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Impacts of the sector concentration of the civil construction in the Foz do Rio Itajaí Region (SC) between 2003 and 2021

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Abstract
This article aims to analyze the effects of the concentration of the construction industry in the municipalities of the Foz do Rio Itajaí region between 2003 and 2021, using the Herfindahl-Hirschman Index (HHI). The results indicate a significant growth in construction activities during the analyzed period. The study also reveals a process of decentralization in the sector, which has historically been concentrated in Balneário Camboriú (BC), still the municipality with the highest concentration in the region. However, a trend toward dispersion is observed: in 2003, BC accounted for 50% of construction activities, while by 2022, this share had decreased to 26%, with notable growth in the sector in Itapema (21%) and Itajaí (19%). These data do not necessarily suggest a reduction in the relevance of Balneário Camboriú but rather a shift in patterns, with a coordinated expansion replicating BC's development model in other municipalities in the region. The effects of this replication process include drastic changes in the urban landscape, characterized by increased verticalization, rising land prices, gentrification, socio-spatial segregation, and environmental degradation. In this context, the study concludes that the implemented regional development model, based on tourism-real estate activities, proves to be unsustainable, requiring significant changes in urban and regional planning.

Keywords: Sector concentration. Construction. Herfindahl-Hirschman Index. Regional Development. River Itajaí Estuary.

Impactos da Concentração Setorial da Indústria da Construção Civil na Região da Foz do Rio Itajaí (SC) entre 2003 e 2021

Resumo
Este artigo tem como objetivo analisar os efeitos da concentração da indústria da construção civil nos municípios da Foz do Rio Itajaí entre os anos de 2003 e 2021, utilizando o índice

Herfindahl-Hirschman (IHH). Os resultados indicam um crescimento expressivo das atividades da construção civil no período analisado. O estudo também revela um processo de descentralização do setor, historicamente estabelecido em Balneário Camboriú (BC), que continua sendo o município com maior concentração na região. No entanto, observa-se uma tendência de dispersão, sendo que em 2003, BC concentrava 50% das atividades da construção civil, enquanto em 2022 essa participação caiu para 26%, com destaque para o crescimento do setor em Itapema (21%) e Itajaí (19%). Esses dados não sugerem necessariamente uma redução na relevância de BC, mas sim uma mudança de padrão uma expansão coordenada com base na replicação do modelo de BC para os outros municípios da região. Os efeitos desse processo de replicação do modelo de desenvolvimento característico de BC, incluem mudanças drásticas na paisagem urbana, marcadas pelo aumento da verticalização, elevação do preço do solo, gentrificação, segregação socioespacial e degradação ambiental. Nesse contexto, o estudo conclui que o modelo de desenvolvimento regional implementado, baseado em atividades turístico-imobiliárias, mostra-se insustentável, exigindo mudanças significativas no planejamento urbano e regional.

Palavras–chave: Concentração Setorial. Construção Civil. Índice Herfindahl-Hirschman. Desenvolvimento Regional. Foz do Rio Itajaí.

Impactos de la concentración sectorial de la industria de la construcción en la región de la Foz del Río Itajaí (SC) entre 2003 y 2021

Resumen
Este artículo tiene como objetivo analizar los efectos de la concentración de la industria de la construcción en los municipios de la región de la Foz del Río Itajaí entre 2003 y 2021, utilizando el índice Herfindahl-Hirschman (IHH). Los resultados indican un crecimiento significativo de las actividades de la construcción durante el período analizado. El estudio también revela un proceso de descentralización del sector, históricamente concentrado en Balneario Camboriú (BC), que sigue siendo el municipio con la mayor concentración en la región. Sin embargo, se observa una tendencia hacia la dispersión: en 2003, BC concentraba el 50% de las actividades de la construcción, mientras que en 2022 esta participación disminuyó al 26%, con un notable crecimiento del sector en Itapema (21%) e Itajaí (19%). Estos datos no sugieren necesariamente una disminución de la relevancia de Balneario Camboriú, sino un cambio de patrón, con una expansión coordinada basada en la replicación del modelo de BC en otros municipios de la región. Los efectos de este proceso de replicación incluyen cambios drásticos en el paisaje urbano, caracterizados por el aumento de la verticalización, el incremento de los precios del suelo, la gentrificación, la segregación socioespacial y la degradación ambiental. En este contexto, el estudio concluye que el modelo de desarrollo regional implementado, basado en actividades turístico-inmobiliarias, resulta insostenible, lo que requiere cambios significativos en la planificación urbana y regional.

Palabras clave: Concentración sectorial. Construcción. Índice Herfindahl-Hirschman. Desarrollo Regional. Desembocadura del río Itajaí

1 Introduction

The urbanization of coastal areas in Brazil in the 21st century has been marked by rapid and unplanned growth, driven by the increasing value of the logistics, tourism, and construction sectors (Zhai et al., 2020; Filgueiras; Albino, 2020). The concentration of these economic activities—particularly in the construction sector—

has led to a dynamic of unequal development, in which some regions become more attractive for investments and generate greater capital flows, while others are left on the margins of this process (Singer, 1985; Alves, 2016). Despite the economic benefits generated, the regional impacts of this model range from the widening of socioeconomic disparities to the intensification of environmental degradation in sensitive areas, highlighting its long-term unsustainability.

The Foz do Rio Itajaí region, located on the northern coast of Santa Catarina, has experienced accelerated urban growth in a relatively short period. This process has been primarily driven by the expansion of port, tourism, and real estate activities, resulting in a significant population increase in this century. The region also stands out for its rapid verticalization process, especially in areas near the beaches. Disorganized verticalization, in turn, combined with intense real estate speculation, has contributed to a sharp rise in square meter prices, making Foz do Rio Itajaí one of the regions with the highest property values in the country (FIPEZAP, 2023).

In addition to the drastic changes in the landscape, there is a severe case of urban gentrification in the region's municipalities, where increasing socio-spatial segregation forces lower-income populations to occupy areas lacking adequate infrastructure and exposed to disaster risks. This scenario indicates that the sectoral concentration of the construction industry is promoting unequal regional development. Locations with a higher intensity of this activity experience accelerated economic growth and improvements in quality of life, while regions with lower concentration tend to remain marginalized.

In this context, the objective of this article is to analyze the effects of the sectoral concentration of the construction industry in the municipalities of Foz do Rio Itajaí (SC) between 2003 and 2022, using the Herfindahl-Hirschman Index (HHI). This study adopts a qualitative-quantitative and descriptive approach. The data were obtained from RAIS/CAGED and IBGE. The HHI was used as a tool to measure the degree of concentration of economic activity in the sector, allowing the assessment of its implications for the region's development process. In addition to this introduction, the article is divided into five sections: i) theoretical review; ii) characterization of the study area; iii) materials and methods; iv) results and discussion; and v) conclusions.

2 Theoretical Review

Regional development can be characterized by its multidimensional nature, as it involves various social sectors and institutions, requiring the active participation of individuals, public entities, and private actors (Gil, 2008). In this sense, the concept refers to a process of social, economic, cultural, and environmental mobilization aimed at leveraging all the potential of a region to promote the quality of life of its population. Elements such as regional autonomy, the ability to reinvest economic surpluses, social inclusion, and environmental awareness are essential to achieving sustainable and balanced development (Boisier, 1996). Regional development is intrinsically linked to a socially equitable and ecologically prudent process, based on democratization at all scales and on the sovereignty of individuals in choosing their future (Souza; Theis, 2009).

The study of regional development is based on the assumption that "development" and "region" are analytically interconnected through mutually influential relationships (time and space). The term "regional development" is associated with change, which may be positive for some and negative for others, while the region refers to a geographic area characterized by a set of social, cultural, economic, or natural features that distinguish it from other areas. It can be defined by factors such as diversity or concentration of power (Gomes, 1995). In this way, each region presents characteristics intertwined with society and the environment. In other words, "the causality between development and region is a collective construction, both symbolic and material, which links the social world to the natural world based on prevailing values" (Mattedi, 2014, p.68). In highly heterogeneous regions, multiple conflicts tend to emerge, especially in urban areas.

Urban development in regions refers to the integrated planning and management of the growth and transformation of urban areas within a specific geographic region (Bruno, 2020). Urban development is a continuous and multifaceted process, driven by a series of factors including technological advancements, population migration, socioeconomic shifts, and governmental policies. As cities evolve, they transform and adapt to meet the constantly changing needs and demands of their inhabitants (Santos, 2013). According to Boisier (1996, p. 45):

> Urban development in a region involves the coordination of urban planning and land use across the region, taking into account natural resources, existing infrastructure, transportation needs, housing demands, among other aspects [...] it seeks to balance economic and social growth among different cities and urban areas within the region, avoiding excessive concentration of activities in a single locality.

