Urban Expansion and neighborhood design: Municipality of Três Rios/RJ

Pâmela de Oliveira Lopes
Master’s student, PROARQ/FAU/UFRJ
pamelasepol@gmail.com

Patrícia Regina Chaves Drach
PhD Professor, PROURB/FAU/UFRJ
DAU/ESDI/UERJ
patricia.drach@gmail.com
The city of Três Rios, located in the central-southern region of the state of Rio de Janeiro, underwent significant territorial and demographic expansion due to its proximity to important transportation routes, such as the BR-040, connecting Rio de Janeiro to Belo Horizonte, and the North-South Railway, connecting it to other parts of Brazil. This expansion brought both positive and negative aspects to the region. In the pursuit of understanding these impacts, data was collected from printed sources, such as articles, master plans, and photographic images, as well as online material about the city. A list of ‘neighborhoods’ was also compiled, and subsequently, a land subdivision map was developed. This material serves as an essential tool for understanding local dynamics and expansion beyond the consolidated territory, providing indicators of growth vectors and enabling the planning of actions to reduce environmental risks and damages.


### 1 INTRODUCTION

Located in the Central-Southern Fluminense region, the city of Três Rios has been marked, since its formation, by a hub-like character. In 1867, the Dom Pedro II Railroad crossed its lands, and remnants of this presence are still perceptible in its urban fabric. The Centro-Leste and MRS (Southeast Regional Network) railways continue to traverse the city, intersected by major road axes such as BR-393 and BR-040, facilitating access to significant commercial centers and establishing itself as one of Brazil's largest road-rail hubs, as evidenced in the map in Figure 1.

The city is characterized by the confluence of three important rivers in the region: Paraibuna, Paraíba do Sul, and Piabanha, from which it derives its name. According to the Alerj Journal, this seems to constitute the world's only triple river delta (Figure 1).

The diversity of connections has driven the city’s growth in line with the Brazilian industrialization process, particularly excelling in logistics and transportation, attracting
numerous factories over the years. This development resulted in the formation of a robust commercial center and the growth of an economy linked to the industry. However, from the 1980s onwards, the city experienced a severe crisis, influenced by the growing Brazilian external debt and the collapse of railways, triggering the bankruptcy process of its largest industry, the renowned Santa Matilde factory. The closure of this industry impacted the levels of other companies, leading to the disintegration of the local secondary sector and a subsequent period of recessions.

In its quest to revitalize the economy and maintain its industrial vocation, the city introduced various tax incentives in the early 2000s. Financial stimulus, coupled with its strategic location facilitating the entry of raw materials and the distribution of production within Brazil, contributed to the recovery of the industrial sector, making it attractive again for work and business.

As part of the implications of the expansion and contraction process linked to the presence of the Industrial Park, urbanized areas underwent an expansion process, at times inadequate for the region. The purpose of this work is, based on the understanding of the formation and evolution process of the city of Três Rios/RJ, to contribute to the organization of data, generating a land subdivision map for the city. To achieve this, data was obtained for historical contextualization and surveying the urban form through the analysis of printed and digital materials capable of contributing to the development of maps and a comprehensive analysis of a region.

2 THE PLACE

Politically emancipated 83 years ago, the city of Três Rios/RJ maintains a close relationship with its river axes. Bounded by lands originally inhabited by the Puris tribe, who, rejecting settlement by colonizers, became nomadic, dispersing into regions near river basins. The exploratory history of the region dates back to the opening of the 'Caminho Novo' in 1698:

The period of exploration in the region is connected to the gold cycle, intensifying when explorers and gold prospectors reached the mouth of the Paraibuna River, which originates in Minas Gerais and flows into the Paraíba do Sul River in the Três Rios region. (INEPAC, [s. d.]).

In the following century, the first traces of foreign occupation emerge, such as the nucleus of Nossa Senhora de Monte Serrat, which aimed to reduce smuggling of goods. In this way, it registered and collected the real passage rights, according to the General Secretariat of Planning of the Rio de Janeiro Court of Auditors. The first mention of the toponym 'Entre Rios' occurred in the land possession request by Antônio Barroso Pereira, the future Baron of Entre Rios:

