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SUSTAINABLE URBAN MOBILITY IN THE AMAZON: CASE STUDY IN A RIVERSIDE CITY

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Maria das Graças Ferraz Bezerra²

ABSTRACT

Objective: The objective of this study is to analyze sustainable urban mobility based on sustainability indicators used in Brazil, in order to identify inconsistencies in the evaluations conducted in cities with cultural particularities.

Theoretical Framework: The official repository documents of the United Nations and the indicators created by the Sustainable Cities Institute for the Sustainability Index of Brazilian cities are highlighted.

Method: The methodology adopted in this research comprises a literature review to discuss sustainable development and urban sustainability indicators, and data collection carried out in loco through a checklist on road infrastructure and active travel modes in an Amazonian city.

Results and Discussion: The results revealed that the creation of a national sustainability ranking in a country of continental dimensions like Brazil can present conflicts between the technical reading of census data and the local interpretation of the Amazonian context, and how these incompatible approaches can lead to a cultural mischaracterization of traditional communities.

Research Implications: This article expresses concern about how the repercussions of news related to the national ranking can pressure communities into cultural modifications that would insert them into the sustainability discourse.

Originality/Value: This study contributes to the understanding of how the use of technical data on sustainability can encourage the stigmatization, especially of cities that preserve Amazonian traditions of intangible value, distinct from the large urban centers of the Brazilian South-Central axis.

Keywords: Sustainable Development, Sustainability Indicators, Urban Sustainability, Sustainability in the Amazon, Riverside Cities.

A MOBILIDADE URBANA SUSTENTÁVEL NA AMAZÔNIA: ESTUDO DE CASO EM UMA CIDADE RIBEIRINHA

RESUMO

Objetivo: O objetivo deste estudo é analisar a mobilidade urbana sustentável a partir de indicadores de sustentabilidade usados no Brasil, a fim de identificar inconsistências nas avaliações feitas em cidades com particularidades culturais.

Referencial Teórico: Destacam-se os documentos do repositório oficial das Nações Unidas e os indicadores criados pelo Instituto Cidades Sustentáveis para o Índice de Sustentabilidade das cidades do Brasil.

Método: A metodologia adotada nesta pesquisa compreende revisão da literatura para discussão sobre desenvolvimento sustentável e indicadores de sustentabilidade urbanos, e a coleta de dados feita in loco por meio de check list sobre a infraestrutura viária e meios de deslocamento ativo numa cidade amazônica.

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Resultados e Discussão: Os resultados revelaram que a criação de um ranking nacional de sustentabilidade em um país de dimensão continental como o Brasil pode apresentar conflitos entre a leitura técnica de dados censitários e a interpretação local do contexto amazônico, e sobre como essas abordagens incompatíveis podem provocar uma descaracterização cultural de comunidades tradicionais.

Implicações da Pesquisa: Esse artigo mostra preocupação sobre como a repercussão das notícias vinculadas ao ranqueamento nacional podem pressionar comunidades para que ocorram modificações culturais que as insiram no discurso da sustentabilidade.

Originalidade/Valor: Este estudo contribui para a compreensão sobre como o uso de dados técnicos sobre sustentabilidade podem incentivar a estigmatização especialmente de cidades que preservam tradições amazônicas de valor imaterial, distintas dos grandes centros urbanos do eixo centro-sul brasileiro.

Palavras-chave: Desenvolvimento Sustentável, Indicadores de Sustentabilidade, Sustentabilidade Urbana, Sustentabilidade na Amazônia, Cidades Ribeirinhas.

MOVILIDAD URBANA SOSTENIBLE EN LA AMAZONIA: ESTUDIO DE CASO EN UNA CIUDAD RIBEREÑA

RESUMEN

Objetivo: El objetivo de este estudio es analizar la movilidad urbana sostenible a partir de indicadores de sostenibilidad utilizados en Brasil, con el fin de identificar inconsistencias en las evaluaciones realizadas en ciudades con particularidades culturales.

Marco Teórico: Se destacan los documentos del repositorio oficial de las Naciones Unidas y los indicadores creados por el Instituto Ciudades Sustentáveis (Instituto Ciudades Sostenibles) para el Índice de Sostenibilidad de las ciudades de Brasil.

