

# **The contribution of the European UNESCO Global Geoparks for the 2030 Agenda for Sustainable Development – a study based on several data sources**

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Tese apresentada para cumprimento dos requisitos necessários à obtenção do grau de Doutor do Curso de Doutoramento em Geografia e Planeamento Territorial, realizada sob a orientação científica da Professora Doutora Maria José Roxo, da Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa (FCSH-UNL) e coorientação do Professor Doutor Artur Agostinho de Abreu e Sá, da Universidade de Trás-os-Montes e Alto Douro (UTAD)

## DECLARAÇÃO DE HONRA

Declaro que esta tese é o resultado da minha investigação pessoal e independente. O seu conteúdo é original e todas as fontes consultadas estão devidamente mencionadas no texto, nas notas e na bibliografia.

A candidata,

Elizabeth Maria Rodada Silva

Lisboa, 26 de outubro de 2020

Declaro que esta tese se encontra em condições de ser apreciada pelo júri a designar.

A orientadora,

[Assinatura]

Lisboa, 26 de outubro de 2020

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O coorientador,

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Lisboa, 26 de outubro de 2020

**DEDICATION**

*To my beloved and special daughter and son  
To my wonderful mother and father for their infinite generosity  
To those who believed in me from the beginning of this "dream" that came true...*

***"Difficult roads often lead to beautiful destinations. The best is yet to come..."***

Zig Ziglar

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# THE CONTRIBUTION OF THE EUROPEAN UNESCO GLOBAL GEOPARKS FOR THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT – A STUDY BASED ON SEVERAL DATA SOURCES

ELIZABETH MARIA ROCHA DA SILVA

## Abstract

With the approval of the International Geoscience and Geoparks Programme (IGGP) by UNESCO, in November 2015, the new designation 'UNESCO Global Geoparks' (UGGps) was created. Based on a holistic approach, and in a sense of territorial ownership of its inhabitants, where the creation of local companies and innovative local products is added, these territories aim at a true sustainable regional development. In this context, this research was developed in the framework of the 2030 Agenda for Sustainable Development (SD) seeking to understand whether and how the UGGps contribute to this universal endeavor. To this end, this study was based on a selection of 33 UGGps, located in 22 European countries, and based on four sources: the Progress Reports (PRs) presented during the biennium 2015-2016, the abstracts presented in two Geoparks conferences (Rokua, 2015, and English Riviera, 2016), a questionnaire fulfilled by the managers of the selected UGGps (2017), and interviews to elements of the staff and local inhabitants and stakeholders of the Marble Arch Caves UGGp (2019). This methodology allowed obtaining data from 91 'PRs', 95 abstracts, 22 questionnaires, and five interviews. Taking into account the UGGp concept, the five pillars of the 2030 Agenda – *People, Planet, Prosperity, Peace, and Partnership* –, together with the 17 Sustainable Development Goals (SDGs), and the 'Top Ten Focus Areas' defined by the IGGP, this study was focused on trying to answer three research questions: 1) *How do the European UGGps effectively contribute to the achievement of the 17 SDGs of the 2030 Agenda? And if so, do they contribute far more than the 'Eight SDGs' selected by the IGGP?*; 2) *How can these contributions be accounted for, in a qualitative approach?*; 3) *How can some of these contributions be used as examples of good practices, demonstrating the real impact in the achievement of some of the 17 SDGs, within the scope of UNESCO's strategies, in this field?*. From the analysis of the obtained data, it was possible to achieve the main objectives of this study and to arrive at a positive answer to the posed research questions. Consequently, it was possible to demonstrate that the UGGps, directly or indirectly in their activities, contribute to the 17 SDGs. It was also feasible to prove that UGGps contribute effectively far more than the selected 'Eight SDGs'. With the applied methodology, it was possible to identify the strengths, weaknesses, opportunities, and threats that UGGps currently face, concerning the SDGs and, in this context, a proposal for a new model of an 'Annual Progress Report' was prepared for the UGGps, contemplating this reality. This study also sheds new light on the effective involvement of local communities in these territories and the need to adapt to new challenges, (e.g. pandemic COVID-19). Therefore, it is expected that this research may open new paths and generate innovative ideas for scientific projects related to the

contribution of the UGGps to the achievement of the 17 SDGs of the 2030 Agenda, allowing to contribute to future actions and strategic plans developed by the management structures of the UGGps.

**Keywords:** IGGP, UNESCO Global Geoparks (UGGps), 2030 Agenda, Sustainable Development Goals (SDGs)

## Resumo

Com a aprovação do Programa Internacional de Geociências e Geoparques (IGGP) pela UNESCO, em novembro de 2015, foi criada a nova designação 'Geoparques Mundiais da UNESCO (UGGps). Assentes numa abordagem holística, e num sentido de pertença territorial dos seus habitantes, onde se acrescenta a criação de empresas locais e de produtos locais inovadores, estes territórios visam um verdadeiro desenvolvimento regional sustentável. Neste contexto, esta investigação foi centrada nos propósitos da Agenda 2030 para o Desenvolvimento Sustentável, procurando compreender se e como os UGGps contribuem para esse esforço universal. Para tal, este estudo baseou-se numa seleção de 33 UGGps, localizados em 22 países europeus, e com base em quatro fontes: os Relatórios de Atividades (PRs) relativos ao biénio 2015-2016, os resumos apresentados em duas conferências de Geoparques (Rokua, 2015 e English Riviera, 2016), um questionário preenchido pelos gestores dos UGGps selecionados (2017) e um conjunto de entrevistas realizadas a elementos da equipa, habitantes locais e parceiros do Marble Arch Caves UGGp (2019). Esta metodologia permitiu obter dados de 91 'PRs', 95 resumos, 22 questionários e cinco entrevistas. Tendo em consideração o conceito de 'Geoparque', os cinco pilares da Agenda 2030 - *Pessoas, Planeta, Prosperidade, Paz e Parcerias* -, conjuntamente com os 17 Objetivos de Desenvolvimento Sustentável (ODS) e as 'Dez Principais Áreas de Foco' definidas pelo IGGP, este estudo focou-se em procurar responder a três questões de investigação: 1) *Como é que os UGGps europeus contribuem efetivamente para a concretização dos 17 ODS da Agenda 2030? Em caso afirmativo, se estes contribuem para mais do que os 'Oito ODS' selecionados pelo IGGP?*; 2) *Como é que algumas dessas contribuições podem ser contabilizadas, tendo por base uma abordagem qualitativa?*; 3) *Como é que algumas dessas contribuições podem ser usadas como exemplos de boas práticas, demonstrando o real impacto na concretização de alguns dos 17 ODS, no âmbito das estratégias definidas pela UNESCO neste domínio?*. A partir da análise dos dados obtidos foi possível atingir os principais objetivos deste estudo, e chegar a uma resposta positiva às questões de investigação colocadas. Consequentemente, foi exequível demonstrar que os UGGps, direta ou indiretamente nas suas atividades, contribuem para os 17 ODS. Foi também viável provar que os UGGps contribuem efetivamente para mais do que os 'Oito ODS'. Com a metodologia aplicada, foi possível identificar os pontos fortes, os pontos fracos, as oportunidades e as ameaças que os UGGps enfrentam atualmente, no que se refere aos ODS e, neste contexto, foi elaborada uma proposta para um novo modelo de 'Relatório Anual de Atividades' para os UGGps, contemplando esta realidade. Este estudo traz ainda uma nova luz sobre o efetivo envolvimento das comunidades locais nesses territórios e a necessidade de adaptação a novos desafios, (e.g. pandemia COVID-19). Espera-se que esta investigação possa abrir novos caminhos e gerar ideias inovadoras para projetos científicos relacionados com a contribuição dos UGGps para a consecução dos 17 ODS da Agenda 2030, permitindo contribuir para ações futuras e planos estratégicos desenvolvidos pelas estruturas de gestão dos UGGps.

**Palavras-Chave:** IGGP, Geoparques Mundiais da UNESCO, Agenda 2030, Objetivos de Desenvolvimento Sustentável (ODS)

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>AC</b>	Advisory Committee
<b>APGN</b>	Asia-Pacific Geoparks Network
<b>ASPnet</b>	Associated Schools Program Network
<b>AUGGN</b>	African UNESCO Global Geoparks Network
<b>BR</b>	Biosphere Reserve
<b>BRs</b>	Biosphere Reserves
<b>CAQDAS</b>	Computer Assisted Qualitative Data
<b>CBD</b>	Convention on Biological Diversity
<b>DESD</b>	Decade of Education for Sustainable Development
<b>DG</b>	Director-General
<b>DRR</b>	Disaster Risk Reduction
<i>e.g.</i>	<i>'exempli gratia'</i> (for example)
<b>EGN</b>	European Geoparks Network
<b>EHPS</b>	Ecosystem's Health Provision Spectrum
<b>ESD</b>	Education for Sustainable Development
<b>EU</b>	European Union
<b>EUROSTAT</b>	Statistics Agency of the European Union
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>GAP</b>	Global Action Program
<b>GeoLAC</b>	Latin America and the Caribbean UNESCO Global Geoparks Network
<b>GGN</b>	Global Geoparks Network
<b>GILGES</b>	Global Indicative List of Geological Sites
<i>i.a.</i>	<i>'inter alia'</i> (among other things)
<i>i.e.</i>	<i>'id est'</i> (in other words)
<b>IACBR</b>	International Advisory Committee for Biosphere Reserves
<b>ICCAR</b>	International Coalition of Inclusive and Sustainable Cities
<b>ICCROM</b>	International Centre for the Study of the Preservation and Restoration of Cultural Properties
<b>ICOMOS</b>	International Council on Monuments and Sites
<b>IGU</b>	International Geographical Union
<b>IGCP</b>	International Geoscience Programme
<b>IGGP</b>	International Geoscience and Geoparks Programme
<b>IHP</b>	International Hydrological Program
<b>INTERREG</b>	Interregional Cooperation Programme of the European Union
<b>IOS</b>	Internal Oversight Service (UNESCO Evaluation Office)
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>IUCN</b>	International Union for Conservation of Nature
<b>IUGS</b>	International Union of Geological Sciences
<b>LEADER</b>	Liasion Entre Actions de Développement de l'Économie Rurale

<b>MAB</b>	Man and Biosphere Program
<b>MAXQDA</b>	Software Package for Qualitative and Mixed Methods Research
<b>MDGs</b>	Millennium Development Goals
<b>NATCOM</b>	National Commission
<b>NGO</b>	Non-governmental organization
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>OUV</b>	Outstanding Universal Value
<b>PALOPs</b>	Portuguese Speaking African Countries
<b>PR</b>	Progress Report
<b>PRs</b>	Progress Reports
<b>ProGEO</b>	European Association for the Conservation of the Geological Heritage
<b>SD</b>	Sustainable Development
<b>SDG</b>	Sustainable Development Goal
<b>SDGs</b>	Sustainable Development Goals
<b>STI</b>	Science, Technology and Innovation
<b>UGGp</b>	UNESCO Global Geopark
<b>UGGps</b>	UNESCO Global Geoparks
<b>UN</b>	United Nations
<b>UNDESA</b>	United Nations Department of Economic and Social Affairs
<b>UNDESD</b>	United Nations Decade of Education for Sustainable Development
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UNECE</b>	United Nations Economic Commission for Europe
<b>UNEP</b>	United Nations Environment Program
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNITWIN</b>	University Twinning and Networking Programme of UNESCO
<b>UK</b>	United Kingdom
<b>UTAD</b>	University of Trás-os-Montes e Alto Douro
<b>WB</b>	World Bank
<b>WG</b>	Working Group
<b>WSSD</b>	World Summit on Sustainable Development
<b>WH</b>	World Heritage
<b>WHC</b>	World Heritage Convention
<b>WHS</b>	World Heritage Sites

## CHAPTER I – GENERAL INTRODUCTION OF THE RESEARCH STUDY

From early times, humankind understood the strong bond with planet Earth. It is the basis of our existence. Without its natural resources, it would be impossible for us, human beings, to live on this amazing Planet. This bond can be easily found in many ancient civilizations who regarded with deep respect planet Earth. It is common to mention in this context the Greek mythology, when speaking about Gaia, the Mother Earth Goddess, considered the ancestral mother of all life. For Mc Keever & Zouros, the Mother Earth Goddess “appeared out of Chaos and her snowy mountains and green valleys became the living places of the gods and, later, humans. Her children were strange gigantic creatures with the crushing and overwhelming strength of hurricanes, earthquakes, and volcanoes” (2005, p. 274), or Cihuacoatl-Tonantzin, the fertility Goddess of the Aztec mythology mentioned as ‘Our Lady Mother’ who this civilization believed it helped to create the human race; or Pachamama – Mother Earth, as used by the indigenous people of the Andes; or even Obatala, the African God responsible for the creation of Earth, in the Yoruba culture, in West Africa (Gill, 1991; Taylor, 2005; Gordon, 2018).

For Popa *et al.* “what makes it special is the relation between natural and human heritage that mirrors how geodiversity shaped the human perception over the natural elements and environment and the way human beings translate their meaning into their own understanding”. For these authors, the origin of natural elements always “intrigued the local communities who tried to find explanations and give different meanings and practical uses to these natural elements (...). This reality unfolds in a material and an immaterial dimension” (2015, p. 139).

For the indigenous people, Mother Earth is the center of the universe, the core of their culture, the origin of their identity as a people. She connects them with their past (as the home of the ancestors), with the present (as a provider of their material needs), and with the future (as the legacy they hold in trust for their children and grandchildren). In this way, indigenoussness carries with a sense of belonging to the place (Burger, 1990; Hillary, 1993).

There are over 370 million indigenous people in the world, living across 90 countries. They make up less than five percent of the world's population but account for 15% of the poorest. They speak an overwhelming majority of the world's estimated 7000 languages and represent 5000 different cultures (World Bank, 1993; United Nations, n.d.a). However, it is also stated that indigenous peoples today, are arguably among the most disadvantaged and vulnerable groups of people in the world (United Nations, n.d.a).

Recalling the importance of the local and indigenous knowledge, the UNESCO Global Geoparks (UGGps) recognizes the importance of these communities, their culture, and the link between these communities and their land (Pásková, 2015, 2018; Firmino *et al.*, 2018a; Rosado-González, 2020). It is one of the “criteria of the UGGps that local and indigenous knowledge, practice, and management systems, alongside science, are included in the planning and management of the area” (UNESCO, 2016a). Taking into account this reality, it was defined that the UGGps motto should be *Celebrating Earth Heritage, Sustaining Local Communities* (Mc Keever & Zouros, 2005; UNESCO, 2016a; Stoffelen *et al.*, 2019; Stoffelen, 2020).

Contextualizing this reality, it is important to note that already in June 1991, in Digne-les-Bains (France), two years before the proclamation of the *International Year of the Indigenous People*, it was approved the *International Declaration of the Rights of the Memory of the Earth*, commonly known as ‘Digne-les-Bains Declaration’. This statement, which will be further detailed in the following chapter, highlighted the importance of the culture and geological heritage for humankind. Furthermore, it also stated that geoconservation is an important task and that geological heritage is important for many reasons (ProGEO, 1991; Martini, 1994a, 1994b; Alexandrowicz & Kozlowsky, 1999; García-Cortés, 2000; Wimbledon *et al.*, 2000; Erikstad, 2008; Jones, 2008; Henriques *et al.*, 2011; Wimbledon & Smith-Meyer, 2012; Posser, 2013; Du & Girault, 2018; Stephens, 2020).

In accordance to Erikstad, even during the time of the discussions that led to the approval of the Digne-les-Bains Declaration, not only this document stressed the importance of the culture and geological heritage for humankind, but it also focused on an “integrated networks of protected geotopes with a high degree of dissemination to the public and use of this dissemination in geotourism”. This aspect was highlighted by



the author, who considered that this was really “interesting as it forms the basis of both ProGEO and the highly active Geoparks European (*sic.*) movement.” (2008, pp.252-253).

In 2016, twenty-five years after the approval of the *International Declaration of the Rights of the Memory of the Earth*, it was approved the *English Riviera Declaration*, during the 7<sup>th</sup> International Conference on UGGps, which states that (UNESCO, 2016b):

*“(...) these territories are linked with the celebration of geological heritage and the promotion of sustainable local development (...). At a time when conflict threatens to divide and displace many communities around the globe, we would like to celebrate the ability of the UGGps to bring people together from all continents and backgrounds. The rocks connect us”.*

This means that the UGGps in their line of action contribute to reinforce the link between mankind and planet Earth. They stimulate territorial development based on the protection, knowledge, education, and promotion of the geological heritage (Eder & Patzak, 2004; Frey *et al.*, 2006; Jones, 2008; Komoo & Patzak, 2008; Rocha *et al.*, 2008a; Erderlen, 2009; Mc Keever & Zouros, 2010, 2011; Palomo *et al.*, 2011; Rocha, 2014; Sá *et al.*, 2015; Henriques & Brilha, 2017; EGN, 2018c; Firmino *et al.*, 2018a; Pásková, 2018; Sá & Silva, 2019, and references therein). But they go even further in this concern. The territorial development is done in a holistic manner, where it includes all the natural heritage (abiotic and biotic) and the cultural heritage (tangible and intangible) (Zouros, 2004; Zouros & Valiakos, 2010; Samat & Harun, 2013; Fauzi & Misni, 2016; Zouros, 2016; Henriques & Brilha, 2017; Du & Girault, 2018; Gabriel *et al.*, 2018a; GGN, 2018; Sá & Silva, 2019). Through this process, the geological heritage gains new visibility and helps local communities to understand its importance and the need to protect it. It gives them also a sense of pride and belonging to that place, reminding their roots and the necessary balance that is required between human activities and the use of natural resources. Thus, the geological heritage also tells a story behind the rocks and fossils and how they shaped our culture and way of living (Patzak & Eder, 1998; Eder & Patzak, 2001; UNESCO, 2015a; Stoffelen *et al.*, 2019; Stoffelen, 2020). It also shaped the intangible cultural heritage legacy. This legacy is passed down from generation to generation and it is constantly recreated by communities in response to their environment, their interaction with nature, and their history, providing them with a sense of identity and continuity (Leidy, 2011; UNESCO, 2015a; Firmino *et al.*, 2018a; Pásková, 2018).

With the adoption of the *Convention for the Safeguarding of the Intangible Cultural Heritage* (UNESCO, 2003a), by the Member States of UNESCO, it was considered that this heritage can help to meet many contemporary challenges of sustainable development (SD) such as social cohesion, education, food security, health and the sustainable management of natural resources. It is also a significant source of income and job creation (Zouros, 2001, 2004; UNESCO, 2014; Petrified Forest, 2018). In this context, a UGGp is not just about geology or a collection of geological sites (Martini & Zouros, 2001; Mc Keever *et al.*, 2005, 2010, 2013; Martini & Zouros, 2009). It also includes the local communities, their needs, and their way of living, building bridges for regional sustainable development. That is why to achieve this holistic vision it is important to develop a bottom-up approach, where the inhabitants assume the responsibility to define the strategies and mechanisms of action for the development of the territory (Patzak & Eder, 1998; Zouros & Martini, 2003; Patzak, 2003; 2010, 2015; Zouros, 2004, 2006, 2010, 2012; Mc Keever & Zouros, 2005, 2010, 2011; Martini & Zouros, 2009; Eckhardt, 2010, 2012; Zouros *et al.*, 2010; Wimbledon & Smith-Meyer, 2012; Pásková, 2015; UNESCO, 2015a; Schaaf & Clamote, 2016; Firmino *et al.*, 2018a; Sá & Silva, 2019; Stoffelen *et al.*, 2019; Rosado-González *et al.*, 2020a, 2020b; Stoffelen, 2020).

In this sense, the UGGps renew once again the bonds of communion between the inhabitants and the territories where they live, assuming the commitment of SD. As mentioned by Xun & Milly “ the heritage of geological history is a legacy bestowed upon us by Nature. It is mankind’s obligation to protect it so that it can be a benefit to posterity forever” (2002, p.33). This way, ‘Gaia Mother Earth’ or ‘Pachamama’ is once again recalled as the UGGps contribute to the conservation and protection of the geological heritage and where each inhabitant belonging to these territories can act as ‘stewards of the Earth’ *sensu* Burger (1990, p.191). The more they know about the geological heritage and its importance, the more they care about it. Thus, it is also possible to understand more about where they came from and which path they can choose to go further.

In this context, the UGGps are useful mechanisms in this process. Through Education, Science, and Culture, along with other vital topics, such as SD, the UGGps can disseminate useful information, for instance, to mitigate and adapt to climate change

(Werner, 2005; UNESCO, 2017a; Du & Girault, 2018; Castro *et al.*, 2019; Rosado-González *et al.*, 2019; Sá & Silva, 2019). Also to perform and promote education awareness activities and to reinforce cooperation in the field of disaster risk reduction, to teach and spread good practices on how to become more resilient to natural disasters, to understand better the dynamics of planet Earth, and to promote regional sustainable development and healthy lifestyles (Mc Keever, 2015; Medina & Poch, 2015; Moreira, 2015a, 2015b, 2015c; UNESCO, 2016b, 2017a, 2018a; Zouros, 2016; Gabriel *et al.*, 2017, 2018; Rosado-González *et al.*, 2017, 2020a, 2020b; Sá, 2017; Silva & Sá, 2017, 2018; Du & Girault, 2018; Silva *et al.*, 2018a; Sá & Silva, 2019).

The UGGps also have as purpose to “inform people about the sustainable use and need for natural resources, whether they are mined, quarried, or harnessed from the surrounding environment, while at the same time promoting for the environment and the integrity of the landscape” (UNESCO, 2017a).

Considering all the above-mentioned framework, it was understood that it was necessary to develop an advanced research work that would allow us to evaluate the degree of realization of many of these realities in a selection of 33 UGGps. Specifically, assuming that the UGGps are territories par excellence for the implementation of SD initiatives, it was important to critically evaluate and analyze the direct and indirect contributions of these territories to the achievement of the 2030 Agenda for SD, proclaimed by the United Nations (UN) in 2015. This reality was the basis for the development of this Ph.D. thesis.

## **1.1 Reasons for the choice of the theme of this research study**

The choice of the theme of this research study was closely related to the fact that the author works at the Portuguese National Commission for UNESCO (Portuguese NatCom) since 1994. As responsible for the Science Sector and developing initiatives, activities, and projects related to Education for SD (EDS), it was obvious the natural predisposition to develop research that would consider the interconnection between Science and SD.

As stated by the Former Assistant Director-General for Natural Sciences of UNESCO, Flavia Schlegel, “without science there can be little progress towards SD. The pursuit of

knowledge and understanding through science will arm us to find solutions to the increasingly acute economic, social, and environmental challenges facing humanity today” (UNESCO, 2013a).

Acting as a focal point for the *United Nations Decade for Education for Sustainable Development* - UNDESD (2005-2014) at the Portuguese NatCom, the author considered that it was the perfect opportunity to know about the reality and framing of the European Geoparks, in this context. The author realized this during her participation in the 2<sup>nd</sup> International Conference on Geoparks (Belfast, Northern Ireland), in 2006.