Antônio Barroso Pereira obtained, through a request dated September 16, 1817, 'sesmaria lands in the backcountry between the Paraíba and Paraibuna rivers.' Within his territorial estate, Antônio Barroso Pereira founded five farms: Cantagalo Farm, the most significant, and the Piracema, Rua-Direita, Boa União, and Cachoeira farms, all dependent on the first one. (TEIXEIRA, [s. d.]).
The region granted by the crown saw its settlement grow due to its strategic location between the states of Rio de Janeiro and Minas Gerais. Thus began the documentation of the first accomplishments of the neighborhoods of Nossa Senhora de Bemposta and São Sebastião de Entre Rios. They introduced local coffee cultivation, initiating a process of local economic development that would stagnate with the decline of coffee in Brazil (1929). Consequently, the settlements began to subsist on agriculture and beef farming, which later transitioned to dairy farming. In the photograph in Figure 2, it is possible to observe Boa União Farm in Três Rios, RJ. The inauguration of the Union and Industry Highway in 1861 marked a change in the exploratory scenario:

Since the inauguration of the Diligence Station of the Union and Industry Company on June 23, 1861, the locality of Entre Rios began to benefit from various improvements, transforming into a major commercial center. In 1867, the Dom Pedro II Railroad was implemented, crossing the road at the site, making the nucleus an important road-rail hub. (TCE/RJ., 2004).

The images in Figures 3 and 4 show, respectively, the Nursery Station of Entre Rios in 1861 and the Chapel of the glorious Martyr São Sebastião, built in 1890. The chapel was demolished in 1936 to make way for the Roberto Silveira Bus Station, now known as the Old Bus Station.
Even with the aforementioned improvements and the growth of the locality, the present city only became a district of the municipality of Paraíba do Sul in 1890. It achieved political independence in 1938, resulting from a split in which Entre Rios encompassed the lands of the districts of Monte Serrat (now Afonso Arinos), Areal, and Bemposta. In Figure 5, the first parish of the municipality, the Parish of São Sebastião de Três Rios, established on April 17, 1925, can be observed. However, due to the existence of other Brazilian municipalities with the same name, on December 31, 1943, it became known simply as Três Rios.

In 1946, the National Steel Company (Companhia Siderúrgica Nacional - CSN) established itself in the city of Volta Redonda, and in 1950, the opening of the Rio-Bahia Highway was completed, the current Lúcio Meira stretch of BR 393, connecting Três Rios to Volta Redonda. The new highway crosses the municipality, where one can observe its intersection with the Union and Industry Road, a stretch of BR 040 (Figure 6).
The opening of highways and their networks brought about a rapid local transformation, taking a region from an economy based on subsistence agriculture to align with the Brazilian industrialization process. Linked to the transportation of raw materials, goods, and people, the city has considerable impacts on the landscape and urban life, transitioning from a city with a bucolic bias to modernist progressivism.

The development of a road-rail network was just the beginning; the industrial vocation of the area was notably boosted in 1963 with the arrival of the Santa Matilde Industrial Company factory, headquartered in Petrópolis/RJ. The Santa Matilde Industrial Company was a globally acclaimed Brazilian mechanical industry, specialized in the manufacture of train carriages and other railway components.

Between the 1960s and 1970s, the factory expanded its activities and gained prominence in the market, occupying a central position in the development of the local economy. However, in the mid-1980s, with the growing Brazilian external debt, the government halted investments in the railway, driving the expansion of highways and consequently the automobile industry. This had repercussions on the company, triggering a severe decline process, leading to a period of economic and social recession in the city.

As mentioned earlier, the crisis atmosphere was not exclusive to Três Rios; Brazil as a whole was reaping the fruits of developmentalist plans. In the following years, the local Metalworkers Union made numerous attempts to reactivate industrial production. With the weakening of the sector, several companies associated with it migrated to other urban centers, and the completion of BR-040 in 1985 resulted in further unemployment and city depopulation. In one of these efforts, the industrial yard of the former Santa Matilde Industrial Company was leased by the T’Trans company (1998), which had significantly lower production capacity but brought hope. The arrival of T’Trans marked a new industrial market, previously focused on railways, and now, with the growing decline of this sector, emphasized road transport.

In Figures 7a and 7b, the Três Rios Station Yard of Leopoldina in 1968 (7a) and the eradication of the line to Bicas, a section near the old Três Rios Station Yard, in 1990 (7b) are indicated. These are examples of some initial impacts on the city's landscape, subject to the assembly and disassembly of urban structures to fit the commodification process. This reflects the disposable nature of contemporary society, characterized by the transmutable aspect pointed out by Marc Auge (2010) - speed, excess, construction, deconstruction, and reconstruction in an incessant process.
Amidst the instability of the city’s main sector, it was the commercial activity that began to play a crucial role in its maintenance.¹ The arrival of the Neobus factory (producer of urban vehicle bodies and minibuses) in 2002 seemed to be another important step for economic recovery, especially after the official bankruptcy decree of Cia Industrial Santa Matilde. Part of its facilities was acquired by Açotel, a more recent industry in the city. According to Sales (2009), in a publication on the website of the National Association of Public Transport, at the time of its inauguration in the city, Neobus invested R$ 100 million in the factory and intended to hire almost two thousand employees. Since then, the location has received significant tax incentives, and several companies have started their activities in Três Rios, creating industrial parks at different points in the city. The map in Figure 8 shows the distribution of the main industrial points in the city.