In Brazil, the first urban settlements were mainly established in coastal areas, forming the foundation of the country's territorial occupation, with ports acting as hubs of attraction and driving the emergence of urban centers. In the 19th century, the export-driven economic model promoted population growth near capitals and ports, reinforcing colonial structures (Mota, 2023). In the 20th century, the industrialization process concentrated in capitals and their outskirts led to mass migration to cities, accelerating urban expansion. In this context, the construction industry played a decisive role in the country's development, as it was necessary to meet the growing housing demand resulting from internal migration (Gonçalves; Farias, 2020).

Since the second half of the 20th century, Brazil's construction sector has experienced continuous growth, driven by factors such as GDP increase, substantial investment volume, and its multiplier effect on the productive chain (Masuero, 2021). Keynesian theory identifies the construction sector as a fundamental driver of economic growth, forming part of a broader regional development process (Oliveira, 2012). According to Scherer (2007), the sector directly influences aggregate demand, contributing to job and product creation while linking economic, industrial, and social dimensions—generating new labor market opportunities.

Another factor strongly linked to the expansion of construction is the tourism sector. Since the 1970s, tourism planning in Brazil followed a sectoral approach with a strong authoritarian bias, where political decisions were made in a centralized

manner (Costa, 2021). Development plans implemented during this period led to disastrous consequences, including disorganized coastal occupation, degradation of ecosystems, and the dismantling of traditional communities. This structure also enabled real estate speculation, resulting in cultural disarticulation and displacement of traditional populations, as well as the destruction of ecologically sensitive areas (Feitosa; Peluso, 2021).

According to Mullins (1991), the interaction between the real estate and tourism sectors creates an agent that performs a dual function: shaping spatial production through landowners and construction firms. It is important to note that the dynamic between tourism and real estate acts as a powerful force, unifying coastal areas under a single logic of urban and regional development (Araújo, 1997). In this logic, the tourism sector seeks to reduce seasonality to ensure better returns on investment, while the real estate sector faces the classic challenge of long production and amortization cycles (Abramo, 1989). Generally, this logic distances itself from the productive sectors, as the real estate market offers more attractive returns in terms of average profitability.

It is evident that the significant 52.10% growth in the construction sector in Brazil's coastal areas between 2013 and 2023, resulting in an average annual increase of 4.28% (SINDUSCON-MG, 2023), is not solely due to demographic growth or local capital circulation. Instead, this growth is driven by rising demand and the goal of attracting national and international investment, especially aligned with tourism. According to Silva and Ferreira (2007, p. 117), the connection between real estate and tourism sectors is one of the main drivers of the real estate boom in coastal regions, reflecting a transformation in economic and urban dynamics:

> a facet of the real estate market, while other factors are linked to local income, local demographics, and state investment. As the coastal axis becomes a space of conurbation among municipalities, the impacts of tourism-real estate activities become evident in population density increases, land value escalation, and greater pressure on natural resources.

As construction expands, new residential and commercial developments arise, boosting demand for labor and services. This sector's growth directly impacts regional development, as previously underdeveloped areas begin to benefit from new investment and infrastructure (Oliveira, 2012). However, this process also correlates with phenomena such as urban gentrification, where rising property values and investment displace lower-income residents from central areas. While these urban transformations contribute to regional economic growth, they also create social disparities, as displaced populations are marginalized to areas with limited infrastructure and higher socio-environmental risks (Finkel, 1997).

Another impact is the transformation of landscapes in several coastal cities: beach houses have been replaced by highly verticalized buildings (Silva; Ferreira, 2007); resorts, marinas, and restaurants have replaced traditional communities; sandbanks and mangroves have given way to wide sandy beaches. Coastal landscape degradation, loss of ocean views and access, pressure on public services, and overexploitation of natural resources are among the most pressing challenges. Furthermore, poor planning and disregard for environmental regulations have led to coastal ecosystem degradation, environmental pollution, and intensified urban

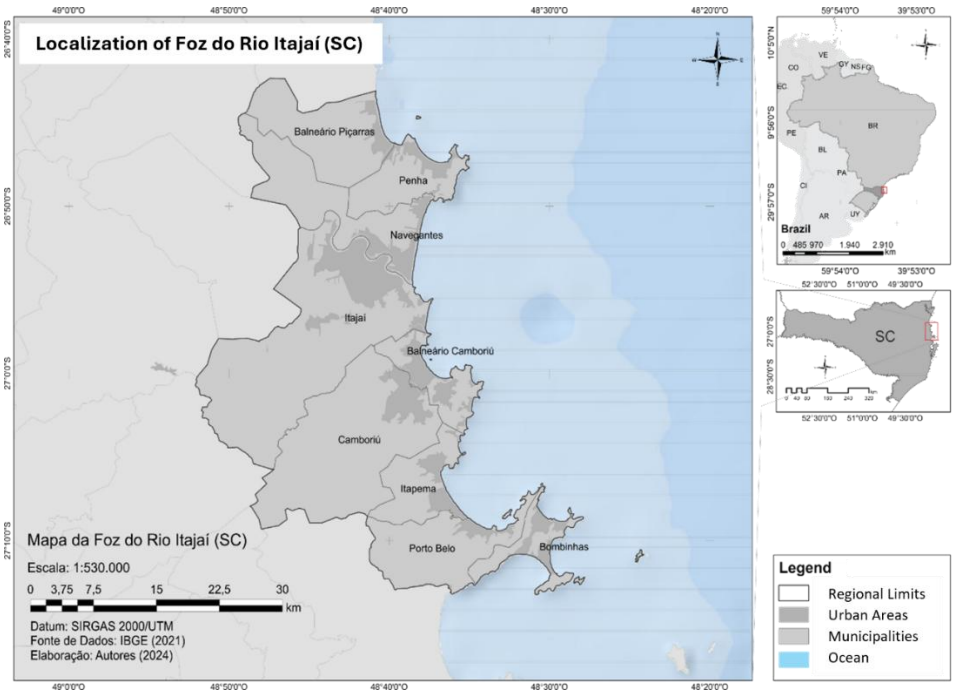
issues (Oliveira, 2020). The lack of public land-use regulation, combined with weak property records, perpetuates environmental problems caused by intensive beach use for real estate purposes (Beserra, 2023; Machado et al., 2022).

In summary, the growth of construction activities has had profound impacts on regional development, with both positive effects—such as GDP increase and job creation—and negative ones—such as rising inequality and urban gentrification. While real estate appreciation and improved infrastructure can boost local economies, this process often results in the exclusion of vulnerable populations, pushing them to peripheral areas. This scenario highlights the urgent need for effective public policies that integrate urban planning and social inclusion to ensure more balanced and accessible regional development, without exacerbating existing social and spatial inequalities.

3 Study Area Characterization

The Foz do Rio Itajaí (Figure 1) is one of the three micro-regions of the Itajaí Valley, located in the state of Santa Catarina, and encompasses nine municipalities, including: Itajaí, Balneário Camboriú, Camboriú, Navegantes, Penha, Bombinhas, Itapema, Piçarras, and Porto Belo. The population of Foz do Rio Itajaí is 782,160 inhabitants, with an area of 997 km² and a population density of 668 inhabitants/km² (IBGE, 2022). The Human Development Index (HDI) is 0.771, classified as high. Among its main characteristics, its coastal location on the Atlantic Ocean stands out, giving it considerable relevance in both the regional and national tourism sectors. In addition, the region has a diversified economy, with emphasis on the port, commerce, and services sectors. The total Gross Domestic Product (GDP) is R$ 52,759,366.43, and the per capita GDP is R$ 53,933.79 (IBGE, 2020).

Figure 1 – Map of the Municipalities of Foz do Rio Itajaí (SC)



Source: Prepared by the authors, based on IBGE (2021).

Foz do Rio Itajaí has undergone an urban and regional development process divided into several phases. The period from 1920 to the mid-1950s is marked by the transition from an agricultural and export-based economy (Itajaí Port) to an urban-industrial economy that accelerated the urbanization of the Itajaí Valley (Danielski, 2009). This period is notable for the emergence of a summer vacation nucleus intended for descendants of immigrants from cities in the Itajaí Valley. The municipalities of Itajaí and Balneário Camboriú were among the first areas occupied for this purpose.

