SOUTHERN CANYONS PATHWAYS UNESCO GLOBAL GEOPARKS:
STRATEGIES FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

Objective: This article aims to understand the process of setting up the GMCCS and its prospects for the sustainable development of the communities living in the territory. The following research questions are posed: a) How did the prospecting of UGGps take place in the LAC region? b) How did the process of recognition and approval of the GMCCS take place? c) How has the GMCCS contributed to the sustainable socio-economic development of the towns that make up the territory?

Method: In order to achieve the above objectives, the state-of-the-art methodology was used, together with bibliographic and documentary research, to understand the conception of the idea of geoparks in the international context and their dissemination around the world.

Results and conclusion: As a result, it was found that the territories that have been recognized, including the GMCCS, have proved to be effective and sensitive tools for the socio-economic development of their respective communities, although the prospecting of geoparks in LAC is still happening slowly and gradually.

Research implications: UGGps (UNESCO Global Geoparks) aim to promote the sustainable development of local communities. The GGN (Global Geoparks Network) currently has 177 accredited territories around the world, ten of which are in the LAC (Latin America and the Caribbean) region. The research shows that the territory of the UNESCO World Geopark Caminhos dos Cânions Sul is moving towards promoting sustainable development in its territory.

Keywords: Local Communities, Economic Development, Sustainable Development Goals.

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RESUMO

Objetivo: O presente artigo se propõe a entender o processo de constituição do GMCCS e suas perspectivas para o desenvolvimento sustentável das comunidades que vivem no território. Colocam-se as seguintes questões de pesquisa: a) como ocorreu a prospecção dos UGGps na região da LAC? b) de que forma transcorreu o processo de reconhecimento e chancela do GMCCS? c) de que forma o GMCCS vem contribuindo para o desenvolvimento socioeconômico sustentável das cidades integrantes do território?

Método: Para atingir os objetivos acima expostos, a metodologia do estado da arte aliada à pesquisa bibliografia e documental foi utilizada para entender a concepção da ideia dos geoparques no contexto internacional e sua disseminação ao redor do mundo

Resultados e conclusão: Como resultado, verificou-se que os territórios chancelados, dentre eles o GMCCS, se mostram ferramentas eficazes e sensíveis ao desenvolvimento socioeconômico das respectivas comunidades, muito embora a prospecção dos geoparques na LAC ainda aconteça de forma lenta e gradual.

Implicações da pesquisa: Os UGGps (UNESCO Global Geoparks) têm por objetivo promover o desenvolvimento sustentável das comunidades locais. A GGN (Global Geoparks Network) conta atualmente com 177 territórios chancelados ao redor do mundo, dos quais dez se situam na região da LAC (Latina América e Caribe). A pesquisa demonstra que o território do Geoparque Mundial da UNESCO Caminhos dos Cânions Sul caminha em direção a promover o desenvolvimento sustentável em seu território.

Palavras-chave: Comunidades Locais, Desenvolvimento Econômico, Objetivos do Desenvolvimento Sustentável.

1 INTRODUCTION

In April 2022, UNESCO designated two new World Geoparks on Brazilian soil: the UNESCO World Geopark Caminhos dos Cânions do Sul (GMCCS) located in the states of Santa Catarina and Rio Grande do Sul, and the UNESCO World Geopark Seridó, located in Rio Grande do Norte. Added to the UNESCO Araripe World Geopark, located in Ceará, Brazil is currently the LAC (Latin America and Caribbean) country with the largest number of internationally accredited UGGps (Unesco Global Geoparks).

Since it was established as an official UNESCO program in 2015, IGGP (International Geoscience and Geoparks program) aims to promote the sustainable use of natural resources through initiatives related to geodiversity, geological heritage and the prevention of geological risks.

Geoparks are one of the strategies the program uses to achieve these objectives. According to the United Nations Educational, Scientific and Cultural Organization – UNESCO (2023), Geoparks are characterized as unified areas, where sites and landscapes of international geographic interest are managed based on a holistic concept of protection, education and sustainable development.

In these territories, the geological heritage is connected to the natural and cultural heritage, which ends up strengthening the links between local communities and the territory, in addition to developing the region economically, mainly through geotourism (Unesco, 2015; Skibiński et al., 2021; Nascimento et al., 2022).
According to Fleig; Nascimento & Valdati (2022) Geoparks represent contemporary forms of nature preservation using the organization of the territory and local communities. Still for the authors, a current conception of Geoparks “comprises heritage conservation, sustainable economic growth and community involvement” (Fleig; Nascimento; Valdati, 2022 p. 2).

