Sustainable urban mobility in a small city: the case of Conde-PB

Mobilidade urbana sustentável em cidade de pequeno porte: o caso de Conde-PB

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Abstract

The National Urban Mobility Policy (PNMU) provides that cities with more than 20,000 inhabitants, belonging to metropolitan regions, or focused on tourist activities must create and approve mobility plans. Small cities, however, have specificities that hinder the development of this instrument. In this context, the purpose of the study was to examine mobility initiatives implemented in the municipality of Conde, State of Paraíba (PB), aiming at their replication in cities with similar socioeconomic conditions. A case study was conducted through documentary research in order to understand the context in which the initiatives were created and the results obtained. As a result, this research contributes to discussions related to sustainable mobility in cities by providing references to guide future efforts.

Keywords: urban mobility; small city; Conde-PB; PNMU.

Resumo

A Política Nacional de Mobilidade Urbana (PNMU) prevê que cidades com mais 20.000 habitantes ou pertencentes a regiões metropolitanas ou voltadas para atividades turísticas elaborem e aprovem planos de mobilidade. Contudo, as cidades de pequeno porte possuem especificidades que dificultam o desenvolvimento desse instrumento. Nesse contexto, esta pesquisa teve como objetivo analisar as iniciativas de mobilidade implementadas no município de Conde-PB, visando à sua replicação em cidades de contexto socioeconômico semelhantes. Para isso, foi realizado um estudo de caso através de pesquisa documental, no intuito de compreender o contexto de elaboração e os resultados alcançados. Como produto, esta pesquisa traz contribuições às discussões relacionadas à mobilidade sustentável nas cidades, por meio do fornecimento de referências para direcionar ações futuras.

Palavras-chave: *mobilidade urbana; cidade de pequeno porte; Conde-PB; PNMU.*

Introduction

Urban planning has always been mostly guided by economic interests; however, in recent years, the relations between the urban way of life associated with the climate emergency has highlighted the urgent character of sustainable urban development. Although the need for strategies to mitigate climate impacts is recognized, little has actually been done to implement such actions, mainly because translating sustainable initiatives into public policies remains difficult due to existing political, economic and social barriers that do not align with city planning (Hall, 2011; Gehl, 2013; Kębłowski et al., 2022).

In Brazil, urban mobility began to be guided by Law n. 12,587 of January 3, 2012, which established the Brazilian National Urban Mobility Policy (PNMU). Considered one of the structuring axes of urban development, the instrument was developed based on a need not contemplated in the Statute of Cities, drafted in 2001.

Recognizing the different municipal profiles that make up the list of cities in need of a Mobility Plan at the time, the Ministry of Cities established that different strategies should be adopted appropriate to the reality of each municipality. As such, the Reference Book for Elaborating an Urban Mobility Plan set forth themes pertinent to the different classes of cities, according to their population. The Book aimed to facilitate the elaboration of plans by cities, understanding that they have different demands and dynamics (Brasil, 2015).

Since the PNMU-establishing law, the federal government has changed the deadline for plan preparation several times. In 2020, Law n. 14.000/2020 prescribed the deadline of April 12, 2023, for municipalities with less than 250,000 inhabitants to elaborate their Urban Mobility Plan. However, due to the significant number of municipalities that failed to do so, the deadline was extended to 2025 by provisional measure n. 1179/2023 (Brasil, 2023b).

Given the above, this research analyzes the urban mobility initiatives implemented by the city of Conde, Paraíba, to evaluate how applicable the concept of sustainability is in the context of urban mobility in small Brazilian cities and to identify guidelines and strategies adopted in the proposal, aiming at its replication in cities of similar socioeconomic contexts.

We assumed that the experience of Conde could offer the possibility of evaluating the process of city intervention and planning in its complexity, allowing to further scientific knowledge on the subject and to improve public policies, based on the solutions implemented. We thus sought to understand how the actions developed allowed to achieve the principles of sustainable urban mobility, and to improve population travel conditions and access to urban services. As for public administration, the study analyzes the role of municipal management in formulating, management and implementing actions.

Theoretical framework

Focusing the issue of urban planning from the perspective of sustainable urban mobility, the prioritization of pedestrians and bicycles is a significant change with regard to sustainable policies, as it uses fewer resources and affects the environment on a smaller scale (Gehl, 2013), while allowing the population to benefit from it more comprehensively and equitably (Brasil, 2012; Vasconcellos, 2017). In this regard, several cities worldwide have adopted the concept of transit-oriented development (TOD), which interrelates and integrates means of public transportation and infrastructures for pedestrians and cyclists.

"TOD is a territorial strategy based on urban projects that aim to articulate urban components with mobility systems to build more compact and environmentally friendly cities" (Hobbs et al., 2021, p. 14).

The system disseminates and creates conditions for building compact, walkable cities with workplaces and residences within reasonable walking or cycling distances, ensuring local sustainable development (Hrelja et al., 2022; Iamtrakul, Padon and Klaylee, 2022). Cities such as New York, Melbourne and Copenhagen have had great influence on a movement that seeks to provide urban quality through mobility (Gehl, 2013).

Andrade and Linke (2017) argue that a unified intervention to ensure that people use active mobility (pedestrian and cycling) to carry out their daily activities, added to the greater attractiveness and efficiency of public transport systems, are key points for creating more sustainable cities. Quality of the urban environment and the conditions for walking to public transport and for walking as a means of transportation to access daily activities directly affect people's and communities' physical and mental health, and are fundamental to maintaining active and healthy ageing (Bonatto and Alves, 2022). Expanding public spaces, qualifying urban spaces, and connecting public transport with the cycling and sidewalk network are TOD recommendations for developing countries (Hobbs et al., 2022).

Methodology

Based on the parameters established by Gil (2019), this is applied research in terms of its purpose and qualitative in terms of its approach. This is an exploratory study aimed at providing greater familiarity with the subject matter and enabling an understanding of the phenomenon being studied. Case study, bibliographical and documentary research technical procedures were used in the research process. For the latter two, data sources consisted of articles published in scientific journals and annals, books, research reports, newspaper reports, official documents, and national, state, and municipal urban regulations.