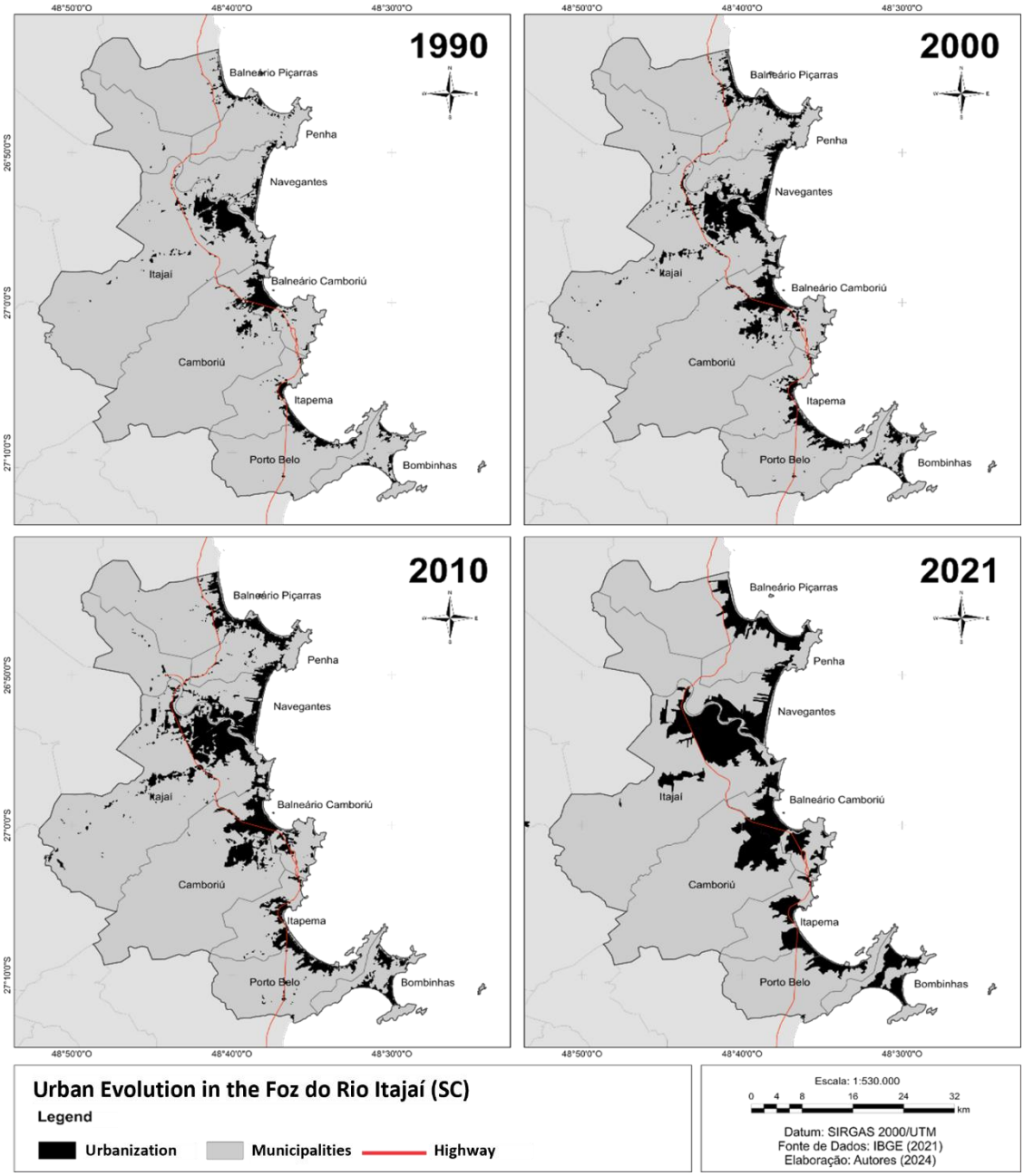
In 1970, the Navegantes Airport was founded. In 1971, the completion of the BR-101 highway made the city more accessible to the rest of the state and neighboring countries, as the highway passes through the city in a north-south direction (Danielski, 2009). In 1991, a theme amusement park was established in the municipality of Penha. In the early 2000s, the duplication of BR-101 boosted urban development in several municipalities of the Foz do Rio Itajaí. In 2004, Navegantes Airport began receiving international flights, and in 2009, the Port of Navegantes was inaugurated. During the 2010s, the municipalities of Itajaí and Balneário Camboriú began receiving cruise ships.

Regarding population growth, there has been an exponential increase, especially since the 2000s. Between 2000 and 2022, the population grew from 357,895 to 782,160 inhabitants (IBGE, 2000; 2022). The municipalities that grew most significantly during this period were Itapema (5.99% per year), Camboriú (4.86% per year), and Balneário Camboriú – BC (4.51% per year). The main urban cluster is located in the central area and includes the cities of Itajaí, Navegantes, Camboriú, and Balneário Camboriú (Figure 2).

One of the defining features of the urban landscape in several municipalities of Foz do Rio Itajaí is the high-rise coastal development. Population density is highest in the municipalities of Itajaí (913 inhabitants/hectare), Balneário Camboriú – BC (3,077 inhabitants/hectare), and Itapema (1,304 inhabitants/hectare), with a notable concentration in coastal and beachfront areas. Economic opportunities related to tourism and commerce have driven denser population growth in these locations.

Regarding the economic data of Foz do Rio Itajaí, the rapid GDP growth (x1000) in this century stands out. In the year 2000, the total gross GDP (x1000) was R$ 3,221,411. By 2010, it had increased to R$ 22,874,446, and in 2020, the result was R$ 53,933,790 (IBGE, 2000; 2010; 2020). The GDP per capita rose from approximately R$ 5,000 in 2000 to over R$ 50,000 in 2020 (IBGE, 2020). The municipalities with the highest GDP growth (x1000) were: i) Itajaí, driven by the expansion of port and transportation activities (from R$ 15,922,960 in 2010 to R$ 33,084,145 in 2020); ii) Balneário Camboriú (BC), boosted by the growth of tourism and real estate investments (from R$ 2,735,408 in 2010 to R$ 6,212,892 in 2020); and iii) Navegantes, where the construction of the port led revenues to rise from R$ 1,423,383 in 2010 to R$ 4,971,218 in 2020 (IBGE, 2010; 2020).

Figure 2 – Urban Growth Map of the Foz do Rio Itajaí Region (SC)



Source: Prepared by the authors based on IBGE (2021).

The region recorded notable exponential growth in both the number of companies and workers associated with the construction sector. In 2021, there were 2,384 active companies in the sector within the region — a significant increase compared to 1,175 companies in 2010 and 577 companies in 2003. This indicates that Foz do Rio Itajaí concentrates 53% of the construction companies in the Itajaí Valley (RAIS, 2021). At the same time, an intensive urbanization process has been identified, based on the verticalization of beachfront areas.

Currently, the four tallest buildings in Brazil are located in Balneário Camboriú. According to the Fundação Instituto de Pesquisas Econômicas – FIPE (2023), which measured the average square meter price in Brazil, three of the top ten cities with

the highest land values are located in Foz do Rio Itajaí: 1st – Balneário Camboriú; 2nd – Itapema; 7th – Itajaí.

4 Methodology

Sector concentration indices are statistical properties that provide an indication of the degree of concentration of economic activities within a given sector or market. They are used to assess how dispersed or concentrated the distribution of companies, production, employment, investments, or any other relevant variable is within a specific economic sector. Key indices include the Entropy Index or Theil Index (T), which captures how market shares are distributed among competing firms (Da Cunha, 2023); and the Joly Index (j), which can also be used to measure market concentration.

Among the most widely used methods to analyze the concentration of an economic sector is the Herfindahl-Hirschman Index (HHI), also known as the sectoral concentration index (Herfindahl, 1950; Kvålseth, 2021). The main premise of the HHI is that the influence power within various dimensions of a sector is directly related to the degree of concentration in that market. Traditionally used in theoretical literature as a measure of concentration, the HHI is also referred to as a complete information index, as it comprehensively captures the characteristics of the entire distribution of companies by size.

The choice of this methodology is supported by the concepts of the New Economic Geography (NEG), which, according to Ruiz (2016), critiques traditional approaches in regional economics for failing to adequately explain the spatial organization of economic agents such as firms, workers, and consumers. These theories lack a general explanation of the spatial "micro-organization" of such agents. In this sense, NEG seeks to fill this gap by proposing a "general theory of the economy in space", which considers local interactions, agglomeration effects, and market dynamics as central factors in the formation and transformation of regional economies (Masahisa; Krugman; Venables, 2001).

This approach provides an understanding of how economies are structured and develop regionally, taking into account local microeconomic and spatial processes. The HHI, therefore, aligns with NEG by measuring the concentration of economic activities in specific regions, allowing for the assessment of how the spatial distribution of these concentrations impacts regional development (Kvålseth, 2021). This index offers an accurate measure of economic dynamics, contributing to the understanding of regional disparities, interactions between firms, and the impact of agglomeration on local economic growth, job creation, and resource distribution.

Thus, the sectoral concentration of the Construction Industry and its respective subclasses was analyzed in the municipalities of Foz do Rio Itajaí (SC) for the period between 2003 and 2022. This is a qualitative-quantitative and descriptive study. First, sectoral dimensions were categorized for the HHI analysis (Table 1): i) number of construction establishments (RAIS/CAGED; 2003; 2021); ii) number of active employment links in construction (RAIS/CAGED; 2003; 2021); iii) volume of real estate investments (IBGE, 2000; 2010; 2022).