Método: La metodología adoptada en esta investigación comprende una revisión de la literatura para discutir el desarrollo sostenible y los indicadores de sostenibilidad urbanos, y la recopilación de datos realizada in situ (in loco) por medio de una lista de verificación (check list) sobre la infraestructura vial y los medios de desplazamiento activo en una ciudad amazónica.

Resultados y Discusión: Los resultados revelaron que la creación de un ranking nacional de sostenibilidad en un país de dimensión continental como Brasil puede presentar conflictos entre la lectura técnica de datos censales y la interpretación local del contexto amazónico, y sobre cómo estos enfoques incompatibles pueden provocar una descaracterización cultural de comunidades tradicionales.

Implicaciones de la Investigación: Este artículo muestra preocupación sobre cómo la repercusión de las noticias vinculadas a la clasificación nacional pueden presionar a las comunidades para que se produzcan modificaciones culturales que las inserten en el discurso de la sostenibilidad.

Originalidad/Valor: Este estudio contribuye a la comprensión sobre cómo el uso de datos técnicos sobre sostenibilidad puede incentivar la estigmatización, especialmente de ciudades que preservan tradiciones amazónicas de valor inmaterial, distintas de los grandes centros urbanos del eje centro-sur brasileño.

Palabras clave: Desarrollo Sostenible, Indicadores de Sostenibilidad, Sostenibilidad Urbana, Sostenibilidad en la Amazonía, Ciudades Ribereñas.

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1 INTRODUCTION

Social conditions can strengthen the foundations for urban development, especially in cities where communities have ethnic and cultural characteristics inherent to their ancestry. One example is traditional peoples such as riverine communities, which occupy riverbanks and floodplains throughout the Brazilian Amazon. To discuss the Amazon, it is necessary to understand the daily routine and way of life of these peoples, and how the identity of these communities contributes to a sense of local belonging, collective identity, and local development.

This article reflects on what is expected of the sustainability of Amazonian cities, using the example of mobility conditions in a riverine community. The main objective of this work is not a descriptive analysis of a case study, but rather to analyse sustainable urban mobility by constructing a critical reflection on the ways of assessing sustainability in Brazil, especially when evaluating a city that preserves Amazonian traditions in the use of space, with an urban reality very different from the large urban centres of the central-southern axis of Brazil.

The theoretical basis of the article presents the general definition, the historical construction of the concept of sustainability, and definitions of sustainable urban mobility. However, to counterbalance the technical view, we will discuss some issues regarding how traditional community practices interact with the concept of sustainable development and, above all, how anti-colonial thinking can contradict it when the discourse is used from a civilisational perspective. The strategy used was to establish a comparison between the sustainable development goals described by the United Nations (UN) and the sustainability indicators developed by the Sustainable Cities Institute (ICS), using SDG 11 as a reference, which deals with “Making cities inclusive, safe, resilient and sustainable” (United Nations, 2015).

The brief report on the case study describes urban conditions of displacement in the city of Afuá, located in the state of Pará, where an on-site analysis was carried out on the urban space in conjunction with the indicators disclosed in the ranking of the Sustainable Development Index of Brazilian Cities (IDSC-Br). This assessment aimed to track potential conflicts between the sustainability performance of some Amazonian cities, considering especially the social impacts that conceptual frameworks can generate in these communities.

Thus, this article aims to emphasise the need to give space to Amazonian social, cultural and traditional conditions in national analyses, so that socio-biodiversity ceases to be a



supporting factor in technical visions and can be incorporated as one of the main conditions for urban sustainability.

2 CONCEPTS OF SUSTAINABLE DEVELOPMENT

The concept of sustainable development aims at a balanced and prosperous future, recognising that resources are finite and need to be managed. For this to occur, the so-called sustainability tripod, first mentioned by Elkington (1997), is normally used, in which the economy, society and the environment become integrated elements, with communities adopting practices to manage natural resources and reduce negative environmental impact, while promoting economic growth and social inclusion for the whole of society, including the most vulnerable.