Although functioning essentially as ‘territories of science’, the UGGps holistic vision was completely in harmony with all issues raised by SD and with UNESCO’s mandate in education, science, culture, and communication (Missoten & Patzak, 2006; Jayakumar & Liu, 2007; Patzak, 2011; Barroso, 2012; Silva, 2013, 2015; Silva *et al.*, 2015, 2018; UNESCO, 2015a, 2015b; EGN, 2018a; Adiyaman *et al.*, 2018; Patrocínio *et al.*, 2018; Castro *et al.*, 2019; Rosado-González *et al.*, 2019; Sá & Silva, 2019).

Taking into account the above-mentioned, through time and being part of two Working Groups (WG) of EGN/GGN – ‘2030 Agenda’ and ‘National Fora’ – and participating in multiple meetings and workshops of these two networks, until 2019, all this increased the curiosity on how the UGGps could be strong supporters and even vital actors to the effective contribution and implementation of the Sustainable Development Goals (SDGs) of the 2030 Agenda. The initial perception was that this could be achieved through their daily activities in the field and working so closely with the local communities.

In this context, this research study was developed to demonstrate this statement and the empirical thinking inherent to this issue. However, there were more reasons behind this interest, related to the work carried on at the Portuguese NatCom and in the previous academic curriculum. Thereby, since 2006, the participation and the knowledge acquired in all the European Geoparks Conferences and many of the International Conferences on Geoparks were assumed as milestones in the conceptualization of this work. Another milestone occurred in April 2011, with the coordination of the Portuguese National Forum of Geoparks and, consequently, the subsequent participation in the WG of the EGN ‘National Fora’.

However, in September 2013, a special situation reinforced other reasons to do this research study. In effect, the participation in the 32<sup>nd</sup> European Geoparks Meeting and the 12<sup>th</sup> European Geoparks Conference, which took place in Cilento e Vallo di Diano, in Italy, coincided with a very pertinent turn over the situation around the Geoparks movement. In those days, Patrick Mc Keever, former Chief of Section of the Earth Sciences and Geo-Hazards Risk Reduction of the Division of Ecological and Earth Sciences of UNESCO, was very concerned about the approval of the 'Initiative of Global Geoparks', by the Member States of UNESCO. It seemed that there was a negative reaction inside the Organization towards the proposed Initiative, which had previously been discussed positively during the 36<sup>th</sup> Session of the General Conference of UNESCO (36 C/14 - Cooperation between UNESCO and the Global Geoparks Network) (UNESCO, 2011a). This concern was real because the current strategy to create such an Initiative was being blocked and there was a risk to have this item removed from the Agenda of the Executive Board<sup>1</sup> of the Organization (UNESCO, 2013b). Therefore, it was concluded that someone should play an active role inside UNESCO, to reach the Member States and to put that item once again on the Agenda of the Executive Board. This idea came from Professor Artur Sá, a member of the Advisory Committee (AC) of EGN. In effect, Prof. Sá suggested to Dr. Guy Martini (EGN AC member) and to Professor Nickolas Zouros (EGN and GGN Coordinator) to invite formally the author to carry on that task, representing the EGN at UNESCO Headquarters. In this sense, the author went to Paris to have several meetings with the above-mentioned purpose.

In this framework, it was organized several informal meetings, held over two days, aiming to convince 20 Members States (Angola, Austria, Brazil, Canada, China, Denmark, Egypt, France, Indonesia, Italy, Japan, Malaysia, Mexico, Netherlands, Paraguay, South Korea, Thailand, Uruguay, Venezuela, and Zimbabwe), especially those with a seat at the Executive Board and those belonging to the WG, already created by UNESCO, to implement such Initiative regarding the Global Geoparks. It was also given special attention to the Portuguese-speaking countries, such as Brazil and Angola. These informal meetings had a very clear objective: to inform and created awareness regarding

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<sup>1</sup> The Executive Board is one of the three constitutional organs of UNESCO (the others being the General Conference and the Secretariat) and it is elected by the General Conference.

the importance to have approved a 'UNESCO Global Geoparks Initiative' (UNESCO, 2013b; Zouros, 2016; Henriques & Brilha, 2017). Nonetheless, the major effort was to put again in the Agenda of the 191<sup>st</sup> Session of the Executive Board the Draft Resolution to create such Initiative (UNESCO, 2011a, 2013c).

These awareness-raising meetings on the 'Geoparks Initiative' took place at a time when the UNESCO Executive Board was preparing to discuss this item at its next meeting in October 2013. This discussion would be based on a negative report by the Director-General of UNESCO (DG), which at that time could raise doubts among the Member States, although for many of them this Initiative was already considered very important, especially for Uruguay. Indeed, in the Executive Board Document EX/9 – the UNESCO Global Geoparks Initiative (UNESCO, 2013b), which was a report from the WG presenting proposals to create such an Initiative, the DG raised several difficulties about these, which made it necessary to proceed gradually with the construction of the referred Initiative. Furthermore, this one had deserved unanimous endorsement in the past during the 36<sup>th</sup> Session of the General Conference of UNESCO (UNESCO, 2011a).

Consequently, with the support of the Portuguese Delegation at the UNESCO Headquarters, the author conducted multiple bilateral informal meetings, where it was possible to find that there was still strong unanimous support for the Geoparks Initiative. At the end of these meetings, there was a unanimous position regarding the creation of such an Initiative.

Due to the strong and close involvement in the Geoparks issue in all the above-mentioned activities, this research study was assumed as the natural consequence of the author's continuous motivation and contribution for the demonstration that the UGGps are, par excellence, territories in which science asserts itself permanently in the service of SD.

In this context, the study carried out was done around this territorial concept, based on a truly SD mainly in rural territories, linking the activities of the selected 33 European UGGps, in 22 countries, to the 17 SDGs of the 2030 Agenda (Fig. 1).

## Sustainable Development Goals



Figure 1 – The 17 SDGs of the 2030 Agenda for Sustainable Development; © United Nations, 2015.

### 1.2 Structure of the research study

This research study is organized into seven chapters. In the *first chapter*, it is done a general introduction of this research, subdivided into three items. The first one gives a broader view of the reasons that led to the choice of the theme of this research study, based especially on the author's professional and academic experience. It is highlighted the work done in the framework of the UGGps, as responsible for the science sector of the Portuguese NatCom for UNESCO, for more than two decades. This journey had two relevant milestones: the follow-up of the first candidature of the Portuguese Aspiring Geopark 'Naturtejo da Meseta Meridional', in 2005, and the participation in the 2<sup>nd</sup> International Conference on Geoparks, held in Belfast (Northern Ireland, UK), in 2006. It is also relevant to mention the active participation in the meetings of the WG organized by UNESCO, between 2013 and 2015, to present a proposal for the creation of an International Geoscience and Geoparks Programme (IGGP) and the role developed as Coordinator of the Portuguese Forum of Geoparks, since 2011.

In the second item, it is done a brief presentation on how this research study is structured and the motivations behind it.

Finally, in the third item, it is referred to as the main challenges to do this research, mainly based on the sources that were available regarding the period of the field research, 2015 and 2016 (Progress Reports and abstracts). However, the author also felt the need to study other sources to obtain more data related to the activities of the UGGps and their relationship with the 17 SDGs of the 2030 Agenda. This was the case of the questionnaires, created in 2017, to be fulfilled by the managers of the selected UGGps and several interviews, done in 2019.

The **second chapter** is composed of two items. The first one is dedicated to the construction of the study object. In this sense, it is explained the theoretical research problem regarding the role of the European UGGps towards the implementation of the 17 SDGs of the 2030 Agenda. It also summarises several assumptions, research questions, and objectives. The second item is dedicated to the applied methodology.

The **third chapter** is dedicated to the UGGps, focusing on the development of this new UNESCO designation. In this scope, this chapter is divided into two items and three sub-items, to understand better the *state of the art* regarding the evolution of the 'Geoparks' concept through time until the approval of the IGGP, in November 2015. Especial focus is done regarding the UNESCO Programmes for the protection of Nature and Culture, but also on the 'Geopark' concept from its birth to the creation of the EGN. This particular interest is related to the scope of this research, based on the selection of 33 UGGps from 22 European countries. In this sense, it is highlighted the main milestones and facts that led to the creation of this regional network, in 2000. It is interesting to note that this network was then expanded in 2004 and, therefore, particular attention was also paid to the Global Geoparks Network (GGN). In this context, the work described in this chapter aimed to provide a broader view of the *state of the art* regarding the conceptualization and development of the UGGps, worldwide. So, this chapter provides a summarized history of the development of the UGGp concept until the acceptance of this new UNESCO designation in 2015. In this sense, it was our understanding that it was necessary to include a brief history of the EGN and the GGN, regarding their evolution and consolidation and also the process that led to the creation of the IGGP, in 2015.

The **fourth chapter** is dedicated to the *state of the art* regarding the 2030 Agenda for SD. This section is divided into two items. In this context, in the first one, it is given special attention to the main milestones of SD that led to the creation and implementation of the 2030 Agenda, in the framework of the UNESCO strategy, linking it to the work developed by the UGGps in this framework. This part of the work includes a special focus on the evolution of the SD concept through time, from the Brundtland Report to the 2030 Agenda. In the second item, it is given some examples of good practices developed by the UGGps in the framework of the 2030 Agenda.



The **fifth chapter** is dedicated to data collection and processing. It comprehends four items based on the analysis of the content of the: *i)* selected UGGps Progress Reports (PRs), regarding 2015 and 2016; *ii)* the abstracts of the 33 selected UGGps presented at the 13<sup>th</sup> European Geoparks Conference (2015), and also the ones presented in the 7<sup>th</sup> International Conference on UGGps (2016); *iii)* a questionnaire that was applied to the managers of the selected UGGps; and *iv)* five interviews that were done to several staff elements of the Marble Arch Caves UGGp and local inhabitants/stakeholders, living in this special cross border territory.

The **sixth chapter** is dedicated to two items: *i)* the discussion of the results; *ii)* the proposal of a working tool that allows the correlation of the UGGps activities to the 17 SDGs.

The **seven chapter** is dedicated to one item, which includes the final remarks, future perspectives, and challenges that this research study has raised and opens the way to other research studies that can be carried on in this field.

### **1.3 Challenges of the research study**

There were many difficulties encountered in carrying out this research study. The author felt the same problem raised by Petti *et al.* when speaking about the 2030 Agenda and its 17 SDGs correlating them to 'Cultural Heritage'. For these authors, the 2030 Agenda symbolize an important start, yet this "platform lacks any data on indicators related to cultural heritage. Consequently, reflecting the challenges in attaining adequate data and developing systematic methodologies on cultural heritage is needed to realize the SDGs" (2020, p.926). In this context, the author also felt the difficulty to find adequate data and developing systematic methodologies when analyzing the UGGps activities related to geological heritage, geoconservation, geotourism, and geoeducation when trying to make the correlation with the 17 SDGs and their targets. The same difficulty was faced with the correlation to the 'Top 10 Focus Areas' (UNESCO, 2017a) defined for the UGGps. In this sense, this was a very complex and challenging task.

It is important to stress in this framework, the difficulty imposed by the number of targets and indicators. When reading about the 2030 Agenda, the author understood

that there were multiple layers to cover. Starting from the 17 SDGs, it was necessary to analyze each of the 169 targets and the 232 indicators. The author was also aware of this difficulty felt by the UN, as it will be further explained in detail in the methodological approach.

Nevertheless, taking into account the 169 targets, and making the possible correlation between those targets and the developed activities of the 33 selected UGGps, the author selected what seemed to be the most suitable targets. Consequently, due to the complexity of analyzing the entire 17 SDGs and their 169 targets, the author selected the targets considered 'more suitable' based on the 'Top 10 Focus Areas', the UGGp concept, and the line of action of the IGGP. This was indeed a hugely time-consuming task.

During this work, it was also realized that when analyzing the activities of the UGGps, through the selected sources, there was a huge lack of data to do a reliable and valid correlation to the indicators. So, in this case, it was not possible to do an in-depth correlation with all the 232 indicators. However, in general terms, the used methodology enables to have high rates of data based on the selected sources, which allowed the author to collect a critical mass of information deemed sufficient to formulate credible findings.

Still, perhaps the most important challenge faced during this work was related to the lack of more organized and structured data regarding the UGGps activities, and especially their results and impacts. Although, analyzing available data from the GGN, the EGN, and UNESCO, the referred lack of outcomes regarding the SDGs developed by the UGGps kept the author from developing a better quantitative and qualitative overview in this domain. Nonetheless, during this research, there were faced with multiple types of data. In this sense, another challenge was met when trying to select the 'most suitable' sources for this research study. After a careful analysis, it seemed, at first, that the most 'suitable source' would be the PRs, elaborated by the 33 European UGGps regarding 2015 and 2016, taking into account that the 2030 Agenda was approved in 2015. The author was well aware of the structure of the PRs, because of her role in the Portuguese Forum of Geoparks and being responsible to elaborate the PRs of this national structure sent to the EGN every year. With this work, it was possible to

count the number of activities developed and to correlate them, when possible, to the 17 SDGs. Yet, it seemed that these reports could not be sufficient to give a broader view of reality. So, other sources were considered, such as the abstracts available in the Proceeding Books of the above-mentioned Conferences, held during 2015 and 2016, as well as questionnaires, and interviews. This meant a large number of data and a very time-consuming task. The processing and interpretation when correlating all the activities to the 17 SDGs was a complex, difficult, and challenging task too.

In the context of the PRs, the author had difficulty understanding what type of document was available for that purpose. The 'template' used for that requirement, seemed to lack a conducting wire to obtain similar information data. It was understood that the PRs did not cover many specific objectives, taking into account the areas that the UGGps should develop, accordingly with their management plans. Sometimes, it seemed that the referred 'template' was used in a very freeway. Consequently, the obtained data differed significantly among the different PRs analyzed. It was clear that there were some examples of very extensive PRs (some of them including sparse results on the activities developed), or others too synthetic to measure the activities carried out. In both cases, it was very complex and subjective to correlate the mentioned activities with the 17 SDGs.

This activity was even more complex since each UGGp, despite trying to follow the 'template', in reality, each one of them provided information considered personally more relevant, therefore very subjective. Sometimes it would be included content that had nothing to do with the main reason to have these PRs. Also, some UGGps did not present their PRs, which also influenced the final results obtained, due to the lack of information in those cases.

When analyzing in-depth the activities carried out by the 33 European UGGps, during the time-frame of this study, it was too often to realize that one could rarely get a real sense of the true impacts of these activities among the local communities. This was the same for the school communities when going through the activities related to geoeducation. The same happened with the activities related to geotourism. On the other hand, besides the difficulty to have a real sense of the impacts of those activities,

it was also difficult to understand their continuity in time, which also made it problematic to reach feasible data.

The referred PRs, as they also did not have a specific field in which it could be done directly the correlation between the activity/activities to the 17 SDGs, led the author to end up inferring a subjective character of the analyzed data.

Another difficulty encountered was obtaining more information revealed on the PRs, *e.g.* through the websites of the selected UGGps. It was found out that in the vast majority of cases, the activities mentioned in the PRs, were not included in the websites. Maybe the reasons for that situation could be the difficulty to have updated information on the developed activities or lack of this information in detail. Sometimes it seemed that many of the activities carried out were indeed omitted in the websites, although mentioned in the PRs. On the other hand, some websites would mention the activities written in the PRs, but since these activities were not systematized, it was difficult to encounter them among so many different information, in the folders of those websites. Nonetheless, even when the websites had the activities highlighted and, therefore, the contents were visible to the public, in most cases, when the contents were updated most of that important data was eliminated, to give room to other recent news and activities. This situation ended up being very frustrating to obtain more pertinent information and to cross-check it with the available data from the PRs. The same situation would occur with the analyzed abstracts since the activities or projects described in those scientific papers would not be emphasized or even mentioned on the websites.

Yet, when checking the websites, another difficulty was encountered in this research study. It was also not so clear a real concern in mentioning the 17 SDGs of the 2030 Agenda - especially on the front page -, and eventually making a direct link to the UN or UNESCO websites regarding this issue. In this sense, it was not mentioned, for instance, the SDGs chosen and worked by each UGGp, intending to create awareness among the readers or visitors/local inhabitants potentially interested in these matters, or just simply searching for this information on the websites. This is very important since UNESCO through the IGGP website refers quite clearly that the UGGps contribute to the achievement of some SDGs and are considered vital actors in the implementation of the 2030 Agenda (UNESCO, 2017e).

It was also noted that within the GGN, although a WG on SDGs was formally created in 2017, during the 14<sup>th</sup> European Geoparks Conference held in the Azores UGGp (Catana & Brilha, 2020), it was already delayed, taking into account that the 2030 Agenda was proclaimed in 2015. Nevertheless, informally, a WG on SDGs gathered in 2016, during the 7<sup>th</sup> International Conference on UGGps, held in the English Riviera UGGp. This WG, which the author is one of the catalysts, started with few elements, and those, in the first phase, did not represent actively and geographically the existing UGGps. There were also no pre-existing guidelines available from the GGN Coordination, in terms of strategies or policies to put into action in a formal document, including among the regional networks, or even specific programs or projects in this field, to involve all the UGGps. It was also found that the GGN Coordination did not previously have a strategic orientation on how to contribute to the implementation of the 2030 Agenda in the management plans of the UGGps. This could allow creating awareness among the local communities about the SDGs and their targets. However, later it was considered that this WG on SDGs should include elements from all the regional networks. In this sense, it was composed of members from different continents (Patricio Melo, Brazil; Xiaochi Jin, China; Jutta Weber, Germany; Ibrahim Komoo, Malaysia; Mustapha Oabbas, Morocco; Kristin Rangnes, Norway; and Elizabeth Silva, Portugal). Therefore, it took time for the GGN to take measures in this area and to count on the contribution of the WG on SDGs to introduce, for instance, the SDGs in the management plans of the UGGps. In this context, the referred WG defined a strategy divided into three phases:

- **The first phase** was to raise awareness among the managers and the scientific coordinators about the 2030 Agenda and its 17 SDGs, by making short presentations on this issue during the coordination meetings;
- **The second phase** was to promote greater awareness about the 17 SDGs, by requesting the managers to fill in a 'template' created by the WG, where they would place the developed activities correlating them with each of the 17 SDGs and preferably illustrating each mentioned activity with a photograph. However, this work was carried out after the period selected for this research

study. So, these ‘templates’ (data) were not taken into consideration in this research study.

- **The third phase** included specific workshops related to the 2030 Agenda and its 17 SDGs, during the European and International Conferences of the UGGps. This was the case of the Workshops carried out in Adamello Brenta UGGp (2018) and Sierra Norte de Seville UGGp (2019).

Thus, during this period, the GGN finally created a legal framework for the creation of the GGN Working Groups. In this document, it is stated that (GGN, 2018a):

*“(...) The main goal of a GGN WG should be the coordination of activities at the global level (on a specific subject), coordination of exchange of ideas and best practices, proposal of new regulations and concepts. In this sense, a GGN WG should: encourage the activities of similar WG at the Regional level where broad participation is welcome; submit to the GGN ExB an annual report of activities; have a limited duration; communicate with all GGN members the activities and results, and finally disseminate through GGN website information about their work to all GGN members.”*

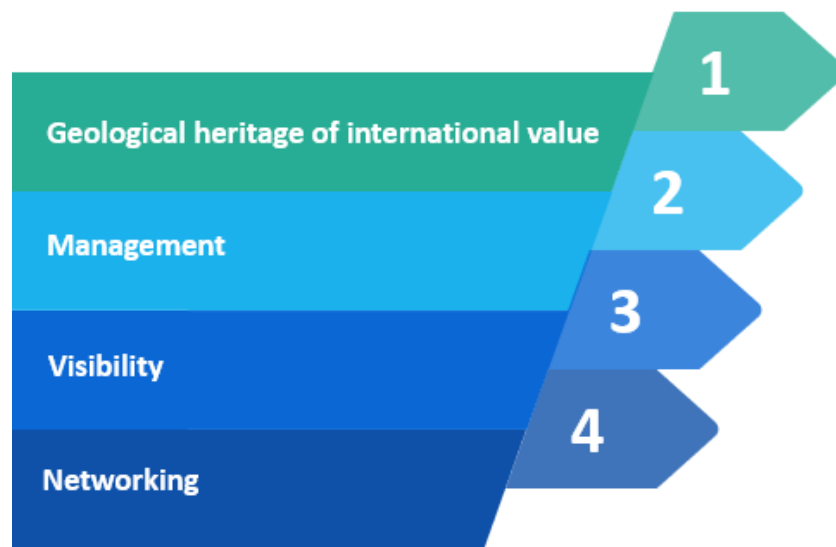
Despite all the efforts from the WG on the SDGs after 2016, these were not possible to be taken into consideration in this research, as explained before, due to the time frame of the fieldwork of this research. In this context, the author felt the need to have more data to consolidate the objectives of this study and to obtain solid results that could give possible answers to the research questions. Subsequently, it was considered very pertinent to also analyze the abstracts of the two above-mentioned conferences, to obtain more useful data. These abstracts were found to be a valuable source for many studies, due to their contents. It was noticed in many cases the strong relationship of the UGGps with issues such as SD, education, science, geotourism, etc. However, it seemed that most of these abstracts were not so well known by many of the staff members of the UGGps. In the same line, it seemed that these abstracts were also not so well-known or even recognized by the academic communities.

When writing about geoeeducation in many abstracts, for example, there is no clear evidence that the staff members are aware of these important deliveries, and that even if the school communities are also aware of this valuable source. In many cases, several

educational projects are examples of good practices, that could be replicable among other schools, especially located inside other UGGps. However, it seems that this is not the case, or at least it is not mentioned either in the majority of the abstracts related to this issue or even in the PRs, although there could be found few exceptions to this situation. This raises a pertinent issue: maybe these abstracts should be more accessible and inclusive (open-access), to be accessed not only by all the staff teams of the UGGps but also by educators and teachers, and also by the general public. Nevertheless, it is a fact that there are a large number of relevant abstracts written over time (since 2001). Yet, maybe for a common person, they are not that easy to access. Furthermore, they could be promoted among the general public or even among a more specialized public, through the EGN, the GGN, and the UNESCO website, and other types of channels (*e.g.* e-libraries). This would bring more visibility to the work developed by the UGGps. Also, when compared, it is a fact that there are a huge number of abstracts, but few scientific articles published in scientific journals, books, etc., with peer-review. One of the reasons pointed out could be that the authors of the abstracts do not systematically develop monitoring, analyzing, and interpretation of the multiple data related to the topics developed by the UGGps, to write scientific articles. This would be fundamental for a greater perception of the work carried out by the UGGps, in so many different fields. By doing it, it would be possible to have a more global knowledge about the activities carried out, not only about geoconservation, geotourism, and geoeducation but also among other relevant themes related to the UGGps activities.

