JOURNAL OF ENVIRONMENTAL MANAGEMENT & SUSTAINABILITY

REVISTA DE GESTÃO AMBIENTAL E SUSTENTABILIDADE – GeAS

Received: 20 Mar. 2020 - **Approved:** 10 Oct. 2020
Evaluation Process: Double Blind Review
https://doi.org/10.5585/geas.v9i1.16850
e-ISSN: 2316-9834

An approach between public policies on urban mobility and the sustainable development goals in Curitiba-PR

Isabela Porte Vieira Locatelli[1], Márcia de Andrade Pereira Bernardinis[2], Matheus do Amaral Moraes[3]

[1]*Especialista em Reabilitação Ambiental Sustentável Arquitetônica e Urbanística, Universidade Nacional de Brasília (UNB). isabela.porte@gmail.com*

[2]*Doutora em Engenharia de Transportes, Universidade de São Paulo. Professora na Universidade Federal do Paraná (UFPR). profmarcia.map@gmail.com*

[3]*Arquiteto Urbanista, Universidade Federal de Santa Maria (UFSM). m.doamaralmoraes@gmail.com*

Cite as
American Psychological Association (APA)

Locatelli, I. P. V., Bernardinis, M. de A. P., & Moraes, M. do A. (2020). An approach between public policies on urban mobility and the sustainable development goals in Curitiba-PR. *J. Environ. Manag. & Sust., 9*(1), 1-24, e16850. https://doi.org/10.5585/geas.v9i1.16850.

Abstract

Objective: This study aims to verify the interrelationships between the main public policies for urban mobility in Curitiba-PR and Sustainable Development Objective number 11 - Sustainable Cities and Communities.

Methodology: For exploratory purposes and supported by the analysus categories proposed by IBAM (2016) – which allow the classification of policies in terms of closer or more distant – the study took place through documentary research on the official websites of public agencies.

Relevance: In view of the urban crisis faced in mobility and the growing production of public policies focused at that problem, the analyzes related to the theme are increasingly urgent.

Results: It was found that there is a correlation between the content of the policies analyzed and the SDG 11. The highest levels of interrelation were the road safety and sustainability categories, while the lowest were public transport and accessibility.

Contributions: In this sense, the present study is part of the effort to establish categories of analysis, based on the parameters established by the goals present in the SDGs, as guiding elements in a necessary process of measuring and evaluating public policies and their dynamics.

Conclusion: It is concluded that is necessary a continuous process of measurement and evaluation of public policies. In this perspective, the qualitative aspects and the panorama of the researched items, point to signs and trends that may still guide new studies.

Keywords: Urban mobility. Public policy. Sustainable development goals. Sustainability. Curitiba.

Uma aproximação entre as políticas públicas de mobilidade urbana e os objetivos de desenvolvimento sustentável em Curitiba-PR

Resumo

Objetivo: O presente estudo tem como objetivo verificar as inter-relações entre as principais políticas públicas de mobilidade urbana em Curitiba-PR e o Objetivo de Desenvolvimento Sustentável número 11 – Cidades e Comunidades Sustentáveis.

Metodologia: Com fins exploratórios e apoiado nas categorias de análise propostas pelo IBAM (2016) – que permitem a classificação das políticas em termos de mais próximo ou mais distante – o estudo se deu por meio de pesquisa documental nos sites oficiais dos órgãos públicos.

Originalidade/ Relevância: Tendo em vista a crise urbana enfrentada na mobilidade e a crescente produção de políticas públicas voltadas à problemática, análises relacionadas ao tema são cada vez mais urgentes.

Principais resultados: Verificou-se que há correlação entre os conteúdos das políticas analisadas e o ODS 11. Os maiores níveis de inter-relação foram com as categorias de segurança viária e sustentabilidade, enquanto os menores foram com o transporte público e a acessibilidade.

Contribuições: Nesse sentido, o presente estudo se insere justamente no esforço de estabelecer categorias de análise, com base nos parâmetros estabelecidos pelas metas presentes nos ODS, como elementos norteadores em um necessário processo de mensuração e avaliação das políticas públicas e suas dinâmicas.

Conclusão: Conclui-se que é preciso um contínuo processo de mensuração e avaliação das políticas públicas. Nessa óptica, os aspectos qualitativos e o panorama dos itens pesquisados apontam indícios e tendências que podem ainda orientar novos estudos.

Palavras-chave: Mobilidade urbana. Política pública. Objetivos de desenvolvimento sustentável. Sustentabilidade. Curitiba.

Una aproximación entre las políticas públicas de movilidad urbana y los objetivos de desarrollo sostenible en Curitiba-PR

Resumen

Objetivo: Este estudio tiene como objetivo verificar las interrelaciones entre las principales políticas públicas de movilidad urbana en Curitiba-PR y el Objetivo de Desarrollo Sostenible número 11 - Ciudades y Comunidades Sostenibles.

Metodología: Con fines exploratorios y apoyado en las categorías de análisis propuestas por IBAM (2016) - que permiten clasificar las políticas en términos de más cercanas o más lejanas- el estudio se realizó a través de una investigación documental en los sitios web oficiales de los organismos públicos.

Originalidad / Relevancia: Ante la crisis urbana que enfrenta la movilidad y la creciente producción de políticas públicas orientadas a la problemática, los análisis relacionados con el tema son cada vez más urgentes.

Principales resultados: Se encontró que existe una correlación entre el contenido de las políticas analizadas y el ODS 11. Los niveles más altos de interrelación se dieron con las categorías de seguridad vial y sostenibilidad, mientras que los más bajos con transporte público y accesibilidad.

Aportes: En este sentido, el presente estudio se enmarca en el esfuerzo por establecer categorías de análisis, con base en los parámetros establecidos por las metas presentes en los ODS, como elementos rectores en un proceso necesario de medición y evaluación de políticas públicas y su dinámica.

Conclusión: Se concluye que es necesario un proceso continuo de medición y evaluación de las políticas públicas. En esta perspectiva, los aspectos cualitativos y el panorama de los ítems investigados apuntan a signos y tendencias que aún pueden orientar nuevos estudios.

Palabras-clave: Mobilidad urbana; Política pública; Metas de Desarrollo Sostenible; Sustentabilidad; Curitiba.

1 Introduction

Discussions involving environmental management and sustainability are recurrent. Initially focused on specific resources such as the exploitation of forests, environmental management vision has been expanded over the years: ecosystems to natural areas and subsequently for the management of the territory as a whole. This view began to require joint action of the state and society on the territorial imbalances, including those related to the practices of the population and the exercise of economic activities (Godard, 2000).

In developing countries like Brazil, the urbanization process is accentuated, consequently, the need for territorial management becomes even more evident. This phenomenon exacerbates the problems inherent to life in cities - such as transportation, sanitation, energy, security, housing, among others - that make up the challenging agenda regarding the emerging socio-environmental crisis. The nature of these challenges requires sustainable, structuring interventions and, above all, that articulate society's demands to public policies.

Among the aforementioned issues related to territorial management, this research deals with those arising from or related to urban displacement, which have acquired expressiveness and have grown in complexity in recent decades. The dimensions of cities and the distances between the places where daily activities were carried out increased. The damage that automobile massification and road hegemony cause in the urban environment is recognized and reiterated by authors like Gorz (2005), Jacobs (2009), Gehl (2013), Ramis and Santos (2012) and Álvarez (2016).

In this scenario, the paradigm of sustainable mobility appears as the main aspiration, moving planners, public administrators, the academic community and society, from the perspective of sustainable development and the paradoxical search for “meeting the needs of the present without compromising the possibility of generations meet their own needs ”(World Commission on Environment and Development, 1992).