An important international milestone in the debate on the topic was the publication of the Brundtland Report in 1987, which launched the term "sustainable development" worldwide and focused on the control of disorderly urbanisation as one of the main discussions (World Commission on Environment and Development [WCED], 1991). Brazil introduced concern for the issue in Article 225 of the 1988 Federal Constitution, with regulations for the creation of socio-environmental policies affirming that the right to an ecologically balanced environment belongs to everyone, as does the duty to defend and preserve it (Brazil, 1988).

During Rio-92, Agenda 21 Global was signed - one of the pioneering documents to emphasise requirements on socio-biodiversity, such as the relationship between cultural ties, natural resources and life support systems; in addition to proposing the reduction of vulnerabilities of specific population groups, focusing on local particularities and promoting a more sustainable path (United Nations Conference on Environment and Development [UNCED], 1995). In the 2000s, the Millennium Declaration described eight Millennium Development Goals (MDGs), which emphasised a global discussion on essentially social factors linked to cultural, economic and public health issues (United Nations, 2000).

Shortly thereafter, the Brazilian Agenda 21 (Ministry of the Environment, 2012) included the publication of the Agenda 21 and Sustainability Debate Notebooks series, which sought to guide sustainable development in Brazil, including the notebook "A New Agenda for the Amazon," exclusively dedicated to the region - the first time that the creation of local sustainability indicators was mentioned in an official document (Ministry of the Environment, 2003).



In 2015, faced with a global scenario that continued to highlight the fragility of sustainability in cities and society, the UN launched a document called "Transforming Our World: The 2030 Agenda for Sustainable Development", which served as a global call for everyone to work towards ending poverty, protecting the environment and climate, and ensuring that everyone, everywhere, can live in peace and prosperity. The document contains 17 Sustainable Development Goals, the SDGs, with a total of 169 targets considered by the organisation to be integrated and indivisible elements (United Nations, 2015).

Since the plan was announced, several countries and institutions have invested efforts to monitor SDG compliance and sustainability progress. A Brazilian initiative came from the Sustainable Cities Institute (ICS), which presented an interesting proposal from a technical point of view to monitor the UN targets at the national level. The institute proposed ranking the country's 5,570 cities, creating a metric called the Sustainable Cities Development Index (IDSC-Br). This would be a way of quantifying, based on reliable numerical indicators, the achievement and fulfilment of the SDGs and facilitating the creation of public policy management tools for monitoring municipal sustainability goals (Instituto Cidades Sustentáveis [ICS], 2025).

It should be noted that since the concept first emerged, the goal of sustainable development has been to enjoy benefits through good environmental practices and the maintenance of biodiversity. Although social debates have been inserted at various historical moments, there is still a very strong focus on the environment as a great potential for future sustenance if it is spared in the present. In this sense, authors attempt to reframe this Western view of sustainable development, stating that the future will only be promising if the interpretation of sustainability values ancestral knowledge.

For Krenak (2019), for example, anti-colonial criticism is quite forceful, treating the concept as a trap or a harmful discourse, with the potential to continue predatory practices. Thus, examples of alternatives for measuring sustainability established after Agenda 2030 may favour an even more controlling discourse of the landscape by humans - and this may be the reason why, throughout history, cities have distanced themselves so much from the natural environment in order to appear modernised.



2.1 URBAN MOBILITY: IS THERE A DIALOGUE BETWEEN TECHNOLOGY AND CULTURE?

Due to the advance of urbanisation, discussions about the right to the city in an environment shaped to meet collective social needs have intensified, aiming at a meaningful appropriation of space and the full use of the right to urban life (Lefèbvre, 2011). Thus, one of the most primitive human needs linked to the right to the city is movement – a practice that allows people to experience different places, goods and routine activities, such as getting to their homes, work, leisure and shopping. There are several factors that interfere with the sustainability of movement, such as the size of the urban space, the complexity of actions and services that take place there on a daily basis, and social conditions such as age group, gender, income, ethnicity, traditions, and disabilities.

In this sense, the concept of sustainable urban mobility emerges, which discusses an unrestricted condition of travel for citizens, encompassing the three pillars of sustainability. The definition is linked to a set of strategies that seek to balance human travel needs and the protection of the natural environment, in order to offer services and environments conducive to human-city demands in a regular, stable, and satisfactory manner, reducing the expected negative per capita impacts on the environment (Ministry of Cities, 2006).