After the research of these abstracts and their citations, for example in *Google Scholar*<sup>TM</sup>, it was noticed that there are few entrances, especially from authors belonging to the staff teams of the UGGps, who present the abstracts in different conferences. Sometimes they just do not simply appear in it. This should be thought about by the Executive Board of the GGN Association, so that the UGGps staff members could be more motivated to publish scientific articles about the projects and activities develop in their territories or in straight cooperation with other geoparks or further partners. This can be a controversial subject, since the managers, including the scientific coordinators and the rest of the staff teams, are very busy maintaining the standards imposed by the IGGP to be a UGGp and all the activities for which they are responsible to develop. But

it is also important to understand how the 17 SDGs are perceived by those managers and the way the same goals of the 2030 Agenda are “conceptualized by national and local governments has a direct effect on the way it is managed, interpreted, and understood” as referred by Petti *et al.* (2020, p.926). Consequently, it is also crucial to understand how the local communities perceive and understand the importance of the 17 SDGs so that stronger collaborations can be established between the UGGps teams and the local communities, in this domain. However, these issues should be discussed in terms of the ‘four essentials’ of the UGGps (UNESCO, 2016a) (Fig. 2).



**Figure 2** – The ‘Four essentials’ of the UGGps (UNESCO, 2016a); © Elizabeth Silva.

In this sense, to have more visibility concerning the UGGps and to promote networking it would be interesting to have much more abstracts developed into scientific papers. This would also be pertinent in terms of the results obtained in the field of science. Since the UGGps are considered ‘territories of science’, it would be very relevant to have more scientific articles about the areas covered by these territories.

It is also important to stress other difficulties faced by this research study. By reading the different abstracts, mainly from the EGN conferences, but also from GGN conferences, even though there is a huge number of abstracts, several of them were found to contain repeated or recurring contents, through time until nowadays. It was also noticed that many abstracts are still repeatedly cited, without a critical analysis of the content and a search for more recent scientific topics and authors, who have been



interested in the UGGps activities more recently. On the other hand, it appears that often, several authors "recycle" the information contained in their abstracts, and present them in other events, without this representing a clear novelty to previous knowledge or adding new knowledge to what has already been acquired. Another difficulty is that the majority of these articles are not available in open access, which makes it expensive for its reading and interpretation.

However, coming back to the core business of this research study, it would have been easier to elaborate on this research if there were available more scientific articles about the relationship between the UGGps and the 17 SDGs of the 2030 Agenda. If this were the case, it would probably be possible to have a deeper and global perception of the impact and contribution of the activities carried out by the UGGps in this domain, and compare data and reach more feasible and effective results. Once again, by searching in *Google Scholar*<sup>TM</sup>, for instance 'Geoparks and the 2030 Agenda' (accessed June 3, 2020), it only appeared five entrances. In this sense, it seemed that there were fewer articles in scientific journals, mentioning the UGGps and their link to the 2030 Agenda. It was also noticed that rarely an article would focus on the UGGps and their contributions to the entire 17 SDGs and their 169 targets. When researching these types of articles, it would be more common to have some articles focusing only on one special SDG or more than one SDG, but not the entire 17.

In the same line of difficulty, but this time referring to the abstracts, there are still few about the UGGps and their relationship with the 2030 Agenda when compared with other themes developed in the existing abstracts. So, the lack of these data, made this research even more difficult due to these constraints.

In this framework, it was interesting to observe the number of abstracts produced by each of the 33 UGGps at the two above-mentioned conferences (Rokua - 2015 and English Riviera - 2016). It was also very interesting to understand what type of topics were presented in those abstracts. It was also possible to cross-check the contents of those abstracts with the PRs. So, it was noticed a gap between the majority of the projects and activities carried out and expressed in the PRs but still not presented through the abstracts at those conferences. Therefore, many examples of good practices were not shared with the entire community of the EGN/GGN, including the aspiring

geoparks staff. The same would happen with the major developed projects and initiatives carried out by the selected UGGps. There were few exceptions in this identified situation. In this sense, the staff elements of the UGGps could select more relevant activities and demonstrate the impacts and results obtained by exposing those data to be shared and motivate others to develop similar projects. This is a very important issue that will be discussed in the final remarks of this research study. Anyway, the abstracts also gave new inputs to this research study and it was possible to do the correlation between each analyzed abstract to the SDGs.

As mentioned before, from the analyzed PRs and abstracts, it was possible to assess the activities carried out and to capture some examples of good practices, in many different fields, related to the main goals of the 2030 Agenda. However, taking into account the complex and subjective method to correlate the mentioned activities with the 17 SDGs, it was noted the need to use even more sources, to have more concrete results, and to comprehend what kind of future perspectives could be raised by this research study.

Regarding the questionnaires, it was created a 'template', with the purpose to obtain more data that could bridge the lack of information felt in the PRs and abstracts. These questionnaires were fulfilled by the managers of the select UGGps, to have clear information about their awareness of the 2030 Agenda. Although not all managers were able to answer it, nevertheless, it was a very useful tool to understand their perception regarding this particular issue. But especially to understand if they considered that their activities developed regarding 2015 and 2016 could already be accounted for as an effective contribution for the 17 SDGs. Although once again it was a very time-consuming task to analyze all the replies, it turned out to be an important source, because it gave significant details regarding the level of awareness of the managers regarding the 2030 Agenda and the 17 SDGs. It was also possible to understand their perception of what they believed that they were contributing to the implementation of the 2030 Agenda. Yet, when cross-checking once again all these different sources and the obtained data, it was understood, even more, the difficulty to have accurate and reliable results, due to so many different perspectives for the same subject. So, making this correlation was a huge challenge.

In the same line of action, it was felt the need to do also interviews, once again to obtain plus details about the main subject of this research study. In this context, since the author had the opportunity to visit several European UGGps and communicate directly with some of the local inhabitants, the idea of making some interviews took shape. So, when the author had the opportunity to visit the cross-border Marble Arch Caves UGGp, located between the Republic of Ireland and Northern Ireland, and bearing in mind the importance given by UNESCO to these types of transnational geoparks, it was assumed as a good idea to do some local interviews. This approach closer to the local inhabitants/stakeholders and members of the staff of this UGGp seemed appropriate for the objectives of this research study. It allowed having a different perception of how these inhabitants/stakeholders saw the activities promoted by the geopark staff and on their effective knowledge about the 2030 Agenda. It allowed also to understand how the members of the staff were aware of the importance of this Agenda in the planning of their activities.

From this personalized approach, it was interesting to verify especially what was the inhabitants' perception of the Marble Arch Caves UGGp activities. Although it was a very time-consuming task, with possibly unpredictable results, it was a very challenging activity. It required listening to all the interviews, counting, describing, and categorizing words, sentences, and actions. So, it was used the 'verbatim transcription'. However, transcribing data from qualitative interviews is a very arduous and time-consuming task. But, as stated by McGrath *et al.* "it offers great benefits in terms of getting to know the data" (2019, pp.1004-1005).

Another challenge was that although the interviews were in English, the Irish accent was an additional problem to understand perfectly what was said. So, this task took a lot of time to understand all that was said because no detail could be left behind, but it also proved to be a very positive source. In the end, it was a very rewarding task and provided a new light to this research study. These interviews allowed, for instance, to verify that often the perception of the local inhabitants can be completely different from the reality captured in the reading of the PRs, abstracts, and questionnaires.

Consequently, when comparing all the data obtained from the different sources, it was possible to observe that the SDGs gained new arrangements or even other

hierarchies. This concrete situation revealed, even more, the difficulty in measuring the activities promoted by the UGGps described in their PRs, and making the correlation to the SDGs. It was also pertinent to bear in mind that perhaps the perception of the local inhabitants about the geopark activities and the developed SDGs related to them could be quite different.

Regarding the EGN, the GGN, and UNESCO documentation, such as Declarations or Agreements, which are also valuable data, another obstacle was the difficulty to find this information available online. Sometimes, it is distributed in so many different websites, and folders, which makes it hard to find it. This situation was sometimes problematic to have a chronological and historical summary of these milestones documents. During this research, it was encountered some difficulties to understand, for instance, how these Declarations evolved from one to another, their contexts, and their real impact on the UGGps. Thus, it is also challenging to have a real perception of how these Declarations are transferred into the daily activities of the UGGps, or even to be reflected in the strategic plans for territorial development.

Finally, from the analysis of the sources, it was recognized the large amount and diversity of the collected data. This situation required reorganizing the data and redefining the initial conceptions of this research study. Besides, it also had an impact on the chosen methodology, which had to be adapted to the reality encountered, which made this task even more demanding and complex.

## CHAPTER II – CONSTRUCTION OF THE STUDY OBJECT AND RESEARCH METHODOLOGY

### 2.1 Theoretical research problem, assumptions, research questions, and objectives

Besides the importance given by the UGGps to SD and the SDGs of the 2030 Agenda, as mentioned above, in the documents and other literature analyzed about the UGGps, it was noticed that special attention was given to the holistic vision of its concept.

When speaking about the need for a UGGp to have a strong management structure, this should be based on a united and preferably multidisciplinary team, capable to put in action a good management plan (Zouros, 2001; Silva & Sá, 2019). This plan should integrate all fields of work of a UGGp and needs to be supported by a sustainable budget, aiming this way to achieve the goals set out previously. Without the analysis of these basic guidelines, a UGGp will never be succeeded. Therefore, this plan must be comprehensive, incorporating the governance, development, communication, protection, infrastructure, finances, and partnerships (Martini & Zouros, 2001; UNESCO, 2015a, 2015b; GGN, 2018). Intrinsically, this means that the UGGps must seek also different types of funding, at a national, regional, and transnational level. In this context, this could be one of the reasons why the EGN was founded in 2000 (Martini, 2000; Frey, 2001b; Martini & Zouros, 2001; Xun & Milly, 2002; Mc Keever, 2003; Zouros, 2004, 2010, 2016; Mc Keever & Zouros, 2005; Mc Keever *et al.*, 2010, 2013; Fassoulas & Zouros, 2010; Patzak, 2010, 2015; Gonzalez-Tejada *et al.*, 2017; Ramsay, 2017; Rosado-González *et al.*, 2017, 2020a, 2020b; Du & Girault, 2018; EGN, 2018a, 2018c; Silva *et al.*, 2018; Sá & Silva, 2019).

Supported by the European Union (EU), it was possible to establish interregional cooperation through the EU funding program by four LEADER II zones with the support of the LEADER IIC initiative<sup>1</sup> (Frey, 2001a, 2001b; Frey *et al.*, 2001). This funding allowed to settle a partnership which provided a forum for the sharing of experiences and best

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<sup>1</sup> The LEADER Programme (an acronym in French – Liaison Entre Actions de Développement de l'Économie Rurale – meaning Links between actions for the development of the rural economy) was a European Union initiative to support rural development projects initiated at the local level in order to revitalise rural areas and create jobs (European Commission, 2006), (accessed January 4, 2018), [https://ec.europa.eu/agriculture/sites/agriculture/files/publi/fact/leader/2006\\_en.pdf](https://ec.europa.eu/agriculture/sites/agriculture/files/publi/fact/leader/2006_en.pdf)

practices in geological monuments management and the development of geotourism in Europe, and the promotion of geological heritage, and SD of the geopark's territories (EGN, 2000a, 2019a; Martini & Zouros, 2001; Zouros, 2004, 2010, 2011; Martini & Frey, 2010; Zouros & Valiakos, 2010; Hose *et al.*, 2011).

Accordingly, to Barroso, the European Geoparks are “in line with the objectives of the Europe 2020 Strategy, considering that these territories are active actors in supporting sustainable economic development, contributing to the reinforcement of social and territorial cohesion, and the creation of jobs. It also considers that education, research, and innovation are at the heart of the referred Strategy”. Finally, it also stresses the “active involvement that the European Geoparks are capable of, through science, education, and geotourism activities, which can improve the local economy while reinforcing cultural identity” (2012, pp. 3-4).

In this framework, other types of funding have been supported by the EU. This was the case of the **INTERREG IIIC South Project** (2000-2005) – ‘European Geoparks... A Tool for geotourism Development in Europe’, where nine geoparks worked together in common activities such as management meetings, thematic conferences, and seminars, creation of tools, publications, and organization of common events (EGN, 2000a, 2005, 2019a; Mc Keever & Zouros, 2005; Zouros, 2006; Petrified Forest, 2018).

Another example could be the **EU INTERREG IIIB (North – West Europe) program**, with the project ‘European Geoparks Network: a pilot project to develop a joint, high quality, sustainable, transnational and educational product in North-West Europe’. This program was developed between 2004 and 2006. It involved four European Geoparks: Bergstraße–Odenwald, Germany; Copper Coast in County Waterford, Republic of Ireland; Marble Arch Caves in County Fermanagh, Northern Ireland; and the Vulkaneifel, Germany. The four geoparks, represented by a consortium of 14 partners, have secured a major funding package to implement a series of major investments in their areas aimed at building and enhancing the high-quality tourism product of each geopark, as well as building transnational cooperation between them (Mc Keever, 2005; Mc Keever & Zouros, 2005).

During the period 2014-2020, it has been also developed the **INTERREG Northern Periphery and the Arctic**. This project aims to “strengthen the understanding,

appreciation, and enjoyment of the fascinating and interconnected geological heritage of the Northern Periphery and Arctic region, and its many links to natural, built and cultural heritage – It will support the development of new and aspiring Global Geoparks (...), and continue to build a strong network of Geoparks in the Northern Periphery and Arctic Region” (Keep.eu, 2014).

The **Horizon 2020 European research program - H2020 RISE on Geoparks** is also a good example. Through the funding EU.1.3.3. – ‘Stimulating innovation through cross-fertilization of knowledge’ was developed the project ‘Geoparks: Heritage, Education, and Sustainable Development – an Innovative Methodology for Southern Countries. Case Study in Morocco, Atlas Mountains, Marrakech (2015-2018)’ (European Commission, 2014, 2015; Girault, 2019).

In this framework, other European programs can be recalled, such as the **Danube Transnational Program**. This initiative promotes economic, social, and territorial cohesion in the Danube Region, through policy integration in selected fields. It includes, for instance, the financing of the project ‘DANUBE GEOTOUR - Valorisation of geo-heritage for sustainable and innovative tourism development of Danube Geoparks (2017-2019)’. It involves European Geoparks from nine EU countries: Austria, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Romania, Slovakia, and Slovenia (Interreg Danube Transnational Program, 2018).

A more recent EU project is the one integrated into the **INTERREG Atlantic Area** (INTERREG Atlantic Area, 2016). It is a European funding program that promotes transnational cooperation among 36 Atlantic regions of five European countries. In this framework, it has been developed the project ‘Atlantic Geoparks – Transnational promotion and cooperation of the Atlantic Geoparks for sustainable development (2017-2020)’. It has the main challenge to promote the Atlantic Geoparks as a unique, leading tourist destination through the right balance between protection of the environment and the development of economic activity in the current context of a globally competitive and changing tourism sector. This project aims to boost economic activity by creating new businesses and increasing the number of jobs in the service sector. It also aims to influence regional policies by raising awareness of the public authorities about the need to legislate and manage the geological areas under both

economic and environmental sustainability criteria, supported by European policies and the recommendations of UNESCO (INTERREG Atlantic Area, 2016; Sá *et al.*, 2017, 2019; Gabriel *et al.*, 2018b; Duarte *et al.*, 2019).

Also, due to EU funding (LEADER+), according to Kavčič & Režun, it was possible to “recover the Mercury Mine of the Idrija UGGp, in Slovenia. Moreover, through the European Funds, the Slovenia NatCom for UNESCO applied these funds in cooperation with the Transnational Karavanke/Karawanken UGGp (Slovenia/Austria)” (2016, 307).

Although there are so many different types of funding, for Girault “thus, while scientific experts (mainly geologists) have most often been at the heart of the process of creating geoparks, some current tensions arise from asymmetries between groups of stakeholders (politicians, managers, scientists, representatives of local populations), particularly for the preparation of heritage inventories and the implementation of projects for the interpretation of the territory/economic development of these heritages” (2019, Introduction, p. xx).

Nevertheless, considering the importance of the different criteria to have a good management plan, it is also interesting to realize that people living in the UGGps are in fact at the center of a well-designed plan. It is indeed a request that the plan must guarantee the SD of the people who live there (Zouros, 2001, 2004, 2016; Mc Keever & Zouros, 2005; Fassoulas & Zouros, 2010; Mc Keever *et al.*, 2010, 2013; Ramsay, 2017; Sá *et al.*, 2017; GGN, 2018; Silva *et al.*, 2018a; Sá & Silva, 2019; Stoffelen *et al.* 2019; Stoffelen, 2020).

Furthermore, besides linking the local and indigenous communities, the UGGps also links the importance of women, and their role in the local economy, promoting gender equality and the empowerment of women and girls (Gidakou, 1999; Gidakou *et al.* 2007; Fassoulas & Zouros, 2010; Sadat & Rezaie, 2015; UNESCO, 2015a, 2015c; Zouros *et al.*, 2016; Rosado-González *et al.*, 2017, 2020a, 2020b; Amrikazemi & Silva, 2018; Firmino *et al.*, 2018b; Pásková, 2018).

In Greece, it is given the example of good practices of the women’s cooperatives. A form of agricultural productive cooperatives developed as small and medium-sized enterprises. The Lesvos Island UGGp collaborates closely with women’s agrotouristic



cooperatives and local organic food producers to promote local gastronomy (Gidakou, 1999; Gidakou *et al.* 2007; Fassoulas & Zouros, 2010; Zouros *et al.*, 2016). Another example can be seen in Portugal, as referred by Firmino *et al.*, where the “women artisans from the Estrela UGGp are responsible for the production of the ‘Estrela’ mascot of the referred territory, with fabrics made of pure wool from the sheep of Estrela Mountain (2018b, p.44).

It is also interesting the work developed by young girls and women, in the Qeshm UGGp, in Iran. In this territory, the Qeshm Geopark management prepared some facilities for women to present their homemade handicrafts to geopark visitors. In the beginning, it was just for their simple and traditional products and making them interested to be more active in society and have the income to help their families. However, through time, they began to be more active and assume a more relevant role in this geopark (Sadat & Rezaie, 2015; Amrikazemi & Silva, 2018).

In accordance with Sadat & Rezaie, “(...) assisted by the geopark staff and through geopark activities, the local women have become more aware of their skills. Some cooperatives have been established to enhance the development of their handicraft products. Now everyone who visits the geopark (Qeshm UGGp) learns about the handicraft skills of the local women and the local handicrafts have become popular souvenirs (...). Qeshm is looking for new ways to meet the needs of women and encourage them to play an even more important role in the geopark” (2015, p. 215).



Therefore, if the holistic vision is the sea where the UGGps must navigate, SD is for sure the lighthouse for the UGGps activities. This means that every action or master plan must consider the pillars of SD and be aligned with the evolution of this concept through time. In this case, the management body should explore and demonstrate more methods of best practices for conserving the area’s geological heritage while balancing economic development and tourism (Zouros, 2001, 2010; Mc Keever & Zouros, 2005; UNESCO, 2015a, 2015c; Ruban, 2017; Sá & Silva, 2019).

Looking at the main milestones of SD, having as an important reference the Brundtland Report (United Nations, 1987) until the 2030 Agenda for SD (United Nations, 2015e) and at the same time, looking in parallel to the history of the construction and consolidation of the UGGps concept, it is possible to match the different pillars of SD –

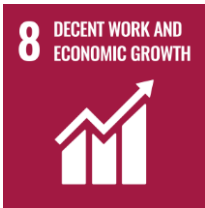




Environment, Society and Economy – to the philosophy behind the concept of UGGps (Brundtland, 1987; UNESCO, 1999a, 2015a; Martini & Zouros, 2001; Xun & Milly, 2002; Eder & Patzak, 2004; Zouros, 2004, 2010, 2016; Mc Keever & Zouros, 2005, 2010; Fassoulas & Zouros, 2010; United Nations, 2015; Weber, 2015, 2017, 2018; Ramsay, 2017; Silva *et al.*, 2016, 2017, 2018, 2019; Silva & Sá, 2017a, 2018; Rosado-González *et al.*, 2018, 2019, 2020a; 2020b; Silva & Weber, 2018; Silva *et al.*, 2018a, 2018b, and references therein).

Thus, more recently, with the creation of the IGGP, was formally recognized the importance of the UGGps in the implementation of the SDGs of the 2030 Agenda (UNESCO, 2015b). For that purpose, and as clearly stated by this Organization (UNESCO, 2017e), it is mentioned the ‘Eight SDGs’ selected by the IGGP and justified the chosen targets to which the UGGps give their active contribution (UNESCO, 2016a, 2017e; Weber, 2017, 2018; Silva & Sá, 2017a; Silva *et al.*, 2018a, 2018b; Rosado-González, 2020a, 2020b) (Table 1).

**Table 1** – The ‘Eight SDGs’ selected by the IGGP and the chosen targets.

SDG icon	Title of the SDG	The specific target of the SDG
	End poverty in all its forms everywhere	<i>(especially target 1.5.)</i> Disaster risk reduction is essential to end poverty and fostering sustainable development. The bottom-up approach of the UGGps reduces the vulnerability of local communities to extreme events and other shocks and disasters through active risk awareness and resilience training.
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	<i>(especially target 4.7.)</i> UGGps actively educate their local communities and their visitors of all ages. UGGps are outdoor classrooms and incubators for sustainable development, sustainable lifestyles, appreciation of cultural diversity, and the promotion of peace.
	Achieve gender equality and empower all women and girls	<i>(especially target 5.5.)</i> UGGps strongly emphasize the empowerment of women through educational programs or the development of women’s cooperatives. Such cooperatives provide an opportunity for women to obtain an additional income in their area and their terms.

**Table 1 (Cont.)** – The ‘Eight SDGs’ selected by the IGGP and the chosen targets.

SDG icon	Title of the SDG	The specific target of the SDG
	Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all	<i>(especially target 8.9.)</i> The promotion of sustainable local economic development through sustainable (geo)tourism is one of the key pillars of a UGGp. This creates job opportunities for the local communities through tourism, but also the promotion of local culture and products.
	Make cities and human settlements inclusive, safe, resilient, and sustainable	<i>(especially target 11.4)</i> Protecting, safeguarding, and celebrating our cultural and natural heritage is the foundation of the holistic approach of the UGGps. The UGGps aims to give local people a sense of pride in their region and strengthen the identification with the area.
	Ensure sustainable consumption and production patterns	<i>(especially target 12.8 and 12.b)</i> UGGps educate and create awareness on sustainable development and lifestyles. They teach the local communities and visitors to live in harmony with nature.
	Take urgent action to combat climate change and its impacts	<i>(Especially target 13.3.)</i> All UGGps hold records of past climate change and are educators on current climate change. Through educational activities awareness is raised on the issue and people are provided with the knowledge to mitigate and adapt to the effects of climate change.
	Strengthen the means of implementation and revitalize The global partnership for sustainable development	<i>(Especially targets 17.6, 17.9, and 17.16)</i> UGGps are all about partnership and cooperation, not only between local stakeholders but also internationally through regional and global networks where knowledge, ideas, and best practices are shared. Experienced geoparks guide aspiring geoparks to reach their full potential.

