., 2017). Negri (1996) notes that while this dynamic represented greater possibilities for economic development in these cities, along with industrial activity, metropolitan problems also migrated to these urban centers. Consequently, all cities impacted by industrialization started to exhibit urban issues that were previously exclusive to the metropolis, such as suburbanization, urban sprawl, and socio-spatial segregation (CANO, 2011).

It is precisely within this characterization that cities like Bauru, an important region in the interior of the state, fit. Bauru belongs to the Bauru Administrative Region (RAB), located in the central-western part of the state, classified as a Regional Capital Level C, due to its ”regional influence area, being referred to as a destination for a set of activities by a large number of municipalities” (IBGE, 2008), thus holding great relevance in the urban network it belongs to.

Under these conditions, ”despite premature urbanisation, the Bauru territory remained relatively continuous until the mid-20th century, as the centre was confined by the physical barriers of the railway, the Bauru River (north), the streams, Água das Flores (east) and Água da Ressaca (west)” (MAIA, 2019). In the period 1950-1960 were recorded the highest rates of population growth in the city so far (DAMASCENO, 2021), followed by the emergence of popular settlements in areas away from the central axis, devoid of any infrastructure. The reasons leading to urban dispersion involved both the dynamics of the real estate market and the permissiveness of municipal authorities and norms: However, despite not having an economy founded on industrial dynamics, Bauru began experiencing peripheral urban expansion, accompanied by deficiencies in public services (GOULART, et al., 2017).

> The high cost of land within the Patrimony caused most of the new residents to look for land outside the urban perimeter, as it was cheaper due to the lack of improvements and the difficulties of access. These agglomerations gave rise to new neighbourhoods, designed at the convenience of the landowner to make the best use of the land. The public power passively watched the random division of land, without any policy to control urban expansion. The first Codes of Posturas were extremely liberal in relation to the land parceling, releasing the land developer from any obligation, requiring only the presentation of the plan for approval and regulation in relation to the width of the streets (translated from RIGITANO, 2008).

Since 1940, the Demographic Census data indicated that Bauru's urban population had already surpassed the rural population. This can be explained by the industry's participation in the local economy, which reached nearly 80% by the end of the 1930s but started losing its importance from 1950 onwards, making way for the service sector (IPEA-Data). However, between 1950 and 1970, this process became more evident, directly impacting population growth rates and urban expansion, particularly with an increasing tendency toward dispersion and segregation (KRAUSE, A. B. P.; Goulart, J. O, 2023). Catelan (2008) states that, in line with the political and economic transformations of the period, activities focused on industrial development led to an influx of workers to the city, thereby increasing the demand for housing, services, infrastructure, etc. Moreover, the popularization of the automobile motivated major changes in the urban fabric of cities in the

country and the state of São Paulo, with the construction of major road transport axes. Incidentally, precisely in Avallone's government (1956-1959) was inaugurated "the first major work of rainwater drainage that corresponded to the blocks between Rua Marcondes Salgados and Avenida Rodrigues Alves (...); on it was built one of the most important avenues of the city - the Avenida Nações Unidas, in the East-West direction" (CATELAN, 2008).

During the authoritarian regime - a period when the Federal Housing and Urbanism Service (SERFHAU) was also set up - the first Bauru Municipal Master Plan was drawn up by the Urbanism Research and Study Centre of the Faculty of Architecture and Urbanism of the University of São Paulo (FAUUSP) in 1967, to comply with the "Organic Law for Municipalities in the State of São Paulo, [State] Law no. 9.025 of 28/12/1965, which required them to obtain state resources" (GHIRARDELLO, 2020). This proposal "also incorporated the idea of industry as fundamental to the development of the interior, proposing the implementation of an Industrial Neighborhood in the city, including a series of incentives" (GOULART, J.O. et al. , 2016). Such incentives involved the offer of urbanized land and exemption of municipal taxes.

The proposals and guidelines of this first Master Plan consisted in the implementation of improvements of the road system from the central area of a "civic centre" (common equipment at the time to house the administrative headquarters of the municipality), and the use of valley bottom areas for the construction of leisure and recreation areas (GHIRARDELLO, 2020). The final version of the Bauru Master Plan, with the diagnosis and the other proposals, was only officially handed over by the technical team to Mayor Nuno de Assis on 14 December 1968, however, its "generic guidelines and a zoning of urban land use" were never actually implemented" (RIGITANO, 2008).

According to Maia (2019), the period between 1960 and 1970 represented the peak of the city's urban expansion in various directions, resulting in the creation of fragmented and discontinuous areas. This dynamic reveals the adoption of a dispersed and segregating model of territorial occupation radiating from the center to the periphery, as seen in large urban centers. Subsequent to the suburbanization, followed by the emergence of slums since the 1980s, the urban space in Bauru became characterized by such phenomena. As early as 1987, there were already four slum clusters with an estimated population of three thousand people, accounting for approximately 1.5% of the total population (KRAUSE, A. B. P.; GOULART, J. O, 2023). In 2011, according to the diagnosis of the Local Plan for Social Interest Housing (PLHIS), the municipality had 22 precarious settlements with an estimated population of 2,423 families. However, by 2020, the number had increased to 34 precarious settlements (SEPLAN, 2020a). Furthermore, the process of suburbanization was reinforced by the implementation of social interest housing projects, which tended to create new peripheral fronts of expansion and increase density in existing areas.

Since the second half of the 20th century, the municipality's Annual Geometric Growth Rates have increased significantly, reaching their peak between 1980 and 1991, surpassing state and national averages. However, similar to what happened in major urban centers and metropolises, the territory was characterized by "increasing dispersion of nuclei and poles, interspersed with voids, with a reduction in occupancy density" (REIS, 2006), resulting in territories of concentration and dispersion intensified by the spread of fragmented and segregated spaces, leading to the transformation of the city's physical and social structure.

From the 1990s to 2010, the public housing production decreased dramatically, in contrast with the proliferation of high-standard developments and gated communities in the south-central region of the city (DAMASCENO, B. C; GOULART, J. O., 2020b), and this decrease in the supply of social housing is directly related to the period of institutional vacuum since the extinction of the BNH in 1986, with the fiscal adjustment agenda that prevailed in the country and with the liberalizing orientation of economic policies that prevailed in the Collor (1990-1992) and

FHC (1995-2002) governments, which negatively impacted investments in social housing policies. At the local level, urban expansion directed to the urban fringes was consolidated in the period 1990-2010. The expansion of the urban area and the consequent displacement of the most vulnerable population led to the formation of a peripheral arc in the city of Bauru. In contrast, the South region remains the main location for closed condominiums in the city (GOULART, J. O., et al. 2016).

Simultaneously with the slowdown in housing production for the low-income strata, another phenomenon emerged that was common to other medium-sized cities in the interior of the country (GOULART, J.O. et al. , 2016) and which had spread since the end of the 20th century in Bauru, and which cannot be ignored: the spread of fortified enclaves/closed spaces for the high-income segments. As had originally happened in large urban centres and metropolitan regions originally and then in medium-sized cities, these developments were being installed towards the fringes of the urban territory, but always separated by walls and sophisticated security systems.

Nevertheless, in terms of population growth, the situation observed in Bauru has significantly changed during the first two decades of the 21st century, with a decrease in population growth rates. However, this has not halted the expansion of the urban fabric, which continues to grow in a disorderly and increasingly dispersed manner.In 2010 Bauru had a population of 343,937 inhabitants (338,184 urban and 5,753 rural), with an urbanization rate of 98.33%. With an economy primarily based on the service sector, its GDP was estimated at R$ 3,312,467.82 at constant prices in the same period, contributing 0.60% to the state's GDP (IPEA-Data).

Despite the specific characteristics identified in the municipality, the analysis of urbanization processes and the production of space demonstrates patterns identified by Caldeira (2003), which have also been adopted in Bauru over the past few decades. Although on a smaller scale, similar effects to those in the capital city of São Paulo occurred, where the location of segregated social segments seems well-defined in the urban space – areas that historically exhibited low interest from the real estate market, intense slum formation, lack of services and urban infrastructure, and that were targeted by public housing policies – and the same occurred with middle and high-income segments, which tend to benefit from public investments in mobility and infrastructure, as well as more recently through self-segregation in gated communities and closed subdivisions.

2.2. PLANNING JUST SPACES

Addressing spatial inequalities

The pervasive issue of spatial inequalities in Brazil is strongly evident in the existence of informal settlements that dot the urban landscape. These settlements, characterized by inadequate housing, limited access to basic services, and social exclusion, pose significant challenges to achieving just urban development. As mentioned before, addressing spatial inequalities requires a multifaceted approach that combines social, economic, and political strategies to empower marginalized communities and promote inclusive growth.However, those principles and understanding of the spatial issue are very recently implemented in urban policies.

Insurgent planning has mainly emerged in the peripheries of the global North and South, particularly in places where the legacy of colonialism and its intertwining with ultra neoliberal regimes have produced adverse effects on cities and historically marginalized populations (Blacks, Indigenous people, women, LGBTs, etc.). These effects manifest materially and spatially through processes of gentrification and cleansing that result in dispossession, exclusion, segregation, and peripheralization of these segments. Therefore, the debate on urban planning requires a critical interpretation of reality, showing that those modifications taking place in the city threaten specific social groups.

In contrast to this logic, counter-hegemonic practices have been conceived through alternative forms of planning that fit into the perspective of building future possibilities based on emancipatory practices. Within the literature of urban planning, counter-hegemonic planning modes originate from social movements, professionals, and academics who are engaged in social action and have experienced planning as an instrument in the struggle for more just cities. The debate on counter-hegemonic planning is part of the context of the global crisis of capitalism, as well as the crisis of planning as a profession and as an idea. In this sense, there is a ”need for other planning practices, a new meaning, and a new imagination” (MIRAFTAB, 2016). Alternative planning focuses on marginalized

and disadvantaged communities, social conflicts, struggles, and resistances against eviction.

In the book "Sobre Urbanismo" (MACHADO, D. B. P., 2006), Nuno Portas (2006) reflects on the experience of urban projects, both in the European context and in so-called peripheral countries, and discusses new research and project challenges. He raises the issue of scale and scope of the projects experienced so far, distinguishing between a first phase, in the 80s-90s, where interventions focusing on public spaces and the regeneration of existing urban fabrics predominate, and a more recent generation of larger and more ambitious projects, integrating extensive accessibility, environmental, and landscape programs. While the first generation of projects serves as a lever for new productive, cultural, and leisure activities, the second, driven by demands for sustainability, seeks to integrate urbanizations and vacant areas that have haphazardly mixed with industrial areas and mobility and logistics infrastructures in metropolitan areas (PORTAS, Nuno 2006).

Portas complains about the lack of research and evaluation of these latter types of projects, both in Latin America and in Portugal, projects that can recover scattered peripheries marked by environmental conflicts and social, infrastructure, and transportation needs [...], whose social priority, but also economic priority, seems unquestionable and, in terms of public costs, probably as achievable as those with greater external visibility.

In Latin America, after the failure of normative planning that characterized the 1970s, there have been no more programs to coordinate actions and projects on a metropolitan scale. The legacy of the last military governments failed to control the growing expansion of informal settlements on the outskirts but left significant marks with the development of transportation infrastructures of great impact. Democratization advocated for decentralization, giving priority to municipalities in decisions and actions concerning the city, favoring punctual interventions focused on the interior.

A specific type of urban project has been developing in the Latin American context around experiences that seek to integrate these informal settlements into the so-called "formal" city. This integration involves a set of physical, social, and institutional interventions aimed at providing infrastructure and urban services, improving accessibility, regularizing properties, and creating new public spaces. The works are articulated with social actions, capacity-building and education programs, income generation projects, health initiatives, among others.

Primarily, the informal settlements in Brazil were treated as an urban problem, limiting the perception of the "issue" to its material dimensions and possible solutions focused solely on physical actions or "cleaning up" (MAGALHÃES, F.; VILLAROSA, F. D. 2012). This approach disregarded "comprehensive poverty alleviation strategies (land, housing, and employment) and the adoption of alternative measures to quickly mitigate the negative effects of urban poverty on the city through these investments'' (BITTENCOURT, E. M. C.; ROCHA, C. C. 2019).

The removal as a public policy was the first approach to interventions in favelas. Sanitary actions against tenements later extended to favelas, remaining as the basic "solution" adopted by the state from the late 19th century to the early decades of the 20th century. The demolition of houses was not accompanied by policies for relocation to new housing.

Throughout history, national views on favelas have systematically led to two main categories of public policies. The first category was developed under the assumption that the housing conditions of the impoverished population presented sanitary, moral, and urban issues that were incompatible with the "civilized standards" associated with the "formal city." Consequently, the "solution" adopted by the state was attempted eradication, aiming to evict residents and destroy favela dwellings (KRAUSE, A. B. P.; Goulart, J. O, 2023).

From this conviction, principles emerged that linked the existence of unhealthy housing in favelas to the quantitative deficiency of adequate housing. Speculative real estate valorization made construction and rental of residences inaccessible to a significant por-

tion of the urban population. Viewing favelas as a housing issue led to the need for the production of Social Interest Housing (HIS), which, coupled with credit policies for the working class, became the main strategies adopted by the federal government in combating favela expansion. The evolution in the perception of the causes of the ”favela problem” by the government and the international scientific community is described as follows:

> ”The favela problem was initially considered a lack of housing (expanding the housing stock), then understood as a lack of income and the availability of affordable products (such as sanitation), until it became related to government performance and urban policies and their link with the macroeconomy. The proposed policies formulated for favelas evolved towards prioritizing processes over projects and emphasizing integrated interventions and coordination with urban and economic policies” (Translated from DENALDI, R., 2003).

This characterization coincides, not coincidentally, with the period of accelerated urbanization in the second half of the 20th century, especially with the patterns of housing policies during the National Housing Bank (BNH) cycle (1964-1986). As urbanization progressed in Brazil, several needs emerged and intensified in the urban space, with housing issues becoming the most significant, characterized by income disparities. As a result, various public housing policies were devised and implemented to address the problem, particularly in major cities.

Throughout the entire period of military dictatorship, the state acted as a promoter of urban space construction, both in housing provision and intra-urban improvements, establishing influential institutional and urban systems, including the Federal Housing and Urbanism Service (SERFHAU) and, most notably, the Housing Finance System (SFH) and the National Housing Bank (BNH) (KRAUSE, A. B. P.; Goulart, J. O, 2023). Within this institutional framework, space was created for the significant role of Housing Companies (COHABs) at the municipal, metropolitan, or regional levels. In the case of the state of São Paulo, these institutions, particularly the Housing and Urban Development Company (CDHU), had a significant impact in stimulating new subdivisions and developments, resulting in the expansion of urban perimeters. Regarding the relevance of CDHU’s actions:

> ”The operational basis for the production of housing is delegated to the Companhia de Desenvolvimento Habitacional e Urbano (CDHU), a state-owned company from São Paulo, whose role as a promoting and financial agent since 1967, in shared action with the 645 municipalities of São Paulo, has promoted the construction of this significant housing stock, distributed in 4,000 housing developments, present in 95% of the municipalities of the state” (Translated from TRANI, E.; SOUZA, M. C. P. D., 2013)

A more recent perspective in national policy is the understanding that favelas are already an inseparable part of the urban fabric, making their eradication increasingly uncommon. While this approach does not seek the direct elimination of favelas, nor does it naturalize them, it acknowledges the significant differences of these territories compared to the rest of the city. Hence, the presence of the state is necessary to reduce the inequalities that separate such distinct urban environments. The actions of the government regarding ”urbanization” or ”re-urbanization” mostly align with land regularization practices. The reasons behind this shift in the state’s approach to the ”favela problem” are described as follows:

> ”The authoritarian and unilateral perspective that characterized the early approaches to the ’favela problem’ softened, partly due to the new circumstances, but also because the rapid acceleration of favela expansion increasingly highlighted the impracticability of organized interventions un-

der the guise of a definitive 'solution'" (Translated from Machado da Silva, L. A. 2002).

The production of social housing in Bauru began in 1955 when a housing complex was developed by the Foundation for Popular Housing (FCP), the first federal agency exclusively dedicated to housing issues in the country. From the beginning, the dispersed nature of these policies was evident, effectively contributing to the consolidation of existing peripheries and the creation of new discontinuous expansion fronts. The quantitative impact of these developments influenced the structuring of the city's periphery, as they were generally located on the outskirts of the urban fabric in a wide arc that extended from east to west, passing through the northern region (GOULART, J. O., et al. 2016).

The Housing Company (COHAB-Bauru) played a prominent role from the beginning. Between 1981 and 1990, approximately 79.98% of the 10,000 housing units were developed by COHAB. As a result, a significant portion of Bauru's periphery originated from housing projects promoted by COHAB (GOULART, et al., 2017). However, its activities were weakened after the dissolution of the National Housing Bank (BNH) in 1986. In the following years, there was a gradual decrease in the housing supply in Bauru, accompanied by a significant increase in the private sector's involvement in providing housing for this segment (INSTITUTO SOMA, 2012)).

Since the 2000s, there has been a resurgence of public intervention in this field. COHAB no longer develops projects, paving the way for state and federal initiatives such as the Housing and Urban Development Company (CDHU), the Residential Lease Program (PAR), and, most importantly, the My House My Life Program (PMCMV). Of the total 3,088 housing units produced between 2001 and 2010, 58.81% were carried out through the PMCMV. From 2011 to 2019, nearly 4,300 housing units were constructed, all under this program, reinforcing the importance of PMCMV in housing policy not only in Bauru but throughout the country (DAMASCENO, B. C; GOULART, J. O., 2020a).

Among the key political tools that have emerged to tackle these challenges are the Plano Diretor (Master Plan) and the Estatuto da Cidade (City Statute). The Estatuto da Cidade (City Statute) is a Brazilian federal law enacted in 2001 (Law No. 10,257). It is a landmark legislation that aims to regulate urban development and promote social inclusion and sustainable urbanization in Brazilian cities. The Estatuto da Cidade provides guidelines and principles for urban policy, emphasizing the social function of cities, the right to adequate housing, and the promotion of democratic and participatory urban management. One of the main objectives of the Estatuto da Cidade is to address urban inequalities and promote more inclusive cities. It recognizes the importance of access to land, housing, transportation, and basic services for all citizens, particularly those living in informal settlements and marginalized areas. The law encourages participatory decision-making processes, enabling residents and civil society organizations to actively engage in urban planning and development (BRASIL, 2001).

The Estatuto da Cidade establishes various tools and mechanisms to implement its principles. These include the mandatory development of Master Plans (Plano Diretor) for every city over 2000 inhabitants, which are strategic planning documents that guide urban development at the municipal level. The law requires the participation of citizens, including residents of informal settlements, in the formulation and review of Master Plans to ensure their concerns and needs are taken into account.

Additionally, the Estatuto da Cidade introduces measures to promote social housing programs, regularize informal settlements, protect environmental and cultural heritage, and encourage the equitable use of urban land. It also addresses issues related to property rights, land tenure, and urban property taxation. Overall, the Estatuto da Cidade plays a crucial role in shaping urban policies in Brazil and fostering more inclusive and sustainable cities. It provides a legal framework for addressing spatial inequalities, improving living conditions in informal settlements, and promoting the social function of cities for the

benefit of all residents.

If properly implemented, the new instruments of the Master Plan are valuable tools for promoting urban policies that fully respect the principles of the social functions of urban property and guarantee the well-being of its inhabitants (NOVAES, P. R. 2012). The application of the instruments provided by the City Statute in most Brazilian cities is still relatively recent, which makes it challenging to draw conclusive ”balances” regarding their impact on the urban fabric and the positive effects of their implementation, especially during decades when the urban agenda was neglected. Among the instruments outlined in Brazilian legislation (City Statute and Master Plans), notable and noteworthy are the Special Zones of Social Interest (ZEIS) for the democratization of access to urbanized land, progressive Property and Urban Land Tax (IPTU), and Compulsory Parceling, Construction, and Utilization (PEUC) (translation).

The Special Zone of Social Interest (ZEIS) is a significant instrument to promote spatial justice. Santo Amore (2013) notes that these areas prioritize the construction or maintenance of social interest housing and encompass locations where slums and precarious settlements exist. The intention was to stimulate the production of social interest housing, primarily by fulfilling the social function of property and reversing the process of peripheralization.

In Bauru, ZEIS were incorporated into the Participatory Master Plan (Law No. 5,631/2008) and regulated by Law No. 5,766/2009, with three modalities (BAURU 2008; BAURU 2009):

- ZEIS 1 - private areas occupied by low-income populations, such as slums;
- ZEIS 2 - underutilized plots or lots for housing production; many existing urban voids have been transformed into ZEIS 2;
- ZEIS 3 - public land occupied by slums.

Despite the potential of this instrument, these zones reinforced the existing peripheral arc, although their demarcation did not extend beyond the consolidated urban fabric (GOULART, et al., 2017). The western region concentrates the majority of ZEIS 2, designated for the implementation of new developments. In contrast to housing complexes, the southern region, historically favored by higher-income populations, had four areas designated as ZEIS, with only one of them intended for new developments, and the rest related to irregular occupation areas. However, to date, this instrument has not been applied in the city center.

The Participative Master Plan approved in 2008 (BAURU 2008) represented a significant institutional advance in terms of urban norms since, in addition to incorporating practically all the regulatory instruments provided for in the City Statute (Progressive IPTU, Compulsory parceling, building or construction, Onerous Granting of the Right to Build, Special Social Interest Zones, Neighbourhood Impact Studies, among others), it was subject to an intense process of participation and consultation with the population, Special Zones of Social Interest, Neighbourhood Impact Assessment, among others), were subject to an intense process of participation and consultation with the population (GOULART, J.O. et al. , 2017), in contrast to the long tradition of urban planning of technocratic and authoritarian standards that predominated in the country (CALDEIRA T. P. R.; HOLSTON J., 2004).

The discussion process, which began in 2005, advanced compared to its predecessor, with greater commitment of the public authorities to ensure the participation of the population during the drafting process: ”after all the steps were fulfilled, the draft of the PDP was forwarded as a bill to the City Council in September 2006” (CUNHA, M. M., 2020), having been approved by the City Council only in 2008. The success in popular participation derived, on one hand, from the commitment of the local government under Mayor Tuga Angerami and, on the other, ”the institutional support given by the Ministry of Cities, which offered didactic material, guidance and training to municipal technicians for the preparation of master plans” (RIGITANO, 2008). These are the objectives of the new

Master Plan:

> ”Based on the principles of the Social Function of the City and Property, Sustainability and founded on Popular Participation, the draft bill of the Participatory Master Plan was built, which provides for the development of a compact city, with control of urban expansion, judicious occupation of urban voids, optimization of installed infrastructure, control and solutions to serious drainage problems, protection of natural resources, especially cerrado reserves and water resources with the creation of valley bottom parks, land title regularization and slum urbanization, guidance for public and private investments and inclusion of the rural area in the municipal planning” (Translated from BAURU, 2008a, p. 5).

However, the Master plans can face some limitations in promoting spatial justice, specially in what it concerns to informalities and slum upgrading, due to fragmented approaches of the city’s stakeholders, complex interconnections between different spatial and social dimensions, challenges of marginalized communities to effectively participate in decision-making processes and the absence of accurate datas due to its informal nature. Besides, there is ample evidence of inconsistencies between the ideas and guidelines described in urban plans and their practices, except for Urban Zoning and Land Use and Parceling laws, commonly promoted based on the economic interests of the wealthier classes and the real estate sector. Therefore, satisfactory results are difficult to achieve through urban planning associated with the ”practice of creating plans,” meaning there are inconsistencies between what is planned by the state and what is actually implemented, and traditional urban planning is limited to ”discourse plans” (VILLAÇA, F., 2005). According to this author’s chronology, the ideological nature of urban plans reached its peak during the 1930-1990 cycle, coinciding with the consolidation of urbanism institutions in Brazil (FELDMAN, S., 2021).

The urban planning, as it is currently conducted in Brazil, top-down, is incapable of incorporating the inherent conflicts within society and the disputes among its different agents, which, according to Maricato (2011), is a characteristic of Brazilian society that ”has a tradition of ignoring, or rather, not recognizing the existence of social conflicts.”

The existing conflicts in society, in general, do not appear in the master plans, which usually work with linear and peaceful scenarios. The solutions to urban problems formulated by urban planners flounder, among other reasons, due to a formulation process not shared with society. Also contributing to the inherent discredit in the practice of urban planning in Brazil is the widespread inability to implement the produced plans, among which we highlight the master plans. Villaça (2005) points out the existing distance between discourse and practice, observed in the history of Brazilian urban planning, which has led to an illusion that, according to the author, ”stems from the abyss that separates its discourse from the practice of our municipal administration and the inequality that characterizes our political and economic reality.”

In this way, the promotion of social justice for informal settlements, requires a context-specific approach of urban planning, in order to acknowledge the dynamics and complexities of the community. One such tool that has gained significant attention and recognition in recent years is the ”neighborhood plan” , which combined with other political tools, can serve as a promising avenue for addressing spatial inequalities and promoting inclusive urban development in informal settlements of cities like Bauru. By examining the underlying principles, potential benefits, and challenges associated with the neighborhood plan, serving as a catalyst for transformative change in these marginalized communities.

As It is not yet mentioned in the Master Plan of Bauru, is is necessary to take as reference the case of São Paulo city: the Strategic Master Plan of São Paulo (SÃO PAULO, 2004) has provided the people of São Paulo with a planning tool at the smallest urban territorial level: the neighborhood. A neighborhood is delimited based on physical, cultural, and so-

cioeconomic conditions.

The neighborhood Development Plan (Plano de Desenvolvimento de Bairro) is a tool for planning the city at the local level, implemented in the Strategic Master Plan of the Municipality of São Paulo. Its purpose is to gather the demands of the neighborhood and, based on them, develop a transformation strategy initiated by civil society but with the involvement of the public sector (especially the municipal government) and the private sector.

According to the PDE, the neighborhood Plan should include local actions related to: mobility (with an emphasis on pedestrian, cyclist, and disabled circulation); public spaces (open areas, green spaces, and recreational areas); micro-drainage; public lighting; accessibility, and public facilities. In summary, it is a planning instrument aimed at considering the implementation of small initiatives and actions directly related to the quality of life of people in the nearest space to their everyday lives (FUNDAÇÃO TIDE SETÚBAL, 2019b).

Planning at neighborhood scale

Is the neighborhood scale the most appropriate for developing a counter-hegemonic planning that genuinely promotes social inclusion in urban spaces? Neighborhoods serve as critical windows for immediate action and experimentation. They function as innovation labs, enabling the pursuit of activities at a smaller scale that can later be proven and replicated at the city level. Neighborhoods strike a balance between being large enough to aggregate interrelated components, forming a coherent urban fragment, while also being small enough to reduce some complexities in system integration and deliver quicker results.

Undoubtedly, good neighborhoods are the foundation of sustainable communities and the essence of people-centered urbanism. A well-designed neighborhood facilitates easy access to daily necessities, ensuring safety for residents. It should boast high-quality urban landscapes, ample open spaces, recreational areas, convenient shopping options, good schools, childcare facilities, and efficient transport links connecting residents to their essential destinations.

The planning of neighborhoods provides a powerful platform for addressing technical and political conflicts that emerge within these spaces. This process, as described by Vainer et al. (2013), is called ”Conflictual Planning,” which relies on the capacity of conflicting processes to constitute collective subjects capable of autonomously occupying the public scene. In this context, urban planning, often criticized for its ideological weight and inefficiency, transforms into a tool to confront conflicts and empower communities.

To initiate this discussion, it is vital to define the concept of ”Neighborhood.” In the Brazilian context, a neighborhood is a territorial unit, an intermediary scale between streets and cities, with a defined shape and size essential for the existence of urban reality. It possesses political-administrative boundaries and carries historical-social significance tied to its physical location. On the other hand, the concept of an urban ”place”

aligns with a territorial and cultural base, primarily rooted in lived experiences. This is the point where social space converges with geometric space. The pedestrian scale, designed to be compatible with human dimensions, allows places to be explored on foot and is unveiled through its "use."

In a study on the settlement of the interior of the state of São Paulo and its surrounding regions, the sociologist Antônio Candido presents an intriguing definition that links the physical aspect of a neighborhood to emotional ties: "Besides a particular territory, a neighborhood is characterized by a second element, the 'sentiment of locality' existing within its residents. This sentiment is formed not only by the geographical position but also by the interactions among families and individuals, essentially clothing the topographical skeleton. Once, I asked an old farmer, 'What is a neighborhood?' His immediate response encapsulated what has been presented here: 'A neighborhood is like a small nation.' Understand that it refers to a portion of land to which residents are aware of belonging, forming a distinct unity compared to others" (SOUSA, 1987).

The English language poses complexities in its terminological distinctions, such as "District" and "Neighborhood". A neighborhood has a center and an edge, the combination of a focal point and a boundary contributes to the social identity of the community. The center, always a public space, may be a square, a green area, or an essential street intersection. In contrast, a district is an urbanized area functionally specialized. While districts may not encompass the entire range of activities found in a complete neighborhood, they are not strictly limited to single activity zones like suburban office parks, housing subdivisions, or shopping centers. The specialization of a district still allows multiple activities to support its primary identity. In this context, the concept of "neighborhood" aligns more closely with the Brazilian notion of "bairro." (BARROS, S. A. L., 2004).

On the other hand, Marcelo Lopes de Souza, a professor at the Department of Geography at the Federal University of Rio de Janeiro, emphasizes the role of the neighborhood as an "area of primary and spontaneous relationships" (SOUZA, 1989). The district, as another reference, is primarily defined by secondary relationships at its scale. If not an empty and formal reference, the district can be associated with intersubjective existence as a collective geographic reference. Consequently, the district becomes closely related to the neighborhood, the "barrio," and the quartier. However, the preference for the neighborhood, rather than the district, in Anglo-Saxon activism may result from its perceived excessively broad scale, indicating a strong parochialism in neighborhoods (SOUZA, 1989).

For these reasons, we shall employ the term "Neighborhood" in this context, as it aligns more closely with the definitions presented above. The neighborhood becomes a moment, a sector of the city's form, intimately linked to its evolution and essence, composed of distinct parts that form its image. For social morphology, the neighborhood is both a morphological and structural unit characterized by a specific urban landscape, social content, and function. A change in any of these elements can significantly alter the neighborhood's boundaries (ROSSI, Aldo, 1995).

Continuing, the neighborhood scale can be equated as an intermediary between the three scales that constitute a city, as proposed by Rossi. These scales are:

- The street scale, where the fundamental elements of the urban landscape are individual residential properties, considering an individual parcel of land primarily occupied by a building.

- The neighborhood scale, formed by a set of blocks with common characteristics.

- The city scale, regarded as a collection of neighborhoods, encompassing residential, central, or productive zones interconnected through streets and neighborhoods within the broader geographical context.

Similarly, Lamas (1993) approaches the scales as ”dimensions”:

- Sectorial Dimension - the scale of the STREET, representing the smallest unit or portion of urban space with its distinctive form. Identifiable morphological elements include buildings, street layouts, trees, green spaces, and urban furniture.

- Urban Dimension - the scale of the NEIGHBORHOOD, where the true urban area, city, or part of it exists. It assumes a structure of streets, squares, or lower-scale forms. In a city, it corresponds to neighborhoods, homogenous identifiable parts, and can encompass an entire village, town, or city. Morphological elements at this scale need to be identified in connection with lower-scale forms, and the analysis of form requires movement and various routes. Streets, squares, blocks, monuments, gardens, and green areas constitute identifiable morphological elements. The form at this scale results from the aggregation of forms at a lower scale.

- Territorial Dimension - the scale of the CITY, where form is structured through the articulation of different forms at the urban dimension, different neighborhoods linked together. The form of cities is defined by the distribution of their primary or structural elements: the macro-system of roads and neighborhoods, residential areas, central areas, or productive zones that are interconnected both internally and with the geographical support.

Brazil led a paradigm shift in urban planning at the neighborhood scale with the Favela-Bairro program, which gained international recognition in the 1990s. Implemented by the municipality of Rio de Janeiro, the program introduced urban design to favelas, incorporating notions of urban planning and valorization into these self-constructed spaces. Consequently, strategies from the highest realms of urban culture were translated to a space that had previously eluded the ”urban” category. According to its proponents, the program’s objective was not solely to address housing deficits but to tackle urban deficits, providing basic infrastructure, social facilities, and new public spaces. This approach represented a sensitive and strategic design capable of capturing the genius loci of each neighborhood through strategic and almost surgical interventions, seeking requalification while preserving its identity and intrinsic spatial logic.

The interventions also encompassed legal aspects of land tenure and social objectives, involving programs ranging from sports facilities to healthcare centers and daycares. Selective relocations of housing in risk-prone areas were also incorporated within each neighborhood. Over its seven-year development, the project received funding from local and foreign sources, mainly the Inter-American Development Bank (IDB) and the European Union (EU), impacting over 150 favelas and a population of 550,000 people (Magalhães, 2004). The Favela-Bairro program was hailed as one of the most advanced poverty reduction initiatives, gaining widespread recognition both nationally and internationally (VESCINA, L. M. 2010).

Since then, other Brazilian cities have implemented similar projects. Under the new Statute of the City, supported by the Ministry of Cities, urbanization of favelas and land regularization became a nationwide policy. A wide range of interventions, varying in quality, management modalities, and community participation, have resulted in a significant body of local experiences. Noteworthy projects include those undertaken by Viglioco and Associados in the outskirts of São Paulo, such as Morro do Socó, Morro do Portal, and the favelas Paraisópolis and Heliópolis, renowned for their architectural quality.

Recently, the Neighborhood Plan instrument was introduced in the Strategic Master Plan Law of São Paulo. The project aims to integrate local concerns with city-wide is-

sues, encouraging residents to participate in a bottom-up planning process. The essence of the Neighborhood Plan lies in nurturing a sense of belonging among individuals in their living spaces and inspiring them to contemplate how they can transform them for the better. Involving everyone, regardless of age, ensures that the dream of a better world with peace and equality remains more than just a utopia.

Legislation plays a crucial role in ensuring the legitimacy of the Neighborhood Plan's development process. It mandates the use of participatory methodologies throughout the plan's construction. This process aligns with the law's purpose of strengthening local planning and social control. Consequently, various stakeholders, especially the local population, should be heard and involved in the design of the Neighborhood Plan throughout the entire process. Examples of actors that can participate in the Neighborhood Plan's development include non-governmental organizations, representatives of public facilities and services, universities, cultural collectives, religious institutions, private social investors, social businesses, along with neighborhood leaders and residents. All participants should have the right to engage and intervene in the design of the Neighborhood Plan.

Furthermore, the legislation of the Strategic Master Plan establishes that the construction of the Neighborhood Plan must involve the Municipal Participatory Councils and receive oversight from the Legislative and Planning Nucleus of each subprefecture. This ensures that the Neighborhood Plan integrates with the City's Planning System and enables it to influence the city's budget execution from a territorial perspective. As a result, the plan seeks technical and financial resources from the government to implement the proposed urban, social, and environmental improvements (SÃO PAULO, 2004).

Neighborhood Plans have the potential to help communities organize territorial demands collectively, fostering a collaborative planning approach for the neighborhood. This approach accommodates diverse interests and seeks convergence in proposals for urban, social, and environmental improvements that form part of the plan. Furthermore, since Neighborhood Plans are integrated within the City's Planning System, they present an opportunity to influence the city's budget execution based on a territorial perspective. This allows for the pursuit of technical and financial resources from the government to implement the planned improvements.

The following page simplify the core aspects and highlight those related to water management and spatial justice outlined in the guidelines and requirements for developing a Neighborhood Plan according to the Strategic Master Plan Law of São Paulo. (SÃO PAULO, 2004)

HIGHLIGHTS OF NEIGHBORHOOD PLAN OUTLINE

DEVELOPMENT PROCESS:

- **Origination:** The Neighborhood Plan has to be conceived either by residents' association representatives or Subprefectures.
- **Collaboration:** The process should involve the active participation of Municipal Participatory Councils and the oversight of the Legislative and Planning Nuclei of respective Subprefectures.
- **Integration:** Neighborhood Plans align with the guidelines outlined in this law, the Land Use and Occupation Law, and the Regional Plans of Subprefectures.
- **Continuity:** The Neighborhood Plans are seamlessly integrated into the revision of the Regional Plans of the Subprefectures.

OBJECTIVES:

- **Local-Global Nexus:** The plan aims to bridge local concerns with broader citywide structural challenges, creating a symbiotic relationship.
- **Economic Empowerment:** By fostering local economic activities and employment opportunities, the plan contributes to the overall growth of the city.
- **Mobility Enhancement:** The plan lays out guidelines for designing urban furniture, pavements, and infrastructure that ensure accessibility and safe pedestrian mobility, especially for those with special needs.
- **Community Facilities:** Identifying and catering to the local requirements for public, social, and recreational facilities is a priority.
- **Cultural Identity Preservation:** The plan must endeavor to honor and preserve the cultural, geographical, and intangible heritage of the community.
- **Environmental Stewardship:** Recognizing and conserving the local environmental heritage are essential components of the plan.

GUIDING PRINCIPLES:

- **Inclusive Data Collection:** The plan's foundation is built on identifying diverse urban, social, and environmental demands. This is accomplished through field research involving Neighborhood residents, analysis of existing studies, and examination of secondary data from different research agencies.
- **Active Participation**: Throughout the planning process, participatory methodologies are employed, engaging residents in various stages of development.
- **Holistic Approach:** Emphasizing the interdisciplinary nature of urban challenges, the plan utilizes a multidisciplinary approach to address issues from multiple angles.

SPECIFIC PROPOSALS:

- **Infrastructure Upgrades**: Focusing on microdrainage and public lighting systems for safer and more efficient urban living.
- **Community Facilities:** The plan aims to design, create, and operate healthcare, education, culture, sports, leisure, and social assistance facilities in line with residents' needs.
- **Accessibility and Mobility:** Ensuring easy access to public facilities for all community members, particularly individuals with disabilities.
- **Pedestrian and Cyclist-friendly Infrastructure:** The plan emphasizes the improvement of public sidewalks, urban furniture, and circulation for pedestrians, cyclists, and those with mobility challenges.
- **Environment Enhancement:** Elevating the environmental quality of residential and commercial areas is a crucial consideration.
- **Green Spaces and Recreation:** The plan strives to design public spaces, green areas, and recreational spots that encourage community interaction.
- **Cultural and Heritage Conservation:** Identifying and safeguarding historical, cultural, religious, and environmental heritage is a core objective.
- **Economic Opportunities:** Promoting the development of economic activities and street commerce.
- **Waste Management and Sustainability:** The plan includes measures for improved solid waste management, including recycling initiatives and organic waste composting.
- **Safety Measures:** Enhancing public safety conditions, particularly around educational institutions, to ensure a secure environment for all residents.
- **Collective Spaces:** Designing public spaces suitable for meetings and social interactions, fostering community cohesion.
- **Active Transportation:** Safe cycling infrastructure that integrates with public transportation, green areas, and major urban facilities.
- **Urban Gardens:** Encouraging urban gardening initiatives.

The role of water in spatial justice

Water plays a pivotal role in the pursuit of spatial justice, a concept centered around fair and equitable distribution of resources within a geographical space. Central to this concept is ensuring that all individuals have access to clean and safe water, as well as safety from water-related natural hazards. However, numerous communities, particularly marginalized and disadvantaged populations, face significant challenges in accessing adequate water resources. Spatial justice seeks to address these inequalities by advocating for equitable access to clean water, regardless of an individual's geographic location or socioeconomic status. By recognizing the importance of providing equal opportunities for all to access this fundamental resource, spatial justice aims to bridge the gap and create a more just and equitable society.