Our choice for the case study and sample unit technique is justified by the unitary character and relevance of the case investigated, whose initiatives were nationally recognized due to the improvements designed

in favor of active mobility and pedestrian travel conditions. The study thus allowed us to understand the research context, as well as to explore possible variables and factors that enabled the proposals elaborated to be successful.

Importantly, this research does not merely propose to conduct an intrinsic study of the case, but instead aims to shed light on theoretical concepts on the subject matter, based on the insights gained from the case analysis for an analytical generalization of the results achieved. Researchers can thus generate, through a particular set of results, new theoretical propositions that can be applied and tested in other contexts, enabling an important contribution to that specific field of knowledge (Yin, 2015).

We therefore decided to conduct the research process based on Yin's (2015) methodology, following five steps: (1) Planning, which consisted of characterizing the phenomenon to be investigated and defining the technical procedures; (2) Delineation, which resulted in the choice of the unit of analysis and the relevant theoretical propositions; (3) Preparation, in which the case study protocol was developed; (4) Collection, which consisted of carrying out bibliographic and documentary research; and (5) Analysis, in which the data obtained was organized, insights observed and guidelines drawn up.

The case of urban mobility in Conde (PB)

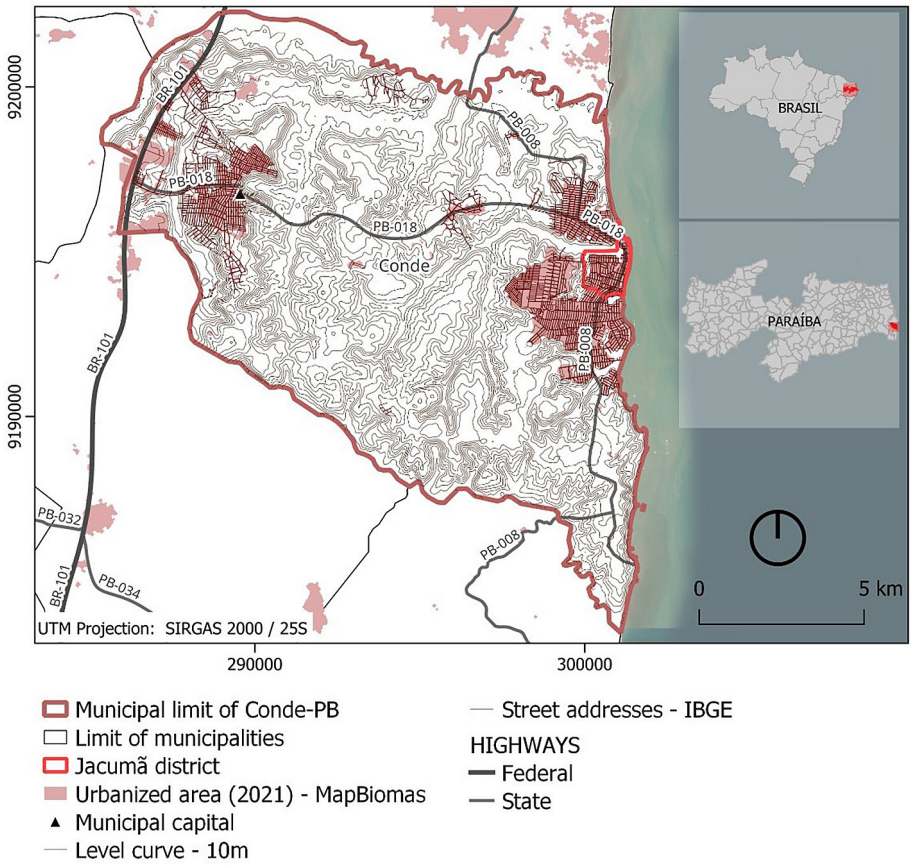
To better understand the urban mobility proposals implemented, especially in relation to their relevance and pertinence to local problems and demands, we present below a brief urban contextualization of the municipality of Conde.

Understanding the urban structure and the mobility context of the municipality

Conde is a small municipality in the Metropolitan Region of João Pessoa, Paraíba, with a territorial extension of 171,267 km², a population of 27,605 inhabitants and a demographic density of 161.18 inhabitants/km². Despite being part of a Metropolitan Region and situated between Brazil's two closest state capitals – João Pessoa and Recife – it has no conurbations with other urban areas (Costa et al., 2020; Instituto Brasileiro de Geografia e Estatística, 2023).

As shown in Figure 1, the territory is administratively divided into two districts, the Capital (or Conde) to the west, housing the hub that gave rise to the municipality and its current administrative infrastructure, and the