Currently, the IGGP has 177 UGGps located in 46 countries around the world. The prospecting of these geoparks, however, did not occur homogeneously across continents over time. More than 90% of designated areas are located in Asian and European territory. LAC owns only 10 of these geoparks which are located, in addition to Brazil, in Peru, Chile, Uruguay, Mexico, Ecuador and Nicaragua.

In this context of dissemination of geoparks, support and organization networks played a fundamental role in structuring the territories. GGN (Global Geoparks Network) founded in 2004, seeks to support UGGps who join the organization. At LAC, Red GeoLAC, founded in 2017, has been promoting cooperation between the network's members, especially with regard to education, management, institutional strengthening, tourism and sustainable economic development (Red Geolac, 2017).

In South America, one of the most recent geoparks approved is the GMCCS, which is located in the southern region of Brazil, on the border between the states of Santa Catarina and Rio Grande do Sul. Taking as a reference the LAC region and the new geopark located in the country, this research aims to understand the process of establishing the GMCCS and its contribution to the sustainable development of communities living in the territory.

To achieve the proposed objective, we initially seek to contextualize the geoparks in the LAC and understand how they were prospected in this region. The main obstacles faced in the designation of new territories and the characteristics of the current UGGps located here are highlighted. Next, the research addresses the process of establishing the GMCCS, from its conception as an aspiring project to the formalization of the submission request to UNESCO, which resulted in the effective approval in 2022. Finally, we seek to understand how and why through which practices the GMCCS has effectively contributed to the sustainable socioeconomic development of the cities within the territory.

2 METHODOLOGY

To achieve the objectives set out above, state-of-the-art methodology was used to understand the conception of the idea of geoparks in the international context and its dissemination around the world. The methodology was also used to reflect on the prospecting of these territories in the LAC region, with the identification of barriers faced in the approval of new territories.

Bibliographic and documentary analysis was also used as a research methodology. Documents and institutional sources from UNESCO, Red GeoLAC, GGN, CMCCS, CPICCS, in addition to statements produced at international conventions and conferences.

Finally, to verify the existence of practices and projects aimed at sustainable development within the GMCCS, research was carried out on websites, social networks (Instagram and Facebook), videos published on YouTube, as well as documents and action plans developed within the administration of the geopark itself. These sources proved necessary to understand the commitment of the GMCCS management to the socioeconomic development of the communities within the territory.
3 THE AWAKENING OF GEOPARKS IN THE LATIN AMERICA AND CARIBBEAN REGION

Unlike Europe and Asia, the prospecting of geoparks in the LAC region has taken place slowly and gradually, more specifically since 2004, with the emergence of the first regional initiatives to create geoparks (Gonzáles, 2020).

Currently, of the 177 UGGps approved around the world, 93 are located on the European continent. The Asian continent has 67 UGGps, located in 8 countries, 41 of which belong to Chinese territory. North America has 4 designated UGGps, while Africa has only two. In relation to Latin America, despite the region’s geological potential and multiple local initiatives, only 10 UGGps have been designated by 2022 (Unesco, 2023a).

This trend of concentration of geoparks on the two continents mentioned above is noticeable when analyzing the approvals that have occurred in the last three years. In 2020, 15 new UGGps were designated by UNESCO, 6 in Europe, 6 in Asia, 2 in North America and only 1 in the LAC region. In 2021, 8 new UGGps were recognized, 7 in Europe and 1 in Asia. In 2022, 8 new UGGps were also designated, 6 in Europe and 2 in South America (Unesco, 2020; Unesco, 2021; Unesco, 2022).

What reasons justify the fact that more than 90% of UGGps are found in European and Asian territory, while only 10 of them are in the LAC region? What factors can be attributed to the difficulty in establishing geoparks on this continent?

Latin America is a vast and culturally diverse territory, whose cultural heritage is made up of manifestations of countless ethnicities. Its multicultural characteristics, in the words of Pelegrini (2006, p. 121), are part of “a dynamic process that is reorganized, renewed and transmitted from generation to generation”. This process constitutes, according to experts, a system that reaffirms the identity of the Latin American people and promotes their development. Respect for the most diverse forms of cultural expression and respect for the varied ethnic roots must constitute the basis of support for policies aimed at protecting the heritage of the countries that make up the LAC (Pelegrini, 2006).