Spatial justice also encompasses the development and maintenance of water infrastructure and services. Adequate water infrastructure, such as reliable water supply systems, proper sanitation facilities, and effective wastewater management, is vital for communities' well-being. Neglecting certain regions or communities when it comes to water infrastructure perpetuates inequalities and contributes to spatial injustices. By focusing on providing essential water services to underserved areas, spatial justice aims to ensure that no community is left behind.

Moreover, environmental justice is intertwined with water-related spatial justice issues. Historically, marginalized communities have disproportionately faced water pollution, toxic waste disposal, and other harmful environmental impacts. Spatial justice aims to rectify these injustices by promoting fair treatment in water-related decision-making processes and addressing the environmental burdens borne by disadvantaged communities. By incorporating environmental considerations and mitigating climate impacts on water resources in an equitable manner, spatial justice takes a comprehensive approach towards creating a more just and sustainable future for all.

Environmental inequality is undoubtedly one of the expressions of social inequality that has marked the history of Brazil. As shown in the last chapters, the poor are more exposed to the risks arising from the location of their homes, the vulnerability of these dwellings to floods, landslides and the action of open sewers. There is consequently a strong correlation between poverty indicators and the occurrence of diseases associated with pollution due to the lack of water and sanitary sewage, or the dumping of solid waste, liquid and gaseous emissions of industrial origin. This inequality is largely the result of the existence of mechanisms for privatizing the use of collective environmental resources - water, air and soil (Acselrad , H. 2000)

In a global/ international perspective, the United Nations General Assembly recognized access to safe drinking water and sanitation as a human right on July 28, 2010 (UN 2010). The decision was made considering a series of UN acts that emphasized the importance of water access for the enjoyment of a full and healthy life and all human rights (Universal Declaration of Human Rights of 1948, note 17, Article 25). The fight for the recognition of DHAS was accompanied by the desire not only to expand access to clean water and sanitation for the population excluded from these services but also to exclude any model of service provision linked to the private sector through corresponding regulation (AVERSA, Marcelo *et al.* 2018). However, documents of the International Human Rights System not only leave the question open but also point to cases and directives for private sector participation in the management of water and sanitation services.

The issue of water is expected to occupy an increasingly prominent place on the international agenda due to conflicts arising from the lack of realization of DHAS, whether due to technical and political incapacity of public and private operators or due to the primacy of profitability in the various forms (licit and illicit) of private sector involvement (PSP) in the environmental management of water and sanitation services. After all, the current historical moment of humanity cannot avoid confronting the Western form of development inherited from the capitalist mode of

dominating nature, which considers it as a source of resources and assets to be accessed by science and technology in order to assign them commercial value (HARVEY, 1996).

In the pursuit of spatial justice in Brazil, water-related issues have emerged as significant challenges. Achieving fair and equitable access to clean water and adequate water infrastructure has been a pressing concern. The relationship between water and regional planning in Brazil has become closer since the 1940s, with the involvement of the state in economic development plans. Different approaches and objectives have reflected the political and economic context throughout these plans (TSUTSUI, H. K., & EMPINOTTI, V. L., 2021). The connection between water and space is strategic in territorial organization and occupation. This link was institutionalized through water planning in the early 20th century, where water became a fundamental element for promoting economic development. Until the mid-1980s, Brazil adopted a sectoral and centralized model in water resources management. More recently, with the approval of Law No. 9,433/97, known as the "Water Law", a decentralized and integrated management model was adopted (BRASIL, 1984).

From the centralized model to the decentralization of water management, the understanding that technological and engineering solutions were the key to addressing water issues persisted. This approach, known as hydraulic mission (TSUTSUI, H. K., & EMPINOTTI, V. L., 2021), encompasses a view of controlling nature through the construction of large-scale infrastructure such as dams and canals. Tsutsui, H. K., & Empinotti, V. L, analyse the water management approaches in brazil structured into three periods: the consolidation of state involvement in planning, the military dictatorship, and the rise of neoliberalism. This division encompasses the major changes in discussions and regional development models regarding the use and management of water.

The Federal Constitution of 1934 was the first step towards the construction of a legal framework for water resources through the approval of the Water Code (Federal Decree 24.643). The Code established the role of the state as the central agent in controlling and managing resources and laid the institutional foundations for the management and regulation of multiple water uses. Although it maintained a sectoral focus, prioritizing power generation, the code, through Article 143, defined precautions for general interests, including the needs of riverside populations, public health, navigation, irrigation, flood protection, conservation and free movement of fish, water drainage, and disposal.

Furthermore, since the Water Code, the ownership of rivers no longer belonged to the landowner where the water passed through but became the property of the municipality, state, or federal government. Waterfalls with hydropower potential became national assets, requiring authorization or concession from the government for their exploitation.

In the 1940s, Brazil witnessed the commercialization of sanitation services through state investments, as well as the first attempts at integrated multiple use for energy, navigation, and irrigation (GEO Brasil Recursos Hídricos, 2007). Historically, throughout the 20th century, Brazil adopted a developmentalist narrative with different characteristics and objectives over time. The end of the military regime marked the rupture of its hegemony, and two other narratives began to compete for national politics: liberalism and participatory democracy (TSUTSUI, H. K., & EMPINOTTI, V. L., 2021).

Aligned with the decentralization process, the 1988 Constitution and the federative pact redistributed responsibilities and powers at the national, state, and municipal levels. In this context, where Brazilian federalism combined centralized decision-making power with decentralized policy implementation, the National Policy on Water Resources was established in 1997, and the National Water Resources Management System (SINGREH) was created through the promulgation of Law No. 9,433/97. Based on principles such as decentralization, popular participation, and recognition of multiple water uses, the Water Law instituted the hydrographic basin as a planning scale, through negotiation spaces with the creation of state and federal

councils and basin committees (BRASIL, 1997).

Thus, water acquired new meanings. Influenced by environmental discussions and demands for an integrated approach to water resources, the Brazilian state recognized water as a natural resource with economic value, multiple uses, and relevance not only to humans but also to other forms of life.

The Water Law of 1997 represented a new milestone in water management in Brazil. Aligned with the decentralization of public policies, the possibility of popular participation demonstrated the importance given to the local scale in water management. Although there were difficulties in its implementation, and water continues to be predominantly approached from a technical and scientific perspective, the Water Law represented progress in enabling popular participation.

The role of water in territorial changes throughout the 20th and 21st centuries demonstrates its centrality and its social, symbolic, economic, and environmental dimensions. Recognizing this inherently intertwined relationship between Brazilian regional planning and water is crucial for considering the multiple connections between water and territorial dynamics.

The hydro-social cycle concept is a framework that explores the intricate relationship between water and society. It emphasizes the interconnections between hydrological processes, such as precipitation, evaporation, and water flow, with social, political, economic, and cultural aspects of human life. The concept recognizes that water is not only a physical resource but also a social construct, shaped and governed by social and institutional dynamics. the concept enables the representation of water within a historical-geographical context, where both the modification of nature for the production of drinking water transforms social relations and the forms of water production management reconfigure power relations (LINTON, J.; BUDDS, J. , 2014)

Reflecting the broader struggles for spatial justice in the country, Bauru/SP faces several water-related issues, impacting the equitable distribuition of water resources as access to clean and safe water, as well as exposure of vulnerable communities to floods and heavy rainfall events.

In Bauru, unequal access to water is a significant issue, particularly affecting marginalized communities and those with lower incomes. Inadequate infrastructure leads to irregular water supply, making it difficult for these communities to meet their daily water needs. Water scarcity is another pressing concern, as the city experiences periods of insufficient rainfall due to its location in a region prone to water scarcity. Inadequate water management and infrastructure exacerbate the problem, resulting in water shortages that disproportionately affect vulnerable populations who struggle to secure sufficient water for essential needs.

Water pollution and contamination pose additional challenges, with industrial activities, improper waste disposal, and insufficient sanitation systems contributing to the pollution of water sources (DAE, 2014). This pollution not only harms the environment but also poses health risks to communities residing near polluted water bodies. Inadequate wastewater management further intensifies the water-related issues, compromising the quality of water sources and impacting the health of downstream communities that rely on them. The development of water infrastructure also highlights spatial injustices, as certain Neighborhoods and peri-urban areas experience neglect in terms of infrastructure development, perpetuating inequalities and marginalizing vulnerable communities. Lastly, Bauru is also affected by the impacts of climate change, with increased droughts and floods disrupting water availability and infrastructure, further endangering the lives and livelihoods of marginalized communities.

Addressing these water-related issues in Bauru requires a holistic approach that incorporates the principles of spatial justice. This involves promoting equitable access to water resources, improving water infrastructure in underserved areas, implementing sustainable water management practices, and ensuring meaningful community participation in decision-making processes. By recognizing the fundamental importance of water

as a shared resource for all residents, Bauru can strive towards a more just and sustainable water future. This endeavor aligns with the broader Brazilian struggle for spatial justice, aiming to create a society where all individuals have equal access to clean water and where water resources are managed in a fair and equitable manner.

2.3. REFERENCE CASES

Figure 02. Cover image of Lapenna Neighborhood plan.

Three case studies have been selected as pivotal references in the development of the neighborhood plan for Vila Cristiana. The first case, the ”Lapenna neighborhood plan,” stands out for its successful participatory process and effective implementation strategies at a local scale, despite limited resources and a vulnerable community.

The second case involves the ”Popular plan and Land regularization of Banhado.” This case emphasizes urban design strategies pertinent to a territory resembling the focal point of this thesis. Positioned at the city’s periphery and straddling the boundary between urban and natural/rural areas in a mid-sized city of São Paulo state, this case’s core objective revolves around revitalizing the hydrological cycle and ensuring equitable access to clean and safe water.

The third case takes inspiration from a water-sensitive design exemple, the Copenhagen climate resilient neighborhood of St Kjeld. Although the cultural and economic contexts differ significantly, this case offers valuable insights into integrated water management techniques gleaned from European experiences. This cross-continental comparison aims to enrich the understanding of water management practices.

Plano de Bairro Território Lapenna

Source: FUNDAÇÃO TIDE SETÚBAL (2019b)

The Neighborhood plan of Jardim Lapenna, situated in São Miguel Paulista, São Paulo, aims to foster sustainable development and reduce social inequalities by integrating schools with community and institutional forces. The Neighborhood has a history of three development phases, with the most recent expansion facing challenges in basic infrastructure and sanitation. Community organizations like Fórum de Moradores do Lapenna advocated for public facilities, leading to the creation of a participatory Neighborhood plan in 2016 with the involvement of local institutions and residents. The plan consists of 48 actions addressing four main challenges: strengthening community organization, improving environmental quality, enhancing micro-accessibility, and addressing infrastructure needs. The implementation began in 2018, and interventions have already improved public spaces and tackled environmental issues. The plan's success lies in its participatory approach and its potential to address micro-level demands, enhancing the well-being of citizens in peripheral areas of the city by empowering them to actively reclaim urban space .

Figure 03. Delimitation of Lapenna territory, according to physical barriers.

- Presentation of the Plan as a tool for community organization and participation, its elaboration process, its scope and limits (what to expect from the Neighborhood Plan), and a space to ask questions.
- Seven tents with different participatory activities: Dream map, Affective map of the neighborhood, Children's games, Dance, Street reading point, Dream clothesline, Street radio, Health station, Art station, Graffiti invitation.

- Technical diagnosis based on secondary databases
- Qualitative and participatory diagnostic actions: walks through the neighborhood, records of the most visible socio-territorial problems, conversations with actors who know the neighborhood in depth, health agents, neighborhood leaders, collection of situational information, listening and recording the possibilities for change.
- Workshops: Population and vulnerability; Public services and equipments; Lapenna's geography: Environment and inhabitation; Potentialities map

- Meetings with the Board, bilateral talks, training workshops with the population and also the installation and circulation of the proposal boxes in the various meeting spaces and residents' meetings.
- Workshops: Transformation wishes for Lapenna; Public services and equipments; Environment and urban infrastructure; Free spaces
- Urban acupuncture in the territory, such as participation-action joint efforts for the improvement of public and collective spaces for coexistence and leisure, and the Virada sustentável, promoting and strengthening sustainable actions in the neighborhood.

- The proposals were categorized into four major challenges of the Neighborhood Plan and specific proposals emerged, leading to the definition of actions as part of the process.
- The document containing challenges, proposals, and actions underwent review and discussion by the leaders and institutions of the Collegiate.
- There were seven meetings and one large meeting for compacts and discussion of actions, where 110 participants discussed the systematically presented actions and their priorities for implementation in the short, medium and long term.

NEIGHBORHOOD'S PLAN STRUCTURE

1. Participative construction of the Neighborhood's Plan : "Launch of the Neighborhood Plan" Party:

2. Diagnosis: The Lapenna we have

Jardim Lapenna: an island surrounded by walls	A young neighborhood, in family organization and age profile	Excellent access to public services, but opportunities for improvement	Excellent access to structural transportation, but with problems of micro-accessibility	Attractiveness, land pressure and rapid population growth

3. Building and discussing proposals for its improvement : The Lapenna we want

Challenge 1 : Strengthen an active and effective community organization. **Proposals:** 1. Strengthen the collegiate; 2. Organize the management of open spaces.	**Challenge 2:** Promote a neighborhood in harmony with its environment. **Proposals:** 1. Structure an integrated solid waste management program; 2. Implement micro-drainage interventions; 3. Expand green areas and create community gardens.	**Challenge 3:** Strengthen the Jardim Lapenna neighborhood. **Proposals:** 1.Improve road sharing; 2. Qualify the open spaces; 3. Create favorable conditions for active and collective transport; 4. Integrate sports, culture and education spaces; 5. Expand sport, culture and education opportunities.	**Challenge 4:** Ensure infrastructure and qualify existing equipment. **Proposals:** 1.Requalify Jd. Lapenna; 2. Mitigate vulnerability in risk areas; 3. Requalify public facilities; 4. Expand the public services offered.

4. The Pact and Implementation Strategy

The 14 proposals resulted in 48 actions distributed in 3-years implementation process, according to its costs, impact and difficulty

T1 (2018-2021)	T2 (2022-2025)	T3 (2026-2029)

Table 01. Lapenna neighborhood plan structure

Source: TAVARES, J. C., & FANTIN, M. (2019)

The Banhado regularization plan, developed by the Grupo de Práticas de Pesquisa, Ensino e Extensão em Urbanismo (PExURB) at the Institute of Architecture and Urbanism (IAU UP), aimed to provide safe and quality living conditions for the 460 families settled in the Banhado area of Jardim Nova Esperança.

The plan took an interdisciplinary approach, involving various fields, and emphasized water valorization, green infrastructure, and community integration. The area faced real estate speculation for a long time, leading to attempts to remove the community. The plan served as a technical and political tool to negotiate against real estate pressures, contributed to a judicial decision allowing the community to stay, and influenced the revision of zoning laws.

Ultimately, the plan demonstrated a comprehensive approach considering environmental sustainability and social interests in addressing the community's needs.

The plan operated at four scales:

- Regional scale: Jardim Nova Esperança's permanence was proposed as a buffer zone between the city center and the environmental area of the Paraíba River, preserving environmental interests.
- Metropolitan scale: The continuity of horticultural and agricultural production in the community was encouraged to contribute to food supply in São José dos Campos and neighboring cities, ensuring food security.
- Municipal scale: Banhado was incorporated into a green corridor along with central garden Neighborhoods, parks, and public spaces, contributing to climate balance and urban fauna and flora.
- Neighborhood scale: Keeping the community in the city center aims to reduce daily commutes and optimize the use of existing municipal resources and services. regional, metropolitan, municipal, and Neighborhood.

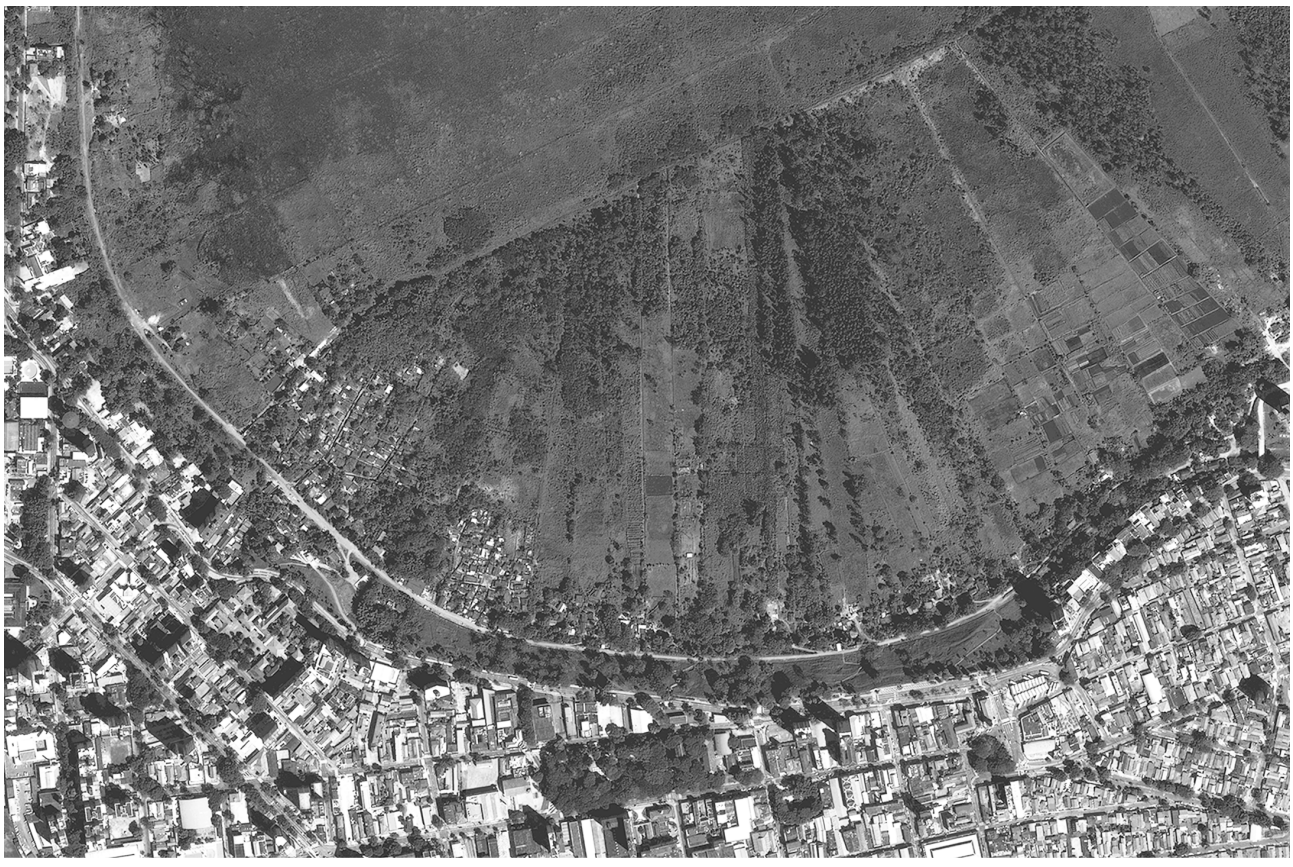


Figure 04. Satellite image of Banhado Territory.

Environmental Zoning

The environmental zoning considered the Banhado as two interconnected systems: the area currently occupied by Jardim Nova esperança; and the rest of the territory connected to the Banhado APA. And it understands that the pressures exerted on the area (community and Banhado) arise from broad factors such as large agro-pastoral areas and the city itself as a vector of diffuse pollution, effluents, among others. On the other hand, the sanitation solutions are presented as the central elements in minimizing the impacts of the community on the Banhado and consider the community as a strategy to prevent further advances in occupation, including by the formal real estate sector.

The environmental zoning proposal is the basis for an alternative to the current layout of the Banhado Municipal Park, with the possibility of guiding the park's development. The Management Plan is intended to establish permissible uses according to its environmental protection objectives.

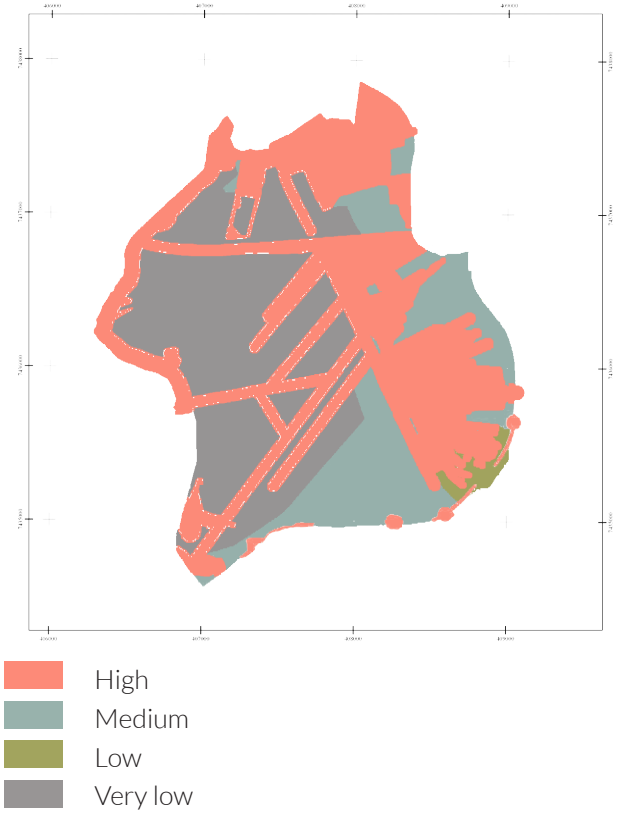


Figure 05. Preliminary zoning proposal considering the criteria Environmental Sensitivity and priority of protection.

Land regularization

Land regularization used the instrument of urban demarcation combined with land legitimation. The establishment of an Urban Land Regularization procedure will allow a Strategic Environmental Assessment - SEA, that is, a structured and proactive process with the democratic participation of the actors involved, strengthening the environmental variable in its transversality, which enables decision-making by the public authorities.

Figure 06. Land tenure based on Municipality's registration.

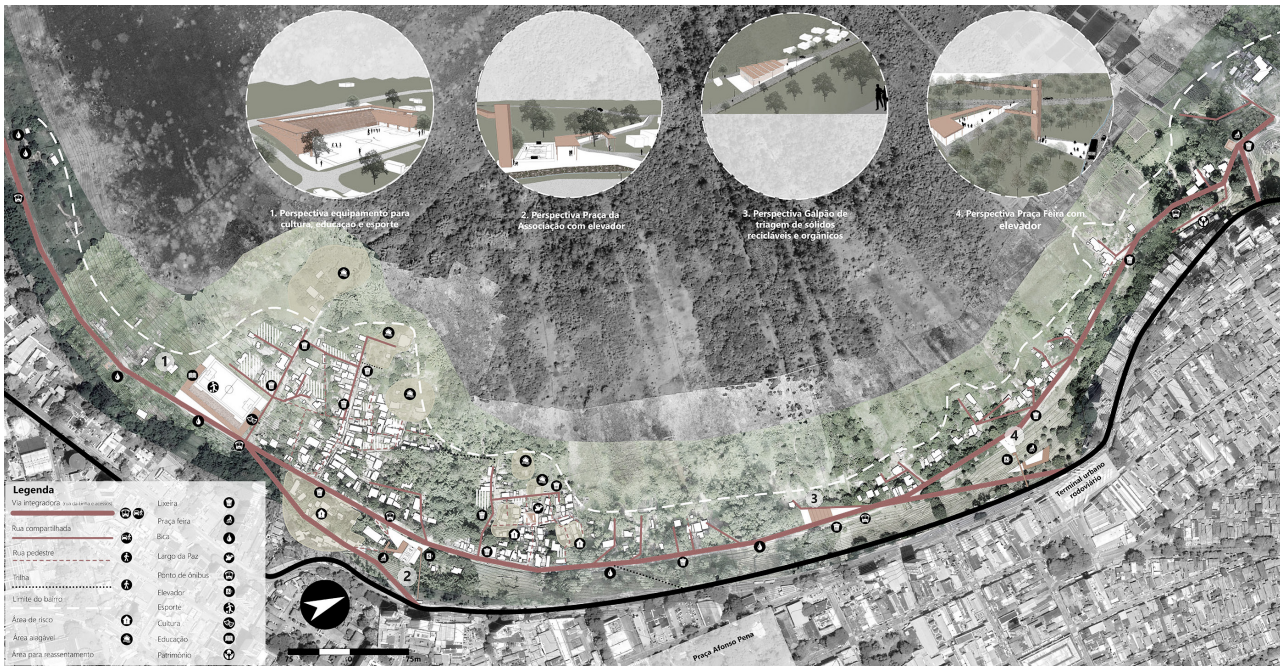
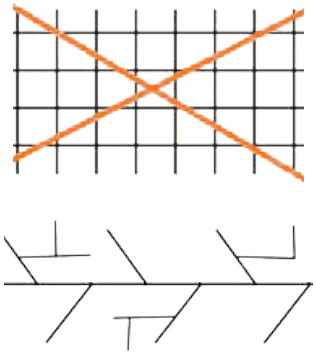


Figure 07. Urban strategies Map of Banhado Plan

1. A network of trunk infrastructure

Proposed system for the neighborhood's roads, in order to limit and order population density and construction.



2. Integrate the community with the city center through public spaces like market squares

The market squares are free areas for leisure and marketing of products grown in Banhado itself and act as an incentive to production and direct marketing of Banhado residents. They are inserted in the transitional lanes between the community and the center, have universal access and are integrated with community and public service equipment. The public space is, therefore, the instrument of integration between the municipal center and the community; between the urban and the rural.

Figure 08. Network of trunk infrastructure of Banhado Plan

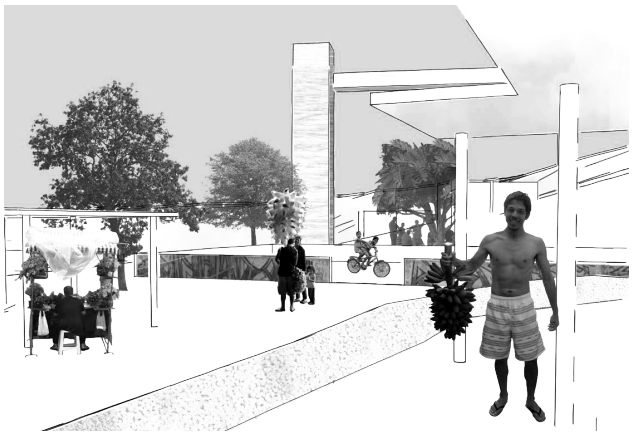


Figure 09. Spout square - valorization of the existing spout and used by residents

3. Recover the hydrological cycle through green infrastructure and water management

The Plan's core objective was to restore the hydrological cycle of the Banhado area to nourish the Parnaíba River, ensuring the revival of its environmental functions. It also aimed to secure resources for rural production while preserving the historical and symbolic significance of the existing drainage channels and spouts that have been part of the area for nearly a century.

Figure 10. Example of existing channel

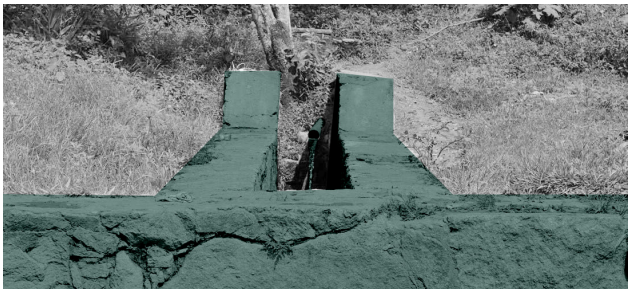


Figure 11. Water spout

Figure 12. Watercourse in the neighborhood

The proposed drainage solution prioritizes maximum water permeability along surface channels and perforated networks to prevent downstream flooding and standing water accumulation. For sewage management, individual local treatment options were chosen due to the rural characteristics of the area, including biodigester septic tanks and evapotranspiration tanks to treat and reuse nutrients from toilet effluent. The traditional network was also considered but faced limitations due to the water table level, necessitating pressurizers to transport sewage to the municipality's treatment plant.

Given the particularities of the area, three road patterns were adopted that are articulated with the surface drainage channels, water mirrors and drainage paving:

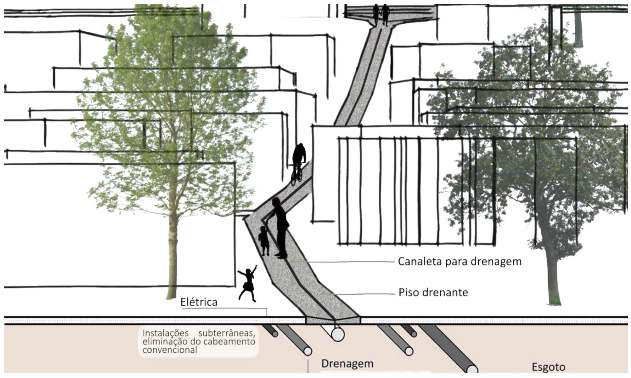


Figure 13. Pedestrian Routes

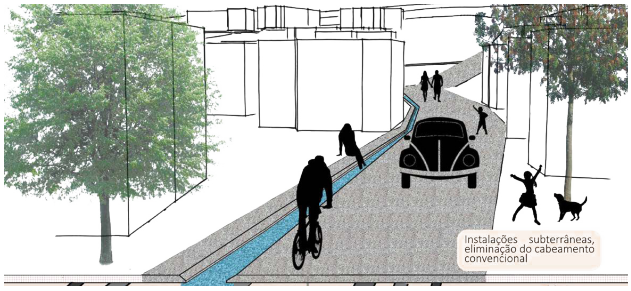


Figure 14. Shared Pathway

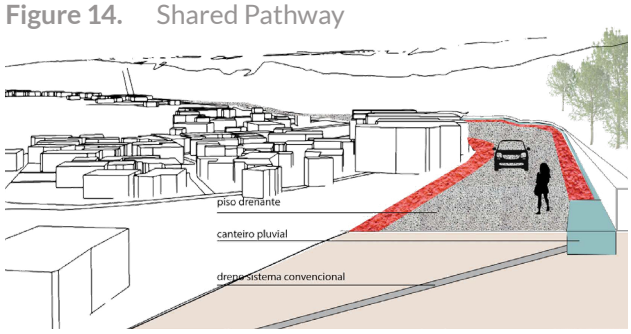


Figure 15. Integrating road

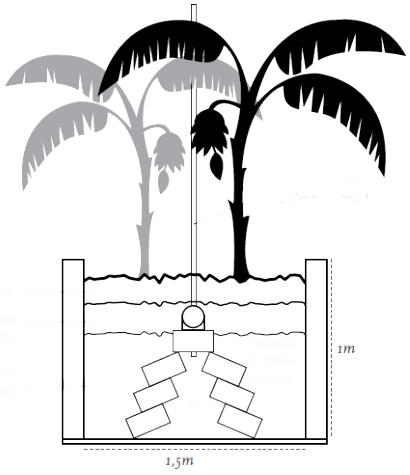


Figure 16. Evapotranspiration Tank

St. Kjeld´s Neighbourhood, Copenhagen/dk

Source: City of Copenhagen (2016)

Background

Copenhagen, the capital of Denmark, might be small in size, but its impact is global due to its innovative solutions and dedication to enhancing citizens' quality of life. Water challenges in Copenhagen encompass ensuring high-quality drinking water for a growing population and safeguarding the community from climate change impacts. The city has faced severe cloudbursts, including a significant event in July 2011, causing damages amounting to around 1 billion US dollars. Climate projections anticipate more such incidents in the future. To address this, Copenhagen has introduced a Climate Adaptation Plan and the pioneering Cloudburst Management Plan (CMP) launched in 2011. The CMP, the world's first city-wide plan for controlled stormwater during a 100-year storm, was collaboratively developed with the Greater Copenhagen Utility, owned by multiple municipalities in the Greater Copenhagen Region.

The CMP outlines infrastructure strategies to manage stormwater, employing solutions that collect, delay, and redirect it to the harbor, preventing sewer inundation. The city's focus on liveability plays a pivotal role in implementation. The CMP is set to guide Copenhagen's physical development for the next two decades, prioritizing citizens' involvement in co-creating their city's future.

Figure 17. Copenhagen flood in 2010. Ph. Scanpix

Copenhagen's Journey to Becoming a Water-Wise City

1. Regenerative Water Services
Replenish Water Bodies & their Ecosystems
Reduce the Amount of Water & Energy Used
Reuse, Recover, Recycle
Use a Systemic Approach Integrated with Other Services
Increase the Modularity of Systems & Ensure Multiple Options

2. Water Sensitive Urban Design
Enable Regenerative Water Services
Design Urban Spaces to Reduce Flood Risks
Enhance Liveability with Visible Water
Modify & Adapt Urban Materials to Minimise Environmental Impact

3. Basin Connected Cities
Plan to Secure Water Resources & Mitigate Drought
Protect the Quality of Water Resources
Prepare for Extreme Events

4. Water-Wise Communities
Empowered Citizens
Professionals Aware of Water Co-Benefits
Transdisciplinary Planning Teams
Policy Makers Enabling Water Wise Action

As part of CMP's implementation, St. Kjelds was chosen as a demonstration neighborhood, featuring initial projects such as a water park at Tåsinge Plads and tunnels for stormwater discharge into the harbor. This endeavor includes active engagement with local stakeholders, involving them in the projects' design and functionality, including refurbishments of buildings, courtyards, and open spaces. St. Kjelds exemplifies a Copenhagen landmark that combines nature-based cloudburst protection with recreational spaces, biodiversity, and new infrastructure.

Following the 2011 cloudburst, Copenhagen unveiled various initiatives aimed at mitigating flood risks, encompassing green dunes, bicycle paths, grassy areas, pocket parks, and green courtyards. The first transformed neighborhood, Saint Kjeld's Kvarter, was designed by architects Thomsen and Schrøder from the firm Tredje Natur.

Tredje Natur, an architectural studio, redesigned the Saint Kjeld's neighborhood to effectively manage anticipated floods caused by climate change-induced intense rainstorms. During heavy rainfall, water will be collected above ground in parks and squares, not only relieving sewer systems but also creating new recreational spaces surrounding these water features. Notably, a colossal ring in the main square will emit a cooling mist on hot days, while surplus water will be directed along novel cycle lanes that double as storm drains, leading to canals and then the harbor, rather than inundating basements.

Copenhagen has ingeniously transformed the climate change challenge into an opportunity to enhance the city's appeal, emphasizing green and blue solutions over traditional gray infrastructure. The city aims to showcase its neighborhoods as models for the best technological adaptations to climate change, creating urban environments that are both resilient and beautiful.

Figure 18. østebro Cloudburst roads / Green streets plan

The water flows to the harbour, Fælledparken or other receiving bodies of water. The vision is to protect the entire neighbourhood against the consequences of cloudbursts by arranging green urban spaces for detention and infiltration of stormwater and cloudburst roads, conveying the masses of water to areas where it doesn't cause damage.

Figure 19. Skt. Kjelds Plads and Bryggervangen. Illustration by SLA

SKT. KJELDS PLADS- THE GREEN HEART OF THE NEIGHBOURHOOD AND BRYGGERVANGEN "THE GREEN CORRIDOR"

Figure 20. St. Kjeld´s Square after transformation.

Figure 21. Raingardens in St. Kjeld´s Square. Ph: Charlotte Brøndum

Figure 22. Tåsinge Plads after the transformation.

3 SPATIAL JUSTICE IN PRACTICE

3.1. VILA CRISTIANA, BAURU/SP - BRAZIL

Figure 23. Picture of Cristiana

History

Source: MAGALHÃES, Kelly Cristina et al. (2022).

The story of the community started back in 2013 when approximately 300 families, predominantly consisting of unemployed individuals and informal workers, assisted by MSLT (Social Movement of Landless Workers), in a public land in the south margins of Bauru City. Over time, the settlement experienced growth and expansion, accommodating around 670 families by the end of 2018. However, the living conditions in the settlement were challenging, and the increasing population led to public intervention. The Ministry of Public Prosecution stepped in to address the situation and initiated the development of a Term of Conduct Adjustment (TAC). This agreement allowed the families to remain in the settlement for a period of up to three years, during which the municipality assumed responsibility for meeting their needs. However, due to the uncertain status of the settlement, the construction of permanent houses was not permitted until a judicial decision was reached.

In 2019, a significant change occurred when 148 families were relocated to Parque Primavera, where the municipality granted a land for the permanence of these families. The area is situated near the Cristo Rei Cemetery, in the northern margins of the city. Since then, the community has been engaged in an ongoing struggle to secure their rights. Their primary objectives include obtaining legal permanence for the settlement and working towards its regularization in collaboration with the municipality. This effort signifies their determination to establish a stable and recognized living environment for the residents of Vila Cristiana, including all the needed urban infrastructure.

The inadequate positioning and lack of infrastructure in the settlement have resulted in the vulnerability of its assets to environmental hazards, particularly flash floods and heavy rainfall. The geographical location of the settlement exacerbates these risks, as it is situated in an area where the cemetery is built on a landfill without a proper drainage system. This has led to landslides along the edges of the landfill, which directly affects the adjacent settlement of Vila Cristiana. Furthermore, the cemetery land itself represents a neglected space, disconnected from the ”formal” city and creating a void in the urban fabric.

On the other side of the settlement, there is a significant amount of residual land that serves no specific function. This land extends towards a watercourse known as the ”água das Flores” River. While there is some vegetation present near the watercourse, the majority of the land is covered by pastures and sparse cerrado species, a type of tropical savanna vegetation.

These circumstances highlight the pressing need for appropriate urban planning and infrastructure development in Vila Cristiana. Addressing the challenges posed by the settlement’s location, including the proximity to the cemetery and the underutilized residual land, will be essential in creating a safer and more sustainable living environment for the residents. Additionally, measures should be taken to mitigate the risks associated with environmental hazards, such as implementing proper drainage systems and land-use planning that considers the settlement’s proximity to the watercourse.

It is worth noting that the project was named in recognition of the importance of Cristina’s history, a black woman who was a significant social organizer in the camp and settlement, and who greatly mobilized and collaborated with the community. After her passing in 2020 due to cancer, Cristina was acknowledged by the community itself, which renamed the Primavera Settlement in her honor. Therefore, it is understood that Cristina represents the struggle of thousands of black women for social rights in Brazil. They are the driving force of this country and represent the main agents of existing transformation because:

> ”When black women
> move, the entire structure of
> society moves with them”
>
> (DAVIS, 1981).

Area profile

Bauru is an important city in the west of São Paulo State. The current population of 343,937 inhabitants is distributed in an area of 667.684 km², whose biome is Cerrado and Atlantic Forest. Its Human Development Index is considered very high (0.801), with 62 SUS Public health facilities, 14,784 children enrolled in secondary schools, current GDP per capita of R$24,215.46 (in 2012) and 89.77% of the population is literate (IBGE 2022).

Geographically, Bauru is located in the central-western region of the state of São Paulo, approximately 329 kilometers from the state capital. Situated on the high plateau of São Paulo, the city's average elevation reaches around 526 meters above sea level. Bauru ranks among the largest municipalities in the region (INSTITUTO SOMA, 2012). Over the years, the city has witnessed remarkable growth and urban development, attracting people from diverse backgrounds, contributing to a vibrant and multicultural environment.

Bauru holds significant importance as an educational and economic hub in the region, boasting several prestigious universities, including campuses of the renowned University of São Paulo (USP) and Paulista University (UNESP). The presence of these educational institutions has fostered intellectual and scientific progress within the city.

Furthermore, Bauru plays a crucial role in the state's agricultural sector, particularly in the production of sugar cane, cattle, and citrus fruits. Its strategic location, well-developed transportation infrastructure, and thriving industries have stimulated economic activity and created numerous employment opportunities. As a result, Bauru combines geographical advantages, cultural diversity, educational excellence, and economic vitality, solidifying its position as a significant city in the interior of São Paulo State.