(Adapted from UNESCO, 2016a, 2018a)

- **Theoretical research problem**

Bearing in mind the arguments stated previously, this research study is focused on the scientific, social, geographical, and historical background of the UGGp concept and its links to SD. In this sense, it was made a selection of 33 European UGGps, based on several criteria, explained in detail ahead, regarding the period 2015-2016, based mainly on the analysis of the PRs and abstracts, but also considering other data, such as the questionnaires and interviews. Thus, in this

research study, it was important to determine what was already known about these links between SD and the European UGGps.

In this context, the theoretical research problem of this study is to understand if it is possible to make the correlation between the activities developed in these 33 European UGGps to the 17 SDGs of the 2030 Agenda. This theoretical research problem is limited to the defined time frame and the specific geographical area.

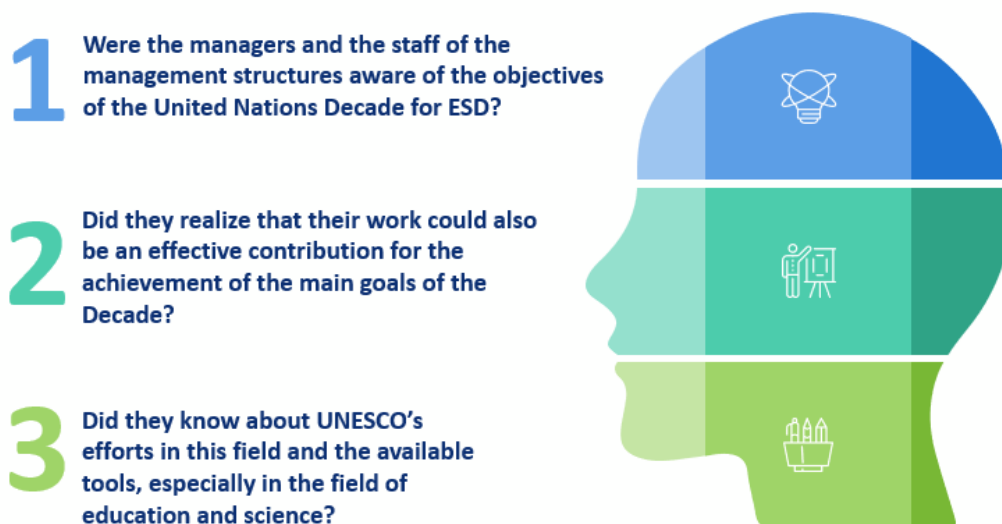
Regarding the *State of the Art*, this research study aimed to explore the existing and most relevant literature about the 'Geopark' concept, but also giving special attention to the most up-to-date literature about the European UGGps and the 2030 Agenda.

During this research, it was also interesting to observe the evolution of the relationship between the European UGGps and the SDGs, since it has become an increasingly important subject, under the framework of the IGGP.

As described before, even a WG for the SDGs was created inside the GGN and spread its work to other regional networks. One of the main reasons was to motivate the UGGps managers and their staff members to develop more activities following the SDGs targets and indicators. This would also aim to engage more the local communities in these activities. Based on the developed activities and correlating them to the 17 SDGs, it was expected to verify and demonstrate if all the 17 SDGs were developed by the 33 European UGGps directly or indirectly, or, at least, which were the most developed SDGs. This process would be done concentrated mainly on the analysis of the PRs but also covering other types of sources, as mentioned before, based on a qualitative approach.

- **Assumptions**

When this research started some questions were raised when thinking about SD regarding the UGGps (Fig. 3):



**Figure 3** – Three primarily questions regarding SD and the role of the UGGps in this context; © Elizabeth Silva.

From the meetings of the EGN and the GGN, the answer to these questions could be, in the vast majority of cases, no. It seemed that the managers were not that familiar with UNESCO and UN issues related to ESD (UNESCO, 2012e). Moreover, it seemed that many of them were not familiar with the UNESCO strategies or with the scientific programs and their relation to SD. However, this was already in the center of the line of work of UNESCO, especially in the MAB Programme, using the Biosphere Reserves (BRs) as ‘living laboratories for SD’ (Nyhus & Adams, 1995; UNESCO, 2001, 2008a, 2016b).

Despite the implementation of the *Lima Action Plan*, endorsed by the 4<sup>th</sup> World Congress of Biosphere Reserves, and adopted during the 28<sup>th</sup> MAB International Coordination Committee, in 2016, in Lima, Peru (UNESCO, 2016c), it seemed that the UGGps managers were not so familiar with these UNESCO initiatives. This Congress, which took place for the first time outside Europe, “addressed issues related to the implementation of the MAB Strategy, notably in support of the 2030 Agenda for SD, the 17 SDGs, and the Paris Climate Agreement. It also stated the importance of the BRs in issues related to ESD, green economies and green societies, biodiversity, climate change, and the protection and sustainable use of natural resources, among others” (UNESCO, 2016c).

In this sense, the World Network of Biosphere Reserves, created a roadmap for the implementation of the MAB Strategy for the period 2016-2025, putting the SDGs in the center of it. And what about the IGGP and the UGGps? What kind of strategy has been considered to put the SDGs in the plan of action of every single UGGp? If the role of UNESCO to promote science to achieve SD was recognized and if the UGGps were considered 'territories of science', intrinsically this could mean that the UGGps should also assume their compromise of working together with the rest of the UNESCO family, working for a sustainable future (UNESCO, 2013a, 2017b; Patrocínio *et al.*, 2018). In this case, were the managers and the staff elements of the UGGps ready to adapt their actions aligned with the UNESCO principles? Were they also prepared to use the geological heritage to promote awareness and to address important environmental and societal challenges, as recognized by this Organization? It seems that all these questions were the beginning of an endless quest.

However, the establishment of the IGGP, in November 2015, could mean that the Member States also understood the great value of the UGGps in their line of work to achieve a regional SD in these territories and the importance of managing outstanding geological sites and landscapes holistically (UNESCO, 2015a, 2015b; Silva & Sá, 2017, 2018; Sá & Silva, 2019). But how to prove this? Where could be found the quantitative and qualitative reply to this question, even though many authors state the close relationship between the work developed by the UGGps and SD (Patzak & Eder, 1998; Eder & Patzak, 2004; Zouros, 2004, 2010, 2016; Mc Keever & Zouros, 2005; Missotten & Patzak, 2006; Dowling, 2009; Komoo, 2010; Burlando *et al.*, 2011; Farsani *et al.*, 2011a, 2011b; Mc Keever *et al.*, 2013; Patzak, 2015; Henriques & Brilha, 2017; Weber, 2017, 2018; GGN, 2018; Silva & Sá, 2017a, 2018; Sá & Silva, 2019; Rosado-González, 2020, and references therein).

There are so many articles, abstracts, proceedings, progress reports, presentations, questionnaires, MSc. and Ph.D. thesis that could explain the core business of the UGGps, their holistic vision, and their main activities towards SD. In this sense, this could be the *first assumption*:

- ***UGGps contribute to regional sustainable development.***

But it was with the approval of the 2030 Agenda, by the General Assembly of the UN, in 2015, that this research study began to take shape. Not only the UGGps could act as vital actors towards regional sustainable development, but a second assumption could be made (Silva, 2017; Silva *et al.*, 2018; Silva & Sá, 2018; Sá & Silva, 2019):

➤ ***The UGGps can play an important role in the implementation of the five pillars of the 2030 Agenda: Planet, Prosperity, Peace, Partnership, and People.***

After reading so many PRs and abstracts of the UGGps, and attending meetings and conferences related to this subject, these words would appear constantly in close relationship with the activities of the UGGps. Nevertheless, it was understood that maybe because this Agenda was so recent, the representatives of the UGGps seemed to know about it, but were not so aware profoundly about the 17 SDGs, its 169 targets, and its 232 indicators. Despite this, they assumed by the titles of each SDG, that they were aligned with them when developing and promoting their activities.

Subsequently, it was analyzed the questionnaires fulfilled by the managers of the selected European UGGps for this research study, and a *third assumption* was made:

➤ ***The managers who replied to the questionnaires knew about the 2030 Agenda.***

But, were they aware of the real meaning of each SDG and their corresponding targets and indicators?

Despite this, it could also be done a *fourth assumption* (UNESCO, 2015a, 2015c; Fauzi & Misni, 2016; Zouros, 2016):

➤ ***Directly or indirectly the UGGps were giving a positive contribution to the SD of the territories.***

In fact, through the variety of their activities, a *fifth assumption* could be done (UNESCO, 2016a; Weber, 2017, 2018):

➤ ***The UGGps fulfill different areas of SD, putting local communities in the center of their action.***

In this sense, the referred assumptions would be the starting point to continue to proceed with this research study (Fig. 4):

## Five assumptions:

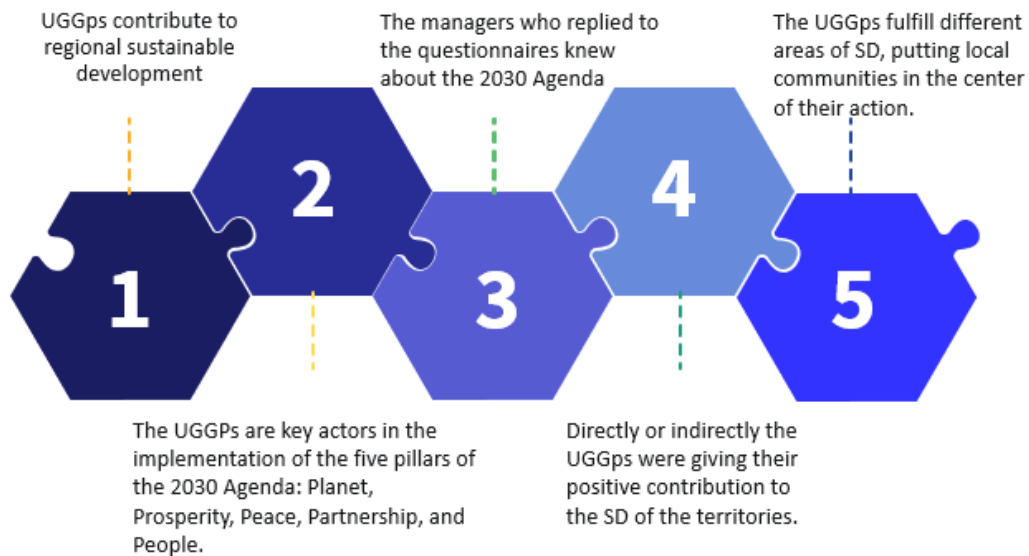


Figure 4 – The ‘five assumptions’ of this research study; © Elizabeth Silva.

- **Research Questions**

This research study sought to identify how do the UGGps contribute effectively to the achievement of the 17 SDGs, considering the main areas covered by UNESCO, the five pillars of the 2030 Agenda, the ‘Top 10 Focus Areas’ of the UGGps, and the ‘Eight SDGs’ selected by the IGGP (United Nations, 2015e; Silva *et al.*, 2017b; UNESCO, 2017e, 2018b; GGN, 2018; Silva & Sá, 2018) (Fig. 5):

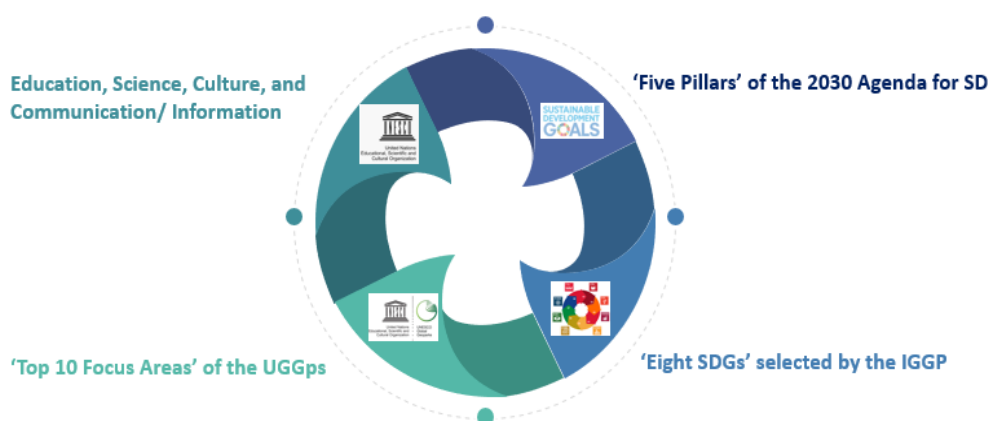


Figure 5 - The main areas taken into consideration regarding the UGGps and SD; © Elizabeth Silva.

This means that a correlation could be done between the activities developed by the UGGps and the 17 SDGs, bearing in mind these three key components (Fig. 6):



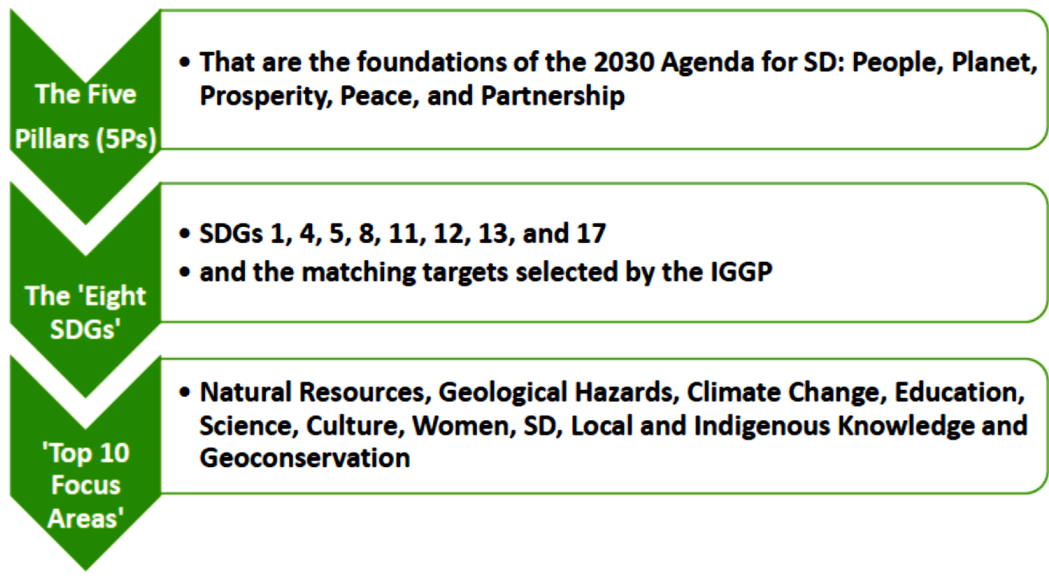


Figure 6 - The three key components functioning as the 'lighthouse' of this research study; © Elizabeth Silva.

From the above mentioned, this research study expects to explore new paths that can demonstrate that the UGGps contribute effectively far more than just 'Eight SDGs' selected by the IGGP. For this reason, it is also considered the concept around these UNESCO territories and their vital role regarding SD. In this framework, it was developed this research study, following three main research questions (Fig. 7):

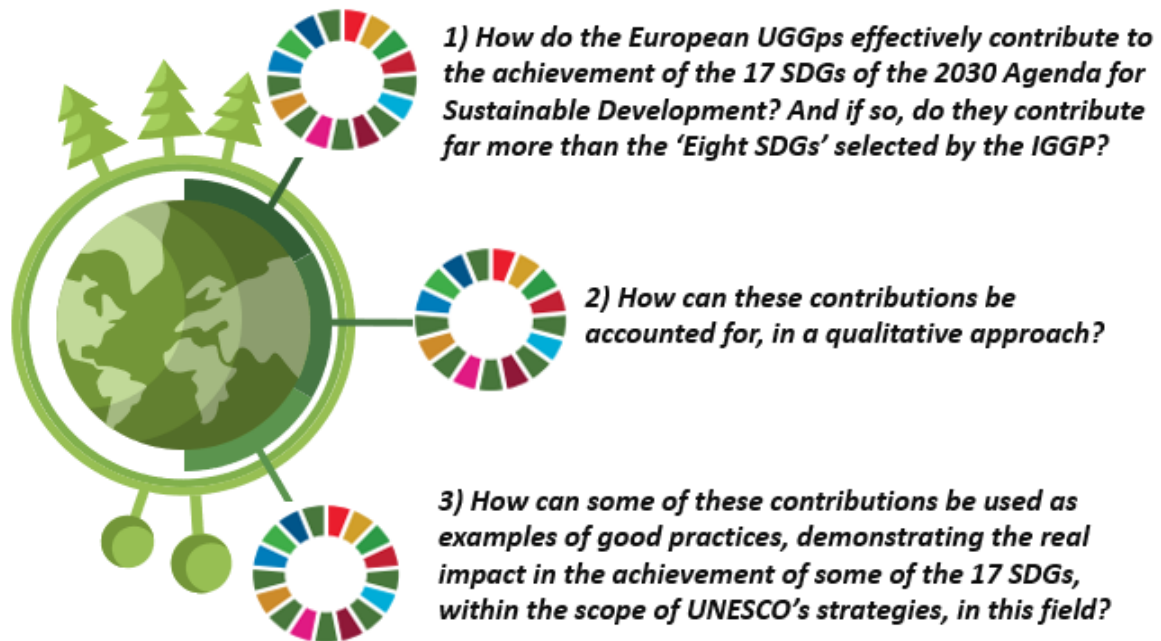
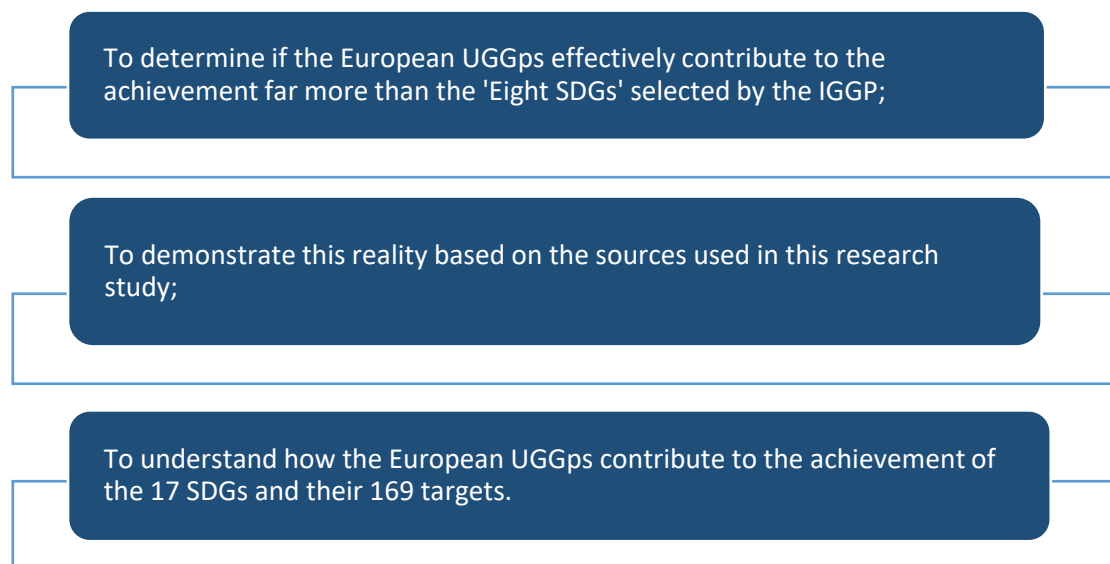


Figure 7 - The three main questions of this research study; © Elizabeth Silva.

According to Williams, the “research process is systematic in defining the objective, managing the data, and communicating the findings that occurred within established frameworks and following existing guidelines. The frameworks and guidelines provide researchers with an indication of what to include in the research, how to perform the research, and what types of inferences are probably based on the data collected. Research originates with at least one question about one phenomenon of interest (...). Research questions (...) help researchers to focus thoughts, manage efforts, and choose the appropriate approach, or perspective from which to make sense of each phenomenon of interest” (2007, p.3).

This was the case for the three selected research questions of this study. On another hand, considering the main theme of this thesis, it was also defined three main goals of this research (Fig. 8):



**Figure 8** - The three main goals of this research study; © Elizabeth Silva.

It is expected to find conclusive results and to seek out reasons behind the identified problems to implement the 2030 Agenda in these territories, and if possible, propose more effective approaches to tackling or understand how this can be done. Therefore, this research study used a mixed-method approach to try to answer the three defined research questions. The collected data was contextualized with a review of relevant and more recent literature on the ‘Geopark’ concept and also in the framework of the 2030 Agenda.

- **Objectives**

Despite the five defined assumptions, after visiting several UGGps in Austria, England (UK), Finland, Germany, Greece, Italy, Northern Ireland (UK), Norway, Republic of Ireland, Romania, Portugal, Scotland (UK), Slovenia, and Spain, and in other regions of the world, like Brazil, Canada, China, Peru, and Iran, it seemed clear to the author that there is no territorial management entity with full capacity to manage entirely the territories designated as UGGps. Somehow, it seems that they have always a kind of political and/or economic constraint, which brings practical obstacles to follow the objectives stated in the IGGP guidelines. Also, according to Papathanasoglou, “geoparks represent development approaches inspired by the protection of Cultural World Heritage, but they do not constitute national legislation. This implies that these provisions have no legal status so state endorsement is hindered. Although the ensuing flexibility bears some benefits, these are outweighed by serious drawbacks. Legal managers of geoparks are deprived of essential authorities and rights and their role in local development planning participation it is not warranted” (2015, p.129). Facing this reality, it seems that most of the time the objectives of the territorial intervention of the management structures are left for a set of good ideas and intentions. Also, when considering the ‘bottom-up approach’, it seems that in the vast majority of cases, the candidatures for UGGps do not involve since the beginning of the process “all relevant local and regional stakeholders and authorities in the area” as stated in the IGGP guidelines (UNESCO, 2016a). Bearing in mind that these territories are commonly rural areas, frequently depopulated, and with an aging population, there are always other reasons behind those processes, especially based on political, socio-cultural, and economic interests. This could mean that very often it is a ‘top-down approach’ where the political institutions intend to decide or influence those candidatures, without involving right from the start the local communities, *e.g.* the landowners, the community groups, etc. Although there can be cases where the local authorities undertake this role, it is pertinent the recall the conclusions of the research study done by Rosado-González (2020), where it is stressed that the true sense of ‘bottom-up approach’ could be found in territories where the indigenous people have a word to say in the territorial development strategy and participate actively in these processes. In this context, and

for instance, the Mixteca Alta UGGp, in Mexico, could be a positive example of this situation, where the empowerment of local communities does effectively exist (Rosado-González, 2020; Rosado-González *et al.*, 2018, 2019, 2020a; 2020b).