Studies point out some particularities of this continental region that may have influenced the development of geoparks. The first of these would be the existence of different economic strategies adopted by developing countries, which combined with the lack of scientific knowledge about geoparks and the little scientific production on the subject, made their prospecting difficult (Gorfinkel; Santos, 2011).

Another factor that may be related to the slow prospecting of geoparks in the LAC region is the little community participation in the management of protected territories, fundamental in a geopark project. Sanchez-Cortez et al., (2017) consider that Environmental Protection Areas (APA) can be considered the basis for the formation of geoparks in Latin America. Many of these areas, however, were implemented under the principle of exclusion, abandoning social ties and limiting human life and productive activities in the location.

This characteristic not only ends up hindering the participation of local communities in the management of the geopark, but also creates a negative perception about new conservation strategies. Even today, in many communities, the understanding of what a geopark is and how it is managed are unknown to the population and local authorities.

Other forces that negatively influence the implementation of geoparks in the LAC are cited by Simbaná-Tasiguano and Sánchez-Cortez (2018): administrative factors, such as bureaucracy, slow processes and territories with multiple jurisdictions; economic discourses not always focused on the conservation of natural resources; territories with important cultural

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7UNESCO recommends that geoparks adopt bottom-up management, which occurs from the bottom up, with the active participation and empowerment of communities in all stages of planning and decision-making (Unesco, 2016).
and economic differences; environmental legislation focused on biological components; deficit in community participation in the management and conservation of protected areas; and deficit in communication, dissemination and education strategies for geosciences (Gonzáles; Sá; Palacio-Pietro, 2020).

Despite the limitations and difficulties of adapting a new environmental protection model structured based on foreign experiences to the Latin American reality, in 2006 the UNESCO Araripe World Geopark became the first Latin geopark to integrate the GGN. From then on, studies involving geological heritage in LAC began to take shape in international conferences and meetings. Countries such as Argentina, Brazil, Chile, Ecuador, Mexico, Nicaragua, Peru, Uruguay and Venezuela begin to develop projects seeking the approval of new territories (Gonzáles; Miguel, 2017; Gonzáles, 2020).

4 RED GEOLAC AND THE 10 UGGPS CANCELED BY UNESCO

To the Since 2010, the Earth Sciences Program, linked to the UNESCO Regional Science Office in LAC, has focused on the objective of creating a network of geoparks in the region, promoting the mapping of potential territories. The initiative was based on two basic concepts: integrated management and sustainable socioeconomic development (Gorfinkel; Santos, 2011).

Social and cultural aspects specific to LAC countries, such as the existence of indigenous peoples and traditional communities, are beginning to be observed in the development and management strategies of geoparks. Such communities are those that live and maintain ancestral links with the territory. They built uses, customs and practices shaped by the region, and should therefore be maintained and preserved in their place of origin (Martini et al., 2011; Gonzáles; Miguel, 2017).

Some events that occurred from 2010 onwards and the respective official documents approved at the time proved to be especially relevant for the development of geoparks in the LAC and for the emergence of a regional integration network in this region.

In 2010, during the 1st Latin American and Caribbean Conference on Geoparks, held in Barbalha/CE, the Araripe Declaration was approved, which served as a conceptual basis for the future development of a regional network of geoparks in LAC. This document refers to geoparks as new territories of the 21st century, in which natural and cultural heritage (tangible and intangible) is at the service of sustainable development (Declaration of Araripe, 2010; Martini et al., 2011).

It also establishes principles that should guide UGGPs in LAC countries in terms of conservation, assessment and education. It was the first time that the presence of indigenous groups and their cultural practices within geoparks was recognized, which was later reinforced by the Melipeuco Declaration in 2011 (Gonzáles, 2020).

It was on the occasion of the IV Latin American and Caribbean Symposium on Geoparks, held in Arequipa, Peru, in 2017, that the World Geoparks and Aspiring Geoparks in the region expressed their formal intention to create the Red GeoLAC. Considering the existence of exceptional geological, social and cultural conditions in the region, as well as the existence of several geopark projects at different stages of development, the four UGGPs then recognized in the continental region combine the creation of the Red GeoLAC, whose statutes are presented at the 1st official meeting of the network, held in Mexico, in November 2017 (Red Geolac, 2017).

8Melipeuco Declaration was ratified during the 1st Geoparks and Geotourism Symposium, held in Melipeuco, Chile, in 2011. The document highlighted the importance of integrating the local indigenous Mapuche population in the management of geoparks (Martini et al., 2011).
Red _ GeoLAC , according to its statutes, aims, among others, to contribute to publicizing UGGps as tools to promote sustainable development, as well as the conservation of geological, historical and cultural heritage, always with the invocation of local communities (Red GeoLAC , 2017). Currently, ten UGGps make up the Red GeoLAC , these are detailed in Table 1 below.