The Vila Cristiana community, situated in the northern region of Bauru city, currently consists of 180 families occupying an approximately 4-hectare area. This land is divided into four blocks, offering 187 plots, each measuring around 5x20 meters, designated for families to build their homes. Despite receiving these plots, the majority of houses in the community remain makeshift structures constructed from tarpaulin and cardboard, lacking the essential attributes of permanent residences. This situation epitomizes the precariousness of the settlement, emphasizing that even though it is no longer identified as a slum by the municipality, the mere land ownership falls short in addressing the fundamental demands necessary to achieve spatial justice. According to the municipality's plan for the area, there should be reserved spaces for greenery and leisure activities (SEPLAN, 2021). However, as of now, there is no implementation plan for enhancing and qualifying these designated areas.

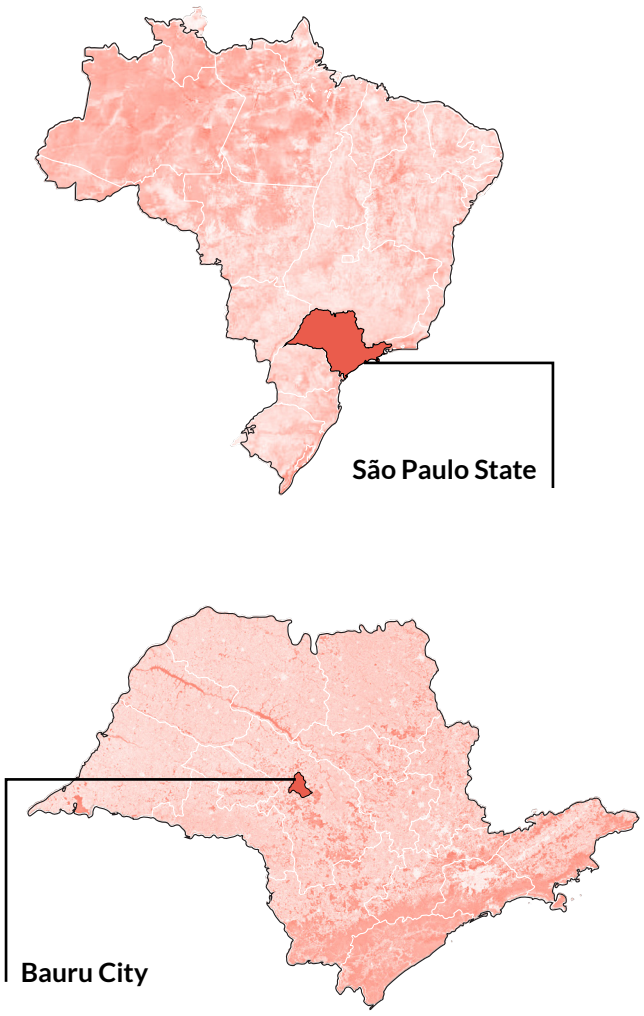
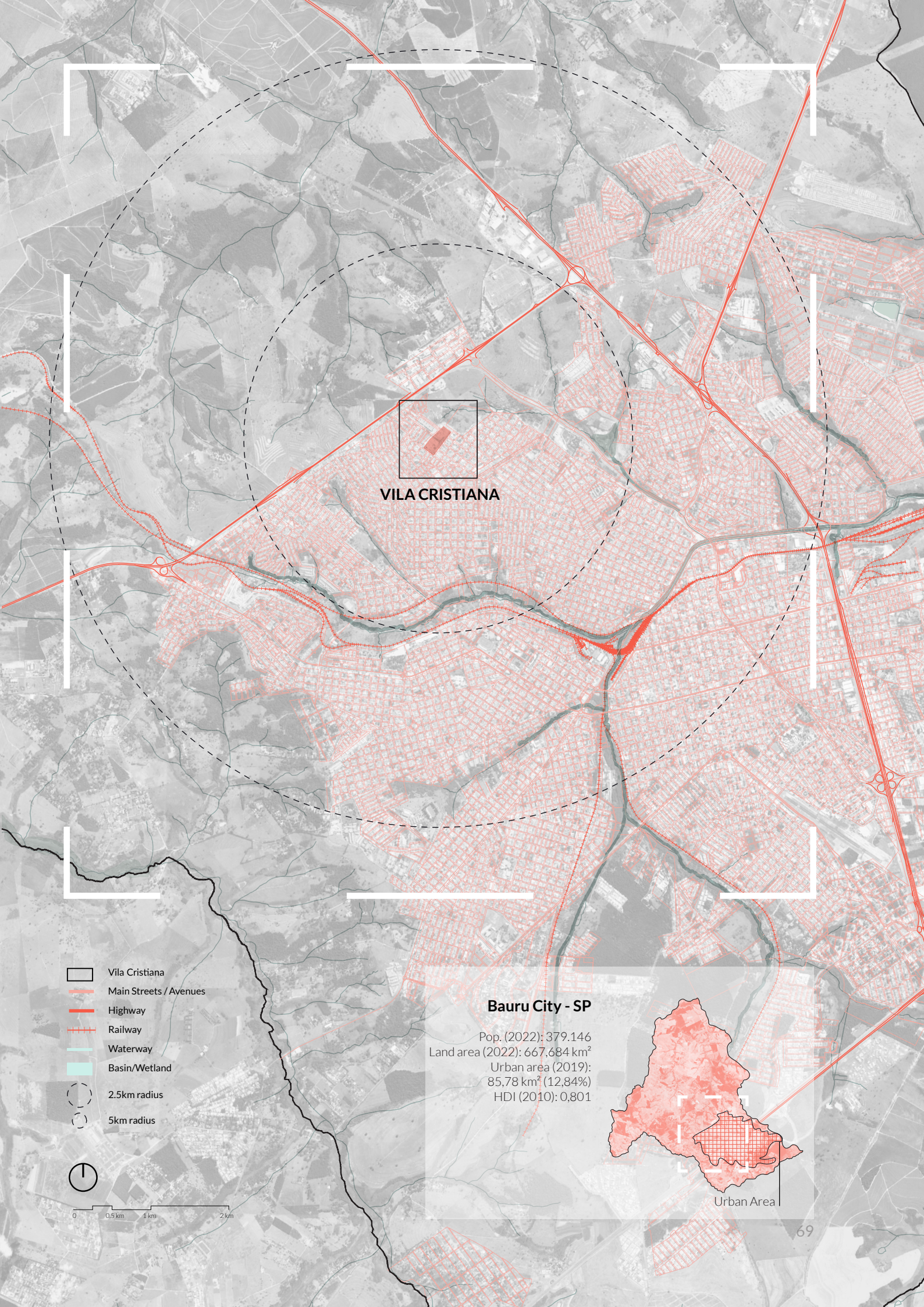


Figure 24. Location of São Paulo state and Bauru city, in Brazil.

Figure 25. (Next page) Map of Bauru


VILA CRISTIANA
Vila Cristiana
Main Streets / Avenues
Highway
Railway
Waterway
Basin/Wetland
2.5km radius
5km radius
0
0,5 km
1 km
2 km
Bauru City - SP
Pop. (2022): 379.146
Land area (2022): 667,684 km²
Urban area (2019):
85,78 km² (12,84%)
HDI (2010): 0,801
Urban Area


Demarcation of the public land designated to the se
Total area: 36.825,83 m²
Green Area
6.763,75 m²
Road system
8.828,78 m²
PLANNED CITY
CEMETERY
VILA CRISTIANA
26 m
0
50m
100m
200m
N

Figure 26. Map of Vila Cristiana Neighborhood

Climatic profile

Bauru experiences a transitional climate between tropical and subtropical, with defined seasons throughout the year. According to Köppen classification (1948), the city presents a climate type A, tropical humid (BAURU 2017), It is characterized by hot summers, mild winters, and moderate rainfall. According to INMET (National Institute of Meteorology), the average annual temperature in Bauru is 19.8 °C.

Summer in Bauru, which spans from December to February, is typically hot and humid. Average temperatures during this season range from 23°C (73°F) to 32°C (90°F), with occasional heat waves pushing temperatures even higher. Thunderstorms are common, providing relief from the heat and contributing to the region's rainfall.

Winter in Bauru, from June to August, is generally mild and dry. Temperatures during this season range from 10°C (50°F) to 24°C (75°F), with cooler nights. Frost is rare, and snowfall is virtually unheard of in this region.

Spring (September to November) and autumn (March to May) in Bauru are characterized by transitional weather conditions. Temperatures gradually rise or fall, with pleasant daytime temperatures ranging from 18°C (64°F) to 28°C (82°F). These seasons are typically marked by mild to moderate rainfall.

In the region, there are typically tropical rains characterized by violent storms (water spouts) with intense and short-duration showers. These rains usually occur in the late afternoon or early evening due to the strong daytime heating. They are scarce during the autumn and winter seasons and are concentrated in the spring-summer period.

Based on the configuration of the annual monthly averages, it is possible to observe that the municipality is characterized by having well-defined dry and wet seasons, with the wettest season occurring in the summer/autumn months (October to March), and the dry season starting in autumn and continuing through the end of winter/spring (April to September). This configuration is typical of a subtropical climate. Regarding the annual totals (mm) shown in Figure 7 below, there has been a slight change in recent years, which may be due to the switch from conventional to automatic monitoring stations. The average annual precipitation during the data period is approximately 1,490.00 mm.

In Bauru, the maximum rainfall amount of 228.1 mm occurs in the summer, while the minimum of 36.3 mm occurs in the winter. These rainfall characteristics in Bauru, when analyzed together with the features of land constitution, vegetation cover, land use, and occupation dominant in each municipality—many of which are urbanized without proper land management—explain the occurrence and establishment of severe ongoing erosive processes, with some areas already experiencing gullies, especially in urban expansion areas. In the region of Bauru, there is a small variation in relative humidity between summer and winter, approximately 11%. The maximum relative humidity corresponds to 85% in the summer.

Regarding the spatiotemporal behavior of insolation (sunshine duration) in Bauru, it can be observed that the highest values occur in autumn (200 hours) and the lowest values occur in spring (155 hours).

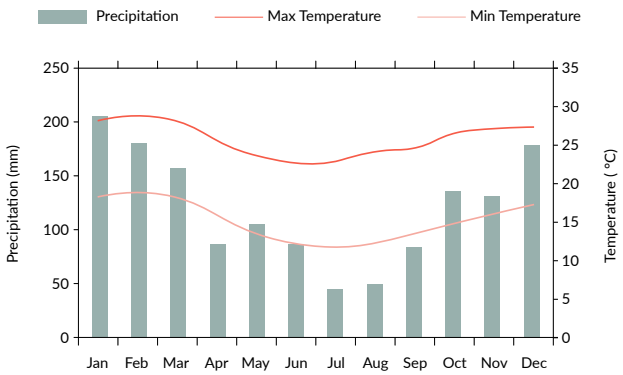


Figure 27. Climatology of Bauru.

Figure 28. Arid soil in the playground area at Vila Cristiana.

Social profile

In Brazil, the racial inequalities indicators are crucial to analyze the social disparities, as they expose the high socioeconomic vulnerabilities of black, brown and indigenous communities. Although brown and black people together, represent 56.1% of the total Brazilian population (IBGE 2019), with approximately 120 million Brazilians, their share among indicators that reflect better levels of living conditions is below this proportion: they represent 72,9% of the population under the poverty line in Brazil (IBGE, 2021). In 2000, the proportion of black people living in informal agglomerations was almost double that of whites, besides they represented only 19% of the landlords of large agricultural lands, while white people are 79,1% . Among the population living in owned households, 40,5% of individuals identified as black or brown resided in households without documentation of ownership, while the proportion among whites was about half of that value (10.1%). This suggests that black and brown people face a greater situation of insecure property and informal housing.

Gender-related disparities, for instance, are apparent in the fact that 94.5% of total rural areas in Brazil are owned by male landlords (IBGE 2021). Additionally, urban inadequate dwellings are predominantly under female responsibility, accounting for 60% of such cases, according to Fundacao Joao Pinheiro's 2022 report. The same report shows that 60% of the housing deficit in 2019 was composed by women living in inappropriate conditions (FUNDAÇÃO JOÃO PINHEIRO, 2022). Besides, these indexes should be read from the intersection between gender and raciality, given that, according to data from the IBGE (2021)., among the 11 million single mothers in Brazil, 61% of them are black women and 63% of the homes that have as reference person black women with children up to 14 years old are below the poverty line, against 39.6% of white women with children, revealing the inequalities between white and black women and their reverberations in the housing and urban experiences of different women.

Bauru is no exception when compared to the Brazilian indicators, it registers a picture of expressive social inequality. According to data presented by the Municipality in 2005, "one fifth of the poorest population held 9% of the income, while the richest fifth owned 42%" . This inequality can be observed especially in the distribution of the population by the urban space from the socioeconomic vulnerability indexes (Figure 29). (KRAUSE, A. B. P.; Goulart, J. O 2023)

In 2010 the sum of groups 5 (high vulnerability) and group 6 (very high vulnerability) totaled 37,474 people, approximately 11% of the population. In the cartographic arrangement it is possible to observe the "clear territorial division between the spaces inhabited by social strata that present low social vulnerability and those occupied by socially vulnerable segments" (DAMASCENO 2021). Thus:

> The population with lower income lives in the peripheral regions of the city, particularly in the favelas, whose average income is less than two minimum wages, lacking urban infrastructure services, transport, schools and health services. On the contrary, the south-central zone of the city, provided with infrastructure and other services, ensures a better quality of life, where the households with incomes higher than 15 minimum wages are concentrated. Thus, there is a pocket of wealth surrounded by a wide extension of exclusion (Translated from BAURU, 2008).

Turning to the residents of Vila Cristiana, as seen in the map, the community was placed in an area that is characterized by the high vulnerability of the residents. The demographic data presented here are the results of a questionnaire administered in the Vila Cristiana community, produced by a group of students from the Júlio de Mesquita Filho Paulista University in Bauru, during the "Cristiana Project: The occupation of the black popu-

lation in Primavera Settlement in the City of Bauru-SP" an academic project coordinated by Professor Dr. Kelly Cristina Magalhães.

The research showed that a total of 72.2% of the local population consists of women, most of whom are homemakers and work autonomously to supplement their families' income. These women, in addition to being the family's breadwinners, are also key social organizers. Despite their daily tasks, motherhood, and long working hours, they strive for the recognition and development of the community.

In terms of age, 24.5% of the participants are 60 years or older, followed by residents aged 20 to 29, accounting for 22.4%, and then residents aged 50 to 59, making up 20.4%. This data highlights a significant number of elderly individuals living in the settlement. Consequently, the existing infrastructure problems become even more alarming, as a large portion of this social segment requires greater accessibility for mobility and transportation.

Regarding self-declared skin color or race, 56.8% of the interviewed residents identify as pardos (mixed), followed by 22.7% as pretos (black), and 18.2% as brancos (white). In this context, most families are composed of four individuals, accounting for a total of 28.3% of the respondents, while 15.1% of households have five people, and 1.9% have six or more (MAGALHÃES, Kelly Cristina et al. 2022).

The majority of the houses where these families live were originally built with wood, with 40% still made of this material, followed by 38.6% made of masonry, and 13.6% made of plywood. Additionally, financial obstacles and land regularization were mentioned as hindrances to the permanent construction of houses. This information aligns with the previous mention of the IBGE research, which identifies the black population as the main social group residing in housing with some form of inadequacy. The presented context represents the consequences of a society where racism is a founding, structuring, and

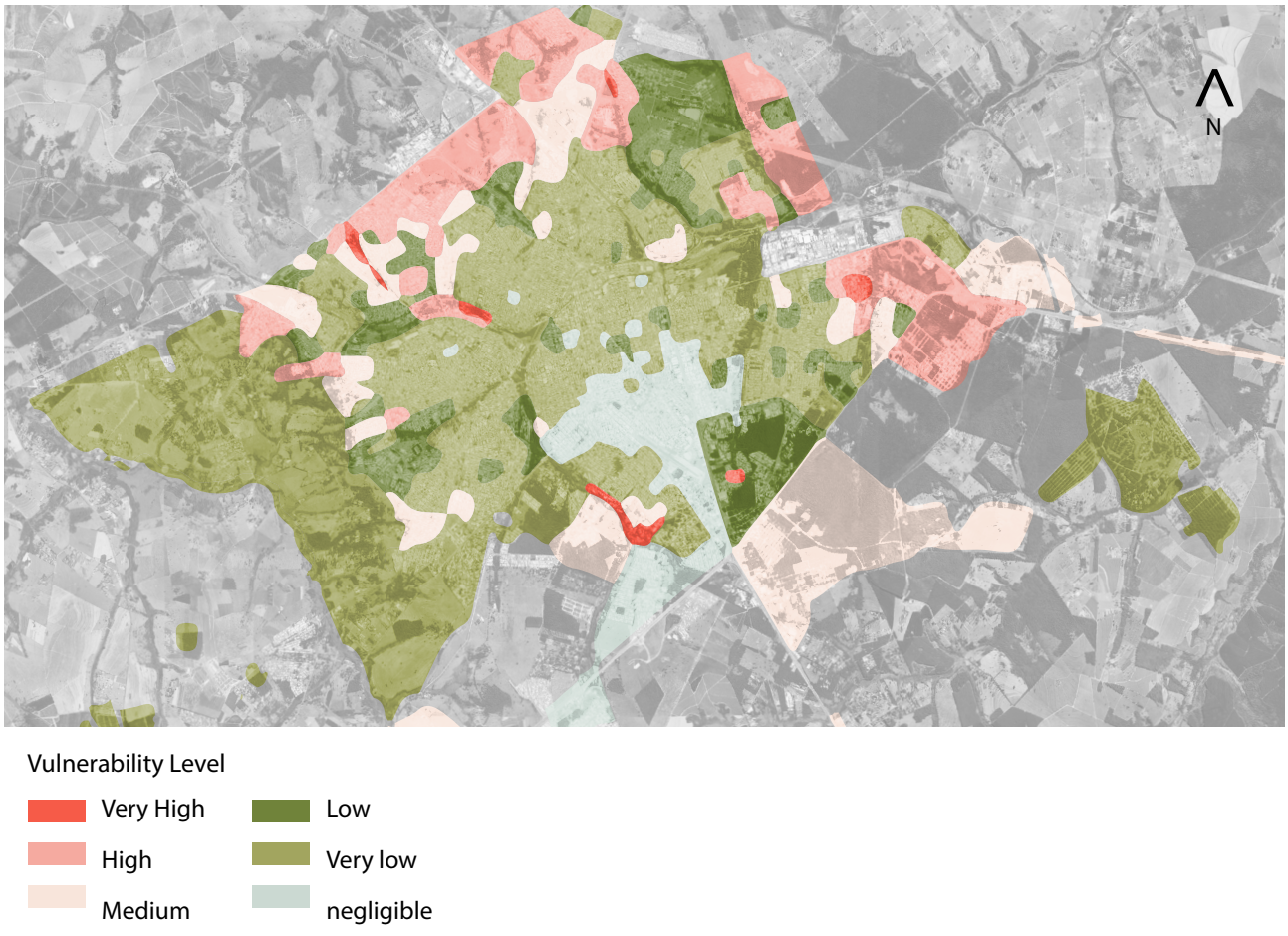


Figure 29. Map of São Paulo Social Vulnerability Index (IPVS) - Municipality of Bauru.

replicating technology of power throughout the social fabric (MBEMBE, 2018). From this perspective, Sueli Carneiro's affirmation (2011) that in Brazil, race and poverty are synonymous becomes undeniable. This annuls the "myth of racial democracy," a concept still alive in the imagination of a significant part of society:

> "(...) The concept of racial democracy was established in Brazil; according to it, blacks and whites coexist harmoniously, enjoying equal opportunities for existence (...). The existence of this alleged racial equality constitutes the 'greatest source of national pride' (...)." However, "we must understand racial democracy as the perfect metaphor to designate Brazilian-style racism: not as obvious as racism in the United States and not as legalized as apartheid in South Africa, but effectively institutionalized in official government levels as well as diffused in the social, psychological, economic, political, and cultural fabric of the country" (Translated from NASCIMENTO, 1978, pp.41 and 92).

According to the report of the academic project: "Cristiana Project: The occupation of the black population in Primavera Settlement in the City of Bauru-SP" coordinated by Professor Dr. Kelly Cristina Magalhães, it was carried out a cultural gathering with the settlement residents, and it was noticed that the women who are most engaged in the housing struggle were the ones who showed the greatest adherence to the action. Most of them felt comfortable sharing their narratives, which are enveloped in sadness due to previous evictions, dissatisfaction with the infrastructure of the place they are in, conflicts with other community members, the yearning for suitable housing, and their dedication to family and home. Among the numerous accounts, one stands out:

> "We don't have an address, the planned streets have no ZIP code, mail isn't delivered, Uber doesn't come in. It's as if we exist but don't exist."

The atmosphere presented is the embodiment of Fernando Henrique Cardoso's statement that the peak of social exclusion in Brazil is represented by a black woman, head of a family, and rural worker (CARNEIRO, 2011). Inserted in this perverse context marked by conditions of sub citizenship, these residents experience a kind of "social asphyxia" that creates tangible and intangible barriers to achieving a good life (CARNEIRO, 2011). Thus, a state of "matriarchy of misery" is outlined:

> "The term 'matriarchy of misery' was coined by the black poet from the northeast, Arnaldo Xavier, to show how Brazilian black women have had their historical experience marked by exclusion, discrimination, and social rejection, and to reveal, despite these conditions, their role of resistance and leadership in their impoverished communities throughout the country" (Translated from CARNEIRO, 2011, p. 121).

Therefore, without the existence of these women, the community would possibly succumb. Hence, the construction of public policies that address vulnerable groups from an intersectional perspective becomes crucial, in order to bring to light the intersections of race, gender, and class.

Figure 30. Kids playing on the street in Vila Cristiana.

Figure 31. Houses in Vila Cristiana.

Figure 32. House to Sell in Vila Cristiana.

3.2. TERRITORIAL ANALYSIS

Figure 33. Vila Cristiana view from natural green area.

Figure 34. Vila Cristiana view from the cemetery

To interpret the relationship between the natural landscape and the built environment within the context of the city, it is important to identify the most prominent elements of the territorial landscape that define important morphological characteristics of the city, particularly the discontinuities in urban fabric and resistant urban forms. Additionally, it aims to assess the potential and assign value to empty spaces (urban voids) through landscape design proposals, promoting the proper planning and development of the landscape to enhance the quality of life for the population.

The components that constitute the landscape, their definitions, and relationships are identified, leading to a deeper understanding of urban and natural processes. The investigation primarily involves inventorying physical elements, including natural features such as geomorphology, geological formations, and elements influenced by human intervention. Equally important is the examination of the biological elements present in the landscape.The landscape analysis serves as an investigation for design purposes, enabling a comprehensive understanding of the interrelationships between the landscape components. It is approached through the lens of Landscape Ecology. Initially, a regional-scale analysis is conducted to comprehend the broader context of the selected area. Subsequently, a more detailed investigation focuses on the specific area of study, allowing for a description of its unique landscape components.

The surveys begin by examining geological formations, followed by the identification of subterranean hydrological sources and a physical description of the geography. Surface hydrology, soils, vegetation, and biodiversity are also studied. The collected information is organized into maps that contribute to the diagnostic and data interpretation phase. This comprehensive analysis of the physical and ecological aspects will serve as the foundation for subsequent stages of the project, facilitating informed decision-making and the development of sustainable interventions.

TIME TRANSFORMATION

Analyzing satellite images from 2010 until 2022, the rapid development in the area becomes evident. However, it is also clear that this growth occurred without a comprehensive urban planning strategy and other guiding principles. In 2010, the landscape was largely covered by greenery, and the urban boundaries were not clearly defined, with most roads unpaved and the urban fabric divided into large blocks. The lack of coherent planning is apparent in the haphazard and unplanned expansion of the urban area.

By 2015, the green area started to be densely populated, with two significant settlements standing out: the informal area of Piquete and the Social housing development "Chácara das Flores," which introduced a contrast of low-rise buildings among the ground-level houses in the surroundings. This expansion appeared disjointed and lacked cohesive urban design, resulting in disconnected and fragmented communities.

In 2019, with the establishment of Vila Cristiana, the city's limit becomes evident, leaving behind a green empty bubble along with the cemetery. The unchecked urban growth has encroached upon the natural green spaces, leading to a fragmented landscape that lacks connectivity and integration with its surroundings.

Another noticeable change in the landscape over time is the density of vegetation and exposed soil, which fluctuates due to natural reasons. In São Paulo's Cerrado vegetation, similar to other regions, there are distinct changes during the summer and winter seasons. The summer months bring heavy rainfall and increased humidity, resulting in lush greenery, new leaves sprouting, and various plants flowering and bearing fruits. On the other hand, during the dry winter months, reduced rainfall and lower humidity lead to sparser and deciduous vegetation, with leaves shedding and a decrease in overall greenery. The dry season can be harsh, with occasional wildfires due to the accumulated dry biomass. However, the Cerrado has evolved to withstand and benefit from periodic fires, as some plant species have seeds that germinate after experiencing the intense heat of a fire. These fires also help to clear the landscape, promoting new growth when the rains return.

Unfortunately, in the region, human interference through the practice of deliberately setting fires to remove unwanted plants, prepare the area for pasture, or burn waste is common. This activity disrupts the natural system, exposes the soil to erosive processes, poses risks to wildlife, pollutes the air, and increases dryness, further enhancing the risk of fires spreading in unwanted directions (SEMMA, 2008).

Preserving the Cerrado's natural integrity and promoting sustainable urban development should be a priority. A comprehensive urban planning approach that considers environmental preservation, connectivity, and community needs is essential to ensure a balanced and harmonious development of the area while protecting its unique natural heritage.

2010

Figure 35. Satellite image of Vila Cristiana Territory. 2010

2015

Figure 36. Satellite image of Vila Cristiana Territory. 2015

2019

Figure 37. Satellite image of Vila Cristiana Territory. 2019

2023

Figure 38. Satellite image of Vila Cristiana Territory. 2023

100m N

Land Use

Territory scale

Bauru is, nowadays, the largest highway-railroad junction in the state of São Paulo. It is at the junction of the Marechal Rondon and Engenheiro João Batista Cabral highways that we can identify one of the city's expansion vectors, with the concentration of several closed "condominiums". As these new subdivisions were emerging, the city's urban perimeter was expanded to incorporate them, so that the limits of these new border the municipality's rural zone - as a result, emptied and disconnected landscapes emerged that do not fit the urban/rural binomial.

The map shows a disconnected territory, perforated by forgotten urban voids, private and public lands serving no function. The fragmentation of the territory can be seen also through the distribution of population, while few residents occupy large areas of closed condominiums, there are agglomerated islands both in the center and the margins of the city, matching with the social housing and informal settlement areas. In Bauru, "such voids are considered by the municipality as 'low-occupation plots' and are inserted in the map of the municipal territorial base even though they do not physically exist or they exist with precarious road infrastructure with very few occupied plots" (MAIA; LEONELLI, 2020.).

The fragmentation of the territory and the presence of significant urban voids can be better understood by examining Bauru's pre-urbanization landscape (Figure 39). It becomes evident that the valley bottoms played a vital role as they coincided with the boundaries of the region's original farms established by the pioneers.

The geography of the city also contributes to the fragmentation of the territory, the river and the railway function as barriers in the territory disconnecting its spatial dynamics. In this way it dificult the access of people living "across the river" or "across the railway" to the urban infrastructure located mostly in the central area.

Figure 39. Overlay of the current map of Bauru and the drawing of the old farms of the XIX century: (1) Fazenda Barreirinho, (2) Fazenda Grande, (3) Fazenda das flores, (4) São João Farm, (5) Vargem Limpa Farm, (6) Campo Redondo Farm.

Figure 40. (Next page) Land Use map in territory scale

Main Streets / Avenues
Highway
Railway
Waterway
Basin/Wetland
2.5km radius
5km radius

0 0.5 km 1 km 2 km

Urban space

- Public green areas
- Urban voids
- Gated condominium
- Centrality
- Social Housing Developments
- Informal Settlements
- Health facilities
- Education facilities

Population Density IBGE 2010

Person/km²

- 0 - 935
- 935 - 4801
- 4801 - 9832
- 9832 - 18568
- 18568 - 8105880

Urban Zones

ZEIS 1	Special Zone of Social Interest type I
ZEIS 2	Special Zone of Social Interest type II
ZEIS 3	Special Zone of Social Interest type III
ZE	Special Zone
ZR 1	Residential parks
ZR 2	Strictly residential zone
ZR 3	Predominantly residential zone
ZR4	Preferred Residential zone
ZS	Predominantly service zone
ZICS A	Strictly Industrial, Commercial and Services Use Zone;
ZICS B	Zone of Preferential Use Industrial, Commercial and Services;
ZICS C	Zone of Diversified Use
ZI	Industrial Zone
ZM	Mixed Zone
ZC	Predominantly comercial zone
ZCC	Strictly comercial zone

> The city of Bauru is marked by the presence of the Bauru and its tributaries. However, the continuity of the urban mesh stops when it meets the valley bottoms of valley bottoms of the streams that cross the city, the railroad tracks or the city, the railroad tracks or the highways, regardless of the existing topography.
>
> (Translated from CONSTANTINO, 2008, p.21).

Even the city's name, Bauru, is closely linked to the presence of the Bauru river. While human activities have transformed the landscape during the process of territorial occupation, the river has remained a constant feature. However, an analysis of local newspapers reveals that rivers are primarily associated with environmental degradation, such as flooding, erosion, limited accessibility, and pollution, rather than being utilized for recreational purposes.

The contemporary discourse on the city emphasizes the significance of revaluing the natural landscape. There is a growing desire to incorporate natural elements into urban spaces, endowing them with a qualitative dimension. The understanding of landscape as a system and as a result of societal actions plays a crucial role in this perspective. By recognizing the intrinsic value of the natural environment, cities aim to create a harmonious integration of natural and built elements, fostering a sense of place and enhancing overall quality of life. (CONSTANTINO, 2008)

The injust distribution of lands summed with the fast urbanization process led to the expansion of many informal settlements around the city. While the fringes of the city were occupied by the lower income social strata, from the 1950s onwards there was a consolidation of the southern region as a place to live for the higher social classes, with the diffusion of fortified enclaves/closed spaces, although installed towards the fringes of the urban territory, they are always separated by walls and sophisticated security systems.

In 2008 it was developed the last Participative Master plan of the city (Law No. 5631/2008), defining areas for certain uses, in order to regulate activities in certain regions of the regions of the municipality. To ensure the most appropriate development of the region, the following Special Zones of Social Interest - ZEIS "Special Zones of Social Interest" were established, aimed at land regularization, the implementation of housing developments, and, when applicable, special concessions for housing purposes, where the urban planning instruments provided for in this Law and in the City Statute apply:

> I - ZEIS 1 - privately owned areas occupied by low-income populations, including favelas, where there is a public interest in the production and maintenance of social interest housing, including social facilities and income-generating activities:
> II - ZEIS 2 - underutilized plots or lots suitable for urbanization, where there is a public interest in promoting the production and maintenance of social interest housing, including social facilities and income-generating activities:
> III - ZEIS 3 - publicly owned areas occupied by favelas, green or institutional areas, where there is a public interest in promoting urban recovery, land regularization, production, and maintenance of social interest housing, including public facilities, local commerce, and services, including mini-Neighborhoods, in which case they must be disaffected and compensated with other areas.
>
> (Translated from Law 5631/2008, Bauru Participative Master Plan)

Although the areas have been carefully selected to address inadequate settlements and housing demand, they have not been reviewed over the years and remain outdated. According to the Local Plan of Social Housing (Plano Local de Habitação de Interesse social - SEPLAN) Bauru had, in 2011, 3162 families living in inadequate housing conditions, distributed in 27 irregular urban areas. In 2016, the national economic crisis led to a

worst scenario, in which 16 new informal settlements were developed, occupied by more than 3 thousand families, double the previous number.

Vila Cristiana encompasses an area initially classified as an Zone of Expansion Interest, containing numerous urban voids with potential for urbanization due to its role as a vector of development, considering the future implementation of Avenida Nações Unidas Norte.

> §1 - The guidelines for the balanced development of the Expansion Zone of Interest are as follows:
>
> I - Implementation of Avenida Nações Unidas Norte as a development axis for the region and the municipality;
>
> II - Establishment of Parque do Castelo (Castle Park) with recreational and leisure activities, rainwater containment, and public services;
>
> III - Incentives for the implementation of private ventures that generate employment and income along Avenida Nações Unidas Norte;
>
> IV - Incentives for the implementation of state and federal public services;
>
> V - Utilization of Urban Consortium Operation, Municipal Consortium, and Transfer of the Right to Build.
>
> (Translated from Law 5631/2008, Bauru Participative Master Plan)

Neighborhood scale

Vila Cristiana is composed of four blocks drawn over a public land that was, before its occupation, serving no function. As seen before, the settlement follows the pattern of urban spatial development, occupying the margins of the city. Close to Água das Flores water stream, the settlement divides the urban landscape to the natural one.

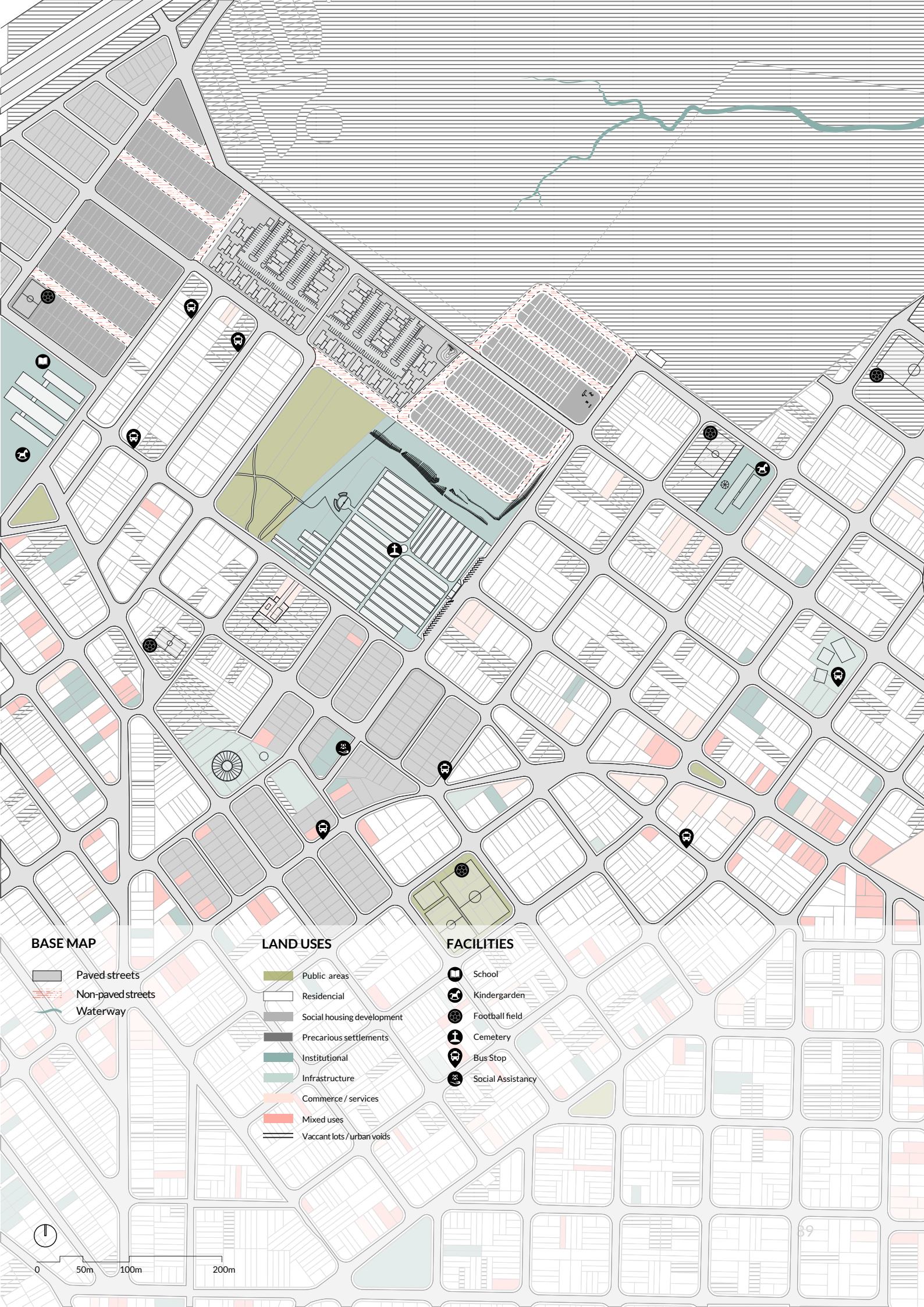
In the area It is visible three contrasting types in the use of spaces: First, in the south of the settlement there is the "formal city" planned roads and allotments; Secondly, a zone characterized by its precarious conditions in terms of basic infrastructure and function on the land, including the informal settlement of Cristiana and Piquete settlement (in the left) as well as the vacant lots; the third landscape of this territory is the natural area, starting with an abrupt transition between the urban area and the river.

The urban voids and vacant lots surrounding the area, can be seen as opportunities to improve the local infrastructure as well, since it exhibits a high amount of residential allotments, such as Social housing, Informal settlements and new plots. The Street Prof. Ayrton Busch, has also a great connecting potential forming a commercial corridor nearby Vila Cristiana.

The Master Plan of Bauru, elaborated by the municipality in 2008, does not foresee any type of protection in the natural are. Basides, it classifies the area as an Expansion Interest Zone, meaning that it is an area designated for future urban expansion and development. It indicates a zone that holds strategic importance for the city's growth and development plans. These zones are typically identified based on factors such as infrastructure availability, proximity to existing urban areas, transportation networks, and the municipality's long-term development objectives. However, It is clearly seen the lack of urban infrastructure, in the area, starting form the number of unpaved roads. The recreational spaces are almost nonexistent, except from the self-constructed football fields in the vacant lots of the surrounding area.

It is important to note that the Master Plan zoning counts with an important mechanism for guiding urban upgrades in informal settlements: the Special Social Interest Zones (Zonas Especiais de Interesse Social or ZEIS), it refers to designated areas within the city that are earmarked for addressing social housing needs and promoting social inclusion. ZEIS are established to ensure the provision of affordable housing and access to basic urban services for low-income populations. These zones are typically located in areas where informal settlements or precarious housing exist, and they aim to improve living conditions and promote social equity. The creation of ZEIS reflects a commitment to addressing housing challenges and the need for social integration within the city. The specific criteria for designating ZEIS may vary depending on local regulations and policies, but they often consider factors such as population density, income levels, housing conditions, and proximity to urban amenities and employment opportunities.

Figure 41. (Next page) Land Use map in neighborhood scale


BASE MAP
Paved streets
Non-paved streets
Waterway
LAND USES
Public areas
Residencial
Social housing development
Precarious settlements
Institutional
Infrastructure
Commerce / services
Mixed uses
Vaccant lots / urban voids
FACILITIES
School
Kindergarden
Football field
Cemetery
Bus Stop
Social Assistancy
0
50m
100m
200m

Geomorphologic system

Territory scale

The majority of cities in the state of São Paulo, including the case of Bauru, are located on terrains consisting of sandy and relatively deep soils. This soil composition presents degradation issues in urban areas due to erosion processes, leading to community risks and threatening housing and public facilities. Consequently, it becomes the most prominent constraint for urban expansion and the establishment of infrastructure projects .