In addition, other parallel HHI analyses were conducted, including: a) number of establishments in architecture, urban planning, interior design, and landscaping

(RAIS/CAGED; 2003; 2021); b) number of engineering works establishments (RAIS/CAGED; 2003; 2021); c) number of real estate development companies (RAIS/CAGED; 2003; 2021). For the purposes of calculating the HHI indices, only active employing companies were considered.

Table 1 – Categorization of Dimensions for HHI Calculation

Código	Dimension	Description
D1	Number of construction establishments	Identify the concentration of companies engaged in activities related to the construction sector, such as architectural services, landscaping, interior design, real estate agencies, developers, construction companies, etc., according to IBGE and CNAE, for the period from 2003 to 2021.
D2	Number of active employment contracts	Active employment contracts indicate the impact of the construction sector on job creation and income. Identify the concentration of workers with formal or informal employment linked to construction activities according to CAGED, for the period from 2003 to 2021.
D3	Real estate investments	The analysis of real estate investments provides an overview of the capital flow driving urban growth and infrastructure expansion. Identify the concentration of real estate investments through the construction of properties and buildings in the years 2000, 2010, and 2022 according to IBGE.

Source: Prepared by the authors.

With the categorization of dimensions in place, it became feasible to carry out the collection and tabulation of secondary data (second stage) from the RAIS/CAGED and IBGE portals. The starting point was the year 2003 on the RAIS platform, as it is the first year in which the data are consistently available. From this portal, data were collected for all years from 2003 to 2021, which marks the final year of the analyzed period. To establish a comparative reference, housing construction data from the 2000, 2010, and 2022 Censuses were also used.

The collected data were organized and tabulated using Microsoft Excel, providing an environment in which they could be efficiently manipulated and analyzed. The third step involved the calculation of the HHI. The Herfindahl-Hirschman Index (HHI) is, essentially, a measure of the size of companies relative to the industry/sector in which they operate and serves as an indicator of concentration or competition among them. According to the OECD (2006), for an economic sector with *n* firms, the Herfindahl-Hirschman Index is defined by Calculation 1 (Kelly Jr; William, 1981):

$$\sum_{i=1}^{n} s_i^2 \qquad (1)$$

Where *n* is the number of firms in the market, and *Si* represents the market share of firm *i* (usually expressed as a fraction of the total market).

The higher the value of the HHI, the greater the market concentration, indicating that a few firms dominate the total market share. As the number of firms

increases, the lower bound of the index decreases. A limitation of the HHI is that, as the number of firms varies, the lower bound also changes, which limits its international comparability. The convention adopted internationally by regulatory agencies is to multiply the market share by 100, so that the HHI ranges from zero (perfect competition) to 10,000 (monopoly).

The HHI is **zero** when there are many market players, each holding a minimal share and equally dividing the market; and 10,000 when there is a single market player with 100% market share. According to conventional use of the HHI in market concentration analysis, a market is considered: "Unconcentrated" when the HHI is below 1,000; "Moderately concentrated" when the HHI is between 1,000 and 1,800 e; "Highly concentrated" when the HHI exceeds 1,800 (Table 2).

Table 2 – HHI Classification

IHH Value	Class
<1000	Unconcentrated
1000-1800	Moderately concentrated
>1800	Highly concentrated

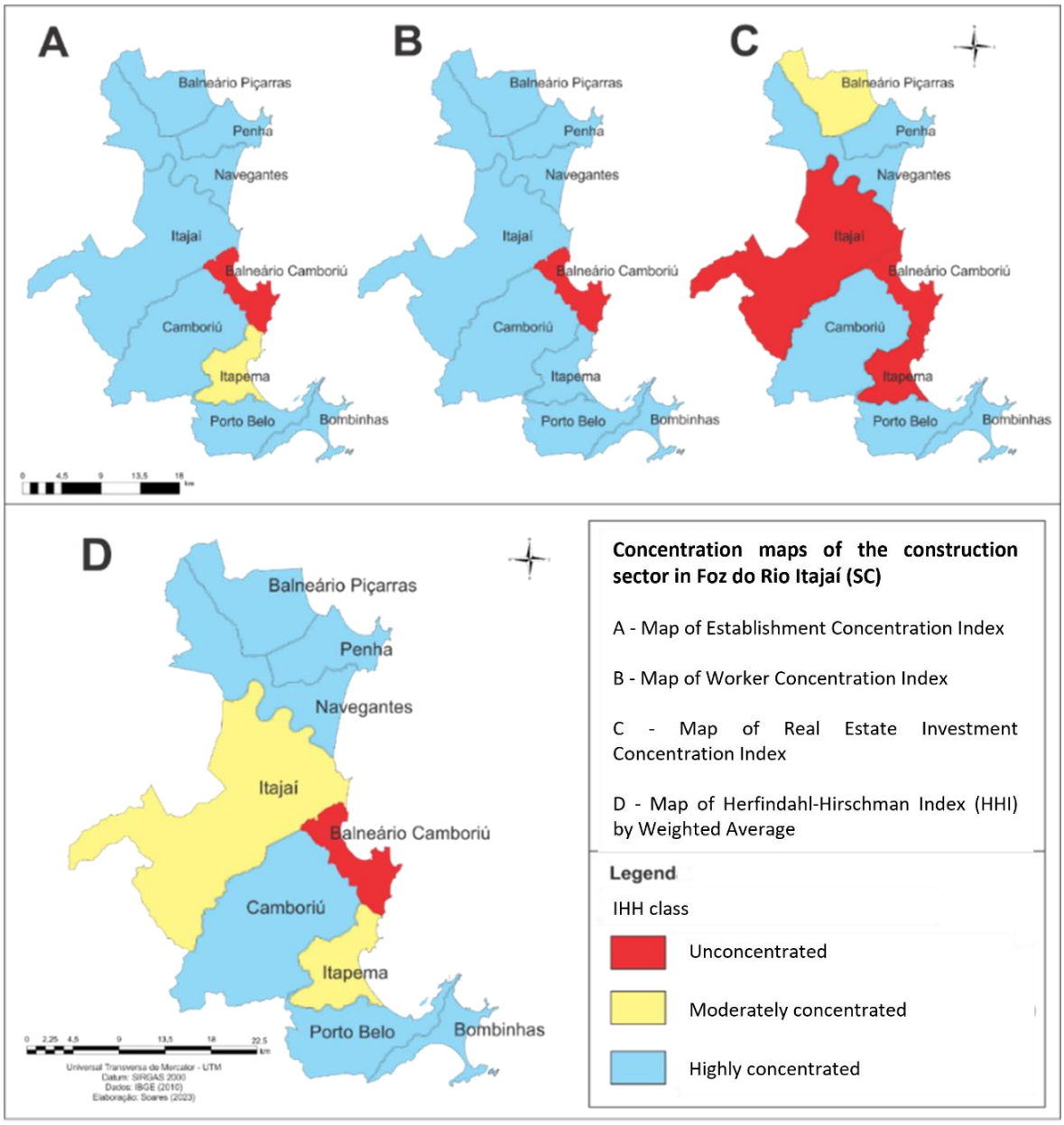
Source: Herfindahl (1950).

The analysis of the Herfindahl-Hirschman Index (HHI) was conducted by municipality, involving a ranking process among the analyzed dimensions and the weighted average total. A classification map of the HHI was created, allowing a clear and objective visualization of the distribution of company concentration across different municipalities. A discussion was carried out that enabled a deeper understanding of the concentration process of construction companies in the Foz do Rio Itajaí region. Additionally, articles, documents, and laws were utilized to broaden the study. Economic, political, and geographic factors were considered, contributing to a holistic analysis of the situation.

5 Results and Discussion

The HHI results for the concentration of the construction sector in the municipalities of Foz do Rio Itajaí (Figure 5) indicate that: BC has the highest values in all analyzed categories, indicating a more intense concentration with a weighted average of 2,829, classified as highly concentrated; in second place, Itapema is established as moderately concentrated in expansion with a weighted average HHI of 1,138; third, Itajaí shows a weighted average of 1,057, moderately concentrated in expansion; Camboriú follows with an HHI of 644, Piçarras with an HHI of 560, Navegantes with an HHI of 490, Bombinhas 274, Porto Belo 163, and Penha 151, all in the low concentration category.

