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ANALYSIS OF THE DYNAMICS OF LAND USE AND COVER IN THE MUNICIPALITY OF ITABUNA, BAHIA

ANÁLISE DA DINÂMICA DO USO E COBERTURA DO SOLO NO MUNICÍPIO DE ITABUNA, BAHIA

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Abstract: Using data from remote sensing as a basis for studies on mapping land cover and use is a world-renowned practice, as it allows a dynamic and spatial analysis of the different classes existing in the territory. In this context, the main objective of this work was to analyze the dynamics of land cover and use in the municipality of Itabuna-BA, from 1985 to 2021, through data obtained by remote sensing. The data used came from the MapBiomas project, and the processing and analysis of this data was carried out with the help of QGIS and Excel software. The results revealed a significant replacement of Forest Formation class by other categories, such as Pasture, Mosaic of Uses and Urbanized Area. The evolution of urban areas in the municipality was also observed, with a significant increase in the Urbanized Area class from 2003 onwards. Furthermore, there was a growing process of urbanization and irregular occupation of preservation areas along the Cachoeira river. Through the results found, we can see the importance and urgency of implementing public policies aimed at environmental conservation and sustainable development, as alternatives to reduce the negative impacts resulting from disorderly urban growth in the municipality of Itabuna-BA.

Keywords: Multitemporal analysis; Land use; Remote sensing.

Resumo: A utilização dos dados provenientes de sensoriamento remoto como base para estudos sobre mapeamento da cobertura e uso do solo é uma prática mundialmente conhecida, pois permite uma análise dinâmica e espacial das diferentes classes existentes no território. Neste contexto, esse trabalho teve como objetivo principal analisar a dinâmica da cobertura e uso do solo no município de Itabuna-BA, no período de 1985 a 2021, através de dados obtidos por sensoriamento remoto. Os dados utilizados foram oriundos do projeto MapBiomas, já o processamento e análise desses dados foi realizado com auxílio dos softwares QGIS e Excel. Os resultados revelaram uma significativa substituição da classe Formação Florestal por outras categorias, como Pastagem, Mosaico de Usos e Área Urbanizada. Observou-se também uma evolução da mancha urbana no município, com aumento expressivo da classe Área Urbanizada a partir do ano de 2003. Além disso, constatou-se um crescente processo de urbanização e ocupação das áreas de preservação ao longo do rio Cachoeira. Através dos resultados encontrados percebe-se a importância e urgência da implementação de políticas públicas voltadas para a conservação ambiental e o desenvolvimento sustentável, como alternativas para diminuir os impactos negativos resultantes do crescimento urbano desordenado no município de Itabuna-BA.

Palavras-chave: Análise multitemporal**;** Uso do solo**;** Sensoriamento remoto.

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1. Introduction

Land use cover on earth has entered a new period of biological, hydrological, and climatological changes that are different from previous land cover changes worldwide (ERDOGAN; NURLU; ERDEM, 2011). The destruction of natural resources and the environment, drought, the increase in floods, and landslides are some of the changes experienced in recent decades. These global and local environmental issues have been identified as some of the most important factors affecting the planet (NURLU *et al.,* 2008). In the last two centuries, the world's population has grown exponentially. In 1965, there were approximately 3.3 billion people on the planet, and this number more than doubled by 2015, surpassing 7.2 billion inhabitants (WEETMAN, 2019). The increase in population and its activities has brought significant changes in land use worldwide, affecting human health and ecosystems. It is emphasized that land use and land cover change are important indicators of landscape change (ERDOGAN; NURLU; ERDEM, 2011; JAAFARI; SAKIEH; SHABANI, 2015) and approximately the entire world has experienced land use changes in recent decades, which have caused some economic and social problems (BESKOWN; NORTON; MELLO, 2013).

Land use and its changes are key factors used in flood zoning, biodiversity assessments, and soil conservation studies (THANAPALPAWIN *et al.,* 2007; MOHAMMADY *et al.,* 2018). However, the main driver of land use change in urban areas is economic development and infrastructure. Therefore, considering that the municipality of Itabuna, located in the southern region of the state of Bahia, is a rapidly growing city known for its strong commerce and family farming production, it can be inferred that various land use changes have occurred throughout its history to facilitate its development. Currently, the municipality faces significant challenges related to unplanned urban expansion and environmental degradation, especially in the areas surrounding the Cachoeira River. Thus, this study aims to assess land cover and land use changes in the municipality of Itabuna over the period from 1985 to 2021. The specific objectives are: to identify and quantify the main land cover and land use classes and the transitions that occurred at each 9-year interval throughout the mentioned period; to analyze the evolution of the urban sprawl.

2. Methodology

The municipality of Itabuna is located in the southern region of the state of Bahia, Brazil (Figure 1), approximately 436 km from the capital of Bahia, Salvador. According to IBGE (2021), the municipality has an estimated population of 214,123 inhabitants, a territorial extension of 401.028 km², and borders seven municipalities: Ilhéus, Itajuípe, Barro Preto, Itapé, Jussari, São José da Vitória, and Buerarema. It has a Tropical Rainforest Climate (Af) according to the Köppen-Geiger classification, with annual rainfall values ranging from 1900 to 2000 millimeters. The climate is characterized by the absence of a dry season, with an average annual temperature of 25°.