For a brief analysis of urban evolution, four images of the same location in the city were used. The first, shown in Figure 9a, is from the early nineteenth century, and the second is from the mid-twentieth century (Figure 9b).

Upon observing the two photographs (Figures 9a and 9b), it is noticeable that the natural landscape was juxtaposed with the growth of the city, symbolically replacing a religious chapel with a bus terminal. There are indications of an overlap of development over the preservation of memory and cultural assets. In a second moment, in addition to the hillside occupations, it is evident that the terminal, now called the Old Bus Station, became secondary, starting to show signs of neglect. In this sense, it began to receive few bus lines until it ceased activities for renovation.

However, when comparing the images from 2014 (Figure 9c) to 2017 (Figure 9d), the only progress in the works seems to be related to parking spaces. The building that once occupied the space of the city’s first chapel and was the first local bus station shows weaknesses, given its minimal economic contribution. This suggests, among other aspects, urban growth with little emphasis on preservation and memory.

3 LEGISLATION

Laws, by definition, play the role of governing democratic societies, serving as means to ensure citizens a series of rights and duties towards the State. Therefore, they are crucial in the process of city evolution. At the municipal level, it is the master plan that determines the parameters for development, supported by other complementary laws that must be in accordance with the City Statute (Federal Law No. 10,257, 2001).

Master Plan of 1968

With over 30 years of emancipation, the city’s first urban plan was sanctioned on December 31, 1968, by Law No. 788. Valid for over two decades, its intention was to control local territorial and socio-economic development. However, it only regulated 25% of the municipality, as demarcated in Figure 10. In other words, until 1990 (the year of its revision), the majority of the city was growing without the support of any legal parameters.
In your text, it covers general guidelines on urban planning to provisions related to zoning, subdivision, and buildings. Thus, 25% of the city is divided into zones based on the predominant land use. In addition, mandatory provisions for construction and a maximum occupancy rate are presented. However, there are no restrictions on building heights, and permeability rates are not specified.

The only trace of environmental concern is found in the case of subdivisions, where it requires 15% for the creation of green areas and/or public buildings. This portion must be transferred to the municipality at the time of regulation.

In 1990, the 1968 Master Plan undergoes its first revision, as already provided for in its clauses, through Law No. 1,716, dated December 27, 1990. In this revision, the entire territory of Três Rios is included, and a change in approach is already noticeable, as its clauses show concern for environmental preservation parameters, even defining areas of environmental preservation. And in urban areas, it defines minimum lot sizes and frontages, justifying that:

The population of cities is increasing more and more, modifying the climate due to this concentration. Large surfaces of concrete pavement, the presence of tall buildings located close to each other, the emission of commercial and industrial heat, and the concentration of pollution sources contribute to the modification of the urban climate. This situation can be changed by the convenient arrangement of buildings. (PD, 1990)

Another aspect of this version is the reference to Furnas Centrais Elétricas SA as the regulatory entity for urban occupation limits in relation to water bodies, especially due to the Sapucaia reservoir (Simplicio 21), which is demarcated in Figure 11. In this sense, it should establish restrictions on the implementation of buildings in flood-prone areas, as specified in the 1990 Master Plan. However, in the documents consulted, this delineation is not explicitly
indicated. It is important to note that this observation is not maintained in subsequent master plans.

Figure 11 – Relationship of the Simplício 21 Power Plant with the Center of Três Rios


If before the Master Plan (PD) of 1968 was divided only according to the predominant use, now, in the 1990 Master Plan, the territory is categorized into three areas: urban area, urban expansion area, and rural area (Figure 12). This reorganization is justified by the need to 'promote the densification of subdivided areas, with better use of the available infrastructure' (PD 1990). Due to this change, each area receives specific zones with regulations and particular uses.

Figure 12 - Zoning of the Master Plan of 1990


The new adjustments also include guidelines regarding sewage, public sidewalks, and private circulations, establishing norms, for example, for stairs and ramps. In this way, the city begins to have legal sanctions consistent with an environmental preservation ideal to guide its
growth. However, the 1990 Master Plan still remains distant from popular participation and land occupancy conditions, resulting in legislation often neglected, as observed in the Brazilian context, where at least half of the housing is in irregular and/or subnormal conditions.

