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THE RELATIONSHIP BETWEEN SOCIETY AND NATURE IN RISK AREAS: AN ANALYSIS OF URBAN COMMUNITIES IN THE MUNICIPALITY OF PETRÓPOLIS (RJ)

A RELAÇÃO SOCIEDADE E NATUREZA FRENTE ÀS ÁREAS DE RISCO: UMA ANÁLISE DAS COMUNIDADES URBANAS NO MUNICÍPIO DE PETRÓPOLIS (RJ)

LA RELACIÓN SOCIEDAD Y NATURALEZA FRENTE A LAS ÁREAS DE RIESGO: UN ANÁLISIS DE LAS COMUNIDADES URBANAS EN EL MUNICIPIO DE PETRÓPOLIS (RJ)

Tamiris Batista DINIZ[1]
e-mail: tamirisbdiniz@hotmail.com

Luiz Henrique Alves da SILVA[2]
e-mail: luiz.henrique.as@hotmail.com

Alexander Josef Sá Tobias da COSTA[3]
e-mail: ajcostageo@gmail.com

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[1] Rio de Janeiro State University (UERJ), Rio de Janeiro – Rio de Janeiro – Brazil. Holds a Ph.D. and an MSc in Geography from UERJ. Also holds both a teaching degree and a bachelor's degree in Geography from the Federal University of Alfenas (UNIFAL-MG).

[2] Rio de Janeiro State University (UERJ), Rio de Janeiro – Rio de Janeiro – Brazil. Holds both a teaching degree and a bachelor's degree in Geography from Estácio de Sá University (2012), and an MSc in Geography from Rio de Janeiro State University (2019), where she is currently pursuing her Ph.D. research.

[3] Rio de Janeiro State University (UERJ), Rio de Janeiro – Rio de Janeiro – Brazil. Holds a teaching degree in Geography (1990) and a bachelor's degree in Geography (1989) from Rio de Janeiro State University. Earned an MSc in Geography from the Federal University of Rio de Janeiro (1995) and a PhD in Environment and Society from the Institute of Philosophy and Human Sciences (IFCH) at the University of Campinas (Unicamp). Serves as an Associate Professor at Rio de Janeiro State University, teaching in the undergraduate Geography program, the Graduate Program in Geography (PPGEO/UERJ), and the Professional Master's Program in Geography Teaching (PROFGEO). Also acts as course coordinator in the distance-learning undergraduate Geography program of the CEDERJ Consortium.

ABSTRACT: In Brazil, the process of urban occupation occurred rapidly and without adequate planning, due to a new development model driven by urbanization and industrialization, which resulted in the intensification of environmental disasters. This reality becomes clearer in metropolitan regions that have come to concentrate large portions of the population, leading to a more fragile and intense relationship with the environment. Thus, this research aims to analyze the relationship between society and nature and how this relationship is manifested in the formation of risk areas, using the municipality of Petrópolis (RJ) as a case study. In this context, it was possible to conduct an analysis by overlaying the boundaries of urban communities and the city's risk areas through geoprocessing tools. To this end, the methodology adopted included a literature review and the cross-referencing of socioeconomic data from the 2022 Census with SGB risk maps, using ArcGIS 10.5 software to produce the results. It was found that urban communities are located in areas with higher risk and greater incidence of landslides.

KEYWORDS: Risk. Society and Nature. Petrópolis.

RESUMO: *No Brasil, o processo de ocupação das áreas urbanas ocorreu de forma acelerada e sem o planejamento adequado, devido a um novo modelo de desenvolvimento alavancado pela urbanização e industrialização, o que resultou na intensificação dos desastres ambientais. Essa realidade clarifica-se nas regiões metropolitanas que passaram a concentrar grandes parcelas da população, resultando em uma relação com o meio mais frágil e intensa. Assim, essa pesquisa tem como objetivo analisar a relação sociedade e natureza e como esta relação elucida-se na realidade da formação de espaços de risco, utilizando o município de Petrópolis (RJ) como caso de estudo. Nesse contexto, foi possível fazer uma análise através do cruzamento dos limites das comunidades urbanas e das áreas de risco da cidade através das ferramentas de geoprocessamento. Para tanto, adotou-se por metodologia a revisão bibliográfica e o cruzamento de dados socioeconômicos do Censo 2022 com mapas de risco do SGB, utilizando o software ArcGIS 10.5 para a elaboração dos resultados. Constatou-se que as comunidades urbanas se situam em áreas de maior risco e incidência de deslizamento.*

PALAVRAS-CHAVE: *Risco. Sociedade e Natureza. Petrópolis.*

RESUMEN: *En Brasil, el proceso de ocupación de las áreas urbanas ocurrió de manera acelerada y sin una planificación adecuada, debido a un nuevo modelo de desarrollo impulsado por la urbanización y la industrialización, lo que resultó en la intensificación de los desastres ambientales. Esta realidad se hace más evidente en las regiones metropolitanas que han pasado a concentrar grandes porciones de la población, generando una relación con el medio más frágil e intensa. Así, esta investigación tiene como objetivo analizar la relación entre sociedad y naturaleza y cómo esta relación se manifiesta en la formación de espacios de riesgo, utilizando el municipio de Petrópolis (RJ) como estudio de caso. En este contexto, fue posible realizar un análisis mediante la superposición de los límites de las comunidades urbanas y de las áreas de riesgo de la ciudad a través de herramientas de geoprocesamiento. Para ello, se adoptó como metodología la revisión bibliográfica y el cruce de datos socioeconómicos del Censo 2022 con mapas de riesgo del SGB, utilizando el software ArcGIS 10.5 para la elaboración de los resultados. Se constató que las comunidades urbanas se sitúan en áreas de mayor riesgo y mayor incidencia de deslizamientos.*