Table 1. Name and characteristics of the 10 UNESCO World Geoparks located in the LAC region

<table>
<thead>
<tr>
<th>Name</th>
<th>Year of appointment</th>
<th>Location</th>
<th>Area</th>
<th>Population</th>
<th>Objectives related to Sustainable Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Araripe UGGp</td>
<td>2006</td>
<td>BRAZIL (Cariri Region, State of Ceará)</td>
<td>3,441 km²</td>
<td>542,929</td>
<td>In addition to the proposal to protect and conserve sites of geological and paleontological relevance, the geopark lists, among its main objectives, promoting social inclusion, considering society's participation as one of the pillars of the geopark's development.</td>
</tr>
<tr>
<td>caves of Palace UGGp</td>
<td>2015</td>
<td>URUGUAY (Flowers Department)</td>
<td>3,611 km²</td>
<td>25,000</td>
<td>Considers opportunities associated with the geopark, among others: obtaining social and economic benefits; strengthen the productive fabric; and overcome weaknesses related to local tourist activity.</td>
</tr>
<tr>
<td>Minera District UGGp</td>
<td>2017</td>
<td>MEXICO (State of Hidalgo)</td>
<td>1,848 km</td>
<td>505,000</td>
<td>Its purpose is geoconservation and the tourist and educational use of the heritage. It also contributes to the development of the socio-emotional skills of young people and teachers, through participatory activities and training.</td>
</tr>
<tr>
<td>Mixteca Alta UGGp</td>
<td>2017</td>
<td>MEXICO (Oaxaca, Mixteca Alta)</td>
<td>415 km²</td>
<td>7,000</td>
<td>The geopark is a community and educational project, focused on teaching the interaction between nature and society. Its purpose is to improve the environment and the quality of life of the local population.</td>
</tr>
<tr>
<td>Kutralkura UGGp</td>
<td>2019</td>
<td>CHILE (Southern Andes Volcanic Zone)</td>
<td>8,053 km</td>
<td>55,326</td>
<td>The geopark's main objective is to actively participate in education, supporting formal education in educational establishments within the territorial base.</td>
</tr>
<tr>
<td>Imbabura UGGp</td>
<td>2019</td>
<td>ECUADOR</td>
<td>4,794.34 km²</td>
<td>428,300</td>
<td>In the geopark, sustainable development efforts have focused on the responsible extraction of copper and gold – among other acquired minerals – to protect populations and ecosystems.</td>
</tr>
<tr>
<td>Colca and Volcanes de Andagua UGGp</td>
<td>2019</td>
<td>PERU (Provinces of Castilla and Caylloma )</td>
<td>6,010.91 km²</td>
<td>Does not mention</td>
<td>The purpose of the geopark is to promote the sustainable development of local communities, conserve landscapes and natural resources and establish geotourism , in</td>
</tr>
<tr>
<td>Geopark</td>
<td>Country</td>
<td>Year</td>
<td>Area (km²)</td>
<td>Population</td>
<td>Description</td>
</tr>
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<tr>
<td>Rio Coco UGGp</td>
<td>NICARAGUA</td>
<td>2020</td>
<td>954</td>
<td>74,224</td>
<td>The dominant economic activities are agriculture and livestock farming in what is one of Nicaragua’s smallest departments, which also has fewer economic resources than others in the country.</td>
</tr>
<tr>
<td>Paths of the Southern Canyons UGGp</td>
<td>BRAZIL (States of Santa Catarina and Rio Grande do Sul)</td>
<td>2022</td>
<td>2,830.9</td>
<td>74,120</td>
<td>The geopark’s public policies aim to promote, conserve, research, and disseminate different aspects of natural, historical and cultural heritage. The geopark also seeks to stimulate the socioeconomic development of the region, by encouraging geotourism and the creation of local businesses.</td>
</tr>
<tr>
<td>Seridó UGGp</td>
<td>BRAZIL (State of Rio Grande do Norte)</td>
<td>2022</td>
<td>2,802</td>
<td>112,740</td>
<td>In the region, the economy was structured around the tripod made up of extensive livestock farming, agriculture and mining (...). New activities were introduced and/or expanded, such as dairy production, the modernization and expansion of goat and sheep farming, ceramics and the development of the tertiary sector, with emphasis on trade and the diversification of services, mainly tourism.</td>
</tr>
</tbody>
</table>


5 UNESCO WORLD GEOPARK CAMINHOS DOS CANIONS DO SUL: FROM ASPIRING GEOPARK TO MEMBERS OF THE WORLD GEOPARK NETWORK

The national territory is rich in abiotic heritage and geodiversity, one of the greatest geological potentials on the planet, with testimony to practically the entire geological history of the Earth ( Schobbenhaus ; Silva, 2012 ). Brazil was the first LAC country awarded the seal of a global geopark, in 2006. However, sixteen years passed before two other global geoparks were certified here by UNESCO.

