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Risk management in tourism: Analysis of destinations in Brazil and vulnerability to natural disasters

Gestão de Risco no Turismo: Análise dos Destinos Turísticos no Brasil e a Vulnerabilidade a Desastres

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Resumo: Em muitos países, os destinos turísticos têm sido atingidos por eventos extremos associados às mudanças climáticas que, também, estão relacionadas à desastres naturais – como seca, inundações, ciclones e incêndios –, cada vez mais frequentes em muitas regiões do mundo. Isto tem contribuído para a incorporação da problemática da vulnerabilidade a desastres naturais nas discussões do planejamento e gestão do turismo. Todavia, no Brasil em particular, nas ações de planejamento e gestão de destinos turísticos, pouco têm sido consideradas por parte dos formuladores de políticas públicas as consequências dos eventos extremos, como é o caso dos desastres naturais, sobre a dinâmica do desenvolvimento turístico. Neste sentido, este trabalho tem como objetivo analisar os municípios no Brasil categorizados pelo Ministério do Turismo – MTUR – como destinos e, que apresentam vulnerabilidade a desastres naturais. A análise foi feita a partir do cruzamento de dados contidos no Plano Nacional de Turismo (2018-2022) com os dados da Base Territorial Estatística de Áreas de Risco – BATER, metodologia de mapeamento de desastres naturais desenvolvida por pesquisadores do Centro Nacional de Monitoramento e Alertas de Desastres Naturais – CEMADEM. Os resultados demonstram que um considerável número de municípios categorizados como

destinos turísticos no Brasil, apresenta vulnerabilidade a riscos de desastres naturais. Todavia, constata-se que nas políticas públicas de turismo, tanto nas escalas local como nacional, não estão contempladas nas suas diretrizes ações estratégicas para a gestão de riscos a desastres naturais no setor de turismo.

Palavras-chave: Brasil, Turismo, Desastres Naturais, Gestão, Destinos.

Abstract: In many countries, tourist destinations have been hit by extreme events associated with climate change, which are also related to natural disasters - such as drought, floods, cyclones and fires -, which are increasingly frequent in many regions of the world. This has contributed to the incorporation of the problem of vulnerability to natural disasters in the discussions of tourism planning and management. However, in Brazil in particular, in the planning and management of tourist destinations, little has been considered by public policy makers the consequences of extreme events, such as natural disasters, on the dynamics of tourism development. In this sense, this work aims to analyze the municipalities in Brazil categorized by the Ministry of Tourism – MTUR – as destinations and, which are vulnerable to natural disasters. The analysis was made from the crossing of data contained in the National Tourism Plan (2018-2022) with data from the Territorial Base Statistics from Risk Areas – BATER, a methodology for mapping natural disasters developed by researchers from the National Monitoring and Development Center. Natural Disaster Alerts – CEMADEM. The results demonstrate that a considerable number of municipalities categorized as tourist destinations in Brazil, are vulnerable to the risks of natural disasters. However, it appears that in public tourism policies, both at the local and national scales, strategic actions for the management of risks to natural disasters for the tourism sector are not included in their guidelines.

Keywords*:* Brazil, Tourism, Natural Disasters, Destinations, Management.

INTRODUCTION

Many countries considered as tourism destinations have been affected by extreme events linked to climate changes. Such climate condition is also related to natural disasters (such as drought, flood, cyclones and fires), which are becoming more constant in many regions. This has contributed to the incorporation of the problematic of vulnerability to natural disasters in discussions of planning and tourism management, in international scope, in all spacial scales, mainly, in local scale. However, in Brazil, in particular, in the actions of planning and management of tourism destinations, the consequences of extreme events have been little considered by part of the formulators of public policies, which is the case of natural disasters, on the dynamic of tourism development. Within this sense, this study has the purpose of analyzing the cities in Brazil, categorized by the Tourism Ministry – MTUR – as destinations and, which present vulnerability to natural disasters.

According to the National Plan of Tourism – PNT (2018-2022), the cities categorized as destinations are considered strategic for the growth of tourism field in the country, due to the generation of jobs and income, contributing to the economy of states and cities, but it is not mentioned in the PNT the possibility of occurring natural disasters in tourism destinations as an issue that may generate crisis for the field. Within this context, the analysis here presented was performed from the crossing of data from MTUR with data gathered from the Territorial Base Statistics from Risk Areas – BATER, methodology of mapping natural disasters developed by the National Center of Monitoring and Alerts of Natural Disasters - CEMADEM, which allows to estimate the population who live in risk areas in Brazil and who find themselves vulnerable to natural disasters, specially in those cities that present risks of earth slide and flood.

Data extracted from the documents produced by the MTUR refer to destinations in Brazil which, in the year of 2018, were classified into categories that go from A to E, from a group of variables defined by the national organ of tourism. Regarding BATER's methodology, it was published by Assis Dias et

al. (2018) from the research performed to determine the risk areas in the cities situated in the Brazilian territory, which exposes the vulnerability to natural disasters. For the systematization and data analysis presented in the present study, tools from Geoprocessing and the Geographic Information System – SIG were used.

Results have shown that several cities categorized as tourism destinations in Brazil present risks of natural disasters, such as floods and earth slide. This is matter of concern, since those events have been occurring each day more in the Brazilian territory, with higher frequency, duration and varied intensity, as highlights USFC (2012). In fact, throughout the last 20 years, natural disasters have been affecting destinations in Brazil, causing negative social and economic impacts to the resident population, to the local tourism field and, also, to the image of tourism destinations such as the cities who integrate the Tourism Region of Costa Verde and Mar/SC - Itajaí-Navegantes, Balneário Camboriú –, as emphasizes Rocha & Mattedi (2017), and of the Serra Verde Imperial/RJ – Nova Friburgo – as highlighted by Corbiceiro (2013). However, it is verified that in tourism public policies, both in local and national scales, strategic actions in their guidelines are not contemplated for the management of risks to natural disasters in the field of tourism.

Risks of Natural Disasters and Tourism

Natural disasters and other catastrophic unexpected events have effects in all areas of society, including tourism. In fact, such phenomenon and other forms of crisis, which affect tourism (epidemic, conflicts, environmental pollution, for instance) may lead to a reduction of visits in the affected areas (Bhati, Upadhayaya, & Sharma, 2016). This is fully applied to the field, once a crisis may affect both national and international tourism trips (Rosselló, Becken, & Santana-Gallego, 2020). The impact of natural disasters in a tourism destination is difficult to anticipate, once it depends on the nature, magnitude and scale of the event (Backer & Ritchie, 2017).

However, in addition to having a negative impact, natural disasters may also have a positive impact on destinations, once when a destination is hit by

a disaster, crisis may offer valuable opportunities to search the comprehension of the dynamic of the situation unraveled by the event and the role of the main interested parts in the management of crises and in the post-disaster recovery, as for example, "the Bali destination that was able to improve management, attracting the consumer, diminishing the perception of risk to the destination, and therefore, the official tourism statistics from the last fifteen years have shown the recovery of the local tourism industry" (Gurtner, 2016, p. 13).