At the global level, there are mobilizations to manage and guide efforts to transform the current predatory scenario on several fronts, including urban mobility. For Coimbra, Mantovanneli e Silva (2015), the United Nations (UN) elaboration of the Sustainable Development Goals (SDGs) is evidence of the role of global pacts in the construction of agendas that guide planning and governance actions in public policy and businesses through explicit targets.

The SDG 11 is highlighted, which presents goals to make cities and human settlements inclusive, safe, resilient and sustainable. Despite the notorious efforts for the realization of such objectives, it is essential to occur an unfolding in local actions and that its direction be present in the process of defining public policies.

In this sense, the Curitiba 2035 project is an initiative of the society of the capital of Paraná, which, according to its organizers, "seeks reflection and collective creation with a view to illuminating action, in particular that of a strategic character", using contributions of several actors "in a structured, interactive, participatory, coordinated and synergistic way" (Curitiba 2035, 2017, p. 12). By establishing the objective of adapting municipal mobility policies to meet SDG 11, the Curitiba 2035 project - as a society initiative - emphasizes the importance of the issue.

Faced with this panorama, the question arises: Are the main public policies for urban mobility in Curitiba aligned with the discourse of sustainable development? And yet, what are the levels of interrelationships between the main public policies on urban mobility in Curitiba-PR and Sustainable Development Goal number 11?

Based on the above, the article is divided into five parts: introduction to the problem; theoretical basis - with the purpose of exploring global and municipal objectives, addressing the concepts present in the SDGs and exploring public policies on urban mobility; exposure of methodological procedures; results and analysis discussions of the interrelationships between the main public policies on urban mobility in Curitiba-PR and Sustainable Development Objective number 11; and, finally, some final considerations.

2 Theoretical foundation

2.1 Environmental management: agenda and objectives

Former UN Secretary-General Ban Ki-moon said that cities are configured as a battlefield in the struggle for sustainable development, where different agents and forces act, or not, in building paths towards sustainability (UN, 2012). This focus has resulted in the development of agendas and objectives over the past few years, in order to foster studies and tools for the development of improvement actions at different urban scales.

In 2000, the Millennium Development Goals (MDGs) were established, which included eight objectives to combat poverty to be achieved by 2015. Then, on the legacy left by the MDGs, a Post-2015 Agenda was signed. Its formulation started after the United Nations Conference (Rio +20) and, unlike what happened in the previous agenda, it sought a greater participation of peripheral countries, in an attempt to avoid a technocratic and centralized framework (Prandi, Maximo & Lima, 2015). The Sustainable Development Goals (SDGs) were the result of a worldwide negotiation effort, culminating in the establishment of 17 objectives, 169 goals and countless challenges.

Still in 2015, Brazil committed itself to mobilize efforts to reach, by 2030, the established goals. However, despite the global nature of the objectives and the commitment made at the national level, they have a close relationship with the local level. According to

Pimentel, Sander and Iubel (2019), the changes guided by the SDGs need action at national, regional and municipal levels.

Taking as an example the objective of SDG 11, entitled “Sustainable cities and communities”, the focus of this study, we note a globally shared development agenda to “make cities and human settlements inclusive, safe, resilient and sustainable”. However, its applicability can only be effective in the scope and specificity of each city or settlement. The goals present in that objective, according to Chart 1, are:

Chart 1 – SDG 11 Goals

SDG 11: Make cities and human settlements inclusive, safe, resilient and sustainable.	11.1 By 2030, guaranteeing everyone's access to safe, adequate and affordable housing, basic services and urbanizing slums. 11.2 By 2030, providing access to safe, accessible, sustainable and affordable transport systems for all, improving road safety through the expansion of public transport, with special attention to the needs of vulnerable people, women, children, people with disabilities and the elderly. 11.3 By 2030, increase inclusive and sustainable urbanization, and capacities for the planning and management of participatory human settlements, integrated and sustainable, in all countries. 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage. 11.5 By 2030, significantly reduce the number of deaths and the number of people affected by disasters and decrease the direct economic losses caused by them in relation to the global gross domestic product, including water-related disasters, with a focus on protecting the poor and vulnerable people. 11.6 By 2030, reduce the negative environmental impact per capita of cities, including paying special attention to air quality, municipal waste management and others. 11.7 By 2030, provide universal access to safe, inclusive, accessible and green public spaces, in particular for women and children, the elderly and the disabled. 11.a Support positive economic, social and environmental relations between urban and rural areas, reinforcing national and regional development planning. 11.b By 2020, substantially increase the number of cities and human settlements by adopting and implementing integrated policies and plans for inclusion, resource efficiency, mitigation and adaptation to climate change, and resilience to disasters; and to develop and implement, in accordance with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels. 11.c Support least developed countries, including through technical and financial assistance, for sustainable and resilient buildings, using local materials.

Source: UN (2015).

The goals and concepts explored by the SDGs were welcomed on a municipal scale by the Curitiba 2035 project, in order to “prepare the municipality for orderly growth and in synergy with the principles of sustainability, consciously taking advantage of the opportunities and investments inherent to the city, prioritizing the quality of life and the well-being of the population ”(Curitiba 2035, 2017, p. 8).

Within nine thematic areas considered strategic for the development of Curitiba, short, medium- and long-term actions were proposed. The area called “Mobility and Transport” stands out, whose first action planned, in the short term, is the “implementation and adaptation of policies to meet the UN SDG11: Sustainable Cities and Communities”

(Curitiba 2035, 2017). It is understood that, by establishing as a guideline to adapt mobility policies to meet the SDG 11, the Curitiba 2035 project emphasizes a citizen demand for public policy proposals in the context of urban mobility.

2.2 Mobility and SDGS: sustainability, road safety, accessibility and public transport

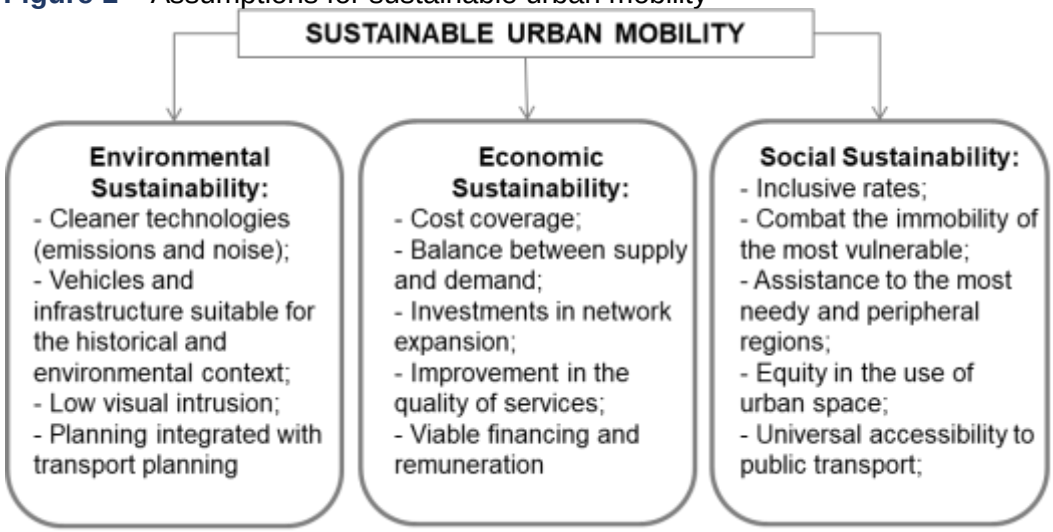
In the social sciences, the concept of mobility is oriented towards associating traffic with society. The idea of a mere physical displacement is overcome and progress is made towards the integration between the action of displacing the conditions and positions of society and individuals. In this perspective, urban mobility is defined as the social relationship linked to the change of place, that is, as the set of modalities by which the members of a society deal with the possibility of successively occupying several places. Thus, mobility designates a set of possibilities, motivations and constraints that influence, in addition to the movements themselves, the projection and realization of the displacement of people, goods and ideas (LEVY, 2001; BALBIM, 2016).