PALABRAS CLAVE: *Riesgo. Sociedad y Naturaleza. Petrópolis.*

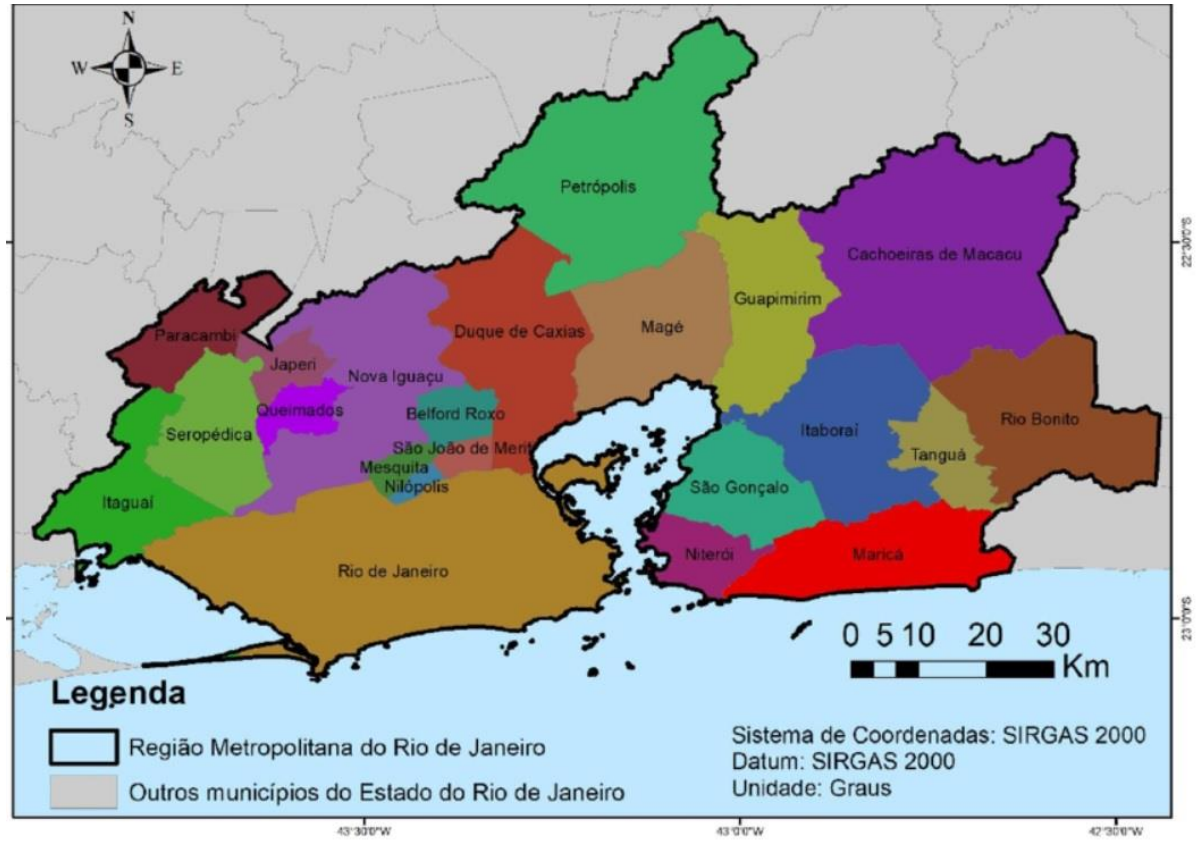
Introduction

Environmental disasters have grown exponentially in recent decades, be they disasters from contamination by chemicals, hydrometeorological, endogenous, among many others that affect the natural balance and end up affecting the quality of life of society. This increase and the concerns with the environmental issue that emerged in the second half of the twentieth century gave rise to a series of researches that seek to organize and understand how the relationship of society with the environment can be a determining factor for social development and, consequently, for environmental well-being.

In this relationship, it is clear the need to identify how this relationship between society and nature is spatialized and how this is reflected in the spatial organization. The need to understand how society is distributed throughout space is fundamental to subsidize the actions of public power on different fronts, whether they are related to environmental, risk, or socioeconomic issues. In this context, the correlation of risk areas and socioeconomic conditions is a fundamental factor for spatial analysis in order to seek an understanding of the relationship between society and nature and the understanding of how this relationship is reflected in a socio-spatial segregation.

Petrópolis, a municipality that is part of the Metropolitan Region of the city of Rio de Janeiro (Figure 1), is a field of study to analyze these conditions, given the reality of occupation of the city and its history of natural disasters. The municipality of Petrópolis has 278,881 inhabitants, according to the demographic Census of the Brazilian Institute of Geography and Statistics (IBGE) of 2022, and a demographic density of 352.50 inhabitants/km2. With a GDP per capita of R $ 51,003.6 (IBGE, 2021), the Municipal Human Development Index (MHDI) reached 0.745 points in 2010. Despite having an HDI considered high by the classification proposed by the United Nations (UN), Petrópolis is marked by high rates of concentration of income and occupations in risk areas by populations in poverty (IBGE, 2025).

Figure 1 - Metropolitan Region of Rio de Janeiro



Source: Araújo and Paula (2022).

In this perspective, the present research aims to analyze the relationship between society and nature and how this relationship is elucidated in the reality of the formation of risk spaces, taking as an example the spatial cutout of the municipality of Petrópolis.