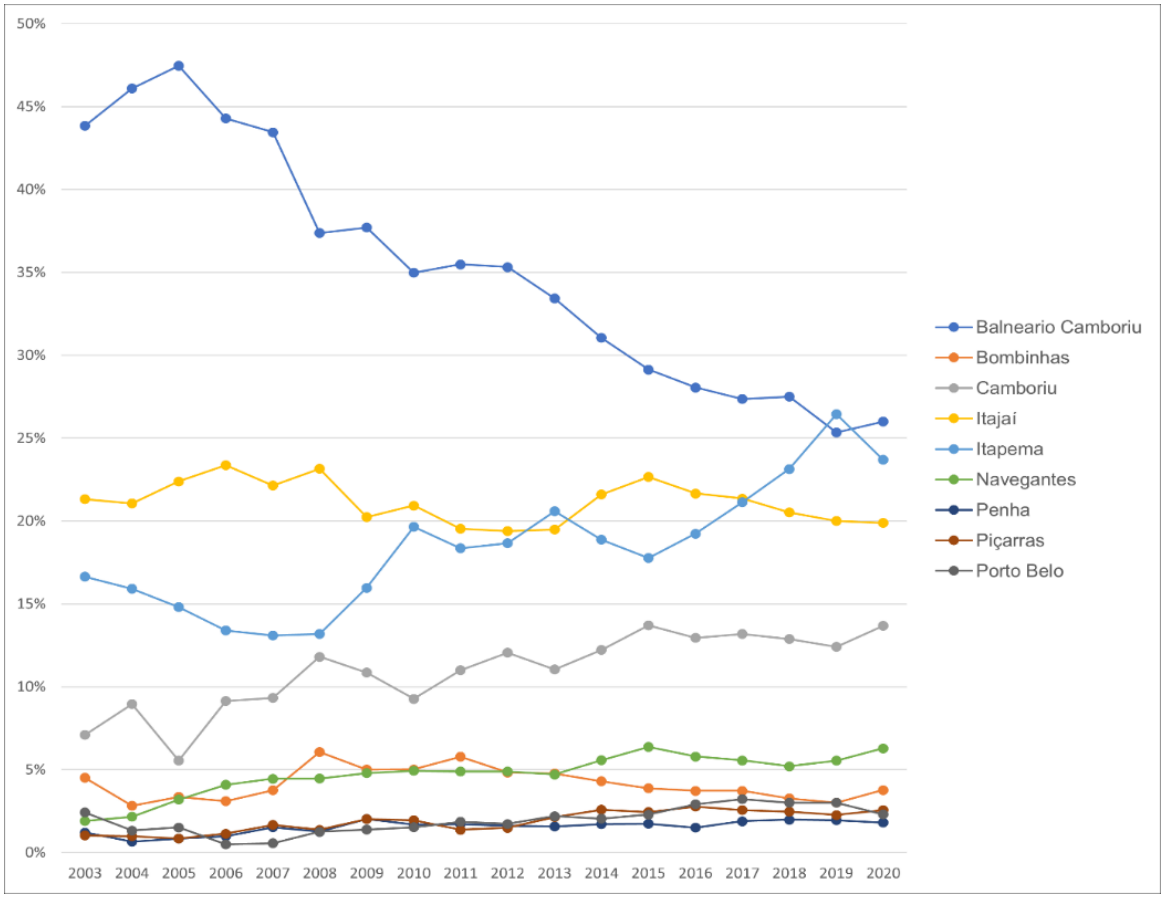
Figure 3 – Concentration maps of the construction sector in Foz do Rio Itajaí



Source: Authors.

Regarding the HHI of the concentration of construction establishments, it is noted that: BC shows an index of 2,392 and is categorized as highly concentrated; Itapema revealed an HHI of 1,284 and falls into the moderately concentrated category; Itajaí presents an HHI of 854, Bombinhas 337, Navegantes 464, Camboriú 412, Penha 49, Porto Belo 8, and Piçarras 7, all of which are in the low concentration category.

Figure 4 – Concentration of construction establishments in Foz do Rio Itajaí (2003 – 2020)

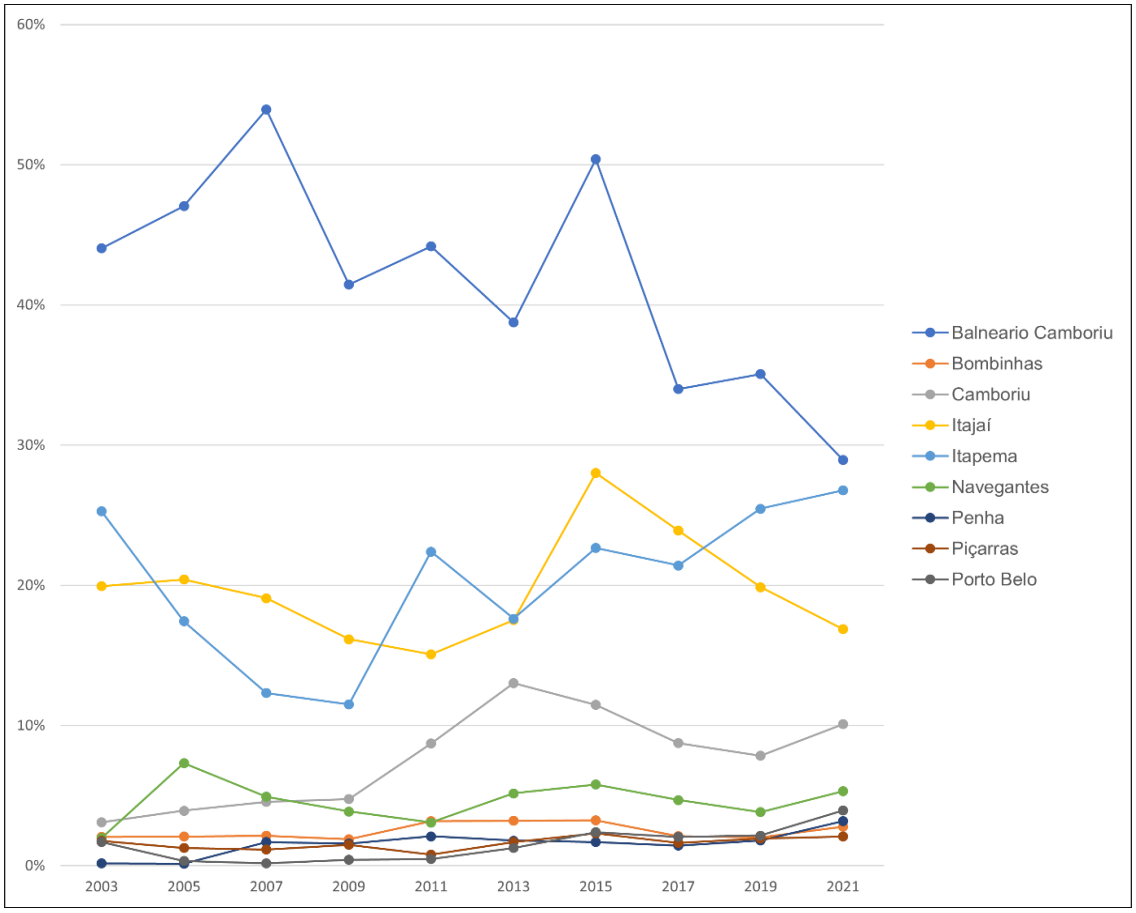


Source: Prepared by the author based on RAIS data (2003–2021)

The analysis of the concentration data of establishments in the Foz do Rio Itajaí (Figure 3), based on the percentages provided for each municipality over the years, indicates some notable trends: BC showed a steady decline in its share over the years, dropping from 44% in 2003 to 25% in 2020, suggesting a relative decrease in the concentration of construction establishments in the area. Bombinhas maintained a relatively low share, ranging between 3% and 6%. Camboriú initially showed an increase in share, reaching 14% in 2014, but then experienced a subsequent decline to 12–13%. Itajaí maintained a significant share, varying from 19% to 23%. Itapema demonstrated a remarkable increase in share, rising from 13% in 2003 to 23% in 2021. This growth suggests a growing concentration of construction establishments in this municipality.

Regarding the concentration of employment ties, the results indicate that BC is the only municipality classified as highly concentrated with an index of 1,877, while the others are classified as low concentration. Itapema revealed an HHI of 372, Itajaí 272, Camboriú 62, Bombinhas 59, Porto Belo 30, Penha 28, Piçarras 24, and Navegantes 21. Figure 4 shows a historical series of the concentration of construction employment ties in the municipalities of Foz do Rio Itajaí.