Machado and Piccinini (2018) believe that the problem surrounding urban mobility is chronic and structural, that is, while it can manifest itself as a promoter of economic development, it is also responsible for negative externalities. In this sense, it is justified to include the theme of mobility in the objectives and goals established by the global pacts, like the goals present in SDG 11.2. It contains principles to be observed in public policies, essentially, they are: sustainability, road safety, accessibility and encouraging public transport.

First, the sustainable mobility paradigm appears as the main aspiration. Although there is a difficulty in establishing a categorical definition of sustainable mobility, some are widely accepted and widespread. Reference is often made to the sustainability tripod focused on the environmental, economic and social dimensions, that is, sustainable mobility systems would be those that contribute to social and economic well-being, without harming the environment and human health (Costa, 2008, Gudmundsson, 2004).

According to Carvalho (2016), it is only possible to understand sustainable urban mobility by observing the broader field of which the concept is part, which refers to the promotion of a balance between the protection of the natural environment and the satisfaction of human needs. For the author, the basic assumptions of sustainable urban mobility can be outlined as shown in Figure 1.

Figure 1 – Assumptions for sustainable urban mobility



Source: Adapted from Carvalho (2016).

As it is a concept that encompasses multiple variables, whose measurement is complex, the same action can have positive impacts from a sustainability perspective and negative impacts from another. In short, sustainable mobility can be understood as actions related to transport management and land use and occupation that aim to provide access to goods and services efficiently to all citizens, maintaining or enhancing the quality of life of the current population without harm future generations (Campos, 2006).

The second approach concerns road safety. Recognized by the World Health Organization as a serious public health problem and one of the main causes of deaths and injuries worldwide, traffic accidents can be recognized as events occurring on a road, including the sidewalk, due to vehicles and pedestrians traffic that results in material damage and/or injuries to people (Ferraz, Raia Junior, Bezerra, Bastos & Silva, 2012).

Soares et al (2017) points out that when the Public Power does not meet the needs of the population in relation to the availability of efficient and safe public transport, the tendency is for citizens to look for alternatives that can replace the gap left by the state, even if this implies often taking risks.

The pattern of mobility set in recent decades causes a great economic, social, cultural and health burden, with a number of fatalities that can be compared to that of a civil war. It is estimated that, since the advent of the automobile until 2012, more than 40 million people died due to traffic accidents, leaving a legacy of economic, human, social and environmental costs (Motta, Silva & Jacques, 2011).

For the purposes of the analysis, it is understood that road safety involves engineering, education and awareness efforts, legal and regulatory issues, public and community engagement, physical-environmental factors and permanent monitoring. Thus, based on Ferraz et al (2012), it is possible to affirm that public policies that act in the

promotion of traffic in safe conditions are those that aim to reduce risk exposure, the number and severity of accidents, based on human elements, vehicular or physical-environmental

Another important concept contained in SDG 11.2 and currently widely discussed is that of accessibility. Accessibility is understood as the condition and the possibility of reaching, with autonomy and security, the spaces, furniture and urban equipment, as well as buildings and transport (Law 10,098, 2000). For the Ministry of Cities (2006), accessibility corresponds to the ease in cost, time and distance to reach autonomously the desired destinations in the city.

Taking Ostroff's (2001) contributions as a reference, the concept becomes clearer when the word “barrier” is understood as a physical obstacle that restricts mobility and does not allow the comfortable and safe use of spaces and their components. Thus, for the author, accessibility is a requirement that should guide decisions, at all levels of urban scale, in order to avoid barriers.

Finally, the importance of encouraging public transport as an objective of sustainable development is emphasized. Through the Federal Constitution of 1988 (CF-88), public transport was defined as an essential service and, in this way, the organization and provision of public transport became the exclusive competence of the municipalities and the institution of national guidelines for the sector was in charge of the Union. Subsequently, in 2015, the approval of Constitutional Amendment No. 90 included in Article 6 of CF-88 the right to transport in the category of social law, alongside and in the same provision as other rights such as education and the health.

According to Rabay and Andrade (2019), there is a consensus that the solution to the problem of contemporary mobility necessarily involves improving the public transport system, whose access and efficiency depend a lot on the adopted fare policies. Despite being an essential service for the population, several factors interfere in the citizens' decisions about the use of public transport, for example, the quality of the service, the fare value, the social class of the users and the characteristics of the trip.

In this perspective, the increase in public transport is identified as an advance towards the democratization of mobility, the reduction of congestion and pollution, in addition to minimizing the need to build roads and parking lots. In summary, public policies that encourage the use of this type of transport mode concern affordable prices, quality, quantity, location, opening hours and physical structure (Araújo et al, 2011; Vasconcellos, 2012).

2.3 Public policies for urban mobility

There is no absolute consensus in the conceptualization of the idea of public policy, in general, the definitions revolve around the actions of the State, but there are other agents

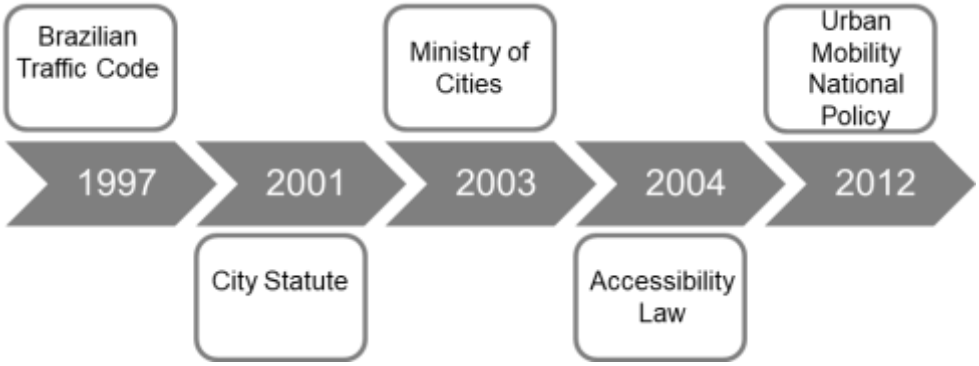
that operate in this equation. Peters (1986) defines them as a sum of government activities, which influence citizens' lives. Muller (2000), on the other hand, understands public policies as the modification of reality by authorities, in a way that it is possible to build new interpretations of the real and define models and norms for actions.

Vasconcellos (1999) states that, methodologically, when observing public policy, it is necessary to analyze the state intervention process and the basic characteristics of its actions, in order to allow the identification of its social, political and economic implications. Therefore, it is necessary to contextualize public policies on urban mobility, as well as related projects and proposals.

The origin of notable advances related to urban mobility policies was mainly from the European Community (Machado, Piccinini, 2018). Progressively, under the influence of international agreements and protocols, the sustainability paradigm starts to drive policies and practices in other locations. Despite the European framework, Vasconcellos (2012) recognizes that the structuring of Brazilian cities is closer to the American model, configured by the spread.