Figure 1 – Map of Conde with the urbanized centers

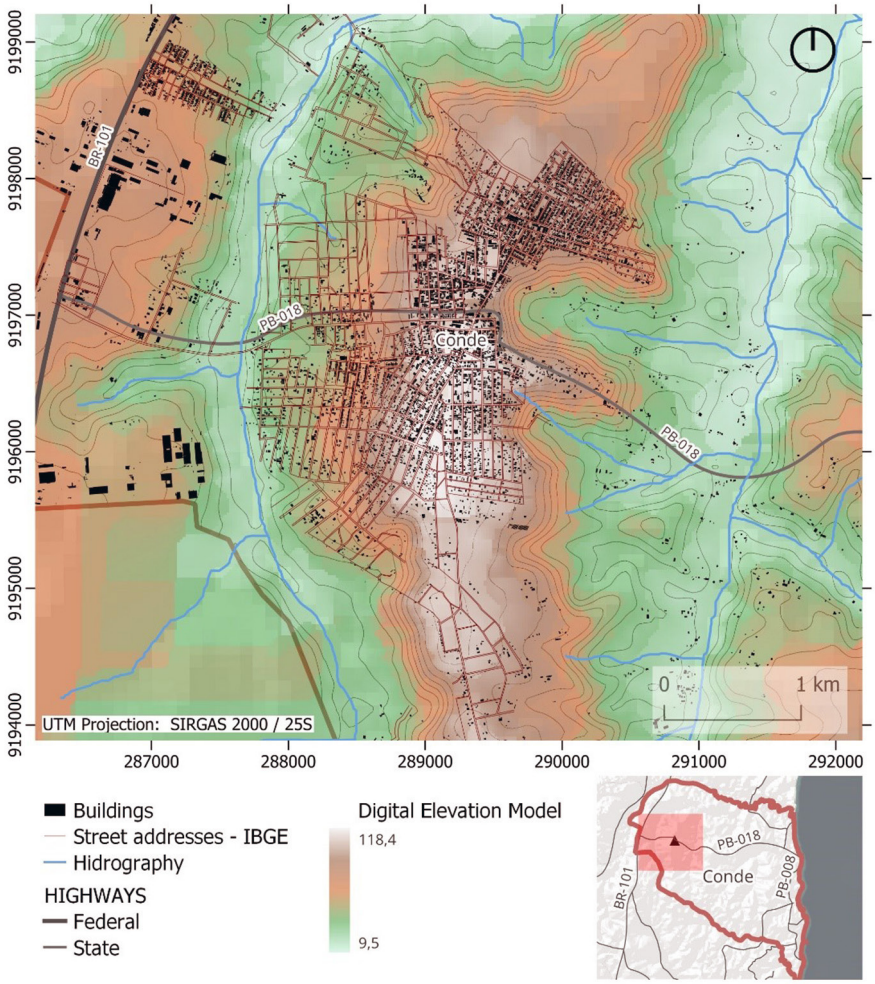


Source: the authors, in 2023, based on data from the Instituto Brasileiro de Geografia e Estatística (2021); MapBiomas (2019); Geo Portal Aesa (2020).

Jacumã district, which extends along the coast. Although located in the same territory and only 14 km apart, the two centers function relatively independently, in a process of territorial fragmentation consolidated over time that has resulted in the formation of two "cities." At its center, the territory has large tracts of remaining vegetation and unbuilt areas (Batista and Silveira, 2020; Costa et al., 2020).

Figure 2 shows the municipality's geomorphology and land use. Conde's formation process was significantly influenced by various geographical factors that conditioned its location, with the city's capital being structured on a spur formed by the source of rivers and their confluences, forming a high plateau in relation to sea level (Costa et al., 2020).

Figure 2 – Physical characterization of Conde's city hall, with the predominant urbanization on the plateau formed by local topography



Source: the authors, in 2023, based on data from Brasil (2008); Instituto Brasileiro de Geografia e Estatística (2021); Geo Portal Aesa (2020); Open Buildings (2023).

Despite incorporation into the city of Parahyba (now João Pessoa) and later emancipation in 1963, it remained a village until the mid-1970s, when an expansion process began, based on allotments with large plots of land that were incorporated into the urban mesh and resulted in a 3,298% increase of the original village's area. Although its urban layout is conditioned by the region's topography, the new developments ignore the natural features to the detriment of prioritizing the market aspects of the plots to be sold, creating steep streets and areas without adequate urban infrastructure (Batista and Silveira, 2020; Costa et al., 2020).

According to Costa et al. (2020), the streets that are currently paved are those in the city's central core, making access to other

parts of the city difficult. There is also a conflict resulting from the state highway PB-018, which connects the BR-101 to the Jacumã district and cuts through the town of Conde. The highway's infrastructure is primarily geared towards cars, but it is widely used by pedestrians, precisely because it is part of the urban mesh (Batista and Silveira, 2020).

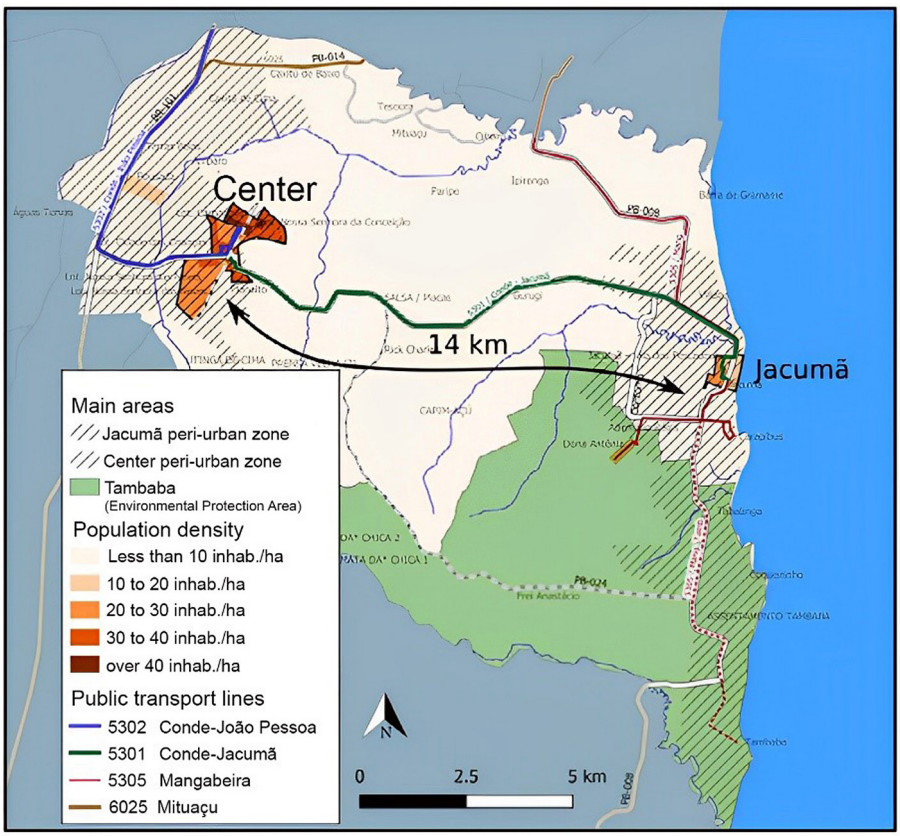
In short, the city of Conde has a more defined population concentration on the plateau, intersecting with the semi-rural area that surrounds it, and based on territorial analysis presents a fragmented urban mesh growth, hindering the implantation of infrastructures and distribution of goods and services throughout the urban area.