Sustainability in travel seeks to strike a balance between the ecosystem, human health and the planet. It establishes a combination of incentives for the development of non-polluting, safe and intelligent transport and, in the same way, provides for the available and compatible supply of goods and services to meet community demands in a stable, regular and environmentally friendly manner (Carvalho, 2016). In Brazil, the Ministry of Cities defined the concept as a set of transport, circulation and urban development policies that aim to provide "broad and democratic access to urban space by prioritising non-motorised and collective modes of transport in an effective manner that does not generate spatial segregation and is socially inclusive and ecologically sustainable" (Ministry of Cities, 2006, p.13).

For the Institute for Transportation and Development Policy, sustainable urban mobility should foster balanced, inclusive, and environmentally conscious communities. Although the institute comments on the reduction in distances and daily travel times, it recognises the fundamental need for urban planning that integrates transport, "highlighting the central role of its primary element: people," promoting greater proximity between individuals and their destinations and activities (Institute for Transportation and Development Policy [ITDP], 2017). Thus, to highlight the importance of people in defining truly sustainable mobility, it is essential



to observe whether individuals feel comfortable and safe, especially during slow travel, and whether they are encouraged to do so.

This perception goes beyond physical conditions, such as thermal and visual comfort and the quality of urban infrastructure. It also involves social and psychological conditions that make the community feel part of the space. It is crucial to question whether already vulnerable groups are able to move autonomously in this environment, or whether the lack of safety makes them even more exposed when alone. However, in many approaches, the vulnerable groups are always the same: women, the elderly, and children. Ethnic and cultural issues are still rarely discussed as a form of autonomy, of making individuals recognise that this space is also for them and includes them.

It is also important to understand how infrastructure geared towards human diversity, whether due to individual, ethnic or social conditions, affects movement, and how urban planning rules and regulations should be interpreted and applied in the urban environment. Thus, it should be noted that sustainable urban mobility is not limited to a specific policy, but rather a set of urban policies and regulations, whose main purpose is to promote easy, safe travel with equal conditions for all users. Failure to comply with regulatory guidelines can create a barrier for various groups, restricting sustainable urban mobility and, consequently, the right discussed in this article: the right to come and go.

Using SDG 11 as a reference, which is subdivided into ten targets that seek to achieve universal access to safe, accessible and green urban spaces, particularly for the most vulnerable, for the United Nations (2015) a city with sustainable mobility is one that can guarantee access to sustainability with inclusive services and urbanisation, which are essential elements for the proper use of public spaces; one that manages to provide everyone with access to safe, sustainable and accessible transport systems; one that reduces pollution and negative environmental impacts; and one that includes the whole of society, in an equitable and accessible manner, in its green spaces for public interaction.

However, with regard to SDG 11, the Sustainable Cities Institute uses only two metrics related to mobility, which are the percentage of the low-income population with a commute time to work of more than one hour and the number of traffic deaths.

There is a significant gap between the ICS's limited indicators and the goals described by the UN, which is likely due to the way the institute measured the data and justified on its official website (ICS, 2025): through information released by Brazilian census and statistical research institutes, which is sometimes incomplete and difficult to compute due to the country's continental dimensions and the complexities involved in accessing some communities.



3 METHODOLOGY

The methodology used in this article was based on a review of the literature on the conceptualisation of sustainable development and the use of indicators, on the concept and application of sustainable urban mobility, and on the use of a checklist for on-site research in the case study city.

The research sought to elucidate recurring concepts and ideas in the manuscript for critical analysis of the concept of sustainable development, especially in urban areas, using as a basis the definitions made at the most significant events on the environment organised by the United Nations up to 2015. The search for information was carried out in the repository published by the United Nations on its official websites, with a particular focus on Agenda 2030. The keywords used for this research were "sustainable development," "urban area," "urbanisation," " " "human settlements," "city sustainability," "sustainable cities," and "sustainable urban development."

The aim was to understand how sustainable development indicators are used in the assessment of urban sustainability, to identify the main sustainable development indicators applied in cities and to understand which methodologies are used by national institutions to calculate these indicators. Based on SDG 11, established by the UN, the publication of the IDSC-Br, created by the Sustainable Cities Institute, was evaluated.