How did the idea of creating a geopark in the southern region of the country arise? The long path taken by GMCCS began around 2005, when the local population saw fit to form partnerships so that the natural beauty of the region would have tourist visibility while at the same time being subject to environmental protection. The project was initiated by Dr. João José de Matos, doctor and mayor of the city of Praia Grande/SC, who together with local and regional authorities carried out the idea of creating the geopark ( Dalpiás ; Ladwig ; Campos , 2019 ; Sung et al., 2019 ).

The Caminhos dos Cânions do Sul Geopark Project aimed to articulate and implement actions aimed at the territory’s candidacy for the title of UGGp, and has undergone a series of changes over time. It is possible to mention the existence of four phases, in which there was a
substantial change not only in the territorial area covered by the geopark, but also in the actors involved in the action.

The first phase takes place between 2007 and 2010, when the Regional Development Agency of Santa Catarina (ADR/SC) and the Association of Municipalities of the Far South of Santa Catarina (AMESC) begin to coordinate the first actions for the construction of the project, then called Cânions do Brasil. At this stage, the project had six municipalities in an estimated area of 3,158km\(^2\) (Dalpiás; Ladwig; Campos, 2019; Sung et al., 2019).

From 2011 to 2014, the number of municipalities participating in the project increased, from six to nineteen cities. The total area increases to 5,750km\(^2\). At this stage, due to the large number of municipalities involved, difficulties arise in organizing an integrated planning process. Also, it is clear that the extensive area of coverage could hinder the analysis of the candidacy by UNESCO. For these reasons, it was decided to reduce the area of the geopark, which now has seven municipalities (Rosa; Rocha; Marimon, 2015; Sung et al., 2019).

In this way, from 2017 onwards a new phase of the project begins, the management of which is assumed by CPICCS (Caminhos dos Cânions do Sul Intermunicipal Public Consortium). Currently, the GMCCS territory is made up of seven municipalities: Morro Grande, Praia Grande, Timbé do Sul and Jacinto Machado, in SC, and Torres, Mampituba and Cambará do Sul, in RS (Figure 1). The geopark covers a unified area of 2,830.83km\(^2\), with around 79,000 inhabitants (Ibge 2022). Of these, more than 30% live in rural areas of low socioeconomic development (Gmccs, 2019). Four municipalities have a high IDHM (above 0.700), the highest being acquired by the municipality of Torres/RS (0.762), and two municipalities with an average IDHM (below 0.699), the lowest being the municipality of Mampituba/RS (0.649) (Atlas Brasil, 2013).

The CPICCS, created in 2017, is constituted as a public association, formed by representatives of the seven cities that make up the geopark, which aims to consolidate territorial management, promote collaboration between public and private institutions, and attract partnerships (at a regional, national and international) in order to expand actions aimed at the geopark. According to the World Geopark Application Dossier (2019, p. 36):

The main mission of the Consortium is to contribute to the preservation, appreciation and promotion of the region’s natural and cultural heritage, with special emphasis on its geological heritage and traditional communities, deepening and disseminating scientific knowledge, developing educational programs and promoting geotourism and development sustainable in the territory.

In November 2019, CPICCS forwarded the World Geopark Application Dossier to UNESCO. The document, containing 49 pages, details the structure of the geopark project, bringing its geographic, social, economic and cultural characteristics. It also details the organizational structure, management, technical staff, scientific committees, educational activities, policies for sustainable development, partnerships, among other information (Gmccs, 2019).