Nevertheless, the UGGps can inspire people to value and care for geodiversity while encouraging scientific research, public education and local economic development (Martini & Zouros, 2001; Xun & Milly, 2002; Zouros, 2004, 2010, 2016; Mc Keever & Zouros, 2005; Fassoulas & Zouros, 2010; Komoo, 2010; Mc Keever *et al.*, 2010, 2013; Prosser *et al.*, 2013; Silva *et al.*, 2014, 2015, 2016, 2017, 2018; Sá *et al.*, 2015, 2016; UNESCO 2015a; Ramsay, 2016, 2017; Gonzalez-Tejada *et al.*, 2017; Ruban, 2017; GGN, 2018; Sá & Silva, 2019).

In this framework, this research study expects to accomplish **six specific objectives** (Table 2):

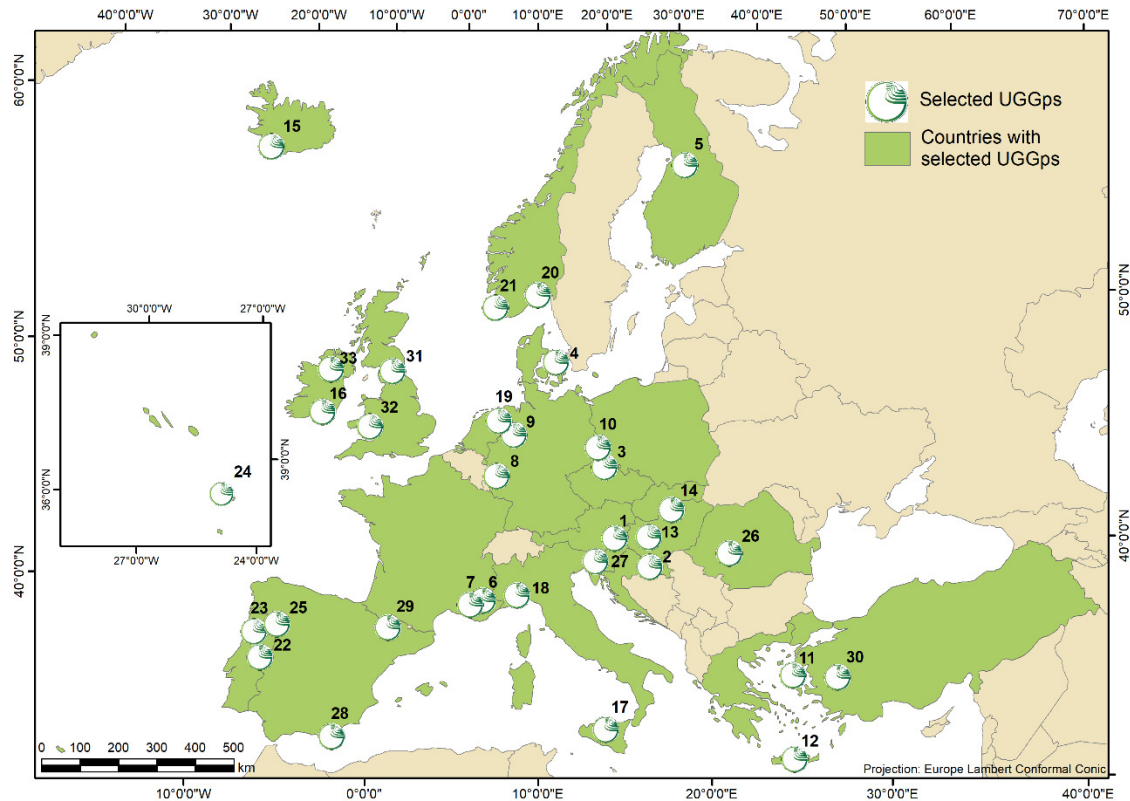
**Table 2** - Six specific objectives of this research study.

i) Assess the number of activities developed by the 33 UGGps, described in the different sources used in this research study, towards the achievement of the 17 SDGs;
ii) Correlate each activity inventoried with the correspondent SDG (or even more than one SDG);
iii) Use a qualitative analysis approach based on the collected data;
iv) Identify best practices developed by the UGGps that effectively contribute to the achievement of the 17 SDGs;
v) Employ the obtained results to run scenarios that can help to guide future actions of the UGGps in the framework of the 2030 Agenda;
vi) Propose a working tool where can be done the immediate correlation between the developed activity and the SDG/SDGs and corresponding targets.

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## 2.2 Methodological approach

To clarify the assumptions, and to find consistent results to the three research questions, based on the six objectives defined for this research study, it was selected 33 UGGps from 22 European countries (Fig. 9).



**Figure 9** - Map of the selected 33 UGGps located in 22 European Countries (for the identification of the numbers see Table 3 below). Map created using the ESRI shapefiles from ArcGIS 10.5 software.

The 33 selected UGGps were assigned to a number and according to alphabetical order by country (Table 3).

**Table 3** – Assigned number of the selected geoparks and described alphabetically by country (explanation of the indexed countries in Table 4).

Number	European Geoparks	Country	Date of admission
1	Styrian Eisenwurzen	Austria	2002
2	Papuk	Croatia	2007
3	Bohemian Paradise	Czech Republic	2005
4	Odsherred	Denmark <sup>1</sup>	2014
5	Rokua	Finland	2010
6	Haute-Provence	France	2000

**Table 3** (cont.) – Assigned number of the selected geoparks and described alphabetically by country (explanation of the indexed countries in Table 4).

<b>Number</b>	<b>European Geoparks</b>	<b>Country</b>	<b>Date of admission</b>
7	Luberon	France	2004
8	Vulkaneifel	Germany <sup>4</sup>	2000
9	TERRA.vita	Germany <sup>4</sup>	2001
10	Muskauer Faltenbogen/Luk Muzakowa	Germany <sup>4</sup> /Poland	2011
11	Lesvos Island	Greece	2000
12	Psiloritis	Greece	2001
13	Bakony-Balaton	Hungary <sup>4</sup>	2012
14	Novohrad-Nógrád	Hungary <sup>4</sup> /Slovakia	2010
15	Katla	Iceland	2011
16	Copper Coast	Ireland	2001
17	Madonie	Italy <sup>2</sup>	2001
18	Beigua	Italy <sup>2</sup>	2005
19	De Honsdrug	Netherlands <sup>1</sup>	2013
20	Gea Norvegica	Norway	2006
21	Magma	Norway	2010
22	Naturtejo da Meseta Meridional	Portugal <sup>3</sup>	2006
23	Arouca	Portugal <sup>3</sup>	2009
24	Açores	Portugal <sup>3</sup>	2013
25	Terras de Cavaleiros	Portugal <sup>3</sup>	2014
26	Hateg	Romania	2005
27	Idrija	Slovenia <sup>1</sup>	2013
28	Cabo de Gata-Níjar	Spain	2001
29	Sobrarbe-Pirineos	Spain	2006
30	Kula Volcanic	Turkey <sup>1</sup>	2013
31	North Pennines AONB	UK of Great Britain and Northern Ireland <sup>4</sup>	2003
32	Fforest Fawr	UK of Great Britain and Northern Ireland <sup>4</sup>	2005
33	Marble Arch Caves	UK of Great Britain and Northern Ireland <sup>4</sup> & Republic of Ireland	2008

(Adapted from EGN, 2018c, 2018e)

The selection of these geoparks took into consideration the geographical distribution settled by UNESCO regarding Europe and North America - Group I<sup>2</sup> and the seven criteria displayed in Table 4. The main goal of these criteria was to have as much as possible a data collection from a total of 33 UGGps, bearing in mind their

<sup>2</sup> ‘Group I - Europe and North America Region’ according to UNESCO. The Europe and North America region follows the specific UNESCO definition which does not forcibly reflect geography. It refers to the execution of regional activities of the Organization. <http://www.unesco.org/new/en/unesco/worldwide/europe-and-north-america/>, (accessed in January 10, 2018).

idiosyncrasies related to their distribution in Europe, covering a total of 22 countries. This strategy intended to have more rich and concrete information about the developed activities, and to better understand how these activities could be correlated to the 17 SDGs. However, despite all the selected territories being located in Europe, they are all different in terms of area, population, geographic location (Fig. 10), socio-economic reality, and cultural diversity, constituting a diversified mosaic, very evident in the amount of information obtained with the PRs.

**Table 4** - The seven criteria established for the selection of the 33 UGGps in 22 European countries.

<i>i) The seniority of the GGN membership;</i>
<i>ii) <b>One UGGp</b> for each European country with membership to the GGN <b>up to 2012</b>;</i>
<i>iii) <b>Two UGGps</b> selected for those countries with <b>five or more members</b> in the GGN;</i>
<i>iv) The exception to the UK of Great Britain and Northern Ireland, where it was selected <b>three UGGps</b>, based on the UNESCO criteria for Group I – Europe and North America which means that follows the specific UNESCO definition which does not forcibly reflect geography. It refers to the execution of regional activities of the Organization; Exception for Germany, <b>with three UGGps</b>, due to the transnational UGGp (Germany/Poland); Exception also for Hungary, with two UGGps, due to the transnational UGGp (Hungary/Slovakia) (see index <sup>4</sup> in Table 3 for all the mentioned cases).</i>
<i>v) Exception for Portugal, where it was selected the <b>four existing UGGps</b> up to September 2016 (see index <sup>3</sup> in Table 3);</i>
<i>vi) Exception for Denmark, Netherlands, Slovenia, and Turkey, although their membership occurred between 2012 and 2014, would allow having a broader view of the data available. The data analysis concerning these UGGps members are marked as conditioned (see index <sup>1</sup> in Table 3);</i>
<i>vii) Exception for Italy, where the <b>two selected UGGps</b> were chosen by geographical region also to have a broader view of results (see index <sup>2</sup> in Table 3).</i>

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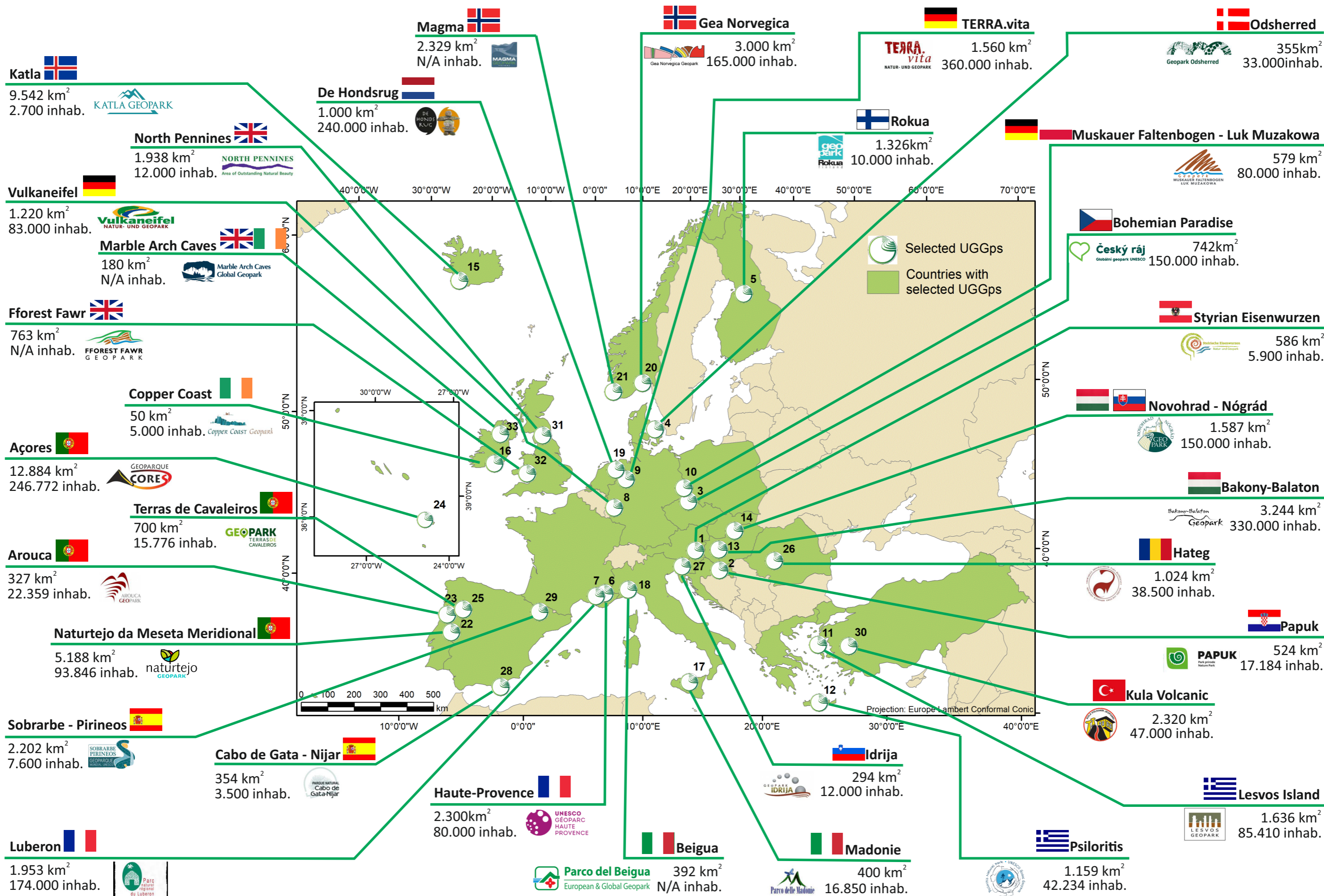


Figure 10 - Map of the selected 33 UGGPs located in 22 European Countries, concerning their area and population. Map created using the ESRI shapefiles from ArcGIS 10.5 software; © Elizabeth Silva

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### ❖ Used methods and data collections

According to Kumar, the “research methodology provides the techniques to find answers to the research questions” (2019, p.4). However, the author recognizes that the applied methodology was influenced by the assumptions made, as well as the gathered data collection, aiming to reach solid and valid conclusions.

In this framework, in the **first phase**, this research study analyzed the activities developed by the selected European UGGps through their PRs regarding 2015 and 2016. This was done using a qualitative and interpretative methodology based on the technique of analyzing documents. This method allowed the induction of thematic categories that were undertaken from the explicit references located in the analyzed documents supported in a heuristic perspective (Marques, 2012; Fernández Álvarez, 2020). In this sense, according to Burkart, the four characteristics of the heuristic methodology are based on the following key elements: “*i*) the researcher must be open and prepared to change his or her preconceptions about the topic if necessary; *ii*) the research topic is also open and may change during the exploratory research; *iii*) the perspectives must vary structurally as much as possible during the phase of data collection, so the researcher can view the topic from many directions; *iv*) the data are analyzed for common patterns” (2003, p. 109). This author also states that the “maximal structural variation of perspectives, which prevents a one-sided view of the topic, allows the researcher to gather the information that is as varied as possible about the research object (2003, p.109).

However, it was taken into consideration also the number of activities correlated with the 17 SDGs and also the number of SDGs achieved through those activities.

In the **second phase**, it was concluded the need to analyze more sources, to have more consistent and valid results. In this context, all the selected sources were important to have a deeper understanding of how the 17 SDGs were already, directly or indirectly, being developed by the 33 UGGps. It was also important to perceive their effective contribution to this worldwide challenge, especially when considering the action plans of the UGGps. In this sense, it was systematically collected data from a set of four sources, giving particular focus to the PRs, but also cross-checking the obtained

results with other types of data, aiming this way to find solid answers posed by this research. Therefore, this research was based on the following four sources (Fig. 11):

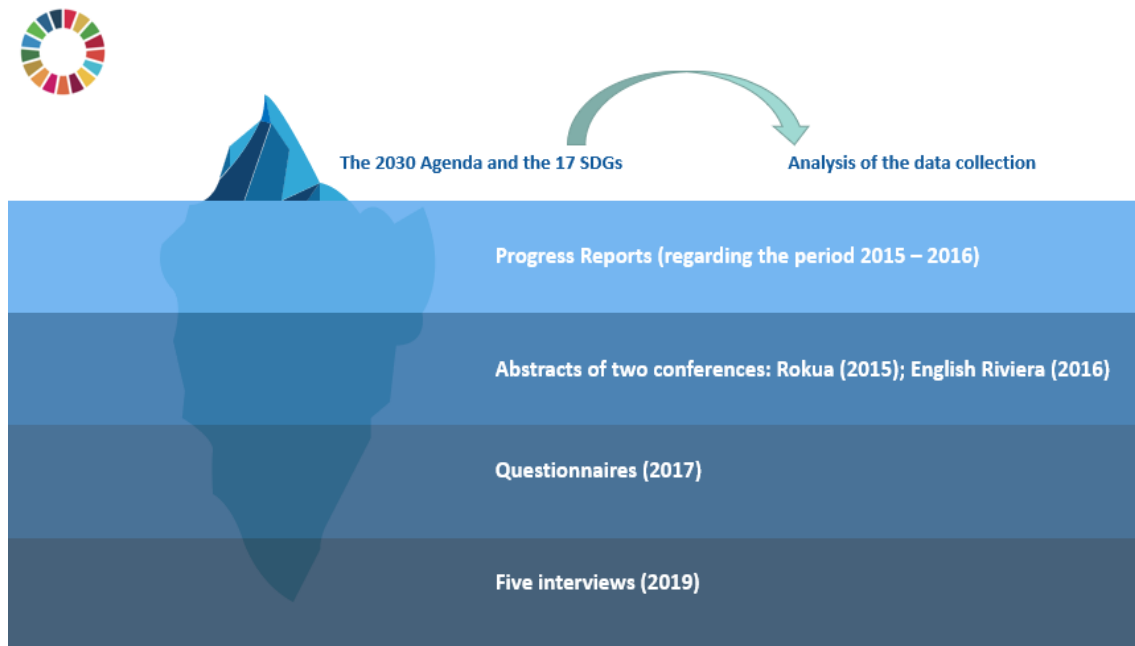


Figure 11 – The used sources in this research study; © Elizabeth Silva

### ❖ The mixed-method

The mixed-method was considered relevant to do an analysis that could provide a broad picture of how the 17 SDGs were already integrated into the ‘action plans’ of 33 UGGps in the context of Europe and the challenges of such integration and its impacts, especially among the local communities and their stakeholders.

Relying on rigorous analysis, this research study was based, as referred by Pace *et al.*, “on different methods allowing them to obtain in-depth answers” to the research questions (2012, p. 47). Consequently, by using a mixed-method, it brought the challenge to analyze so many data collection and to correlate it with the 17 SDGs. Thus, although realizing that this combined methodology would result in a large number of data, it would allow also to have the largest number of details on the effective contributions of the selected UGGps, through their developed activities. In this sense, the author focused not only on counting and measuring the developed activities during 2015-2016 but also on interpreting and understanding the correlation of those activities with the 17 SDGs (Creswell, 2003; Williams, 2007; Henman, 2010; Almalki, 2016).

In accordance with Williams, the mixed-method allows “researchers to collect or analyze not only numerical data, which is customary for quantitative research but also narrative data, which is the norm for **qualitative research** to address the research question(s) defined for a particular research study. As an example, to collect a mixture of data, researchers might distribute a survey that contains closed-ended questions to collect the numerical, or quantitative data and conduct an interview using open-ended questions to collect the narrative, or qualitative data.” (2007, p. 70). This was indeed the case of this research study when collecting the selected data.

Moreover, the goal of using the mixed-method approach is intended to draw from the strengths and minimize the weaknesses of the quantitative and qualitative research approaches (Johnson & Onwuegbuzie, 2004; Johnson *et al.*, 2007; Williams, 2007). Therefore, through this method, the author categorized words, sentences, themes, etc., when counting and making the correlation between the developed activities to the 17 SDGs (Henman, 2010; Purzer, 2013).

In this context, through the data collection, it was possible to quantify the occurrence of certain words, phrases, subjects, etc., contained in those data, and finally, it would lead to analyze the results. Yet, as highlighted previously, the mixed-method and the data collection gathered through time were dominated by the qualitative approach.

Furthermore, according to Johnson *et al.*, “the mixed methods research paradigm offers an important approach for generating important research questions and providing warranted answers to those questions. This type of research should be used when the nexus of contingencies in a situation, concerning one’s research question(s), suggests that mixed methods research is likely to provide superior research findings and outcomes” (2007, p. 129). In this sense, through this ambitious process, it was intended to find out more about the purposes, messages, effects, and impacts of the developed activities of the European UGGps. Also, by doing the correlation to each SDG, this research aimed to understand which contributions were direct or indirectly correlated with the 17 SDGs. This process would consider the possible contributions of the UGGps to the five pillars of the 2030 Agenda, based on the ‘Top 10 Focus Areas’. But especially, to understand if the UGGps could develop the total of the 17 SDGs, directly or indirectly,

instead of the 'Eight SDGs' selected by the IGGP and their corresponding targets. This process would also allow making inferences when analyzing the meaning and relationship of the words, sentences, subjects, etc., expressed in the four types of sources of the data collection. This was even more interesting, for instance, when analyzing the interviews, which allowed the author to better understand the intentions and targets, of the management structure of the Marble Arch Caves UGGp and the perception of the local inhabitants/stakeholders regarding the work developed in the field, by this transnational Geopark.

This work has followed the example given by Williams since this research study intended to “provide in-depth insight into a phenomenon (...). For that, it can be selected as a small but informative sample, e.g. interviews, which is typical of qualitative research. (...) It might also be used inferential statistics to quantify the results, which is typical of quantitative research, as strengths worthy of combining into a single research study” (2007, p. 70). Therefore, to obtain results to the three main questions of this research study, and if possible, to understand the reasons behind the identified activities and even some recognized problems, it was required a quantitative method when analyzing the data available in the sources that were used, but also a qualitative method to obtain even more details and then cross-checks the results obtained with the two methods. Consequently, by using a mixed-method, it brought the challenge to analyze so many data collection and to correlate the used sources with the 17 SDGs and at the end of this process to evaluate the results obtained. Thus, this combined methodology, as mentioned before, although resulting in a large number of data, would allow having the largest number of details on the effective contributions given by these UGGps, through their activities. This process could also allow having a sense of the real impact of all those outputs towards the achievement of the 17 SDGs.

Further, this type of methodology was also adapted to the research problem and enabled the analysis of the contributions, and the processes employed by the selected UGGps to the achievement of the 17 SDGs. In this context, according to Almalki, mixed-method research can be:

*“A suitable approach to any given project, its use would yield positive benefits, in that the use of different approaches has the potential to provide a greater depth and*

*breadth of information which is not possible utilizing singular approaches in isolation. Despite its time-consuming nature and the suspicion with which some quarters of academia still regard mixed methods research, it does afford opportunities for researchers to have an informed conversation or debate involving information that is generated by both quantitative and qualitative collection methods. Furthermore, evidence would suggest that, rather than restricting the opportunities for research by only utilizing either qualitative or quantitative methods, a mixed-methods approach provides researchers with greater scope to investigate (...) issues using both words and numbers, to benefit (...) society as a whole” (2016, p.288).*

Moreover, for Johnson *et al.*, “mixed research is a synthesis that includes ideas from qualitative and quantitative research” (2007, p. 113). Additionally, other authors state that a mixed-method study is one that plans fully juxtaposes or combines methods of different types (qualitative and quantitative) to provide a more elaborated understanding of the phenomenon of interest (including its context) and, as well, to gain greater confidence in the conclusions generated by the evaluation study (Green *et al.*, 1989; Johnson *et al.*, 2007).