As Figure 2 illustrates, in the Brazilian scenario legal actions have produced advances over the past few years: the Brazilian Traffic Code - instituted in 1997; the City Statute - in 2001 regulated the Constitution's "Urban Policy" chapter; the creation of the Ministry of Cities in 2003, the Accessibility Law - enacted in 2000 but only regulated by Decree No. 5,296, 2004 - and the National Urban Mobility Policy in 2012.

Figura 2 – Brazilian public policies timeline



Source: Own elaboration.

We highlight the National Urban Mobility Policy, which, centered on guidance and action at different levels of government, aims at increasingly sustainable urban mobility. According to the Ministry of Cities (2016), the Law clarifies citizens' rights to the mobility system, provides guidelines for regularizing transport services and for planning and managing systems. After this legal framework, the Urban Mobility Plan became an official and mandatory instrument for the implementation of national policy in Brazilian cities with

more than 20 thousand inhabitants, in municipalities that are part of metropolitan regions, in those with areas of tourist interest and those located in areas of environmental impact.

Specifically in Curitiba, during the 1960s and 1970s, the institutionalization of urban planning, the action of the State through extensive territorial interventions and the planning practices considered as innovative gave the city the title of "model city". In this phase, the following measures stand out: (i) the proposal of a mass public transport that articulates the sectors of the city, through the Integrated Transport Network (RIT); (ii) the adoption of the trinary system (three parallel lanes, one of which is central with an exclusive channel for public transport, and the other two for rapid transit); and (iii) encouraging the use of mixed land (commercial and residential) associated with verticalization in the vicinity of bus corridors (Stroher, 2014).

Despite the advances, it is necessary to point out that the technocratic discourse present in these described actions privileged the population of the central region, hiding the latent inequality and the progressive occupation of peripheral and environmentally fragile areas. The pattern of uneven urban growth and the periphery of the low-income population showed the limitations of the proposals, and, in a way, contributed to the increase of physical and economic distances within the city of Curitiba (Albuquerque, 2007).

For Stroher (2014), the subsequent decades of 1980 and 1990 were marked by projects of ecological appeal (such as parks, monuments and urban attractions) and technological (such as tube stations and new models of buses, the light ones). Subsequently, after the City Statute in 2001, there was a return to the elaboration of successive urban plans, in addition to the attempt at an integrated planning of the metropolitan region of Curitiba, however, the new plans had the same disarticulations as the previous ones.

More recently, Curitiba counted on the elaboration of other public policies to face the mobility crisis, such as the projects implemented in the Calm Area and Green Sidewalk - both based on the principles of Traffic Calming, the consortium urban operation of the Green Line - a major axis metropolitan area, in addition to projects related to cyclomobility, which will be addressed in the course of the study.

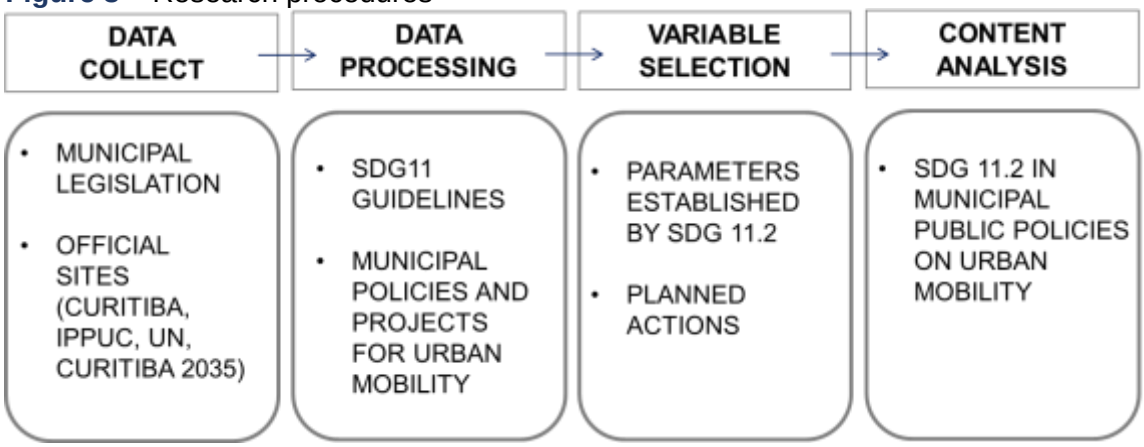
3 Methodological procedures

This study falls into the category of exploratory research of a qualitative nature which, according to Bogdan and Biklen (2003), involves descriptive data, concern with the process, attention to the meaning and an inductive analysis process. For Gil (2008), exploratory research aims to clarify, develop and modify concepts and ideas. Thus, the objective of the study is in line with the proposal to clarify an idea, which, in this case, is to verify the existing convergences between Sustainable Development Objective number 11.2 (Sustainable Cities

and Communities) and the urban mobility policies developed in Curitiba -PR.

Based on the procedures proposed by Bardin (1977), the research is organized in three in three intrinsically related phases: pre-analysis, exploration of the material and, finally, the treatment of the results obtained. Figure 3 explains the procedures that will be detailed below.

Figure 3 – Research procedures



Source: Own elaboration.

In the pre-analysis phase, a first approach was made to identify the main public policies for urban mobility in Curitiba. The criteria adopted for the selection of policies to be analyzed were: actuality, being directly related to urban mobility, being municipal, being implemented or being consolidated and having data available. Thus, from the official websites of the city of Curitiba and the Institute of Research and Urban Planning of Curitiba (IPPUC), it was possible to verify four ongoing initiatives: the Green Line, the Calm Area, the Green Sidewalk and the Cycle Structure Plan.

From the same official sites, the documentary body was delimited. Bearing in mind that there is no homogeneity in the format of the documents, the procedure was carried out observing specifically the actions foreseen by each of the policies. In the case of Green Line, the actions provided for in the law that instituted it - Law No. 13,909 of 2011; in the Calm Area project, the Feasibility Study made available by IPPUC (2014); in the case of Green Sidewalk, the Traffic Calming proposal book (IPPUC, 2016) and, finally, the proposals present in the Cycle Structure Plan (IPPUC, 2018).

Then, for the exploration of the material, the categories of analysis were designated based on the parameters established in item 11.2, which encompass the need to "(...) provide access to safe, accessible, sustainable transport systems and the affordable price for everyone, improving road safety through the expansion of public transport (..) "(ONU, 2015). They are noted as guiding elements of the objective and are defined as categories of analysis: road safety, accessibility, sustainability and the incentive to use public transport.

Supported by the public policy analysis matrix developed by the Brazilian Institute of Municipal Administration [IBAM] (2016), in partnership with the Ministry of Science, Technology and Innovation, the levels of interrelationships were classified as high, medium, low or non-existent. The proposed categories function as instrumental references that allow the classification of policies in terms of closer or further from the SDGs.

In a survey conducted by IBAM (2016), the methodological procedure was applied to verify the integration of the SDGs with national policies, considering the goals for each of the objectives and grouping the policies according to their respective ministries. Likewise, in the present study, the categories of analysis were presented in a matrix together with the actions provided for by each of the political policies, giving greater objectivity and systematicity for the analysis.

Finally, the approximations between the municipal public policies for urban mobility and the SDG 11.2 are verified by inferences and interpretations of the results obtained.

4 Results

This topic presents a brief contextualization of each of the policies and, considering the points dealt with in the theoretical foundation, the analysis proceeds.