2006 Master Plan

In 2001, Brazil enacted the City Statute, Federal Law No. 10,257, which highlights the responsibility of municipalities in city development. The Statute emphasizes that full development occurs through democratic land management, which must include popular participation, compliance with the social function of the city and property, as well as ensuring safety and environmental sustainability, among other aspects. A deadline was set for all municipalities to align their plans with the new guidelines, coinciding with this deadline, came the revision of the 1990 Master Plan of Três Rios.

The first Master Plan of the municipality in the 21st century addresses, for the first time, topics such as heritage, mobility, culture, and sports, incorporating aspects of the new Statute.

2013 Master Plan

Worthy of highlighting in Law No. 3,906 of October 2, 2013, is the recognition of the need to reduce the housing deficit, aligning strategies to reduce inequalities, such as the planning of social housing. In addition, it addresses the preservation of historical heritage and the vitality of the city, dividing it into macrozones: Urban, Rural, and Environmental. In the urban area, there are subdivisions into consolidated, directed, and territorial expansion zones.

The most recent legislations on urban management in the city are the Land Use and Subdivision Law (No. 4648 of December 30, 2019) and the 2019 Municipal Organic Law. However, according to the Three Rivers City Hall website, the Master Plan in effect in 2021 is governed by Law No. 3,906 of October 2, 2013.

Consulting the legislations, it can be stated that land occupancy restrictions in the city are still relatively recent, having been fully regulated just over 30 years ago. This scenario may contribute to the Brazilian situation of more than 5 million subnormal dwellings in 2020, according to IBGE data.

However, since the 2006 Master Plan, there is a notable shift in paradigm regarding city use norms, and it can be affirmed that the concern for environmental balance is formally represented.

4 TERRITORIAL ORGANIZATION

With 97% of the population living in urbanized areas, divided into at least 60 localities that occupy about 1/4 of the entire Três Rios territory, the city has a significantly urban daily life, despite containing a significant space with rural potential, as we will see. According to the City Hall website, the Master Plan in effect in 2021 is governed by LAW No. 3,906 OF OCTOBER 2, 2013, which organizes the city into the following zones: I – Urban Macrozone (MZU); II – Rural
Macrozone (MZR); III – Environmental Macrozone (MZA). Figure 13 Map presents the areas corresponding to these zones, according to the legal standards of the 2013 Master Plan.

For this study, only the Urban Macrozone (MZU) will be analyzed, as the main focus is related to neighborhood design. The final text of the 2013 Master Plan delineates the subdivisions for each zone: Consolidated Urban Zone, Consolidated Urban Expansion Zone, and Directed Urban Expansion Zone (Table 1).

Table 1 - Subdivisions of Neighborhoods in the Urban Macrozone - Master Plan 2013

<table>
<thead>
<tr>
<th>Consolidated Urban Zone</th>
<th>Consolidated Urban Expansion Zone</th>
<th>Directed Urban Expansion Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>I - Centro</td>
<td>I - Caixa D’água</td>
<td>I – Bemposta (Sede Distrital)</td>
</tr>
<tr>
<td>II - Portão Vermelho</td>
<td>II – Cantagalo</td>
<td>II – Moura Brasil</td>
</tr>
<tr>
<td>III - CTB</td>
<td>III - Cariri</td>
<td>(Aglomerado Urbano Dispenso)</td>
</tr>
<tr>
<td>IV - Jardim Primavera</td>
<td>IV - Ciudad Nova</td>
<td>III – Hermogênio Silva</td>
</tr>
<tr>
<td>V - Boa União</td>
<td>V - Bairro Habitat</td>
<td>(Aglomerado Urbano Dispenso)</td>
</tr>
<tr>
<td>VI - Vila Isabel</td>
<td>VI - Jaqueira</td>
<td>IV – Pilões</td>
</tr>
<tr>
<td>VII - Morada do Sol</td>
<td>VII - Ladeira das Palmeiras</td>
<td>(Aglomerado Urbano Dispenso)</td>
</tr>
<tr>
<td>VIII - Morro dos Caetanos</td>
<td>VIII - Mirante Sul</td>
<td>XIX – Terceiro Depósito</td>
</tr>
<tr>
<td>IX - Barros Franco</td>
<td>IX - Monte Castelo</td>
<td>V – Bairro Grama</td>
</tr>
<tr>
<td>X - Nova Niterói</td>
<td>X - Vila Paraiso</td>
<td>(Núcleo Urbano Dispenso)</td>
</tr>
<tr>
<td>XI - Palmital</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The author, 2021