According to the Environmental Water Resources Diagnostic of Bauru (2008), the Western Plateau, where the municipality of Bauru is located, has predominantly sandstone formations, in some regions cemented by calcium carbonate. The relief is slightly undulated, with a predominance of wide hills and morrotes, shows strong structural imposition, under control of sub-horizontal layers, with a slight fall to the west, forming an extensive structural platform structural platform extremely smoothed, leveled in quotas close to 500 m (SEMMA, 2008).

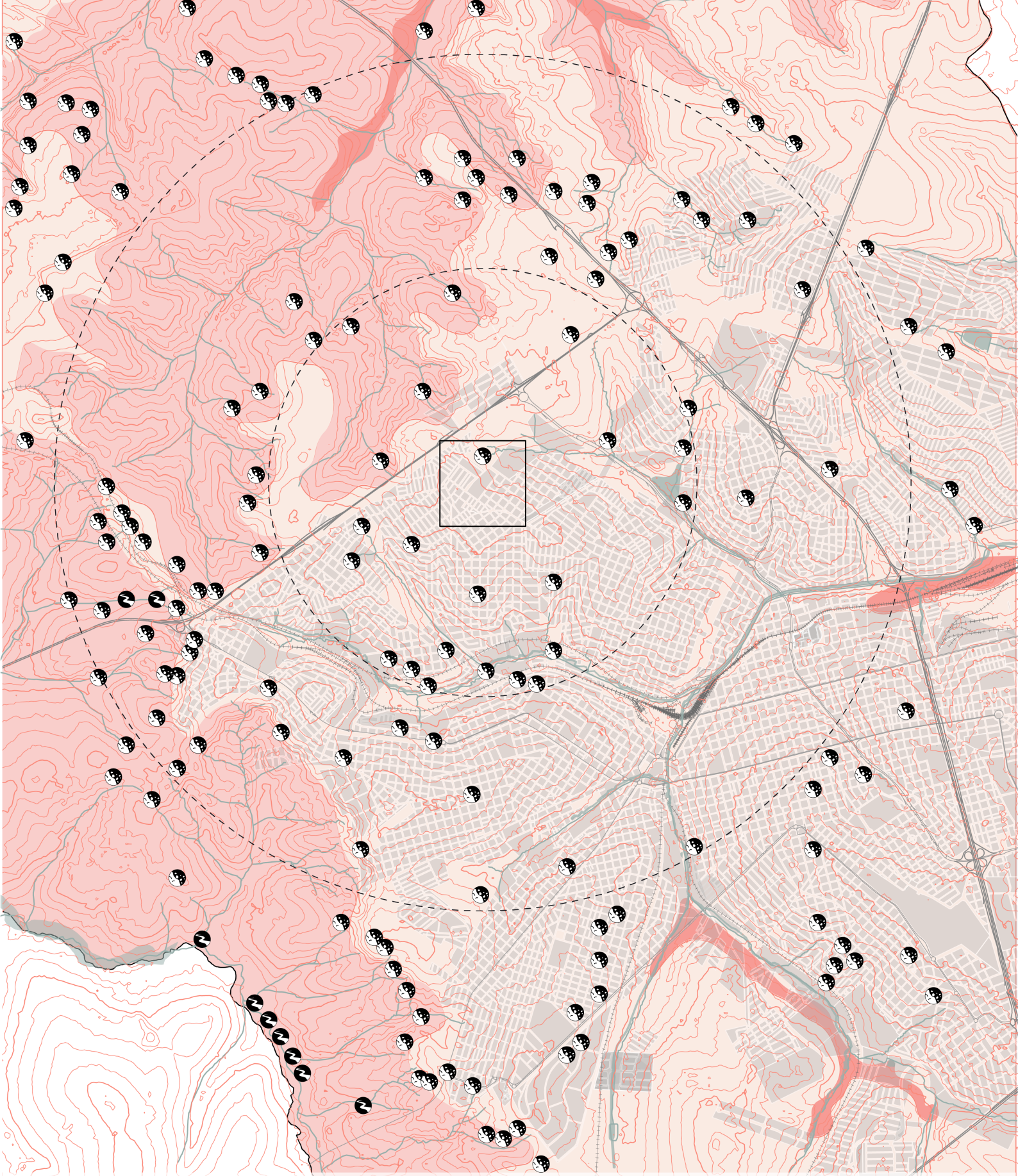
Regarding the characteristics and features of the topography and geology in Bauru, the city exhibits specific traits shaped by its geological history. The region has a predominantly flat or gently undulating topography, with altitudes ranging from approximately 456 meters to 664 meters above sea level. The city's geology is marked by the presence of formations such as sedimentary rocks, including sandstones and conglomerates, which contribute to the sandy nature of the soil.

Moreover, Bauru is situated within an area that experiences significant erosion susceptibility, primarily due to factors such as rainfall intensity, land use practices, and the erosion-prone nature of sandy soils. These erosive processes pose challenges for urban planning and infrastructure development, requiring careful consideration of erosion control measures and sustainable land management practices.

The erosive processes involve the disaggregation of particles caused by the impact of raindrops on the soil surface, rendering the soil vulnerable and promoting the transport of particles through mechanical dragging by rainfall. This can lead to the formation of grooves, gullies, and ravines. Consequently, this process causes the sedimentation of watercourses, as at a certain point, the water loses its carrying capacity, and the particles are deposited, usually in lower areas of the terrain. Along with the soil, nutrients and organic matter are also carried away, a process known as sheet erosion. The erosive processes result in sedimentation of watercourses, destruction of urban infrastructure, environmental degradation, financial losses in public attempts to restore areas, and pose risks to human life and potential human losses (SEPLAN 2020b).

Understanding the topographical and geological characteristics of Bauru is crucial for comprehending the environmental context in which the city exists and for addressing the challenges associated with erosion and land degradation. By incorporating this knowledge into planning and development strategies, it becomes possible to mitigate the risks posed by erosion, safeguard the well-being of the community, and ensure sustainable urban growth.

Figure 42. (Next page) Geomorphologic system map in territory scale



Basemap

- Main Streets / Avenues
- Highway
- Railway
- River
- 2.5km radius
- 5km radius

0 0.5 km 1 km 2 km

TERRAIN TYPE

River Plateaus
Slope: <1%.
High sensitivity to occupation due to the risk of flooding, contamination and silting up.

Dissected Hills
Amplitude: 50 to 75m
Slope: 5% to 10% with sectors from 10% to 15%.
Sensitivity to occupation: Medium high, due to the erodibility of the sandy soils accentuated by the slope

Hills
Amplitude: 50 to 100m
Slope: 1% to 5% with sectors from 5% to 10%.
Sensitive to occupation: Medium, due to the erodibility of the sandy soils

GEOLOGICAL PROCESS

- Siltation
- Erosion

Neighborhood scale

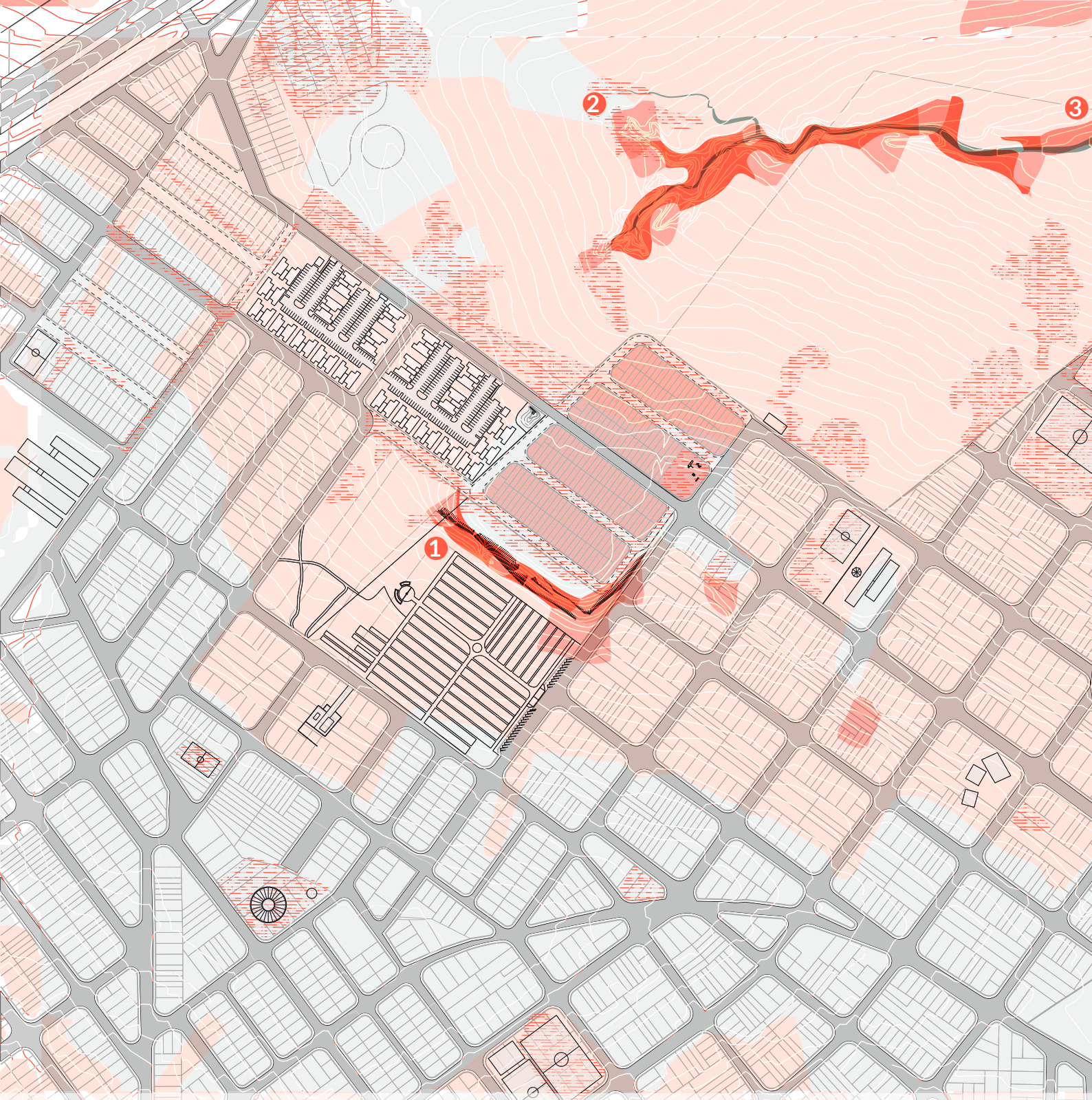
To analyze the geomorphological characteristics of Vila Cristiana, it is necessary to approach the scale of the Neighborhood. By examining the map, it is possible to describe the geological morphology of the area, located halfway between a hilltop and the valley.

In the majority of the area the slope is constant and low, mostly around 5%. However, there is a break in the consistency of the slope between the Cristo Rei cemetery (located near the settlement) and Primavera, with slopes going to up to 30% and more in eroded areas between the two, followed by slopes below 5% within the community and between 5% and 12% until the river margins.

The amount of exposed soils are both contributing and caused by erosive processes due to the impact of heavy rains in a terrain classified as Hilly by the Urban Diagnosis for the new Master Plan for the city. This land is considered of medium vulnerability to occupation, due to the erodibility of its sandy soil. (SEPLAN, 2020b)

The slope, relief, and street map allow us to analyze how these three factors work together and their impact on the settlement. It can be observed that most of the surrounding streets in the settlement have a slope. Additionally, the settlement is situated in an area with significant slope, causing water to flow towards it during rainfall. As the terrain is flat, the settlement is susceptible to flooding, and some issues in the streets, which are still unpaved, are exacerbated

Figure 43. (Next page) Geomorphologic system map in neighborhood scale



BASE MAP

- Paved streets
- Non-paved streets
- Waterway
- Vila Cristiana

GEOMORPHOLOGICAL SYSTEM

- Contour lines
- Soil exposed
- Landslide / erosion

DECLIVITY

- 0 to 5%
- 5 to 12 %
- 12 to 20 %
- 20 to 30 %
- >30 %

0 50m 100m 200m

TERRAIN

Type: Hills
Amplitude: 50 to 100m
Slope: 1% to 5% with sectors from 5% to 10%.

Surface Dynamics:
Laminar, furrow and occasional fluvial erosion of low to medium intensit.
Slopes of low inclination with areas favorable to occupation, implantation of civil works, urbanization and agricultural mechanization.
Soils with good hydric availability, not presenting difficulties for the penetration of roots, which allow mechanization and different degrees of management.

Geo-environmental sensitivity:
Medium
Terrain sensitive to interference due to the erodibility of the sandy soils.

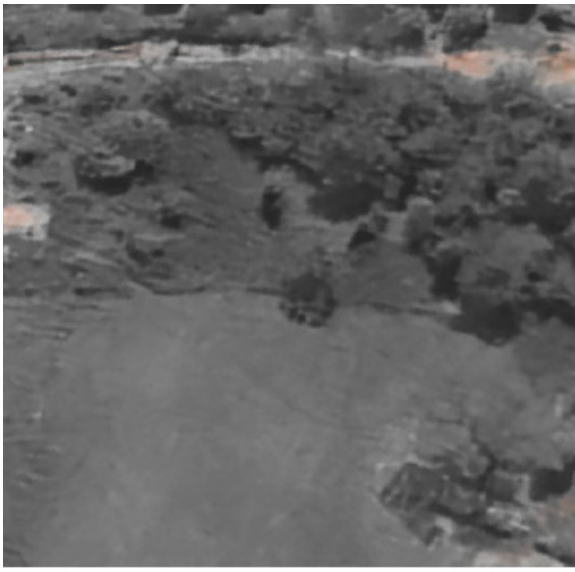


Figure 44. Satellite image of erosion in location 01

Figure 45. Satellite image of erosion in location 02

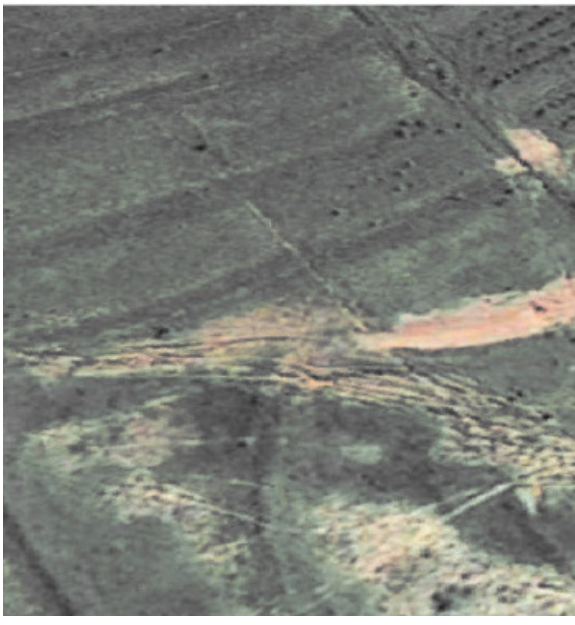
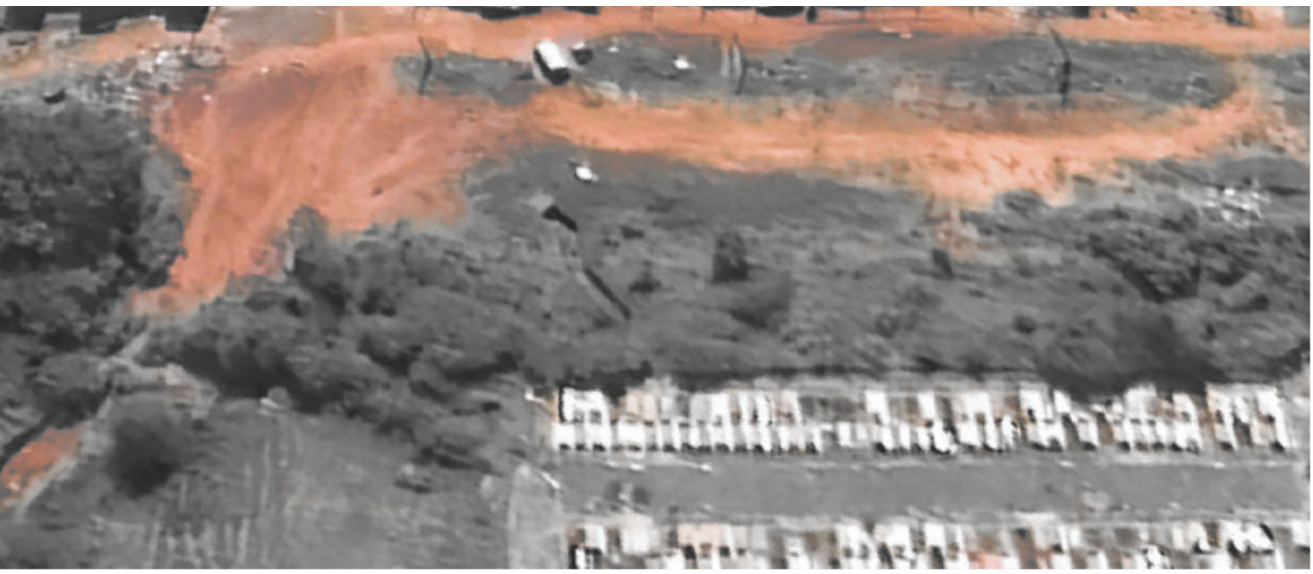
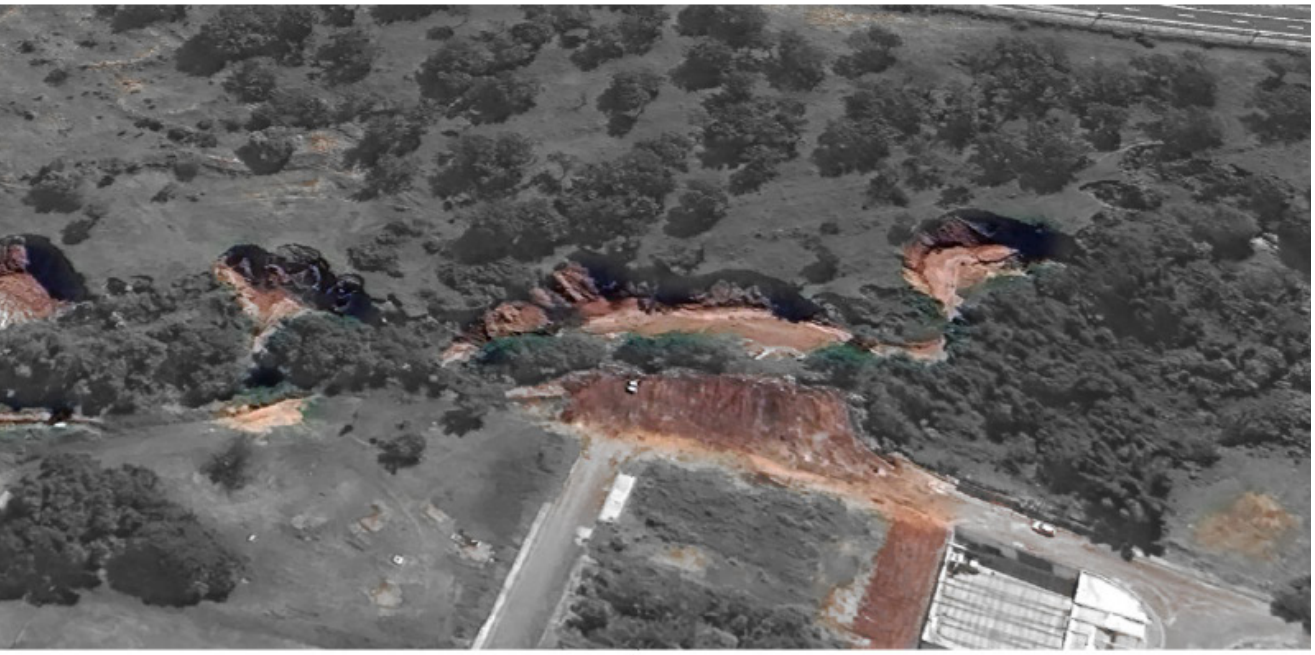


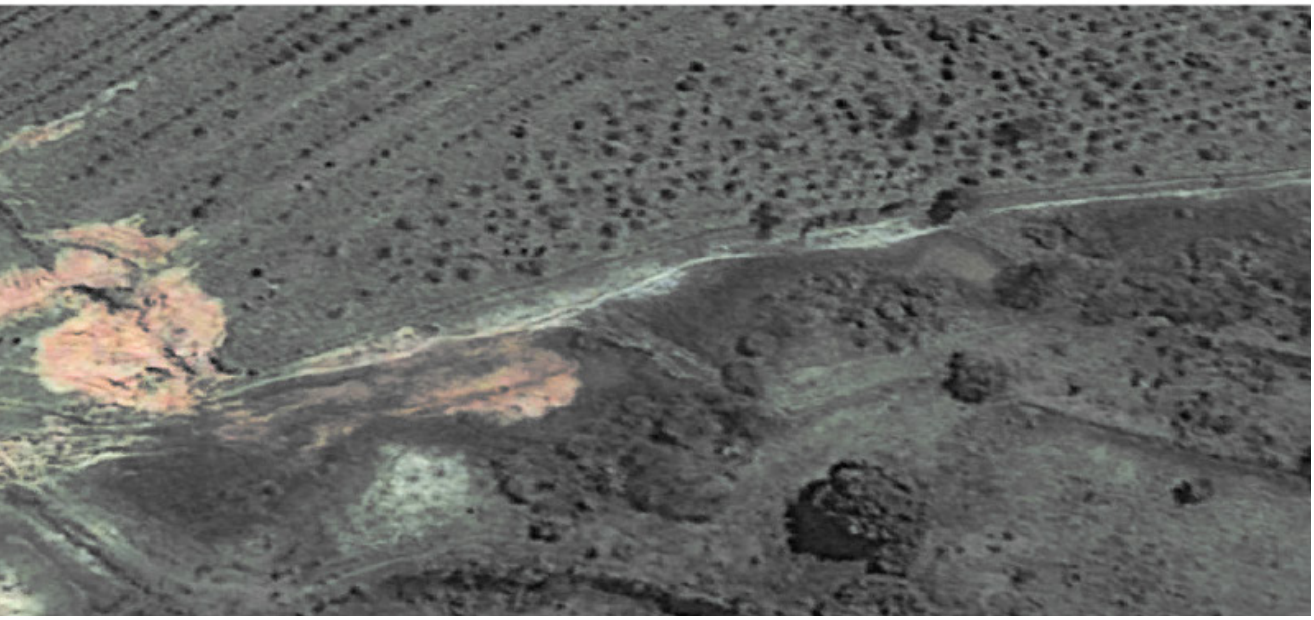
Figure 46. Satellite image of erosion in location 03



1



2



3

Green system

Territory scale

The original forest cover of the state of São Paulo, which once covered 88% of its territory, has been reduced to approximately 13.4%, according to SEMMA (2015b). Currently, the situation is even more concerning, as despite improvements in environmental legislation, the destruction rate remains very high. The intense, rapid, and unregulated pace of urbanization has exerted pressure on natural ecosystems, inevitably resulting in a reduction in biodiversity. The same situation applies to the Cerrado biome, which now occupies only 1% of the area of the state of São Paulo. According to information from the Municipal Plan for the Conservation and Recovery of the Atlantic Forest and Cerrado (SEMMA, 2015b), studies have shown an 87% reduction in Cerrado areas between 1962 and 1992. Currently, this ecosystem is represented by small and highly isolated fragments immersed in a landscape dominated by agriculture and large urban centers. The remaining fragments are concentrated primarily within a limited number of Conservation Units, which precariously house what remains of the original biodiversity.

According to the Forest Inventory of the State of São Paulo in 1993, the state had approximately 33,307,744 hectares of ”Natural Forest,” which accounted for 13.4% of its territory. Among these, approximately 85% were classified as ”forest” and ”secondary forest,” 9% as different physiognomies of the Cerrado (Brazilian savanna), and 4% as ”floodplain,” ”coastal strand,” ”mangrove,” and ”unclassified vegetation.” The Forest Inventory also reveals a significant decrease in natural vegetation coverage in the state over the years. From 1962 to 1973, there was a decrease of 39.45%, and from 1973 to 1990-92, the decrease was 29.20%. Overall, between 1962 and 1992, the loss of vegetation reached a staggering 57.13%, which is a concerning figure.

Currently, one of the main challenges in conserving the remaining forest remnants in the state is their extreme fragmen-

Figure 47. (Next page) Green system map in territory scale.


BASE MAP
Main Streets / Avenues
Highway
Railway
Waterway
Basin/Wetland
2.5km radius
5km radius
GREEN SYSTEM
Urban Public green areas
Natural parks
Environmental Protected Areas
Ecological Interest areas
Reforestation
Riparian forest
SOLID WASTE
Landfills and recycling plants
Debris collection locations
Irregular waste disposal
ECOREGION
Atlantic Rainforest
Cerrado / Tropical Savanna
0
0.5 km
1 km
2 km

tation. For instance, in the Cerrado biome, the remnants are distributed across approximately 8,353 fragments. This fragmentation of the environment poses difficulties for the conservation of São Paulo's fauna, leading to a high number of endangered animal species. In the municipality of Bauru, the current situation of natural remnants follows the same pattern observed for the entire state of São Paulo. KRONKA et al. (1993) point out drastic reductions in natural vegetation. The accelerated degradation of forest formations in recent decades is evident, and the main factor responsible for this has been the expansion of the agricultural frontier, primarily coffee cultivation followed by sugarcane. The direct consequence of this devastation has been the fragmentation of vegetation. What remains of the vegetation today are fragments of varying sizes, in different states of degradation, and isolated from one another. These "vegetation islands" are generally small in size and surrounded by agricultural lands. The anthropogenic impact on these "vegetation islands" leads to the development of ecological processes that result in reduced diversity, species mortality, and other characteristics associated with the "edge effect" (SEMMA, 2015b).

Riparian vegetation is another type of fragment found in the municipality, which, although degraded and limited in extent, accompanies a significant portion of river and stream drainage. The riparian vegetation along the small streams that directly drain into the Batalha River (such as Água do Cedro, Água da Leopoldina, and Água do Paiol) can be considered typical marshy vegetation, with the presence of species such as cypress and grasses, especially from the genera Fimbristylis sp., Rhynchospora sp. (navalha grass), Scleria, and Cyperus sp., among others. In permanently flooded areas, Typha angustifolia (cattail) stands out. The marsh forests are primarily composed of species such as Calophyllum brasiliense, Magnolia ovata, Xylopia emarginata, Cedrela odorata, and Tapirira guianensis (CARBONI, 2007). In the sub-basin of Água Parada, the Guabiroba stream is also bordered by marshy riparian vegetation, while the rest of the drainage (such as córrego da Figueira, São Bento, and Rio Verde) is accompanied by a mosaic of arboreal and marshy riparian vegetation. The riparian forests along the Água Parada and Batalha rivers, which traverse the entire municipality of Bauru, although mostly degraded, still have sections that are potentially recoverable. The riparian forests in the Água Parada Environmental Preservation Area are of great importance, particularly as a potential water source for future water supply in the city of Bauru. All these remnants are of utmost importance for the municipality, as they represent shelters and potential resource sources for fauna and flora, and therefore contribute to the maintenance of biological diversity.

Among the key landscape attributes, a notable feature is the presence of remnants of vegetation from the Cerrado ecotone, thanks to the occurrence of forest formations as a transitional zone between different biomes, namely the Atlantic Forest and the Cerrado.In this ecologically tense area, where fragments of cerrado, cerradão, and Atlantic Forest converge, the city is still surrounded by numerous patches of native vegetation, which are now protected by law. These remnants of vegetation hold immense ecological significance, serving as vital habitats for a diverse range of flora and fauna species. The intermingling of different biomes creates a unique ecological mosaic, fostering biodiversity and contributing to the overall health of the ecosystem. The presence of such natural areas within an urban context provides valuable opportunities for environmental education, ecological restoration, and the promotion of sustainable urban development

Figure 48. (Next page) Cerrado Vegetation / Bauru. Ph. Foto Arthur Almeida

Neighborhood scale

Through the production of a vegetation map, a detailed analysis of urban tree cover, predominant vegetation types, and vacant green lots was obtained. In the analyzed region, it is evident that although there is some form of vegetation on all streets, it is far from ideal.

The area represents a halfway in between two biomes, at the limits of the are classified as Cerrado and the Atlantic Rainforest, it can be classified as an Ecotone. It is characterized by a mix of species and ecological characteristics from both adjacent ecosystems. Ecotones often exhibit unique biodiversity and ecological dynamics, as they can support species from both ecosystems and serve as corridors for species movement.

The green areas shows predominantly a low vegetation, with bushes and high grass.This scenario changes while getting closer to the water stream, the vegetation becomes denser with taller and more wild trees.v

The occurrence of flooding is exacerbated by the lack of permeable areas within the settlement. The composition of the settlement consists of susceptible red soil prone to erosion and impermeable asphalt roads, aggravating the situation further. The combination of these factors contributes to the accumulation of water within the settlement, as there are limited opportunities for natural drainage or water absorption.

Figure 49. (Next page) Green system map in neighborhood scale

BASE MAP

- Paved streets
- Non-paved streets
- Waterway
- Vila Cristiana

GREEN SYSTEM

- Pature
- Riparian Vegetation
- Residual green areas (Bushes, tall grass)
- Residual green areas (Low grass)
- Public squares
- Internal / Private tree
- External low tree
- External tall tree

NATIVE SPECIES

Holocalyx balansae
Psidium cattleianum
Schinus terebinthifolis
Schinus molle
Eugenia dysenterica
Muntingia clabura
Camponesia phoea
Peltophorum rubium
Ocotea diospyrifolia
Jacaranda macrantha
Cedrela fissilis
Cássia ferruginea
Copaifera langsdorffii
Pera glabrata
Psidium guajava
Eugenia brasiliensis
Astronium graveolens
Casearia sylvestris
Aspidosperma parvifolium
Inga SP
Tabebuia-rosea-alba
Tabebuia avellanedae
Myrciaria caulifolia
Syzygium jambos
Hymenea courbaril
Cariniana legalis
Hancornia speciosa
Dendropanax cuneatum
Annona coriácea
Duguetia lanceolata
Byrsonima basibola
Myrciaria tenella
Ormosia arbórea
Bauhinia forficata
Caesalpinea echinata
Gallesia integrifólia
Qualea grandiflora
Cariocar brasiliense
Aspidaspetma polynecron
Xilopia aromática
Gomidesia lindeniana
Eugenea uniflora
Tibouchina granulosa
Kielmeyera rubriflora
Lecythis pisosonis
Caesalpinia Pluviosa
Bondichia virgilioides
Aegiphila sellomiana
Eugenea pyriformis

0 50m 100m 200m

1

Figure 50. Public area in Vila Cristiana

2

Figure 51. Banana and Papaya trees in residence

3

Figure 52. Big tree on the sidewalk

4

Figure 53. Greenery in kindergarten

5

Figure 54. Blooming plants of the cemetery

6

Figure 55. Solid waste in public green area

7

Figure 56. Sparse and dry natural vegetation

8

Figure 57. Lush and dense natural vegetation

9

Figure 58. New planted urban trees and exposed soil

10

Figure 59. Tall trees in the plot of Water and Sewage Department

Hydrologic system

Territory scale

Situated at a water divide, the municipality of Bauru occupies a unique position as it partially encompasses two distinct hydrographic macro-basins that ultimately flow into the Tietê River. The larger basin, known as the Tietê-Batalha Basin, is predominantly formed by the Batalha River, covering an area of 502 km2, which corresponds to approximately 75% of the municipality's total area. The remaining 25% of the municipality, spanning 673.5 km2 according to IBGE, contributes to the Bauru River, forming part of the Tietê-Jacaré Basin, covering 172 km2. Being located at a water divide entails various peculiarities, including the presence of numerous springs, which necessitates a great responsibility in maintaining local and regional water resources. (SEMMA, 2008)

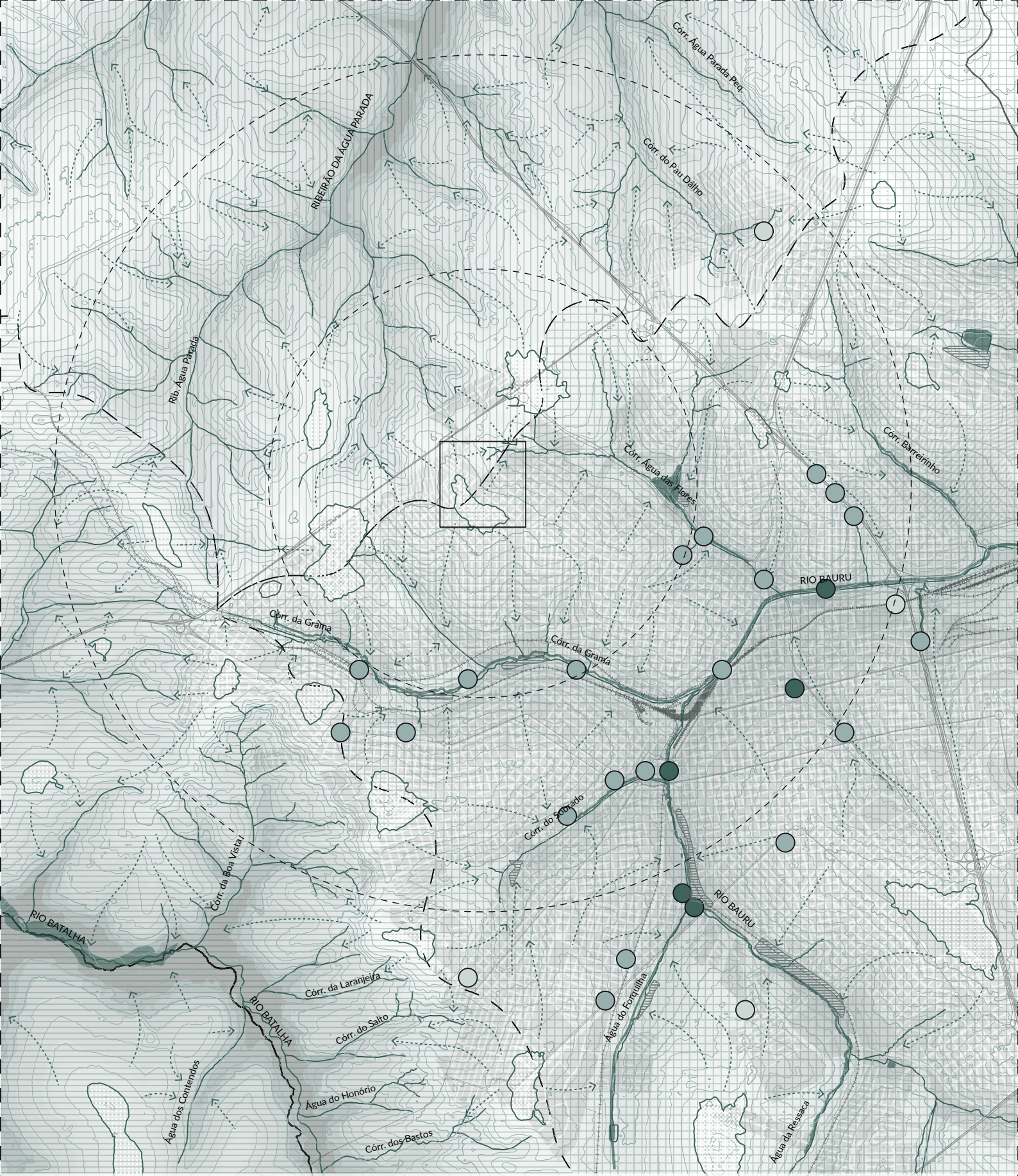
According to Federal Law 9.985/2000, which established the National System of Nature Conservation Units, an Environmental Protection Area - APA is defined as: "an area that is generally extensive, with a certain degree of human occupation endowed with abiotic, biotic, aesthetic or cultural attributes that are especially important for the quality of life and the well-being of human populations". O The objective of defining an area as being of environmental protection is in the sense of "protecting biological diversity, disciplining the occupation process and assuring the sustainability of the use of natural resources".

Thus, the municipality of Bauru has three APAs, designed to protect and conserve the environmental quality of its hydrographic basins, to ensure that the water supply has adequate quality and quantity. quantity. Together, they total 66% of the municipal territory, which is mostly in the rural part of the rural area. The municipality also has a Management Council (CONGAPA) which guides the municipal authorities in the administration of the environmental protection areas. protection areas.

The majority of the urban area of Bauru falls within the Bauru River basin and discharges its untreated sewage directly into its waters. Consequently, all tributaries of the Bauru River carry contaminated water, resulting in extremely low dissolved oxygen levels as it leaves the municipality. The Bauru River meets the Tietê River with significant amounts of foam and high levels of contamination (DAE, 2014).

On a different note, the Água Parada stream, a tributary of the Batalha River with the largest drainage basin in Bauru (349 km2), traverses the rural areas of the municipality. It serves as one of the potential future

Figure 60. (Next page) Hydrologic system map in territory scale



BASE MAP

- Main Streets / Avenues
- Highway
- Railway
- 2.5km radius
- 5km radius

TOPOGRAPHY

- Contour lines 50m
- Contour line 10 m
- Hillshade
- 664m - 456m

WATER BASIN

- Ribeirao da Agua parada
- Rio Bauru
- Rio Batalha

WATERWAY

- River
- Water mass
- Water source

DRAINING PATTERN

- Rainwater direction
- Hilltop

Critical Drainage Points

- Very high risk
- High risk
- Low risk

0 0.5 km 1 km 2 km

water supply sources for the municipality and is closely associated with the Batalha River Environmental Protection Area (APA). In the region, typical tropical rains occur, characterized by violent storms and intense but short-duration showers.

The headwaters of the Água Parada stream (a tributary of the Batalha River) and a significant portion of its length are located in the municipality of Bauru. Approximately 40,047.6 hectares of the Água Parada stream basin are occupied by pastures; 2,209.13 hectares by sugarcane crops; 273 hectares by corn crops; 2,293.3 hectares by orange orchards; 4 hectares by bean crops; 6 hectares by rubber trees, and 67 hectares by coffee crops. Pastures and sugarcane cultivation dominate the other crops in the watershed. Considering the use of pesticides associated with sugarcane cultivation, it can potentially contribute to water contamination in the Batalha River and its tributaries (Plano de Bacia Hidrográfica da UGRHI 16).

The water supply for the city has two sources: the Batalha River, responsible for 36% of the water that reaches homes, with an average production capacity of 1,300,000 m3 per month, and the deep wells that supply the other 64% of the city. To ensure that the people of Bauru will not lack water, the local authority has 34 deep wells, 33 of which draw water from the Guarani Aquifer and one that draws water from the Bauru Aquifer, with an average production capacity of 2,300,000 m3 of water per month, and 52 reservoirs, located in various Neighborhoods of the town.

DAE, also responsible for the collection and disposal of domestic effluents gives the municipality a collection rate of 99%, with an efficiency of 8.97%. Only 9.1% of the sewage produced in the city is treated. Thus, 90.9% of the effluent collected by the public network is discharged directly into bodies of water. This fact confers a very poor quality of the waters of the Bauru River which, directly or indirectly, receives all the organic load produced in the city. (DAE, 2014)

The Bauru River and its water streams receive a significant portion of the city's untreated domestic sewage, and they are either fully or partially located within the urban area. According to Gomes (2012), the water quality of the Campo Novo stream is compromised due to the discharge of industrial effluents. Additionally, some of its springs are located within the urban perimeter. As a result, the water quality of the Bauru River compromises the use of these water bodies for public water supply purposes.

Moving to the drainage system of the city, the rainwater is conveyed through gutters, stormwater drains, stormwater galleries, and pipes until it discharges into water bodies, forming the Urban Drainage System. Common equipment found in public streets, such as storm drains, culverts, stormwater galleries, channelizations, and stream rectifications, are the responsibility of the Public Works Department of the Municipality of Bauru. Within each block or lot, it is the responsibility of the property owners to direct rainwater to the sidewalks.