4.1 Green line

Created through Law 13.909 / 2011, the Green Line Consortium Urban Operation establishes urban guidelines for the area of influence of the urban stretch of the former BR-116, which cuts through Curitiba in the northeast - southeast direction. It is a set of interventions and measures coordinated by the municipal government, over 22 km, using financial resources from the sale of certificates for additional construction potential (Law No. 13.909, 2011).

The actions along the Green Line aim to guarantee urban development, preserving environmental quality, through urban and environmental requalification, complementing the road and transport system, giving priority to public transport, drainage, the provision of free spaces for public use with appropriate landscape treatment, bike paths and land tenure regularization of areas of irregular occupation (Law No. 13.909, 2011).

When analyzing the correlations between the proposed Green Line interventions and the parameters established by SDG 11.2, compliance is verified, as shown in Chart 2.

Chart 2 – Interrelation levels - Green Line

Mobility public policy	**Sustainable development goal**			
Actions	Road safety	Accessibility	Sustainability	Public transp.
Conclusion and suitability of road infrastructure (roads, transpositions, bridges)				
Implementation of green areas and free spaces for public use of safe circulation for pedestrians				
Creation of different environmental conditions through afforestation				
Implementation of suitable and compatible urban furniture, such as garbage bins, bus stops, information panels, benches, internet access booths and bike racks				
Implementation of bicycle path sections				
Recovery and expansion of the sewage and drainage network				
Construction of public facilities buildings for the population and municipal administration				
Relocation of vulnerable houses, in risk areas or in preservation areas				
Expansion and improvement of the urban and metropolitan public transport integration system				

Label	**High**	**Medium**	**Low**	**Non-existent**
Interrelation levels				

Source: Law n° 13.909, 2011. Own elaboration.

It is possible to note that the content expressed by the actions of the Green Line seeks an alignment with the sustainability discourse. A high interrelation is observed in the implantation of green areas and free spaces for public use, in the environmental treatment with afforestation, in the implantation of stretches of bicycle path and in the relocation of houses in risk or preservation areas.

Another frequent approach is regarding accessibility. The main propositions that indicate this trend are the conclusion and adequacy of the road infrastructure, the implantation of stretches of bicycle path. The expansion of the transport integration system, the implantation of adequate urban furniture and green areas are of medium relevance for sustainable development with regard to accessibility.

There are also actions directly linked to encouraging the use of public transport, such as the implementation of bus stops and information panels, the construction of public

equipment (such as terminals and stations) and the improvement of the system for integrating urban and metropolitan public transport.

The highest incidence of non-existent levels of interrelation is in the category of road safety. However, the relationship is intensified when referring to “safe circulation for pedestrians” and in the forecast for the implementation of cycle paths. The other actions have an indirect or no relation to the theme.

4.2 Calm area

After the revision of the Curitiba master plan, in 2014, the concepts of traffic calming and the sharing of public space started to be addressed with more emphasis in the municipality. The guidelines contained in the plan aimed at improving the conditions for the movement of pedestrians and cyclists, allowing autonomy and safety to these modes (IPPUC, 2016). As examples of the application of these precepts, the Calm Area project stands out, an intervention focused on the principles of traffic calming.

Still in 2014, a feasibility study for the Calm Area was prepared by the Institute of Research and Urban Planning of Curitiba - IPPUC. The investigations were oriented towards promoting connections in the urban fabric of the central area, reducing the aspects of segregation resulting from the excessive crossing caused by the verified traffic. During the study, the benefited urban dimensions were: preference for pedestrians, rationalization of public transport logistics, promotion of individual and collective transport modes (alternative and non-polluting), enhancement of living areas in public spaces and development of projects using matrix of sustainability (IPPUC, 2014).

Implemented in November 2015, the Calm Area region is located in the city center of Curitiba and comprises a total of three avenues, six alleys, two wide streets, eight lanes, 14 squares, 51 streets, 140 blocks and the Public Walk (Iwamura, 2016). Chart 3 illustrates the interrelationships between the actions of the Calm Area and the categories of analysis.

Chart 3 – Interrelation levels – Calm Area

Mobility public policy	Sustainable development goal			
Actions	Road safety	Accessibility	Sustainability	Public transp.
Intervention and implementation of horizontal and vertical signaling				
Uniformization of the maximum speed of the determined central perimeter				
Intensification of electronic surveillance of speeding and advancement at traffic lights				
Citizen awareness actions on the proposed measures				

Label	High	Medium	Low	Non-existent
Interrelation levels				

Source: IPPUC, 2014. Own elaboration.

There is a high interrelation between all the actions of the Calm Area project with the road safety theme. This converges with the fact that, according to the document analyzed, the general objective of the policy would be to impact this aspect (IPPUC, 2014).

The level of interrelation between the policy and accessibility is, for the most part, medium. This is because the improvement of signage, the uniformity of the maximum speed and the intensification of electronic inspection influence the accessibility of users of non-motorized modes. The propositions are also related to sustainability, mainly through measures that discourage the use of motorized modes.

There is a relationship between the discourse of actions and the incentive to use public transport, but it is less explicit than the others. This relationship is expressed in the development of the use of the individual car within the scope of the project, which may lead users to opt for public transport.

4.3 Green sidewalk

According to IPPUC (2016), based on references already implemented in other countries, proposals for interventions in strategic points within the Calm Area were elaborated, where it was verified by the intense flow of pedestrians and vehicles. The Green Sidewalk project proposes “interventions through paintings, bollards and plant pots, composing a wider and safer area for pedestrians, and increasing the general visibility of the road for vehicles” (IPPUC, 2016, p. 10).

The main objective of the government with the intervention is to seek the humanization of the city, which is even more relevant in a region where it is estimated that

around 700 thousand pedestrians and 330 thousand vehicles circulate per day (Curitiba, 2015). However, some propositions present in the initial studies were not incorporated, such as parklets and biovalets. Considering the actions incorporated, the project proposals are aligned with the Sustainable Development Goals, as shown in Chart 4.

Chart 4 – Interrelation levels – Green Sidewalk

Mobility public policy	**Sustainable development goal**			
Actions	Road safety	Accessibility	Sustainability	Public transp.
Intervention in road geometry through painting				
Lighting improvements				
Rental of pots and plants				
Treatment of crossings of large flow of pedestrians and vehicles				

Label	High	Medium	Low	Non-existent
Interrelation levels				

Source: IPPUC, 2016. Own elaboration.

The content of the propositions converges with the principles of SDG 11.2., with an emphasis on aspects of road safety and accessibility, which is evident in the intervention in the geometry of the roads, in the improvement of lighting and in the treatment of crossings with a large flow of pedestrians and vehicles. The action of "leasing of pots and plants" is highlighted as the one with the lowest level of interrelation with the categories of analysis.

The promotion of the use of public transport and the theme of sustainability are little explored within the propositions. In this way, it is possible to verify that the project has low levels of interrelation with these categories.

4.4 Bicycle structure plan

For IPPUC (2018), the definition of the municipal cycle network and its supporting elements, needs to be oriented towards rational, adequate and safe structures for the use of bicycles in the urban network, so that they favor both the connection between urban equipment regarding interaction with other modes of transport.

The design of the system starts from the structural axes and the Green Line, which are structuring of the city's road system. According to IPPUC (2018), the current network presents several points with discontinuity, where they must receive treatment to act as "connection ties" between the existing system and the projected system. With the proposed expansion, the cycle network would go from 208.5 km - 4.3% in relation to the total street in the city - to 400.6 km - 8.3% in relation to the total street in the city (IPPUC, 2018).