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9**During this period, the territorial base of the project expanded considerably, covering the following cities: Torres, Mampituba, Cambará do Sul and São José dos Ausente, in Rio Grande do Sul; Araranguá, Balneário Arroio do Silva, Balneário Gavota, Ermo, Jacinto Machado, Maracajá, Maleiro, Morro Grande, Passo de Torres, Praia Grande, Santa Rosa do Sul, São João do Sul, Sombrio, Timbé do Sul and Turvo, in Santa Catarina (Rosa; Rocha; Marimon, 2015).**
In November 2021, two years after sending the dossier, UNESCO technicians arrived at the GMCCS territory for the Aspiring Geopark Assessment Mission. The Mission Report is finalized on November 30 of that same year. Finally, in April 2022, after the 214th session of the Executive Council, the GMCCS is designated as a UNESCO World Geopark for a period of four years – from April 2022 to April 2026.

6 FEATURES AND RICHES OF GMCCS

The majestic scenery made up of the Serra Geral cliffs, immense canyons carved by river channels over millions of years, as well as beaches, dunes and lagoons in the coastal region mark the geography of the territory. The region, which holds geological heritage of national and international relevance, stands out as the largest concentration of canyons in the country, which combines with the rich biodiversity present in the ten Conservation Units (CUs) and the geomonuments located in the area (Gmccs, 2019; Godoy; Binotto; Wildner, 2011).

Mbýa, Lakláno-Xokleng people, according to Campos and Miziescki (2022) there are records of the presence of human occupation in the region since approximately 10 thousand years. Later, according to the flow of colonization and immigration, Africans and immigrants descended from Azoreans, Italians and Germans came together. In the territorial base of the geopark there are remnants of original peoples, such as the quilombola community São Roque.
(in the municipality of Praia Grande/SC) and the indigenous village Guarani Mbyá Nhu -Porâ (in the city of Torres/RS) (Silva et al., 2020; Sung et al., 2019).

In relation to the geological riches of the GMCCS, the Dossier (2019) selected 30 geosites representative of regional geodiversity, among the 37 then mapped. Such geosites “were chosen based not only on their geological relevance, but also on their educational potential, cultural relevance and scenic beauty” (2019, p. 23). Among them, eight have international relevance, five have national relevance, and seventeen have regional relevance.

In addition to the geological richness, biodiversity stands out in the territory that has a diversity of ecosystems such as beaches, restingas, dunes, lakes, rivers and forests. The GMCCS is entirely part of the Atlantic Forest Biosphere Reserve, hosted by the UNESCO MAB (GMCCS, 2019). Diverse fauna and flora are also characteristics of the geopark, which features several endemic species related to different habitats. Such species are protected by UCs distributed throughout the territory.

7 GMCCS AND SUSTAINABLE REGIONAL DEVELOPMENT

Some points deserve to be highlighted when we evaluate the trajectory of the GMCCS and its connections with the populations present in the seven cities that make up the territory. Firstly, it can be seen that the GMCCS management's concern with sustainable development emerges already in the first phase of the project - the period from 2007 to 2010. In this phase, the first political articulations for the creation of the geopark took place and issues relating to the development of the region (Sung et al., 2019).

One of the first mentions in the bibliography linking GMCCS to sustainable development is made by Tomasi (2011). The author, who was part of a consultancy group in the first phase of the project, states that in a planning workshop held in the region, some sustainable development indicators were chosen for the geopark's operations. Are they:

- Dissemination of cultural habits and regional identity
- Reduction in youth emigration,
- Raising the educational level of the general population
- Increase in the employment of the economically active population
- Reduction of contamination of effluent waters in the region
- Increasing the supply of organic foods;
- Increased production of specific and local scientific and educational material;
- Rescue, registration and dissemination of regional cultural assets, highlighting the wealth of ethnicities present, the archaeological and historical heritage, with emphasis on the region's colonization process;
- Rescue, recording and dissemination of eating habits and regional gastronomy, with the promotion of typical products, such as pine nuts, and others that have specific local characteristics, such as honey;
- Implementation of qualification and certification processes for regional products, endorsing regional processes and products;
- Increasing cultural opportunities for the local population;
- Increased population participation in regional planning processes (Tomasi, 2011 p. 61).

Another important point of convergence of the project with sustainable development occurs in its second phase – from 2011 to 2017. A governance model called GATS - Water and Territory Governance from a Sustainability perspective was then adopted. The GATS model was designed by the Transdisciplinary Research Group on Water and Territorial Governance, linked to the Federal University of Santa Catarina (UFSC) and according to Sung et al., (2019,
p. 1050), it brings the “idea of local governance and focuses on empowering people/communities in decision-making processes on issues that concern them”.

The GATS model uses three management strategies that can be considered directly linked to sustainability. These are, according to Silvestre et al., (2008, p. 04), “the cultural, with the valorization of the local experience economy, the pedagogical with the creation of learning communities on the subject and the political with the empowerment of the community in local management”. The alignment of this governance model with the strategies put together by the IGGP can be seen, which highlights the importance of heritage education, bottom management up and the appreciation of local culture as a form of empowerment and economic growth.