A summary was made of the Brazilian Amazonian urbanisation process, its territorialisation and urban-regional development to contextualise the case study, based on historical information focusing on riverside cities. With this, the case study was conducted with an on-site visit to the municipality of Afuá, Pará, to collect technical urban data using a checklist on road infrastructure and active modes of transport used in the region. Thus, the investigation of conflicts was carried out by superimposing the information collected on site on the IDSC-Br sustainability indicators.

4 RESULTS AND DISCUSSIONS

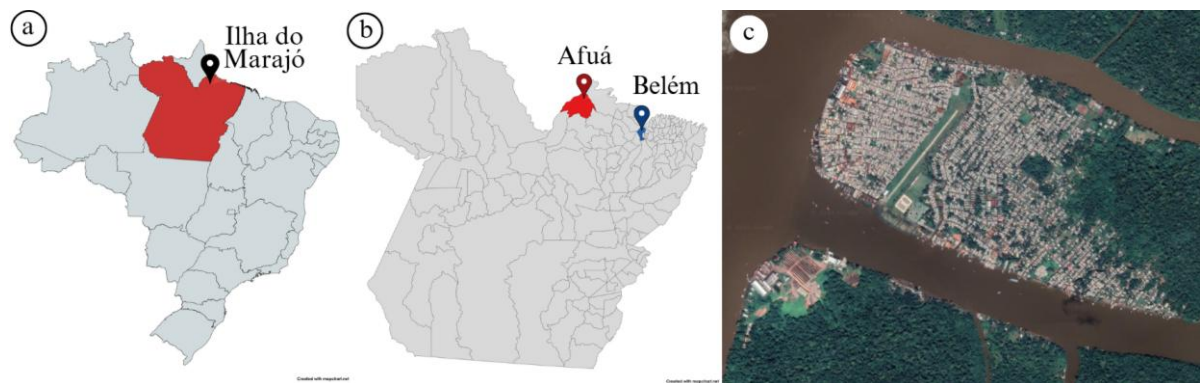
Planning how travel occurs within cities is a way to fulfil one of the social functions of urbanisation. However, fulfilling such a subjective function as a social one based strictly on numbers can lead to a distorted view of urban life in some communities, as is the case with the ranking of sustainable cities in Brazil, which is based solely on the materiality of the data and not on the immateriality of the cultural heritage involved in the construction of these cities.



The case study was conducted in a riverside city, with a view to demonstrating how ancestry can outline new paths to sustainability through the ancient relationship between the community and the territory. Afuá is a municipality located in the northwestern region of Marajó Island, in the state of Pará. According to the 2022 Census, Afuá has a population of 37,765 people and a population density of 4.53 inhabitants per km² - a small city with a predominantly extractive character (Brazilian Institute of Geography and Statistics [IBGE], 2023). It was founded in 1845 in a geographically isolated location, which was considered suitable for transit in the Amazon estuary, and with a population composed of direct descendants of indigenous peoples, rubber tappers, and traders who came to the region in search of rubber (Costa, 2020), in a typically riverside urbanisation process (Becker, 2013).

Figure 1

Location of Afuá in Brazil and in the state of Pará.



Source: a. b. Adapted from MapChart; c. Google Earth (2024).

According to Becker (1995, 2013), it is essential to understand the riverside cities in this region not as isolated enclaves or untouched areas, but as spaces connecting the forest and urbanisation, as highlighted by the term "Urbanised Forest," which emphasises that even the most remote cities have elements intrinsic to the Amazonian dynamic. This perspective highlights that urbanisation in the Amazon has its own characteristics, related to the flow of people and goods that mostly occurs via rivers.

Reaffirming Becker, waterways played a fundamental role in the occupation of the territory in Afuá, as natural communication and transport routes, through which villages developed through trade, with floodplains that were already inhabited, productive, and with a population accustomed to travelling by private boats to nearby cities (Cardoso, Vicente, & Brito, 2021). Within this complex urbanisation network, the articulation over the years within



the Afuaense territory did not cause major losses of natural heritage: of the 8,338.438 km² of territory, only 1.69 km² was urbanised by 2019 (IBGE, 2023).