Materials and methods

This work has a quantitative-qualitative nature, using the following steps that combine theoretical foundation, data collection and spatial analysis by geoprocessing. First, the research and literature review (books, articles and theses) were carried out, referring to the study area. The terms “susceptibility to landslides in Petrópolis (RJ)” were used as descriptors, having as a temporal space the last 30 years, to find articles available in electronic journals through the main indexers, in order to indicate the concepts, studies and environmental analyzes on the topic addressed.

After this stage, research and data collection were carried out in public agencies, such as: Petrópolis City Hall, Geological Survey of Brazil (SGB), Brazilian Institute of Geography and Statistics (IBGE), among others. Then, the organization and analysis of the collected data was carried out, through the crossing of the layers of location of the favelas and the susceptibility to landslides in the municipality of Petrópolis using the *Software* ArcGis Desktop version 10.5.

Data on the location of favelas or urban communities and the value of the average monthly nominal income of the people responsible for households in the municipality were extracted from the preliminary results of the 2022 demographic Census of IBGE, on a scale of 1:25,000. On the other hand, the data on the sliding risk classes came from the GBS, also on the 1:25,000 scale. At the end, the materials produced were reviewed and the final text of the article was prepared, indicating the results obtained.

The environmental issue: relationship society and nature

According to Hogan, Marandola Jr. and Ojima (2010), for a long period, the relationship between society and nature was understood from the Malthusian population theory, developed by Thomas Robert Malthus (1766-1834). He argued that the population grew in geometric progression, while food production grew in arithmetic progression. Thus, the discourse of the pressure of the quantity of people on resources arose, that is, it was from consumption that the relationship between population and environment was understood. In this sense, space is the gateway to the theme of this interaction in demographic and population studies, in order to understand its processes and evolution.

Davis (1991) points out that many researchers have focused efforts on creating strategies to contain population growth, seen as responsible for the pressure on Natural Resources. However, paradoxically, there is also the argument that the main causes of environmental problems are not strictly demographic, highlighting, in this sense, the relevance of social institutions, the efficiency of markets, the level of technological development and income distribution.

Historically, a tradition of demography studies incorporated demographic distribution as one of the axes of its reflection, but not as a factor of population processes. It is recent in the studies of population displacements the conception that space is the cause of spatial distribution processes. This conflicted so when the environmental theme was incorporated in population

studies, space is no longer seen only as location, making the issue of integrating space with the population more evident (Hogan; Marandola Jr.; Ojima, 2010).

These authors clarify that this environmental issues were introduced the population, from the human ecology that emphasizes the environmental factors existing in space to understand the characteristics of inhabiting own beings humans, as well as of the studies on risks, dangers and vulnerability that contributed to the mechanisms of adjustment and adaptation of populations to environmental instabilities, making them adapt to the environment, since it is both "stage" of anthropic actions, as a component element of the relationship.

The process of urbanization of the world's population has its origins in the Industrial Revolution, when large migratory flows towards cities began. These urban centers offered abundant labor, economies of scale, and greater sharing of infrastructure, resources, and production and marketing opportunities (Freitas; Porto, 2006). At the beginning of the twentieth century, about 13% of the world's population lived in urban areas; today, this figure reaches 55%, according to the World Cities report, published by UN-Habitat in 2022 (Freitas; Porto, 2006; Nações Unidas Brasil, 2023).

For centuries, economic advancement driven by the Industrial Revolution prevented environmental problems from being considered. The environment was predominantly seen as an accessory to development, and not as an intrinsic part of it (Sousa, 2005). However, this begins to change from the 1960s, when the world experienced a series of social and political transformations, such as the Cultural Revolution in China, the strengthening of pacifist movements opposed to the Vietnam War and the rise of the hippie movement in society, among others (Hogan; Marandola Jr.; Ojima, 2010).

In this scenario of socio-political effervescence, environmental issues began to gain prominence, driven by the growing concern about the impacts of anthropogenic actions on the environment. Thus, environmental issues began to be perceived as a challenge of a global scale, going beyond regional borders. At the same time, tensions between developed and developing countries were intensifying around the debate on the economic development model (Hogan; Marandola Jr.; Ojima, 2010).

The discussion regarding the relationship between nature and society is very current. If in the very recent past the tonic in the global scenario was the obtaining of profit to the extreme, not respecting the limits of the environment, nowadays there is a concern with climate change. From this context, a whole culture emerges aimed at avoiding the degradation of the environment with the consequence of collective well-being. The World Conference on

Development and Environment held in 1972 in Stockholm was the first attempt at a global level to discuss environmental problems, highlighting the high levels of pollution of the biosphere (Mendonça, 2010).

> The environmental crisis, recognized mainly since the 1970s, has been putting to rest the dreams of a linear model of progress and economic development that is part of modernity. The productivist ideology of the consumer society and technological optimism have been losing ground in the face of the growing and complex environmental problems recognized in recent decades. More economic growth, more scientific knowledge and the diffusion of sophisticated technologies do not necessarily mean the improvement of the living conditions of current populations, and the living conditions of future generations are increasingly put at risk (Freitas; Porto, 2006, p. 19).

Thus, several measures have been adopted with the aim of promoting a rational use of natural resources, guided by the concept of sustainable development. This concept was formally presented in 1987, through the Brundtland Report, which defined it as the effort to "meet the needs of the present without compromising the ability of future generations to satisfy their own needs" (WCED, 1987, p.9).

In 1992, during the United Nations Conference on Environment and Development, also known as Rio-92, the concept of Sustainable Development gained greater projection (Guimarães; Feichas, 2009). The event marked a global effort to reconcile economic growth with human development and the preservation of environmental quality. In addition, Rio-92 significantly boosted geographical studies aimed at the analysis of socio-environmental relations, contributing to the evolution of the very concept of the environment. From this framework, traditional conceptions were resized, incorporating new elements that allowed different ways of understanding and addressing environmental problems (Morais; Melo, 2013).