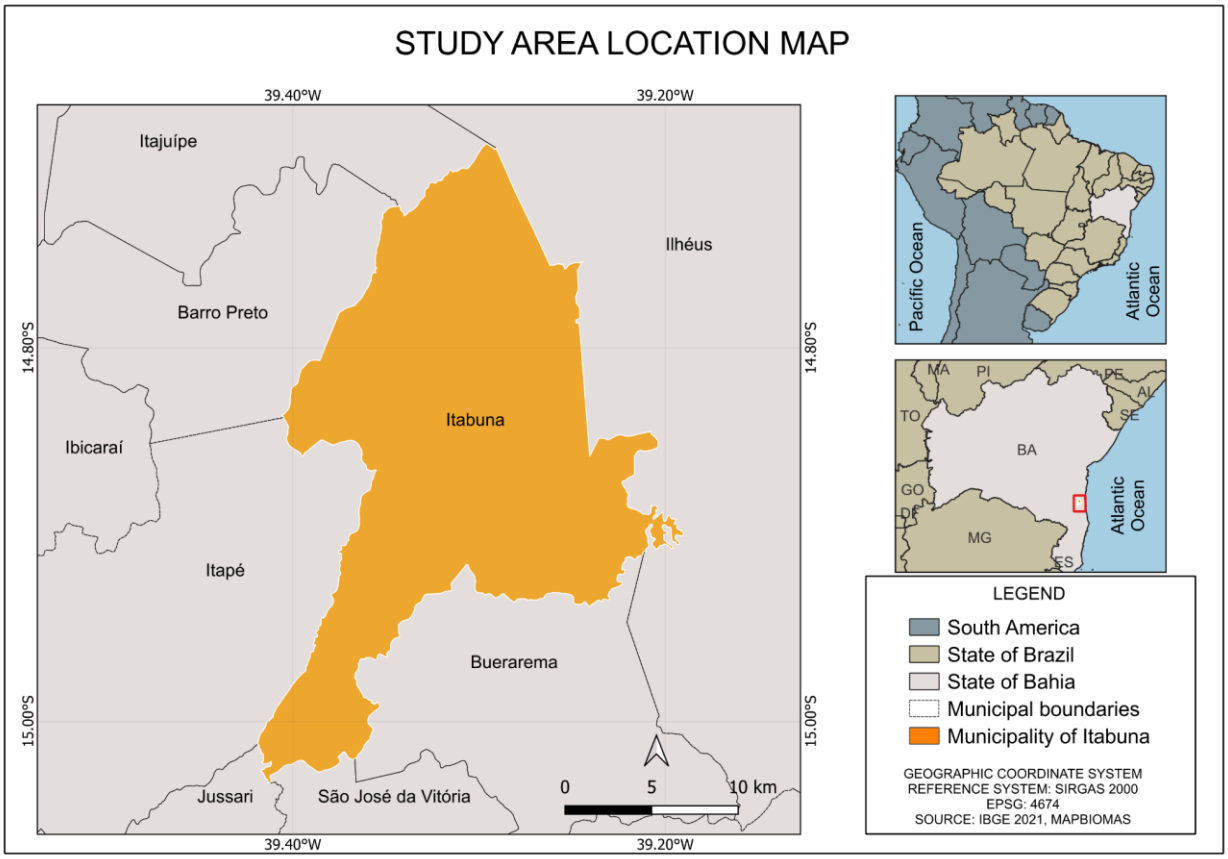

Figure 1 – Location map of the study area.
Source: Authors (2024).

2.2 Data Collection and Analysis

For the development of the research, information on land use and land cover for the study area in the years 1985, 1994, 2003, 2012, and 2021 was used. This data was made freely available by the Annual Land Cover and Land Use Mapping Project of Brazil (Mapbiomas), an initiative that involves a multi-institutional collaborative network with experts in different biomes and cross-cutting themes to optimize solutions. The data processing is carried out using the *Google Earth Engine* platform.

The land use and land cover dataset in raster format was obtained through the MapBiomas website. Results from the mapping quality assessment were also obtained on this platform, where accuracy analysis is the primary form of evaluation. The global accuracy for each land use and cover class in the data used was 91.5%, while the allocation disagreement was 6.9% and the quantity disagreement was 1.7%.

After downloading the data, the images were imported into the QGIS software for processing and analysis. The flowchart shown in Figure 2 outlines a summary of the procedure carried out.

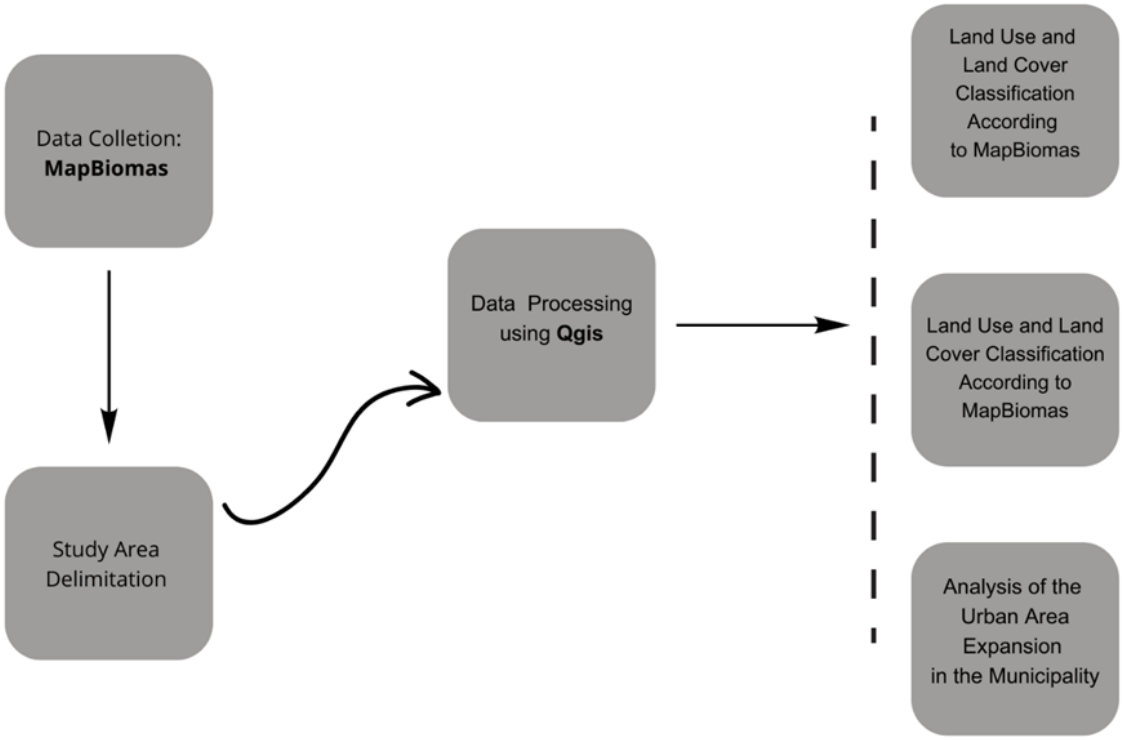

Figure 2 – Methodological steps for obtaining land cover and land use maps, transition maps, and urban sprawl evolution maps.
Source: Authors (2024).

In the QGIS software, the land cover classes were named to create the legend based on the reference document titled "Codes of Legend Classes and Color Palette Used by MapBiomas," which is available on the project website (MAPBIOMAS, 2021). Next, the raster was clipped using the boundaries of the municipality of Itabuna with the shapefile provided on the IBGE website (IBGE, 2021). Subsequently, the land cover categories for the analyzed years were identified, and the areas within each class were quantified. Based on the same input data, land use and land cover transition maps for the municipality were created.