Although the natural characteristics have been largely preserved, according to the IDSC-Br, the city of Afuá has a very low level of sustainable development, ranking 5,538th out of 5,570 Brazilian cities, with a score of 36.01 (ICS, 2025). One of the reasons for analysing Afuá was the IDSC-Br's interpretation of SDG 11 in particular, regarding the major challenges for the city's sustainability.

To delve into the specifics of local mobility, it is necessary to discuss some of Afuá's urban constraints. Based on an urbanisation model centred on the river, the urban fabric of this city replaced traditional colonial-style roads with a centuries-old Amazonian form of transport known as *estivas* (Mesquita, 2017). Without grounding, these walkways were purposely made of wood, about 1 metre above the floodplain soil and supported by stakes, at a level high enough so that the rising tide would not interfere with the routine of the city's residents (Dias & Da Silva, 2012).

However, the information contained in the Sustainable Cities Institute's ranking on the urbanisation of Afuá and other Amazonian cities is not based on a qualitative survey conducted in loco, but rather on quantitative data available in Brazilian databases. For the IBGE (2023), for example, the urbanisation of public roads in this city is non-existent, given that, according to the latest census, 0% of urban households were located on roads with adequate urbanisation – i.e. equipped with road infrastructure such as drains, pavements, paving and kerbs. Thus, it is noted that even though the city has hardly deforested for urbanisation and has the ability and capacity to coexist with water level variations, these factors alone are not sufficient to characterise it as sustainable.

It is undeniable that some elements essential to maintaining the quality of cities are deficient in the municipality, such as basic sanitation – including sewage treatment and treated water distribution, as can be seen in IBGE (2023) surveys. However, what is being questioned here is that anything that deviates from standardisation and differs from the road infrastructure methods used in large centres is considered inadequate or inappropriate. In this sense, we understand Krenak's (2022) criticism of the homogenisation of places, which in this example of Afuá implies that the only valid form of urbanisation is that imposed by rigid urban engineering methods.

The most important element in relating the stives to good urban mobility practices in Afuá is the fact that these ancestral roads are used exclusively for sustainable urban mobility.



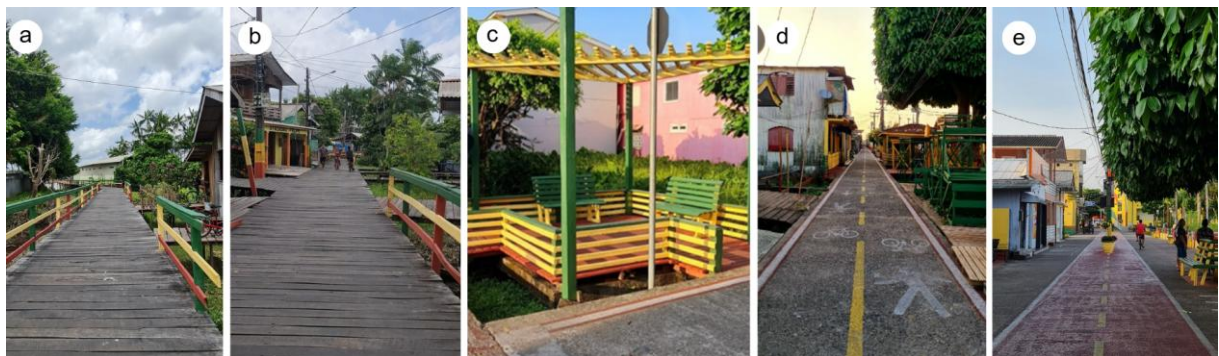
Pedestrians and bicycles share the space, and there is a municipal ban on motorised traffic on the roads, in accordance with Law No. 495 of 2022.

Another element is the walkability of the routes, with Jacobs (2011) and Gehl (2013) stating that spaces should be designed to sustain the vitality of the city. For Jacobs (2011), life in cities happens through vital organs – streets and pavements, which must provide attractions so that people want to be on foot, moving slowly. In the case of riverside cities, this analysis applies to docks, bridges and wharves, which are the environments where life pulsates.