Environmental efforts aimed at conserving and / or preserving nature often conflict with the logic of the capitalist socio-economic system. In many cases, such initiatives end up resulting in palliative solutions to recurring problems, since without structural changes at the heart of this system, a large part of these efforts tends to be ineffective. "Perhaps, the search for full sustainability is a utopia, but although it cannot be fully achieved, it can and should be the horizon of what we seek" (Ojima; Hogan, 2009 *apud* Hogan; Marandola Jr.; Ojima, 2010, p.92). According to these authors:

> The search for sustainability therefore goes through many reconstructions: some simpler, others more complex. All of them, however, open exciting perspectives for us to think about our space, our time and our environment.

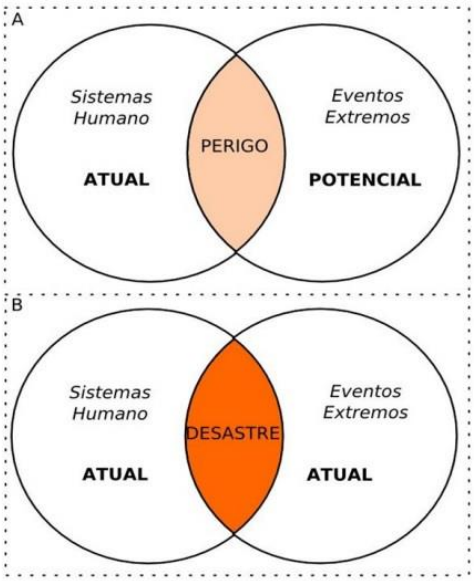
> Accepting this challenge is launching oneself in search of oneself in the condition of being that connects to everything, even thinking of oneself as unique (Ojima; Hogan, 2009 *apud* Hogan; Marandola Jr.; Ojima, 2010, p. 97).

According to Veyret (2007) it is important to highlight that there are different types of risks, but geography is dedicated, above all, to those whose perception and management involve a spatial dimension. These risks are classified according to the processes that originate them and this concept is defined as:

> Risk, a social object, is defined as the perception of danger, of a possible catastrophe. It exists only in relation to an individual and to a social or professional group, a community, or a society that apprehends it through mental representations and coexists with it through specific practices. There is no risk without a population or individual who perceives it and who could suffer its effects. Risks are taken, which are assumed, refused, estimated, evaluated, calculated. Risk is the translation of a threat, of a danger to the one who is subject to it and perceives it as such (Veyret, 2007, p. 11).

The Ministry of Cities (Brasil, 2007, p.26) defines risk as "the relationship between the possibility of occurrence of a given process or phenomenon and the magnitude of damage or social and/or economic consequences on a given element, group, or community. The greater the vulnerability, the greater the risk." For Marcelino (2008, p. 24), "risk is the (measurable) probability of a danger becoming a disaster." Thus, as the frequency of the hazard and the intensity of the vulnerability increase, the risk of a hazard becoming a disaster will also increase (Figure 2).

Figure 2 - Relationship between danger and risk



Source: Adapted from Tobin and Montz, 1997 *apud* Marcelino, 2008.

Environmental risks are divided into natural risks, social risks and technological risks. Natural hazards are those that are sensed, perceived and borne by a social group or individual subject to the action of a possible physical process. They can originate from seismic, volcanic, climatic, desertification, fires, pollution, floods, among others. They can also be aggravated or provoked by human activities and the occupation of the territory (Veyret, 2007). This type of risk can present with different degrees of losses due to the magnitude of the spatial scope and the time of activity of the processes (Castro; Peixoto; Pires do Rio, 2005).

Technological risks cover the scope of production processes and industrial activity (Castro; Peixoto; Pires do Rio, 2005). They deal with the dangerous phenomenon of chronic pollution and accidental pollution, in which in chronic pollution, the phenomenon acts recurrently and the risk comes from the consequences of environmental degradation, morbidity and mortality. In accidental pollution, on the other hand, the greatest technological risks occur, such as explosions, leaks of toxic products and fires (Veyret, 2007).

Social risks, on the other hand, refer to the fragmentation of space that arises at the same time as a cause and result of social inequalities. Due to inequalities arise the risks of delinquency and crime, those associated with drug use, those linked to wars, totalitarian ideologies and terrorism (Veyret, 2007).

In this sense, the scales of the city and the region are important to think about environmental risk, since in the city there is the fragmentation of urban space that promotes inequality, where the risk areas are occupied by the lowest income population. And at the

regional scale there are productive systems, economies, hierarchical relationships, agrarian dynamics and migration that are fundamental to understanding environmental impacts and risks (Hogan; Marandola Jr.; Oima, 2010).

According to IBGE (2018), 8.3 million people lived in areas at risk of mass movements, floods and floods, in 2010, in 872 municipalities in the country. The increase in the number of people living in risk areas has been one of the characteristics of the process of urbanization and growth of cities, in this way there is a "territorialization" of risks. The risks in the city are due to the density of land occupation, the nature and types of infrastructure, such as buildings and water, electricity and sewage networks (Veyret, 2007).

Rezende and Oliveira (2010) highlight, in this context, the need to understand and transform social, political, economic, cultural and environmental structures, in order to overcome the contradictions imposed by the capitalist model of production and its negative consequences for the natural and social worlds. In this scenario, the educational process assumes a central role, being fundamental for the transformations necessary to overcome the socio-environmental crisis.