The Rio Bauru, in the upper portion of its course, cuts through the downtown area of the city of Bauru and flows into the Ribeirão Grande, which is a tributary of the Tietê River (both located in the municipality of Pederneiras). The increasing urbanization in the city has significantly contributed to the siltation of urban channels and the increased flow of stormwater runoff, which, in excess, is responsible for flooding in the central area of Bauru or nearby.

Between 1990 and 2003, the Municipality of Bauru carried out a canalization project that covered approximately 2.5 km of the main channel of the Rio Bauru in the urban section. Additionally, some sections of the river were straightened through dredging. Following the canalization of the Rio Bauru, the floods became concentrated mainly at the mouths of the Água da Forquilha and Água do Sobrado streams, which are urban tributaries of the river.

For the municipality of Bauru and its surrounding areas, precipitation is primarily associated with disturbances caused by cold fronts and instability lines. These disturbances not only bring rainfall but also intensify regional and local winds, generating turbu-

lence and mixing in the lower atmospheric layer. These rains usually occur in the late afternoon or early evening due to the strong daytime heating. They are scarce during the autumn and winter seasons and concentrate within the spring-summer period.

Monthly average precipitation in the Southeast Region reaches its highest values in December, January, and February, while it is lower in June, July, and August. During the summer, local orographic convections and the passage of cold fronts can cause regionally more intense rainfall with higher daily and monthly volumes. In winter, with lower average temperatures and reduced evaporation, rainfall is less intense, and monthly volumes are lower. In nearly 100% of cases, rainfall is caused by the passage of frontal systems. Precipitation in the Southeast Region exhibits significant spatial and temporal variations, with marked seasonal differences and pluviometric deviations over consecutive years.

In Bauru, the maximum pluviometric value, 228.1mm, occurs in the summer, while the minimum, 36.3mm, occurs in winter. When analyzed in conjunction with the characteristics of the region's composition, vegetation cover, and dominant land use and occupation patterns in each municipality, which in many cases lack proper land management, these pluviometric aspects help explain the occurrence and severity of ongoing erosive processes, some of which have already reached the stage of gullies, particularly in urban expansion areas.

The IPMet/UNESC - Bauru Meteorological Center, through the Integrated Storm Monitoring, Forecasting and Warning System for the South and Southeast regions of Brazil, has catalogued data regarding extreme events from 1980 to 2015 in the municipality. The data contained in the platforms are obtained through communication with the Civil Defense and/or through local media (newspapers). The Municipal Civil Defense mapped in 2013, 35 risk points of flooding and frequent flooding in the urban environment of Bauru, highlighting them in risk categories: Very High Risk; High Risk and Low Risk .

Neighborhood scale

The area of Vila Cristiana, is located in the limits of the Rio Bauru Water Basin and Água Parada Water basin. While the basin of Água Parada drains the rural area of the region and it's used mostly for recreation and irrigation, the closest stream to Vila cristiana drains the water to Rio Bauru, which receives all the organic load produced in the city, conferring a very poor quality of its water.

Created by law 4,126/1996 and regulated, expanded and named in 2001 (law 4,704/2001), the Água Parada APA is almost completely inserted into Bauru territory, which corresponds to 97% of the total. It overlaps the area also occupied by the APA Rio Batalha and also houses the Conservation Unit Ecological Station Sebastião Aleixo da Silva. These waterways are in a bad state of conservation, receiving a load of untreated domestic sewage from the municipality and also receiving all kinds of solid waste poorly disposed of (SEMMA, 2015a).

The region where the stream Água Parada is located is characterized by intensive soil use. In this way, its waters receive negative impacts, which compromises the health of these water courses. It is also observed, in many Many springs are also undergoing a process of urbanization that expands downstream. As a result of these facts presented, the springs are subject to changes caused by this process: suppression of natural vegetation, sealing and soil erosion, reduction of groundwater recharge areas, increase in rainfall runoff.

In order to describe the drainage pattern of the selected area, a map was developed with topography elements, allowing to study the watersheds, valleys and Hilltops. These three elements structure the landscape in the following way: the hilltop located to the Southwest of Primavera shapes the relief, by means of two water divisors parallel to the community. This generates a broad valley bottom with gentle concavity, which has no water body. Among the alternatives studied by the Municipal Government to minimize the effects of floods, the construction of small containment dams in the main tributaries of the Bauru River in the urban area stands out. This includes a dam located in the Agua das Flores Stream, near the area in question (DAE, 2014).

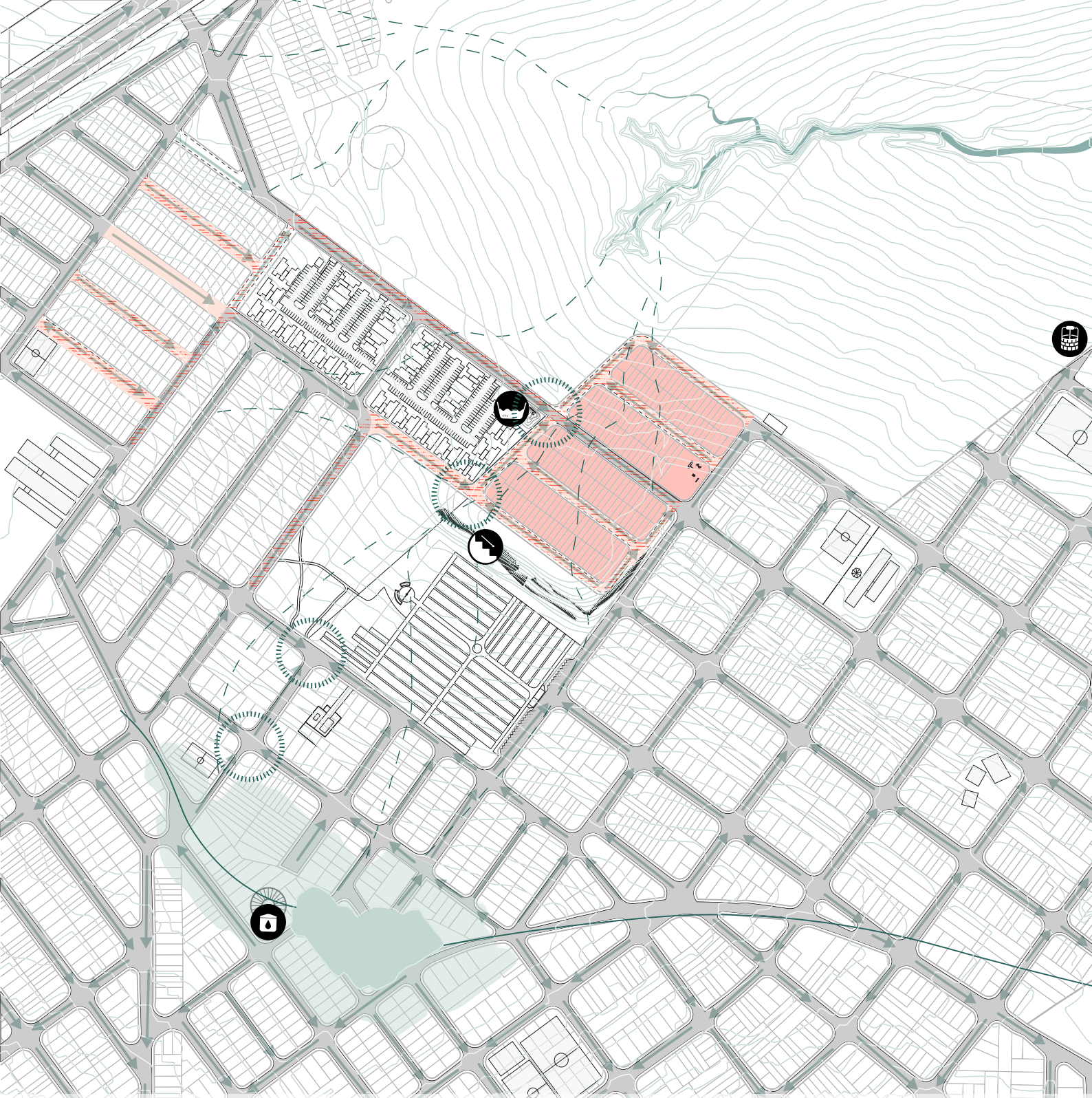
The map aims to illustrate the flow of rainwater, taking into consideration the topography, urban design, and water dividers of the area. The shape of the terrain, influenced by hilltops, has a significant impact on the nearby streets, causing multiple confluences, with the most severe one occurring near the Cristo Rei Cemetery. Additionally, there is a tendency for water to flow towards the Primavera area.

Due to its position below the terrain of the Cristo Rei Cemetery and the steep slope separating them, the substantial flow of water that bathes the settlement during rainfall becomes contaminated. Moreover, houses adjacent to the cemetery are susceptible to landslides and receive polluted water runoff from the site. The houses closest to the valley also suffer from high water levels, which leads to flooding. The settlement also lacks essential urban infrastructure such as pavement, green spaces, tree cover, and more.

A storm water runoff map was developed to show the rainwater flows, considering the relief in conjunction with the site's urban design and the water dividers to determine the runoff directions through the streets. The shape of the relief caused by the hilltop affects the nearby streets causing several confluences, the most serious being the one near the Cristo Rei Cemetery. In addition, there is a tendency of confluence towards Primavera.

Figure 61. Street after rain in Vila Cristiana.

Figure 62. (Next page) Hydrologic system map in neighborhood scale



BASE MAP

- Paved streets
- Non-paved streets
- Waterway
- Vila Cristiana

HYDROLOGIAL SYSTEM

- Rainwater direction
- Confluence
- Valley
- Watershed
- Hilltop
- Contour line 10m

INFRASTRUCTURE

- No Water supply
- No sewage system
- Retention basin
- Waterwell
- Water resevoir
- Stepped spillway

0 50m 100m 200m

3.3. STAKEHOLDERS ANALYSIS

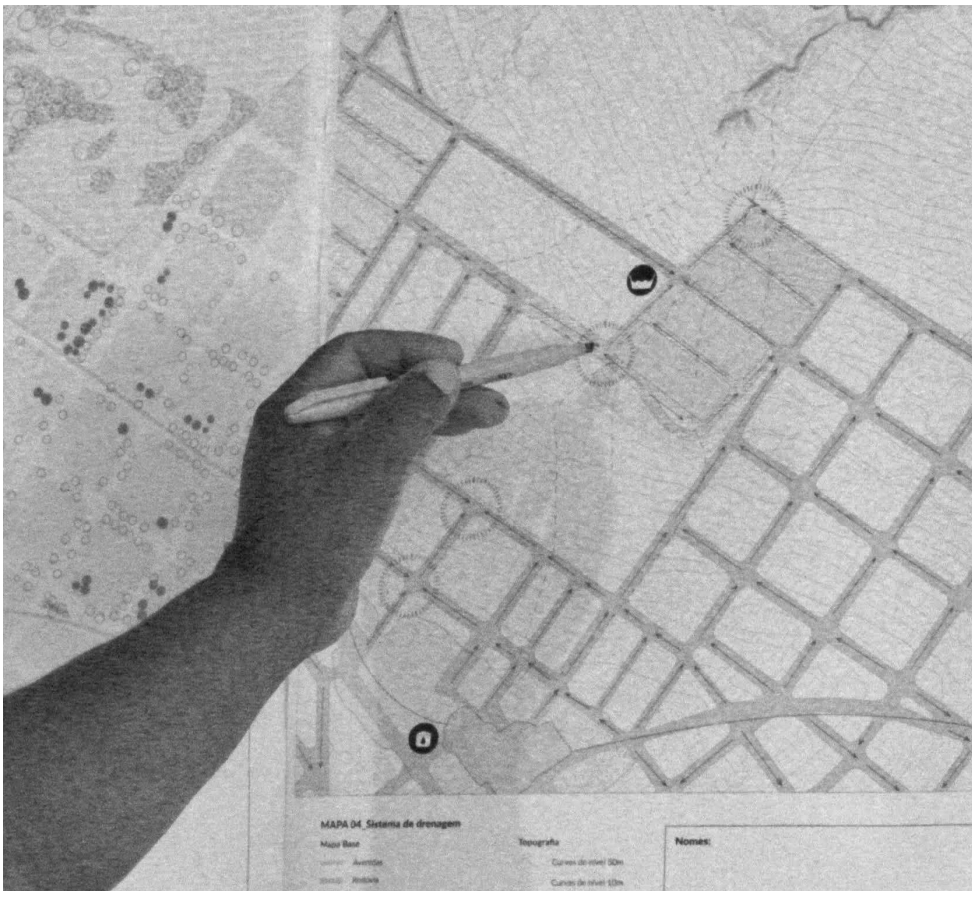


Figure 63. Resident sketching on the map during workshop

Conducting an stakeholders analysis is a very important step for the decision-making process of the Neighborhood plan, in order to understand the different perspectives and interests of individuals, groups, organisations and institutions that can influence the plan. The analysis can be useful to build partnerships and collaborations with potential partners that can contribute with resources, expertise and support the Neighborhood planning process. Moreover, it helps to assess power dynamics and conflicting interests, by understanding the influence and positions of stakeholders, and work towards finding mutually beneficial solutions.

The method used for carrying out a stakeholders analysis consists in three steps: Identifying, Mapping, Engaging.

Stakeholders identification

As the first step, It was identified the key-players in different sectors (private, public and third sector) that are already involved in the regulamentation process of Vila Cristiana community as well as potential stakeholders that should be considered and can affect/be affected by the Neighborhood plan to be developed.

They were identified by responding the following questions:

- Who will be affected by The Neighborhood plan?
- Who will be able to influence the outcomes of the project ?
- Who are the potential supporters of the plan and who would be opponents or disinterested ?
- What partnerships might build around the issues involved ?
- Whose voices or interest on the subject should be heard ?
- Who will be responsible for managing the project outcome?
- Who can facilitate or impede the outcomes through their participation or non-participation ?

Public sector	Private Sector	Third sector / individuals / NGOs
Regional level	**Regional level**	**Regional level**
1 Bauru Municipality	1 Urban Planners	1 Community members Osvaldo da Silva Pereira (Residents association Lider)
2 SEPLAN (Urban planning secretariat)	2 CPFL (Energy distribution, generation and transmission)	2 Projeto Cristiana / UNESP Campus Bauru Profa. Dra. Kelly Cristina Magalhães (Coordinator)
3 SEMMA (Environmental secretariat)	3 Local media (JCNET/ JornalDois)	3 Neighbor communities
4 SEDECON (Municipal Department of Economic Development, Tourism and Income)	4 Drainning infrastructure companies	4 Local Church
5 Semel (Municipal Sports and Leisure Department)	5 Banco do Povo	5 Social Assistant
6 DAE (Water supply and Sewage system)	6 Local business	**National Level**
7 Cras - Social Assistancy program	7 Instituto SOMA	6 Lab JUTA (Lab for Territorial Justice / Federal University of ABC)
8 CETESB - Environmental Company of the State of São Paulo	**National Level**	**International Level**
9 SABESP	8 Instituto POLIS	7 International Union of Architects (UIA)
10 Political Parties that advocates for urban Land Reform	9 Banks (BNDES/BB/CAIXA)	8 TU Delft - The Centre for Just City
National Level	10 National Housing Secretary (Secretaria Nacional de Habitação)	9 Global Facility for Disaster Reduction and Recovery (GFDRR)
11 Ministério das Cidades	**International Level**	
12 Ministério do Desenvolvimento regional	11 IBD World Bank	
International Level	12 Banco Interamericano de Desenvolvimento (Inter-American Development Bank - IDB)	
13 UN-Habitat	13 Global Program on Nature-Based Solutions (NBS) for Climate Resilience	

Table 02. Stakeholders Identification table

Stakeholders Mapping

After defining and categorizing the stakeholders, the second step consists in mapping them according to their role during the development of the project. It is important to identify the key-moments when each actor should be activated.

Roles in the project development

- Community empowerment / Capacitation

  7

  6 7

  1 2 3 5 4 8

- Visibility / Communication

  10 13

  3 11

  8 7

- Planning / technical assistancy

  1 2 3 4

  1 7 11 12 13

  6 7 8 9

- Legitimating / Legal work

  1 2 3 8 11 12

  10

- Financing / Funding / Donors

  1 4 5 10 11 12 13

  5 6 8 9 10 11 12

  4 7

- Suppliers

  6 9

  2

- Implementation

  1 2 3 8 9

  1 7 8

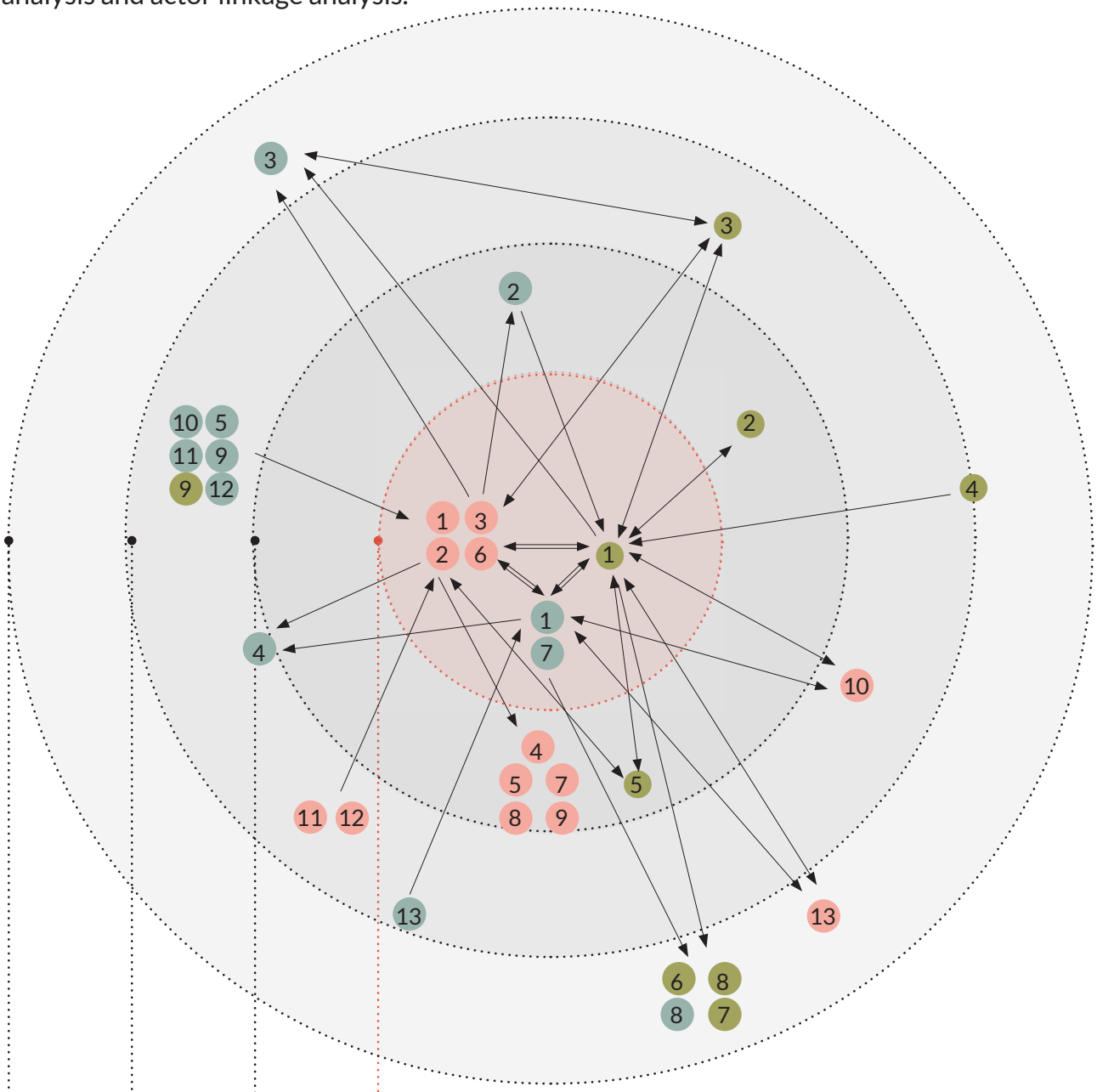
- Follow up

  1 2 3 6 8

  7 8

Table 03. Stakholders roles

Another mapping tool is the ”Chain map”, a visualization method which creates a map representing the local multi-layer stakeholder group composed by the results of two analytical methods: the interest x influence analysis and actor linkage analysis.



PARTNERSHIP HIGHLIGHT: PROJETO CRISTIANA

"The city as pedagogical practice. Affirmative actions and the black population in the Settlement Primavera / Vila Cristiana in the city of Bauru / SP" - Academic extension project carried out with the support out with the support of the Affirmative Action and Diversity Advisory (AADI / UNESP- Campus Bauru / FAAC - Faculdade de Arquitetura, Artes, Comunicação e Design).

Project members:
Prof. Dra. Kelly Cristina Magalhães (Coordinator)
Ana Carolina Souza de Castro (Architecture and Urban planning Bachelor Student)
Camila Moreira Santos (Architecture and Urban planning Bachelor Student)
Débora Martins Lopes (MSc. Media and Technology student))
Gabriely Aparecida dos Santos (Architecture and Urban planning Bachelor Student)
Marcele Glenda Pinheiro da Silva Mendes (Architecture and Urban planning Bachelor Student)
Tathiane Pâmella Nunes (Architecture and Urban planning Bachelor Student)

Institution:
Universidade Estadual Paulista Júlio de Mesquita Filho - Campus Bauru/FAAC Faculdade de Arquitetura, Artes, Comunicação e Design.

Figure 64. Pojeto cristiana logo

Figure 65. (Next page) Participants of the workshop about solutions for the construction of the houses carried out by "Cristiana Project"

The project aims to promote the recognition of the history of the Primavera / Vila Cristiana settlement (Bauru-Sp), as well as the importance of occupying spaces in the city of Bauru, in order to foster affirmative actions that can subsidize public policies of an ethnic-racial nature.

It examines the dynamics between urban development, affirmative actions, and the experiences of the black population in the Primavera/Vila Cristiana settlement located in Bauru, São Paulo. The project recognizes the importance of addressing the allocation of urban land and housing policies that have historically excluded and marginalized communities.

Drawing on the principles of the City Statute and the engagement of social movements, such as the MST and MSLT, the project seeks to analyze the intersectionality between social housing struggles and urban development. It also emphasizes the role of university extension programs in collaborating with local communities and integrating teaching, research, and community demands.

During the year of 2022, the members of the project conducted six initial visits of participant observation in the Primavera Settlement in 2022 to establish a connection with residents and identify key issues. Additionally, seven visits were made to understand the community-settlement relationship, and 54 questionnaires were administered to gather data on the community's socioeconomic profile.

Based on the questionnaire results, a public hearing titled "Infrastructure of the Primavera Settlement" was organized in partnership with the Neighborhood residents' organization to address land regularization. Furthermore, a culture circle called "spring coffee" was held in October, providing a space for women in the community to share their narratives and promote a sense of community.

In 2023, the project plans to organize four culture circles, three within the community and one at the University, held every two months. These circles aim to foster collective participation, utilizing a Freirean methodology of dialogue and critical knowledge construction, while emphasizing the experiences of marginalized groups. The partnership between the Cristiana project and the elaboration of this thesis take place in one of those events, including an additional workshop with the theme "Waters of Vila Cristiana - Promoting Spatial Justice through Participatory Water Management".

All of the actions taken by the project, including participant observation, questionnaires, public hearings, and culture circles, have been crucial in establishing rapport with the community, understanding their needs, and promoting inclusive dialogue. The project demonstrates a commitment to community engagement and empowerment through participatory methodologies and a focus on addressing the specific challenges faced by the Primavera Settlement.

Overall, this project seeks to shed light on the challenges faced by the black population in accessing housing and urban resources while promoting affirmative actions that address spatial justice, equality, and social inclusion in the context of the Primavera/Vila Cristiana settlement.

Community Engagement: Workshop

The third step of the stakeholders analysis was to develop an engagement strategy for involving the stakeholders in the Neighborhood Planning process, which is important to promote accountability and transparency, besides, it is a commitment to include their voices and perspectives in decision making, building trust and credibility.

By understanding that the participative process in the promotion of spatial justice is essential, community engagement is a key-player in the decision-making process for the development of the Neighborhood plan. In this way, for this project, two main stakeholders were actively engaged, the community members and the University (UNESP) through a dynamic workshop.

The workshop will be carried out both through videoconference and in presence, counting on the collaboration of the students from the state university UNESP-Campus Bauru, taking part of the ”Cultural workshops series” held by the academic project ”Cristiana Project: The occupation of the black population in Primavera Settlement in the City of Bauru-SP”, coordinated by Professor Dr. Kelly Cristina Magalhães.

The local church, a place often frequented by community members, has provided an area with sufficient infrastructure for the workshop to take place. In addition, the materials required for the activities were borrowed from UNESP university.

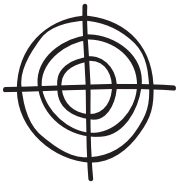
Table 04. (Next page) Workshop framework

WORKSHOP: WATERS OF VILA CRISTIANA

Promoting Spatial Justice through Participatory Water Management

FRAMEWORK

WHO? + WHAT? + WHY?



Community members

- Osvaldo da Silva Pereira (Residents association Lider)
- Shirley Pereira
- Cristiane
- Marta

Cristiana Project members

- Profa. Dra. Kelly Cristina Magalhães (Coordinator)
- Kamilly
- Andreia
- Camila Moreira Santos
- Luan
- Tathi
- Geovanna
- Ana

Speech guest and activity leader

- Mariana Cobbos

Photography and media communication

- Íris Lumi Tateishi

Introduction

Welcome participants, introduce new members and the workshop's purpose and goals.

Brief presentation on the concept of spatial justice and the landscape elements relevance to water management.

Landscape analysis exercise (4 groups)

The participants will be divided in 4 small groups and provided printed thematic maps of the neighborhood. Each group will focus on a specific landscape analysis theme: hydrographical system, land uses, vegetation, and geomorphology. The participants will be encouraged to sketch and mark relevant features and observations on the maps.

Presentation of the result of the maps

The groups will be invited to present their findings and observations to the larger group. The data collected by each group will be recorded and compiled, ensuring that everyone's contribution is included.

Conclusion on the maps analysis and the possible solutions on the water problem

Encourage participants to share their ideas, concerns, and aspirations for addressing water-related challenges.

The workshop aims to engage community members in a participatory process for developing the Neighborhood plan focused on water management. By recognizing and mapping landscape elements, the workshop seeks to raise awareness about the importance of these elements in addressing water-related issues. The goals of the workshop are both informative and data collection-oriented.

This workshop have an utmost importance in the Neighborhood planning for the following reasons:

- Empowering the community
- Inclusive and responsive Neighborhood development.
- Accessing local knowledge and expertise
- Building social cohesion and trust
- Promoting sustainable outcomes

MATERIALS

WELCOMING / COFFEE BREAK

- Popcorn
- Juice
- Water
- Coffee
- Spreadables
- Biscuit
- Cups
- Plates
- Knive / spoon
- 1 Table

PRESENTATION / VIDEOCONFERENCE

- Projector
- Screen
- Laptop
- Camera / phone
- Internet connection
- 1 Table

ACTIVITY

- 4 A2 plotted Maps
- Colored markers
- Pencil, Pen (diverse)
- Transparent tracing paper
-
- Around 20 Chairs
- 4 tables for the group work

ACTIVITY OUTLINE

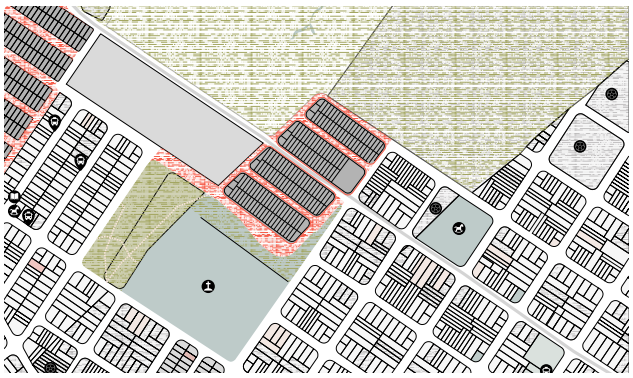


Figure 66. Workshop MAP 01_ Land Occupation

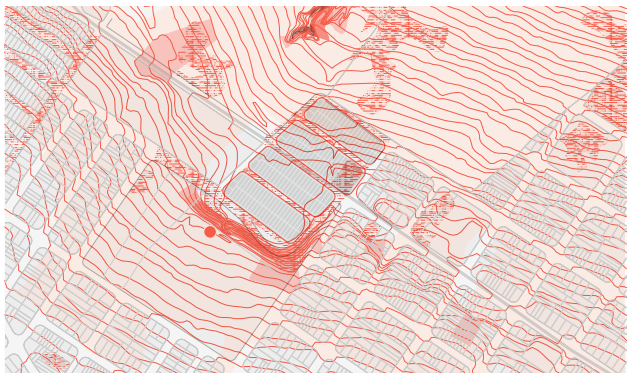


Figure 67. Workshop MAP 02_ Geomorphology

According to your experiences and perceptions of the region where you live, can you identify the places where:

- You consider dangerous
- You often meet friends, talk, socialize
- You consider it pleasant / leisure space
- Where access is difficult, there are physical barriers to walking/access.
- Frequented by children and families

Do you notice differences in soil type (appearance, color, texture, smell) in different parts of the Neighborhood?

- Are there places where the soil characteristic (type, texture, slope, elevation etc) affects your movement or routine activities in the Neighborhood?
- Have you noticed any changes in the topography of the land over time?

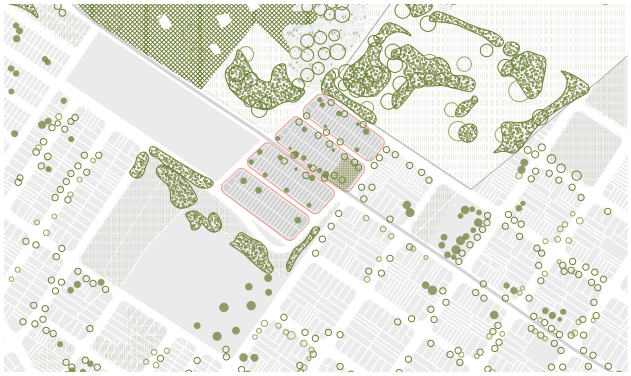


Figure 68. Workshop MAP 03_ Vegetation

Figure 69. Workshop MAP 04_ Hydrologic

Have you noticed any relevant transformation in vegetation in recent years, such as:

- Vegetation removed
- New vegetation
- Burning
- Is there any relevant memory or sensory experience (scent, sound, shade) related to a specific tree or vegetation in the Neighborhood? - Describe and point out the location
- Is there any personal practice or tradition involving vegetation, such as gardening or food gathering?
- Is there any collective initiative by the community involving planting?

- Are there places where stagnant water can be observed?
- Are there any self-made solutions to deal with the lack of drainage in the Neighborhood?
- Which places suffer the most from rain damage?
- Is it possible to observe places where there has been apparent water damage/alteration?
- During heavy rains, can you identify the path(s) where the water runs off?

  What is the solution to the lack of sewage collection from houses?
- Are there places with open sewage?

Figure 70. Final map sketched together with the residents during the workshop

MAP O1: LAND OCCUPATION

- Difficulties to walk due to the lack of accessibility: irregular terrain, solid wastes, holes in the ground.
- Some spaces represent danger for the families living there, specially because of the rising criminality related drug dealing in some spots of the Neighborhood. They reported that the street close to the green area is the most affected because it works an escape route for escaping the police.
- Presence of big animals (horses) that might chase or hurt people, also block the paths.
- Cars in high speed coming from the highway, no crosswalks or traffic lights.
- The most used leisure area counts with a playground for the kids and a self-made football field, although has been recently taken as a spot for criminals (it might be related as a strategic spot for ”entering” in the neighborhood).
- Dangerous animals, such as venomous snakes, scorpions and spiders, are frequently found in the houses close to the northern green area.

MAP 02_ GEOMORPHOLOGY

- Hard soil, difficulty to perforate the soil both to plant and to build a foundation for the house
- Alteration in the ground shape because of the water runoff, muddy soil.
- Solid wastes are found below ground during any soil excavation work. Residents report finding large chunks of concrete, and construction debris, even clothing and objects a few meters deep in the ground.
- It was informed that the slope separating the cemetery land and the Neighborhood, presented an erosion movement of 3-5 meters towards the cemetery, reaching today the limit of the area where the tombstones are.

MAP 03_VEGETATION SYSTEM

- Difficulty to develop any gardening activity because of the poor and hard soil. Besides, cultivating vegetables for consumption is prohibited because of polluted water from the cemetery
- Residents reported solutions such as planting in pots and hanging gardens in their homes
- One successful tree species suitable for planting in the area was reported by one of the residents: the pink pepper tree.
- Frequent burnings occur in the local forest, the burnings are not natural processes, but in order to make easy maintenance in the wild vegetation that invades the Neighborhood, decrease the amount of venomous animals and burn the garbage accumulated on the site.

MAP 04_ HYDROLOGIC SYSTEM

- All of the residents present in the workshop reported having access to the water system now, but months ago they used to receive a donation of a water truck or collect clean water from the wells of the water distribution department of the city hall and bring it to the Neighborhood.
- Despite having access to the city water network today, there are residents who still choose to collect/divert water from the network in order not to be charged the service fee.
- As for the sewage system, although they have available access to the distribution system, they still cannot connect to their homes due to the impossibility of acquiring the connectors, which are the responsibility of the residents according to the municipality. Reported solutions for domestic sewage treatment are septic tanks.
- Some measures to contain or mitigate the effects of rainwater have been implemented on site such as stormwater galleries, retention basin and spillway to dissipate water runoff power, but they were undersized and do not meet their purposes.
- The last street on the south was identified as containing many spots of stagnant water, presenting health risks to the population (proliferation of infected mosquitos, and ringworm in the kids were reported)

Author's Impressions

As planned, the workshop was successfully held in collaboration with the students of Projeto Cristiana, led by Prof. Dr. Kelly Magalhães. I was introduced as a guest collaborator in their workshop series with the community, and we were delighted to be joined by Camila Moreira Santos, a dedicated student heading the group.

Despite the limitations posed by the distance factor, we managed to conduct a blended mode workshop, both online and in person. Thanks to the University UNESP, who provided us with projectors and other multimedia equipment, communication was seamless with the help of the students present on-site. However, we must acknowledge that even with technological advances in the post-pandemic lifestyle, nothing can replace the significance of face-to-face interaction in building strong bonds and trust among stakeholders.

The workshop saw the enthusiastic participation of 5 residents of Vila Cristiana, including prominent community members such as Oswaldo Pereira, the residents association president, Shirley Pereira, the vice-president of the association, her daughter Cristiane, Marta, the pastor of the church, and resident Cassia. The workshop even attracted the attention of some curious children passing by the local church (where the workshop was taking place), who joined the activity and enjoyed some snacks.

During the workshop, the residents shared their heartfelt connection to the community, dating back to the previous location, the former settlement Canaã, where they had built strong bonds. They nostalgically spoke about the fertile land there, where food cultivation was a frequent practice in the community.

Figure 71. UNESP Students, Projeto Cristiana Members.

Figure 72. Children enjoying snacks from the workshop.

Figure 73. Maps on the wall, prepared to be sketched on top.

Figure 74. Workshop participants

One interesting point that got my attention was the total lack of connection with the green area and water body in the north of the area. Some of the residents were not even aware of the presence of the river and they report that this distancing is due to the barrier this area represents, being connected to danger in many forms, such as criminality, poisonous animals, wild vegetation, solid and bulky waste disposal and others.

I was impressed by the remarkable engagement of the residents, especially the women who formed the majority of the group. They demonstrated a deep awareness of the Neighborhood's challenges related to spatial justice, both in distributive terms, recognizing water-related risks and the potential for implementing impactful mitigation solutions, as well as in terms of procedural justice, emphasizing the importance of political education and active participation to ensure their rights.

The residents also shared the positive news of recent infrastructure improvements in the Neighborhood, including the commencement of street pavement works. They highlighted that the funding for these enhancements came from National-level budgets through parliamentary amendments and Provisional Measures.

Overall, the workshop was a valuable opportunity to collaborate with the community and gain insights into their perspectives and aspirations. We look forward to building on this engagement to develop a Neighborhood plan that addresses water-related challenges and promotes socio-spatial justice for the residents of Vila Cristiana.

"Now we have drinking water, but once we went two months without a drop of water in the tap. We were supplied by water trucks. Once my husband put a water tank in the truck and we went up to the well to ask for water. The man said: "Here we are also without water!". But if there is no water at the well, where is there? Without electricity we can go through, but without water it is impossible"

-Marta, resident and pastor of the church, statement during workshop.

Figure 75. Marta (Resident) sketching on the map together with Camila (Projeto Cristiana member).

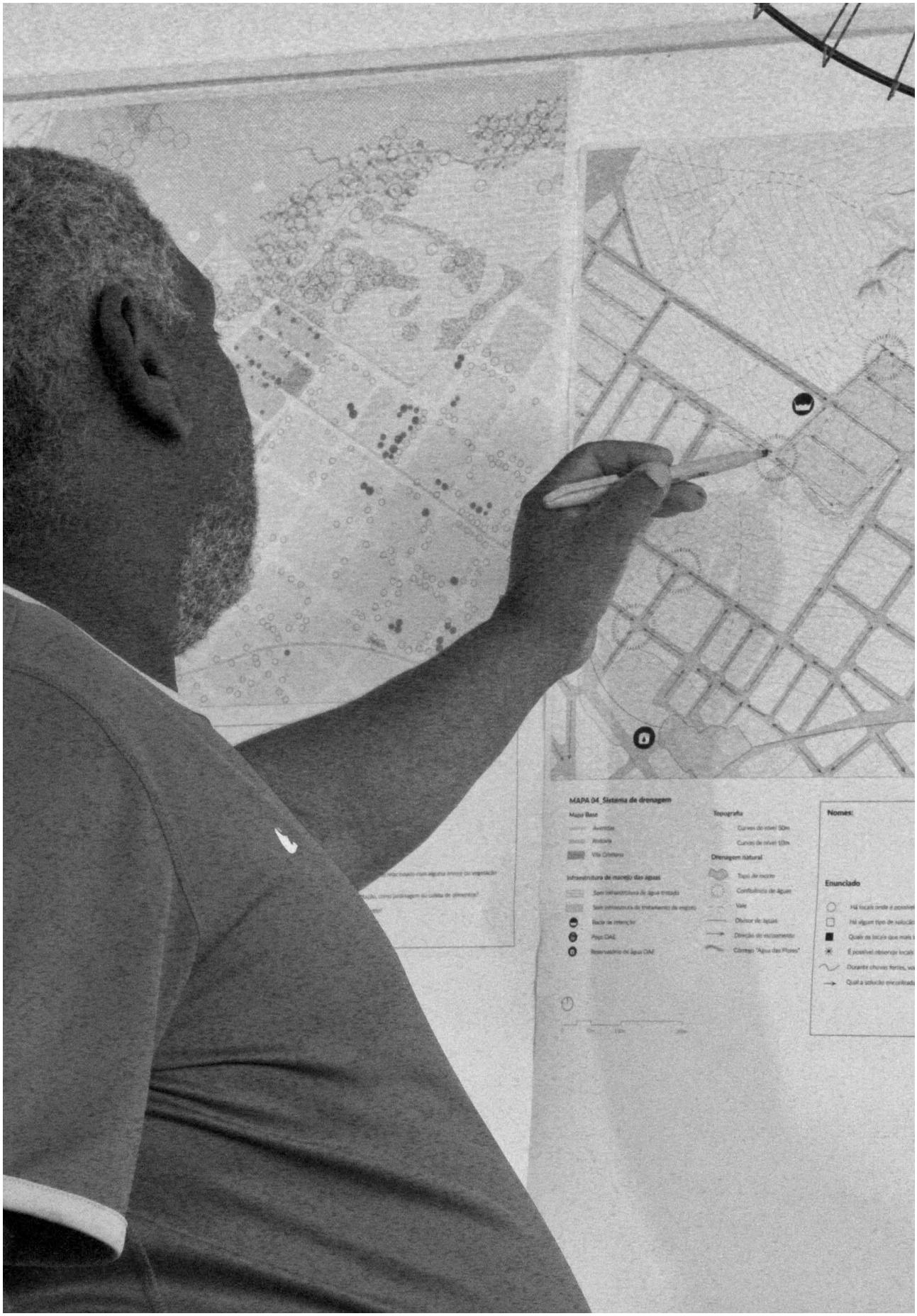


Figure 76. Sr. Osvaldo sketching the water-related issues on the map

Figure 77. Kids playing on the soil from the street pavementation work in front of the Church.