As in a process of adaptation to new situations of crisis, the lessons learned, positive and negative, should remain being documented and evaluated, aiming at orientating and improving the capacity of management of crisis and reduction of risks to disasters for any given tourism destination (Gurtner, 2016). Disaster may be defined as a "serious disturbance in the functioning of a community or society in any scale due to dangerous events with condition of exposure, vulnerability and capacity, leading to one or more of the following aspects: human, material, economic and environmental losses and impacts" (United Nations Office for Disaster Risk Reduction [UNDRR], 2009, p. 15). Natural disasters are determined from the relation society-nature. When measurements for the reduction of the effects of disasters are not applied, the tendency is to increase the intensity, magnitude and frequency of the impacts (Kobiyama, 2006).

The risks of disasters have become intense each day more in urban spaces, in particular those with big population concentration, exposing such population to danger, due to inappropriate life conditions. This can be understood as a perception of danger for a possible catastrophe, being a threat for a danger the one submitted to it and that notices as such (Veyrete, 2007). Risk is frequently treated as a product of probability of occurrence of a natural phenomenon, inductor of accidents by the possible consequences which will be generated (economic or social losses) in a given community (Souza & Zanella, 2009). In technical sense, the occurrence of a disaster is associated to the combination of three terms: risk, exposure and vulnerability.

On the other hand, vulnerability is defined as "conditions determined by factors or physical, social, economic and environmental processes that increase the individual's or the community's susceptibility, assets or systems to the impact of risks" (United Nations Office for Disaster Risk Reduction [UNDRR], 2019, p, 19). The concept of vulnerability is generally seen as an extension of the consequences of a disaster, being the risk characterized by encompassing many victims, having a significant cost of damage and causing environmental impact.

In general terms, risks to natural disasters are related to social-spacial vulnerability, which means, populations that live in areas hit by disasters are not affected uniformly. On one hand, the more vulnerable population, in general, are the ones whose necessities are not sufficiently considered in the planning of local organizations of response and assistance (Flanagan, Gregory, Hallisey, Heitgerd, & Lewis, 2011).

In summary, vulnerability to natural disasters shows when there is a group of natural and social specific factors, which provoke an increase to the susceptibility to risks, not being, many times, incorporated in the urban planning strategics, whether in national or local scope. In many situations, populations are undervalued in the estimations done on real losses by natural disasters. The vulnerability of the tourism field has also been recognized by organs and entities of the field, such as the World Tourism Organization – WTO. As a result, reports have been published, for example, World Tourism Organization (WTO) (1998); United Nation Environment Program (UNISDR) (2008); United Nations Office for Disaster Risk Reduction (UNDRR) (2009) to help the field to be prepared and to answer to crisis and disasters. In terms of risk management, the main strategy is to create resilience to adverse events in the field of tourism, in forms of activities for reduction of risks of disasters and preparation in case of new events, as highlighted by Brown, Rovins, Feldmann-Jensen, Orchiston & Johnston (2017).

Risk Management to Natural Disasters in Tourism Destinations in Brazil

In the last decades, all across the world, the number of destinations that suffered with the occurrence of natural disasters such as flood, land sliding, seismic waves, fires in forests, has increased, as several authors have emphasized (Gurtner, 2016), (Ghaderi, Mat Som, & Henderson, 2015), among others. Such events have occurred in several regions of the planet, including in territories considered tourism destinations. It can be defined that tourism destinations are a geographic region that presents a group of attractions, being able to provide for tourists experiences of visiting which would attract them to the destination for tourism purposes, as highlights Bornhorst, Ritchie &, Sheehan (2010). In the perspective of the UNWTO Word Tourism Organization (UNWTO, 2010) on the definition of tourism destination, the organ performs a more inclusive approach, which includes, besides geographic issues, as exposed above, an economic, social-cultural and management perspective, promoting, therefore, a broad concept of tourism destination.

According to the Word Tourism Organization (UNWTO, 2010):

> A tourism destination is a physical space in which a visitor sleepovers at least one night. This includes tourism products such as support service, attractions and tourism resources to a day of trip in return. It has physical and administration frontiers which define its management, and also has images and perceptions which define its competitiveness in the market. Tourism destinations embody several *stakeholders* that generally includes the local community, and that may still shelter and form a larger net of destinations (Word Tourism Organization [UNWTO], 2010).

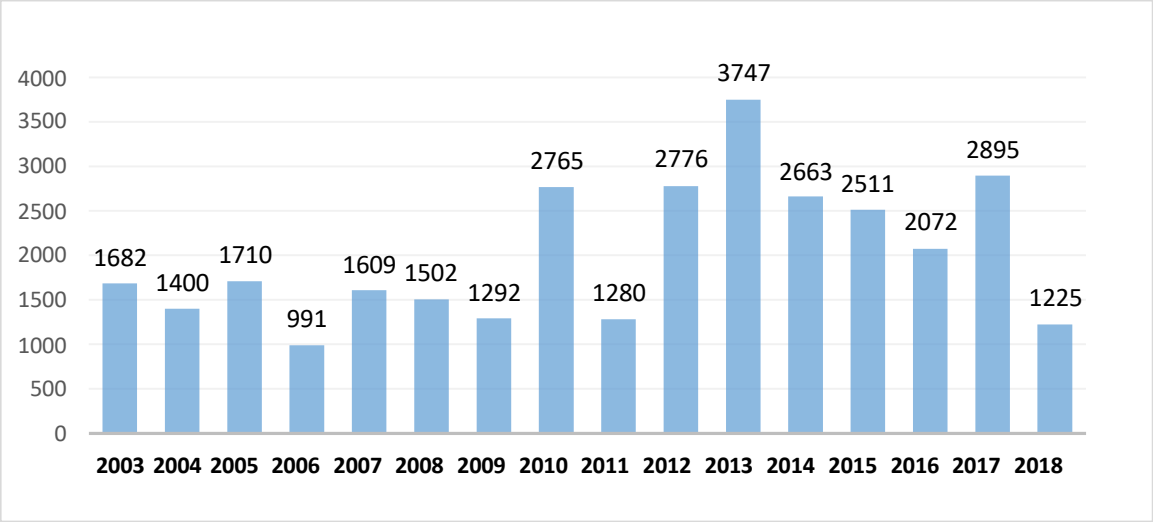
It is noticed, that the concept of tourism destination is broad due to its varied condition of characteristics. Furthermore, in addition to the above-mentioned issues, which integrate this concept, in tourism destinations are "required a group of services (whether transportation, hosting, food, among other public or private activities), which are offered in well-defined geographic spaces, needed for the establishing of the trip" as highlights (Anjos, Anjos, & Oliveira, 2013; apud Acerenza, 1987). In face of this, the tourism field has been growing exponentially, putting in the center of this activity the tourism destination as main point of tourists movement (Flores & Mendes, 2014).

This way, due to the promotion of tourism destinations to the consumer market, the environmental issues have become fundamental in the process of planning the tourism activity. When a territory becomes part of tourism, becoming a tourism destination or has the potential to do so, and, at the same time, has environmental vulnerabilities, the natural disaster may constitute a harmful factor for tourism development, depending on nature, magnitude and scale of the disaster (Backer & Ritchie, 2017).

In Brazil, natural disasters have become more frequent and intense, in the last decades, as highlights the Federal University of Santa Catarina (UFSC, 2013), the National Confederation of Cities (CNM, 2018). Several cities have been hit by natural disasters, suffering economic and social losses. In this context, many cities hit by such phenomenon are considered tourism destinations and have tourism as main economic activity.