The raster calculator tool was used to select only the classes where changes occurred in order to obtain a graphical representation of the transition between the analyzed periods. To quantify these transitions, an adaptation of the code developed and made available by one of the MapBiomas coordinators was used, allowing the extraction of transition data for each analyzed period. Finally, to analyze the evolution of urban sprawl, the raster calculator tool was used again, enabling the selection of only the "Urban Area" class, thus allowing the generation of maps that demonstrate the growth of the urban sprawl in the municipality.

3. Results and Discussion

3.1 Land use and land cover of the municipality of Itabuna, BA

The land use and land cover data for the municipality of Itabuna from 1985 to 2021, in 9-year intervals, are visually shown in Figure 3, and their quantification is presented in Table 1. Note that in the visual representation, the classes "Savanna Formation", "Flooded Field", "Wetland Area", "Other Non-Vegetated Areas" and "Mining," which appear in the table, were omitted from the map legend because, due to their small size relative to the total area of the municipality, these areas were not distinguishable visually at the scale used for representation.

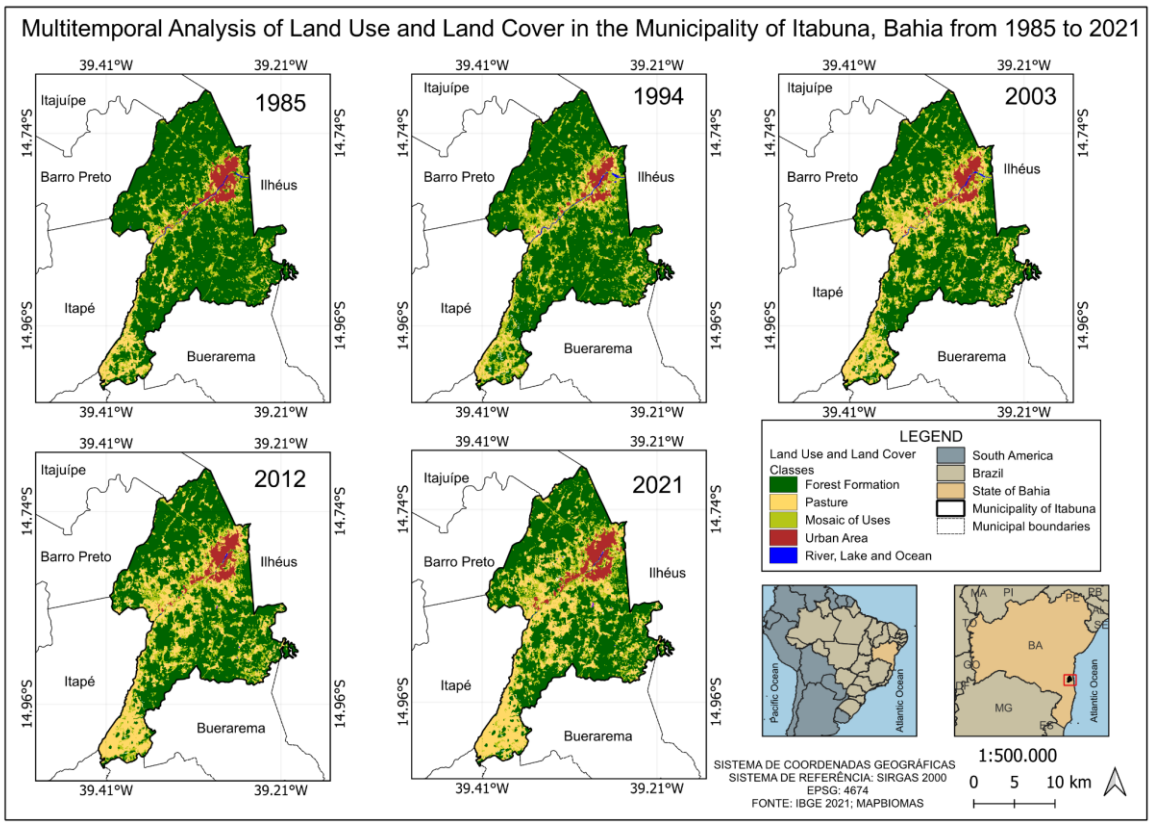

Figure 3 – Land use and land cover map for the municipality of Itabuna, showing changes from 1985 to 2021.
Source: Authors (2024).

In the first year analyzed, 1985, the Forest Formation class covered an area of 289.52 km², and the River, Lake, and Ocean class covered an area of 1.36 km², corresponding to 72.20% and 0.35% of the total area of the municipality of Itabuna, BA, respectively. The remaining area of the municipality, 117.14 km² (29.18% of the total area), was occupied by other land uses and covers, such as the Flooded Field and Wetland Area classes, Pasture, Mosaic of Uses, Urban Area, and Other Non-Vegetated Areas.

It can be observed that in 1994, the most representative class was the Forest Formation, occupying 67.37% of the total area, represented by 270.19 km². This was followed by the Mosaic of Uses class, covering 20.68% of the total area, equivalent to 82.93 km², and the Pasture class, occupying 8.64% of the total area, or 34.30 km². In this year, the Savanna Formation class also appeared, occupying 0.25% of the territory, which corresponds to 1.05 km². The Forest Formation, which was the dominant class, experienced a reduction in its area, while the Mosaic of Uses and Pasture classes saw an increase in the area occupied compared to 1985.

In 2003, the dominance of the Forest Formation class remained, covering 240.78 km² (60.04%) of the area, but it was again observed that this class was being lost to other uses in the municipality. The Pasture class saw a significant increase, growing by 36.08 km², and occupying 69.34 km² (17.29%) of the total area. The Mosaic of Uses class covered 75.46 km² (18.82%) of the municipality, indicating a reduction in the area occupied by this class between 1994 and 2003 of approximately 7.74 km² (1.86%).

Table 1 – Land use and cover classes in the municipality of Itabuna, BA, for the years 1985, 1994, 2003, 2012 and 2021.