In Afuá, the road infrastructure, which may seem precarious to the untrained eye, mainly due to the use of unprocessed wood in the poorest neighbourhoods, has a logic of affection and welcome for pedestrians and cyclists. In several sections, there are guardrails and handrails to increase safety and prevent accidents in relation to the river (figure 2a); the size of the docks is compatible with the simultaneous transit of bicycles and pedestrians (figure 2b); there are several rest areas along the routes (figure 2c); and elements to guide traffic, such as sectioned lanes (figure 2d) and paint markings on the pavement to delimit areas suitable for pedestrians and bicycles (figure 2e).

Figure 2

Infrastructure for walkability identified in the docks.



Source: Author, 2023.

It should be noted that the smooth functioning of urban mobility in Afuá is a resource for community identity and belonging, defined through the relationships between the city and its citizens (Carlos, 2017; Gehl, 2013). However, even though the quality of travel in the city is quite satisfactory, the indicators related to mobility assessed by the IDSC-Br ranking are considered very low. The percentage indicator of the "low-income population with a commute time of more than one hour" is flagged as very unsatisfactory, and the "number of traffic deaths" as average or fair.



In metropolitan areas, spending more than an hour commuting between home and work implies a series of situations that indicate a low quality of life, such as long distances and traffic jams; services concentrated in wealthier centres; lack of opportunities in poor neighbourhoods; increased expenses and the possibility of road and urban violence; as well as increased pollutant emissions and heat islands. However, this is not the urban dynamic in many of the riverside cities of the Amazon.

According to the 2017 Agricultural Census, in the sample of people employed in agriculture, more than 12,000 workers are employed in permanent and temporary crop cultivation (IBGE, 2017), and shrimp fishing is the activity that provides the family income for a large part of the community (Vicente & Cardoso, 2020). Thus, commuting between home and work becomes time-consuming, as extractive settlements and fishing sites are far from urban areas.

In no way does this work aim to romanticise Amazonian labour. The reflection made is on the fact that the delay in commuting in Afuá does not imply the harsh conditions implicit in commuting in large urban centres, or necessarily a lower quality of life, but rather that it is related to the geographical conditions of the routes, which take advantage of the natural course of rivers and streams for commuting. In this sense, travel in Afuá is incomparable to the problems that exist in large cities.

In Afuá, the docks are a space suited to the demands of the community, for carrying out their most immediate and basic activities, such as travelling on foot. Could the city therefore be considered a model of sustainable mobility? Given that this cultural condition was not taken into account when assessing travel, Afuá's urban mobility is very unsatisfactory according to the ranking. Thus, the city where the docks integrate residential areas with work and leisure through active modes of transport, respecting the particularities and plurality of the people, stands out negatively at the national level.

The questions raised in this article about the national ranking show concern about the repercussions that data such as this can have on cities, and especially on communities, when the media encourages a race to meet the SDGs, generating great pressure for changes that bring cities into the discourse of sustainability. Recently, for example, structural changes have been noted in Afuá, which have altered the vernacular appearance of the city.

Possibly in an attempt to achieve satisfactory census indices on the urbanisation of public roads, wooden staves have been replaced by concrete slabs (Figures 2d and 2e). Until 2022, few stave roads were concreted, but by 2025, most of the staves in the oldest part of the city had already been replaced. Furthermore, according to Cardoso, Vicente, & Brito (2021)



and Bibas (2018), the region has faced a shortage of wood for local use due to exports to other businesses, causing significant changes in architectural styles as well.

The use of concrete instead of wood, in addition to being unsatisfactory for thermal and environmental comfort, jeopardises the existing traditional spaces that are so characteristic of the region and the community's relationship with the water. This situation is reminiscent of the metropolisation experienced by the city of Belém and the risks of a process that has transformed stows into paved roads and stilt houses into masonry buildings. In large cities, stilt houses and stows are associated with poverty and stigmatised spaces, without decent housing conditions. In addition, they have become spaces that neglect the traditional knowledge of dealing with the region's typical climatic conditions, such as tidal variations, in favour of hygienist, rigid and sometimes inefficient construction technologies, such as macro-drainage.

The urbanised area of Afuá emerged and consolidated itself in relation to the secular indigenous culture, where the river is the great link between individuals and all their basic activities. However, Amazonian traditions still tend to be seen in Brazilian territory as something to be sanitised, moulded, civilised. Contrary to the sustainability already experienced in the city, the pressure for adaptation now gives voice to construction techniques that are notably major causes of socio-environmental problems in other cities in the same state.