Figure 5 – Concentration of construction employment ties in Foz do Rio Itajaí (2003 – 2021)



Source: Prepared by the author based on RAIS data (2003–2021)

Balneário Camboriú (BC) shows fluctuations over the years but reveals a general downward trend in employment concentration, dropping from 44% in 2003 to 29% in 2021. Bombinhas maintains a relatively low and stable concentration, ranging between 2% and 3%. Camboriú experienced a significant increase in employment concentration, rising from 3% in 2003 to 10% in 2021. Itajaí shows a decline in concentration, going from 26% in 2003 to 17% in 2021. Itapema exhibits an increase in concentration, rising from 26% in 2003 to 28% in 2021. Navegantes started with low concentration in 2003, increased until 2007, and then maintained a downward trend, reaching 5% in 2021. Penha began with low concentration, experienced an increase in 2007, and remained relatively stable, reaching 3% in 2021. Piçarras maintained a low and stable concentration throughout the period, fluctuating between 1% and 2%. Porto Belo started with low concentration, had a brief drop in 2009, but increased significantly in recent years, reaching 4% in 2021.

Regarding the HHI of real estate investments, some trends are noted: with an HHI of 2,829, BC is classified as highly concentrated in terms of real estate investments. Furthermore, BC has about 50% of its properties unoccupied and used only occasionally (IBGE, 2022). Itajaí, with an HHI of 2,035, also shows high concentration in real estate investments. Itapema has an HHI of 1,804, establishing it as highly concentrated. Piçarras shows an HHI of 1,010, classified as moderately

concentrated. Camboriú presents an HHI of 820, indicating low concentration. Navegantes has an HHI of 456, indicating low concentration. Porto Belo's HHI is 452, also indicating low concentration. Bombinhas has an HHI of 427, indicating a considerable concentration in real estate investments. Bombinhas also has about 70% of its properties unoccupied and used only occasionally (IBGE, 2022). Penha's HHI is 377, indicating low concentration of investments.

The data indicate that there is an ongoing expansion of civil construction activities (companies, employment ties, and investments) across the municipalities of Foz do Rio Itajaí. Until 2003, BC concentrated about 50% of these activities in the region, but from 2005 onwards, a decentralization process occurred, highlighting the growth of the real estate market in Itapema. In 2021, BC concentrated about 26% of the sector's activities in the region. The evident growth in the civil construction sector in the municipalities of the Foz do Rio Itajaí region, such as Itapema and Camboriú, does not necessarily imply a loss of the sector in BC, which itself also experienced robust development. On the contrary, this scenario may indicate a coordinated expansion to surrounding municipalities, given the sector's success. According to Maranhão (2023), BC is undergoing a shift in its construction model, with a growing focus on luxury buildings. Due to the lack of land for new construction, developers opt to demolish relatively new buildings to rebuild higher-standard ones in an aggressive urban reproduction process (Rahy, 2012, p. 2012).

A factor enabling this sector expansion in the region is the flexibilization of master plans, building codes, and the extensive application of instruments such as consortium urban operations and onerous grants. Between 2006 and 2019, R$ 108,923,455.84 was raised solely from the purchase of additional floor area rights along BC's beachfront (Siqueira; Schleder, 2021). A total of 139,183.57 m² more was purchased than originally established by the 2006 Municipal Master Plan. In Porto Belo, according to estimates by the Municipal Planning Secretariat (2022), with the implementation of instruments that facilitate construction approvals, such as "Aprova Fácil," between 2020 and 2023, 566 residential and commercial construction permits were granted — 195 of which were for vertical buildings. The flexibility of these and other instruments has allowed the original building planning to be bypassed, increasing utilization coefficients, building height limits, land occupancy rates, and reducing green areas.

The most visible impact of this development model is the transformation of the regional urban landscape, with a significant increase in the number of high-rise buildings along the coastlines of the municipalities. The replication of the "BC model" (Figure 6) is evident, reflecting a highly complex urban-touristic growth over a territory of great environmental fragility and scenic value (Pinho, 2012). Since the 2000s, all municipalities in the region have undergone a significant change in their landscape, where areas predominantly occupied by vacation homes were replaced by verticalized buildings, with increasing height trends.

Figure 6 – The "BC" Urbanization Model

Source: Prepared by the author with images from the Historical Collection of Balneário Camboriú.

However, economically, the region experienced a significant influx of investments, especially in the real estate sector. Nevertheless, the urban development model does not seem to foster a classic form of centralization, as seen in traditional models, due to the region's high economic decentralization. Still, Itajaí and Balneário Camboriú (BC) were the municipalities that most expanded their activities, operations, and financial investments between 2000 and 2021 across the entire Vale do Itajaí. While in 2000 the municipality of Blumenau concentrated 50% of the financial activities of the Vale do Itajaí, Itajaí accounted for 9% and BC for 6%. By 2022, Blumenau's share dropped to 24%, Itajaí grew to 14%, and BC concentrated 10% (RAIS/CAGED, 2022). This indicates that the redistribution of financial activities in the Vale do Itajaí is converging toward the Foz region. This financialization model has projected BC primarily onto the international market, attracting significant foreign investments. Although BC is not a global city, it is strongly influenced by globalization processes and is a product of this phenomenon.

However, this expansion of real estate investments has generated negative socio-environmental impacts for the most vulnerable communities. One of the most pernicious impacts of this regional urban development model is socio-spatial segregation, primarily driven by the expansion of real estate speculation. Real estate speculation, in turn, while seeking quick profits through the appreciation of properties and land, can drive short-term economic growth, generating jobs and increasing municipal revenue (Scherer, 2007). While creating employment, this process directly impacted housing costs, creating affordability challenges for a portion of the population. Speculation has caused an exaggerated increase in property values in safe areas, pushing less favored populations into marginalized zones (Mello, 2024).

Camboriú is the most affected municipality by this process, as it shows the lowest socioeconomic indicators in the region. Only 34% of Camboriú's economically active population works within the municipality (IBGE, 2021), while the remainder commutes to other municipalities, especially BC. Furthermore, Camboriú has the highest social vulnerability index among the municipalities analyzed (IPEA, 2017). Regarding income, approximately 11% of Camboriú's population lives with a household income below half a minimum wage, whereas in BC, this proportion is only 4% (IBGE, 2021). In this context, many service sector workers, mostly migrants, reside in Camboriú due to the greater affordability of land prices, meeting the demand generated by capital in BC and Itapema.

The rise in land values has also led to increased risk areas, such as steep slopes and regions susceptible to flooding and landslides. This gentrification phenomenon intensifies occupation of vulnerable areas, increasing potential damage in disaster events. The lack of adequate urban drainage infrastructure, due to disorderly expansion, contributes to flooding during heavy rains. Such practices reduce soil absorption capacity and amplify exposure to risks. According to Mello (2024), "inherent to climatic phenomena, a regional development model emerges that promotes people's inclusion in the territory without efficient urban and housing policies, while simultaneously stimulating the expansion of real estate speculation [...] the result of this process is the increase of disaster risk areas."

Another problem stemming from this concentration of real estate investment is the high level of environmental degradation. According to Lourens et al. (2021), the Camboriú River is among the world's thousand most polluted rivers, with approximately 137,000 kilograms of plastic dumped into its waters annually. The occupation of river margins in all municipalities, along with the destruction of restinga and mangrove ecosystems, significantly contributes to water pollution and environmental degradation (Pollete, 2021). According to Mapbiomas (2023), BC had 10 hectares of preserved mangroves in 2005, but by 2023, only 1 hectare remained. Additionally, the search for land for real estate developments has led to the occupation of preservation areas and environmental interventions, such as beach widening in BC and river channel straightening in all municipalities.

In this context, the sustainability of the development model promoted in the region—based on an aggressive, uncontrolled urbanization process—may face significant medium- and long-term challenges (Amparo, 2014). The growing verticalization and disorderly occupation of often fragile and environmentally risky areas can result in severe impacts, such as ecosystem degradation, soil sealing, and increased vulnerability to natural disasters. Furthermore, as observed in other large urban centers in Brazil, the degradation of formerly thriving areas represents a substantial challenge. Concerns arise about how to manage existing infrastructure during crises, including maintenance costs and the social and economic impacts of abandonment or underutilization (Sousa, 2010).

Therefore, it is necessary to implement strict urban regulations and promote sustainable construction, focusing on the efficient use of natural resources and environmental preservation. More sustainable examples can be found in the region itself. Bombinhas stands out as one of the few municipalities without significant high-rise buildings, maintaining highly restrictive zoning. Despite pressure from the real estate sector, Complementary Law No. 367 of November 10, 2021, limits

constructions to 4 floors, with a maximum of 7 depending on the area. Another example is Praia Brava, in Itajaí, where a stepped height zoning model was adopted: buildings up to 3 floors on the waterfront and up to 8 floors in more distant areas, respecting the shading cone over the beach (Itajaí Municipal Master Plan, 2024). In Praia de Cabeçudas, which was the focus of intense debates, building heights will be reduced to a maximum of 7 meters, following new urban guidelines. Thus, considering these models could promote the expansion of the civil construction sector in a way that respects ecological limits and fosters greater social cohesion, minimizing the impacts of this activity.