This said, it is understood the importance to analyze how disasters may provoke damage to the tourism field and, mainly, identify which destinations, in Brazil, have found themselves vulnerable to these adverse events. According to the National Confederation of Cities (CNM, 2018), throughout 2003 until 2018, there was an increase in the solicitations of Public Calamity or State of Emergency due to the recurrent damages from adverse events, as highlighted in graph 1. The evolution in the volume of decrees reflects the increase of occurrence of such events in the Brazilian territory, associated to an increase of exposition to risks and vulnerabilities, as highlighted by Almeida, Welle, & Birkmann (2016).

Graph 1. Evolution of the volume of Municipal Decrees in Brazilian Cities – period from 2003 to 2018



Source: Adapted from CNM (2018)

With the increase of occurrence of natural disasters in Brazil, damages are also bigger (National Confederation of Cities [CNM], 2018). In spite of this, the risk to disaster management, in Brazil, still has not been effective, as emphasized (Pedroso & Pinheiro, 2016). Risk management may be defined as the application of policies and strategies of reduction of risks to new or existing disasters and the management of residual risks, contributing for the strengthening of resilience and for the reduction of losses, as highlights (UNDRR, 2017).

As a result of efforts performed by the federal government, in 2012, the Law 12.608 was promulgated, which constituted the National Policy of Protection and Civil Defense –PNPDEC, that started to structure and determine actions that orientate management and risk reduction in Brazil. The Law 12.608 establishes the duty of Union, States, Federal District and Cities, in adopting the necessary measurements for reduction of risks to disasters (Brazil, 2012). This federal law responds to the international movement, which defines as purpose the institution in management of risks to natural disasters, as highlighted by the Nations International Strategy for Disaster Reduction (UNISDR) (2012), International Strategy for Disaster Reduction (EIRD) (2016).

Within this context, in Brazil, there was an alteration in the scope of prevention and mitigation of natural disasters and, also, the adoption of a

series of measurements, such as the creation of organs and the promotion of new policies, such as, for example, the creation of the National Plan for Risk Management and the response to Natural Disasters. This step, in the implementation of risk management, in Brazil, in face of natural disasters, should, mainly be due to the high index of events that were occurring in the country, culminating with thousand of deaths and incalculable damages for society.

Such actions, which started to be implemented have become a new tool to integrate the GRDN and the management of disasters "that comprehend as a broad process of planning, coordinating and executing actions of response and recovery" (Brazil, 2017, p. 33). However, in the new guidelines of the National Policy of Protection and Civil Defense, the preoccupation with the occurrence of disasters and their impacts on tourism field, has not been sized for the implementation of risk management.

In Brazil, little attention has been given to management of risks to natural disasters in tourism planning, as well as, the adoption of prevention strategies to such events, in a way that might guide the development of the field. In reality, what is verified is the absence of guidelines in tourism policies in the country, in the sense of facing risk situations in the tourism field. However, as already mentioned in several studies performed in other countries, the effects of such events, in lower or higher degree, may affect decision-making, harming, therefore, the management capacity of a tourism destination.

From the point of view of risk management, mainly at local scale, in which, in fact, public policies are materialized (Alheiros, 2006), the lack of knowledge of some conditioning factors – in this case the risks to natural disasters – reflects itself on the incapacity of managers to evaluate, efficiently, the impacts that might occur in a tourism destination.

Such absence, in Brazil, of management of risks in tourism activity becomes evident when the actions from the National Plans of Tourism – PNT – are analyzed, as for example, in the current PNT, 2018-2022, which proposes

the guidelines for promotion and economic growth of the field in a regional form, without referring to the environmental risks and natural disasters as elements that may bring economic harm and the field's destructuring. Another important point, which confirms the absence of the discussion that deals with risk management in tourism, is the Law nº 11.771, from September 17th, 2008. This law is considered the Legal Mark and establishes the rules for the National Policy of Tourism, defining the attribution of the Federal Government for planning, development and stimulation of the tourism field, just like the discipline to the tourism services offering, the registration, classification and inspection of the tourism services providers (Brazil, 2008).

The National Policy of Tourism has the purpose of promoting, decentralizing and make tourism regional, stimulating states, Federal District and cities to plan, in their own territories, the tourism activity in a sustainable and safe way, including among themselves, with the involvement and effective participation from the receiving communities of the benefits which come from the economic activity (Brazil, 2018). In this perspective, tourism management in Brazil has started to aim at searching for promotion of the ordered and sustainable growth of the field, integrating the other activities to the sectors of local economy, with special highlight to the tourist and service providers security and the local community, in all its aspects (Brazil, 2018). However, despite the advances in tourism management in national scale, the management of risks to natural disasters has not been incorporated in tourism policies in Brazil, although such events have increased and become recurrent in many tourism destination in the country.

It is possible to state that many Brazilian cities, considered tourism destinations, which means, places that posses cultural and natural attractions, and have equipment and services focused on attending visitors, are being hit by natural disasters, provoked by extreme events associated to climate phenomenons, which highlights a high vulnerability to natural phenomenons. To exemplify, it can quoted tourism destinations that have already suffered damages with the occurrence of natural disasters, such as, for example, the

Região Serra Verde Imperial, located in Rio de Janeiro, where, in 2011, the cities of Petrópolis, Teresópolis and Nova Friburgo were hit by this event, due to the torrential rains (State of Rio De Janeiro, 2012). Due to the disaster that hit the tourism region, "the tourism in the region was hit by the rains of January, which led to a small search for the 2011 New Year's " (Quaino, 2012, p.1).

Another example was the city of Blumenau, belonging to the Tourism Region Vale Europeu in Santa Catarina, where, in 2008, the disaster provoke several landscape, economic and social damages, affecting the service field, with 117 economic activities, 9.7 thousand enterprises and great part of the tourism scenery being under water (Zucco, Magalhães, & Morreti, 2011). Such examples have shown that the tourism activity is also vulnerable to suffer damages provoked by natural disasters and that many tourism destinations are at risk due to their social and natural vulnerability, as pointed out by several authors (Mayhura, Manyena, & Collins, 2017), (Tanner & Árvai, 2017).

And, there is still more, the referred examples do not safely reflect the Brazilian reality. In case of the several destinations existing in Brazil and that are located in the five Brazilian macro-regions, the amount of tourism destinations that are affected by extreme events may be very expressive if the available data is analyzed.

It is in this context that the issues which confirms the problematic approached in this study are presented, which are: (i) there is lack of studies that aim at analyzing the occurrence in destinations and the probable damages from natural disasters in tourism activity, once the researches performed in national scope are not shared by the scientific community in a satisfying way, generating, therefore, a big gap in the absence of data to show effectively in what measure tourism destinations in Brazil are exposed to natural disasters and, consequently, suffer negative impact with the occurrence of such events; (ii) there is disarticulation among the responsible organs for management of risks to disasters in Brazil, which ends up reflecting in the absence of actions to guide the risk management in the tourism field,