5 CONCLUSION

Sustainable development and urban mobility are interconnected concepts that are essential for contributing to a more equitable urban future. To promote balance and justice, which are so hotly debated in both concepts, it is necessary to intertwine environmental, social, and economic dimensions so that the demands of the present are met while ensuring that future generations can also meet their needs. Throughout this article, it has been emphasised that current discussions on sustainability and efficient forms of urban mobility, although fundamental to designing a more resilient future, are often accompanied by a colonialist logic, which is revealed in discourses on preserving the environment today so that natural resources can be used tomorrow.

In a world where the environment is seen as manageable and measurable, academic debates often disregard complex social and cultural networks. In this context, some counterarguments from researchers of traditional peoples, such as Ailton Krenak, consider this type of civilising discourse to be a fallacy that further fragments life in cities and distances individuals from a more genuine connection with nature. Thus, anti-colonialist thinking and



discussion attempt to chart a path toward a more assertive understanding of sustainability, whose focus should be on society and traditional knowledge for dealing with nature.

In the city of Afuá, as in countless other Amazonian cities, elevated platforms above the floodplain facilitate sustainable mobility and demonstrate a harmonious relationship with tidal variations, a concept relevant to approaches to the Amazon's "Urbanised Forests," as conceptualised by Bertha Becker. Although this traditional urban strategy is functional and respects nature, Afuá is classified as having low sustainable development by the Institute that ranked Brazilian cities. Therefore, this article questioned this assessment based solely on census data, which did not qualify the walkability of the docks and the way of life of this community, taking into account that the journeys, although long, are very different from those in metropolises.

Cultural and intangible requirements, intrinsic to the regions, tend to be undervalued in favour of hygienist urbanisation adaptations. In this sense, this article reflected on how sustainability rankings, such as those proposed by the Sustainable Cities Institute, can be misleading when assessing traditional Amazonian cities based solely on material indicators, such as the absence of pavements and cement or concrete paving.

It was noted that measuring data while disregarding intangible cultural heritage and the proactive adaptation capacity of traditional communities can be a dangerous bias, generating negative consequences from the pressure to "adapt" to hegemonic and colonising urban standards. Motivated by the stigmatisation that Amazonian cities and the ancestral knowledge of their communities are allegorical, this change can compromise the resilience of communities and promote a breakdown of cultural identity.

While Lefebvre sees the city as a collective cultural and historical product of society, Krenak's perspective encourages building cities based on the ancestral knowledge of peoples who live in harmony with nature. In this way, it is possible for the concept of sustainability to develop in its entirety, using traditional knowledge as a source of solutions to current urban challenges. Therefore, beyond technological and urban planning solutions, a real advance in sustainable development and urban mobility strategies would be to value the perspective of indigenous peoples as holders of effective knowledge for building a sustainable and equitable future.



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Sustainable Urban Mobility in the Amazon: Case Study in a Riverside City

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Keywords: *Sustainable Development, Sustainability Indicators, Urban Sustainability, Sustainability in the Amazon, Riverside Cities*

Abstract

Objective: The objective of this study is to analyze sustainable urban mobility based on sustainability indicators used in Brazil, in order to identify inconsistencies in the evaluations conducted in cities with cultural particularities.

Theoretical Framework: The official repository documents of the United Nations and the indicators created by the Sustainable Cities Institute for the Sustainability Index of Brazilian cities are highlighted.

Method: The methodology adopted in this research comprises a literature review to discuss sustainable development and urban sustainability indicators, and data collection carried out in loco through a checklist on road infrastructure and active travel modes in an Amazonian city.

Results and Discussion: The results revealed that the creation of a national sustainability ranking in a country of continental dimensions like Brazil can present conflicts between the technical reading of census data and the local interpretation of the Amazonian context, and how these incompatible approaches can lead to a cultural mischaracterization of traditional communities.

Research Implications: This article expresses concern about how the repercussions of news related to the national ranking can pressure communities into cultural modifications that would insert them into the sustainability discourse.



Originality/Value: This study contributes to the understanding of how the use of technical data on sustainability can encourage the stigmatization, especially of cities that preserve Amazonian traditions of intangible value, distinct from the large urban centers of the Brazilian South-Central axis.

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