	Area in km²	**Area in percentage (%)**

Land use and land cover classes										
	1985	**1994**	**2003**	**2012**	**2021**	**1985**	**1994**	**2003**	**2012**	**2021**
Forest Formation	289.52	270.19	240.78	224.81	214.14	72.20	67.37	60.04	56.07	53.40
Savanna Formation	—	1.05	0.77	0.31	0.59	—	0.25	0.18	0.06	0.13
Wetland	0.004326	0.35	0.23	0.20	0.17	—	0.09	0.06	0.04	0.04
Pasture	33.26	34.30	69.34	87.57	97.98	8.28	8.54	17.29	21.48	24.42
Mosaic of Uses[1]	62.01	82.93	75.46	72.31	68.51	15.46	20.68	18.82	18.04	17.08
Urban Area	14.84	10.25	12.92	15.15	18.70	3.69	2.55	3.23	3.78	4.66
Other non Vegetated Areas	0.001730	0.014	0.07	0.10	0.32	—	—	0.02	0.02	0.06
Mining	—	—	—	0.04	0.11	—-	—	—	—	0.02
River, Lake and Ocean	1.36	1.89	1.38	0.48	0.41	0.35	0.46	0.81	0.12	0.09

Source: Authors (2024).

In 2012, the Pasture class increased by 54.31 km² compared to 1985, and for the analyzed year, it covered an area of 87.57 km², representing 21.48% of the municipality's area, followed by the Urban Area class with 15.15 km² (3.78%). The Forest Formation class continued to decrease in area, covering 224.81 km² (56.07%), and the Mosaic of Uses class also showed a reduction in its area, with 72.31 km² (18.04%). However, a new class, Mining, appeared, covering 0.04 km² of the municipality's territory.

The last year analyzed, 2021, saw the largest increase in area for the classes Savanna Formation with 0.59 km² (0.13%), Pasture covering 97.98 km² (24.42%), and Urban Area recording 18.70 km² (4.66%). The Mining class occupied 0.11 km² (0.02%) of the municipality's area. However, the Forest Formation and Mosaic of Uses classes continued to decrease as seen in previous years, covering 214.14 km² (53.40%) and 68.51 km² (17.08%), respectively. These changes demonstrate the transformation in the distribution of land use and land cover classes in the municipality.

The land use and land cover maps represented for each year analyzed reflect the changes that occurred in the municipality of Itabuna, from 1985 to 2021. It is possible to observe the continuous loss of Forest Formation to other land uses, mainly Pasture, Mosaic of Uses, and Urban Area, which becomes evident when comparing the representations between the initial year (1985) and the final year (2021) of the analyzed period. This is clearly shown by the fact that throughout the entire period, there was a reduction of 75.39 km² for the Forest Formation class, while the Pasture, Mosaic of Uses, and Urban Area classes saw an increase of 64.72 km², 6.5 km², and 3.86 km², respectively.

According to the study conducted by Pereira (2022) in the municipality of Sousa, in Paraíba, covering the period from 1985 to 2020, the classes that showed the greatest increases in area were Pasture, with a significant increase of 88%, and Urban Area, which registered a 22.7% growth in land occupation. These figures reflect changes in the landscape and land use over this time period. Presumably, the changes that occurred in the municipality of Itabuna are linked to shifts in the socioeconomic activities in the region, which had been dominated by cocoa cultivation for many years. However, after the

[1]According to the information provided by MapBiomas, areas of agricultural use where it was not possible to distinguish between pasture and agriculture, as well as areas of urban vegetation, including cultivated and natural vegetation (both forested and non-forested), were classified as Land Use Mosaic.

cocoa crisis, the municipality's economic profile changed, leading to growth in commerce as a result of the expansion of urbanized areas in the city.

3.2 Assessment of Land Use and Land Cover Transitions

The results of land use changes over a 36-year time span for the municipality of Itabuna were visually summarized in Figure 4. The transitions of the main land use and land cover classes in Itabuna for each analyzed period are shown in the graphs corresponding to Figures 5, 6, 7, and 8. The data analysis showed that the main transitions occurred in the classes involving Forest Formation, Mosaic of Uses, Pasture, and Urban Area. The other classes had transitions with values smaller than 1 hectare and were not represented in the graphs.

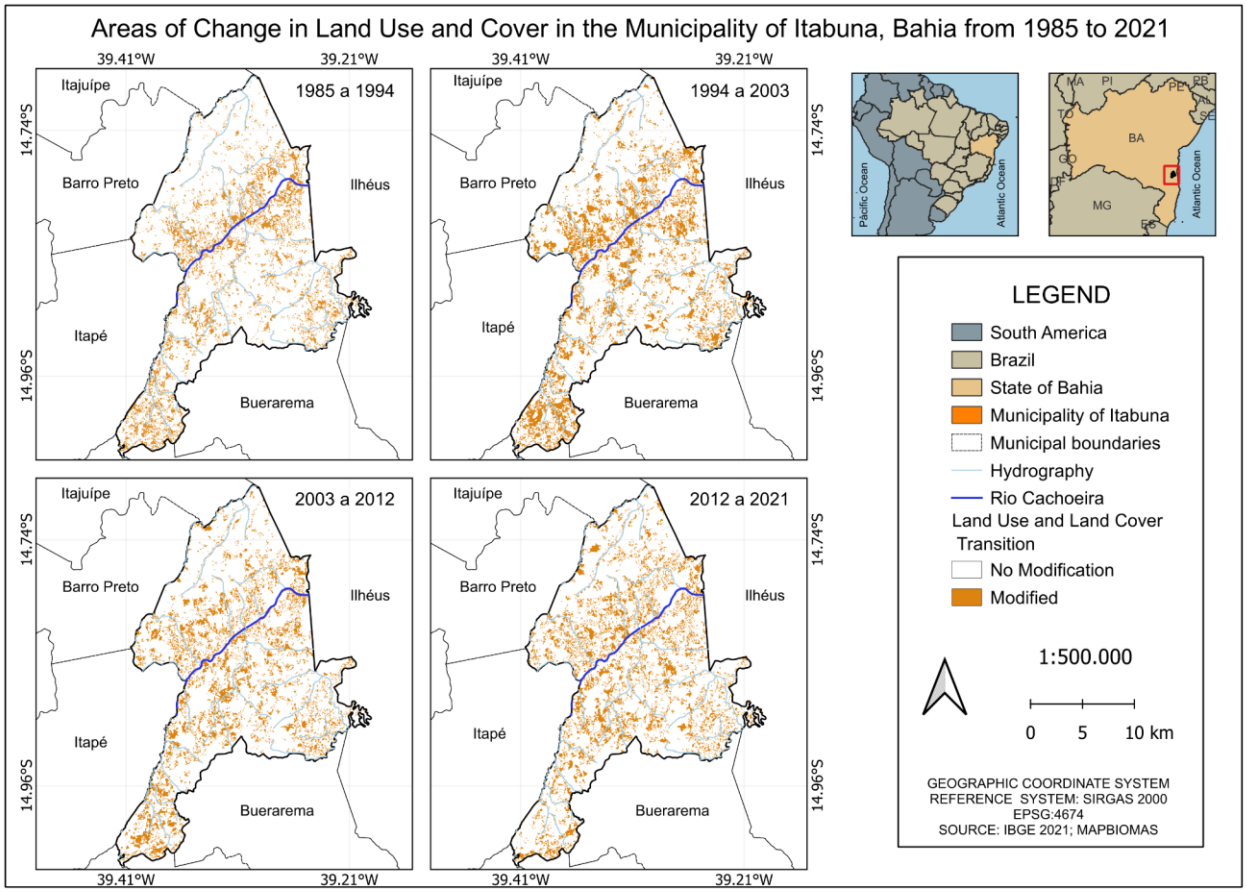

Figure 4 – Transition map of land use and land cover from 1985 to 2021 for the municipality of Itabuna, Bahia.
Source: Authors (2024).