6 Conclusions

The Foz do Rio Itajaí region has stood out as the state epicenter of a real estate "boom" that began in the 1990s. The real estate market not only identified opportunities but also developed solutions and implemented its expansion plans. The region became a successful prototype for investments, consolidating itself as an urbanization model aligned with neoliberal principles. In this model, property ceased to be seen merely as a residential space or a fundamental right, becoming instead a high-value economic asset, reflecting an emphasis on its economic function rather than its social function. The impact of this "success" extended beyond municipal borders, influencing the replication of this model in other municipalities of the state. However, the intense real estate dynamics generated several socio-environmental impacts.

The significant concentration of real estate investments in BC, Itapema, and Itajaí had notable impacts on the urban landscape of these localities. This concentration appears to be less directly related to the municipality's population size and more influenced by tourism dynamics, second-home demand, and the passivity of public agencies regarding construction parameters. Although this development brought considerable economic results, it also caused conflicts such as environmental devastation, pressure on urban services, noise and visual pollution, excessive traffic, and the transformation of the local environment. Urban gentrification — a process where previously accessible areas inhabited by low-income communities undergo revitalization and rising living costs — also becomes a significant concern.

Finally, transformations in the urban development model of the Foz do Rio Itajaí are necessary, including: the implementation of urban master plans promoting sustainable development, rational land use, preservation of green areas, and protection of fragile coastal ecosystems; establishment of clear limits for urban expansion; review and, if necessary, restriction of the use of "outorgas onerosas" (paid development rights) to prevent uncontrolled real estate speculation and ensure more balanced and inclusive development; prohibition of construction in environmental preservation areas along the coast, protecting sensitive ecosystems such as mangroves, dunes, and coral reefs from unchecked urbanization; provision of tax incentives and other benefits for civil construction projects adopting sustainable practices; and encouragement of active community participation in urban planning and decision-making processes.

Regarding the methodology, the contributions of the Herfindahl-Hirschman Index (HHI), when applied to the construction industry, can provide clues for analysts to identify market concentration trends. Regulators and antitrust authorities can use the HHI as a tool to assess the need for regulatory intervention in the construction sector. If the HHI indicates high concentration, this may justify a more in-depth investigation into anticompetitive practices. Based on past and present concentration patterns, the HHI can help predict future market trends in the construction industry. The HHI allows evaluation of how policies and economic conditions affect the competitive structure of the sector in different parts of the world.

Although the Herfindahl-Hirschman Index (HHI) is a useful tool for analyzing sectoral concentration, it also has some important limitations. The HHI calculation is sensitive to the number of firms in the market. In sectors with a limited number of firms, the HHI may be inflated, suggesting a higher concentration than actually exists. The HHI treats all firms equally regardless of their relative size. This means that one very large firm can have the same weight as several smaller firms in the index calculation. Therefore, the HHI may not adequately capture the influence of dominant firms in the market. Additionally, the HHI does not consider aspects such as product differentiation, entry barriers, market power of dominant firms, or supply and demand dynamics, which are important for a comprehensive sector concentration analysis.

REFERENCES

ABRAMO, P. Dinâmica imobiliária: elementos para o entendimento da espacialidade urbana. **Cadernos IPPUR**, n. 3, pp. 47-70, 1989.

ALVES, L.R. Região, urbanização e polarização. **Economia & desenvolvimento regional**, p. 41-45, 2016.

AMPARO, P.P. Os desafios a uma política nacional de desenvolvimento regional no Brasil. Conferência. **Interações,** v. 15, n. 1, 2014, Doi: https://doi.org/10.1590/S1518-70122014000100016

ARAÚJO, T. B. Herança de diferenciação e futuro de fragmentação. **Revista Estudos Avançados**, v. 11, n. 29, 1997. Doi: https://revistas.pucsp.br/metropole/article/view/8732

BESERRA, M.V.P. **Verticalização de padrão popular e a produção capitalista da moradia: a valorização de áreas periféricas da cidade de Natal/RN.** Tese de Doutorado. Centro de Ciências Humanas, Letras e Artes, Universidade Federal do Rio Grande do Norte, Natal, 2023.

BOISIER, S. Em busca do esquivo desenvolvimento regional: entre a caixa-preta e o projeto político. **Planejamento e Políticas Públicas**, n. 13, p. 111-147, 1996. Disponível em: < //www.ipea.gov.br/ppp/index.php/PPP/article/view/135 > Acesso: 21 jan. 2025.

BORELLI, E. Urbanização e qualidade ambiental: o processo de produção do espaço da costa brasileira. **Revista Internacional Interdisciplinar Interthesis**, v. 4, n.1. 2007. Disponível em: < https://periodicos.ufsc.br/index.php/interthesis/article/view/894 > Acesso: 23 mai. 2024.

BRUNO, A.P. **Desenvolvimento urbano: o contexto de formulação da Política Nacional de Desenvolvimento Urbano.** Ministério do Desenvolvimento Regional, 2020.

COSTA, G.M. Da compreensividade multidisciplinar à abordagem inter (trans) disciplinar no planejamento urbano regional. In: LIMONAD, E; MONTEIRO, J. C.; MANSILLA, P. (orgs). **Planejamento Territorial: reflexões críticas e perspectivas**, São Paulo: Editora Max Limonad, 2021.

DA CUNHA, A.A.P. Desigualdade do abastecimento de água nos municípios pernambucanos pelo índice de Theil-T. **Revista Estudo & Debate**, v. 30, n. 3, 2023. Doi: https://doi.org/10.22410/issn.1983-036X.v30i3a2023.3450

DANIELSKI, M. **Padrão Arquitetônico e Representação Social na Paisagem da Beira-Mar de Balneário Camboriú/SC.** 275 f. Dissertação (Mestrado em Geografia) – Centro de Filosofia e Ciências Humanas, UFSC, Florianópolis, 2009.

FEITOSA, E.A.S.S.; PELUSO, M.L. **Diálogos Contemporâneos em Geografia.** Strong Edições, 2021.

FILGUEIRAS, G.D.L.; ALBINO, J. Vulnerabilidade costeira a partir da abordagem multicritério: estudo de caso no litoral sul do Espírito Santo. **Revista do Departamento de Geografia**, v. 40, 2020. Doi: 10.11606/rdg.v40i0.165831

FINKEL, G. The economics of the construction industry. New York, London, England: M.E. Sharpe: ARMONK, 1997.

FONSECA, M.A.P. **Segunda residência, lazer e turismo.** Natal: EDUFRN, 2012.

FIPEZAP - FUNDAÇÃO INSTITUTO DE PESQUISAS ECONÔMICAS**.** Índice FipeZap 2023. Disponível em: **<** *https://www.fipe.org.br/pt-br/publicacoes/relatorios/#relatorio-fipezap* **>** Acesso: 6 jun. 2023.

GARROTE, M.S.; SANTOS, G.F. história, meio ambiente e desenvolvimento regional do território do parque nacional da serra do Itajaí no município de Blumenau (Vale do Itajaí, Santa Catarina). **Geosul,** v. 34, n. 70, p. 446-462, 2019. Doi: http://dx.doi.org/10.5007/2177-5230.

GIL, I. Cooperação, competição e resistência nas associações de municípios: a AMNAP e o desenvolvimento regional da Nova Alta Paulista. **Revista NERA**, v.12, 2008. Doi: 10.47946/rnera.v0i12.1398

GOMES, P. C. da C. O conceito de região e sua discussão. In: CASTRO, I. E.; GOMES, P. C. da C.; CORRÊA, R. L. **Geografia: conceitos e temas.** Rio de Janeiro, Bertrand Brasil, 1995, p. 49-76.

GONÇALVES, G.M.; FARIA, A.P.N. Planejamento cultural e estético da paisagem urbana costeira. **Projectare: Revista de Arquitetura e Urbanismo**, v. 1 n. 10, 2020. Disponível em: < https://periodicos.ufpel.edu.br/index.php/Projectare/article/view/19101 > Acesso: 10 jul. 2024.

HERFINDAHL, O. **Concentration in the U.S. Steel Industry.** New York: Columbia University, 1950.

IBGE – Instituto Brasileiro de Geografia e Estatística. Censo demográfico de Santa Catarina de 1940-1950. 1950. Disponível em< https://biblioteca.ibge.gov.br/?view=detalhes&id=767> Acesso: 19 jan. 2022.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA FÍSICA. Censo demográfico 2022. Disponível em: < https://www.ibge.gov.br/estatisticas/sociais/populacao/22827-censo-demografico-2022.html?edicao=35938&t=resultados > Acesso: 19 jul. 2023.

_____. Censo demográfico 2000. Rio de Janeiro,v.25, p.1-568, 2000.

_____. Censo demográfico 2010. Rio de Janeiro, p.1-251, 2010.

_____. Censo demográfico de Santa Catarina de 1950-1960. 1960. Disponível em < https://biblioteca.ibge.gov.br/index.php/bibliotecacatalogo?id=768&view=detalhes > Acesso: 19 jan. 2022.