Results and discussions

Petrópolis is a municipality marked by a history of environmental disasters dating back to the Brazilian colonial period, even before its institution as a city. The city developed from a pilot project prepared by Major Julio Frederico Koeller, at the request of the then Emperor Dom Pedro II, at the end of the first half of the nineteenth century. His planning, for what would then be the Imperial Villa, developed in the valley bottoms and on the low slopes. Koeller's design is now seen as modern and bold. Environmental concerns and safety in the face of natural hazards were already present in the then Land Code of the time, in which there were limitations to construction and deforestation of the slopes (Silva; Mello; Barbosa, 2012).

This planning was not enough, nor brake mechanism to stop the growing and uncontrolled urban development that settled in the region in the second half of the twentieth century. Areas hitherto unoccupied by the Imperial oligarchies became fronts of urban expansion. These areas were located in portions of extremely rugged relief, such as slopes higher than 45º, and river banks that until then were avoided, given the recurrent rains that make up the climate of the region and that often culminate in the elevation of the drainage channels

of the region. Thus, in the municipality, urban occupation is even in the areas of permanent preservation of slope and river banks.

This framework, composed of a relationship between society and nature developed from an unequal urban expansion and without adequate planning, has currently culminated in scenarios that present us with realities such as favela areas. In Petrópolis, according to the Demographic Census of 2022, 42 areas are found demarcated as favelas or urban communities, occupying 7.29 km2 of the territory of the municipality that has approximately 791 km2.

Petrópolis has five districts, and the Posse district does not have favelas in its territory, while Pedro do Rio and Itaipava have one in their territory, respectively the Leito / BNH favelas Pedro do Rio and Madame Machado. The Cascatinha district has 5 favelas: Bonfim Urbano – Corrêas, Morro da Glória, Juiz Castro e Silva, Morro da Lenha and Boa Vista. And the Petrópolis district has the highest concentration of favelas, with a total of 35, as can be seen in Table 1 and Figure 3.

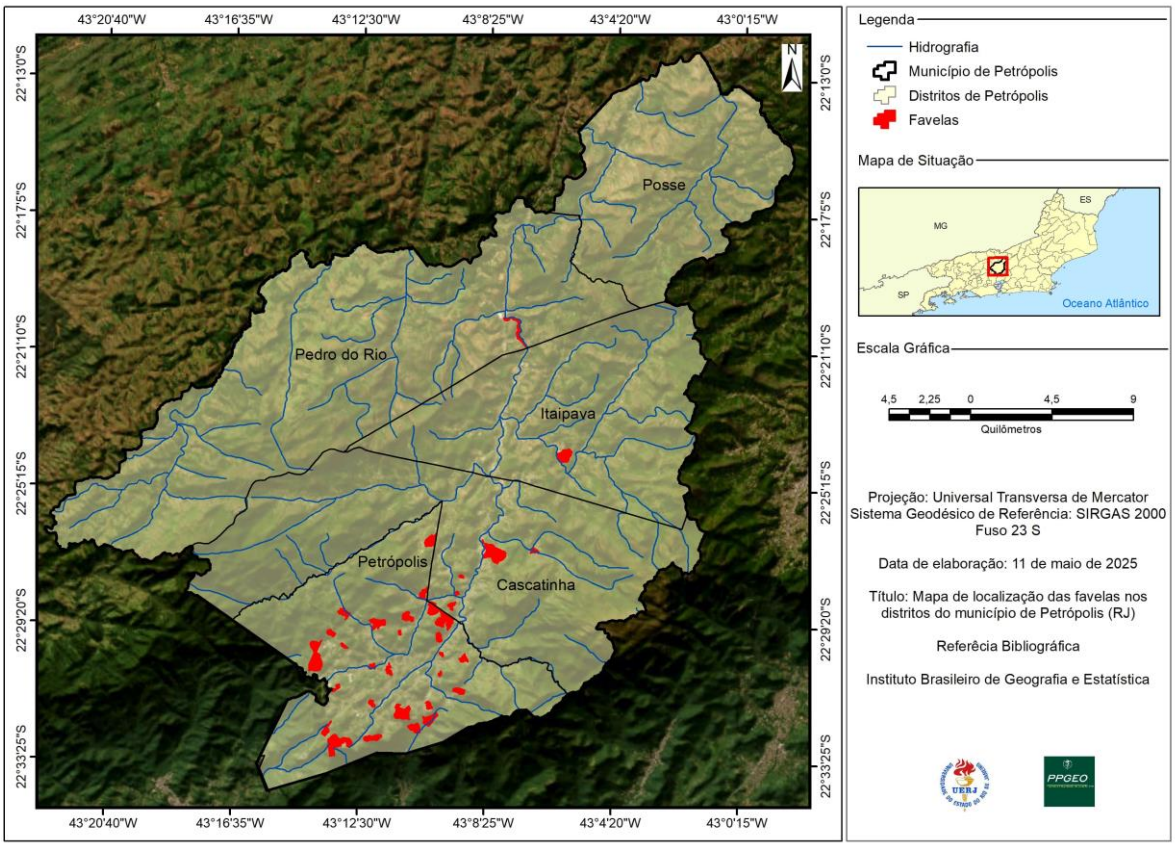
Table 1 - Urban communities in the municipality of Petrópolis (RJ)