For the period from 1985 to 1994, the most frequent change was the conversion of Pasture into Mosaic of Uses areas, covering an area of 27.156 ha. Next, the conversion of Mosaic of Uses into Forest Formation was observed with 15.135 ha (as shown in Figure 5). On the other hand, the transitions that occurred in smaller amounts were the conversion of Pasture and Mosaic of Uses areas into Urban Area, indicating that these areas, which had already been in use for some time, were designated for population settlement.

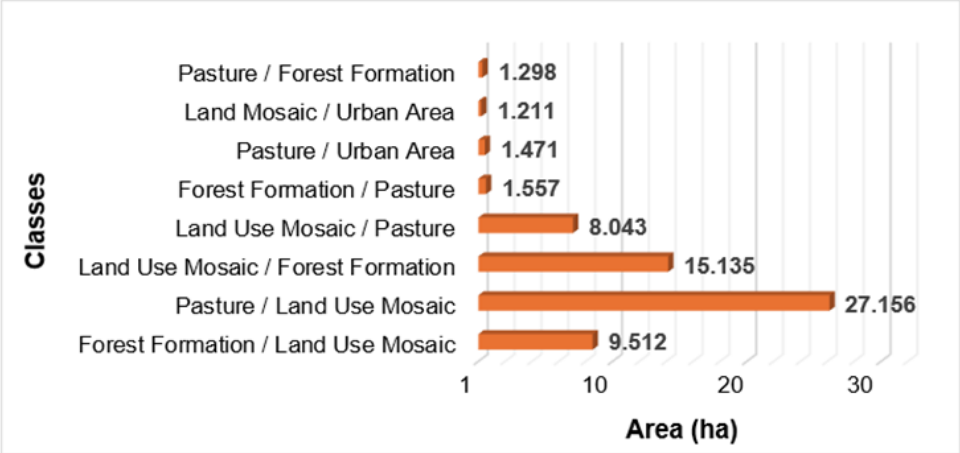

Figure 5 – Transitions of the main land use and land cover classes in Itabuna from 1985 to 1994. Source: Authors (2024).

During the period from 1994 to 2003, the most significant transitions were from Mosaic of Uses to Pasture with 21.362 ha, from Pasture to Mosaic of Uses with 11.244 ha, and from Mosaic of Uses to Forest Formation with 11.157 ha (Figure 6). It was observed during the analyzed period that the classes Pasture and Mosaic of Uses continued to be the main sources of conversion to Urban Area, with 4.248 ha. This trend was also observed in the previous period. A similar result was found by Moares (2020), who observed that the transitions occurring from 1987 to 2018 in the Piracicaba River Basin – MG, showed that the Forest Formation class was mainly replaced by Planted Forest (47.395,8 ha) and Pasture (24.788,3 ha), but they also noted that the Pasture class had a larger area replaced by Forest Formation (24.788,3 ha).

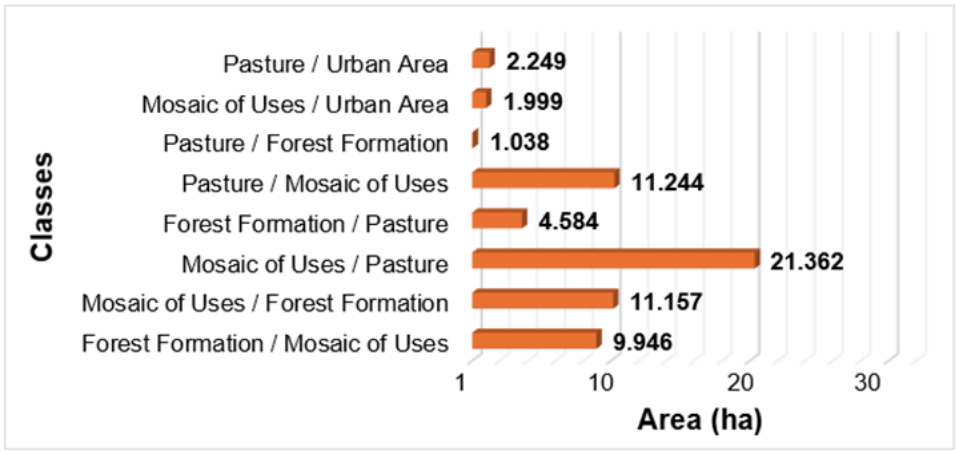

Figure 6 – Transitions of the main land use and land cover classes in Itabuna from 1994 to 2003. Source: Authors (2024).

In the period from 2003 to 2012, the most significant transition changes occurred from Mosaic of Uses to Pasture, covering 29.315 ha. Compared to the other analyzed periods, this was the time when this transition occurred most intensely. However, there was also an increase in the conversion from Pasture to Mosaic of Uses, with 17.211 ha, and from Mosaic of Uses to Forest Formation, with 12.888 ha. It is worth noting that there was a significant increase in the conversion from Forest Formation to Pasture (5.707 ha) and from Forest Formation to Mosaic of Uses (9.253 ha). This analyzed period recorded the highest loss in Forest Formation compared to the other years analyzed (Figure 7).