In this context, Creswell *et al.* referred that this approach requires the “integration of qualitative and quantitative data and results to yield multi-dimensional, synergistic understandings of the phenomena of interest” (2011, p. 18). In this sense, the mixed-method enables one to have a greater degree of understanding of a specific study, instead of just a single approach. Therefore, with this method, it was possible to collect and analyze both qualitative and quantitative data in a progressive manner, integrating the two forms of data. Thus, this method, as highlighted by Lee & Greene “illuminates particular strands of the complex relationships” (2007, p. 366), in this case between the 17 SDGs and the activities developed by the selected UGGps.

In this context, these were the main guidelines that led to the selection of the mixed-method. Nevertheless, the author was conscious that this method would bring many difficulties and challenges.

Nevertheless, by having both quantitative and qualitative data, it was possible to do correlational research, allowing this way to further explanatory studies. Consequently, it is expected that this research study may generate new areas of research for future

researchers interested in the involvement and contribution of the UGGps to the 2030 Agenda and its SDGs, targets, and indicators.

This study was also based on non-experimental research. This type of research as referred to by several authors lacks the manipulation of an independent variable, random assignment of participants to conditions or orders of conditions, or both. (Sampieri *et al.*, 2006; Chiang *et al.*, 2015). So, rather than manipulating an independent variable, this study developed non-experimental research simply measuring variables as they naturally occurred based on the activities developed by the selected UGGps. Thus, in this non-experimental study, the activities were not built, they already existed and were described mainly in the PRs, but also other data sources. Subsequently, they were not intentionally caused by the author when analyzed and done the correlation to the 17 SDGs. In this context, the author had no direct control over the developed activities nor could they be influenced by the author, since they have already happened, as well as their effects (Sampieri *et al.*, 2006; Marques, 2012; Chiang *et al.*, 2015).

In this sense, the research, on one hand, focused on the analysis and evaluation of each of the activities developed by the selected European UGGps, especially described in the PRs. This choice aimed particularly to ensure comparability between those documents available online on the EGN website. On the other hand, it would also be possible to obtain more data through the analysis of the contents of a selection of abstracts. This would also able the author to compare the content of each abstract with the described activities in the PRs. Furthermore, it was possible to compare and cross-check all this information with the answers and data obtained from the questionnaires and with the interviews. According to these criteria, it was intended to eliminate results that could not be compared and to avoid inaccessible data.

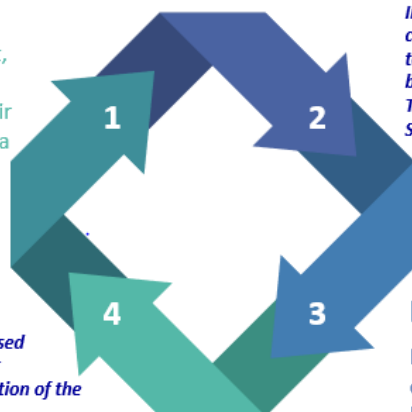
This process, as mentioned before, had a defined period related to the PRs, regarding 2015-2016. In this sense, it was based on a **transversal model**. Nevertheless, it was understood that it could also use other sources, such as the questionnaires (2017), and the interviews (2019) to understand the changes achieved overtime related to the 17 SDGs and the selected UGGps, using, in this case, a **longitudinal model** (Sampieri *et al.*, 2006) (Fig. 12). In this context, some data, such as the questionnaires fulfilled in 2017,



## Transversal Model

Data collection in a single moment, in a single time. Its objective is to describe variables and analyze their incidence and Interrelationship at a given moment.

*In this case, the author's interest also focused on the analysis of changes over time, after 2015 and 2016, regarding the implementation of the 17 SDGs among the selected 33 UGGps, and also within IGGP.*



*In this case, the research study refers to the contributions of the selected European UGGps to an event: the 2030 Agenda and its 17 SDGs, based first on the PR regarding 2015-2016. Then, correlating the obtained data to the 17 SDGs and the targets found more suitable.*

## Longitudinal Model

Research studies collecting data at different points, over time, to make Inferences about the changes, its causes, and its effects.

**Figure 12** – The models adopted in this research study according to Sampieri *et al.* (2006); © Elizabeth Silva.

the interviews made in 2019, as well as the UN, UNESCO, the EGN, and the GGN recent documents were also taken into account over time, until 2020, aiming this way to make inferences about the changes and their consequences regarding the activities of the selected UGGps. This was the case, for example, of the creation of the WG on SDGs by the GGN (Catana & Brilha, 2020), and its specific activities (since 2016). It was also considered the organized workshops during the international conferences (2018 and 2019), and the different reports on the 2030 Agenda by the UN, such as the 'Global Sustainable Development Report 2019: The Future is Now – Science for Achieving Sustainable Development' (United Nations, 2019a).

The units used in this research study were each of the 33 European UGGps. These were coded from 1 to 33. Then, based on the three research questions, it was also defined four '**units of meaning**' (Fig. 13):

- i) each sentence written in the Progress Report related to each developed activity;
- ii) each content of the abstracts presented by each selected UGGp in the two Conferences (Rokua, 2015, and English Riviera, 2016);
- iii) each question made in the questionnaire and also the chosen SDGs by the managers;
- iv) each selected card corresponding to each SDG picked by the interviewers, including the frequency of sentences/ words used by the interviewers to determine the chosen cards/SDGs.

**Figure 13** – The four 'units of meaning' of the research study; © Elizabeth Silva

All of these ‘units of meaning’ were also coded with numbers and/or capital letters, (according to the data under analysis), and then correlated with each SDG and its targets. In every single case, there was also a clear objective to determine the ranking of the SDGs obtained with each analysis and making the possible correlation to one or more SDGs, or even none, and comparing results between the different sources. Furthermore, the ‘Top 10 Focus Areas’ were the ‘set of categories’, since all of the 10 themes are the backbone of the UGGps concept. Each one of these 10 categories involved keywords that enable the accurate identification of the characteristics of the data collection and the 17 SDGs, allowing to make the correlation between them (Table 5).

**Table 5** – Correlation between the ‘Top Ten Focus Areas’ and the SDGs considering the identified keywords.

<b>‘Top Ten Focus Areas’</b>	<b>Correlated SDGs</b>
Natural Resources	SDG 2, SDG6, SDG 7, SDG 11, SDG 12, SDG 14, SDG 15
Geological Hazards	SDG 1, SDG 2, SDG 3, SDG 9, SDG 11, SDG 13
Climate Change	SDG 1, SDG 2, SDG 3, SDG 13, SDG 14, SDG 15, SDG 17
Education	SDG 4, SDG 12, SDG 13
Science	SDG 3, SDG 9, SDG 13, SDG 14, SDG 16, SDG 17
Culture	SDG 4, SDG 11, SDG 12
Women	SDG 1, SDG 2, SDG4, SDG 5, SDG 8
Sustainable Development	SDG 1, SDG 2, SDG 4, SDG 8, SDG 9, SDG 10, SDG 11, SDG 12, SDG 14, SDG 15, SDG 16, SDG 17
Local and Indigenous Knowledge	SDG 2, SDG 11, SDG 12, SDG 15
Geoconservation	SDG 11, SDG 13




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In this framework, it was recognized that each ‘Top 10 Focus Areas’ seemed to be correlated to the 17 SDGs. So, for example, when considering the category ‘Climate Change’, every ‘unit of meaning’ related to this subject (*e.g.* word, sentence/activity), would be correlated with SDG 13 - ‘Climate Action’ and its targets, but also with SDG 1 - ‘No Poverty’, SDG 2 - ‘Zero Hunger’, and SDG 3 - ‘Good Health and Well-Being’. Therefore, this process was based on selected targets established already by the UN, for each of the 17 SDGs. Yet, in this research study, the selection took into consideration





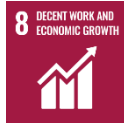


mainly the targets related to the UGGps concept, and especially those connected to the ‘Top 10 Focus Areas’, and the mainline of action of the IGGP.

In this context, the correlation between the developed activities and the 17 SDGs was done based on the most suitable targets of the 17 SDGs taking into consideration the core activity of the UGGps, based on the referred ‘Focus Areas’ and the ‘Geopark’ concept itself. As mentioned before, those ‘Focus Areas’ were the selected categories, and each category could be correlated to more than one SDG, depending on the targets already established by the UN. Consequently, when analyzing in-depth the 169 targets, it was possible to carefully choose more targets than those corresponding to the ‘Eight SDGs’ selected by the IGGP. In this sense, these were the targets selected, when analyzing the activities described in the PRs and the abstracts (Table 6).






**Table 6** - Selected targets of the 17 SDGs when correlating the activities described in the data collection. To give a clear idea of the added targets to those already selected by the IGGP, the ones selected by this Programme are marked in blue and with a cross.

SDGs	Targets	IGGP
	<p><b>1.5</b> By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social, and environmental shocks and disasters.</p> <p><b>1.a</b> Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programs and policies to end poverty in all its dimensions.</p>	X
	<p><b>2.3</b> By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists, and fishers, including through secure and equal access to land, other productive resources, and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.</p> <p><b>2.4</b> By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters, and that progressively improve land and soil quality.</p>	
	<p><b>3.4</b> By 2030, reduce by one-third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.</p> <p><b>3.9</b> By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination.</p>	




**Table 6 (cont.)** - Selected targets of the 17 SDGs when correlating the activities described in the data collection. To give a clear idea of the added targets to those already selected by the IGPP, the ones selected by this Programme are marked in blue and with a cross.

SDGs	Targets	IGGP
	<p><b>4.7</b> By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development.</p>	X
	<p><b>5.5</b> Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life.</p> <p><b>5.a</b> Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance, and natural resources, in accordance with national laws.</p>	X
	<p><b>6.5</b> By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate.</p> <p><b>6.6</b> By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers, and lakes.</p> <p><b>6.b</b> Support and strengthen the participation of local communities in improving water and sanitation management.</p>	
	<p><b>7.a</b> By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency, and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.</p>	
	<p><b>8.3</b> Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services.</p> <p><b>8.9</b> By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products.</p>	X
	<p><b>9.1</b> Develop quality, reliable, sustainable, and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.</p> <p><b>9.5</b> Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.</p>	
	<p><b>10.2</b> By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status.</p>	

**Table 6** (cont.)- Selected targets of the 17 SDGs when correlating the activities described in the data collection. To give a clear idea of the added targets to those already selected by the IGGP, the ones selected by this Programme are marked in blue and with a cross.

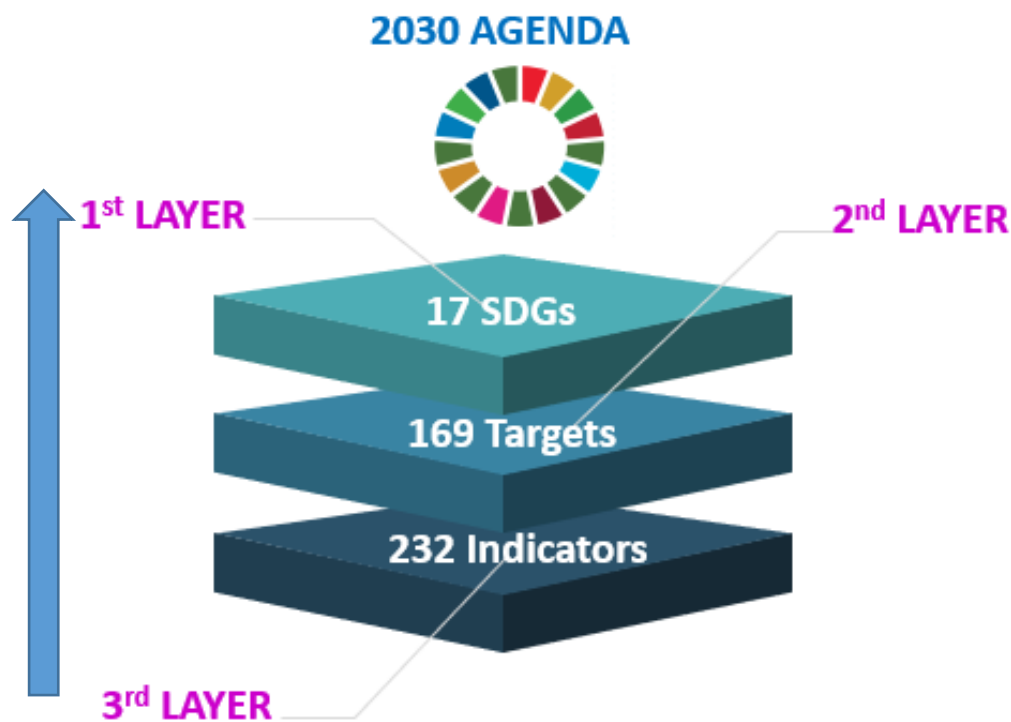
SDGs	Targets	IGGP
	11.4 Strengthen efforts to protect and safeguard the world’s cultural and natural heritage.	X
	11.7 By 2030, provide universal access to safe, inclusive, and accessible, green and public spaces, in particular for women and children, older persons, and persons with disabilities.	
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.	
	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.	X
	12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products.	X
	13.3 Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.	X
	13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in the least developed countries and small island developing States, including focusing on women, youth, and local and marginalized communities.	
	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.	
	14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience and take action for their restoration in order to achieve healthy and productive oceans.	
	14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.	
	14.a Increase scientific knowledge, develop research capacity, and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular, small island developing States and least developed countries	
	14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the UN Convention of the Law of the Sea, which provides the legal framework for the conservation and sustainable use of the oceans and their resources, as recalled in §158 of “The Future We Want”.	
	15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development.	
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.	

**Table 6** (cont.)- Selected targets of the 17 SDGs when correlating the activities described in the data collection. To give a clear idea of the added targets to those already selected by the IGGP, the ones selected by this Programme are marked in blue and with a cross.

SDGs	Targets	IGGP
	<b>15.9</b> By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies, and accounts.	
	<b>15.c</b> Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.	
	<b>16.10</b> Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements.	
	<b>16.b</b> Promote and enforce non-discriminatory laws and policies for sustainable development.	
	<b>17.6</b> Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology, and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.	X
	<b>17.9</b> Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South, and triangular cooperation.	X
	<b>17.14</b> Enhance policy coherence for sustainable development.	
	<b>17.16</b> Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.	X
	<b>17.17</b> Encourage and promote effective public, public-private, and civil society partnerships, building on the experience and resourcing strategies of partnerships.	

(Adapted from United Nations, 2015; UNESCO, 2016a)

Therefore, the data collection was analyzed based on the above-mentioned 41 selected targets (24,3% from the total 169 targets). However, besides these two particular sources, when reading other relevant and recent documentation about the UGGPs, such as the Self-Evaluation based on the ‘Evaluation Document – A’ and the Progress Evaluation ‘Evaluation Document - B’ (UNESCO, 2018c), it was understood that these documents had also different layers that had to be considered in this research study. Consequently, probably more targets could be identified also in the categories presented in these UGGPs documents. Therefore, when analyzing all these sources, it was recognized the three layers of the 2030 Agenda (Fig. 14).



**Figure 14** – The different layers of the 2030 Agenda; © Elizabeth Silva.

In this sense, the 2030 Agenda includes 17 SDGs (first layer), 169 targets (second layer), and 232 indicators (third layer). Bearing in mind this reality, it was recognized the need to make difficult choices since the analysis of all the gathered data was indeed a hugely time-consuming task.

Furthermore, due to the complexity of analyzing all the 17 SDGs and taking into consideration, as mentioned before, the 41 targets more suitable when making the correlation to the ‘Top 10 Focus Areas’, the ‘UGGp concept’ and the ‘line of action of the IGGP’, it had to be made difficult decisions. Consequently, when analyzing the gathered data, it was understood that there was a huge gap or even an effective major lack of data regarding the indicators. Although some of them could be empirically detected, it was not possible to collect feasible and concrete data from the sources and, therefore, to do the possible correlation between the activities of the UGGps and the indicators.

Nevertheless, even the experts from the ‘UN Sustainable Group’ stressed the same difficulty when highlighting that the scale of data required for the 2030 Agenda is unprecedented. Much work lies ahead to develop quality, accurate, open, timely, and

sufficiently disaggregated data and indicators to inform development policies and programming, monitor progress, and strengthen accountability and transparency at all levels. To meet demand, countries need to strengthen capacities to collect, integrate, analyze, communicate, and use data from multiple sources (United Nations, 2019b; UNSDG, 2019).

The same is required to the GGN and the IGGP, regarding the available data and the need to have more data in open access, when discussing the SDGs and the UGGPs role in this increasingly ambitious Agenda. Especial attention must be given to incorporate realistically and transparently the SDGs and their targets into the 'action plans' of the UGGPs and to have appropriate mechanisms to present the activities promoted by these UNESCO territories and their effective correlation to the 17 SDGs. Thus, it is still necessary to have also available data related to the impact of those activities, especially among the local communities, but also from local, national, and international levels.

These were the main reasons not to focus on the indicators, but to collect and analyze the data, based on the two first layers: the 17 SDGs and the selected 41 targets when considering the data available in the PR and the abstracts. This decision also took into consideration that the 2030 Agenda is still an on-going process. Through time, the UN continued to do adjustments, especially regarding the indicators. This is reflected in the 'Global Sustainable Development Report' of the UN, published in 2019 (United Nations, 2019a). In this report it is stated that the global indicator framework will be reviewed comprehensively by the Statistical Commission at its fifty-first session, to be held in March 2020. The 2020 comprehensive review will provide an opportunity to improve the indicator framework to advance the global monitoring of the SDGs (United Nations, 2019a). This means that the 2030 Agenda is still being revised through time, to have more accurate and realistic targets and indicators, so that the established goals can be achieved by all countries, 'leaving no one behind' (United Nations, 2015e, 2019a). This was already accepted by the UN, in 2017, when stating that "the 2030 Agenda enshrines the principle of monitoring development results, and elevates data and statistics as a development priority" (United Nations, 2019b). However, since the beginning of the creation of the 2030 Agenda, it was stressed that this Agenda "calls for follow-up and review processes to be rigorous and based on evidence, informed by



country-led evaluations and data which is high-quality, accessible, timely, reliable, and disaggregated by income, sex, age, race, ethnicity, migration status, disability, and geographic location and other characteristics relevant in national contexts” (United Nations, 2015).

Taking into account the above-mentioned reality, it was understood that the focus of this research study would be concentrated only on the 17 SDGs and the selected 41 targets, considered more suitable in the framework of the above-mentioned used sources.

In this framework, Hák *et al.* stated that “there are many SD indicators and indices already developed and new metrics will certainly yet appear. Some commentators speak about an obsession with numbers and an indicator explosion, others call for new and better indicators. Neither the scientific community nor the users know whether this remarkable worldwide effort should be more coordinated and regulated or if the survival of the fittest (indicator) strategy is still the most efficient one” (2016, p. 566). In this context, it was assumed that it was more suitable to find the ‘fittest targets’ during the data analysis.

#### ❖ Progress Reports (PRs)

After considering all these issues, at first, it seemed that the PRs could be the most pertinent source to analyze the developed activities and to correlate them with the 17 SDGs. Therefore, this research study started by analyzing the mentioned PRs, regarding the period 2015-2016. This period coincided with the first year of the implementation of the 2030 Agenda. In this sense, it was intended to verify which measures were taken by the UGGps, right from the start, to apply the 17 SDGs into their ‘plan of action’, but also based on a medium-long strategy to develop activities related to the SDGs until 2030.

The selected PRs were studied through the analysis of each activity developed by the UGGp management structure and, at the same time, making a direct or indirect correlation between that activity to each SDG. The correlation was done, taking into account the targets of the SDGs that could be achieved by the developed activity. Each

of the latter could also be correlated to more than one SDG or none. It was a complex and challenging task, but it was intended to reach feasible and useful results, as mentioned before.

Aiming to have a consistent analysis, in the **first phase**, it was used an Excel sheet for each of the three PRs sent to the EGN by the selected UGGps (Fig. 15):



**Figure 15** – The PRs analyzed regarding 2015-2016; © Elizabeth Silva.

This would allow understanding *per semester*, the total sum of developed activities, and the correlation between those activities and the 17 SDGs. It also provided information regarding the ranking of the referred SDGs *per semester*. However, it was recognized that it would be really useful, effective, and necessary for this research study to have one single Excel sheet containing all the data gathered from this source. Therefore, in the **second phase**, it was done the merge of the three PRs into one single Excel sheet. The structure of the Excel sheet for the PRs included the following criteria:

- Each UGGp had a code (e.g. the first UGGp analyzed 'Styrian Eisenwurzen UGGp' - PR1 would be the corresponding code). In this sense, each UGGp were coded from PR1 to PR33 (according to alphabetical order by country);
- Each UGGp was identified by its official name, country, and date of admission in the EGN;
- Each activity was given a number. This would allow quantifying the total of developed activities by each UGGp, in the corresponding time frame.

Through this process it was also possible to correlate the activity to one or more SDGs, or even none;

- If the activity could be correlated to an SDG, it was scored with 1 (one); if an activity could not be correlated with any SDG, it was scored with 0 (zero).

Through the analysis of each activity and correlating it with the 17 SDGs - bearing in mind the qualitative approach and the set of categories -, it was selected the SDGs and their corresponding targets that were directly or indirectly present in each activity mentioned in the PRs. In this context, each SDG was coded with 'capital letters' (*e.g.* SDG) and with its corresponding number (*e.g.* SDG 4), using the software Microsoft Excel™.

As mentioned previously, it was analyzed each sentence (unit of meaning) written in the PRs related to each developed activity and made the correlation to one or more, or none SDG. However, taking into account the three research questions and the five assumptions of this research study, and when analyzing the data of the PRs, it was understood that this was not sufficient to demonstrate that the UGGps could effectively contribute to the achievement of the 'Eight SDGs' selected by the IGGP. It was intended to demonstrate that these territories could contribute far more than those 'Eight SDGs', and if possible, to the entire 17 SDGs.

#### ❖ Abstracts

Consequently, the data collection involved the analysis of other sources, such as the abstracts of the two conferences organized in 2015 and 2016 (Fig. 16). In this case, the abstracts analyzed were just those that were presented in these two conferences, regarding the initiatives/activities developed in the 33 selected UGGps. It was expected that this source could complement the activities listed in the PRs. Each content of the abstracts was analyzed and done its correlation to the 17 SDGs, based on their corresponding targets. This was also another way to assess the contributions given by these European UGGps towards the achievement of the 17 SDGs. Therefore, it was analyzed each content (unit of meaning) of the abstracts and made the possible correlation to one or more, or none SDG, depending on the described activity.



**Figure 16** – The two conferences where it was presented the abstracts used in this research study; © Elizabeth Silva.

It was used the same method as for the PRs. So, in the **first phase**, it was created an Excel sheet for each conference. This would give the total number of abstracts presented *per year/conference*. In a **second phase**, it was done the merge of the two Excel sheets into one. This merge would allow quantifying the total number of abstracts presented by each UGGp and correlate the activities mentioned in this source to the 17 SDGs.