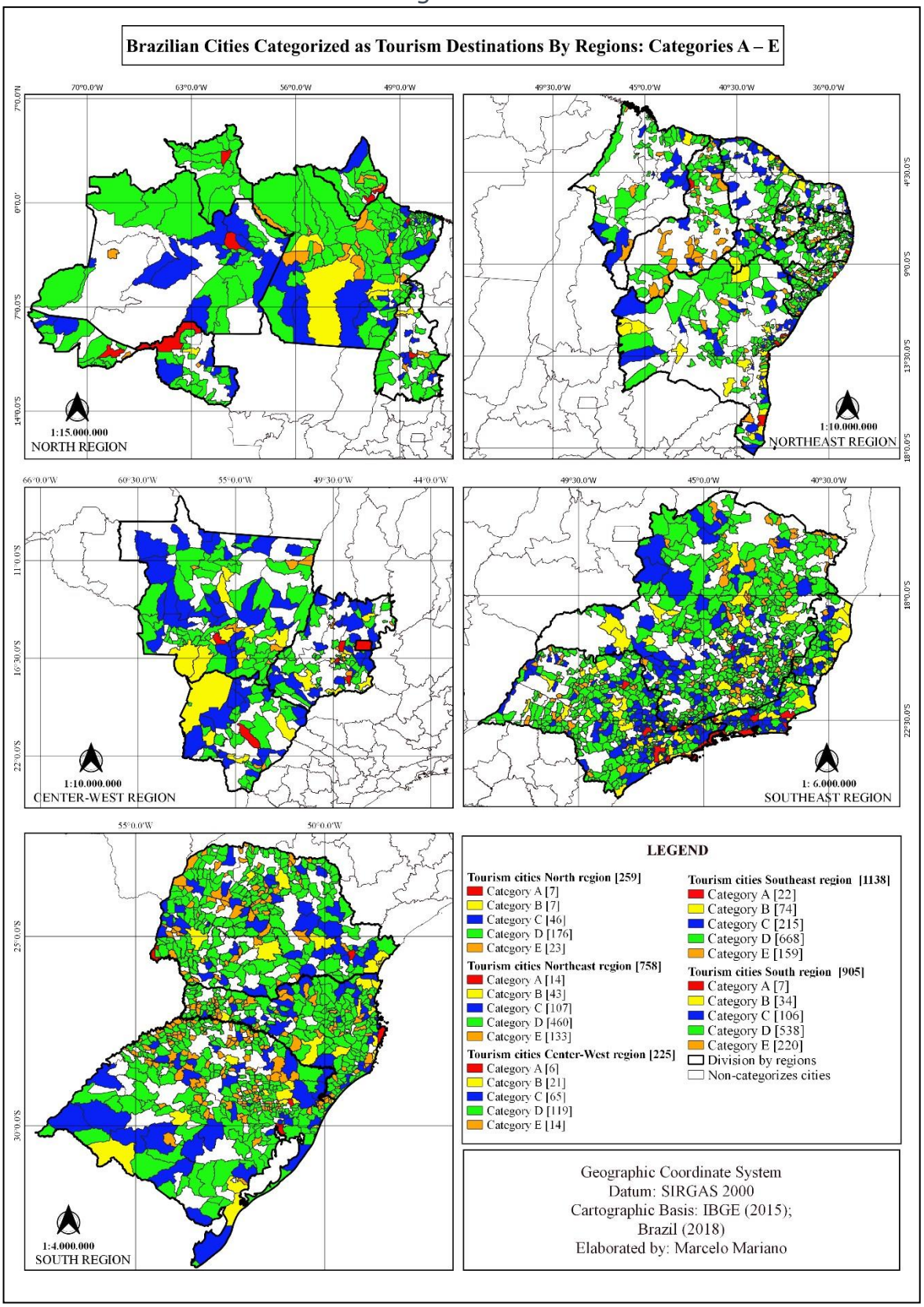
impairing, therefore, the implementation of a diagnosis of the current scenery from tourism destinations vulnerable to natural disasters in the country.

The management of risks to disasters in tourism needs to be incorporated in policies and strategies that aim at reducing risks in tourism destinations, contributing, therefore, for the strengthening of the resilience and the diminishing of losses in the destinations. The vulnerability to natural disasters, in tourism destinations in Brazil, demands that the policymakers effectively implement actions and strategies to recovery, restore and prevent damages provoked by such events, as emphasized by Becken & Hughey (2013), Faulkner (2001), Ritchie (2008). In this perspective, it is necessary that policies and strategies be implemented by part of the public and private actors who, consequently, come to contribute in improving the capacity of resilience in tourism destinations.

Categorization of Destinations in Brazil

The management of tourism destinations, in Brazil, has a base the actions presented in the National Plan of Tourism – PNT (Brazil, 2018), being the current PNT started to prevail in 2018, and is valid until 2022. The Ministry of Tourism has instituted the methodology that has its scope to promote Brazilian tourism from decentralization of the field, aiming at identifying and categorizing the performance of the economy of tourism from cities inserted in the tourism regions of the Brazilian Map of Tourism (Brazil, 2018). In this perspective, such methodology adopted four selected variables, as follows: 1. Amount of hosting establishments in the destinations; 2. Amount of jobs in hosting establishments; 3. Estimated amount of domestic visitors; and 4. Estimated amount of international visitors. Such variables were crossed in an analysis in the form of cluster (grouping), and that resulted in the formation of the five categories of tourism cities. This way, the cities that have similar averages – in the four analyzed variables – were grouped into a same category – A, B, C, D and E (Brazil, 2016). Form this systematization of data, the Ministry of Tourism (MTUR) produced a map with the Brazilian tourism destinations divided by categories, as illustrated in map 1.

Map 1 – Brazilian Cities Categorized as Tourism Destinations By Regions: Categories A – E



Source: The authors (2020)

The map represents a total of 3.285 Brazilian tourism destinations, distributed into the five macro-regions in Brazil, and that were categorized based on the performance of the economy of tourism in each city, and analyzed according to the previously mentioned variables. In category A are grouped the cities with better performance in the economy of tourism, and in category E, the cities with poorer performance in the field (Brazil, 2016). It can be noticed, in the map, the distribution of the destinations by macro-region in Brazil, with highlights for the Southeast, South and Northeast regions, with 1138, 905 and 758 tourism destinations, respectively.

Thereafter, comes the regions North, with 259 and Center-west, with 225 destinations. According to Brazil (2016), the cities belonging to the category A – including the capitals – correspond to 47% of the estimation of domestic tourists flow, and 82% of the estimation of international tourists flow, to Brazil. If added, categories A and B correspond to 68% of the estimation of domestic tourists flow, and above 96% from the estimation of international tourists flow in the country.

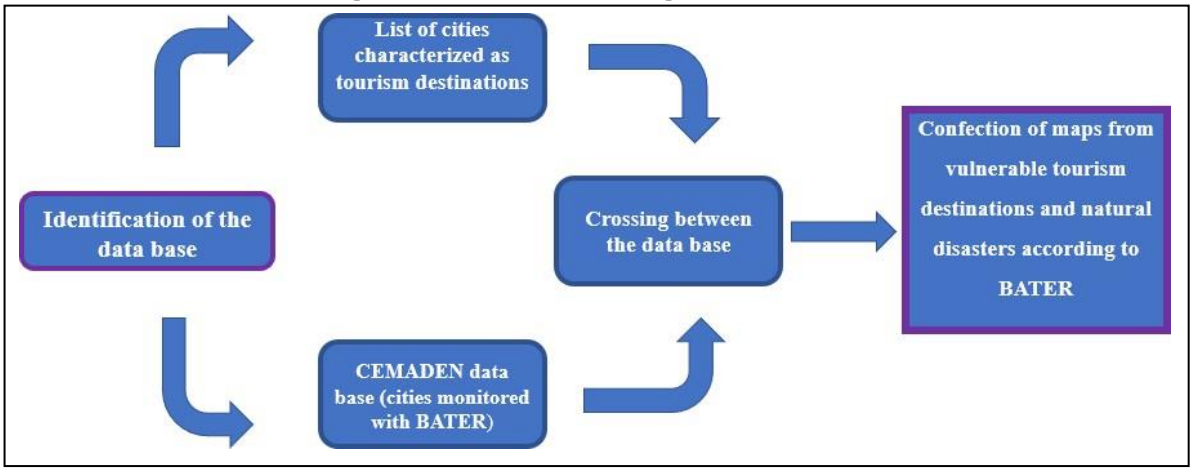
It can be observed, in the map, a big concentration of destinations in the categories D and E that, jointly, correspond to more than 75% of the categorized cities. It is understood, that such result reflects the reality, once that in most destinations, tourism is found at early stage, which can be comprehended from the performance of the selected variables for the categorization. It is worth highlighting that the cities from category E present zero values for the four variables employed in the analysis (Brazil, 2016). In this context, the diagnosis of the tourism destinations that present risk areas to natural disasters was performed.