Figure 78. Erosion of the cemetery retaining wall, in front of the Church

Figure 79. North Street where it was reported as dangerous spot because of criminality

4 NEIGHBOR-HOOD PLAN

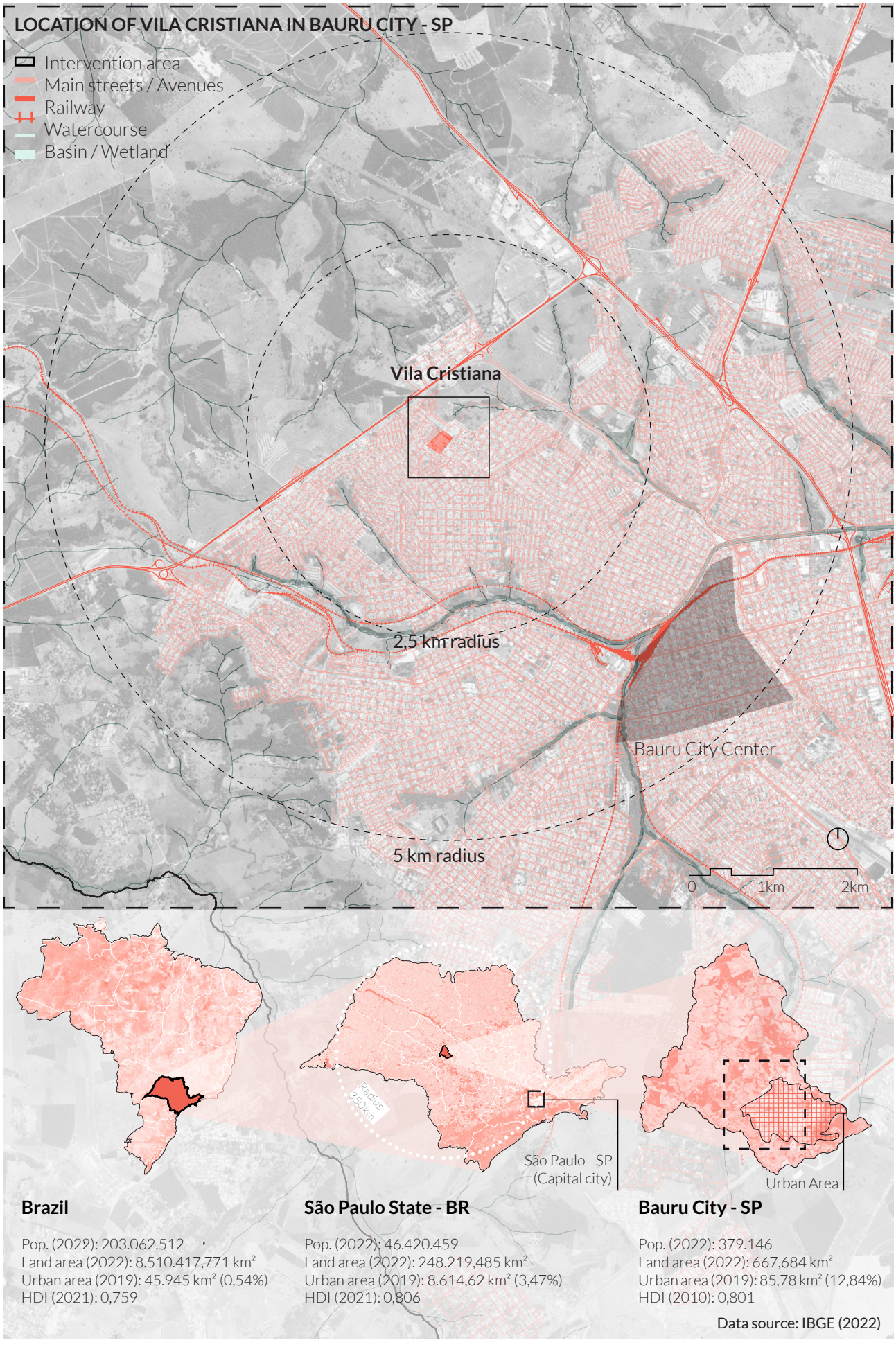


Figure 80. Map Location of Vila Cristiana

4.1. DIAGNOSIS

Figure 81. Satellite Image of Vila Cristiana in 2023.

The Neighborhood Plan offers a spatial diagnosis of Vila Cristiana, drawing from insights gathered through territorial analysis and local knowledge acquired during community workshops. These findings are examined through the prism of spatial justice principles while taking the unique local context into account. This approach helps shape the objectives and challenges that the plan aims to tackle.

A closer examination reveals a landscape marred by irregularities and marked deficiencies in its urban infrastructure, thereby exacerbating a series of water-related challenges. These issues encompass a lack of access to clean drinking water, coupled with an exposure to contaminated waters originating from a neighboring cemetery and ailing sewage systems. Among those most acutely endangered by these precarious conditions are the children who play in these potentially hazardous environments. Adding to this complex equation is the nearby river area, beset by environmental degradation, which further imperils water quality and disrupts natural drainage patterns. Moreover, the community stands as a testament to the neglect perpetuated by a state entangled in the clutches of racism, patriarchy, and elitism. This neglect has led to the creation of a marginalized enclave, where critical assistance and policies of social inclusion remain conspicuously absent, particularly for the most vulnerable members of society. Amidst these challenges, black women emerge as steadfast pillars within the community, actively driving collective efforts and advocating for improved housing conditions.

SPATIAL CONDITIONS

Upon analyzing the area of Vila Cristiana, it becomes evident that the area faces numerous irregularities in its landscape and urban infrastructures, exacerbating the water-related challenges. These challenges include limited access to clean drinking water, as well as exposure to polluted water due to contamination from the nearby cemetery and inadequate sewage system. These issues pose significant health risks to the population, particularly the children who play in the streets and are directly exposed to these hazardous areas. The river area in the vicinity also suffers from environmental degradation, further compromising the water quality and the natural drainage pattern. Additionally, the population is highly vulnerable to water-related natural events such as flash floods, heavy rainfall, and landslides.

The conditions of the local community reflect the neglect of a state with racist, patriarchal and elitist structures, which fails to provide adequate support and excludes the most vulnerable members of society. This neglect results in the creation of a ”non-place” where assistance and social inclusion policies do not reach those in need. However, it is important to acknowledge the crucial role of black women within the community, as they actively contribute to collective efforts and the struggle for improved housing conditions.

In terms of spatial analysis, the area exhibits three contrasting types of space utilization. The southern part represents the ”formal city” with planned roads and allotments. In contrast, the zone characterized by precarious conditions encompasses Vila Cristiana and vacant lots. Additionally, the natural area shows a sudden transition between the urban area and the river. It’s important to note that the settlement is located in a transitional zone between the hilltop and the valley, where intense rainwater flow occurs. It sits at the border of two major water basins in Bauru city, namely the Água Parada basin and the Bauru River Basin.

Considering the vegetation, the northern area of the city, where Vila Cristiana is situated, can be considered an ecotone between the cerrado (brazilian savannah) and the Atlantic rainforest. Moreover, the specific location of the settlement holds the potential to serve as an ecological corridor, linking urban and natural areas.

By highlighting these aspects, we can gain a deeper understanding of the challenges faced by the Primavera Settlement and work towards developing comprehensive strategies that promote social equity, environmental sustainability, and improved living conditions for all residents

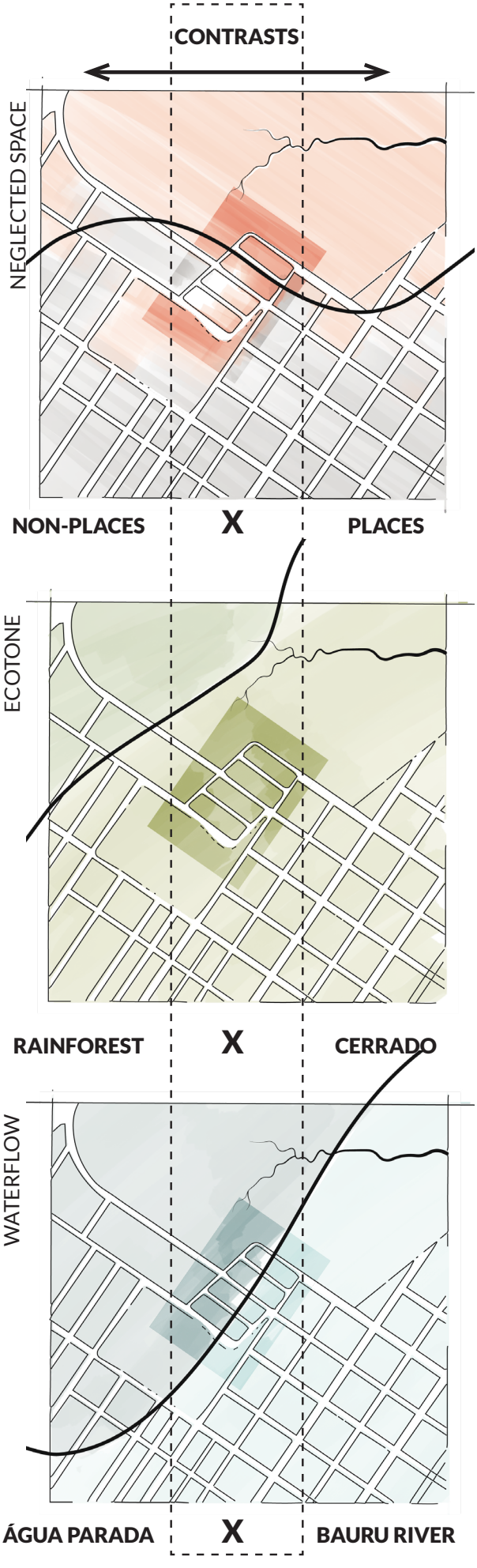


Figure 82. Contrasts diagram map neglected space

Figure 83. Contrasts diagram map ecotone

Figure 84. Contrasts diagram map Water flow

Figure 85. Diagnosis map

- Neglected areas prone to fire and criminal activities, posing safety risk
- Urban voids and lack of green infrastructure leading to a degraded environment.
- Irregular waste disposal contributes to environmental pollution.
- Public natural area with a great potential of restoration in terms of size, resources, biodiversity and location

- Potential partnership with neighbors and similar communities for empower the struggles for the common goal of achieving spatial justice
- Strong community engagement
- Right to remain permanently in the area, as well as the regularisation process with the municipality.
- Contaminated soil, making it difficult to plant vegetation and hindering food cultivation
- Underutilized schools, playgrounds, and squares due to lack of accessibility and safety.
- Contaminated water causes health hazards for the community.
- Lack of draining infrastructure leading to waterlogging during heavy rains.
- Vulnerability to landslides and flash floods due to improper water management.
- Neglected space prone to perceptions of danger and unsafety
- Public area by the side of the cemetery, designated to be a green area for the Neighborhood

- Commercial areas not effectively fostering economic development and community engagement.
- Limited opportunities for residents to access qualified public spaces.
- Spatial barriers due to unplanned urban development of the city
- Lack of activities to attract visitors (people from other parts of the city or other towns) to visit or invest in the area in question.

Limit between the urban and the rural areas

Natural resources

Vila Cristiana

Urban equipments and infrastructure

Formal City

- Urgent issues
- Limitations
- Potentialities

Hazards and Risks

Within the neighborhood of Vila Cristiana, the presence of water is often perceived as a source of danger and risk within the community. The term "waters of the cemetery," as used by residents, carries a persistently negative connotation that casts a shadow over the entire area, influencing various aspects of residents' daily lives. This stark contrast between the risks and hazards posed by the neighborhood's spatial characteristics, when compared to its surrounding areas, underscores a palpable sense of spatial injustice.

Among the hazards to which the population of Vila Cristiana is exposed is the contamination of the soil, primarily caused by stormwater runoff originating from the adjacent cemetery. This contamination poses a multifaceted risk, including concerns about food safety, as edible plants are cultivated in the vicinity despite municipal prohibitions. Additionally, this soil contamination raises serious dermatological health concerns, such as fungal infections and bacterial skin conditions.

Compounding these challenges, the polluted water spreads throughout the community's territory, driven by recurrent flash floods that are a common hazard in the area. These floods, coupled with the fact that many houses are constructed from precarious materials, significantly increase the potential for damage to property and infrastructure, placing a heavy burden on residents.

Moreover, this contaminated water often combines with untreated sewage from the houses and accumulates as solid waste along the neighborhood's edges, eventually finding its way into the local water stream within the valley. This not only poses ecological risks but also engenders water insecurity for the community, threatening their access to safe and clean drinking water.

Beyond these immediate concerns, the Flores stream, which symbolizes a neglected and unsafe zone, serves as a dividing line between urban and rural domains. Residents living along this perimeter face additional risks, including encounters with poisonous animals from the cerrado biome and increased vulnerability to criminal activities. The area's challenging access and limited visibility make it an attractive escape route for criminals, further compromising the safety and well-being of the community.

In summary, Vila Cristiana grapples with a complex web of hazards, risks, and dangers related to water contamination, flooding, ecological threats, and safety concerns, all of which demand urgent attention and comprehensive solutions.

HAZARDS

- Soil contamination
- Water pollution
- Landslide
- Flashflood

RELATED RISKS

- Food insecurity
- Water insecurity
- Damage to assets and infrastructure
- Health risks
- Ecological risks

OTHER DANGERS

- Criminality
- Poisonous animals

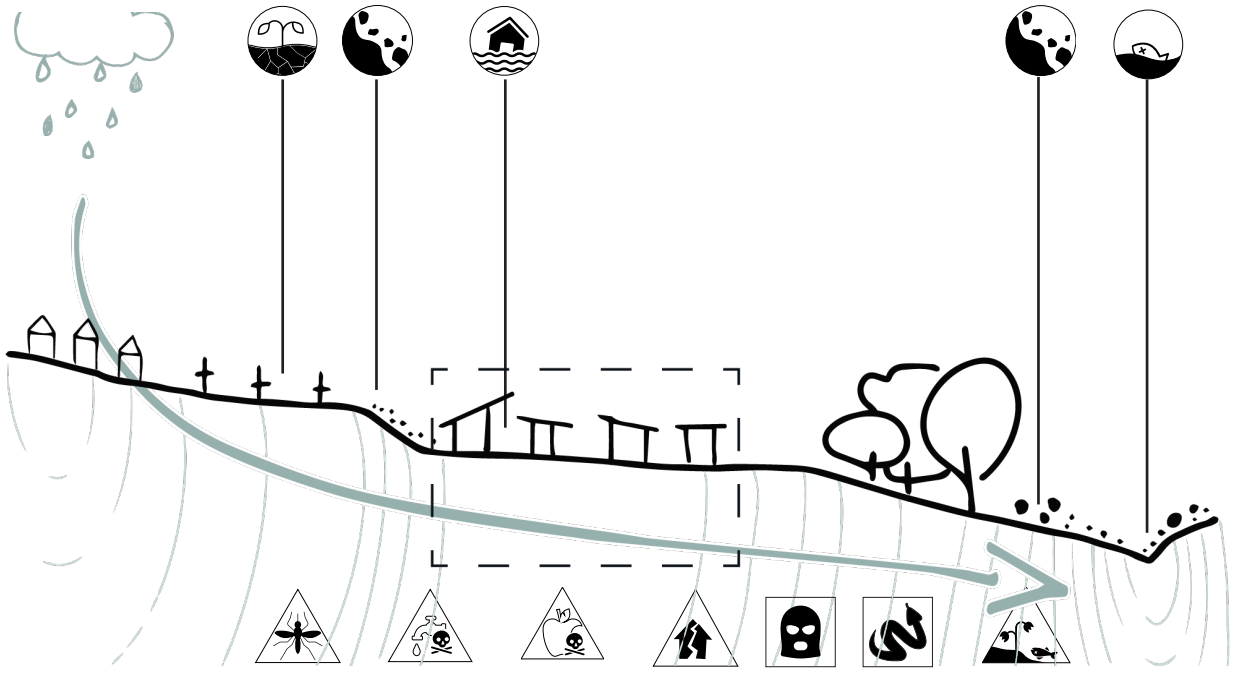


Figure 86. Schematic section: Risks, hazards and dangers

SWOT ANALYSIS

Strengths

Strong community participation and active involvement in the planning process.

Neighborhood very well defined by its physical, cultural and socioeconomic characteristics.

Valuable local knowledge of the residents about the Neighborhood, its water resources and specific challenges.

Presence of social organizations and advocacy groups for Land access like MLST.

Support from institutions like universities and NGOs.

Academical research and actions interest.

Community's ability to adapt and innovate in the face of the infrastructure challenges: The football fields of the area, for example, represent a self-constructed effort and a desire for leisure equipment access.

S

Weakness

Lack of adequate water infrastructure and drainage system.

Limited financial resources for implementing large-scale water management projects.

Limited support from local government or regulatory bodies for implementing spatial justice-focused water management initiatives.

Fragmented and segregated characteristics of the city's territory, empty areas like the cemetery and river represent barriers in the urban fabric.

Bureaucratic barriers for the regulamentation process.

Lack of registers and information about the area.

Remanent natural vegetation and river areas linked to environmental degradation.

The polluted water penetrates the soil, making it unsuitable for food cultivating in the area below the cemetery.

W

Opportunities

Engaging the community in decision-making processes and empowering them to take ownership of water management initiatives.

Building partnerships with local organizations, universities, and government agencies to leverage expertise, resources, and funding opportunities.

Utilizing existing policies and legislation that promote spatial justice and sustainable water management: apply the principles and guidelines described in:

- City Statute (National Level)
- Bauru Master Plan (Local Level)
- Neighborhood Plan of São Paulo City (Guidelines Reference)

Developing educational programs and awareness campaigns to promote water conservation, equitable access, and spatial justice principles.

Exploring opportunities to incorporate green infrastructure, such as rain gardens, green roofs, and permeable surfaces, to manage stormwater and enhance water quality.

Availability of public lots already destined to green areas.

Possibility of using compensatory urban drainage techniques as leisure units to expand public areas into subdivisions

Presence of facilities and infrastructure like schools, playgrounds, commercial areas and squares that are now underutilized, have a great potential if improved.

O

Threats

Exposition to polluted water as a result of the contamination from the cemetery and poor sewage system.

Population highly exposed to water-related natural events, such as flash floods, heavy rainfall, and landslides.

Increasing frequency and intensity of extreme weather events, such as floods and droughts, that can impact water availability and exacerbate existing challenges.

Lack of political support or prioritization of water management and spatial justice initiatives at the local level.

Existing social disparities that may hinder equal access to water resources and the implementation of spatial justice principles.

Difficulty in securing financial resources for long-term water management projects and maintenance.

Complex bureaucratic processes and regulations that may delay or impede the implementation of certain water management strategies.

T

Goals and challenges

In the pursuit of spatial justice and equitable development, Vila Cristiana emerges as a community with immense potential for transformation. Central to the Neighborhood Plan is the goal of valorization of water heritage—a sustainable approach that addresses water-related challenges while fostering a holistic sense of community and well-being.

Through sustainable water management, the plan aims to implement a comprehensive drainage system and safeguard water bodies to prevent flooding, landslides, and contamination, ensuring access to clean and safe water for all residents. This mitigates environmental hazards and promotes a stronger sense of security and resilience within the community.

Environmental justice is another cornerstone of the Neighborhood plan. By restoring neglected areas and transforming them into green spaces, the plan reclaims urban voids from neglect, mitigating environmental risks, and promoting biodiversity. These revitalized spaces will become recreational havens, providing the community with safe, inspiring places to connect with nature and each other.

The empowerment of community engagement seeks to forge stronger bonds between residents and local governance. Through capacity-building initiatives, the plan empowers the community to actively participate in decision-making processes, fostering a sense of ownership and pride in public spaces, leading to a more cohesive and united Vila Cristiana.

Participatory water management lies at the heart of the endeavor. Residents will actively engage in the conservation and sustainable use of water resources. Educational campaigns, workshops, and community-led initiatives will ensure water conservation becomes ingrained in the community's ethos. Collaboration with local authorities will lead to policies that prioritize participatory water management, fostering an enduring partnership for sustainable water solutions.

The vision also aims to integrate the Neighborhood with the broader city landscape, promoting economic development and social inclusion. By fostering better connectivity between commercial areas and the community, the plan unlocks economic opportunities, creating a thriving hub of enterprise and growth.

The valorization of water heritage guides the effort—celebrating the life-giving properties of water while addressing socio-environmental challenges. Vila Cristiana, fueled by hope and resilience, shall emerge as a symbol of spatial justice, where the barriers that once segregated communities are transformed into bridges of connection and opportunity. The vision is not just an aspiration; it is a testament to the power of collective action and the transformative capacity of a united community.

GOAL 01

SUSTAINABLE WATER MANAGEMENT

SPECIFIC GOALS

1. Develop and implement a comprehensive drainage system to prevent flooding and manage stormwater effectively.
2. Ensure access to clean and safe water sources for all residents through water quality improvement projects.
3. Implement measures to prevent landslides and flash floods, such as slope stabilization and proper stormwater management.
4. Develop alternative solutions for plants irrigation in the contaminated area

CHALLENGES

1. Lack of draining infrastructure leading to flooding during heavy rainfall
2. Contaminated water sources posing health risks to residents
3. Landslides and flash floods causing hazards to the community
4. Deforestation of vegetation cover

GOAL 02

ECOLOGICAL RESTORATION AND COMMUNITY SAFETY

SPECIFIC GOALS

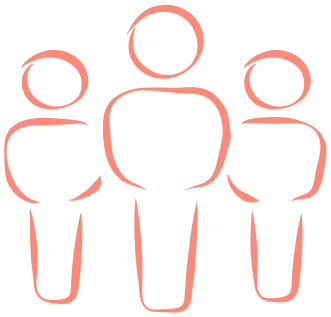
1. Establish conservation and protection measures for water bodies to enhance ecological systems and promote biodiversity.
2. Restore neglected areas and transform them into green spaces and recreational areas for the community.
3. Implement safety measures and create connections that encourage residents to actively use public spaces and amenities.
4. Promote economic development by facilitating better integration between commercial areas and the community.

CHALLENGES

1. No protection or conservation of water bodies, leading to further degradation
2. Neglected areas with high crime rates and irregular waste disposal, posing environmental and safety risks
3. Urban voids and neglected spaces that can be transformed into green infrastructure and places of well-being

Table 05. Goals and Challenges

GOAL 03



EMPOWERMENT THROUGH PARTICIPATORY GOVERNANCE

SPECIFIC GOALS

1. Empower the community through capacity-building initiatives, providing them with the knowledge and skills to participate actively in local governance.

2. Encourage community involvement in the planning, design, and management of public spaces through participatory processes.

3. Develop programs and activities that engage residents in utilizing public spaces and fostering a sense of community ownership.

4. Strengthen community networks and partnerships to collectively address issues and achieve spatial justice in Vila Cristiana.

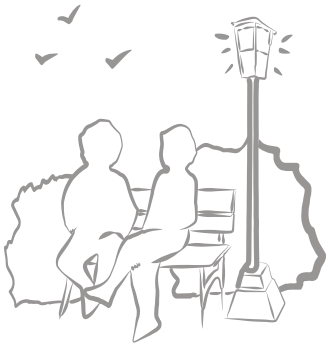
5. Engage residents in the management of water resources through educational campaigns and workshops on water conservation and sustainability.

CHALLENGES

1. Limited networks and partnerships among stakeholders lead to fragmented efforts and hinder progress towards common goals

2. Limitations within the local administration system

GOAL 04



ENHANCING PUBLIC SPACES AND ECONOMIC INTEGRATION

SPECIFIC GOALS

1. Restore neglected areas and transform them into green spaces and recreational areas for the community.

2. Enhance safety measures and create connections that encourage residents to actively use public spaces and amenities.

3. Promote economic development by facilitating better integration between commercial areas and the community.

4. Enhance the quality and maintenance of public spaces to create a sense of ownership and pride among residents.

CHALLENGES

1. Existing public spaces are underutilized due to lack of accessibility, safety, and connection

2. Commercial areas have potential for economic development but need better integration with the community

4.2. URBAN DESIGN PROPOSAL

Figure 87. (Next page) Illustrative Vision of final Proposal

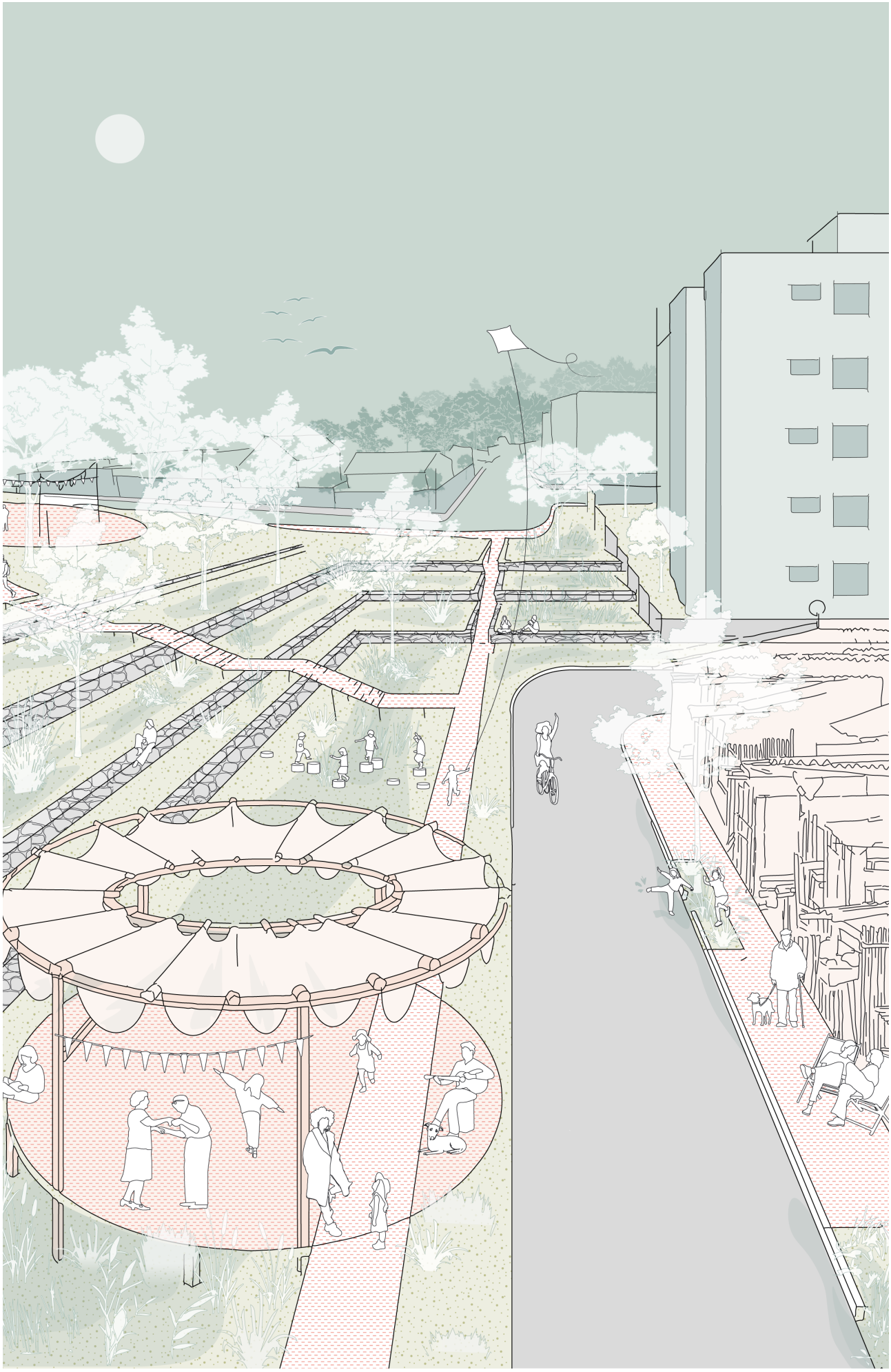


Figure 88. Urban Design proposal

1 Intervention site 01: Pocket park

Public drinking water fontain

Water storage

2 Intervention site 02: Green block

Raingardens in the perimeter of the block

Slow stormwater runnoff

3 Intervention site 03: Public green area

Atificial wetlands

Leisure infrastructure

Community plaza / pateo

4 Intervention site 04: Gabion retention wall

Bioswale

Community hubs / kiosks

5 Intervention site 05: Buffer zone

Gabion canal guiding water

Large sidewalk with furniture

Solid Waste collection points

Riparian vegetation to be restored

Urban Vegetation

Stormwater drainage path

Water ponds

Water tank / well from municipality

Pavement

Paved streets

Fast lanes

Integrating streets

Green corridors

Flores River

Contour lines 1m

0 50 100 200m

Design drivers

The urban design vision for Vila Cristiana is centered around a profound reimagining of the role of water within the community. Fueled by the principles of water-sensitive design, this concept transforms the once negative association of water from the cemetery, marked by pollution and degradation, into a powerful symbol of renewal, harmonizing it with the notion of water flowing gracefully towards the Flores River. This transformative shift enables the community to trade the unfavorable perception of ”waters of the cemetery” for the positive connotation of ”waters of Flores (river).”

To address rainwater management, the plan introduces innovative water-sensitive design concepts and low-maintenance techniques. These strategies encompass:

- Encouraging natural infiltration, storage, and prolonging the journey of runoff, thereby reducing its impact.

- Respecting the natural drainage system’s integrity while appreciating and preserving the presence of water within the urban fabric.

- Integrating drainage solutions within ’green areas,’ parks, sports facilities, and recreational spaces, enhancing their functionality and aesthetic appeal.

- Establishing a controlled drainage system that seamlessly follows the natural terrain contours and efficiently manages runoff at critical junctures.

- Sizing the system to accommodate longer return times, extending beyond conventional standards to effectively manage flood risks.

- Prioritizing public health and comfort, as well as considering the broader repercussions of urbanization on water bodies and downstream ecosystems.

The emphasis on water-sensitive design principles not only ensures the community’s well-being and convenience but also safeguards the environmental health of watercourses and downstream environments. This forward-thinking approach underscores the harmonious coexistence of urbanization and nature, while fostering resilience and reducing vulnerability to flooding. By embracing these innovative design drivers, Vila Cristiana aspires to create a sustainable, interconnected, and vibrant neighborhood that thrives alongside its natural surroundings.

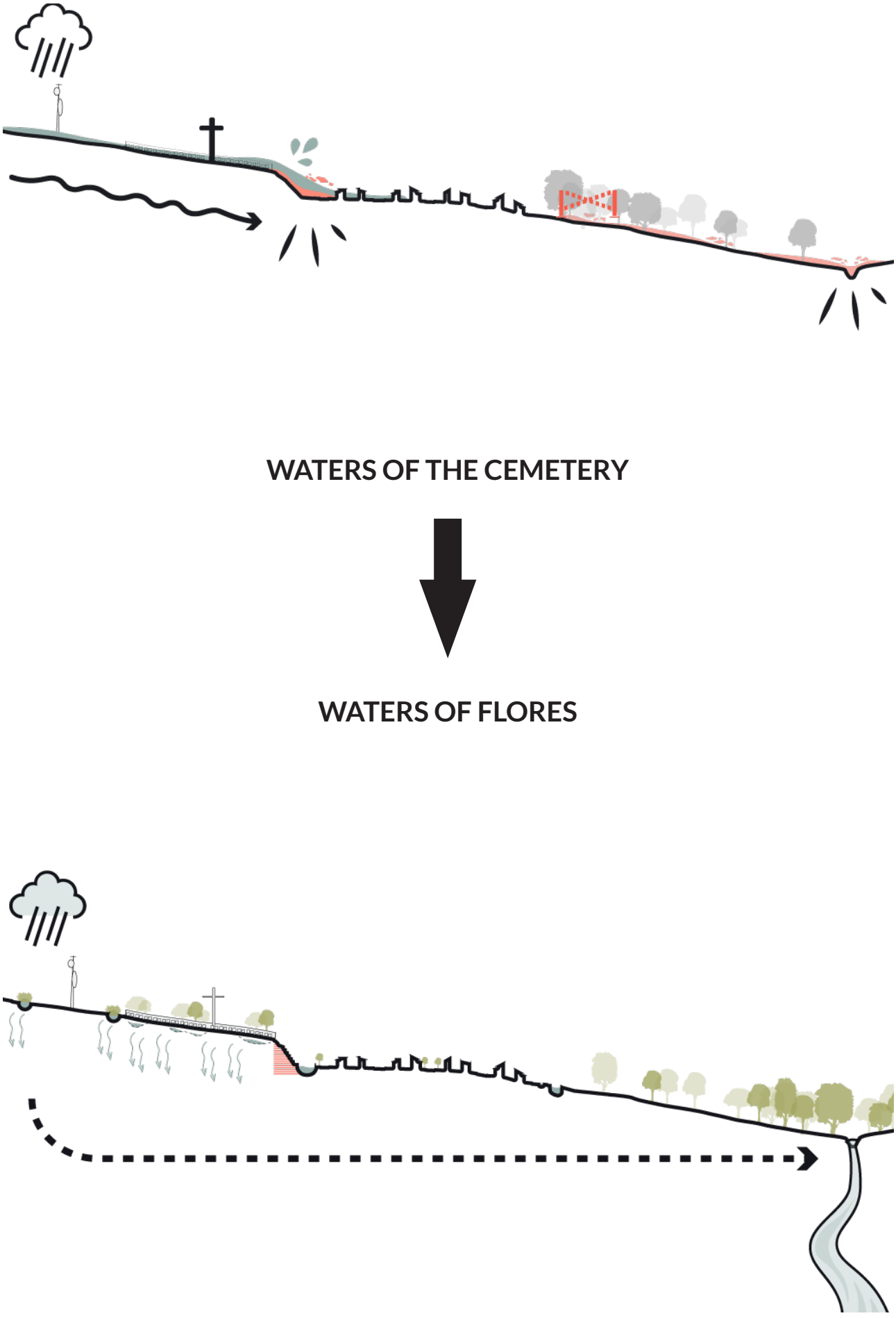


Figure 89. Schematic section design concept

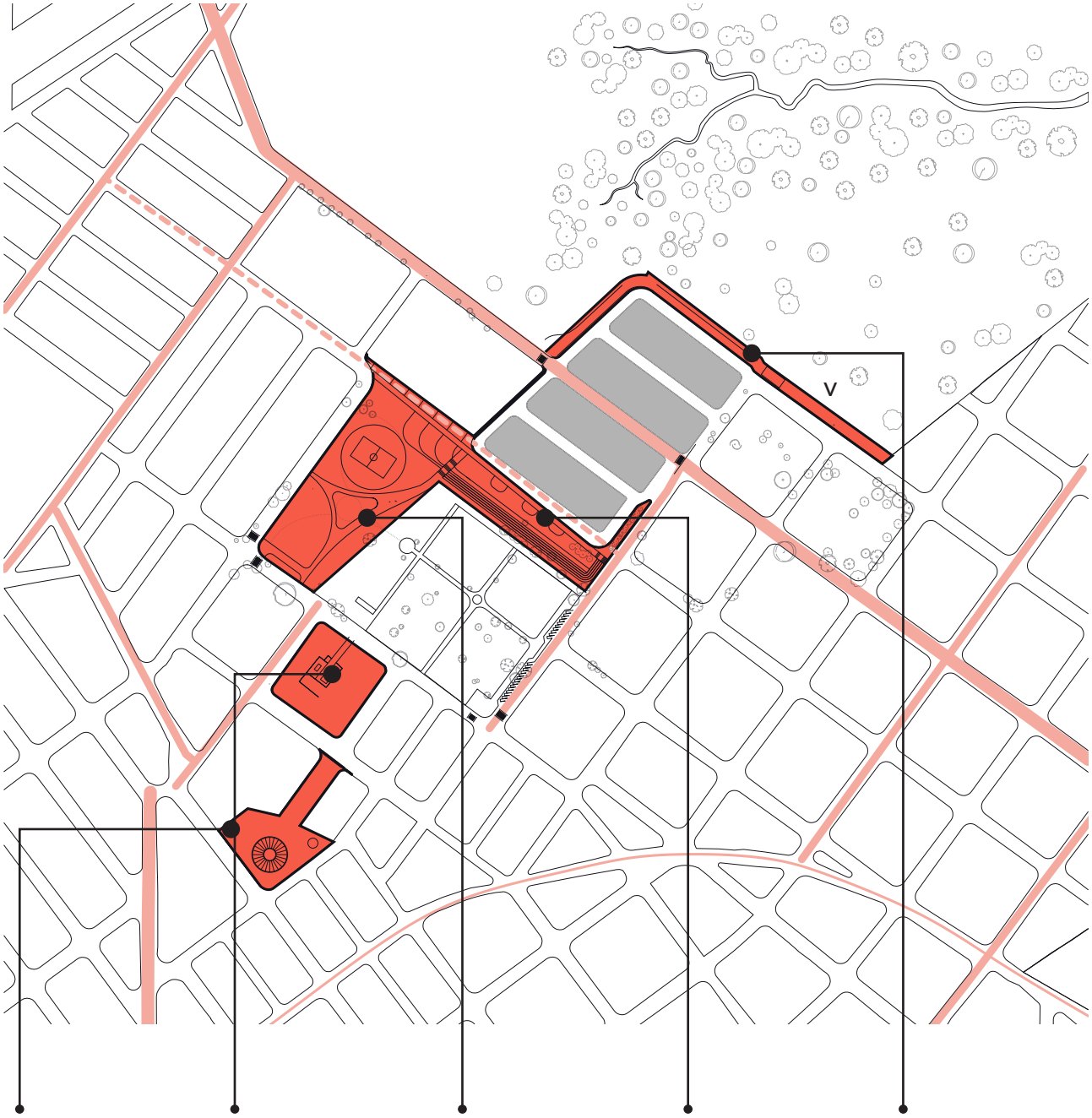
Spatial interventions

To achieve the four identified goals, the plan introduces five primary intervention sites strategically positioned from the hilltop to the valley of Vila Cristiana's territory. These sites will undergo revitalization and reimagining to not only ensure water safety but also provide avenues for urban engagement. They will foster social development within the community by offering adaptable spaces for social gatherings, open markets, leisure activities, and well-being initiatives. The plan envisions a thriving community enriched by cultural and educational events, promoting a sense of ownership and pride in public spaces.