#### ❖ Questionnaires

The third source was a questionnaire produced on purpose (Annex 1) aimed to be fulfilled by the UGGps managers. In this sense, the author took the opportunity to request the fulfillment of the questionnaire during the 39<sup>th</sup> European Geoparks Meeting (Burren and Cliffs of Moher UGGp, Republic of Ireland), in March 2017 (Fig. 17).

It was expected to obtain more specific data and then cross-checked with the data collection previously gathered with the PRs and the abstracts. By doing this cross-check analysis, it would be possible to compare the selected SDGs chosen by the representatives with those obtained from the other two sources. This would also allow having the perception about the awareness of the managers regarding the 2030 Agenda, with the first two closed-questions:



**Figure 17** - Fulfilment of the questionnaire by the Head of the Geopark Group, Earth Science Officer of the Bakony-Balaton UGGp (Hungary); © Elizabeth Silva.

- 1. Are you aware of the 17 SDGs of the Agenda 2030 for Sustainable Development? (all SDGs; several SDGs; none SDGs);**
- 2. Do you consider that several of the activities developed by your UGGp in this time frame (2015-2016) can be already accounted for as a contribution to the 17 SDGs? (Yes / No).**

In the second part of the questionnaire, the managers had to choose three options ('very important'; 'relative important'; 'not important') regarding the 17 SDGs, when posing the following request:

- 1. Taking into account the progress reports since 2015, please choose the following options for each SDG in the activities developed by your UGGp.**

With this method, hopefully, the questionnaire would allow to gather also information regarding their personal choice around the 17 SDGs when thinking about the developed activities in the territories and provide the number of the chosen SDGs and their ranking.

#### ❖ Interviews

Besides the data collection already mentioned, the author had also the opportunity to do five interviews with elements of the staff of the Transnational UGGp Marble Arch

Caves (Republic of Ireland & United Kingdom of Great Britain and Northern Ireland), local inhabitants/stakeholders, in 2019. With this source, it was intended to obtain more relevant, complementary, and comparative data.

The author had the opportunity to visit this Transnational UGGp. It was a very positive occasion, due to the importance given by UNESCO, to these type of geoparks, as stated by the Organization (UNESCO, 2019a):

*“(...) In many cases, geological boundaries, shaped by rivers, mountain ranges, oceans, and deserts, do not follow the boundaries drawn by people. UGGps, too, do not always follow human-made borders. Some UGGps therefore naturally cross-national borders, connecting the peoples of different countries and encouraging intimate regional, cross-border cooperation. It is through this strong cross-border cooperation that transnational UGGps strengthen the relationship between countries and contribute to peacebuilding efforts. In 2008, the **Marble Arch Caves UGGp** expanded from Northern Ireland across the border into the Republic of Ireland, becoming the **world’s first transnational Global Geopark. Situated in a former conflict area, this UGGp is now seen as a global model for peacebuilding and community cohesion. UNESCO actively supports the creation of transnational UGGps – especially in regions of the world where there are none yet.**”*

Furthermore, since it was a cross-border UGGp it was considered a good opportunity to understand the perception of the interviewees regarding the effective contribution of this Geopark in peacebuilding efforts and community cohesion, as stated by UNESCO.

For these interviews, it was used the technique of ‘individual semi-structured interviews’ with open and closed questions applied to the five individuals to better understand the reasons that could exist behind the theme of this research study. In this context, the managers had to answer pre-formulated questions, with the same sequencing (Schmidt, 2004; Wolff, 2004). However, the interviews were conducted with relative flexibility, giving plenty of freedom of movement in the formulation of questions and answers, due to the level of knowledge of the majority of the interviewees regarding the 17 SDGs and the 2030 Agenda.

With the ‘semi-structured interview guide’, the author had a list of questions and topics that need to be covered during the conversation, usually in a particular order

(Cohen & Crabtree, 2006; Halcomband & Davidson, 2006). In this context, the interviewer followed the guide but was able to follow topical trajectories in the conversation that may stray from the guide when the author felt that this was appropriated (Cohen & Crabtree, 2006; Halcomband & Davidson, 2006). The author also expected that this method would provide a clear set of instructions for interviewers and reliable, comparable qualitative data, as stated by Cohen & Crabtree (2006, p.1). According to the same authors, this strategy would also “provide the opportunity for identifying new ways of seeing and understanding the topic at hand” (2006, p.1).

The author had the notion that it would not have a second chance to interview elements and local inhabitants/stakeholders from the Marble Arch Caves UGGp. So, it took this particular opportunity to collect more data, by conducting the interviews, which could provide other aspects not covered entirely by each PR, abstracts, and questionnaires.

It was also expected to compare the obtained data regarding the PR, abstracts, and questionnaire of this particular UGGp, with the answers given by the interviewees.

Thus, the comparison of the obtained outcomes would hopefully bring a new light about what is written, for instance, in the PRs and what is effectively felt by the local inhabitants regarding the developed activities and their impacts in the territory. Therefore, the interviews were done to obtain more detailed information about:

- i) the awareness and degree of knowledge of the interviewees regarding the 2030 Agenda and its 17 SDGs;*
- ii) which SDGs were more relevant for the staff team of this UGGp and the local inhabitants.*

The interviews were taped, transcribed, and analyzed, according to have reliable and valid results. In this sense, it was used the ‘verbatim transcription’. This is considered the most common form of transcription in qualitative interviews (Halcomband & Davidson, 2006; Clarke *et al.*, 2011; Eaton *et al.*, 2019; McGrath *et al.*, 2019). The ‘verbatim transcription’ refers to the word-for-word reproduction of verbal data, where the written words are an exact replication of the audio-recorded words (Poland 1995; McGrath *et al.*, 2019). However, Poland poses a very pertinent concern regarding this method, “(...) ensuring that transcripts are accurate may unreflexively conflate lived

experience of the one-on-one conversation with recorded speech (tapes), and this speech with the written word (transcript)” (1995, p. 291). As referred by the same author, this means that “many aspects of the interview context that are often not recorded on tape: looks, body postures, long silences, the physical setting, the way one dresses, and other factors affecting the tone of the interview” (1995, p. 291). Nevertheless, when transcribing all that it was said, as mentioned by McGrath *et al*, it was considered the “pauses, giggles, and other cues offered by the interviewee as markers for important events in the interview” (2019, p.3).

Moreover, during the interviews, the author also distributed to the interviewees **17 cards** (Annex 2), each one of them representing the 17 SDGs, with their specific logo, title, and subtitles (Fig. 18).



**Figure 18** - Example of one of the 17 cards distributed to the interviewees; © Elizabeth Silva.

The interviewees were free to pick the cards (SDGs) that they considered most important when considering the developed activities in the territory promoted by this UGGp. This allowed defining the activities held in the territory from the participant's point of view. However, the interviewees also picked the cards that they considered important for the improvement of their lives. Therefore, each chosen card was justified by the interviewees. This allowed perceiving other reasons behind the chosen cards (Fig. 19).





**Figure 19** - Interview with a local inhabitant/stakeholder of the Marble Arches Caves UGGp, Black Lion Market House; © Elizabeth Silva.

By choosing the cards with total freedom, allowed the interviewees to express their points of view on their terms. By doing so, the collected data brought not only a new light to the research study, but also revealed other possible topics to be explored in other research studies. Lastly, the interviews allowed also to observe and understand how the staff of this geopark comprehends the 'UGGp' concept and also how the local inhabitants/stakeholders do their interpretation of the referred concept.

#### ❖ **Types of computer software used to analyze the sources**

All the relevant data was compiled in the appropriate categories. In this sense, correlations between the data collection and the SDGs were computed, using different types of computer Software (Purzer, 2013). Consequently, as mentioned before, the PRs, abstracts, and questionnaires were registered in **Excel** sheets, following the defined codes and categories. In the case of the interviews, they were tape-recorded, transcript, and finally run through the **MAXQDA** computer Software, to obtain the relevant data. This type of method is usually used in qualitative and mixed-methods research so that

no detail can be lost (Fernández Álvarez, 2020). Thus, when the coding was completed, the collected data were examined to find patterns and trends, aiming that way to obtain feasible and reliable results to answer the three research questions. Additionally, it was possible to use some statistical analysis to find correlations or trends, discuss the interpretations of what the results obtained meant. It was also possible to make inferences about them, which in some cases affected the perceptions about the UGGps and their relationship with the 17 SDGs. Also as stated by Petti *et al.*, “(...) In fact, there is no common dataset associated with monitoring SDGs, and the field of heritage is extremely complex and diversified” (2020, p. 1). This is the case also for the UGGps, where there is a lack of a common dataset established to monitor the SDGs, and the field of work of the UGGps is also extremely complex and diversified and differs from country to country, and especially from continent to continent.

The author also used the Software ‘WordClouds.com’ to extract and count the words that were more repeated during the interviews. Through this process, it would be quite clear which words were more used by the interviewees, and therefore, to understand better their concerns and interpretation of the reality that surrounded them, allowing the author to do a qualitative interpretation of the gathered data.

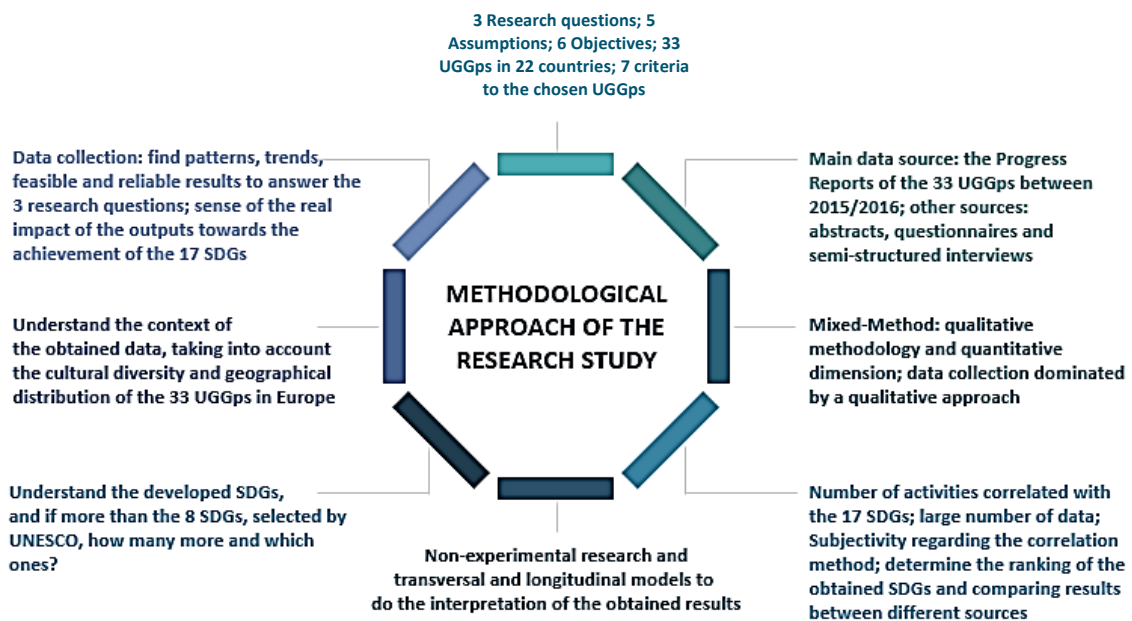
Taking into account the above-mentioned, it was chosen a data collection that seemed more suitable for this research study, considering the diversified field of work of the UGGps and the complexity behind it. But especially when trying to correlate their activities to the 17 SDGs and looking for solid results, through a cross-comparison of the selected sources. This was indeed a very hard and time-consuming task. However, as stated also by Petti *et al.*, it was assumed that “more research is needed in developing a robust correlation between national datasets and international targets” (2020, p. 1) when speaking about the SDGs of the 2030 Agenda.

The data collection and processing followed a systematic procedure, so that this method could be transparent and replicable by other researchers, but also looking for results with high reliability.

During the data analysis, it was intended to avoid being reductive and it followed the aspirational context of the SDGs. In this sense, it did not focus just on words or activities in isolation but on understanding the context of the obtained data, including

the cultural diversity existing between the selected European UGGps, since it involved 22 different countries. Nevertheless, once again this was done based on a qualitative approach when analyzing the data. So, this involved a certain level of subjectivity, due to the personal interpretation of the author. This was, as mentioned previously, one of the major identified problems of this research study.

When analyzing the four sources, according to Melo *et al.*, it was also understood that the “interpretative paradigm with a qualitative approach allows a greater degree of reflection since the qualitative approach is inserted when it requires the degree of subjectivity of the researcher” (2020, p.70). In this framework, when making the correlation between the developed activities and the 17 SDGs, it was recognized the referred degree of subjectivity in the applied method. However, it was decided to follow a structured and systematic procedure, to avoid issues related to the reliability and validity of the results and conclusions. In this sense, the methodological approach of this research study was based on several elements (Fig. 20):



**Figure 20** – The main elements of the methodological approach of this research study; © Elizabeth Silva.

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## CHAPTER III – UNESCO GLOBAL GEOPARKS: THE DEVELOPMENT OF A NEW UNESCO DESIGNATION

### 3.1 The ‘Geopark’ concept: a historical approach

Over the past 30 years, so much has been written and done around the ‘Geopark’ concept. It has already a long story, and many have tried to explain it, write about it, but over the years so much has been repeated by so many authors. Therefore, it is interesting to understand how the concept appeared and evolved. In the end, what matters is to see how this designation changed the way it is perceived the importance and value of the geological heritage that surrounds us. That leads to a holistic vision and the central pillar of a bottom-up approach, when speaking about ‘territorial management and local communities engagement’, as stressed in the UGGp concept nowadays (UNESCO, 2015a, 2015b):

*UNESCO Global Geoparks (UGGps) are single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development. A UGGp uses its geological heritage, in connection with all other aspects of the area’s natural and cultural heritage, to enhance awareness and understanding of key issues facing society, such as using our Earth’s resources sustainably, mitigating the effects of climate change, and reducing natural disaster-related risks. By raising awareness of the importance of the area’s geological heritage in history and society today, UGGps give people a sense of pride in their region and strengthen their identification with the area. The creation of innovative local enterprises, new jobs, and high-quality training courses is stimulated as new sources of revenue are generated through geotourism, while the geological resources of the area are protected.*

Through time, there have been many contributions and improvements related to the UGGps mission and vision. However, Patzak considered that the Global Geoparks functioned as a “laboratory of ideas, standard-setter, and clearinghouse for the dissemination and sharing of information on the Geoparks principles” (2010, p. 6). This was a clear statement on how Geoparks were seen by UNESCO, the importance given to their work, and especially seen as potentially powerful new tools for a new holistic

approach to nature conservation and sustainable economic development through geotourism (Missotten & Patzak, 2006; Eckhardt, 2010, 2012; Martini & Frey, 2010; Mc Keever & Zouros, 2010; Patzak, 2010, 2015; Mc Keever *et al.*, 2013). Taking this into account, this research study is intended to address the main milestones that led to the creation of such a visionary concept, in permanent evolution through times. Was it created in China, due to the amazing and countless geosites, and a strong link between people and nature? Was it brought to Europe? Or was it developed simultaneously in both parts of the world? Researchers from different countries, like China, Germany, France, or the United Kingdom, *i.a.*, saw the potential of the geological heritage not only to conserve it but, especially in a broader view, to better understand where we all came from. In this sense, it is important to know about our past on this Planet, to make the right decisions in the present, bearing in mind what we want to leave to the next generations, by protecting our environment, the natural resources, and the cultural linkages that were created by stones, rocks and fossils that shaped our own identity (Galopim de Carvalho, 1994; EGN, 2001; Frey *et al.*, 2001, 2006; Martini & Zouros, 2001; Patzak, 2003, 2005, 2011; Todorov & Wimbledon, 2004; Brilha & Sá, 2012; Wimbledon & Smith-Meyer, 2012; Hose, 2016; Sá & Silva, 2019).

### **3.1.1 The UNESCO Programmes for the protection of Nature and Culture**

At this point, it is important to remember that UNESCO is the only UN Organization that designates sites for protection and has a unique mandate to designate natural areas of significance for all humanity (Patzak, 2003, 2010; Badman & Mc Keever, 2006; Schaaf & Clamote, 2016; UNESCO, 2016a; Adiyaman *et al.*, 2018). In this context, to achieve a broader view of the evolution of the 'Geopark' concept, it is important to understand what has been discussed and approved at an international level and that contemplated, directly and indirectly, the natural heritage. For such, it is necessary to go back to the 1970s, when UNESCO seeks to assist the protection of the Planet's natural and cultural heritage. This was achieved through the **Man and Biosphere Intergovernmental Scientific Programme (MAB)**, approved in 1970. This was immediately substantiated and consolidated by the creation of the ***Convention concerning the Protection of the***

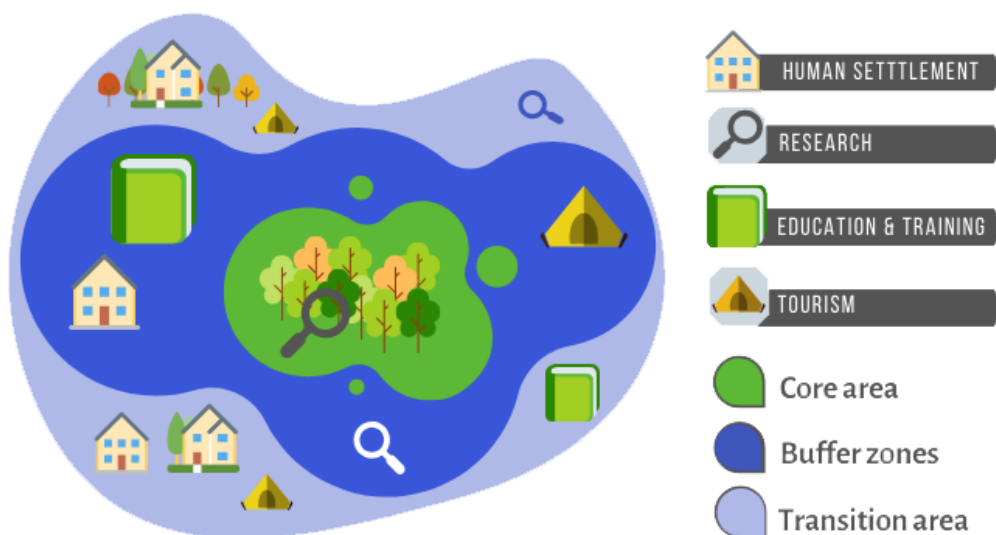
**World Cultural and Natural Heritage**, known as the **World Heritage Convention (WHC)**, and the scientific **International Geological Correlation Programme (IGCP)**, both created in 1972 (UNESCO, 1972a), as a real first step to protect and conserve natural sites of 'Outstanding Universal Value' (OUV) (Dingwall, 2000; Wimbledon *et al.*, 2000; Patzak, 2003; Dingwall *et al.*, 2005; Badman & Mc Keever, 2006; UNESCO, 2015c, 2019b; Schaaf & Clamote, 2016). Later, in 2015 it was created the **International Geoscience and Geoparks Programme (IGGP)**, based on two pillars under the same objective: the International Geoscience Programme, a legacy of the evolution of the International Geological Correlation Programme, which kept the IGCP logo and acronym, and the **UNESCO Global Geoparks (UGGps)** (UNESCO, 2015b, 2015g).

During the 1970s, the UNESCO scope was more targeted to biodiversity conservation and environmental issues. In this framework, the **Man and Biosphere Programme (MAB)** was approved during the 16<sup>th</sup> Session of the UNESCO General Conference in 1970. This Programme remains until today as an Intergovernmental Scientific Programme that aims to establish the scientific basis for the improvement of relationships between people and their environments (Nyhus & Adams, 1995; Dingwall, 2000; UNESCO, 2000a; Schaaf & Clamote, 2016; Brilha, 2018). This Programme, which coordinates the World Network of Biosphere Reserves, currently counts 701 sites in 124 countries (July 2020).

Since its creation, the MAB Programme has contributed to improving the management of the territories designated as Biosphere Reserves (BRs), on which it is combined the natural and social sciences, economics, and education, to improve human livelihoods and equitable sharing benefits and to safeguard natural and managed ecosystems. In this way, they have actively contributed to the promotion of innovative approaches to economic development that are socially and culturally appropriate, and environmentally sustainable (Batisse, 1985, 1997; Nyhus & Adams, 1995; UNESCO, 1988, 1996, 2001, 2008, 2019c; Dingwall, 2000; Price *et al.*, 2010; Schaaf & Clamote, 2016).

The BRs were created to promote solutions reconciling the conservation of biodiversity with its sustainable use (Nyhus & Adams, 1995; UNESCO, 1996, 2001, 2008, 2019c). Considered as '*science for sustainability support sites*', the BRs function as

interdisciplinary testing sites to understand and manage changes and interactions between social and ecological systems (Schaaf & Clamote, 2016). It is also important to remember that the BRs are sites established by the Member States, with the main goal to promote biodiversity conservation. They have a zonation pattern, divided into three areas: core area, buffer zone, and transition zone for the conservation of biodiversity and development (UNESCO, 2019a) (Fig. 21).



**Figure 21** - Zonation pattern of a Biosphere Reserve; © (UNESCO, 2019a).

Since the MAB's main objective is to contribute to biodiversity conservation and SD, based on local community efforts and sound science, geodiversity is not part of the MAB Programme focus.

On the other hand, as stated by Schaaf & Clamote, the idea of the creation of the WHC was due to an “international movement for the heritage protection that emerged after World War I” (2016. p. 15). This Convention emerged from two main concerns, being the first focusing on the preservation of cultural sites, and the second dealing with the conservation of nature.

In this sense, it is important to stress that the WHC already recognized how people interact with nature, and the fundamental need to preserve the balance between them both, and sets out that (UNESCO, 1972):



*"[...] By signing the Convention, each country pledges to conserve not only the World Heritage sites situated on its territory, but also to protect its national heritage. The States Parties are encouraged to integrate the protection of the cultural and natural heritage into regional planning programs, set up staff and services at their sites, undertake scientific and technical conservation research and adopt measures that give this heritage a function in the day-to-day life of the community."*

Furthermore, it is important to retain what was defined as 'natural heritage', stressed in Article 2 of this *Convention* (UNESCO, 2015d):

*Article 2*  
*For the purposes of this Convention, the following shall be considered as "natural heritage":*

- ***natural features** consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;*
- ***geological and physiographical formations** and precisely delineated areas which constitute the habitat of threatened species of **animals and plants of outstanding universal value** from the point of view of science or conservation;*
- ***natural sites** or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.*

This could be interpreted as a major step in the preservation of natural sites, of OUV. However, the geological and physiographical formations are mentioned based on the protection of habitats and threatened species of animals and plants of OUV. Thus, achieving these criteria it is required three distinct elements: site integrity, management plan, and fulfilling of the criteria (Dingwall, 2000; Wimbledon *et al.*, 2000; Dingwall *et al.*, 2005; Schaaf & Clamote, 2016). This may well be understood that it was not yet totally considered the geological heritage itself and the need for its protection and conservation, highlighting the sense of pride and engagement of the local communities around that particularly geological heritage (Firmino *et al.*, 2018a; Pásková, 2018; Sá & Silva, 2019). It was then a different scope and focus of the UGGps concept.