	Name of a favela or urban community	District	Area (in km2)
1	14 Bis Bartolomeu De Gusmão	1º-Petrópolis	0.03
2	Alto Independência	1º-Petrópolis	0.68
3	Alto Siméria	1º-Petrópolis	0.09
4	Cantinho da Esperança	1º-Petrópolis	0.12
5	Caxambu-Buraco do Caxambu, allotment Elísio Alves	1º-Petrópolis	0.11
6	Community of São Francisco de Assis - Alto da Derrubada	1º-Petrópolis	0.17
7	Community Unidos Venceremos	1º-Petrópolis	0.06
8	Community Vitória	1º-Petrópolis	0.05
9	Contorno I	1º-Petrópolis	0.39
10	Contorno II	1º-Petrópolis	0.25
11	Duques	1º-Petrópolis	0.13
12	Espírito Santo	1º-Petrópolis	0.07
13	Estrada da Saudade-Veridiano Felix	1º-Petrópolis	0.52
14	Estrada do Paraíso A	1º-Petrópolis	0.3
15	Estrada do Paraíso B	1º-Petrópolis	0.06
16	Marujento	1º-Petrópolis	0.05
17	Morro da Oficina - Rua dos Ferroviários	1º-Petrópolis	0.09
18	Morro do Alemão	1º-Petrópolis	0.3
19	Morro do Alemão	1º-Petrópolis	0.03
20	Morro do Neylor	1º-Petrópolis	0.16
21	Morro do Príncipe	1º-Petrópolis	0.28
22	Morro Florido-Estrada da Saudade	1º-Petrópolis	0.12
23	Osvaldo Cruz-Valparaiso	1º-Petrópolis	0.07
24	Pedro Ivo	1º-Petrópolis	0.15
25	Professor João de Deus-Brazilian quarter	1º-Petrópolis	0.03
26	Highway BR-040-km 79	1º-Petrópolis	0.05
27	850 Bingen Street – Bingen	1º-Petrópolis	0.05

28	São João Batista	1º-Petrópolis	0.12
29	Sargento Boening	1º-Petrópolis	0.11
30	Sítio do Pica-Pau	1º-Petrópolis	0.08
31	Vai quem Querer-Vital Brasil	1º-Petrópolis	0.12
32	Vale do Carangola – Carangola	1º-Petrópolis	0.3
33	Villa San Francisco A	1º-Petrópolis	0.28
34	Villa San Francisco B	1º-Petrópolis	0.23
35	Vila São José-Downtown	1º-Petrópolis	0.03
36	Boa Vista	2º-Cascatinha	0.09
37	Bonfim Urbano-Corrêas	2º-Cascatinha	0.07
38	Juiz Castro e Silva	2º-Cascatinha	0.03
39	Morro da Glória	2º-Cascatinha	0.77
40	Morro da Lenha	2º-Cascatinha	0.03
41	Madame Machado	3rd - Itaipava	0.39
42	Leito / BNH Pedro do Rio	4º-Pedro do Rio	0.23
	Total		7.29

Source: Demographic Census of the Brazilian Institute of Geography and Statistics (2022). Adapted by the authors (2025).

Figure 3 - Location map of favelas in the districts of the municipality of Petrópolis (RJ)

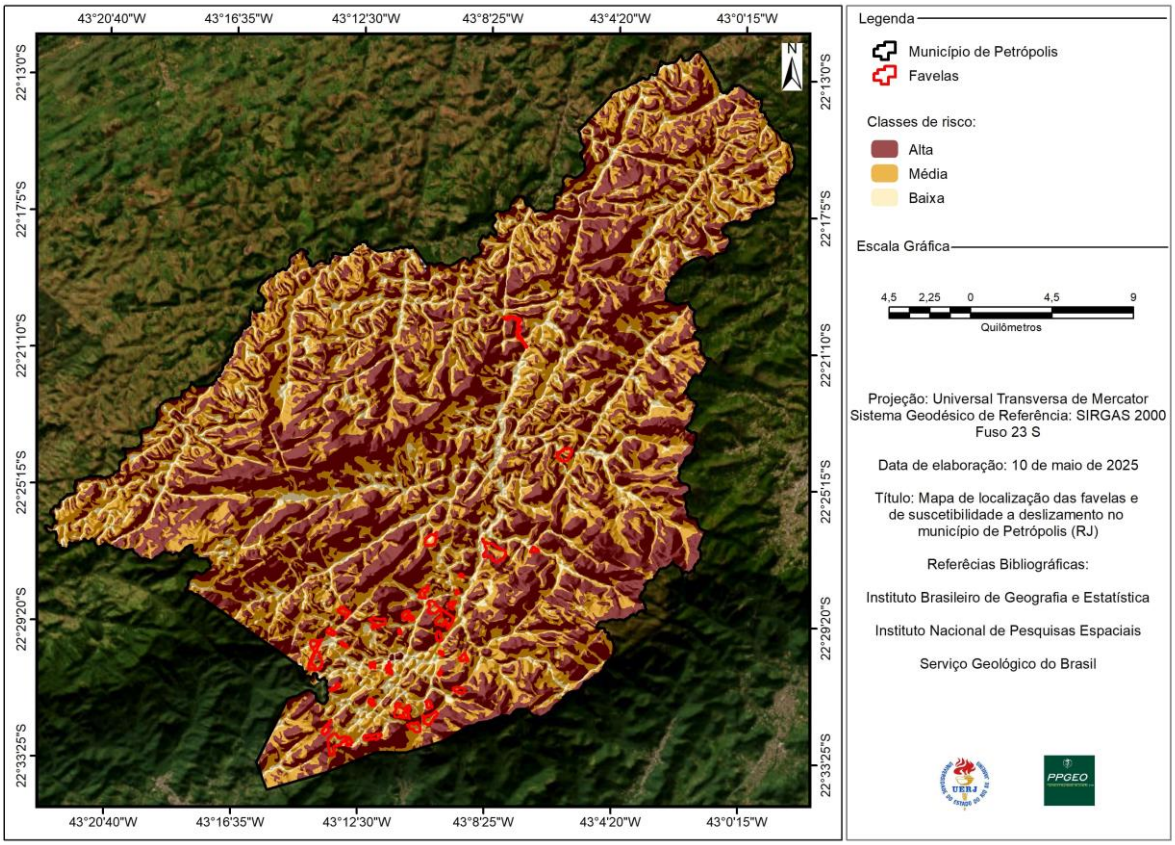


Source: Elaborated by the authors (2025).