### 5 NEIGHBORHOOD DESIGN

The city is composed of regions involved in distinct historical moments, and therefore, it possesses varied physical, economic, and cultural characteristics. The delimitation of neighborhoods is not only a tool for municipal management but also facilitates understanding the relationship of these parts with the whole.
The Três Rios Master Plan mentions the intention to create a neighborhood map through complementary legislation. As of the research date, it was not possible to identify the existence of this law or the neighborhood map, making its development the focus of this work. Through the IBGE census map, the final text of the 2013 Master Plan, and assistance from residents in different areas of the city, a scheme was developed containing some neighborhoods for a better understanding of local subdivisions (Figure 14). For this purpose, an updated list was developed with the addition of localities (Table 2).

The identification of these regions is approximate and does not cover all popular/living boundaries, which often occur within the same neighborhood. For example, for residents of the Monte Castelo neighborhood, it has a subdivision called Espinhaço and another called Populares, each with distinct territorial and historical characteristics. The same happens with Santa Terezinha, which has the micro-region of Multirão, with Vila Isabel containing Mãe Preta, and so on.

**Table 2 - List of localities in Três Rios**

<table>
<thead>
<tr>
<th>Localities identified on the map of the PD 2013</th>
<th>Locations identified in the final version of the PD 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Centro</td>
<td>1. Centro</td>
</tr>
<tr>
<td>2. Portão vermelho</td>
<td>2. Portão Vermelho</td>
</tr>
<tr>
<td>5. Vila Isabel</td>
<td>5. Boa União</td>
</tr>
<tr>
<td>8. Triângulo</td>
<td>8. Morro dos Caetanos</td>
</tr>
<tr>
<td>10. Cantagalo</td>
<td>10. Triângulo</td>
</tr>
<tr>
<td>15. Nova Niterói</td>
<td>15. Bairro Habitat</td>
</tr>
<tr>
<td>17. Ponte das Garças</td>
<td>17. Ladeira das Palmeiras</td>
</tr>
<tr>
<td>18. Ponto Azul</td>
<td>18. Mirante Sul</td>
</tr>
<tr>
<td>19. Alto Purys</td>
<td>19. Monte Castelo</td>
</tr>
</tbody>
</table>

![Figure 14 - Cluster of localities in Três Rios](image)

Source: The author, 2021
The schematic map of localities allows us to perceive that the urban area of the city is mostly concentrated in the northwest region. Therefore, its more dispersed urban center, the district of Bemposta, has a separate management. The points of localities, main water masses, and main strategic axes indicated on the proposed abairramento map shown in Figure 15 allow a more comprehensive understanding of Três Rios, with the presence of water in the urban space and the axes that intersect a region.

Figure 15 - Localities, rivers, and main axes of Três Rios
CONCLUSION

In the face of the current scenario of the city of Três Rios, this research was initiated with the aim of obtaining an overview of the human and legislative interventions that have resulted in the current conformation of the city. This perspective highlights the significant trajectory in which road development has surpassed even historical constructions, such as the first religious chapel, overlaid by a bus terminal that, now obsolete, is currently in ruins, demonstrating urban growth with little emphasis on preservation and memory.

Through the examination of legislation, it is evident that the city has been predominantly regulated for just over 30 years, aligning with many residences in inappropriate locations and/or outside current urban parameters. Currently, concerns about environmental balance are formally represented. However, there is still a low adherence to land-use codes, resulting in various residences presenting different types of risks.

The city, known for hosting the largest carnival in its neighboring region, the Encontro dos Três Rios, inviting commerce, and other attractions, feels its potentialities shaken in the face of the increase in its urban fragilities, such as violence, environmental degradation, and situations of public calamity.

The survey of the city’s expansion process and the development of a zoning map are crucial actions for identifying growth beyond consolidated limits. This material can be a valuable ally in determining local needs and defining public policies, contributing, for example, to the guidelines for implementing education and health spaces given the new demands related to new occupations. The contribution of this information is not limited to meeting demands but also to observing growth vectors and developing strategic actions capable of minimizing risks to the population and environmental damage resulting from inadequate implementations. Planning based on a comprehensive understanding of the territory enables the assessment of local interests and possibilities while simultaneously meeting the population’s needs by providing quality spaces involving mobility, health, education, and recreation.

References


TRÊS RIOS. Law No. 788, of December 31, 1968. Establishes the Três Rios Urban Master Plan, approves its General Guidelines, sets standards for its execution and provides other measures. Três Rios Master Plan of 1968. Três Rios,