The search for intermodality takes place through the establishment of the highest possible level of synergy with the Integrated Transport Network (RIT), which is found in the trinary system of the structural sectors, and by the provision of public bicycles at the boarding stations (IPPUC, 2018). The synthesis of the correlations observed between the content of the propositions of the bicycle structure plan and the selected analysis categories, according to Chart 6, are:

Chart 6 – Interrelation levels – Cyclomobility

Mobility public policy	**Sustainable development goal**			
Actions	Road safety	Accessibility	Sustainability	Public transp.
Defining competences for managing the cycling network				
Adoption of bicycle structure standards (dimensioning, models, signage, furniture)				
Increase and closure of the cycle network				
Provision of support equipment for cyclists and adaptation of urban furniture				
Promotion of educational and awareness programs for pedestrians, cyclists and drivers				
Promotion of cycling events				
Public bicycles available at transport stations				

Label	High	Medium	Low	Non-existent
Interrelation levels				

Source: IPPUC, 2018. Own elaboration.

Accessibility appears as the category with the highest level of interrelationships with the analyzed policy. In addition, sustainability also has correlations with the content, with emphasis on the actions of “increasing and closing the cycle network” and “Making public bicycles available at transport stations”.

Only the adoption of standards for the cycle path structure and the promotion of educational and awareness programs for pedestrians, cyclists and drivers can be considered directly related to road safety. It appears that, indirectly, the increase in mesh also connects with the security aspect.

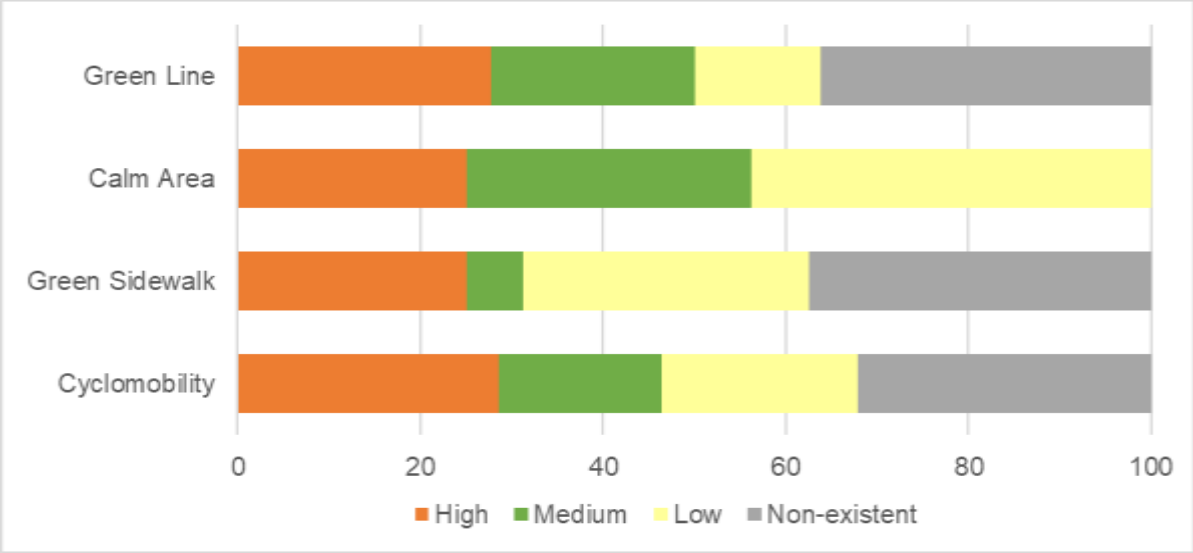
The only proposition that has a direct relationship with public transport is the availability of public bicycles at departure stations, the others have an indirect or no relationship. Also noteworthy is the action of “promoting cycling events” as the one with the lowest level of interrelation with the categories of analysis.

Therefore, the trend revealed by the analysis is in alignment with the accessibility discourse, followed by sustainability and the least addressed topics were road safety and public transport.

4.5 Discussion

Based on the results analysis, it was found that, to a lesser or greater level, there is a correlation between the content of urban mobility policies developed in Curitiba and Sustainable Development Objective 11 (Sustainable Cities and Communities). Figure 4 illustrates, from the total actions of each of the policies, the percentage of high, low, and nonexistent relationship levels incidence.

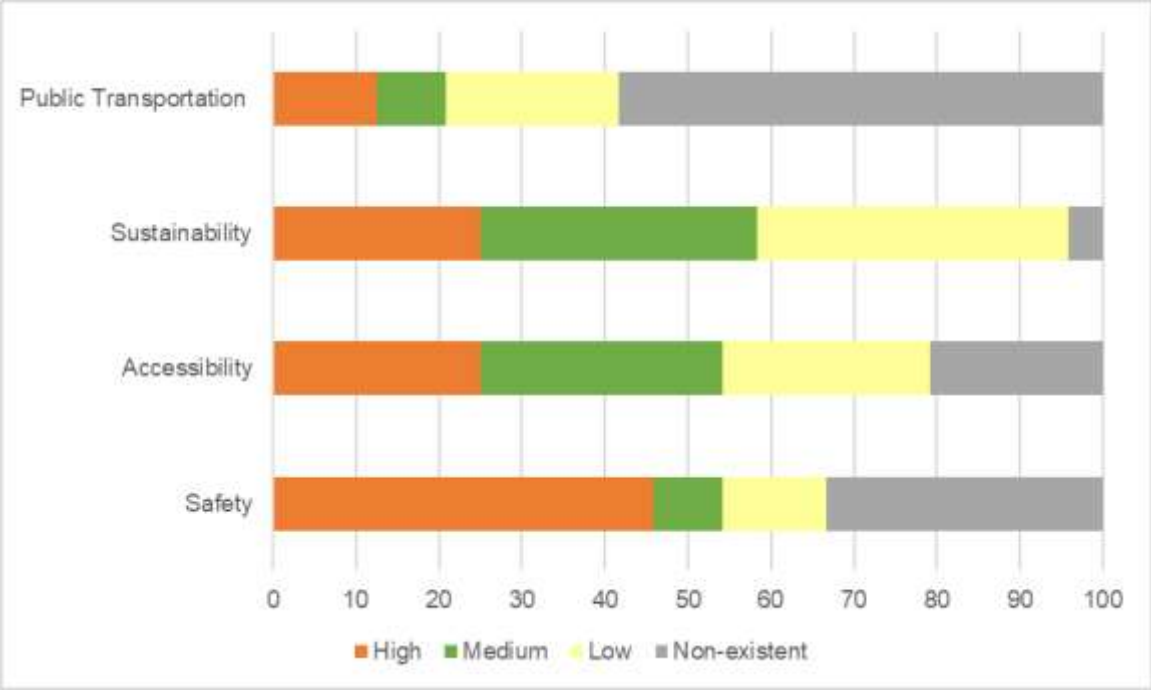
Figure 4 – Levels of interrelationship by policy.



Source: Own elaboration.

As shown in Figure 5, the highest levels of interrelation were with the categories of road safety and sustainability, while the lowest were accessibility and public transport.

Figure 5 – Levels of interrelation by category of analysis.



Source: Own elaboration.

It should be noted that the lack of a public transport approach within the scope of municipal policies is harmful to sustainable development. In Curitiba, according to Lourenço, Bosco Junior and Bernardinis (2019), despite the axes of the trinary system and the implementation of exclusive lanes, which aim to encourage public transport, there is a noticeable gradual loss of the number of passengers on buses. In the same vein, Vasconcellos (2019), states that, despite the discourse, Curitiba has not overcome the exclusionary mobility policies historically implemented in Brazil, supported by the use of the car and poor treatment of the use of public transport.