Therefore, from the systematized data base from the MTUR, the present study used as data source the study performed by researchers from the National Center of Monitoring and Alerts to Natural Disasters (CEMADEN), entitled "Estimation of exposed population to landslides and floods risk areas in Brazil, on an intra-urban scale" (Assis Dias et al., 2018). Currently, CEMADEN monitors 958 cities in Brazil, with critical risk to the occurrence of disasters. From

this total, the study emphasized 872 cities that have risk maps from several sources and in different years aiming at identifying the occurrence of land sliding, floods and sudden floods (Assis Dias et al., 2018).

Among the CEMADEN efforts, there is the promotion of knowledge of implementation of strategies for risk reduction. Within this scenery, CEMADEN has developed a new methodology, called BATER – Territorial Statistical Base for risk Areas – which offers an estimation of the population who lives in areas of risk to natural disasters, such as land sliding and floods (Assis Dias et al., 2018). According to the study, "BATER is an association between data bases from the demographic census and from the mapping of risk areas" (Assis Dias et al., 2018, p. 4). From the data base available to the study, it was possible to perform crossing for quantification of the cities that are categorized as tourism destinations, and associate them with the data produced by Assis Dias et al. (2018), referring to the cities, which posses critical risk to natural disasters – mass and hydrological movement. Figure 2 presents the methodological scheme constructed for the analysis presented in the present study.

Figure. 2 – Methodological Scheme



Source: The authors (2020)

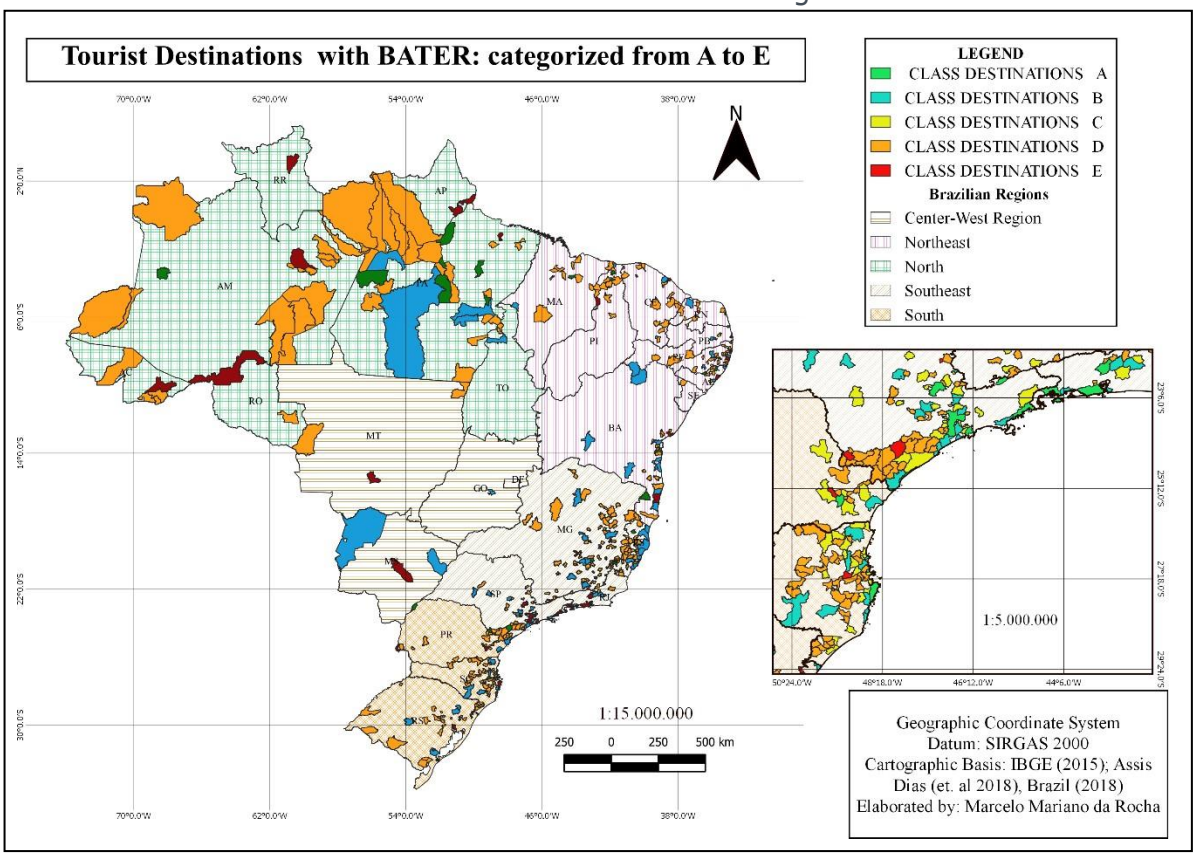
Analysis of the Vulnerabilities to Natural Disasters in Destinations in Brazil

The occurrence of natural disasters in the Brazilian territory has been happening frequently, exposing many tourism destinations to risks to such events. However, in tourism policies, there is clear absence of information about the tourism destinations that have history and re-occurrence of disasters. Such fact may be verified in the National Plans of Tourism (Brazil, 2018), in which no document mentions the probable damages to the tourism field, provoked by natural disasters. This gap justifies the importance of the proposed mapping in this study, aiming at representing geographically the tourism destinations that have vulnerability to natural disasters, due to the presence of risk areas in their territories.

The confection of maps has as basis the data bank available in documents created by the following organs: (i) Ministry of Tourism, with the Categorization of the Cities from Tourism Regions of the Brazilian Tourism Map – National Plan of Tourism (2018-2022); (ii) BATER- Territorial Statistical Base from Risk Areas, study elaborated by Assis Dias et al. (2018), researchers from CEMADEN – which establish the risk areas to land sliding and/or floods, according to BATER.

The tools used were Geoprocessing and Geographic Information System – SIG, using the Software QGIS 3.4. The study from BATER, elaborated by Assis Dias et al. (2018), determined a total of 872 Brazilian cities that have one or more risk areas in their territories. From the crossing of data that BATER and the categorized cities as destinations by MTUR, the representation of tourism destinations with vulnerabilities to natural disasters was elaborated, according to categories from A - E as shown in Map 2.