As of 2017, CPICCS assumed governance of the then geopark project, with the purpose of promoting sustainable development in the region. One of the evidences of such commitment can be seen in the Internal Regulations of the CEC (Educational and Consultative Committee) 10 of the GMCCS (Cpiccs, 2019). Article 2 of the document provides:

inter and multidisciplinary scientific and educational knowledge for the promotion of Geoconservation, Geotourism and Geoeducation aiming at the sustainable development of the Caminhos dos Cânions do Sul Geopark territory, fulfilling the following objectives (...). (emphasis added).

Likewise, the World Geopark Application Dossier (2019, p. 44) demonstrates sensitivity and mobilization towards integrating the geopark with the community, partners and supporters. In that regard:

The sustainable economic development of the seven municipalities that make up the territory has at its core the creation of the Caminhos dos Cânions do Sul Aspiring Geopark. The project has been able to build a feeling of belonging in the community, and this union makes them stronger. In other words, work has been done to break long-standing paradigms regarding competition and unity between regions (emphasis added). The dossier also highlights and defines policies especially aimed at sustainable development, which promote the integration of community entities and favor the public-private intersection in the consolidation of the geopark. Table 2 presents the following strategic points for development:

| Table 2 – Policies of the UNESCO World Geopark Caminhos dos Cânions do Sul aimed at sustainable development |
| Geotourism and Economy | Increased tourist infrastructure and geotourism products and training of local guides and drivers. Promote and develop activities that seek to stimulate the socioeconomic development of the region and encourage the creation of local business and craft industries involved with tourism in the region, community-based tourism and, in general, make the territory a more attractive destination for tourists, providing a wide range of different and interesting experiences. |
| Geoeducation | Plans were made to include teachers, students and their families in events that seek to educate the population on the value of the territory’s geological, natural and cultural heritage, environmental conservation and sustainable development of the region. With a large student population, the geopark has been involved, in the last two years, with around 76 public schools (municipal and state), with a total of 12 thousand students, distributed between seven municipalities and two states: Santa Catarina and Rio Grande do Sul. |
| Geology and Geoheritage | Conservation through actions that promote research and dissemination of geosciences, particularly geology, geomorphology and geoconservation. |

10The Educational and Scientific Committee of the Caminhos dos Cânions do Sul Geopark is linked to CPICCS and was established through Resolution No. 001/2018, of November 14, 2018. The committee’s mission is to collaborate in the planning, development and evaluation of scientific activities and educational activities integrated into the geopark (Cpiccs, 2018).
**Landscape Protection**

Promote landscape protection based on environmental education actions and the valorization of natural spaces, incorporating geological history into existing natural and cultural narratives, taking into account current legislation.

**Agriculture**

Stimulate and develop actions that allow the development of agricultural activities, mainly promoting the strengthening of family and organic farming.

**Source:** Prepared by the authors with data from Gmccs (2019)

Due to the immense territorial extension of the GMCCS, it is important to highlight that the establishment of partnerships becomes essential not only to consolidate the geopark, but also to effectively empower local and indigenous communities and definitively promote the region. This partnership has been established with public and private organizations and entities, as shown below.

### 8 PROJECTS AimED AT SOCIOECONOMIC DEVELOPMENT IN GMCCS TERRITORY

Once the GMCCS overlaps with sustainable development, we seek to understand how the geopark, through its management body and its coordination axes, has been developing actions directly or indirectly linked to socioeconomic development and the well-being of local communities. Through research carried out on social media and the GMCCS website, a series of projects, campaigns, partnerships and courses were found to be aligned with the 17 SDGs and the 2030 Agenda.

The first point refers to the GMCCS initiatives aimed at encouraging geotourism in the region. Stimulating tourism is associated, among other benefits, with income generation, new business opportunities, development of products and geoproducts, in addition to encouraging the protection of local geoheritage. (Medeiros; Gomes; Nascimento, 2015). The geopark is engaged in several projects aimed at geotourism, three of which are worth highlighting.

In July 2022, the “**Rural Tourism**” course was held in Jacinto Machado, with the aim of presenting the community with the potential of the rural area, encouraging future investments and adding value to the products produced (Geoparque, 2022). That same year, the “**International Canyoning Meeting**” took place, held in Praia Grande/SC. The event brought together around 100 participants from 14 countries, and was considered an important moment for the development of tourism in the region (Geoparque, 2022a).