> The urban area, which is denser and more consolidated, is located on the plateau. Within this perimeter, the intersection of the main roads (old, integrated, main and collector) form urban nodes, where public facilities and shops are concentrated. (Costa et al., 2020, p. 91)

In terms of urban mobility, there is insufficient infrastructure to enable people to move around the municipality. As far as means of transportation are concerned, the leisure spots are huge distances to walk, as in the case of the coastal Jacumã district (Figure 3). Other options such as canyons or other natural environment sites are only accessible by motorcycles or cars, items whose maintenance costs can reach almost half of the average monthly income in the municipality (1.9 minimum wages). Thus, those restricted to public transportation, bicycles or walking account for 75% of the population (Vialle, 2020). The author points out another reflection of the lack of adequate infrastructure: around 87.1% of public roads lack paving, either asphalt or block, which directly impacts urban mobility, hindering the implementation of bus stops, road signs or passenger information systems.

We can thus infer that urban mobility is a preponderant factor for improving urban quality in the municipality, since these are infrastructures that articulate the city's urban layout and directly impact daily dynamics, whether through population use to access goods and services, or through the economic development resulting from these infrastructures.

Figure 3 – Territorial map of Conde and road infrastructure



Source: Vialle (2020, p. 345).

Urban mobility initiatives in Conde

Although the deadline set by the PNMU for the preparation and approval of Urban Mobility Plans in Brazilian municipalities is approaching, Conde does not yet have this legal instrument implemented, and is currently finalizing it. Nonetheless, the municipality has gained some national notoriety in the field of urban mobility due to the initiatives implemented by the state administration and former mayor Márcia Lucena's (2017-2020) administration which have resulted in education and mobility gains. The actions, although one-off, resulted in significant changes to the local reality. Even before taking office as mayor, Lucena had already implemented urban mobility actions. As

Secretary of Education and Culture of the State of Paraíba, from 2011 to 2014, she developed several programs in partnership with the state government to improve mobility conditions for students in municipal and state schools. In 2012, the Paraíba Faz Educação Program enabled the distribution of school buses to 81 municipalities in the state, benefiting more than 56,000 state school students. At the time, the secretary highlighted the priority given to school transportation services, given the precariousness of the means of transport offered to students (Governador..., 2012).

Local news has portrayed this reality and pointed out many irregularities in the vehicles used for school transportation, known as "pau de arara" (Município..., 2015), especially the precarious infrastructure and the lack of seat belts for passengers. Amid the criticism, the former mayor of the municipality of Mogeiros, Antônio José de Ferreira, even justified the regulation and hiring of these vehicles due to the lack of funds to purchase suitable vehicles and the difficulty of accessing certain areas due to the region's rugged terrain. However, the public prosecutor's office notified the municipality and pointed out that the regulations allowed for the use of adapted vans or any other vehicle that provides safe transportation for students (Município..., 2015), which in no way justifies the legitimization of improvised means of transport.

Faced with this reality, other important state-level initiatives stand out, such as the Caminhos da Escola Project, which distributed around 15,000 bicycles and safety equipment (helmets, elbow and knee pads) to public school students who walked long distances on the way to and from school. Student selection criteria considered the distance traveled – which had to be between 6 km and 10 km adding up the round trips –, regular enrollment in Regular High School or Youth and Adult Education (EJA) or in rural, indigenous and quilombola schools, as well as a minimum age of 12 years old (Distribuição..., 2013).

Reports from teachers and principals noted that after the bicycles were delivered students' attendance and punctuality improved. According to these professionals, students sometimes returned home at lunchtime and did not return to school in the afternoon. In turn, some of the children selected claimed being happy with their improved routine made possible by the change in means of transport. As reported, many had to get up early and walk up to 25 minutes to school. Occasionally, they ended up arriving late and tired at the educational institution (Distribuição..., 2013). Importantly, the project has not only made transportation safer, but has also contributed to improving the children's quality of life.

For its part, municipal management (2017-2020) faced significant challenges due to the lack of regulatory instruments, up-to-date data on the territory and the unavailability of financial and human resources to support actions. According to Vialle (2020), although the municipality had an Urban Plan (Law n. 716/2012), the document was not up-to-date and lacked urban mapping to support and guide land use and occupation parameters (Complementary Law 1/2018). As such, the municipality had to plan proposals and strategies that would enable effective action, combined with resource optimization.

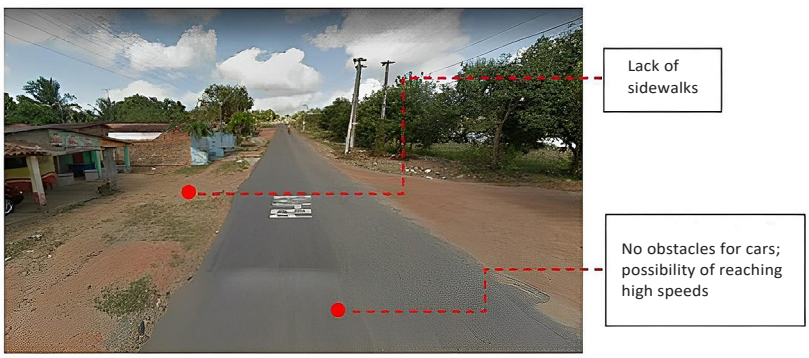
One such strategy adopted consisted of collaboration, from 2017 to 2020, between Conde City Hall and the Urban and Built

Environment Laboratory (Laurbe), which conducts research in the field of architecture, urbanism and urban and regional planning at the Technology Center (CT) of the Federal University of Paraíba (UFPB). The partnership sought to develop a masterplan to support the new administration in terms of technical aspects and short-, medium- and long-term urban planning guidelines for the city's sustainable development, aiming at a possible revision of the Municipal Urban Plan (Batista and Silveira, 2020).

According to the authors, the initiative was formalized via an outreach project coordinated by professors José Augusto Ribeiro da Silveira and Geovany Jessé A. Silva (Laurbe – UFPB), and Federica Tortora (Laurbe – Università di Roma "La Sapienza"), with the collaboration of undergraduate students from the Architecture and Urbanism, Environmental Engineering, Civil Engineering and Geography programs. One of the topics analyzed by the research group was urban mobility, in which various local problems were identified and proposals drawn up based on the guidelines recommended by the Sustainable Transit-Oriented Development Manual (TOD), prepared by Embarq Brasil (2015).