MAP 2 – Tourist destinations with BATER: categorized from A to E



Source: The authors (2020)

Map 2 shows the quantification of tourism cities that present vulnerability to natural disasters – mass and/or hydrologic phenomenons. From this statement, a total of 3.285 destinations that were categorized by the Ministry of Tourism, approximately 20%, which corresponds to 654 categorized tourism destinations, present areas of risk to natural disasters, as highlighted by BATER. Table 1 summarizes what was represented in the map, for visualization purposes and comparison of the amount of cities, from their categories and the Brazilian regions where they belong.

Analyzing table 1, it can be verified that from the 56 destinations considered category 1, by presenting the better index due to complete tourism infrastructure, 34 destinations or approximately 60% of the total have BATER, therefore, have in their territories areas of risks to natural disasters associated to mass movement and/or hydrological risks.

TABLE1 – Cities categorized according to BATER

Category Region	**A**	**B**	**C**	**D**	**E**
North	6	5	16	40	7
Northeast	10	23	35	100	10
Center-west	2	3	8	2	-
South	6	15	41	68	4
Southeast	10	36	64	134	9
Total	**34**	**82**	**164**	**344**	**30**

Source: The authors (2020)

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In category B, also considered more relevant destinations, but that have less elements of infrastructure than the ones in category A, are a total of 82 categorized destinations with the presence of BATER, from a total of 179, representing around 45%. In the other categories, the highlight is on the high number of destinations with BATER in the categories C and D, and the small number in category E. Evaluating this issue by regions and by the more relevant categories (A and B), it can be highlighted that the Southeast region has more tourism destinations with BATER, totaling 46 cities. Following, comes the regions Northeast and South, with a total of 33 and 21 destinations, respectively. The Center-West and North regions are the ones that present less cities in the categories A and B with BATER, totaling 5 and 11, respectively. This point is concerning, since those cities are the main destinations in Brazil, which receive both national as international tourists, with estimation of million of tourists in the next following years, according to (Brazil, 2018).

However, it is important to mention that it can not be stated nor disregarded that the vulnerable areas to risks to natural disasters identified with BATER correspond to tourism areas in the destinations. This way, it is necessary to promote new studies, in order to identify each reality individually, to determine whether the tourism destinations identified with the presence of BATER are found in areas with high demand of tourists. Such studies are extremely important to analyze the issues that are open, up to the

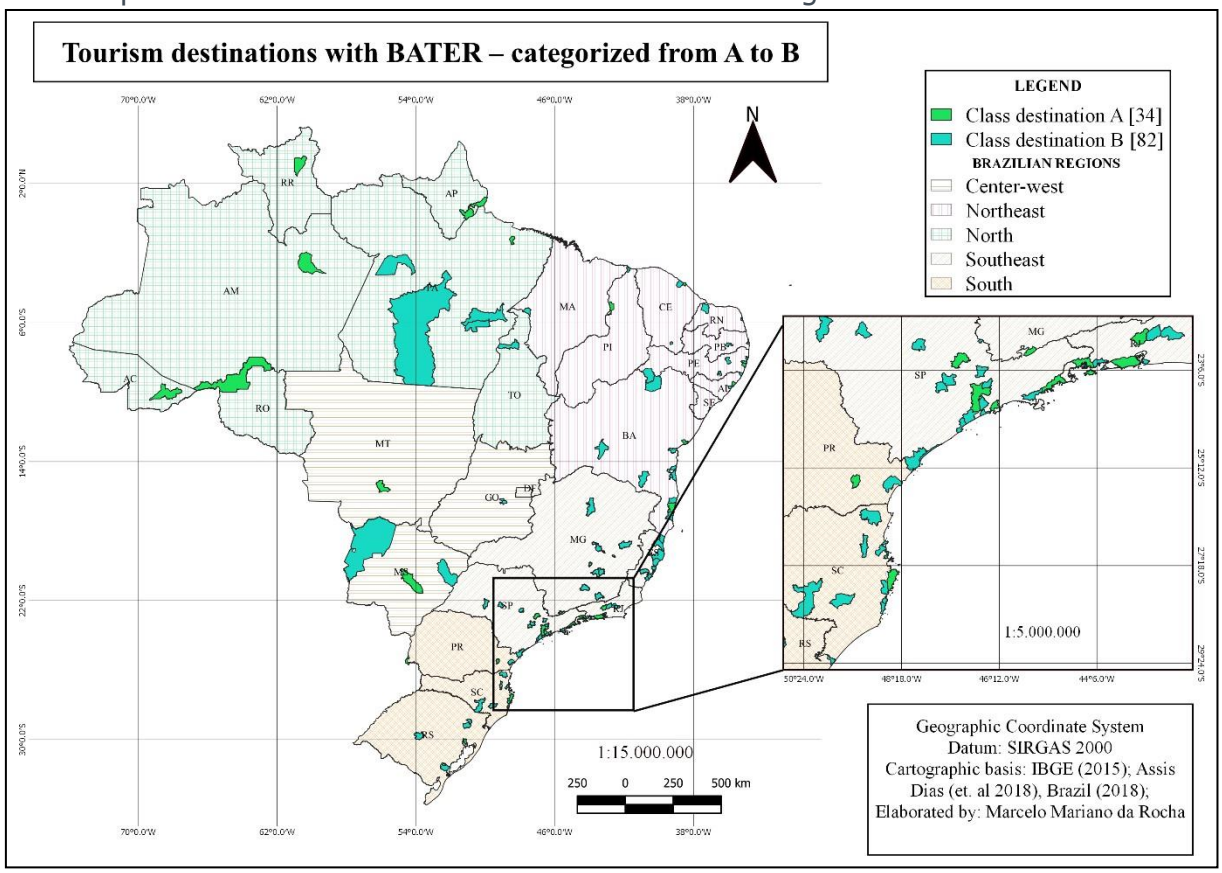
present moment, in addition to other aspects that may be studies, such as, for example, identifying which degree of exposure to risks to natural disasters in the tourism destinations. The management of natural disasters, in the tourism field, must be one of the competences of the actors responsible for the elaboration of public policies in the tourism destinations, mainly due to the big number of tourism cities that present risk areas, as can be seen in Map 2. In addition, another aggravating factor is that the categorized cities as tourism destinations are "considered critical with the occurrence of natural disasters being inserted in a national system of monitoring due to their susceptibility to adverse events and, therefore, are considered priority in the emergency actions from the federal government" (Brazil, 2017).

According to Assis Dias et al. (2018), BATER does not include data referent to urban floods, due to the lack of available information and, yes, it brings a systematization referred to the risk areas with mass movement and hydrological risks. Data presented highlight some statements regarding the current scenery from destinations in Brazil, where the management of natural disasters in tourism, in these cities, by part of the federal government, are found nonexistent referring to the promotion of public policies in the field. It is notorious that the risks to adverse events, in tourism destinations are evident due to the great number of cities classified with the presence of BATER. It is important to highlight that the specialization from destinations that have generated the map, includes all cities categorized from A – E, by part of Ministry of Tourism.

However, according to the methodology established by the MTUR, the destinations A and B are better in infrastructure, considering variable such as, for example, number of tourists, job creation and income, number of hosting establishments and contribution to promotion of the local and regional economy. Analyzing the data referring to the destinations from categories A and B, according to the Ministry of Tourism, the projection of the number of tourists, until 2022, which will visit the cities, both domestic as well as international, is of, approximately, 150 million tourists (Brazil, 2018).