_____. IBGE Cidades. (2018). Disponível em: < https://cidades.ibge.gov.br/ > Acesso: 15 nov. 2020.

_____.Censo demográfico de Santa Catarina de 1970-1980. 1980. Disponível em< https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=772 > Acesso: 19 jan. 2022.

_____. Censo demográfico de Santa Catarina de 1991-2000. Disponível em< https://www.ibge.gov.br/estatisticas/sociais/administracao-publica-e-participacao-politica/9663-censo-demografico-2000.html > Acesso: 19 jan. 2022.

_____. Portal de Mapas (2021). Disponível em: < https://portaldemapas.ibge.gov.br/portal.php#homepage > Acesso: 26 jan. 2023.

IPEA - INSTITUTO DE PESQUISA ECONÔMICA APLICADA. **Atlas da Vulnerabilidade Social nos municípios brasileiros.** Brasília: IPEA, 2017.

KELLY Jr., WILLIAM, A. A Generalized Interpretation of the Herfindahl Index**. Southern Economic Journal, v. 48**, n.1, pp. 50–57. 1981. doi:10.2307/1058595

KVÅLSETH, T. O. et al. Cautionary Note About the Herfindahl-Hirschman Index of Market (Industry) Concentration. **Contemporary Economics,** v. 16, n. 1, p. 51-60, 2022. Doi: 10.5709/ce.1897-9254.468

LOURENS, J.J.M. et al. More than 1000 rivers account for 80% of global riverine plastic emissions into the ocean. **Science advances,** v.7, n. 18, 2021. Doi: 10.1126/sciadv.aaz5803

MACHADO, R.B.G. et al. **Análise territorial com base no mercado imobiliário e na sintaxe espacial no distrito Campeche**. Dissertação de metrado. Universidade Federal de Santa Catarina. Florianópolis/SC. 2022.

MAPBIOMAS. Projeto MapBiomas Coleção [versão] da Série Anual de Mapas de Cobertura e Uso da Terra do Brasil. Disponível em: < https://brasil.mapbiomas.org/ > Acesso: 23 jan. 2024.

MARANHÃO, R. A. Mercado imobiliário de luxo no brasil: uma análise na cidade de Balneário Camboriú. **Boletim de Conjuntura (BOCA)**, v. 14, n. 40, p. 270-284, 2023. Doi: 10.5281/zenodo.7812132.

MASAHISA, F. KRUGMAN, P.; VENABLES, A.J. The spatial economy cities, regions, and international trade. MIT Press, 2001.

MASUERO, A.B. Desafio da Construção Civil: crescimento com sustentabilidade ambiental. **Matéria**, v. 26, n. 04, 2021. Doi: https://doi.org/10.1590/S1517-707620210004.13123

MATTEDI, M. A. Pensando com o desenvolvimento regional: subsídios para um programa forte em desenvolvimento regional. Revista Brasileira de Desenvolvimento Regional, v. 2, n. 2, 2014. Doi: http://dx.doi.org/10.7867/2317-5443.2014v2n2p059-105

MELLO, B.J. Explorando a dinâmica entre resiliência aos desastres socioambientais e desenvolvimento regional sustentável: o estudo de caso da bacia hidrográfica do rio Itajaí-mirim (SC). Tese de Doutorado. Programa de Pós-Graduação em Desenvolvimento Regional. Universidade Regional de Blumenau, 2024.

MOTA, S.O.L. Dinâmica da ocupação da frente litorânea de Aracaju, Sergipe: fases e padrões de assentamento. **Élisée - Revista De Geografia Da UEG**, 12(01), 2023. https://doi.org/10.31668/elisee.v12i01.13866

MULLINS, P. Turism Urbanization. **International Journal of Urban and Regional Research**, , v.15, n.3, 1991. Doi: 10.1111/j.1468-2427.1991.tb00642.x

OLIVEIRA, F.F.R. **As recentes políticas habitacionais e as práticas do setor imobiliário na atualidade: a segregação socioespacial no espaço urbano de Uberaba–MG.** Dissertação de mestrado. Universidade de Brasília (UnB). 2020.

OLIVEIRA, F.O. Indústria da construção civil: análise e perspectivas no desenvolvimento regional. **Anais do XVII Encontro de Iniciação Científica XIII Mostra de Pós-graduação VII Seminário de Extensão IV Seminário de Docência Universitária**, 2012.

PEREIRA, R. M. F. do A. Origens, evolução e tendências do setor hoteleiro de Balneário Camboriú/SC. **Revista Turismo - Visão e Ação - Eletrônica**, v. 17 - n. 2, 2015. Doi: 10.14210/rtva.v17n2.p508-537

PLANO DIRETOR MUNICPAL DE ITAJAÍ. **Lei complementar n° 449, de 11 de março de 2024. Institui o plano diretor de gestão e desenvolvimento territorial de Itajaí.** Disponível em: <https://leismunicipais.com.br/plano-diretor-itajai-sc> acesso: 30 nov. de 2024.

POLLETE, M. **Rios Itajaí-açu e Camboriú entre os mil mais poluídos do mundo. Entrevista para o jornal "O Diarinho" (2021).** Disponível em: < https://diarinho.net/materia/626623/Rios-Itajai-acu-e-Camboriu-entre-os-mil-mais-poluidos-do-mundo > acesso: 30 mai. de 2023.

RAIS/CAGED. Ministério do Trabalho e Emprego. Programa de Disseminação das Estatísticas do Trabalho. **Relação Anual de Informações Sociais (RAIS),** Brasília, DF, 2021.

RAHY, I.B. Verticalização e Paisagem Urbana. In: SEMINÁRIO INTERNACIONAL URBICENTRO. Salvador – BA, 2012. **Anais....** Salvador – BA, 2012.

RUIZ, R.M. Economia regional urbana: políticas regionais na nova geografia economia. Belo Horizonte: UFMG, 2006.

SANTOS, M. **A urbanização brasileira**. EDUSP, 2013.

SECRETARIA MUNICIPAL DE PLANEJAMENTO DE PORTO BELO. Dados sobre alvarás de construção, 2022. Disponível em: < https://www.ojanelao.com.br/em-tres-anos-porto-belo-emite-566-alvaras-de-construcao/ > acesso: 18 nov. 2023.

SCHERER, F.L. A consolidação de empresas brasileira de construção pesada em mercados externos. Belo Horizonte: UFMG, 2007.

SILVA, A.F.C.; FERREIRA, A.L.A. Dinâmica imobiliária e turismo: novas relações, novos riscos. **Cadernos Metrópole,** v.18, 2007. Disponível em: < https://revistas.pucsp.br/index.php/metropole/article/view/8732 > Acesso: 23 jul. 2024.

SIQUEIRA, M.T.; SCHLEDER, C.S.L. Operações Urbanas Consorciadas em Balneário Camboriú: o desvirtuamento do solo criado. **Cad. Metrop., São Paulo**, v. 23, n. 51, pp. 787-808, maio/ago 2021 http://dx.doi.org/10.1590/2236-9996.2021-5115

SINDUSCON (MG) - Sindicato da Indústria da Construção Civil no Estado de Minas Gerais. ***Construção revisa projeção de crescimento e deve fechar 2023 com queda de 0,5%.*** *Disponível em: < https://sinduscon-mg.org.br/construcao-revisa-projecao-de-crescimento-e-deve-fechar-2023-com-queda-de-05/#:~:text=O%20levantamento%20mostrou%20que%20no,registrado%20pelo%20setor%20desde%202020.* > acesso em: 10 out. 2023.

SINGER, P. Urbanização e desenvolvimento: o caso de São Paulo. **IN: Economia Política da Urbanização. Ed. Brasiliense, São Paulo**, 1985.

SOUSA C. A. Do cheio para o vazio. Metodologia e estratégia na avaliação de espaços urbanos obsoletos. 2010. Dissertação (Mestrado)—Instituto Superior Técnico, Universidade Técnica de Lisboa. Lisboa, 2010.

SOUZA, C. M. M.; THEIS, I. M. Desenvolvimento regional: abordagens contemporâneas. Blumenau: Edifurb, 2009.

ZHAI, T. et al. Assessing ecological risks caused by human activities in rapid urbanization coastal areas: Towards an integrated approach to determining key areas of terrestrial-oceanic ecosystems preservation and restoration. **Science of The Total Environment,** v. 78, 2020. Doi: https://doi.org/10.1016/j.scitotenv.2019.135153

ZIELINSKI, S. et al. Beach Litter Assessment: Critical Issues and the Path Forward. Sustainability, v.14, n.19, 2022. Doi: https://doi.org/10.3390/su141911994