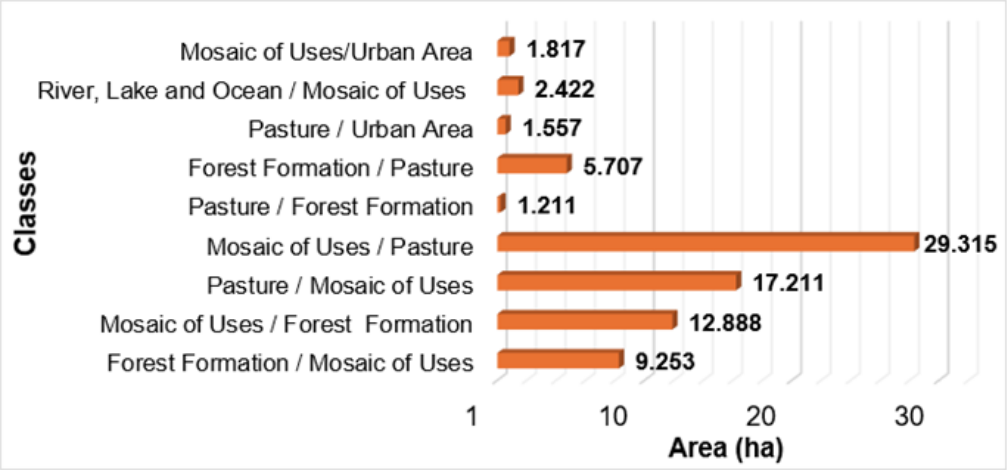

Figure 7 – Transitions of the main land use and land cover classes in Itabuna from 2003 to 2012.
Source: Authors (2024).

In the last analyzed period, from 2012 to 2021, the most significant transitions, as shown in Figure 8, were from Mosaic of Uses to Pasture, covering 28.366 ha, from Pasture to Forest Formation with 16.438 ha, and from Pasture to Mosaic of uses with 16.694 ha. It is noticeable that the Pasture class experienced a significant loss of hectares to other land uses during this period. However, the Forest Formation class also underwent significant changes, losing 12.108 ha to Pasture and Mosaic of Uses. Meanwhile, the Urbanized Area expanded primarily through transitions from Pasture and Mosaic of Uses, totaling 3.374 ha .

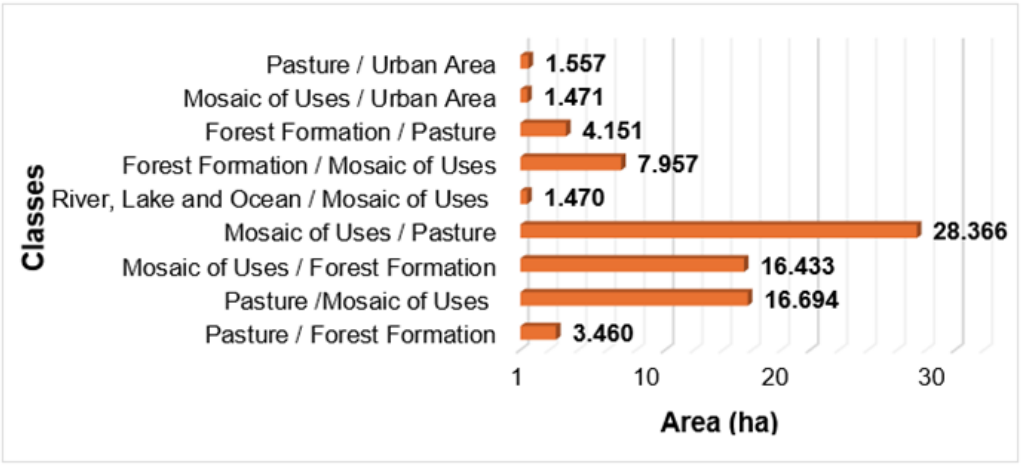

Figure 8 – Transitions of the main land use and land cover classes in Itabuna from 2012 to 2021.
Source: Authors (2024).

When analyzing the different periods, a pattern of changes in land use and land cover transitions was observed. The conversion of Pasture into Mosaic of Uses was the most recurrent in all periods, reaching its peak between 2003 and 2012 (16.694 ha). However, during this same period, Forest Formation lost a larger area compared to other periods, as its areas were converted into Pasture and Mosaic of Uses, totaling a 30.2% loss. Unlike previous periods, between 2012 and 2021, Forest Formation experienced a greater area gain (19.893 ha), indicating that the Mosaic of Uses and Pasture classes were replaced by Forest Formation, suggesting a forest succession.

Finally, the entire study period, from 1985 to 2021, was analyzed. For this period, in addition to the graph representing the transitions of the main land use and land cover classes in the municipality (Figure 9), the spatialization of these transitions was also carried out (Figure 10) to enable the spatial identification of the areas where land use and land cover changes occurred throughout the analyzed period.

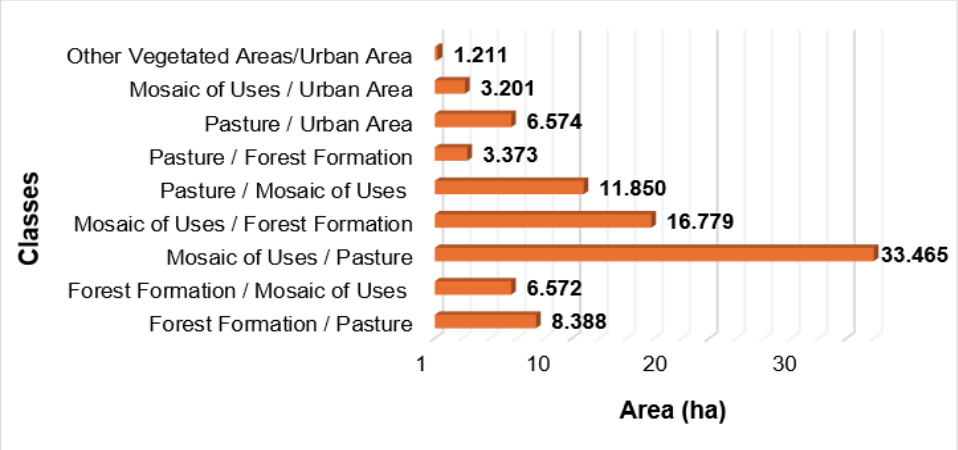

Figure 9 – Transitions of the main land use and land cover classes in Itabuna from 1985 to 2021. Source: Authors (2024).