Map 3 presents the 116 tourism destinations categorized in A and B that have BATER. According to such data, approximately, 48% of the tourism destinations, in Brazil, have one or more risk areas, which expose to natural disasters, as well as the local community, the tourists who go and will visit the destinations. It may be realized, in the map, the existence of a big concentration of tourism destinations with category A and B, in the following regions in Brazil: Southeast (46), Northeast (33) and South (21) with BATER, which shows a high vulnerability to natural disasters and, followed by the North region (11) and Center-west (5).

Map 3– Tourism Destinations with BATER – Categorization from A and B



Source: The authors (2020)

It can be highlighted that BATER are risk areas that are limited and, consequently, may estimate the amount of people that are vulnerable to natural disasters. According to the data researched, it was possible to quantify the risk areas in the cities that have the best tourism index, such as

categories A and B, in separate. In the destinations from category A, a total of 13,223 areas of risks were found, distributed in 34 categorized cities by MTUR, meanwhile in tourism destinations from category B 4,319 were found, totaling 17,542 areas of risks.

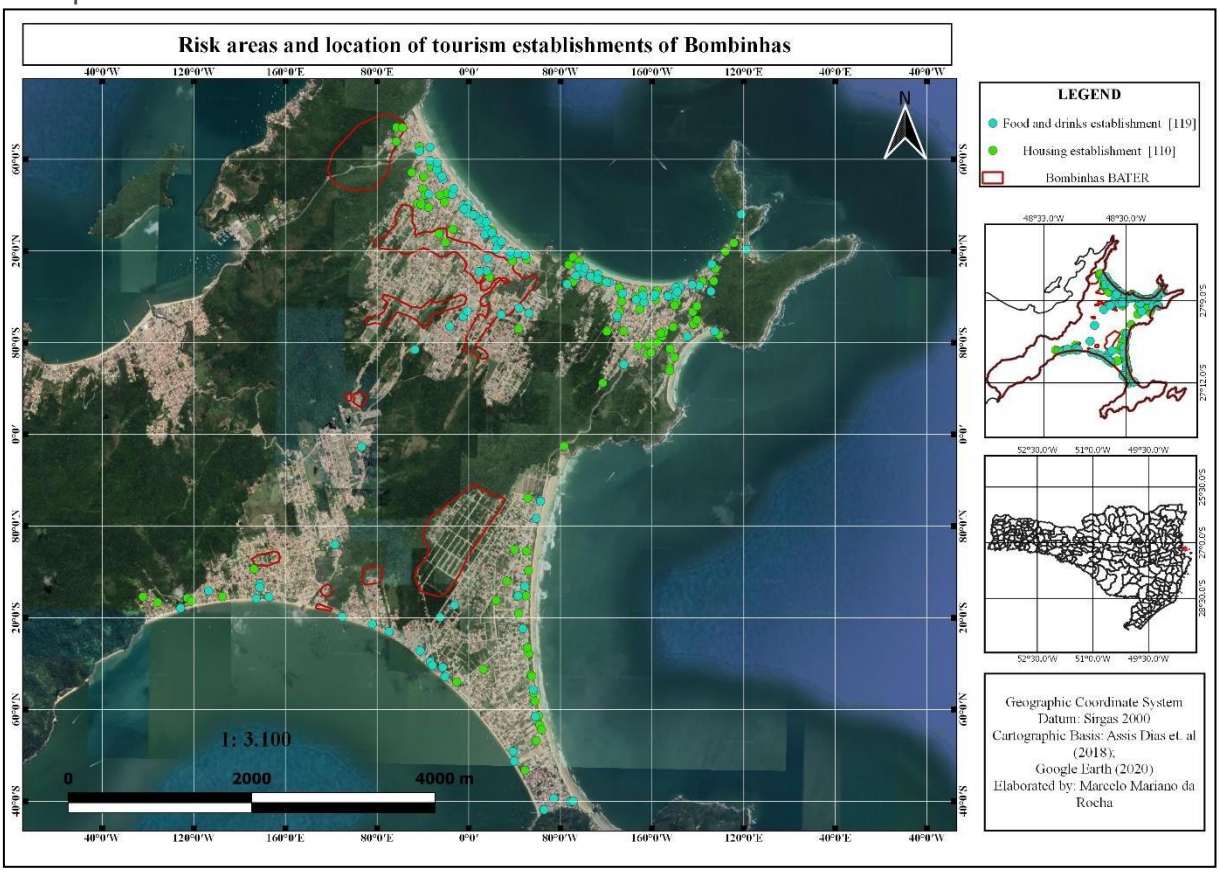
Another analysis performed, from data quantification of the cities that have BATER in their territories. According to what was seen, the cities of Belo Horizonte, Salvador and São Paulo, included in category A, are the ones that present more risk areas in their territorial limits, with 4,542, 1,380 and 1,325, respectively. However, it is important to highlight that, in this cities, the areas that represent risks to natural disasters are, in its majority, in more vulnerable of the territory, not being necessarily in the tourism areas. Thus, in category B, the following cities are highlighted: Blumenau (1,386), Juiz de Fora (498), and Nova Friburgo (411).

It important to highlight that the cities of Blumenau and Nova Friburgo have already suffered greatly with big proportion natural disasters, which have strongly impacted the tourism field, as highlighted by (Zucco et al., 2011), (Corbiceiro, 2013). The map shows that hundreds of tourism destinations, as investments made by part of the federal government, have the presence of BATER and, even so, have already suffered with natural disasters that have impacted the tourism activity as previously mentioned. It is important to highlight that, in Brazil, there are countless tourism destinations that have risk areas to natural disasters in their territories and that, at the same time, gather hundreds of tourists.

In the classification established by the Ministry of Tourism, the city of Bombinhas is considered as category A, since it presents a wide range of services and infrastructure of support to the field, and, also, by its importance in the generation of job and income, at local and regional level. In high summer season the higher flux of tourists occur, which means, from December to March Bombinhas receives, approximately, 1,5 million of tourists. It is in this period that beaches are more crowded and that the city remains in a constant movement rhythm (turismo.bombinhas.sc.gov.br, 2020). Map 4

shows a correlation of the risk areas from the city of Bombinhas, determined by BATER, with tourism establishments.

Map 4 – Risk areas and the location of the tourism establishment of Bombinhas



Source: The authors (2020)

As it can be seen on the map, the city presents two characteristics: (i) it is a tourism destination with high flux of tourists throughout the season, having a broad and complete infrastructure; (ii) Bombinhas has ten risk areas, which shows how much the city is vulnerable to natural disasters. This relation is extremely worrying, since there is great circulation of tourists in the city that are exposed to risk. In case of disaster, the tourists are more vulnerable than the resident population itself, as emphasizes the Word Tourism Organization [WTO] (1998), and Rosseló, Becken, & Gallego (2020).

The tourists are unaware of the risks and, in most cases, do not know how to handle them, due to lack of information, mainly by part of the local public power. It is important to mention that such areas of risk are found in extremely urban places, with high demographic density. According to Assis

Dias et.al (2018), BATER from Bombinhas has established an estimate of 14,293 people that live nearby risk areas, being exposed to natural disasters from mass movement and hydrologic phenomenons.