Furthermore, roadways will experience tailored adaptation strategies based on their functions. These strategies focus on enhancing pedestrian accessibility, increasing permeability, and improving drainage. This involves incorporating elements like rain gardens, greenery, wider sidewalks, improved lighting, and other urban amenities.

By implementing these strategies, Vila Cristiana aims to foster spatial justice and establish an inclusive, sustainable, and empowered neighborhood. The plan recognizes the inherent potential of its water heritage as a guiding principle, celebrating water's life-sustaining attributes while addressing socio-environmental challenges.

Through a blend of infrastructure enhancements and community-driven endeavors, the Neighborhood plan aspires to transform the barriers that once isolated the community into bridges of connection and opportunity. Ultimately, the plan stands as a testament to the remarkable capacity of collective action and community collaboration in shaping a brighter and more equitable future for Vila Cristiana.



1. Site belonging to the Municipality's department of water and sewage. Holds the water reservoir in the hilltop.

2. Site belonging to a telephone and communication company. Holds a communication antenna and the rest of the block is empty.

3. Public plot assigned to be a public green area, but is underused now.

4. Public green area defined as part of Vila Cristiana land regularization.

5. Public green area, part of the large natural zone.

Figure 90. Spatial interventions map

SPATIAL INTERVENTIONS TO ADDRESS GOAL 01: SUSTAINABLE WATER MANAGEMENT

1. Water canal guiding the water to the natural path, avoiding erosion and standstill waters on the street.

2. Artificial Wetlands in the public green area to create water retention ponds to maximize water infiltration.

3. Gabion retention wall to prevent the landslide from the cemetery .

4. Bioswale with filtering plants, in order to protect the community from the contamie water coming from the cemetery.

5. Raingardens and bioswale on the perimeter of the communication antenna's plot to allow water infiltration and slow the runoff from the hilltop.

6. Pocket park in the plot of the water distribution tank with public drinking water source and landscape work maximizing the permeability and slowing the rainwater runoff.

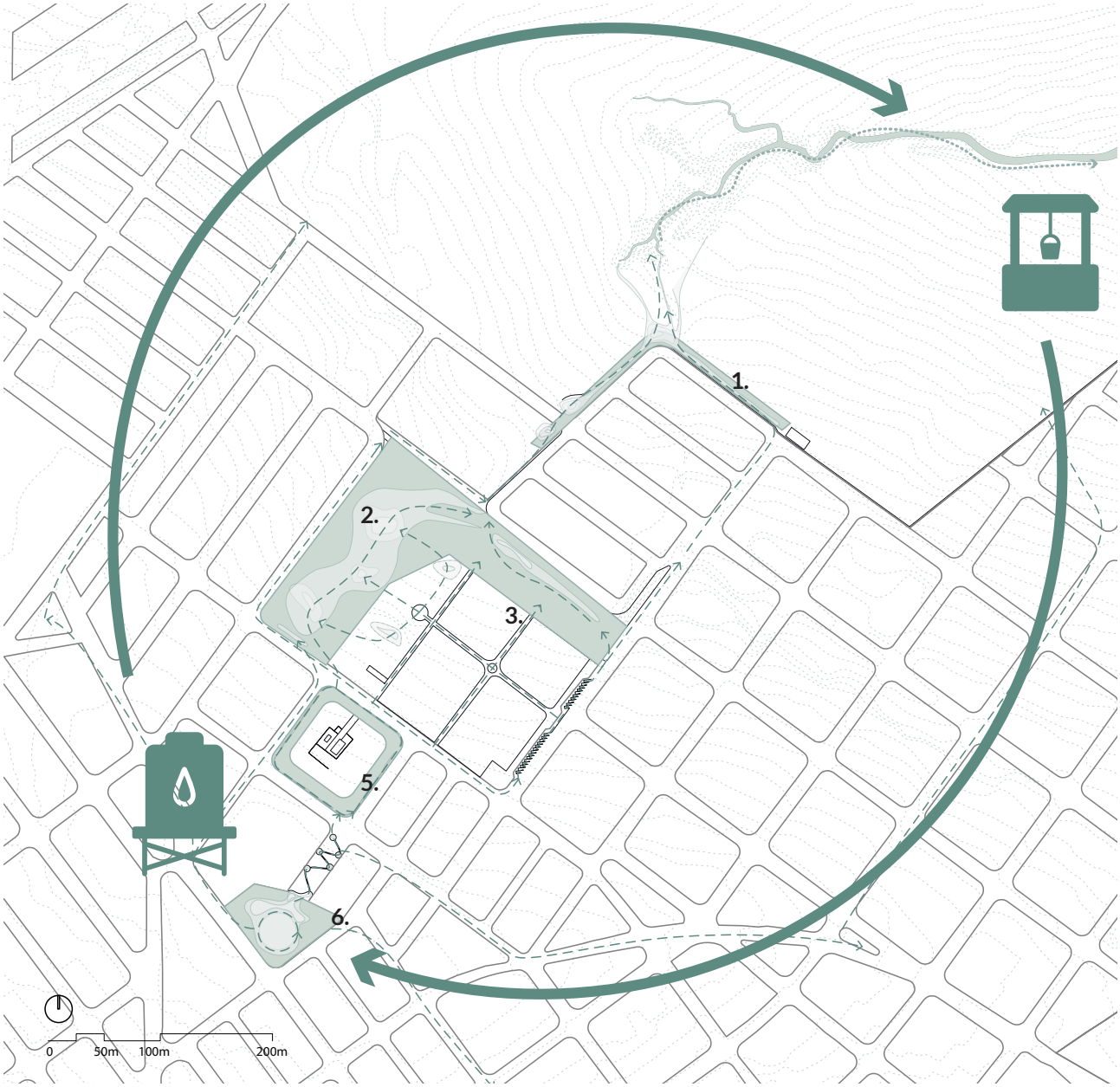


Figure 91. Urban design strategies: Goal 1

1.

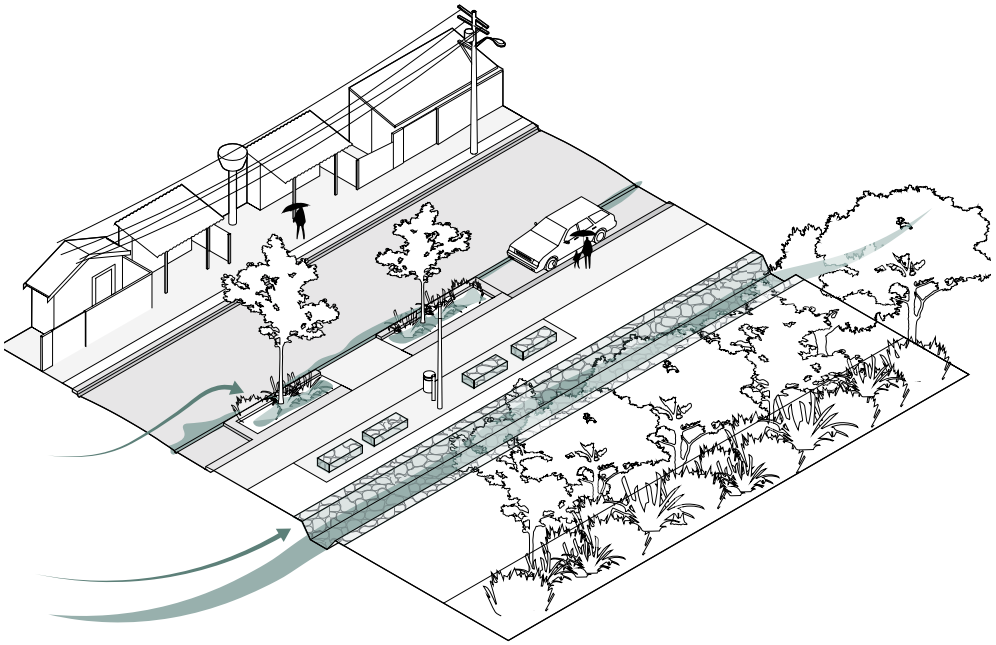


Figure 92. Axonometric water trench

2.

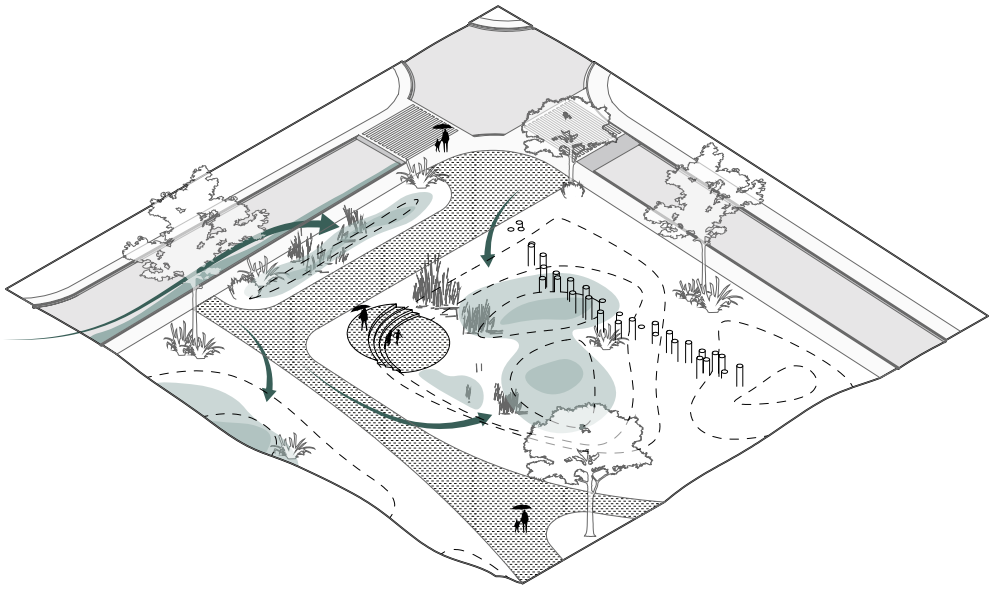
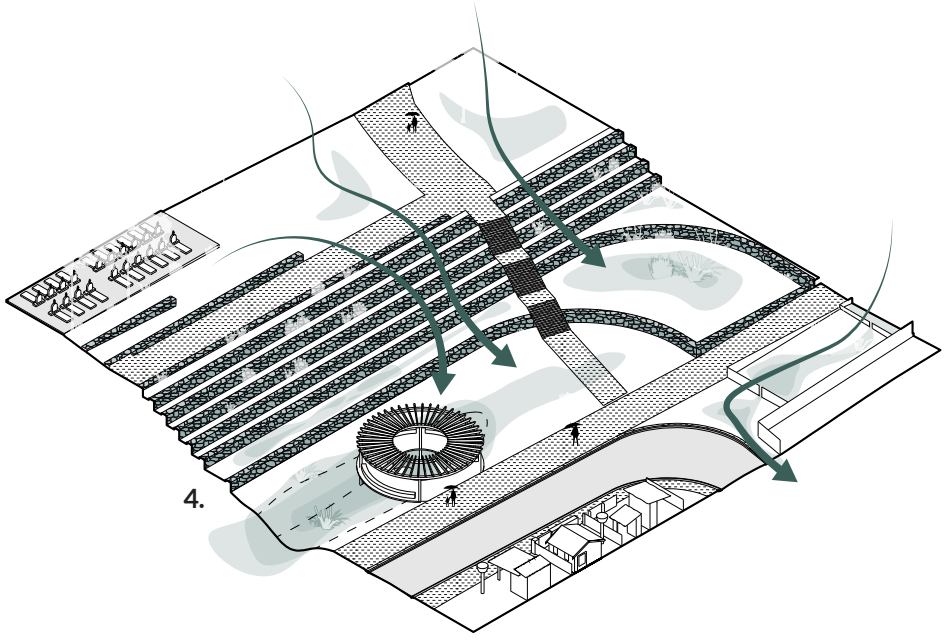


Figure 93. Axonometric water ponds and wetlands

3.



4.

Figure 94. Axonometric Gabion retention wall

SPATIAL INTERVENTIONS TO ADDRESS GOAL 02: ECOLOGICAL RESTORATION AND COMMUNITY SAFETY

1. Buffer zone in the perimeter of the natural area with sparse and low vegetation, maximizing visibility and protecting from dangerous species from the cerrado (snakes, scorpions and spiders) that come from the dense vegetation.

2. Create ecological corridors bringing native species to the urban greenery and streets arborization, connecting the different green systems of the neighborhood.

3. Landscape design in the remanent public green areas with low maintenance and native species.

Figure 95. Urban design strategies: Goal 2

1.

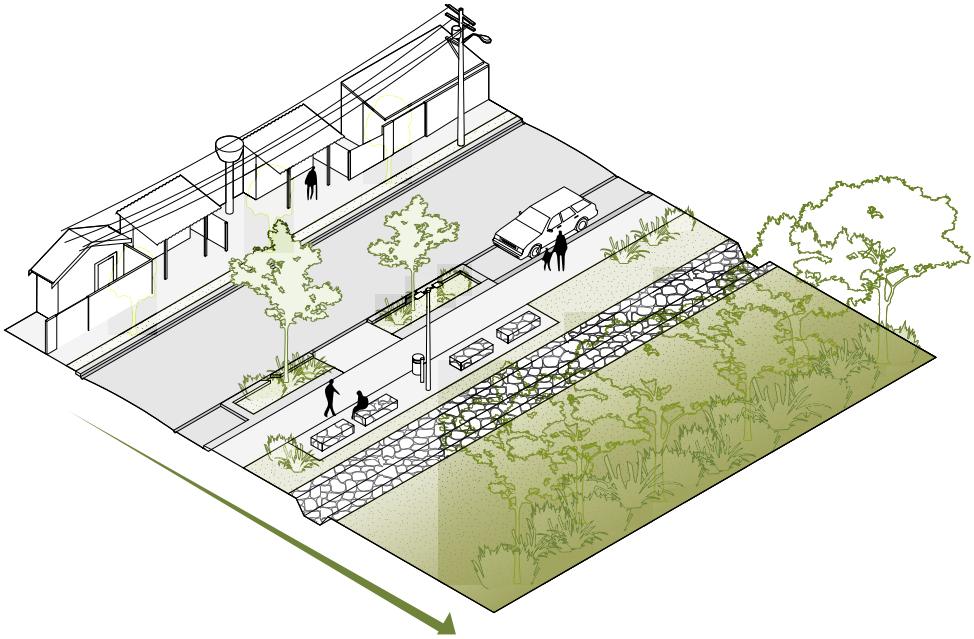


Figure 96. Axonometric vegetation buffer zone

3.

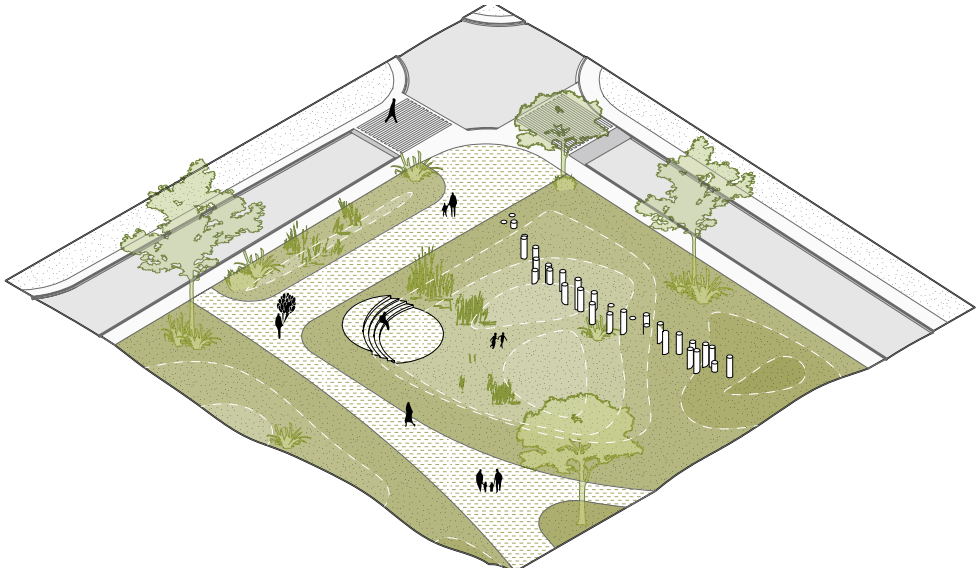


Figure 97. Axonometric public green area

SPATIAL INTERVENTIONS TO ADDRESS GOAL 03: EMPOWERMENT THROUGH PARTICIPATORY GOVERNANCE

1. Elevated flower beds in public areas allowing the community to cultivate vegetables collectively, a practice common in the area they were settled before, stopped by the polluted water from the cemetery and poor soil of the current location.

2. Flexible and inclusive public area that can host events and gatherings, fostering the exchange between different communities of the neighborhood.such as the informal settlement of Piquete (a) and the Social Housing "Chacara das Flores" (b).

3. Sheltered spaces / Kiosks allowing small groups gatherings safe from weather conditions, specially the hard sun of the region.

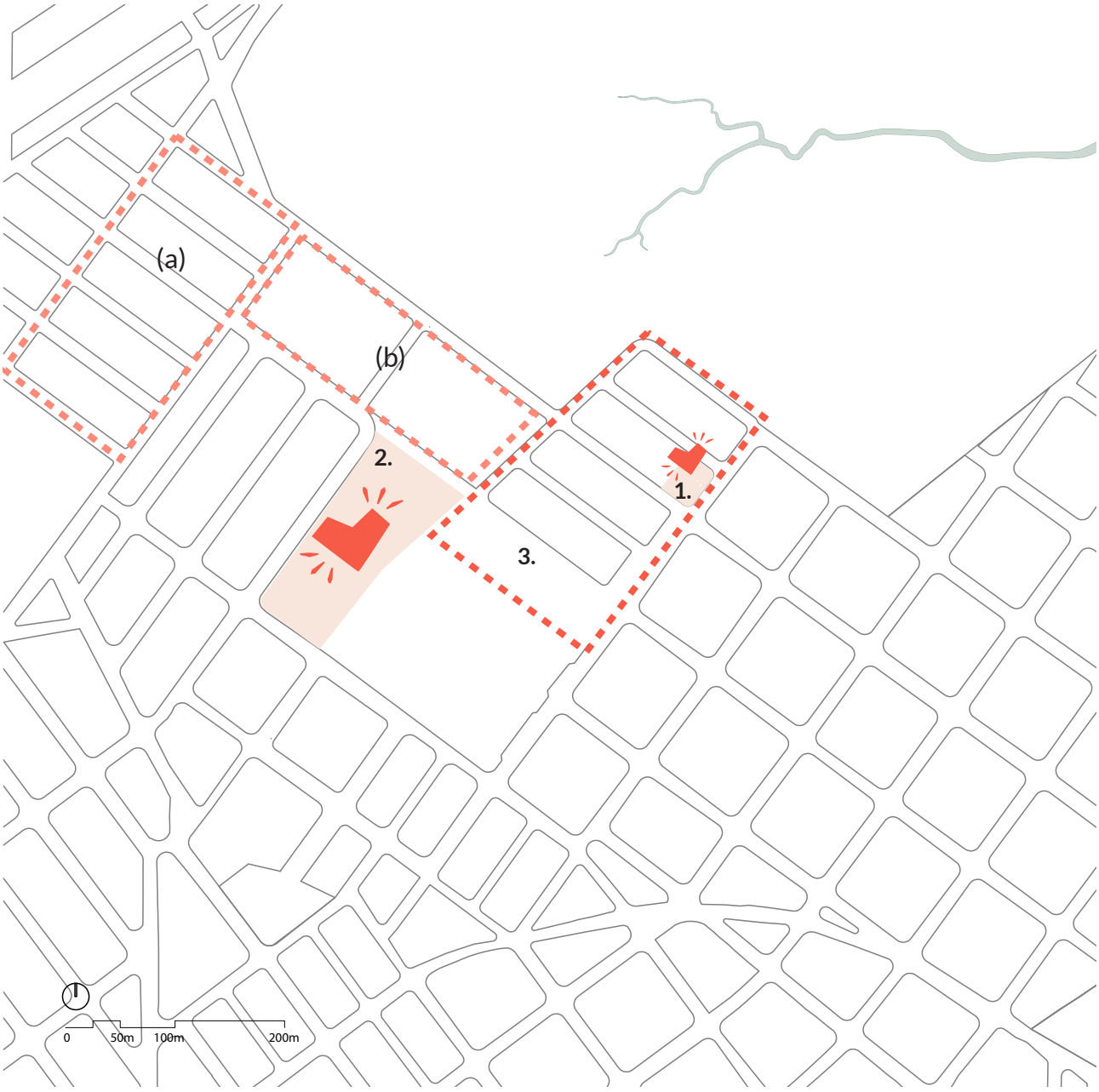


Figure 98. Urban design strategies: Goal 3

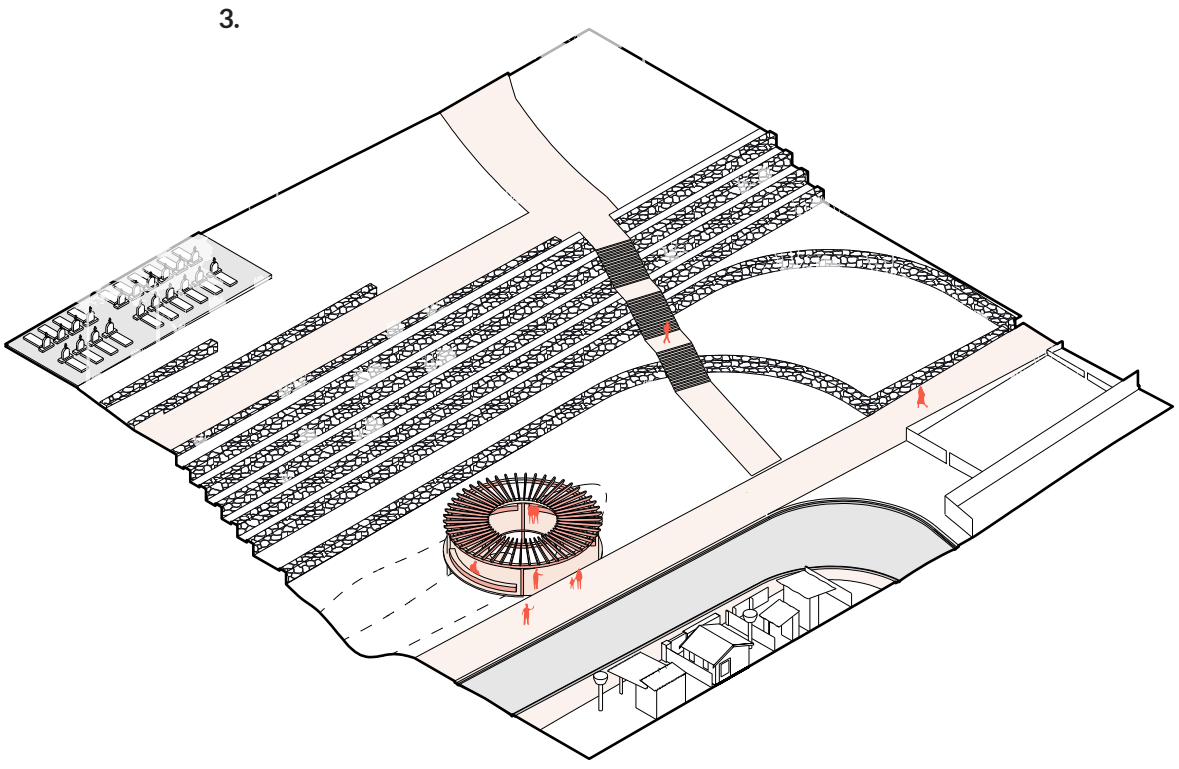


Figure 99. Axonometric community hubs / kiosks

SPATIAL INTERVENTIONS TO ADDRESS GOAL 04: ENHANCING PUBLIC SPACES AND ECONOMIC INTEGRATION

1. The heart space, where community members have a belonging feeling by expressing their art, hobbies and daily habits, working as an extended garden from their homes.

2. Improve existing sports squares infrastructure as well as accessibility and safety in school areas.

3. Infrastructure for open markets in public areas close to the community, including local business in commercial areas already consolidated.

4. Streets adaptation according to hierarchy:
   - Fast lanes: Adopt traffic calming measures to lower vehicle speed
   - Connecting streets: Pathway and cycling networks
   - Green corridors: Increase permeability and improve drainage capacity

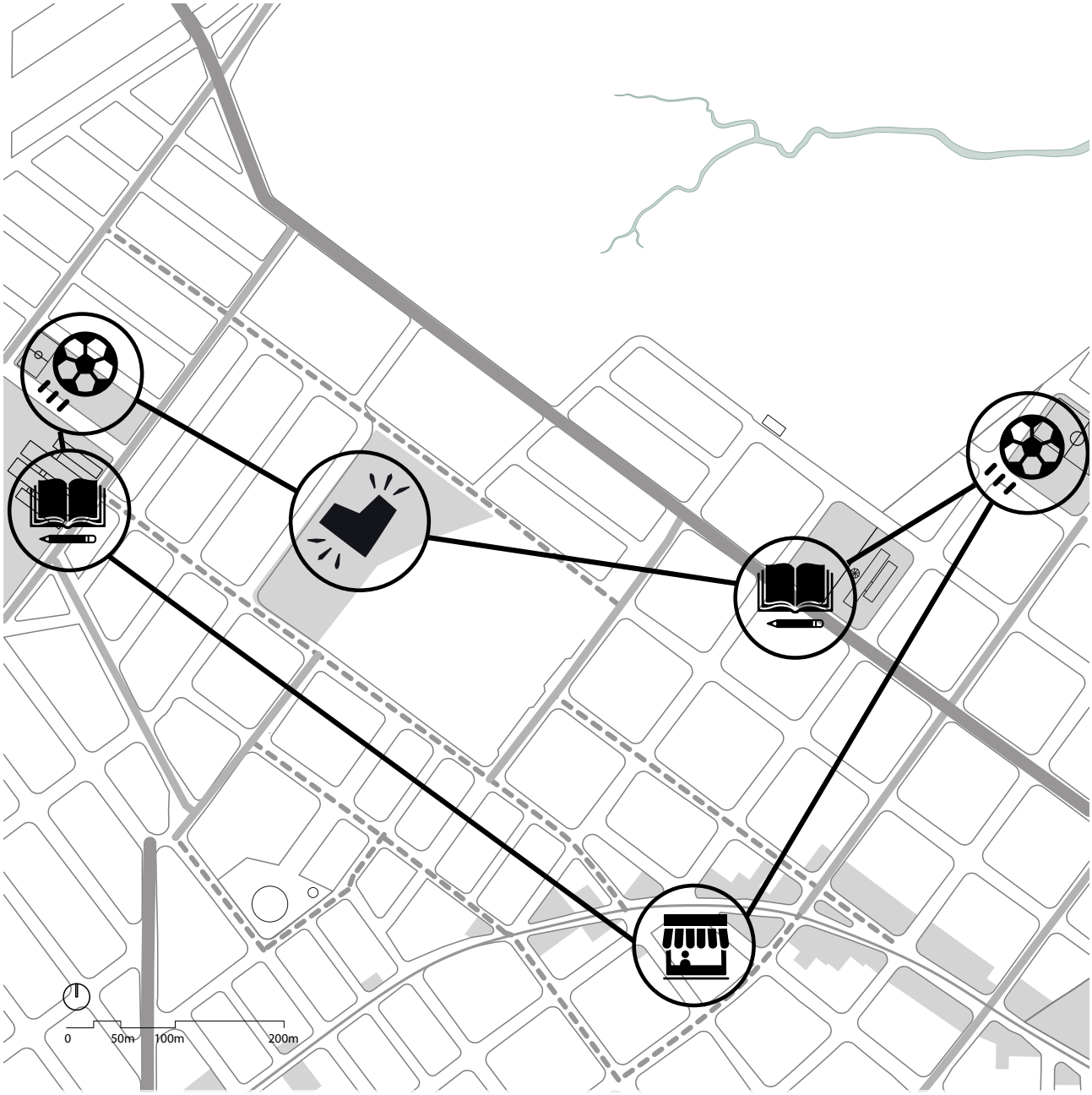


Figure 100. Urban design strategies: Goal 4

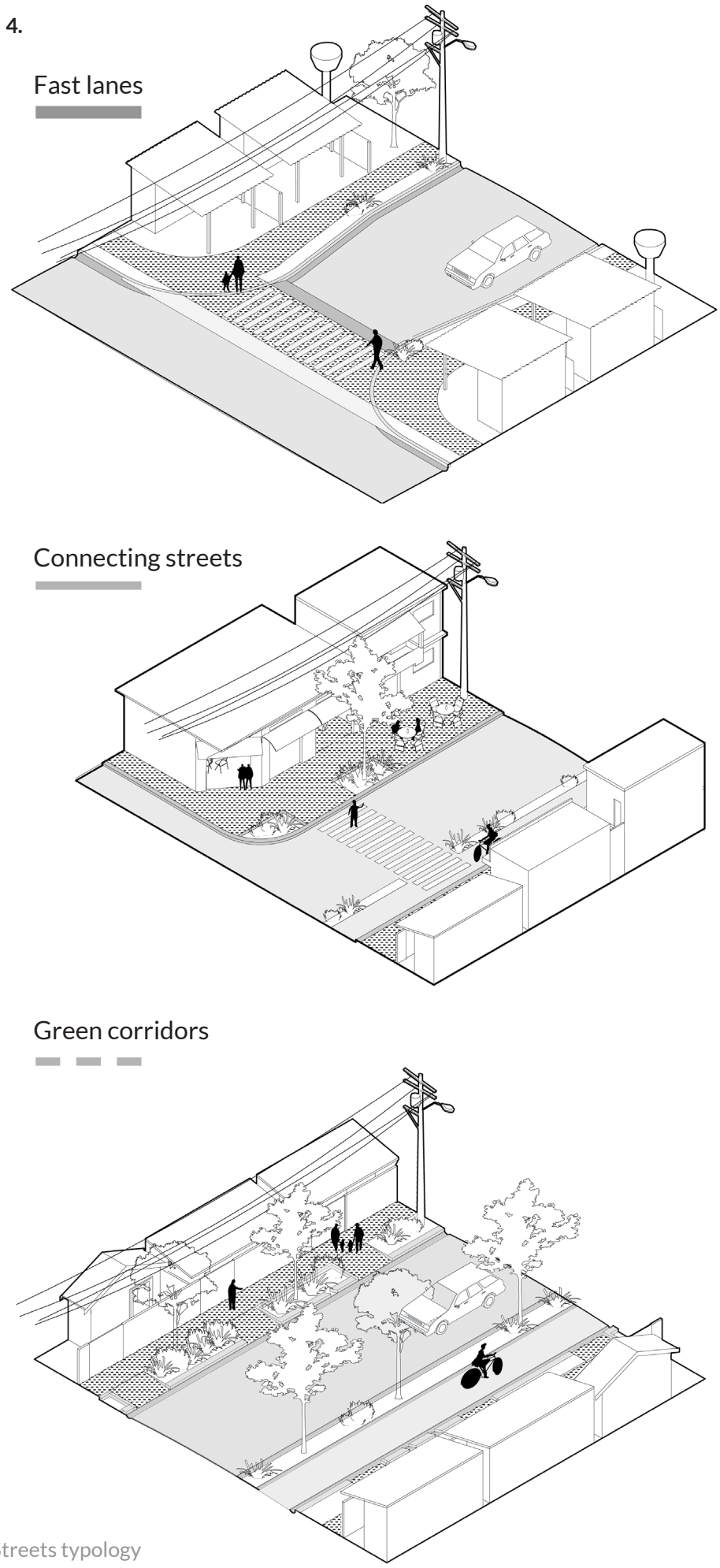


Figure 101. Axonometric Streets typology

Figure 102. Illustration Neighborhood before intervention

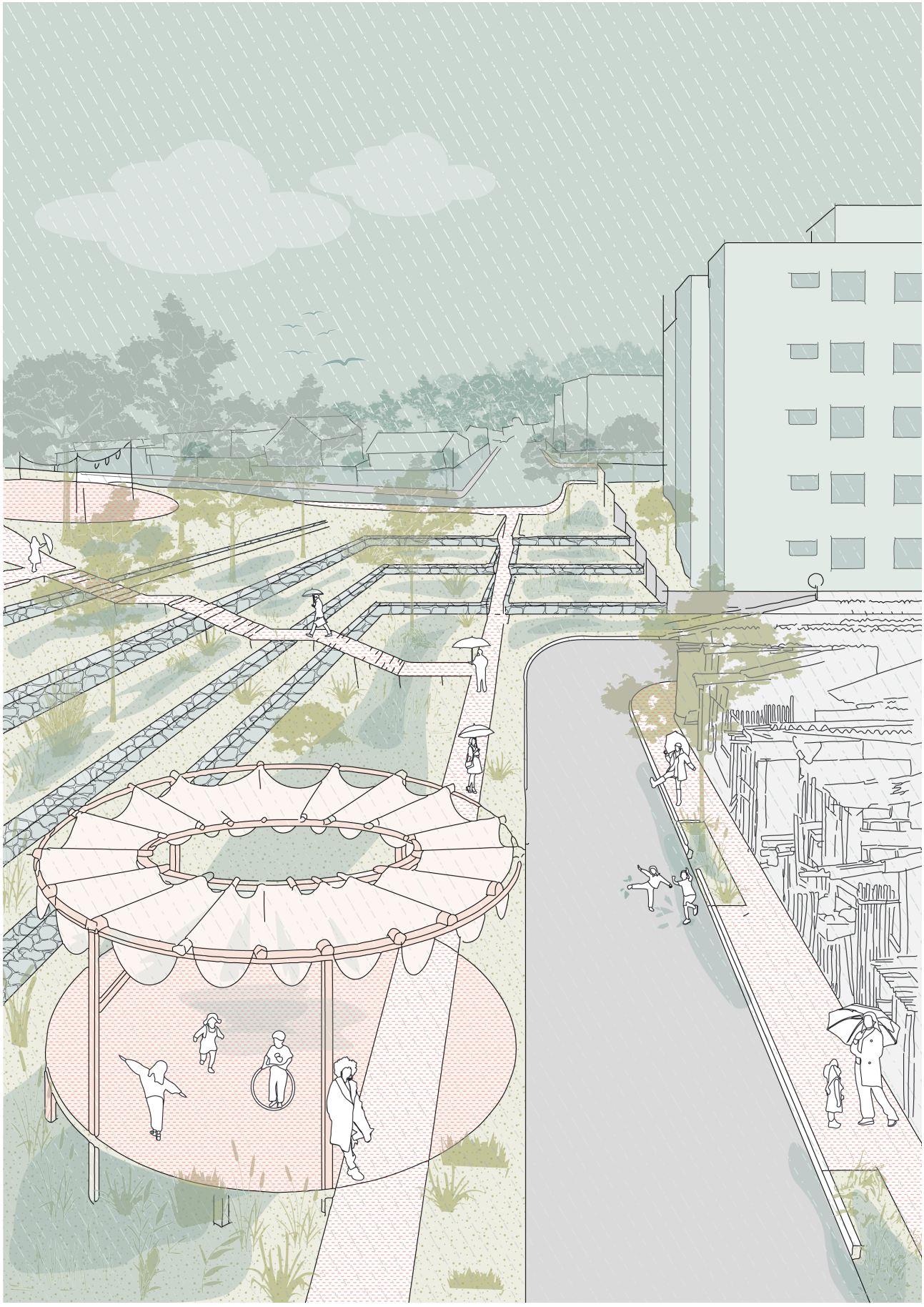


Figure 103. Illustration vision of the Nieghborhood after interventions

4.3. ADMINISTRATIVE STRATEGIES

At the Guidelines and Administrative level, the plan aims to empower the community through participatory governance. Residents will be actively involved in decision-making processes, and capacity-building initiatives will provide them with the knowledge and skills to actively participate in local governance. Guidelines for maintenance will be developed to ensure the long-term sustainability of the implemented infrastructure. Furthermore, risky areas and irregularities will be constantly assessed to identify and address potential hazards.

The plan also envisions a community enriched by cultural and educational activities/events. To achieve this, cultural and educational initiatives have to be promoted, fostering a sense of community ownership and pride in public spaces.

By implementing these strategies, Vila Cristiana seeks to promote spatial justice and create an inclusive, sustainable, and empowered Neighborhood. The plan acknowledges the potentials of water heritage as a guiding principle, celebrating the life-giving properties of water while addressing socio-environmental challenges.

Through a combination of infrastructural improvements and community-driven initiatives, the Neighborhood plan aspires to transform the barriers that once segregated the community into bridges of connection and opportunity. Ultimately, the plan serves as a testament to the transformative capacity of collective action and community collaboration in fostering a brighter and more equitable future for Vila Cristiana.

GOAL 01

SUSTAINABLE WATER MANAGEMENT

1. Involve residents in decision making for water management
2. Develop an emergency response plan to address water-related hazards and protect vulnerable community members.
3. Continued review of the masterplan
4. Create a water quality monitoring program in collaboration with local authorities and residents.
5. Establish clear guidelines for property owners to manage stormwater on their premises, preventing runoff and flooding.
6. Provide financial incentives or subsidies to encourage the adoption of sustainable water management practices.
7. Integrate water management into the city's overall development plan and coordinate efforts with relevant stakeholders.
8. Promote educational Workshops: Capacitacao para construcao de alternativas ao esgoto / Elevated gardens as an alternative practice in inadequate soils location

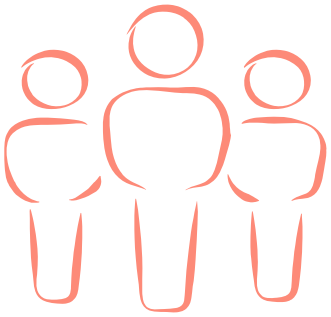
GOAL 02

ECOLOGICAL RESTORATION AND COMMUNITY SAFETY

1. Develop a land-use zoning plan that designates areas for ecological restoration and community safety measures
2. Implement an urban forestry program to plant and maintain native tree species in public spaces and private properties.
3. Improve the solid waste management and recycling program to reduce environmental hazards and promote sustainability.
4. Establish a community-led surveillance system to identify and report safety hazards or environmental violations.
5. Collaborate with local schools and educational institutions to promote environmental awareness and conservation.
6. Create an urban design review board to ensure that new developments adhere to ecological restoration guidelines.
7. Promote educational Workshops: Educate residents on water conservation and sustainability, Educate about safety and poisonous animals management of cerrado species

Table 06. Administrative strategies

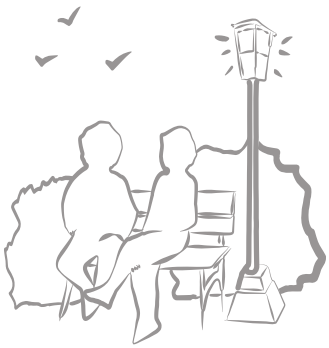
GOAL 03



EMPOWERMENT THROUGH PARTICIPATORY GOVERNANCE

1. Develop a capacity-building program to train community leaders in participatory governance and community organizing.
2. Establish a digital platform or mobile app to facilitate communication between residents and local authorities.
3. Organize regular town hall meetings to address community concerns and promote transparency in decision-making.
4. Provide support and resources for community-led initiatives and projects that promote social cohesion and empowerment.
5. Develop guidelines for the inclusion of diverse voices and perspectives in the decision-making process.
6. Encourage the formation of Neighborhood associations to promote community collaboration and collective action.

GOAL 04



ENHANCING PUBLIC SPACES AND ECONOMIC INTEGRATION

1. Develop a capacity-building program to train community leaders in participatory governance and community organizing.
2. Establish a digital platform or mobile app to facilitate communication between residents and local authorities.
3. Organize regular town hall meetings to address community concerns and promote transparency in decision-making.
4. Provide support and resources for community-led initiatives and projects that promote social cohesion and empowerment.
5. Develop guidelines for the inclusion of diverse voices and perspectives in the decision-making process.
6. Encourage the formation of Neighborhood associations to promote community collaboration and collective action.