Mobility diagnosis highlighted the sprawl and segmentation of the metropolitan area – which affects municipal dynamics and road network connections – as well as the underutilization of existing infrastructure to support the road system; the difficulty of accessing services and shops; the lack of accessibility and equipment in pedestrian and cyclist circulation spaces and the insecurity of pedestrian circulation on highway stretches (Figure 4).

Figure 4 – Examples of problems identified by the study



Source: Batista and Silveira (2020, p. 186).

As such, the group proposed guidelines for improving urban mobility in the municipality, focusing on active mobility, the development of sustainable alternatives and the production of safer and more pleasant environments for pedestrians and cyclists (Batista and Silveira, 2020). Namely:

1) Shortening distances: by promoting the compact city model, in which maximum distances are established between homes and infrastructure and services (such as schools, basic health units, supermarkets and leisure areas);

2) Eliminating the fear of traffic: by implementing traffic calming measures in urban design (such as narrowing streets, creating raised crosswalks and establishing one-way traffic), at strategic points in the urban mesh, to reduce speed and improve pedestrian safety;

3) Enabling sustainable mobility: by improving travel conditions for pedestrians and cyclists through the standardization of accessible sidewalks, the creation of a hierarchical cycling network made up of bike paths, bike lanes and bike routes – arranged based on the hierarchy and location of the city roads — and the provision of accessible, sufficient and quality public transport.

At the administrative level, another important action consisted of traffic municipalization (there was already a 2015 legislation in place, but it was considered inadequate) and creation of the Mobility and Traffic Coordination (a body that does not yet exist in the municipality) in 2017. Among the initiatives carried out, we highlight the implementation of traffic awareness campaigns and parking fees for spaces located on the seafront, aiming at better managing demand in the municipality's strategic commercial area (Vialle, 2020).

Regarding urban restructuring, an important project was carried out to redevelop Conde's downtown, which ended up receiving the Prêmio Cidade Caminhável [Walkable City Award] (2021). The award was an initiative of the SampaPé Movement, a non-profit organization led by women who seek to contribute to building more walkable cities for and with people, and received support from the Institute for Transport and Development Policies (ITDP Brasil) and the Walk 21 Institute, both of which have initiatives aimed at promoting more walkable and sustainable cities. Conde was awarded in the Small Cities category (SampaPé, 2021).

Its redevelopment proposal stood out for the way in which the planning process was conducted and for the work execution, ensuring population participation by co-creating a charter of design guidelines, incorporating residents in the competition's participatory jury and also in the construction team responsible for building the square. The project aimed to "make downtown an inviting and accessible area for pedestrians and cyclists, connecting the two squares into a large equipped and pleasant public space, adjacent to the promenade on the church's axis" (Versa, 2018).

As can be observed in Figure 5, the project proposed a wide pedestrian sidewalk in the center of the street box that leads to the church, a solution that makes pedestrians the main actor in local mobility dynamics. Additionally, public sidewalks were to be improved by adding trees and lighting.

Figure 5 – Images of the design proposal

Source: Fortaleza... (2021).

Resulting from a national project competition, the winning solution presented as its core guideline the promotion of active mobility, the creation of new living and leisure areas for the population and the increase of street furniture and equipment, as recommended in the competition notice (Archdaily Brasil, 2018). The project team also applied solutions based on the rationality, functionality and feasibility of the project, according to the local economic reality (CAU-RS, 2018).

Results and discussion

Given the initiatives adopted by the municipality, an analysis based on the main instruments that guide urban mobility, such as TOD and PNMU, is necessary. The following is a reflection on how the specific actions implemented in Conde contributed to meeting the sustainable mobility guidelines proposed by these instruments, aiming at their possible replication in other cities.

Analysis of the proposal based on the PNMU and the Sustainable Urban Mobility principles

Despite lacking an effectively implemented Urban Mobility Plan, Conde's proposals for adaptation of some critical mobility points have brought benefits to the population. In this regard, it is worth analyzing which sustainability principles, based on the PNMU, Conde was able to comply with when implementing them.

Art. 5 section II of Law n. 12,587/2012 sets forth urban mobility principles based on universal accessibility, sustainable city development, equity in population access to public transport; equity in the provision of urban transport services; democratic

management, among others, which ensure the effectiveness and safety of people's movement (Brasil, 2012).

Regarding the PNMU and the specific actions carried out in the city, the initiative of downtown redevelopment encompassed most of the principles established by this policy, explaining part of its national recognition. Despite significant improvements in local infrastructure and the participatory planning process recommended, the proposal was the only candidate in the small cities category of the aforementioned award – which does not mean that the set evaluated is demerited or discredited, but it does highlight the scarcity of mobility actions in cities of this size.

Likewise, the distribution of bicycles to students in rural areas and of school transport buses, although not municipal initiatives, have benefited city mobility, ensuring the transportation of public school students and resulting in a safe and efficient urban traffic. In turn, the implementation of rotating parking has helped to ensure the equity of public space and the fair distribution of benefits and burdens when adopting individual cars as a form of transport. Similarly, the municipalization of traffic has helped to make urban traffic in the municipality more efficient. However, most of the benefits derived from these actions were restricted to specific areas of the territory, since they were neither articulated nor coordinated in an integrated urban development plan.

Developing the masterplan in partnership with UFPB, in addition to creating a return link between university and society, brought mobility strategies that cover several points related to urban traffic in terms of quality, safety and efficiency. Although it has not been implemented in full, there are tangible strategies for implementation, with a strong potential return for residents.