According to data from IBGE (2020), the city has a total of 19,769, which means, around 80% of inhabitants from Bombinhas live near risk areas. Another important aspect to be highlighted on the map is a high concentration of equipment destined for tourists, which are in or near BATER. Overall, 119 equipment of Food and Drinks (restaurants, bars, diners, bakeries and related) were mapped, and 110 lodging facilities (hostels, bed & breakfast and related). In this places, there is high concentration and circulation of tourists, which may compromise the security in case of occurrence of an extreme event, mainly in establishments that are within the risk areas, determined by BATER.

The example of Bombinhas raises an issue of this reality in Brazil, which highlights several tourism destinations whose territories have risk areas to natural disasters and that, at the same time, gather hundreds of tourists. However, in Brazil, management strategies are not promoted by the public power, which establishes guidelines to deal with this issue. This aspect becomes notorious in the analysis of the National Plat of Tourism (2018-2022), in which the absence of actions that integrate risk to natural disasters management is perceived, in federal scope, fact that makes all cities unprepared to face a crisis situation.

Notoriously, the economy bias is the main element in Brazil's tourism policies and there is no space for a management approach of tourism destinations which present history and re-occurrence of disasters and that may suffer severe crisis, both economic as well as social, in case of a natural phenomenon occurring. It is necessary that the management of risks to disasters in tourism destinations be inserted in Brazil's tourism policies, so that cities that present vulnerable areas to natural disasters and, mainly, those cities that have history and re-occurrence of such events, may deal with this issue, in order to minimize the damage. When there is a natural catastrophe in

a tourism destination, operational actions may be adopted, in order to obtain a fast recovery, avoiding, therefore, that the image of the destination suffers negative impacts. (Toubes & Fraiz Brea, 2012).

To promote public policies that may guide actions to reduce natural disasters in the tourism field has become extremely important for the vitality of the sector. For the World Tourism Organization [WTO] (1998), the need to study the reduction of natural disasters in tourism destinations may be expressed in the following terms:

- Tourism is an important global phenomenon, involving the mobility of million of individuals from all countries, worldwide;
- The development of tourism is frequently located in exposed areas, or areas that can be exposed to sudden beginning disasters, particularly in beaches or coastal areas [.];
- Since tourists generally do not necessarily speak the country's language that they visit and, therefore, there is need for immediate communication, in case of eminent and sudden beginning disasters contributing for a specific problem; and
- In case of tourists becoming victims of a natural disaster, the negative impact on the image of a tourism destination may be severe and long (World Tourism Organization [WTO], 1998).

The actions above mentioned explain how important is to implement management of risk to natural disasters in tourism destinations, mainly those that present areas of risk and, therefore, may become extremely preoccupying for the continuity of tourism safely, even in cases that the areas of risk are not found in the tourism areas, once, depending on the magnitude of the phenomenon, the destination may be affected as a whole. Tourism is very sensitive to any interruption and, when a destination is affected by adverse events, damage may be incalculable, such as, for example, the diminishing of tourism flow, as highlighted by (Rosseló et al., 2020), in which the authors analyzed the occurrence of different types of events that may

alter tourism flows in different degrees, resulting in tourist's arrivals after an event, exemplified by the Covid-19 world pandemic, which has contributed to a drastic reduction of tourists who visit Brazilian tourism destinations.

BATER has become a methodological tool of essential importance in the diagnosis of the cities considered as tourism destinations, with the presence of risk areas, mainly cities from A and B, by receiving a technical and financial investment from the public power (Brazil, 2018), but at the same time present vulnerability to natural disasters. Several reports and documents (UNEP, 2008), (Nguyen, Imamura, & Iuchi, 2016; World Tourism Organization [WTO], 1998), highlight that the tourism destinations that are located in coastal areas, are more vulnerable to sudden beginning natural disasters, putting local inhabitants at dangers, mainly tourists.

In Brazil, the model of development of the coastal area in the country has contributed for the tourism in many cities, as highlighted by (Benseny, 2006), (Silveira & Rodrigues, 2015). For Becker (2001), tourism has been transformed into an important vector of coastal occupancy in Brazil, producing a multiplication of real state complex, resorts and marines. According to this study, 43 tourism destinations, diagnosed with BATER, are located in the coastal zone, where many cities have tourism as main economic activity, thus, are found themselves vulnerable to natural disasters.

In summary, it is necessary to develop strategies of management of risks to natural disasters, which lead to the strengthening of the tourism field, and that may contribute for an integrated planning, through proper diagnosis of the destinations that present higher probability of occurrence of adverse events. Regarding actions of preventive character, decentralized management of the field, implemented by the National Policy of Tourism, may be used as methodological structure for inserting management of risks to natural disasters in Brazil's tourism destinations.

CONCLUSION

In the present study, the main purpose was to analyze cities in Brazil categorized by the Ministry of Tourism – MTUR – as destinations and that present vulnerability to natural disasters, from the crossing of data from the National Plan of Tourism (2018-2022) with data from the Territorial Statistical Base of Risk Areas – BATER. Data presented showed that several tourism destinations, mainly the ones from categories A and B, present vulnerability to natural disasters, constituting a reality for many cities in which tourism is one of the main vectors for the local and regional economy. However, it is important to highlight that the analysis here presented does not allow to state that the totality of the areas of use and tourism occupation in the destinations is vulnerable to natural disasters and, consequently, whether tourists and the local community are totally exposed to risks. However, the analysis allows to state that the problem found related to risks to natural disasters is not being treated with the due importance by the responsible organs, by management and promotion of the Brazilian tourism.

In fact, the National Plans of Tourism, mainly the current one (2018-2022), are considering, in their guidelines and actions, the management of risks to natural disasters, but pleading, only economy gains earned by the field. The adoption of strategies, in a way to integrate the risks to the tourism fields, should be contemplated by the public power in the elaboration of the National Plans of Tourism, aiming at implementing specific policies for the risk management of tourism activity. However, it is determined a complete disarticulation between the responsible organs by management of the tourism field in the country, where the agendas do not converge to group actions, contributing, therefore, to making tourism destinations each day more vulnerable to natural disasters.

The absence of strategies and actions in tourism public policies also reflects in the insufficient amount of studies and scientific studies regarding the issue approached in this study. Therefore, it is considered very important the deepening of issues that treat of the management of risks to natural disasters in tourism. Thus, according to the picture presented in this study,

many cities, which have in the tourism field a strong economy dependence, are vulnerable to natural disasters, and this is extremely preoccupying. After all, the occurrence of adverse events may compromise the complete tourism infrastructure, in addition to harming the destination's image, in the perception of tourists.

Therefore, the management of risks to disasters should, also, be incorporated to the public policies and tourism planning. The evaluation of the impact and subsequent managing of crisis and disasters depend on their nature – which should be considered in any effort of tourism risks. The size, frequency, duration and magnitude of the crisis and/or disasters, are considered important to an effective managing. A theme that assumes fundamental importance due to the great potention of growth of the Brazilian tourism and that, next to the security issue of million of national and international tourists, involves the own survival of tourism destinations vulnerable to natural disasters.

In conclusion, throughout this study, it was aimed at demonstrating that natural disasters show recurrence in several Brazilian cities, including the cities already with tourism. In addition, the analysis here presented puts in evidence the fact that the management of risks to natural disasters has not been incorporated in the cities' tourism plans. This shows how much the tourism activity, in Brazil, is still needy of studies, specially, researches that are dedicated to the problem related to natural disasters and their impacts on the field.

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