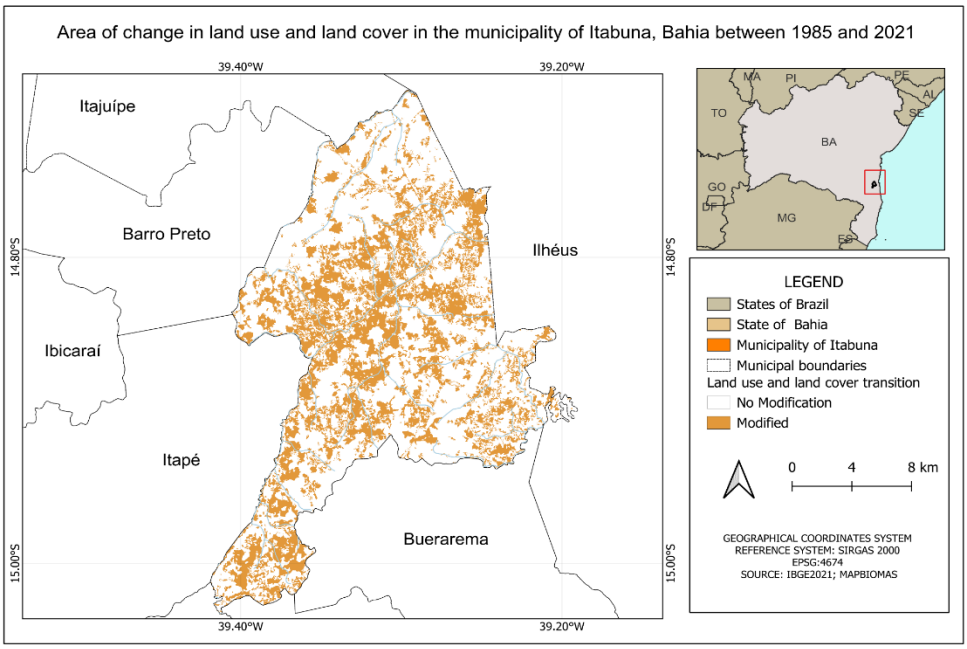

Figure 10 – Land use and land cover transition map for the years 1985 to 2021 for the municipality. Source: Authors (2024).

When considering the entire period from 1985 to 2021, the most significant transitions observed were from Mosaic of Uses to Pasture with 33,465 ha, Mosaic of Uses to Forest Formation with 16,779 ha, Pasture to Mosaic of Uses with 11,850 ha, and Forest Formation to Pasture with 8,388 ha (Figure 10). Throughout the 36-year period analyzed, it was evident that the Pasture and Mosaic of Uses classes were the main sources of conversion to Urbanized Area, totaling 9,775 ha. Furtado (2023), in his research in the municipality of Canaã dos Carajás, Pará, observed that during the years 1989 to 2019, the

Forest Formation class was primarily replaced by the Pasture class, which gained approximately 47.5% of the municipality's territory. However, the growth of the Urban Infrastructure class also became prominent due to the population increase, a consequence of the rise of mining activities in the municipality over these 30 years.

3.3 Assessment of urban sprawl growth

The growth of urban sprawl in the municipality of Itabuna is represented in Figure 11. In 1985, the percentage of the total municipal area occupied by the Urban Area class was 3.69%. By 1994, this percentage had decreased to 2.55%, indicating a reduction in urbanized area. In 2003, the class occupied 3.23% of the total municipal area, showing a slight increase compared to the previous year.

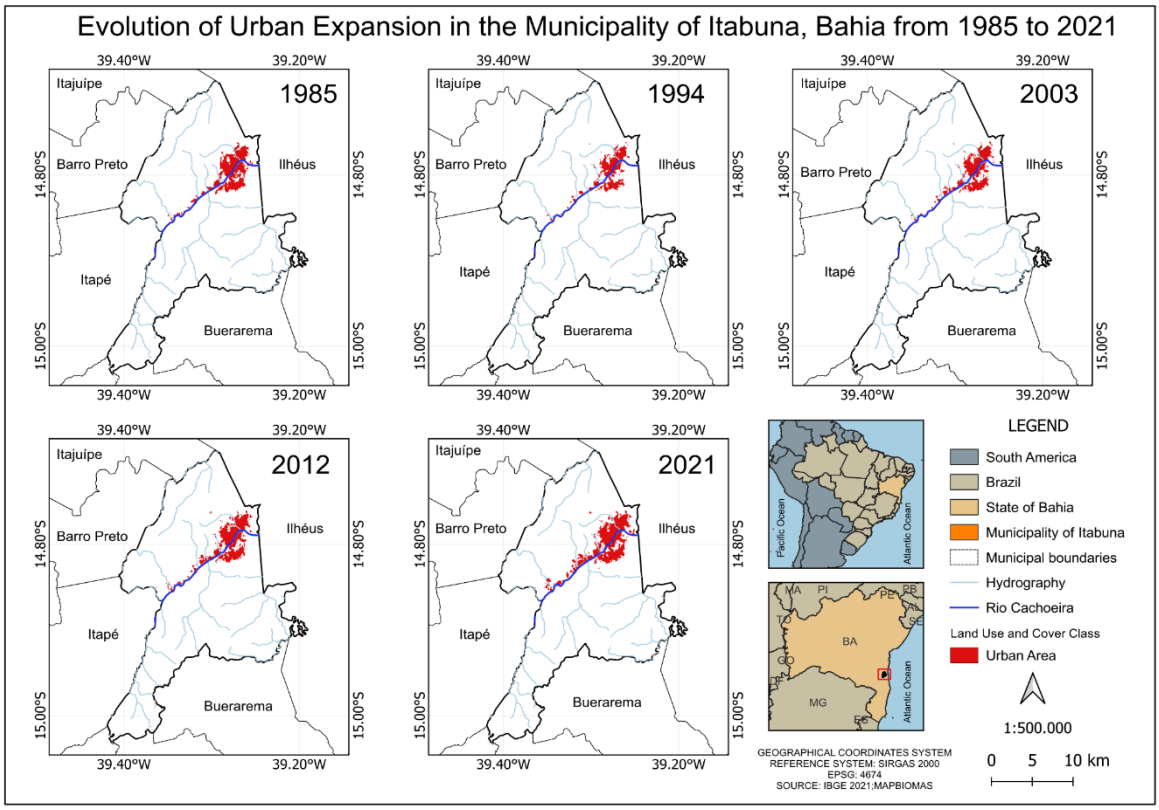

Figure 11 – Map of land use and occupation of the urbanized area class over the years from 1985 to 2021 for the municipality.
Source: Authors (2024).

For the year 2012, this percentage continued to increase, reaching a total of 3.78%. However, the year with the highest percentage is 2021, when the class accounted for 4.66% of the municipality's area (Table 01). Considering the entire analyzed period, it is observed that the urban area in the municipality of Itabuna grew by approximately 26.3%. One possible reason for the decrease in urban sprawl in 1994 is related to the densification of inhabitants in the more central areas of the city, where commerce was expanding, along with the popularization of vertical constructions, which spread during that period. According to Bolfe (2003), the verticalization process results from created and multiplied land; thus, buildings are the material expression of this process in the urban landscape, influencing land ownership and use.