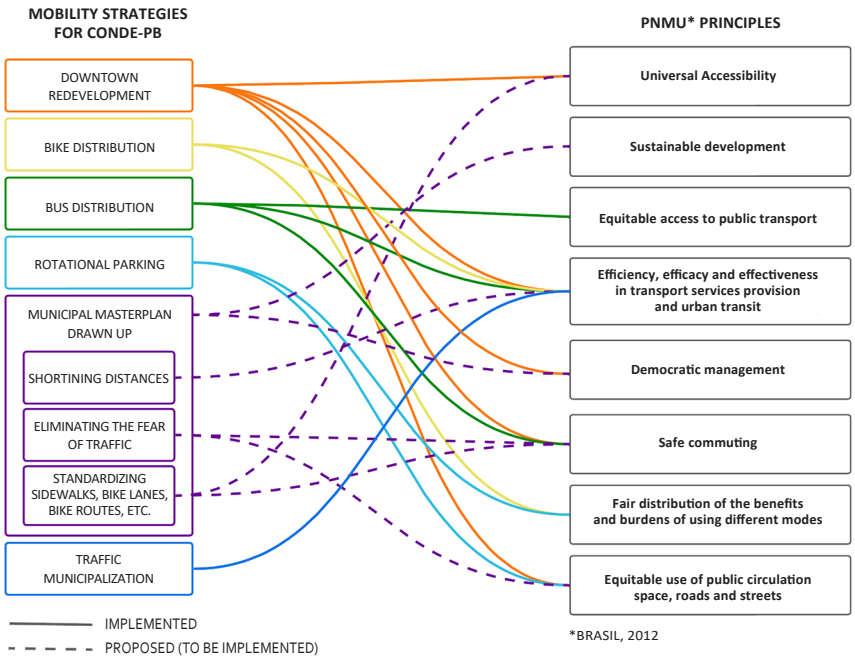
Although the partnership momentarily solves the lack of up-to-date data on local demands and helps guide possible future actions to improve mobility, as the document is instructive and not normative, the applicability and sustainability of the guidelines and strategies in the medium and long term are not guaranteed.

The summary diagram shown in Figure 6 helps visualize the aforementioned initiatives and their respective correlations with the PNMU mobility principles.

As noted, all the principles have been addressed in specific parts of the territory, but it cannot be said that they have been achieved in their entirety, since few strategies manage to meet more than two principles. Some initiatives are related to a single principle and, in other cases, there are principles related to strategies not yet implemented by the municipal management.

Similarly, but on a different scale, the strategies also meet the Transit-Oriented Development (TOD) principles, a planning model created to transform a city from a 3D

Figure 6 – Initiatives adopted and PNMU principles met

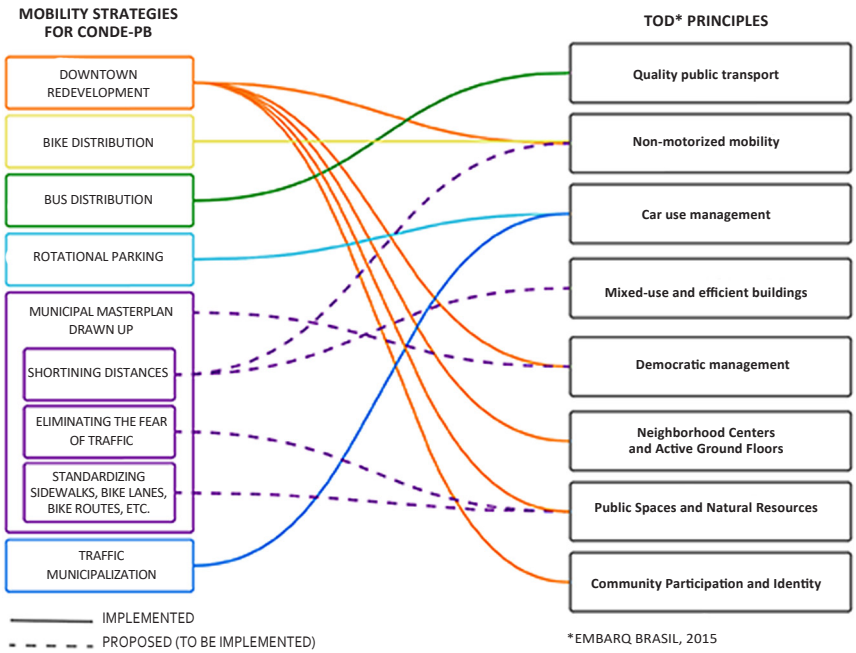


Source: the authors, 2023.

occupation model – dispersed, disorganized and disconnected – into a 3C one – compact, coordinated and connected (Embarq, 2015). It therefore enables a more efficient, sustainable urban environment, favoring those who need to travel daily to access goods and services. The model also favors compact neighborhoods with high population density and diversified use of commerce and services, as well as fostering social interaction (Zottis, 2015).

Figure 7 shows the correlation between the initiatives adopted and compliance with the TOD principles. Although all the principles have been achieved, we observe the same correlation trend as in Figure 6, except for the downtown redevelopment proposal, which encompasses multiple principles. There are also principles linked to strategies that have not yet been implemented in the municipality.

Figure 7 – Initiatives adopted, and TOD principles met



Source: the authors, 2023.

Overall, the actions adopted in Conde comply with the main instruments for implementing sustainable urban mobility. Although a structured plan with implementation guidelines is essential for implementing a mobility policy, we may argue that the specific actions have brought benefits to the municipality's urban mobility. Recognizing the benefits of these specific actions, as well as their compliance with sustainability principles, however, is not intended to encourage the adoption of such strategies to the detriment of a Mobility Plan. It is well known that a plan is a fundamental planning tool that provides a legal framework to guide actions in the short, medium and long term. The existence of municipal legislation promotes the sustainability of actions regardless of local political will.

Moreover, the PNMU fosters a more critical social body, since it advocates an open and participatory planning process, in

conjunction with the local population, as a way of understanding their demands. Unlike one-off actions, it also enables intersectoral coordination to ensure that certain targets are met and mobility conditions improved.

Post-implementation developments of the proposals

Our search for news on Conde city council's official website related to mobility in recent years returned few articles on laws that brought progress towards consolidating the measures adopted previously. Among those that stand out most in the municipal administration as of 2020 are the provision of buses for students (all levels) by extending the Caminhos da Escola Program, road paving actions, traffic education for children, regulation of tourist transport and accessibility on the city's coastal beaches.

Other state or regional actions are also mentioned, such as subsidizing part of the cost and reducing taxes on fuel for intercity transportation, as well as planning actions at the metropolitan level that consider cooperation on various issues, including mobility – without specifying details about this integration. We can thus infer that mobility in Conde is still addressed on an ad hoc basis.

Although these actions improved urban infrastructure, provided more regional integration and guaranteed more efficient and safer means of transportation, there is still a lack of state policies capable of ensuring that the measures adopted to improve mobility in Conde are implemented in the territory and consolidated. This finding reinforces the need for a Mobility Plan, backed by law, which coordinates public actions and policies in line with the wishes of the community. In the absence of such a plan, interventions become fragile and can be demobilized by changes in management.