4.4. IMPLEMENTATION STRATEGY

To ensure the effective implementation of both urban design and administrative strategies, a systematic approach has been devised, subdividing the strategies into actionable steps spread across a four-year timeline. This approach is based on a comprehensive stakeholder analysis conducted earlier, ensuring the involvement of relevant parties at each phase. The implementation plan is designed with a clear timeline in mind:

- **Year 1: Establishing a Foundation -** The first semester will be dedicated to participatory workshops, fostering engagement with the community to finalize and fine-tune the plan based on their valuable feedback. During this year, immediate action will be taken on critical priorities. Notably, the construction of a retaining wall below the cemetery and the creation of water retention ponds in the green public area will be initiated. These initiatives are pivotal in safeguarding residents from recurring landslides and contaminated flash floods.

- **Year 2: Infrastructure Enhancement -** The second year will witness the execution of key infrastructure projects, particularly those focused on enhancing greenery and public spaces. This phase may necessitate substantial financial resources for successful completion.

- **Year 3: Comprehensive Implementation -** Year three is dedicated to finalizing infrastructure works and introducing specific interventions to enhance accessibility, leisure options, and mobility within the community.This year will mark the practical testing of the urban design through the hosting of cultural events, open markets, community gatherings, and aesthetic enhancements. These activities will validate the effectiveness of the plan in real-world scenarios.

- **Continuous Focus: Administrative Strategies -** Throughout all phases and future years, administrative strategies centered around maintenance and monitoring will be continuously implemented. These include actions such as monitoring water and soil quality and facilitating regular town hall meetings. This consistent oversight ensures the sustainability and longevity of the neighborhood's transformation.

This comprehensive approach ensures that both short-term urgencies and long-term aspirations are addressed cohesively. By involving various stakeholders and adhering to a structured timeline, the implementation strategy maximizes the plan's potential for positive impact, creating a more resilient, vibrant, and inclusive neighborhood for all residents.

Table 07. **(Next page) Implementation strategies**

ACTIONS

URBAN INFRASTRUCTURE
Gabion retention wall below the cemetery
Water retention ponds in the public green area
Water trench in the buffer zone
Raingardens in hilltop and water reservoir surrounding

GUIDELINES AND ADMINISTRATION
Monitor water and soil quality
Develop an emergency response plan to address flash flood events and protect community members
Promote educational Workshops within the topics: “Managing stormwater in residences, preventing runoff and flooding.”; “Elevated gardens as an alternative practice in inadequate soils location”; “Alternative solutions for sewage systems”

URBAN INFRASTRUCTURE
Clearing soil and vegetation from an area of at least 5 meters around the perimeter of the natural area
Set bulky waste collection points
Reforestation of the riparian forest on the banks of Corrego das Flores
Planting urban greenery in the specific green corridors
Landscape design of public green areas

GUIDELINES AND ADMINISTRATION
Develop a plan to improve solid waste management and recycling program
Implement an urban forestry program to plant and maintain native tree species in public and private spaces.
Collaborate with local schools and educational institutions to promote environmental awareness and conservation.
Educate residents on water conservation and sustainability

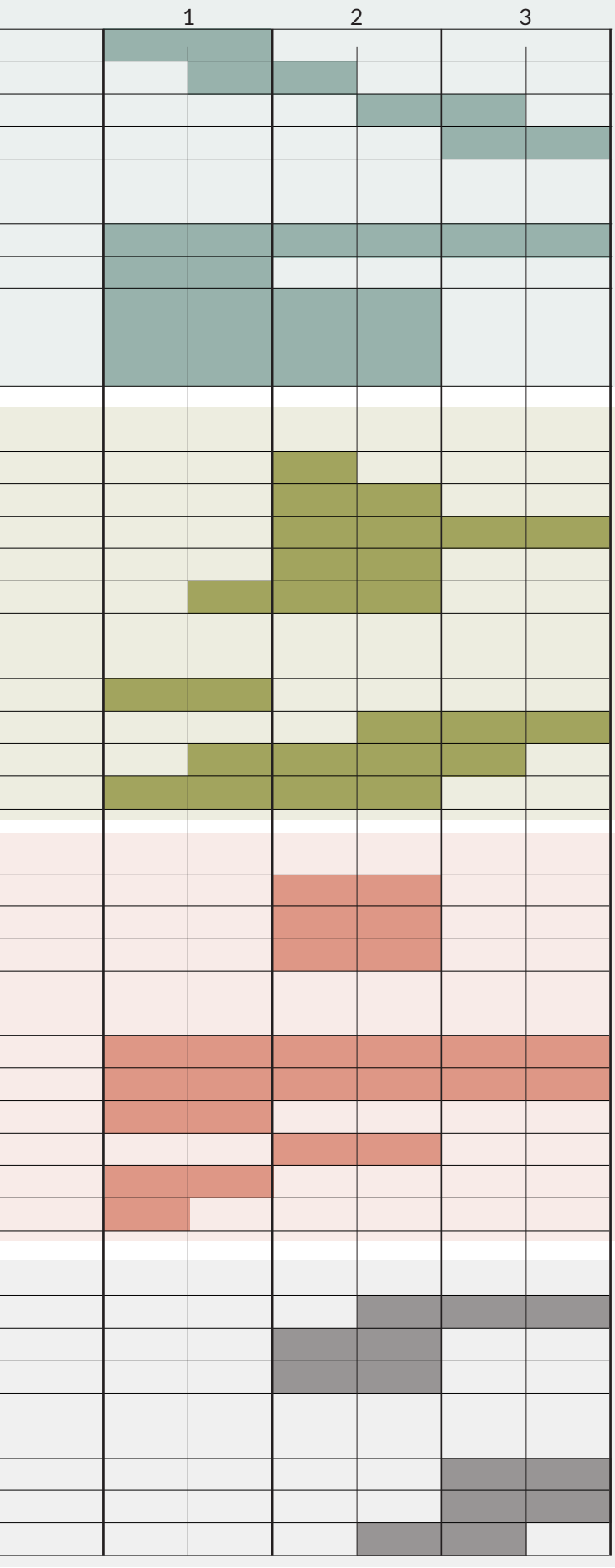
INFRASTRUCTURE
Flexible arena/pateo construction in the public green area
Elevated flower beds available to members of the community to practice gardening activities
Construction of sheltered public spaces/hubs close to Vila Cristiana core area

GUIDELINES AND ADMINISTRATION
Organize regular meetings between the community and the municipality.
Provide support and resources for community-led initiatives.
Develop guidelines for the inclusion of diverse voices and perspectives in the decision-making process.
Engage locals in beautifying public spaces, such as graffiti art walls and gardening interventions
Develop a capacity-building program to train community leaders in participatory governance.
Establish a digital platform or mobile app to facilitate communication between residents and local authorities.

URBAN INFRASTRUCTURE
Streets adaptation and accessibility improvements (lights, sidewalks, road signs)
Installing leisure infrastructure (playgrounds, benches, open-air gyms etc)
Guarantee the flexibility of the kiosks and public arena to host open markets and events

GUIDELINES AND ADMINISTRATION
Set guidelines and reserve spaces for pop up shops and street vendors
Establish guidelines for street art and murals
Establish a maintenance plan for public spaces, ensuring regular upkeep and cleanliness.

TIMELINE (YEAR)



STAKEHOLDERS ACTIVATION

- SEPLAN (Urban planning secretariat)
- DAE (Water supply and Sewage depertment)
- SEMMA (Environmental secretariat)
- Instituto SOMA
- Drainning infrastructure companies
- UNESP University- Projeto Cristiana
- Community members

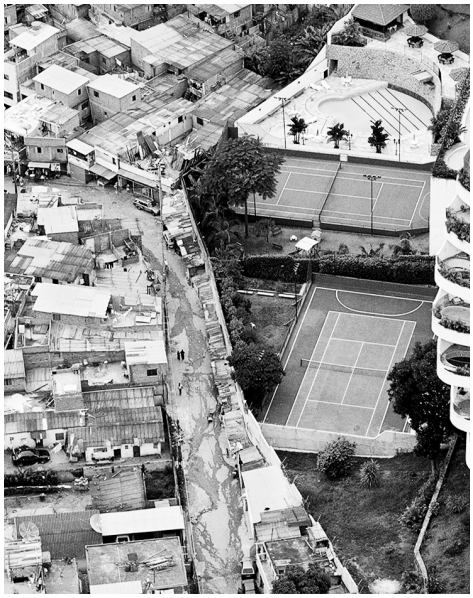
- SEPLAN (Urban planning secretariat)
- SEMMA (Environmental secretariat)
- CETESB - Environmental Company of the State of São Paulo
- Instituto SOMA
- Landscape designers
- UNESP University- Projeto Cristiana
- Community members

- SEPLAN (Urban planning secretariat)
- Municipal Culture Department
- Cras IX de Julho (Social Assistancy program)
- UNESP University- Projeto Cristiana
- Community members

- SEPLAN (Urban planning secretariat)
- SEDECON (Municipal Department of Economic Development, Tourism and Income)
- Semel (Municipal Sports and Leisure Department)
- Banco do Povo
- UNESP University- Projeto Cristiana
- Local business

5 CONCLUSION

Conclusion diagram



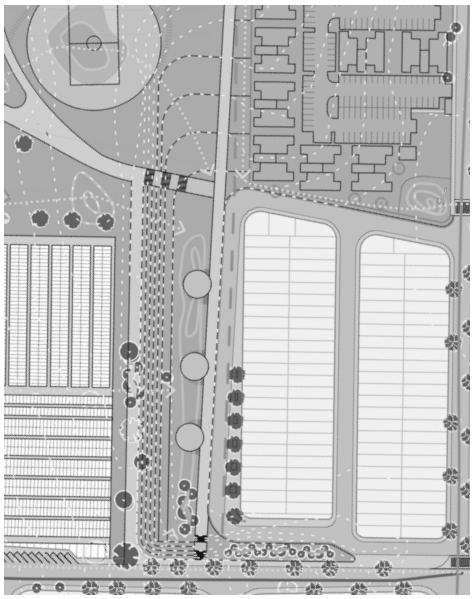


Figure 104. Conclusion Diagram

Theoretical discussion on

SPATIAL JUSTICE

- Distributive and Procedural aspects of Spatial Justice.
- Social and racial segregation in Brazilian spatial context.
- Role of water in spatial justice.
- Planning on local scale as an alternative urban practice.

Represented in practice by

VILA CRISTIANA, BAURU/SP-BRAZIL

- Reflects the social and anthropological profile of marginalized Brazilian communities.
- Faces water-related challenges posed by its geographic location.
- Community engagement as part of the process of promoting spatial justice.

Proposed possibilities materialized as a

NEIGHBORHOOD PLAN

- Spatial interventions based on water-sensitive design principles
- Administrative guidelines proposed in order to maintain the plan through the years
- Implementation strategy including stakeholders activation in a timeline
- Neighborhood plan as a process: Events, Workshop and education programs are proposed in order to keep engaging the community and constantly adapting the plan.

Conclusions of the debate on spatial justice

In general lines, the thesis acknowledges the complexities of Brazil's spatial injustices and the multifaceted challenges they present. Notably, the work of Brazilian authors such as Lúcio Kowarik, Ermínia Maricato, and Raquel Rolnik, along with the academic contributions of Roberto Rocco from TU Delft, has shed light on these complex issues. Their research has emphasized how the spatial distribution of the population mirrors prevailing economic segregation, perpetuating socio-spatial injustice (Kowarick, 1979). Meanwhile, in this chapter it is offered a localized planning possibility in the form of the neighborhood plan for Vila Cristiana, it recognizes that in the pursuit for spatial justice in the context of Brazil, water-related issues must remain at the forefront of our efforts. Clean water, effective drainage systems, and ecological preservation are not just matters of convenience; they are essential components of creating equitable, sustainable, and just communities.

SPATIAL INEQUALITIES IN BRAZIL

- **Complex Historical Roots:** Spatial inequalities in Brazil, particularly within São Paulo's center-west region, have deep historical roots stemming from colonization, periods of dictatorship, and contemporary rapid urbanization.

- **Social and racial segregation:** The spatial distribution of the population mirrors ethno-racial segregation, perpetuating socio-spatial injustices. Especially in the capitals, favelas became racialized spaces, predominantly inhabited by black populations (CARRIL, 2006).

- **Legacy of Urban Reforms:** Historical urban reforms, dating back to the early 20th century, laid the foundation for a unique form of urbanism that marginalized populations, relegating them to the peripheries of cities and perpetuating territorial segregation (Maricato, 2000). These historical processes have cast a long shadow, giving rise to contemporary urban challenges such as unequal spatial occupation, income concentration, limited access to services and infrastructure, population density disparities, and heightened social vulnerability (Goulart et al., 2017). These challenges are not confined to Brazil's major cities; they extend to medium-sized urban centers within the state of São Paulo, like Bauru.

THE PURSUIT OF SPATIAL JUSTICE

- **Challenges of Neoliberalism:** Spatial injustices arise in regions where colonialism intersects with ultra-neoliberal regimes, leading to processes like gentrification and urban cleansing.

- **Emergence of Insurgent Planning:** To tackle these deeply entrenched spatial injustices, insurgent planning has emerged primarily in the global South, offering alternative approaches that counteract the adverse effects of colonialism and neoliberalism on marginalized populations. These practices aim to build future possibilities rooted in emancipatory principles, bridging the gap between theory and action in the pursuit of justice (Miraftab, 2016).

- **Counter-Hegemonic Practices:** Counter-hegemonic practices have arisen as a response to this status quo, driven by alternative forms of planning that envision building future possibilities rooted in emancipatory ideals. These counter-hegemonic planning modes have emerged from the efforts of social movements, dedicated professionals, and engaged academics who see planning as a tool in the struggle for more equitable cities. This discourse on counter-hegemonic planning unfolds within the context of the global crisis of capitalism and a crisis in the concept and practice of planning as a profes-

sion. It underscores the urgent "need for alternative planning practices, a redefined purpose, and a fresh imagination" (Miraftab, 2016).

- **Role of Key Legislation:** Legislation like the Estatuto da Cidade plays a pivotal role in regulating urban development and promoting social inclusion, emphasizing participatory urban management and addressing urban inequalities.

- **Key Instruments:** In the Brazilian context, key instruments for addressing spatial inequalities include the Plano Diretor (Master Plan) and the Estatuto da Cidade (City Statute). The Estatuto da Cidade, enacted in 2001, serves as a landmark legislation that regulates urban development while emphasizing the social function of cities, the right to adequate housing, and democratic and participatory urban management. It recognizes the importance of access to land, housing, transportation, and services for all citizens, particularly those in informal settlements and marginalized areas. Among its core objectives is the redress of urban inequalities and the advancement of more inclusive cities. This legislation recognizes the significance of access to land, housing, transportation, and basic services for all citizens, with particular attention to those residing in informal settlements and marginalized areas. The law actively encourages participatory decision-making processes, enabling residents and civil society organizations to engage actively in urban planning and development (Brasil, 2001).

- **Planning at the local level:** the Neighborhood Development Plan (Plano de Desenvolvimento de Bairro) within the Strategic Master Plan of São Paulo offers a localized planning approach. It enables collaboration between civil society, the public sector, and the private sector in developing transformation strategies that address local demands, enhancing the quality of life for residents at the neighborhood level (Fundação Tide Setúbal, 2019b).

WATER IN SPATIAL JUSTICE

- **Critical Role of Water: o**f water within the framework of spatial justice. Access to clean water, effective drainage systems, and the ecological preservation of water bodies have emerged as critical elements in fostering equitable and sustainable development. Water, as a fundamental element in shaping communities and livelihoods, must be integrated into spatial justice endeavors to ensure long-term resilience.

- **Water-Related Challenges in Brazil:** Water-related issues in Brazil have taken on substantial significance in the pursuit of spatial justice. Ensuring fair and equitable access to clean water and establishing adequate water infrastructure have become urgent priorities. The relationship between water and regional planning in Brazil has deepened since the 1940s, with the active involvement of the state in economic development plans. Various approaches and objectives have evolved in response to the shifting political and economic landscape over the years.

- **Shift in Water Management**: With the Water Code and subsequent legislation, water assumed new dimensions and significance. Brazil transitioned to a decentralized and integrated management model, recognizing water as a natural resource with economic value, multiple uses, and relevance not only to human populations but also to other forms of life. This paradigm shift reflects a broader recognition of water's intricate role in social and ecological systems, reinforcing its centrality within the realm of spatial justice in Brazil.

Spatial (In)justice in Vila Cristiana

The case of Vila Cristiana in Bauru serves as a focal point for understanding spatial (in)justice within the Brazilian context. This choice is motivated by both personal and substantive reasons. Personal familiarity with the community, rooted in prior academic engagements, facilitated a deeper understanding of its unique context. Additionally, Vila Cristiana encapsulates a convergence of spatial challenges faced by many marginalized communities in Brazil, making it a pertinent case study.

Bauru, situated approximately 300 kilometers from São Paulo, plays a significant role in the region as an educational and economic center, particularly in the agricultural sector. The city experiences a transitional climate marked by hot summers, mild winters, and distinctive rainy seasons characterized by intense, short-duration storms.

Vila Cristiana, located in the city's northern region, comprises around 180 families residing in an area designated as "high vulnerability" by the Social Vulnerability Index of São Paulo (IPVS). The settlement consists of four blocks, providing 187 plots, each measuring approximately 5x20 meters. Despite land ownership, most dwellings remain makeshift structures constructed from tarpaulin and cardboard, lacking essential attributes of permanent residences. This situation underscores the precariousness of the settlement, revealing that mere land ownership falls short in addressing fundamental demands for spatial justice. The municipality's plan for the area envisions reserved spaces for greenery and leisure, but as of now, no implementation plan has materialized to enhance these areas.

Spatial disparities, influenced by social, racial, and gender dimensions, are evident in Vila Cristiana compared to the broader city landscape, mirroring broader Brazilian spatial inequalities. For instance, data from the Municipality of Bauru in 2005 revealed that "one fifth of the poorest population held 9% of the income, while the richest fifth owned 42%." These inequalities manifest spatially in the distribution of population by socioeconomic vulnerability indexes.

In Vila Cristiana, women constitute 72.2% of the population, primarily serving as homemakers and working independently to supplement family incomes. These women, despite their multiple responsibilities, actively contribute to community organization and development. Furthermore, a significant proportion of the residents are elderly, comprising 24.5% of the population, necessitating improved accessibility and infrastructure for mobility. In terms of racial diversity, 56.8% identify as mixed race (pardos), 22.7% as black (pretos), and 18.2% as white (brancos). These demographics highlight the importance of addressing racial disparities in housing and living conditions.

Most houses in Vila Cristiana were initially constructed using wood (40%), followed by masonry (38.6%), and plywood (13.6%). However, financial constraints and land regularization issues hinder permanent housing construction. This data aligns with broader research that identifies the black population as the primary group residing in inadequate housing.

The contextual challenges in Vila Cristiana are emblematic of a society where racism is deeply ingrained, perpetuating disparities throughout the social fabric. This chapter illuminates the complex interplay of historical, social, economic, and governance factors contributing to spatial injustice and inequality, underscoring the imperative for inclusive solutions.

Within the specific context of Vila Cristiana, it becomes evident that the challenges faced extend far beyond the realm of water-related issues. Structural racism, corruption, and criminality are deeply ingrained within the spatial fabric of the neighborhood. It is crucial to recognize that this work humbly acknowledges the limitations inherent in addressing such multifaceted challenges and acknowledges the proposed neighborhood plan as just one contribution among many potential solutions. Moreover, it serves as a platform to amplify the desires and aspirations of the community for a more democratic and just city.

TERRITORIAL ANALYSIS KEY-FINDINGS

	Territorial Scale	*Neighborhood Scale*
Land Use	• Expansion and Disconnected Territory • Natural features like rivers and railways act as barriers, limiting access to urban infrastructure for communities located "across the river" or "across the railway." • Rapid urbanization has led to informal settlements in the outskirts of the city. • Zones of Social Interest (ZEIS) have been established to address housing demand, but they remain insufficient.	• Contrasting land use patterns within the area: the "formal city" with planned urban infrastructure, areas with precarious conditions, and natural areas with a sharp transition between urban and natural spaces. • Urban voids and vacant lots present in the surroundings. • Vila Cristiana was classified as an expansion zone in the Master Plan of 2008. Nevertheless, it lacks urban infrastructure despite strategic importance.
Geomorphologic system	• Sandy soils are susceptible to erosion, posing risks to communities. Factors like heavy rainfall, results in grooves, gullies, sedimentation, environmental degradation, and financial costs.	• Vila Cristiana lies between a hilltop and a valley, with a significant slope, increasing susceptibility to flooding during rainfall.
Vegetation System	• Atlantic rainforest and Cerrado biomes cover reduction and fragmentation, which poses challenges for conserving local fauna. Isolated fragments remain within agricultural and urban landscapes. • Riparian areas play a vital role in supporting biodiversity and water source preservation.	• Vegetation types are predominantly low bushes and high grass with invasive species. • Vila Cristiana is situated in an ecotone between the Cerrado biome and Atlantic Rainforest.
Hidrologic system	• The urban planning strategy of the city is based on sectors according to the water basins divisions. • Environmental Protection Areas (APAs)cover a significant portion of the municipal territory and are crucial for safeguarding water resources. • Bauru River's water quality is impacted by untreated sewage of the city. • Batalha River basin is the main water supply of the city. • Rainwater management is shared responsibility between municipal departments and property owners. • Urbanization has increased stormwater runoff and siltation, resulting in recurrent flooding issues.	• Vila Cristiana is situated within the limits of the Rio Bauru Water Basin and the Água Parada Water Basin. The closest stream to Vila Cristiana drains into the Rio Bauru. • Environmental Protection Areas (APAs): APAs cover most of Vila Cristiana but are deteriorated. • Intensive soil use impacts water quality. Springs in the area are also undergoing urbanization, resulting in changes like the suppression of natural vegetation, soil sealing, erosion, reduced groundwater recharge, and increased runoff. • The terrain's shape, influenced by hilltops, significantly affects the flow of rainwater, causing multiple confluences of water, with the most severe near the Cristo Rei Cemetery. Water tends to flow towards the Primavera area, affecting the settlement.

Table 08. Territorial analysis key-findings

STAKEHOLDERS SURVEY

A comprehensive stakeholder survey was conducted to facilitate the development of a neighborhood plan for Vila Cristiana in Bauru. The methodology involved identifying and categorizing key stakeholders from diverse sectors, including local and international levels. Emphasis was placed on the significance of engaging stakeholders from the private, public, and third sectors, recognizing their crucial roles in the regulation and development of Vila Cristiana. Additionally, the exploration of potential international partnerships was deemed strategic to address spatial challenges not only within Vila Cristiana but also in similar communities globally, especially in the global south.

Key stakeholders deeply involved in developing the neighborhood plan for Vila Cristiana include: Community Members: The official association recognized by the municipality represents the community, actively engaged in the process; Urban Planning Secretariat of Bauru: Involved since the settlement's inception, particularly in negotiations regarding land tenure and regularization; Water and Sewage Department: Responsible for managing the city's water resources; Local University (UNESP): Conducts various academic extension projects, including the Cristiana Project, sharing knowledge acquired through teaching and research with the community.

In terms of financing, the community currently relies on specific national budgets and donations from political parties. However, potential funding opportunities and support could be explored by engaging national and international banks focused on urban development, such as BNDES, CAIXA, BB, the international World Bank, and the Inter-American Development Bank.

Additional stakeholders that could be activated to contribute to the plan's success include organizations with expertise in planning and community-based technical support, such as Instituto Polis, Instituto SOMA, and Lab JUTA (Lab for Territorial Justice from ABC Federal University). At the international level, the possibility of technical assistance is available from UN-Habitat and World Bank projects.

Mapping stakeholders according to their specific roles during the project's development process is a critical step, enabling the activation of each stakeholder at the right moments to ensure their contributions align with the project's objectives.

COMMUNITY ENGAGEMENT

The community engagement process undertaken in Vila Cristiana has been a crucial step in the development of the neighborhood plan. By actively involving the community in the decision-making process, It was not only upholding the principle of procedural aspects of the spatial justice but also building trust and credibility within the community. Recognizing the importance of participation, two key stakeholders were engaged: the community members themselves and the academic expertise offered by UNESP through a dynamic workshop.

This workshop, conducted both in person and through videoconference, showcased the commitment and enthusiasm of the community, with active participation from residents, including prominent community figures. The engagement of women, in particular, demonstrated a deep awareness of spatial justice challenges, both in terms of distribution and procedural justice. The workshop provided invaluable insights into the neighborhood's current challenges and opportunities. It highlighted issues related to land occupation, accessibility, safety, and the need for infrastructure improvements. It also shed light on the residents' connection to their community's history and their deep-seated concerns about the environment, including water-related risks and the impact of pollution.

Furthermore, the workshop revealed positive impacts of recent infrastructure enhancements funded at the municipal level. These improvements underscore the potential for positive change when stakeholders collaborate effectively.

In summary, the community engagement workshop has set the stage for a more

inclusive and responsive neighborhood development plan. It has empowered the community, accessed local knowledge and expertise, built social cohesion and trust, and paved the way for successful outcomes. The findings from the workshop are instrumental in shaping a comprehensive neighborhood plan that addresses the unique challenges faced by Vila Cristiana and promotes socio-spatial justice for its residents.

Key outcomes from the workshop:

Land Occupation

- Lack of accessibility: irregular terrain, solid wastes, holes in the ground.
- Some spaces represent danger, rising criminality related drug dealing. They reported green area works as an escape route for escaping the police.
- Presence of big farm animals (horses) in public areas that might chase or hurt people, also block the paths.
- Cars in high speed coming from the highway, no crosswalks or traffic lights.
- The most used leisure area has been recently taken as a spot for criminals (it might be related as a strategic spot for ”entering” in the neighborhood) .
- Dangerous animals, such as venomous snakes, scorpions and spiders, are frequently found in the houses close to the green area

Geomorphologic system

- Hard soil, difficulty to perforate the soil both to plant and to build a foundation for the house
- Alteration in the ground shape because of the water runoff, muddy soil.
- Large solid wastes are found below ground during any soil excavation work.
- It was informed that the slope separating the cemetery land and the Neighborhood, presented an erosion movement of 3-5 meters towards the cemetery, reaching today the limit of the area where the tombstones are.

Vegetation system

- Difficulty to develop any gardening activity because of the poor and hard soil. Cultivating vegetables for consumption is prohibited because of polluted water from the cemetery.
- Residents reported solutions such as planting in pots and hanging gardens in their homes
- Frequent burnings occur in the local forest in order to make easy maintenance in the wild vegetation, decrease the amount of venomous animals and burn the garbage accumulated on the site.

Hydrologic system

- All of the residents present in the workshop reported having access to the water system now, but they used to receive a donation of a water truck or collect clean water from the wells.
- Despite having access to the city water network today, there are residents who still choose to collect/divert water from the network in order not to be charged the service fee.
- As for the sewage system, although they have available access to the distribution system, they still cannot connect to their homes due to the impossibility of acquiring the connectors, which are the responsibility of the residents according to the municipality.
- Reported solutions for domestic sewage treatment are septic tanks.
- Some measures to contain or mitigate the effects of rainwater have been implemented on the area such as stormwater galleries, retention basin and spillway to dissipate water runoff power, but they were undersized and do not meet their purposes.
- Spots were identified as containing many spots of stagnant water, presenting health risks to the population (proliferation of infected mosquitos, and ringworm in the kids were reported)

Neighborhood Plan outcomes

URBAN DESIGN VISION:

The urban design vision for Vila Cristiana centers on reimagining the role of water in the community, guided by water-sensitive design principles. It aims to transform the negative perception of water from the cemetery, tainted by pollution, into a symbol of renewal in harmony with the Flores River. Key aspects of this vision include:

- ***Water-Sensitive Design:*** Innovative strategies for rainwater management, including natural infiltration and storage, respecting natural drainage systems, and integrating drainage solutions into green areas, parks, and recreational spaces.
- ***Controlled Drainage System:*** Implementing a controlled drainage system that follows natural terrain contours, manages runoff efficiently, and mitigates flood risks.
- ***Public Health and Environmental Considerations:*** Prioritizing public health, comfort, and environmental impact, ensuring urbanization respects water bodies and ecosystems.

These principles enhance community well-being, safeguard environmental health, and promote the coexistence of urbanization and nature, fostering resilience and reducing vulnerability to flooding.

ADMINISTRATIVE APPROACH:

At the guidelines and administrative level, the plan empowers the Vila Cristiana community through participatory governance, focusing on:

- ***Community Engagement***: Active resident participation in decision-making processes and capacity-building initiatives to equip them with skills for effective local governance.
- ***Infrastructure Maintenance***: Developing guidelines for long-term infrastructure maintenance, including risk assessments and prompt hazard mitigation.
- ***Cultural and Educational Enrichment:*** Promoting cultural and educational initiatives to create a culturally enriched community that takes pride in public spaces and actively participates in community life.

IMPLEMENTATION PLAN OVERVIEW:

The implementation plan spans three years, with distinct objectives for each phase:

- ***Year 1: Building Foundations***
  - Engage the community through participatory workshops to gather feedback and refine the plan.
  - Take immediate action on critical priorities, such as constructing a retaining wall below the cemetery and creating water retention ponds in the green public area to address landslides and floods.
- ***Year 2: Infrastructure Enhancement***
  - Focus on executing key infrastructure projects, particularly enhancing green spaces and public areas.
  - Secure necessary financial resources for successful completion.
- ***Year 3: Comprehensive Implementation***
  - Finalize infrastructure works and improve accessibility, leisure options, and mobility.
  - Host cultural events, open markets, community gatherings, and aesthetic enhancements to test the urban design's effectiveness.

Administrative strategies for monitoring water and soil quality, facilitating town hall meetings, and ensuring sustainability are vital throughout all phases and future years. This comprehensive approach addresses immediate needs and long-term aspirations, maximizing the plan's potential for creating a resilient, vibrant, and inclusive neighborhood for all residents.

ISSUES STILL ON THE TABLE

While the development of the plan marks a positive step forward, it is vital to acknowledge that the Plan focuses on addressing the water-related challenges, hence certain challenges persist without immediate solutions. These encompass issues deeply ingrained in systemic inequality, persistent social injustices, and external factors like criminality and corruption.

On the public and urban scale, an obvious obstacle remains the insufficient availability of financial resources to fully execute the necessary infrastructure projects. At the same time, in the private and individual sphere, the residents of Vila Cristiana continue to be prevented from realizing their rights to safe and adequate housing, a problem deeply rooted in the systemic inequality that prevails in the country, along with the neoliberal dynamics of the real estate market.

It is important to recognize that some of these problems are deeply rooted and may require comprehensive systemic changes for a complete resolution. The plan, while a significant step, operates within its academic limitations and the context of the challenges of water management to promote spatial justice.

	GOALS	CHALLENGES
Goal 01 Sustainable Water Management	• Develop a comprehensive drainage system. • Ensure clean and safe water access. • Prevent landslides and flash floods. • Find alternative plant irrigation solutions for contaminated areas.	• Lack of drainage infrastructure leading to flooding. • Contaminated water sources endangering residents' health. • Landslides and flash floods pose hazards to the community. • Deforestation threatens vegetation cover.
Goal 02 Ecological Restoration and Community Safety	• Establish conservation measures for water bodies. • Transform neglected areas into green spaces. • Enhance safety and encourage public space usage. • Promote economic development and integration with commercial areas.	• Lack of water body protection leads to further degradation. • Neglected areas with crime and waste disposal issues. • Urban voids and neglected spaces can be transformed into green infrastructure.
Goal 03 Empowerment through Participatory Governance	• Empower the community through capacity-building. • Encourage community involvement in public space planning. • Develop programs that engage residents in utilizing public spaces. • Strengthen community networks and partnerships. • Engage residents in water resource management through education campaigns.	• Limited networks and partnerships among stakeholders. • Limitations within the local administration system.
Goal 04 Enhancing Public Spaces and Economic Integration	• Restore neglected areas and create green spaces. • Enhance safety measures to encourage public space usage. • Promote economic development and better integration with commercial areas. • Improve public space quality and maintenance to create a sense of ownership and pride among residents.	• Existing public spaces are underutilized due to accessibility and safety issues. • Commercial areas have economic potential but need better integration with the community.

Table 09. Neighborhood plan strategies

STRATEGIES

SPATIAL INTERVENTIONS	ADMINISTRATIVE STRATEGIES
• Water canal to guide water and prevent street flooding. • Artificial wetlands for water retention. • Gabion retention wall to prevent landslides. • Bioswales with filtering plants. • Raingardens and bioswales around communication antenna plots. • Pocket parks with public drinking water sources.	• Involving residents in decision-making for water management. • Developing an emergency response plan for water-related hazards. • Creating a water quality monitoring program. • Establishing guidelines for property owners. • Providing financial incentives for sustainable water management. • Integrating water management into the city's development plan.
• Buffer zones with sparse vegetation for visibility and safety. • Creation of ecological corridors with native species. • Landscape design in public green areas with native species.	• Developing a land-use zoning plan. • Implementing an urban forestry program. • Improving solid waste management and recycling. • Establishing a community-led surveillance system. • Collaborating with schools for environmental awareness.
• Elevated flower beds for collective vegetable cultivation. • Flexible and inclusive public areas for gatherings. • Sheltered spaces/kiosks for small group gatherings.	• Developing a land-use zoning plan. • Implementing an urban forestry program. • Improving solid waste management and recycling. • Establishing a community-led surveillance system. • Collaborating with schools for environmental awareness.
• The heart space for community expression and art. • Improvement of sports squares and school areas. • Infrastructure for open markets in public areas. • Streets adaptation based on hierarchy.	• Developing a land-use zoning plan. • Implementing an urban forestry program. • Improving solid waste management and recycling. • Establishing a community-led surveillance system. • Collaborating with schools for environmental awareness.

Personal conclusions from the experience

The conclusion of this thesis highlights Brazil's intricate socio-spatial complexity rooted in historical inequality and exclusion from the colonial era. São Paulo's center-west context adds unique layers to this complexity. Rapid urbanization leads to inadequate informal settlements, while economic disparities persist. Ethnic and racial inequalities intersect spatially. Infrastructure deficits, land tenure issues, and vulnerable environmental areas amplify challenges. Inadequate housing policies and limited access to education and healthcare deepen disparities. This intricate web of historical, social, economic, and governance factors intertwines spatial injustice and inequality, necessitating inclusive solutions. This lens illuminates the struggles faced by the community of Vila Cristiana in Bauru/SP, and by extension, many informal settlements across the nation.

While the central focus of this work is on water-related issues, it is vital to acknowledge that the challenges faced by Vila Cristiana extend far beyond this aspect. Structural racism, corruption, and criminality are deeply intertwined with the socio-spatial fabric of the neighborhood. This work humbly acknowledges the limitations inherent in addressing such multifaceted challenges and recognizes the neighborhood plan proposed here as just one contribution to the broader array of potential solutions. Moreover, it serves as a platform to amplify the desires and aspirations of the community for a more democratic and just city.

I also wish to address the limitations that inevitably arose during the course of this academic endeavor. Factors such as geographical distance between my current residence and the studied community, the scarcity of official information in informal settlements and financial constraints for the design interventions proposal presented formidable challenges. In response, I employed different strategies, including video conferencing between Europe and Brazil, local collaborators acting as intermediaries, and conducting unofficial surveys, to bridge these gaps.

Central to the neighborhood plan outlined in this thesis is the recognition of its interdependence with the broader master plan of the city. A coordinated and synergistic approach is essential for the effectiveness of any proposed intervention.

This work, while individual in its nature, is far from the culmination of my efforts. Looking ahead, I am committed to sustaining my engagement with the Cristiana Project and expanding my network to forge partnerships dedicated to the cause of spatial justice in Vila Cristiana. This thesis will be presented and discussed within the community itself, fostering a collective dialogue aimed at charting a shared path forward. Furthermore, I envision potential collaborations not only within Vila Cristiana but also among other informal settlements in Bauru. Future workshops and discussions will continue to nurture the process of building an effective and comprehensive plan for Vila Cristiana.

Ultimately, reflecting on my personal journey, I recognize how my background and experiences have seamlessly intertwined with the development of this project. During my bachelor's degree, my engagement with the Vila Cristiana community within the former area of "Nova Canaã" nurtured my sense of purpose as an architect and urban planner. This experience facilitated my connection with the people of my homeland, inspiring me to strive for a more inclusive and equitable urban environment. My master's degree in Architecture for Sustainable Design in Torino expanded my technical knowledge and introduced me to innovative sustainable techniques, which I sought to apply to urban planning. Additionally, my internship in Copenhagen exposed me to Danish urban planning practices, including democratic design, water-sensitive strategies, and other sustainable approaches.

Possible Future Feedback

As the neighborhood plan continues to unfold, an ongoing cycle of feedback and adaptation is expected. The community's response to the plan stands as a pivotal force in shaping its future trajectory. This engagement will not only refine the plan but also ensure that it aligns more closely with the evolving needs and aspirations of Vila Cristiana's residents.

It's essential to recognize that the true value of this project lies not only in its endpoint but rather in the continuous development process of the Neighborhood Plan. This project is conceived as a dynamic process, serving as a conduit for immediate feedback to the community. Through means such as informative sessions, engaging workshops, enlightening presentations, and consistent communication with residents, this endeavor amalgamates technical expertise, local wisdom, dreams, and desires.

Consequently, several key expected outcomes emerge from this iterative process:

- ***Empowerment and Awareness:*** It is expected that residents will not only recognize their rights but also gain a deep understanding of the reasons behind the specific water-related issues in their locality. Knowledge is empowerment, and informed residents are better equipped to advocate for their needs.
- ***Community Cohesion:*** The project aims to foster a sense of belonging and togetherness among the community members. This cohesive bond strengthens their collective voice and their capacity to address shared challenges.
- ***Effective Communication:*** The project serves as a platform for residents to articulate and communicate their needs and wishes more effectively. It streamlines the process of organizing and presenting their claims to the municipality and other stakeholders.
- ***Collaboration with Existing Initiatives:*** Collaboration with the Cristiana Project, which is actively addressing various community issues, including affordable housing solutions and a community center, remains ongoing. Integrating these initiatives into the Neighborhood Plan ensures a coordinated approach to prioritize and implement key projects.

In essence, the Neighborhood Plan's future hinges on its adaptability, driven by the valuable feedback from the community. This ongoing dialogue not only enhances the plan's effectiveness but also strengthens the resilience and well-being of Vila Cristiana's residents, positioning them to address challenges and realize their collective aspirations.

Future Steps:

Looking ahead, the thesis envisions several suggestions. Firstly, it highlights the necessity of recognizing the interdependence between the neighborhood plan and the broader master plan of the city. A coordinated and synergistic approach is essential for the effectiveness of any proposed intervention.

Additionally, the work emphasizes the importance of sustaining engagement with the Cristiana Project and expanding networks to forge partnerships dedicated to the cause of spatial justice in Vila Cristiana.

This thesis will be presented and discussed within the community itself, fostering a collective dialogue aimed at charting a shared path forward. Furthermore, there is a vision for potential collaborations not only within Vila Cristiana but also among other informal settlements in Bauru. Future workshops and discussions will continue to nurture the process of building an effective and comprehensive plan for Vila Cristiana.

Ultimately, the thesis reflects on the author's personal journey, acknowledging how background and experiences have seamlessly intertwined with the development of this project. It serves as a catalyst for a trajectory of continuous engagement, advocacy, and positive change.

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