In 2010, the last Demographic Census recorded a population of 204,667 inhabitants in the municipality, of which 97.55% lived in urban areas and 2.45% in rural areas (IBGE, 2012). In previous years, starting from 1980, 1991, and 2000, there was an increase in the urban population and a significant decrease in the rural population, as illustrated in Figure 23. From 1980 to 1991, there was a 59.02% reduction in the number of people residing in rural areas, characterizing

the phenomenon of rural exodus. In contrast, the urban population grew by 6.71%. When comparing data from the first demographic census in 1980 with the most recent one in 2010, an 8.6% increase in the urban population is observed. This population growth had a significant impact on the municipality, leading to changes in land use and land cover, with a greater conversion of areas into the Urban Area classification. This increase in urban occupation is directly related to demographic growth and its demands for infrastructure, services, and housing, resulting in transformations in the municipality's urban landscape and dynamics.

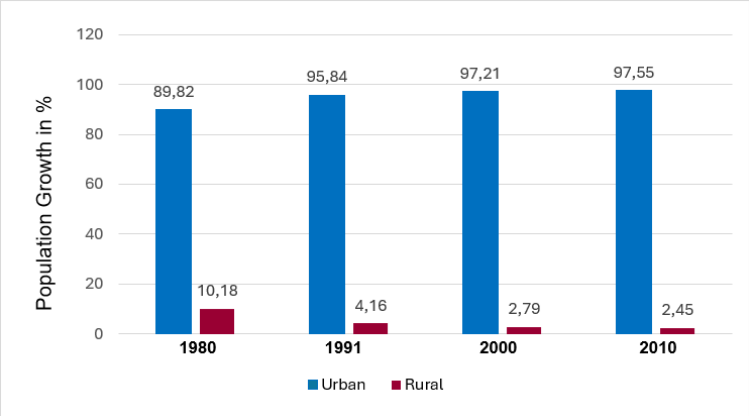

Figure 12 – Census data for the municipality of Itabuna - BA.
Source: Authors (2024).

The map generated during the multitemporal analysis in 9-year intervals showed that the evolution of the urban sprawl in the municipality occurred around the Cachoeira River, particularly to the north of the municipal area. Throughout its development, Itabuna played an important role in the state as a major agricultural producer, encompassing crops such as sugarcane, cereals, rubber trees, fruits, and coffee plantations (LOPES, 2001). Therefore, the proximity of the river was an essential factor for irrigation of the crops. Historically, the establishment of the first civilizations is linked to the availability of water, which is one of the main factors for the permanent settlement of human communities, a natural element that became a resource, not only for the population's consumption or crop irrigation but also as a means of communication between communities (LIMA, 2016).

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The Cachoeira River watershed (BHRC) encompasses 10 municipalities in the south of Bahia, with its downstream located in the municipality of Itororó and its mouth in the municipality of Ilhéus. The municipality of Itabuna is the penultimate stretch of the Cachoeira River (ALVES; GONÇALVES; NASCIMENTO, 2022). The urban area of Itabuna is mainly concentrated near the Cachoeira River, following a pattern similar to many other cities in the country. The watershed has played an important historical role in the urban growth of the municipality, particularly during the cocoa era. With the crisis of this period, economic changes occurred that altered the land use and occupation in the municipality, leading to disordered urbanization, which still reflects in current times (PINHEIRO; SOUZA; ALVES, 2022). However, it is observed that the land occupation in the city does not comply with Law No. 12.651, commonly known as the Forest Code, which was enacted in 2012. This law establishes guidelines for the preservation of riparian areas, indicating that rivers up to 10 meters wide should have a riparian forest strip of at least 30 meters wide. In the case of Itabuna, this legislation is not being followed, especially in urban areas, where the width of the riparian forest is often only 5 meters. This shows that the city is not complying with the guidelines established to protect the riparian areas around the rivers. As a result, the city frequently suffers from flooding and inundation events, with the last such event occurring in 2021, when

heavy rains caused floods in neighborhoods near the river, resulting in the destruction of homes and losses in local commerce.

4 Final considerations

The multitemporal analysis of land use and land cover based on remote sensing data demonstrates high effectiveness in obtaining information on spatiotemporal variations in cities. In this context, the MapBiomas project plays a key role, as the contribution of its database lies in the ability to provide detailed mappings, allowing the identification and monitoring of various land use and land cover classes over time. With its accessible approach, MapBiomas offers the opportunity for more robust and informed evaluation, providing support for numerous academic research, as well as planning and management activities.

The results obtained for the municipality of Itabuna - BA indicated growth in areas of the Pasture class and the Urbanized Area class, especially in the years 2003 and 2012, when the highest indices for these classes were identified. This suggests a trend of urbanization and agricultural expansion, indicating potential pressures on natural resources and changes in the urban landscape. For this same period, it was identified that the Forest Formation class was the one that experienced the greatest reduction. It is important to highlight that this class is vital for biodiversity and climate regulation, and its decline may represent a significant impact on the health of local ecosystems and the provision of essential ecosystem services.

It can be observed that over 36 years (1985 to 2021), the municipality of Itabuna experienced significant urban sprawl, totaling approximately 26.3%. In parallel, the area designated for Pasture also recorded an increase of 16.14% during this period. These figures highlight a trend of urban and agricultural expansion that directly impacts the territorial structure and the use of natural resources in the region. The transition analysis revealed that the Mosaico of Uses class was the most affected by the conversion of its area to other uses, especially to Pasture, which represented approximately 29,315 hectares in just the year 2012. This phenomenon reflects the expansion of agriculture and livestock as an economic activity in Itabuna.

The findings reveal a significant transformation in land use in the municipality over the last few decades, with important implications for the environment and local socioeconomic dynamics. In light of the above, it is evident that there is a need for better management and control of natural resources in the municipality of Itabuna as a basic premise to ensure the quality of life for both present and future generations. The conservation of forested areas, the containment of unchecked urban growth, and the promotion of sustainable agricultural practices are essential elements to ensure biodiversity, water availability, and the balance of local ecosystems. Therefore, a well-structured management system not only helps mitigate the risks of environmental disasters but also promotes an urban vision integrated with sustainable development, capable of meeting the municipality's growth demands in a balanced and responsible manner.

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