On the other hand, it is possible to infer that the global agendas exert pressure and have an impact on local policies in the city of Curitiba. In addition, when civil society initiatives - such as the Curitiba 2035 project - set the objective of adapting local policies to meet the SDG 11, the importance of the theme is emphasized as a demand from other actors involved in the dynamics of territorial management, not international organizations only.

The results are in line with the process called by Menezes and Máximo (2019) as “international standardization of activities linked to cities”. The established view that local governments and cities are not targets for sustainable development policies, but vehicles for possible transformations and places where the answers to global problems will be thought is clear in the commitments surrounding the Sustainable Development Goals. It can be seen that there is a progressive international standardization of activities related to cities, which shows the importance that they have reached in the agendas and in the recognition of urban

centers as actors of international and local politics.

Despite the advances, it is worth noting that, in the same line as Cavenaghi (2015), it is possible to see how one of the biggest problems found in the content of the SDGs is in the goals that are sometimes very specific, as an indicator to be followed, sometimes very broad, a statement of a generic aspiration, which sometimes makes it difficult to establish interrelationships with local actions.

On the other hand, the urban crisis faced in mobility and the growing production of public policies focused on the issue suggest how analyzes related to the theme are increasingly urgent. In this sense, the present study is part of the effort to establish categories of analysis, based on the parameters established by the goals present in the SDGs, as guiding elements in a necessary process of measuring and evaluating public policies and their dynamics.

5 Final considerations

The European Platform for Mobility Management (EPOMM, 2013) reveals that the authorities 'concern about making city mobility more sustainable has gradually increased and that this is essentially due to the increase in citizens' interest in improving the quality of life. In this perspective, it is noted how road safety, accessibility, sustainability and the incentive to use public transport are important to provide access to goods and services in an efficient way for all inhabitants, enhancing the quality of life of the current population without harming future generations.

The results presented showed that, in terms of discourse, the main public policies on urban mobility in Curitiba are aligned with the guiding elements of the objectives of sustainable development, to a lesser or greater level. According to the results of the investigation, the highest levels of interrelation concern road safety and sustainability. It was also demonstrated that public transport has the lowest levels of interrelation, followed by accessibility.

It is worth noting that no matter how much the identified content aims to contribute to sustainable urban development, each of the actions is likely to present problems of scope and effectiveness, as, as Machado and Piccinini (2018) point out, at the same time that it can manifest itself as a promoter of development, they can also be responsible for negative externalities, since the conditions of mobility directly affect different dimensions.

As indicated by Souza (2008), the main limitations of this type of approach refer to the fact that the classification processes generate a simplification, which can induce a reductionist reading. Thus, the effort to translate into an analytical matrix and measure the approach of a complex discourse, will necessarily miss aspects of the phenomena under

analysis. It is noteworthy that the research did not intend to establish statistical correlations, however, it aimed to present qualitative aspects and an overview of the items researched, as well as to point out signs and trends that may even guide new studies.

Finally, a continuous process of measuring and evaluating public policies is necessary. In this perspective, the qualitative aspects and the panorama of the researched items, pointing out signs and trends that may still guide new studies.

References

Albuquerque, A. (2007). *A questão habitacional em Curitiba: o enigma da "cidade modelo".* Dissertação mestrado em Arquitetura e Urbanismo, Universidade de São Paulo, São Paulo, SP, Brasil. Disponível: https://teses.usp.br/teses/disponiveis///16/16137/tde-20052010-092803/pt-br.php.

Alvarez, D. A. C. (2016). O automóvel nas cidades e o planejamento deteriorado. *Revista de Geografia e Interdisciplinar Inter espaço*, v. 2, n. 7, p. 45-60.

Araújo, M. R. M., Oliveira, J. M., Jesus, M. S., Sá. N. R., Santos, P. A. C., & Lima, T.C. (2011). Transporte Público Coletivo: discutindo acessibilidade, mobilidade e qualidade de vida. *Psicologia & Sociedade*, v. 23, n. 3, p. 574–582.

Balbim, R. (2016). Mobilidade: uma abordagem sistêmica. In: Balbim, R.; Krause, C.; Linke, C. C. (Orgs.). *Cidade em movimento*. Mobilidades e interações no desenvolvimento urbano. Brasília: IPEA, ITDP.

Bardin, L. (1977). Análise de conteúdo. Lisboa: Edições 70.

Bogdan, R. S., & Biken, S. (2003) *Investigação qualitativa em educação: uma introdução à teoria e aos métodos*. (12ª ed.). Porto: Porto.

Campos, V. B. G. (2006) Uma visão da mobilidade urbana sustentável. *Revista dos Transportes Públicos*, v. 2, p. 99-106.

Carvalho, C. H. R. (2016). *Mobilidade Urbana Sustentável: Conceitos, Tendências e Reflexões* [Texto para discussão, n° 2194]. Brasília, DF: IPEA.

Cavenaghi, S. (2015). *Data revolution: Is Latin America prepared and ready to engage?* Program of the Annual Meeting Population Association of America, San Diego, USA. Disponível: https://paa2015.princeton.edu/abstracts/153763.

Comissão Mundial Sobre Meio Ambiente e Desenvolvimento. (1992). *Nosso futuro comum*. Rio de Janeiro: Fundação Getúlio Vargas.

Coimbra Neto, R. M., Mantovaneli Júnior, O., & Silva, J. M. M. (2015). Indicadores de desenvolvimento em agendas globais: a contribuição dos ODM e ODS na construção da governança para o desenvolvimento sustentável. *Anais do Seminário Internacional sobre Desenvolvimento Regional.* Santa Cruz do Sul, RS, Brasil, 8.

Costa, M. S. (2008). *Um Índice de Mobilidade Urbana Sustentável.* Tese de Doutorado em Engenharia Civil, Universidade de São Paulo, São Carlos, SP, Brasil.

Curitiba (2017). Projeto Curitiba 2035. Curitiba: Senai/PR. Disponível: file:///C:/Users/isabe/Desktop/Curitiba_2035.pdf.

Curitiba. (2015) *Conhecendo melhor a região da Área Calma* - Prefeitura de Curitiba. Recuperado em 14 de junho, 2019, de https://www.curitiba.pr.gov.br/noticias/conheca-melhor-a-regiao-da-area-calma/37604.

Ferraz, A. C. P. C., Raia Junior, A. A., Bezerra, B. S., Bastos, J. T., & Silva, K. C. R. (2012). *Segurança Viária*. São Carlos, SP: Suprema Gráfica e Editora.

Gehl, J. (2013). Cidades para pessoas. São Paulo: Pespectiva.

Gil, A. C. (2008). Métodos e técnicas de pesquisa social / Antonio Carlos Gil. - 6. ed. - São Paulo: Atlas.

Godard, O. (2000). A Gestão Integrada dos Recursos Naturais e do Meio Ambiente: conceitos, instituições e desafios de legitimação. In: Vieira, P.; Weber, J. (Orgs.). *Gestão de Recursos Naturais Renováveis e Desenvolvimento.* São Paulo: Cotez Editora.

Gorz, A. (2005). A ideologia social do Automóvel. In: Ludd, N. (Orgs.). Apocalipse motorizado: a tirania do automóvel em um planeta poluído. São Paulo: Conrad Editora do Brasil.

Gudmundsson, H. (2004). Sustainable Transport and Performance Indicators. In Hester, R.E. & Harrison, R.M. (eds), *Transport and the Environment* - Issues in Environmental Science and Technology (20, pp. 35-63). Cambridge: UK

Instituto Brasileiro de Administração Municipal; Ministério da Ciência, Tecnologia e Inovação (2016). Políticas públicas para cidades sustentáveis: integração intersetorial, federativa e territorial. In Alberto Lopes (Coord.). – Rio de Janeiro: IBAM, MCTI, 180p.