In 2022, under Mayor Karla Pimentel's administration, the process of drafting the Urban Mobility Plan and the Immediate Action Plan for Traffic and Transportation began, with the hiring of a planning company to manage and conduct the work and communication plan related to the activities for creating the plans.

In the preliminary version of the document made available by the hired company, there are several social surveys to verify urban demands regarding mobility. Results show the population's dissatisfaction with mobility conditions in the city, indicating that, despite the specific actions taken, there are still several issues to be addressed as to make urban mobility effective in the territory. The plan includes a detailed diagnosis of mobility conditions, accessibility, the road system, among other topics that point to several deficient issues in the city.

Thus, the draft law drawn up by the company defines among other strategic objectives:

> Promote ongoing traffic and transport management by the Municipal Department, ensuring that all public policies and projects are aligned with the Urban Mobility Plan guidelines, and provide for ongoing activities to ensure the quality of transport services and the proper operation of the road system. (Líder Engenharia e Gestão de Cidades, 2023, p. 14)

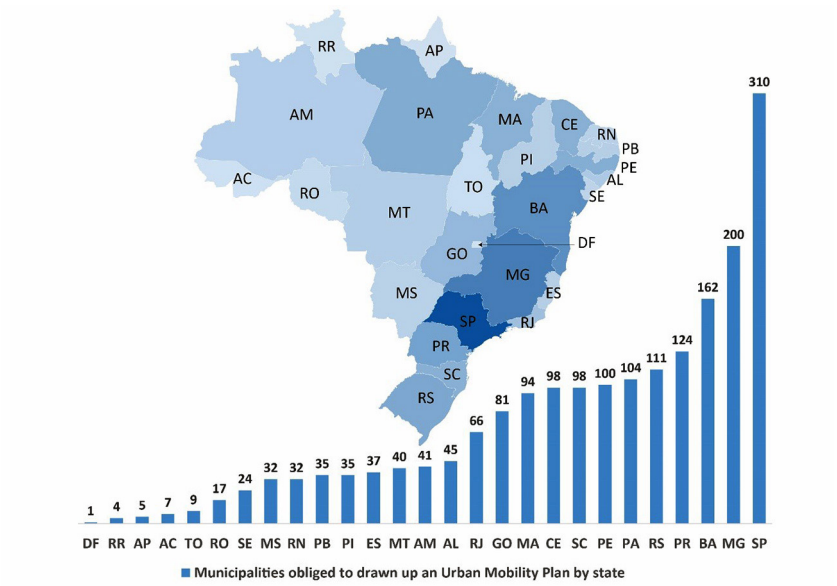
Drawing up an Urban Mobility Plan is therefore essential to ensure that actions are continuous and coordinated with other urban development fronts. Note that the specific actions carried out previously have helped the municipality to make progress in its mobility and in the scope of mobility education. Therefore, the strategies of the Mobility Plan to be implemented will improve the pre-existing mobility context.

From Conde's analysis, we can extract ideas for actions that can be implemented in other cities with a similar profile, aiming to apply them in conjunction with the elaboration of the Urban Mobility Plan. It is therefore appropriate to analyze the panorama of municipalities obliged to draft such instrument.

Guidelines for replicating the proposal in small cities

Article 24 of Law n. 12,578/2012 requires cities with a population of over 20,000 inhabitants to draw up a Mobility Plan as a condition for receiving federal public funds to be invested in the sector. Cities belonging to metropolitan, administrative or tourist regions also fall under this demand, even if they have fewer than 20,000 inhabitants. In practice, the cities referred to in the article are the same ones required by law to have an Urban Plan, which – according to data from the Reference Book for Elaborating an Urban Mobility Plan – totaled 3,065 cities in 2015 (Brasil, 2015).

Figure 8 – Graph of the number of municipalities per state required to elaborate an Urban Mobility Plan



Source: the authors, in 2023, based on data from Brasil (2023a).

Currently, however, only 1,912 cities spread across all Federation Units (Figure 8) are required to draft a mobility plan, according to data updated in 2023 by the Ministry of Cities (Brasil, 2023a).

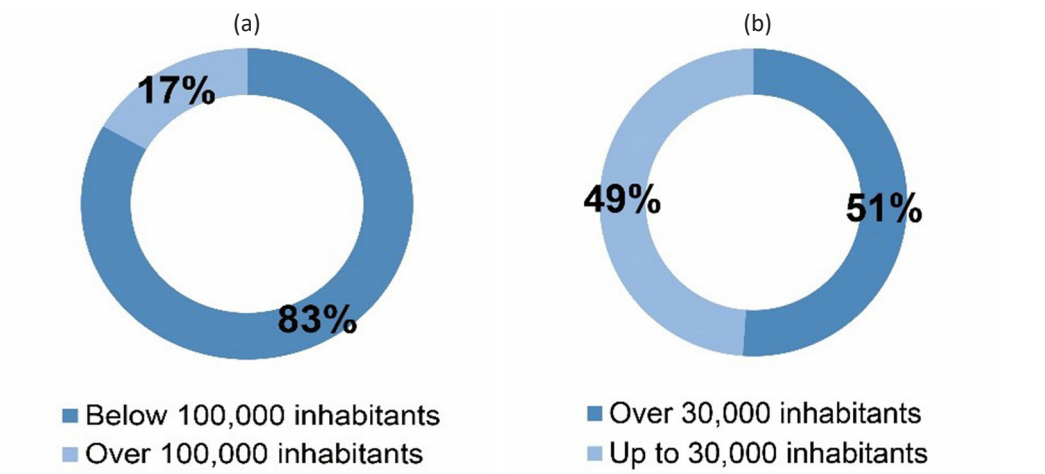
Thus, the cities obliged to draw up an Urban Mobility Plan account for 34% of Brazilian municipalities, and of these, a considerable number (83%) are small, i.e., have fewer than 100,000 inhabitants. Of the small cities required to prepare an Urban Mobility Plan, almost half (49%) have the same population profile as Conde, between 20,000 and 30,000 inhabitants (Figure 9).