According to landslide susceptibility data from the Geological Survey of Brazil, Petrópolis has a good part of its territory in an area of high risk of landslides with 386.53 km2 (48.82%) and medium risk with 332.6 km2 (42.01%); only 72.55 km2 (9.16%) of the municipality has

low risk. Favelas occupy mainly areas of high and medium risk of landslides, as shown in Figure 4.

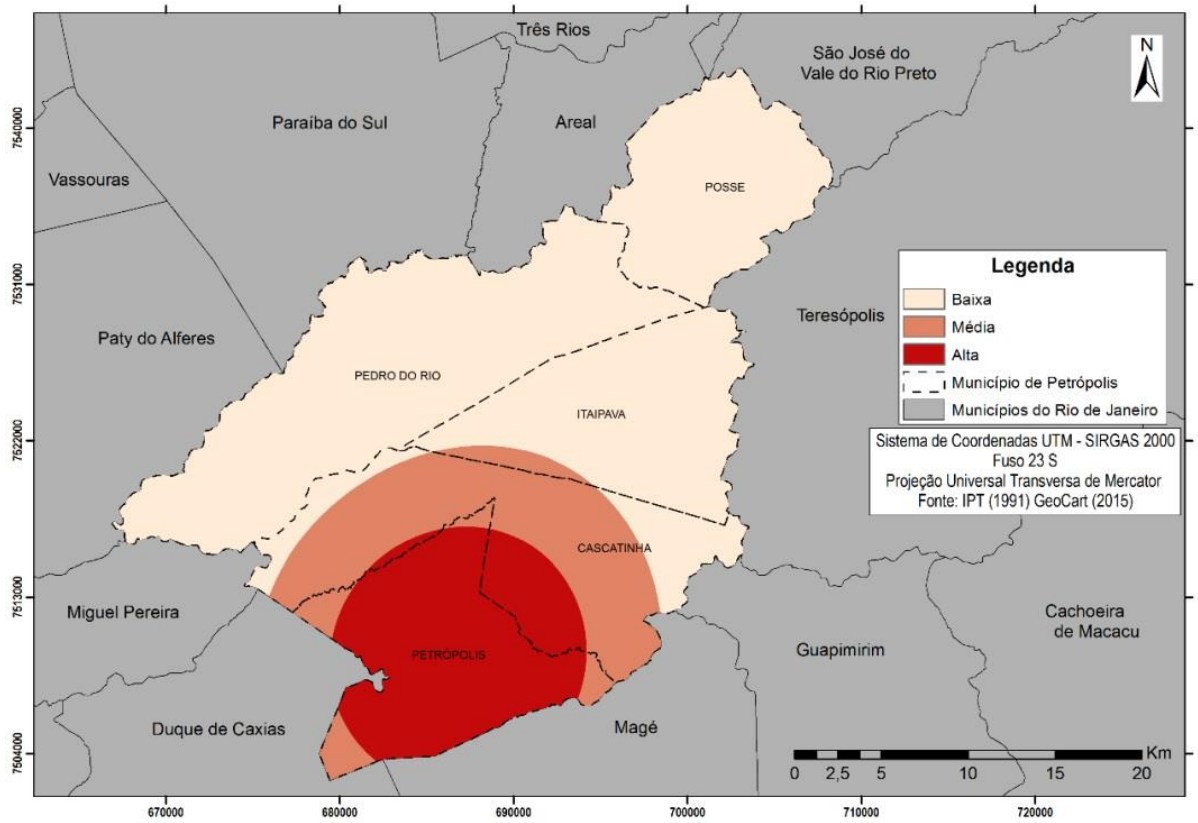
Figure 4 - Map of favelas location and susceptibility to landslides in the municipality of Petrópolis (RJ)



Source: Elaborated by the authors (2025).

Of the 7.29 km2 occupied by favela areas in Petrópolis, 2.42 km2 (33.19%) are located in an area of high risk of landslides, 4.22 km2 (57.88%) are in an area of medium risk of landslides, and 0.65 km2 (8.91%) have a low risk of landslides. Urban communities are not spatially distributed homogeneously throughout the municipality. Most of them are located in the first district, Petrópolis, which concentrates the urban center of the municipality and a large portion of the petropolitan population. In addition, it is where there is the highest intensity of occurrence of landslide events in the municipality, as shown in Figure 5.