Instituto de Pesquisa e Planejamento Urbano de Curitiba. (2014). Caderno Área Calma – Estudo de Viabilidade. Recuperado em 14 de junho, 2020, de http://www.ippuc.org.br/visualizar.php?doc=http://admsite2013.ippuc.org.br/-arquivos/documentos/D327/D327_015_BR.pdf.

Instituto de Pesquisa e Planejamento Urbano de Curitiba. (2016). Caderno Calçadas Verdes – Traffic Calming. Recuperado em 14 de junho, 2020, de http://www.ippuc.org.br/visualizar.php?doc=http://admsite2013.ippuc.org.br/-arquivos/documentos/D327/D327_016_BR.pdf.

Instituto de Pesquisa e Planejamento Urbano de Curitiba. (2018). Plano de Estrutura Cicloviária. Recuperado em 20 de julho, 2020, de http://ippuc.org.br/visualizar.php?doc=http://admsite2013.ippuc.org.br/arquivos/documentos/D327/D327_029_BR.pdf.

Iwamura, C. K. (2016). *Avaliação do impacto na segurança viária da área calma de Curitiba*. Trabalho de Conclusão de Curso de Engenharia Civil da Universidade Tecnológica Federal do Paraná, Curitiba, PR, Brasil.

Jacobs, J. (2009). *Morte e vida de grandes cidades*. São Paulo: Ed. WMF Martins Fontes.

Lei nº 10.098, de 19 de dezembro de 2000. (2000). Estabelece normas gerais e critérios básicos para a promoção da acessibilidade das pessoas portadoras de deficiência ou com mobilidade reduzida, e dá outras providências. Coletânea de Legislação e Jurisprudência,

Brasília/DF.

Lei n° 13.909, de 19 de dezembro de 2011. (2011). Aprova a Operação Urbana Consorciada Linha Verde – OUC-LV. Diário Oficial do Município. Curitiba, PR.

Levy, J. (2000). Os novos espaços da mobilidade. (Haesbaert, R; Souchaud, S; Trad.). In: Bonnet, M; Desjeux, D. *Les Territoires de la Mobilité*. Paris: Presses Universitaires de France.

Lourenço, G. H., Bosco Junior, D., & Bernardinis, M. A. P. (2019). Respostas à política nacional de mobilidade urbana: Comparativo entre capitais dos incentivos ao transporte público e à bicicleta. *Revista Transportes*, n. 2, vol 27, p. 1-15.

Machado, L., & Piccinini, L. S. (2018). Os desafios para a efetividade da implementação dos planos de mobilidade urbana: uma revisão sistemática. *Revista Brasileira de Gestão Urbana*, n. 10(1), p. 72-94, jan./abr.

Menezes, H. Z. & Máximo, L. M. São as cidades sub-representadas na Política Internacional? Uma análise da participação das cidades na Habitat III. Revista de Direito à Cidade, v. 11, N. 4., p. 411- 439.

Ministério das Cidades. (2006). *Construindo a cidade acessível.* Brasil Acessível – Programa Brasileiro de Acessibilidade Urbana. Caderno 2, 1° ed., Brasília/DF.

Ministério das Cidades. (2016). *Indicadores de efetividade da Política Nacional de Mobilidade Urbana:* Relatório de atividades e resultados do grupo de trabalho para definição de indicadores para monitoramento e avaliação da efetividade da Política Nacional de Mobilidade Urbana. Portaria do Ministério das Cidades nº 536, de 9 de outubro de 2015.

Motta, R. A., Silva, P. C. M., & Jacques, M. A. P. (2011). Análise de indicadores de segurança viária nos níveis local, estadual, nacional e internacional. *Revista dos Transportes Públicos – ANTP*, 33 (2° quadrimestre), p. 35-50.

Muller. P. (2000). L'analyse Cognitive des Politiques Publiques: vers une sociologie politique de l'action publique. *Revue Française de Science Politique,* Paris, v. 50, n. 2, p. 189-208.

Organização das Nações Unidas. (2012). Ban Ki-moon afirma que problemas de rápida urbanização terão prioridade na agenda da Rio+20*.* Recuperado em 24 de julho, 2020, de https://nacoesunidas.org/ban-ki-moon-afirma-que-problemas-de-rapida-urbanizacao-terao-prioridade-na-agenda-da-rio20/.

Organização das Nações Unidas. (2015). Transformando nosso mundo: A agenda 2030 para o desenvolvimento sustentável. Recuperado em 26 de julho, 2020, de https://nacoesunidas.org/wp-content/uploads/2015/10/agenda2030-pt-br.pdf.

Ostroff, E. (2001). Universal Design: The New Paradigm. In: Universal Design Handbook. Wolfgang Preiser and Elaine Ostroff. McGraw-Hill. Chapter 1. P. 1-12.

Pimentel, R; Sander, J. A., & Iubel, S; C. (2019). Indicadores de Sustentabilidade na Gestão Pública Municipal: o caso do plano de governo da prefeitura municipal de Curitiba. Seminário Nacional Sociologia & Política – América Latina hoje: Rupturas e Continuidades – GT 12 – Sociologia e a cidade. UFPR.

Peters, B. G. (1986). *American Public Policy.* Chatham, N.J.: Chatham House.

Plataforma Europeia para Gestão da Mobilidade - EPOMM. (2013). *Mobility Management*: The Smart Way to Sustainable Mobility in European Countries, Regions and Cities: European Platform on Mobility Management.

Rabay, Ligia, & Andrade, Nilton Pereira de. (2019). O uso de diferentes valores de tarifa como estratégia de transferência de demanda em sistemas de transporte público urbano. urbe. *Revista Brasileira de Gestão Urbana*, 11, e20180024. Epub February 21, 2019.

Ramis, J. E. & Santos, E. A. (2012) Uso de automóveis e o caos urbano – considerações sobre o planejamento de transportes das grandes cidades. *Journal of Transport Literature*, vol. 6, n. 4, pp. 164-177.

Soares, J. A. S., Andrade, M. Z. S. S., Medeiros Junior, J. F., & Queiroz, F. M. (2017). Mobilidade urbana sustentável: Fatores determinantes da escolha pelo transporte alternativo na percepção dos usuários que fazem a rota Campina Grande – PB /Alagoa Nova- PB. *Rev. Gest. Ambient. Sustentabilidade- GeAS*, 6(2), 31-41.

Souza, M. L. (2008). Mudar a cidade: uma introdução crítica ao planejamento e à gestão urbanos. 5. Ed. Rio de Janeiro: Bertrand Brasil.

Stroher, L. E. M. (2014) Trajetória do Planejamento Urbano na Curitiba-Metrópole: O Impasse da Reforma Urbana na “cidade-modelo”. XIII Seminário da Red Iberoamericana de Investigadores sobre Globalizacion y Territorio – Salvador.

Vasconcellos, E. A. (1999). *Circular é preciso, viver não é preciso*: a história do trânsito na cidade de São Paulo. São Paulo: Annablume.

Vasconcellos, E. A. (2012). *Mobilidade Urbana e Cidadania.* Rio de Janeiro: SENAC Nacional.

Vasconcellos, E. A. (2019). Mobilidade urbana em Curitiba – os limites do sonho. *Revista dos Transportes Públicos* – ANTP, n° 151, 1° quadrimestres, p. 7-24.