We can thus infer that a significant proportion of cities correspond to Conde's urban and population profile and, in this sense, the municipality's case can be used as a reference for applying mobility guidelines.

The Reference Booklet for Elaborating an Urban Mobility Plan establishes the following themes as relevant for cities with a profile similar to that of Conde, i.e., municipalities with 20 to 60,000 inhabitants (Brasil, 2015):

- Integration of mobility with urban planning and land use;
- Classification, hierarchization of the road system and traffic organization;

Figure 9 – Graph of the number of small municipalities obliged to draw up an Urban Mobility Plan (a) and percentage with less than 30,000 inhabitants (b)



Source: the authors, in 2023, based on data from Brasil (2023a).

• Implementation and upgrading of sidewalks and walking areas;
• Creation of suitable conditions for cyclists;
• Promotion of universal accessibility;
• Safe and humane road traffic conditions;
• Accessibility, public and school transportation for rural areas; and
• Institutional structuring.

All of the topics set out in the Reference Book have been addressed by the municipality in a timely manner, although some of the topics included in the masterplan have not yet been fully implemented. In relation to the PNMU, therefore, Conde has the necessary experience to expand its actions to other areas of the territory. With this in mind, we can argue that the strategies adopted are relevant to around half of the small municipalities. With small efforts, several cities could also make progress in urban mobility in line with the PNMU.

In this regard, the following strategies adopted in Conde, which have been successful, stand out for replication in municipalities of similar socioeconomic profile:

Participatory Management: Local population collaboration in drawing up the proposal for downtown redevelopment made the project much more assertive, considering the opinions of those who actually use the space. This has made the project widely accepted, through people's understanding of the issue of mobility in the city, as well as facilitating the appropriation of public space.

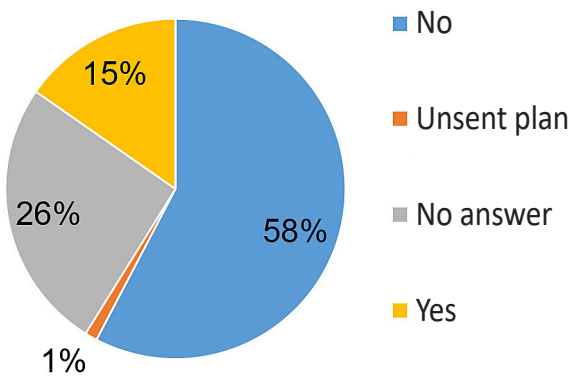
Partnership with educational institutions: The link between the Federal University of Paraíba and Laurbe has brought great benefits to management by development of the masterplan. In addition to the municipal administration benefiting from qualified technical staff to conduct studies on the city, the university contributes by returning the knowledge produced at the institution to society. As such, it becomes a means of benefiting both parties and serves as an example for other institutions and cities.

Studies for local diagnostics: Laurbe's analyses made it possible to understand the local reality in various aspects that were important for guiding the strategies to be adopted, according to the municipality's feasibility. A local diagnosis is essential for drawing up strategies according to the particularities of each municipality, not only for urban mobility, but also for various issues pertaining to urban planning.

Effective one-off actions: The case of Conde makes it clear that specific actions, when analyzed together, can result in a satisfactory panorama of social transformation. In a context of scarce resources (common in many small cities), it is sometimes impossible to implement mobility initiatives due to high investment costs, especially when considering a complete plan. However, Conde's example has shown that mobility can be improved through small actions that together meet a large part of the sustainable mobility principles, even without elaborating a legal instrument for this purpose.

These strategies are less expensive than major infrastructure investments and can be adopted by many cities, provided there is the impetus to act to improve urban quality. The low rate of cities of up to 250,000 inhabitants with an Urban Mobility Plan (Figure 10) confirms the seriousness of the mobility issue in Brazilian cities, which requires a major effort to be reversed.

Figure 10 – Municipalities with up to 250,000 inhabitants with an Urban Mobility Plan



Source: the authors, in 2023, based on data from Brasil (2023a).

The recent postponement of the deadline for drawing up an Urban Mobility Plan by the municipalities covered by Law no. 12,587/2012, drafted by Provisional Measure no. 1179 of 2023, reflects the low adherence to the topic of urban mobility in cities, especially small ones. According to the executive summary of the provisional measure, since the Mobility Plans have not been approved by a significant number of municipalities, preventing them from obtaining federal funds earmarked for the issue, the Federal Government is forced to postpone the deadlines (Brasil, 2023b).

It is therefore necessary to identify actions that can be taken to comply with the law, within the stipulated deadlines, so that cities can obtain resources to improve urban mobility. Considering small actions for this purpose is extremely important, given that only 15% of cities with up to 250,000 inhabitants have an Urban Mobility Plan.

Final considerations

As discussed, Brazil still has a long way to go in the search for enacting Law no. 12,587/2012. In view of the constant deadline postponements, it is evident that cities, especially small ones, face difficulties in elaborating and implementing the Brazilian National Urban Mobility Policy. Given this context, we highlight the initiatives adopted by the city of Conde in an effort to foster ideas in cities with similar profiles. Moreover, the theme is of great importance for achieving sustainability principles in the municipalities.

There is also the social well-being that urban mobility guidelines can provide to city dwellers. As seen in Conde, the implementation of some guidelines, starting by redeveloping downtown, has favored urban vitality.

We also highlight the need for greater integration between the different administrative spheres (federal, state and municipal), to assist in developing and implementing solutions to improve urban mobility. As demonstrated in the case studied, many municipalities lack sufficient local resources to intervene in certain points.

As such, the research evinced the urgent nature of actions related to elaborating Urban Mobility Plans in the Brazilian context. In this regard, the points highlighted by the analysis of the mobility initiatives implemented in Conde may be relevant for municipalities still in the preparation phase or that lack this instrument. Although small cities face scarcity of financial resources, specialized technical staff and data on local problems, it has become evident how municipal management can provide numerous benefits to the local population through specific joint interventions.

This study is limited by the exclusive use of secondary sources, due to the impossibility of accessing the object. Future works should conduct a comparative analysis of other sustainable urban mobility initiatives in small cities, a post-implementation evaluation study to analyze proposal effectiveness, as well as a direct evaluation of population satisfaction with the measures adopted.

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