In January 2023, the “**Entrepreneurship and Sustainable Tourism**” course took place in the city of Morro Grande/SC. The course aimed to integrate entrepreneurs (tourism agencies, restaurants and inns) and also disseminate topics such as culture, geodiversity, creative economy, in order to stimulate local businesses and expand the community's sources of income (Geoparque, 2023).

Such projects aimed at geotourism contribute to several SDGs of the 2030 Agenda, in particular to SDG1 (eradication of poverty), SDG2 (eradication of hunger), SDG8 (decent work and economic growth) and SDG 10 (reduced inequalities).

Another important project supported by GMCCS is the certification of the brand “**PARTER COMPANY UNESCO World Geopark Caminhos dos Cânions do Sul**”. Local entrepreneurs who choose to use the brand commit to implementing sustainable solutions for their business, which contribute to reducing the consumption of natural resources and which correctly dispose of the waste generated. Around 40 companies and producers have already joined the project (Gmccs, 2019). Mention can be made here of collaboration with SDG 8 (decent work and economic growth), SDG 9 (innovation and infrastructure), SDG 11 (sustainable cities and communities), among others.

GMCCS also promotes a series of projects focused on education, directly contributing to SDG4 (quality education). In addition to work aimed at municipal and state schools in the
region, in 2022, CPICCS organized the II Heritage Education Seminar, whose theme was “Strategies, challenges and perspectives for sustainable development”. The event presented an international program, including 14 lectures with experts and contributing members of GGN. The series of lectures sought to discuss the role of UGGPs as territories at the service of local sustainable development (GEOPARQUE, 2022b). Another example of promoting education was the creation of a comic book called “Turma do Geoparquito, in: Dreaming about a Geopark in the South of Brazil”, containing local mascots. This publication was launched as a way to include GMCCS in local education (Dalpias; Ladwig; Campos, 2019).

Aimed at recovering the forest area of the Nhü-Porã Indigenous Village, the “Fruits of Our Earth” project constitutes an important environmental action that makes the planting of 80 thousand seedlings of fruit trees native to the region viable. The project contributes to the subsistence of the local community, as it offers an alternative to generating income (GEOPARQUE, 2023a). It can be stated, once again, that this project is closely committed to some of the 17 SDGs, among them: SDG 10 (reduced inequalities), SDG 12 (responsible consumption and production) and 15 (life on land).

Finally, as a last example of action aimed at sustainable development within the GMCCS territory, episodes 7 and 8 of the GEOCAST Podcast – the Caminhos dos Cânions do Sul Geoparque Podcast – are mentioned. The episodes had women as their theme, with the title “Female trajectories and resistance in the territory of the Caminhos dos Cânions do Sul Geopark” (Geoparque, 2022c; Geoparque, 2022d). The initiative is related to SDG5, whose objective is to achieve gender equality and the empowerment of all women and girls. Another demonstration of GMCCS’s commitment to women is the fact that they currently represent 50% of the members of the GMCCS management team (Geoparque, 2023b).

9 FINAL CONSIDERATIONS

The present study sought to understand the process of establishing the GMCCS and its implications with sustainable development. To understand this process, it was important, firstly, to understand the emergence and prospecting of UGGPs in LAC, since their intrinsic characteristics shaped the establishment of geoparks in this territory.

It was found that the evolution of UGGPs in LAC happened slowly and gradually, especially when compared to Europe and Asia. The reduced number of geoparks is due to numerous factors, such as: cultural, political and social issues; low community participation in the management of protected territories; bureaucracies; deficient environmental legislation; lack of technical knowledge; and little scientific production on the subject.

It was also found that the UGGPs of LAC are, for the most part, territories with low demographic density and a low Human Development Index (HDI). These are developing territories that suffer from the emigration of the local population, who turn to large urban centers due to the lack of working conditions.

In relation to GMCCS, a long path of struggle for recognition was perceived, which involved communities and various local actors. Along this path, the search for sustainable development of the territory was present in all phases of management. There are countless geopark projects and partnerships focused on education, environmental protection and development. However, as it is a recent UGGp, with only one year of designation, it was not possible to establish a research methodology capable of verifying changes in specific socioeconomic indicators resulting from the seal.

It is possible to say, however, that the opportunities arising from and associated with the geopark serve the population, stimulating income generation, developing new products and services, encouraging geotourism, and, above all, contributing to the implementation of the 2030 Agenda.
REFERENCES