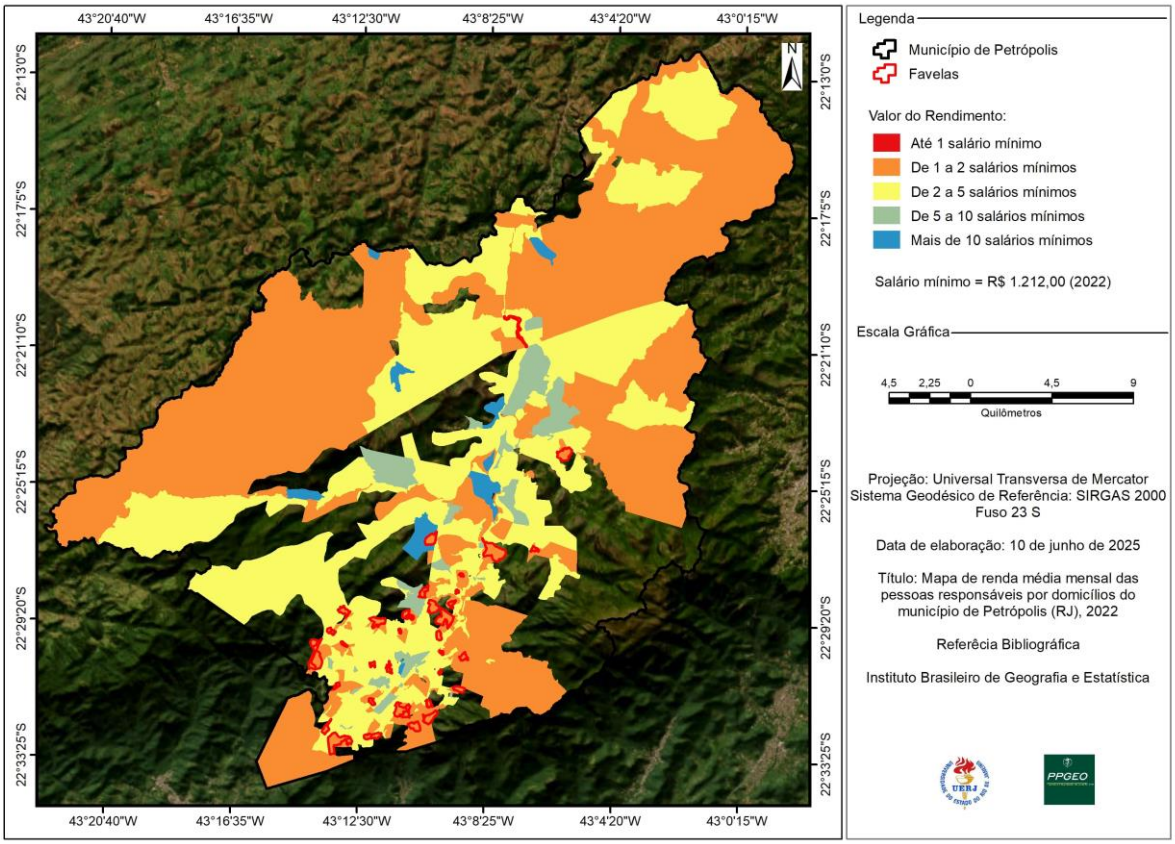
Figure 5 – Map of landslide intensity in the municipality of Petrópolis (RJ) in the period from 1940 to 2015



Source: Nemirovsky, Neves and Fernandes (2018).

Figure 6 shows the map with data on the value of the average monthly nominal income of people responsible for households in the municipality, according to preliminary data from the 2022 IBGE Demographic Census. In Petrópolis, the average income of those responsible for households ranged from R$ 1,181.79 to R$ 55,305.22, but in urban communities this income does not exceed 2 minimum wages. It is worth mentioning that the minimum wage in 2022 was R$ 1,212.00.

Figure 6 - Map of average monthly income of people responsible for households in the municipality of Petrópolis (RJ), 2022



Source: elaborated by the authors (2025).

Thus, from the identification of the limits of urban communities, it was possible to correlate their location with the areas primarily defined as areas of risk of landslides, in which it can be seen that the residents of favela areas, usually people impoverished are the ones who most receive the environmental burdens of the municipality, either due to the risk or the absence of the public power to efficiently guarantee essential services, resulting in a precarious infrastructure that makes these areas even more vulnerable. Relating these data reveals a very alarming reality for the municipality of Petrópolis, but this information is crucial to urban planning, in order to subsidize the actions that must be taken in order to regulate and prevent socio-environmental damage.

Final remarks

The relationship between society and nature has always been at the heart of different sciences, which aim to understand how to use resources for the survival of society through the

extraction of materials from the environment. However, the increase in the number and recurrence of socio-environmental disasters and deaths occurring in different events in the history of society revealed the need to review the dynamics of environmental overexploitation.

In this context, this research indicates that the disasters that now plague society are not mere natural fatalities but the result of a process of unequal distribution and occupation of space. In the case of Petrópolis, the data show that the population with lower purchasing power is segregated into risk areas with precarious infrastructure and greater exposure to adverse geological conditions. The relevance of this study lies precisely in the ability to spatialize this vulnerability, transforming statistical and cartographic data into a diagnostic and critical analysis tool. From the combination of information on the location of favelas and the susceptibility to landslides in Petrópolis, a direct correlation was found between the precariousness of housing conditions and environmental risks, especially in areas of rugged relief and riverbanks, whose occupation intensified from the second half of the twentieth century. The historical analysis of the occupation of the city demonstrates that, although the initial planning of the Imperial Villa contemplated environmental concerns, these guidelines were not maintained during the urban expansion process, resulting in a framework of deep spatial fragmentation excluding.

Therefore, it is worth emphasizing the importance of critical understanding of the relationship between society and nature in the process of Brazilian urbanization. The construction of resilient cities requires not only the strengthening of technical instruments for monitoring and risk management, but, above all, a reorientation of urban development paradigms towards greater territorial equity and environmental sustainability. In this sense, overcoming socio-spatial segregation and mitigating environmental disasters cannot be dissociated from a broader project of socio-environmental justice.

Therefore, this article contributes to the advancement of technical-academic debates, offering a theoretical-methodological analysis that can contribute to the formulation of public policies for planning and territorial planning. Finally, the results presented here reinforce that disaster mitigation in Petrópolis is inseparable from a broad project of socio-environmental justice and the fight against socio-spatial segregation.

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