Taking into account the above mentioned, it is interesting to see how these types of natural sites have increased over the years when considering the number of World Heritage Sites (WHS), spread around the world. Until nowadays (July 2020), there are

1121 WHS (“properties”). This number is divided into 869 Cultural Sites, 213 Natural Sites, and 39 mixed Sites (Cultural and Natural Sites) (Table 7). This means that Natural Sites represent only about 23% of this list (IUCN, 2019). But why this huge difference between the number of Cultural Sites when compared with the number of Natural Sites, even including those that are mixed? Why this unbalanced number? Why since 1972, the number of Natural Sites is so low when compared with the Cultural Sites? What are the difficulties to become elected as a Natural Site? One of the reasons can be based on the established criteria of this Convention. In this context, it is important to recall that until the end of 2004, WHS were selected based on six cultural and four natural criteria (UNESCO, ICCROM, ICOMOS, and IUCN, 2011, 2012; Schaaf & Clamote, 2016; UNESCO, 2019b).

**Table 7** – Number of WH Sites until July 2020.

States Parties that ratified the WHC	167
Total of ‘Properties’/WH Sites	1121
Transboundary WH Sites	39
Delisted WH Sites	2
In Danger WH Sites	53
Cultural WH Sites	<b>869</b>
Natural WH Sites	<b>213</b>
Mixed WH Sites	<b>39</b>

(Adapted from UNESCO, 2019b)

With the adoption of the revised Operational Guidelines for the Implementation of the WHC, only one set of 10 criteria exists nowadays (UNESCO, 2019b) (Table 8).

**Table 8** – Ten criteria of the Operational Guidelines for the implementation of the WHC.

<p><b>Selection criteria:</b></p> <p>(i) to represent a masterpiece of human creative genius;</p> <p>(ii) to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design;</p> <p>(iii) to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living, or which has disappeared;</p> <p>(iv) to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history;</p> <p>(v) to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;</p> <p>(vi) to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria);</p> <p><b>(vii) to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;</b></p> <p><b>(viii) to be outstanding examples representing major stages of Earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features;</b></p> <p>(ix) to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;</p> <p>(x) to contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.</p>
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(Adapted UNESCO, 2019b)

From 1972 until 2004, this Convention had already four natural criteria, that were by now aligned with the concern around the protection and conservation of geological heritage but related, as mentioned before, with the habitat of threatened species of animals and plants of OUV. However, it is stated that the Convention is not intended to ensure the protection of all properties of great interest, importance, or value, but only for a selected list of the most outstanding of these from an international viewpoint (Wimbledon *et al.*, 2000; Patzak, 2003; Gray, 2004; Schaaf & Clamote, 2016, UNESCO, 2019b). Thus, in 1992 it took into consideration “the protection, management, authenticity and integrity of properties” and also the “significant interactions between people and the natural environment” which had also been “recognized as cultural landscapes” (UNESCO, 2019b).

Through the years, the Operational Guidelines of this Convention were also adapted by State Parties, to be updated and to be more aligned especially with the

environmental reality on which we were living. So, for example between 2002 and 2005, although the Cultural Criteria remain the same, the Natural Criteria changed as described (Table 9).

**Table 9** – Main changes of the Operational Guidelines of the WHC *per* year regarding the Natural Criteria.

Operational Guidelines (year):	Natural criteria:			
2002	(i)	(ii)	(iii)	(iv)
2005	(viii)	(ix)	(vii)	(x)

(Adapted UNESCO, 2015c)

However, this change had few impacts on the WHS inscribed solely for their geological heritage. In this sense, it could be assumed that there was an apparent under-representation of Earth Sciences in the selection of WHS (Patzak, 2003; Gray, 2004; Mc Keever *et al.*, 2013). Nevertheless, in the case of the UGGps, they are defined as territories where they first need to demonstrate the existence of a geological heritage based in sites and landscapes of international geological significance (Patzak, 2003, 2005, 2011, 2015; Gray, 2004; Zouros, 2004, 2006, 2007, 2010, 2011, 2012, 2015; Mc Keever & Zouros, 2005, 2010, 2011; Mc Keever, 2013; Missotten & Patzak, 2006; Sá *et al.*, 2009, 2010, 2012, 2015, 2017; Mc Keever *et al.*, 2010, 2013; Silva *et al.*, 2011, 2014b, 2015, 2016, 2018a, 2018b, 2019; Silva & Sá, 2013, 2016, 2018; Sá, 2017; GGN, 2018b; Pásková & Zelenka, 2018; and references therein).

Another important difference is that the WHC requires total protection of the site, but in the case of the UGGps, it is required only the protection of the geosites. Thus, recalling criterion *viii*) of the Convention, “[...]to be outstanding examples representing major stages of Earth’s history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features”. This criterion could lead to the understanding that WHS would also cover the *Memory of the Earth* and, therefore, could be understood as having a basic pillar regarding the conservation and protection of the geological heritage. Nevertheless, few WHS are inscribed in the List of the WH under these particular criteria. For example, to the reviewers of the IUCN are asked to provide a considered judgment on whether the nominated site meets the Natural WH Criteria (criteria vii, viii, ix, and x).

In effect, during the evaluation process, the '*Global Significance*' only includes the Natural features, geological and physiographical formations, and Natural Sites that are unique and are not duplicated or surpassed anywhere in the world (UNESCO, ICCROM, ICOMOS, and IUCN, 2011, 2012). This interpretation can be explained by the main scope of the IUCN, giving special attention to biodiversity rather than to geodiversity, when dealing with the selection of nominations. In fact, since 2005, IUCN is recognized as the technical Advisory Body on nature to the WHC and established the global framework for the application of the Earth Science Criterion for World Heritage (Dingwall, 2000; Gray, 2004; Dingwall *et al.*, 2005; Larwood *et al.*, 2013).

Throughout the years, it was also recognized that the criteria of OUV were often not appropriated to sites of geological interest. This means that some geological and geomorphological occurrences, even though their national or regional significance would not be suitable for WH inscription because they do not meet the referred OUV or satisfy the required conditions of integrity or management (Dingwall *et al.*, 2005; UNESCO, 2008b). However, over time it was created a thematic strategy for increasing the number of geological sites on the WH List. This could be related to the way geoconservation has been perceived over time. Indeed, geoconservation and geodiversity still struggle to guarantee an identical level of recognition, at the geographical, social, and political level, identical to the support and values attributed to the conservation of biodiversity and cultural heritage. A justification for this lack of recognition is the fact that geological heritage is not viewed as threatened at the same level that biodiversity or cultural heritage (Carrerras & Druguet, 2000; Prosser *et al.*, 2011; Larwood *et al.*, 2013). Thus, IUCN defined 'Nature' by including both biotic and abiotic aspects of the natural environment and is therefore inclusive of geodiversity, as emphasized by IUCN in their guidelines on protected area management (Badman & Mc Keever, 2006; UNESCO, ICCROM, ICOMOS, and IUCN, 2011, 2012; Larwood *et al.*, 2013).

Furthermore, the distinction made by the IUCN between Cultural and Natural Heritage appears to be an ineffective dichotomy, especially for geoconservation. For this reason, some experts consider that the recognition of geological heritage as a new listable category, being this recognition associated with geoparks (UNESCO Earth-

Sciences Division) and geosites (IUGS) (Carreras & Druguet, 2000; Gray, 2004; Prosser, 2013; Larwood *et al.*, 2013).

Although UNESCO is the only UN Agency with a mandate to support research and capacity in Geology and Geophysics and claims that Geoscience is its flagship (Adiyaman *et al.*, 2018; UNESCO, 2019c), there was a huge gap in international visibility and recognition between the development of the MAB Programme and the WHC, when compared with the work done by the IGCP.

The IGCP, as mentioned before, was approved in 1972, resulting from a joint venture between UNESCO and the International Union of Geological Sciences (IUGS). In its early years, the IGCP was strongly focused on (UNESCO, 1972b):

*“(...) Research and training and to foster the synthesis of knowledge in the Earth Sciences and the related natural hazards, and in particular: a) to promote scientific studies of geological, geomorphological, geochemical and geophysical problems relating to the exploration of mineral resources and the preparation and publication of small-scale Earth-Sciences maps; b) to promote research in geophysical phenomena underlying natural hazards and scientific studies aimed at the more accurate location, prediction and assessment of natural hazards related to the Earth Sciences, and at the elaboration of effective means of protection; c) to encourage and assist the Member States in research and training specialists and technicians for the above-mentioned objectives.”*

According to Turner, the IGCP was to be “a scientific research program aimed not only at understanding the workings and history of the Planet but also at improving man’s environment and the search for natural resources” (2006, p. 297). In this context, IGCP work was based on projects led by geoscientists, spread around the world, and working on common research, in many areas of Geosciences. Nevertheless, the results of such projects would often stay only in the particular sphere of work of the involved geoscientists and the acquired knowledge would remain in this restricted circle without any other impact, regarding the awareness of society for many of the achievements of those projects (Turner, 2006; Adiyaman *et al.*, 2018; Heirman & Lopes, 2019). However, during the 32<sup>nd</sup> Session of the General Conference of UNESCO, in 2003, it was approved an ‘Amendment to the Statutes of IGCP’, which was due to the discussions during the

29<sup>th</sup> session of the Scientific Board of IGCP who decided, after several years of discussion (UNESCO, 2003b):

*“[...] the Program should be renamed the ‘International Geosciences Program’, thus providing a better reflection of its current nature and purpose at the start of the twenty-first century. The Scientific Board recognized the desirability of retaining the historic, widely known, and respected acronym ‘IGCP’ and logo (Fig. 22), together with its slightly amended subtitle ‘Earth Science in the Service of Society’”.*

The referred Amendment was based on the new commitment adopted under the recommendations of the Agenda 21, approved at the UN Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, in 1992 (United Nations, 1992a) and at the Earth Summit+5, in New York, in 1997.



**Figure 22** - Acronym and logo of the IGCP; (UNESCO, 2019c).

Greater emphasis was placed on those project proposals aiming at serving the scientific needs of society by, for example, focusing on societal and cultural issues, risk mitigation of natural hazards, population growth, and increasing demand for resources and energy. More recently, in 2015, it was agreed the need to give more visibility and promotion to the IGCP strategy and action. However, all these efforts and changes were not enough to raise this Scientific Programme to the same level of public recognition as MAB and WHC. Why was this happening? If the main objectives were related to issues as described ‘aiming at serving the scientific needs of society by, for example, focusing on societal and cultural issues’, why the low visibility and therefore the low budget given to this Programme by UNESCO? It seemed that not only society, in general, did not know about the achievements obtained with the IGCP projects, but especially the Member States were not aware of those projects and their results and true impacts. The efforts

to put in the center of this Programme the motto '*Earth Science in the Service of Society*', in 2003, was still far from giving the necessary awareness to the importance of Earth Sciences, and therefore the budget of UNESCO for IGCP has been severely cut. In this sense, as referred by Turner, "already at the begging of the take-off of this important Scientific Programme, there was the main problem: lack of money" (2006, p. 303). However, through this Programme, thousands of geologists were cooperating all over the globe. More importantly, this includes people from developing and southern hemisphere countries, who had mostly been excluded from the 19<sup>th</sup> and 20<sup>th</sup> centuries science (Turner, 2006).

The scope of IGCP was not particularly focused on the importance of geoconservation, and the need to protect and conserve the geological heritage for future generations, especially the one that has international significance. In fact, IGCP did not cover the important role of protecting geodiversity, which means that it was not considering the protection of features of direct scientific or inspirational value to humans and also to maintain the natural ecological processes which are essential for most nature conservation concerns (Komoo, 2003, 2005; Komoo & Patzak, 2008).

### **3.1.2 The 'Geopark' concept: from its birth to the creation of the European Geoparks Network (EGN)**

The birth of the 'Geopark' concept could be placed in China, in April 1985, when it was established in Beijing the **Chinese Academy of Tourism Earth-science and Geopark Research**. This is the earliest use of the wording '*Geopark*' found in the bibliography. Following the creation of this institution, through the research done by its scientists, it was created the designation of '*Earth-Science Park*' (Chen *et al.*, 2015). In effect, this could be considered the first step to reach the 'Geopark' concept in the late 1980s in China. It seemed that the beginning of the path that led to the appearance of the 'Geopark' concept was connected to the outstanding geological features of the Zhangjiajie National Forest Park. In effect, these amazing landforms, which captured even the attention of the film director James Cameron for the movie 'Avatar' (produced in 2009), are characterized by remarkable sandstone columns in the core zone of Wulingyuan. It was in this scenario that in November 1985 it was organized the



Conference on Geo-based Natural Heritage Reserves, where the participating delegates proposed to the Chinese Ministry of Geo-mining Industry the creation of the **Wulingyuan National Geopark** (Chen *et al.*, 2015). This was a very important milestone as well as when discussing all the movements that lead to the UGGps nowadays.

Along with these discussions in China, on the other hand in Europe, in 1988, it was created the 'First European WG on Earth Science Conservation' that would lead to the creation of the 'European Association for the Conservation of Geological Heritage', known by the acronym ProGEO (Wimbledon & Smith-Meyer, 2012; Larwood *et al.*, 2013; Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018). This Organization would also have an important role in the Geoparks movement.

Later, in 1989, once again the concept of 'Geopark' appears. This time it was related to the development of the District of Gerolstein, in Germany. In fact, at that date it was created the **Gerolstein District Geopark** to fulfill three requirements (Bitschene & Schüller 2006; Bitschene, 2015; Brilha, 2018):

1. *Protect geosites in general and especially famous fossil-bearing sites;*
2. *Attract visitors to geologically outstanding sites fostering geotourism;*
3. *Provide additional economic stimulus to the public.*

In this context, 'national geoparks' have been promoted in Germany since the beginning of the 1990s, especially in the Vulkaneifel region, situated in central-western Germany, due to the focus of intensive geological investigations and geotourism (Frey, 2001a, 2001b; Frey *et al.*, 2001, 2006; Bitschene & Schüller 2006; Bitschene, 2015).

The creation of 'national geoparks' was a direct result of geological public relations work. This led to the development in the Eifel region of a new tourism sector called 'geotourism' (Frey, 2001; Frey *et al.*, 2001). It was due to this new reality that Germany's first 'geo-trails' were developed in this area. In effect, the very first steps towards a 'geopark' were taken in Gerolstein County right in the heart of the Vulkaneifel region (Frey, 2001b; Frey *et al.*, 2001; Bitschene & Schüller, 2006; Frey *et al.*, 2006).

Comparing both realities, the Chinese 'geosite nature reserves', which would become later known as 'national geoparks', and the German strategy, using the word 'geopark', there was a bridge between both ideas: protection of the geological heritage

(geosites/geotopes) but using them as an attraction for the local communities and foreign visitors, as a way to develop the local economy.

Due to the work carried on in the creation of the 'German National Geoparks', it is relevant to note that in 2000 the 'Gerolstein District Geopark' was enlarged to become the Vulkaneifel European Geopark (Frey, 2001b; Bitschene & Schüller 2006; Frey *et al.*, 2006) and one of the founders of the EGN.

Going back to 1989, it is important to recall also a relevant UNESCO Document (SC-89/CONF.004/INF.4), approved during the 13<sup>th</sup> Session of the WH Committee (UNESCO, 1989). This document states that UNESCO, IUGS, and IUCN had been working towards a proposal for a 'Global Indicative List of Geological Sites' (GILGES), to provide UNESCO with a list of geoheritage candidate sites, which had the potential to meet the WH criteria (UNESCO, 1989; Wimbledon 1996; Wimbledon *et al.*, 2000; Gray, 2004; Erikstad, 2008; Brilha, 2018; Du & Girault, 2018). The main purpose of GILGES was to make lists of WH candidates of geological origin and was later transformed into the 'GEOSITE project', which was started as an IUGS initiative. The main goal of this project was to make international listings of sites with high international values-based and selected from national inventories and lists through scientific comparisons between the candidates (Gray, 2004; Erikstad, 2008). Nevertheless, this project was left behind because IUGS withdrew its support to it (Du & Girault, 2018).

Another major milestone in this path towards the consolidation of the 'Geopark' concept took place in Digne-les-Bains, France, in 1991. It was the 1<sup>st</sup> International Symposium on the Conservation of the Geological Heritage, which led to the approval of the *Digne-les-Bains Declaration*, commonly known as the *Declaration of the Rights of the Memory of the Earth* (Martini, 1994a, 1994b, 2003; Alexandrowicz & Kozlowsky, 1999; Wimbledon *et al.*, 1999; Dingwall, 2000; Xun & Milly, 2002; Zouros & Martini, 2003; Gray, 2004; Erikstad, 2008; Jones, 2008; Martini & Frey, 2010; Zouros, 2010; Hose *et al.*, 2011, 2012; Brilha, 2012, 2018; Wimbledon *et al.*, 2012; Larwood *et al.*, 2013; González-Tejada *et al.*, 2017; Du & Girault, 2018). In this context, it is also relevant to make a parallel regarding the designation of 'Haute-Provence National Geological Nature Reserve', with the Chinese concept of 'geosite nature reserves' that later led to the appearance of the 'Geopark' concept in China. On both ideas, the geological heritage

is the central attraction, and where the main pillar of SD of these territories is geotourism. The same situation is also mentioned regarding the pilot project of the 'Gerolstein District Geopark', in Germany. As a consequence, in the early 1990s, the geoconservation movement gained new energy and dynamic, with all these discussions and the development of pilot projects around this issue (Alexandrowicz & Kozlowsky, 1999; Wimbledon *et al.*, 2000; Erikstad, 2008; Posser, 2013). These led to many events that open the way for a progressive consolidation of the UGGps concept. One of these events was the 2<sup>nd</sup> Conference on Geological and Landscape Conservation, held in Malvern, UK, in July 1993, which represented a big step forward since its proceedings had an international impact (Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018). During this event, it was stressed that there was a need for an '*International Earth Science Conservation Convention*'. It was also recognized that the justification for potential scope and objectives of such a convention should be examined in-depth, and supported the establishment of an international task force that would pursue, and report back, on these proposals (O'Halloran *et al.*, 1994; UNESCO, 1996b; Erikstad, 2008). This led to the *Malvern Resolution*, which is considered as a brief action plan, clearly calling to expedite the creation of an *International Organization for Earth Science Conservation* which would, on formation, take over the functions of the Task Force (Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018).

Posteriorly, in 1995, the Chinese Ministry of Geo-mining Industry classified Geoparks "as a form of geosites reserves in the Regulation on the Protection of Geosites". In this context, Zhao & Zhao (2003) explained that for the first time in China the conservation of geosites was proposed in the form of ministerial regulations. They also stated that according to the referred regulations, the establishment of 'geoparks' was the perfect tool to guarantee the protection and conservation of geosites. Although China implemented these guidelines, it is important to highlight that still none of the 86 'geosite nature reserves' were designated as 'geoparks' by the end of 1999 (Zhao & Zhao, 2003; Chen *et al.*, 2015; Ding *et al.*, 2020). However, only in September 2000, it was created the 'Chinese National Geoparks Network', composed of 11 geoparks and involving 13 local governments, with the notion that the 'Chinese national geoparks' were, at that time, a tool for the protection of geosites (Gray, 2004; Chen *et al.*, 2015).

In 1996, also in China, another important milestone took place in this process. It was the organization of the 30<sup>th</sup> International Geological Congress. For some authors, the discussions during this event led in fact to the notion of the 'Geopark' concept and its dispersion worldwide. During this Congress, the UNESCO Division of Earth-Sciences and the IUGS together proposed to build a 'Global Geopark Initiative', to protect our global geological heritage, and the term 'Geopark' was suggested (Chen *et al.*, 2015). The initiative immediately attracted more than 30 supporters including China. Other authors, like Zhao & Zhao (2003), Mc Keever & Zouros (2005), or Du & Girault (2018), also reiterate that the 'Geopark' concept was indeed proposed during this event. These authors justify such a statement because they believed that the creation of the 'Geopark' concept would:

*"[...] fill the gaps in the WH Programme and bypass obstacles to the advancement of geoprotection, namely insufficient finance, insufficient recognition of IUGS's Global Geosites Programme, which seldom succeeded in obtaining the attention of member Governments, and at the last the strict protection concept which deprived local populations of their rightful access to natural resources, leading to poor cooperation and sometimes even opposition, occasionally resulting in increased destruction of geosites."*

In continuity, in Merida (Yucatan, México), it was held in September 1996 the 20<sup>th</sup> Session of the World Heritage Committee. During this event, it took place an important discussion around the concern related to the conservation of the geological heritage. It was presented the *Report of Expert Meeting on geological and fossil sites*, which workshop was held in the above mentioned 30<sup>th</sup> International Geological Congress. As stated in this report (WHC-96/CONF.201/INF.10), the experts recommended (UNESCO, 1996b):

- 1. That the World Heritage Committee encourages States Parties to the Convention to prepare inventories of their national geological heritage, and further to consider identifying from these inventories sites for national tentative lists for World Heritage;*

2. *That IUGS, through the Global Geosite Working Group, makes a first assessment of the values of these sites and compiles a global comparative inventory and database;*
3. *Invited IUCN to cooperate closely with IUGS and other NGOs as appropriate for further evaluation of sites proposed for World Heritage listing;*

It was also presented the possibility of establishing an ‘*International Geosite Reserve Programme*’ under the auspices of IGCP (UNESCO, 1996b). This proposal could be also interpreted as the first early seed of the ‘Geopark’ concept that would lead to the UNESCO Programme that would coordinate the UGGps, almost 20 years ahead. In this proposal, it was stated that (UNESCO, 1996b):

*“A World Network of Geosite Reserves could be established like the UNESCO Man and the Biosphere Programme. The Seville Strategy on Biosphere Reserves of March 1995 was noted, and it was agreed that the same principles could apply to Geosites Reserves. They could also serve a variety of purposes including sustainable management of natural resources, protection, education, training, and research. Such a global system of Geosphere Reserves could serve as a recognition of an internationally important suite of geological sites at a level beneath the WHS.”*

It was also discussed a possible strategic and thematic basis for international recognition of geological sites. For this, “Time (geological history) was noted as fundamental, and stratigraphy is another possible unifying theme. Plate tectonics had previously been suggested as a suitable strategic element” (UNESCO, 1996b).

The first reference in a scientific paper to the wording ‘Geopark’ in the framework of UNESCO was done by Patzak & Eder (1998). In this scientific article, later on, republished in its essence by Eder (1999), through this new designation, it was written that UNESCO promotes the creation of a ‘world network of natural parks’ with significant geological features, labeled as ‘UNESCO Geopark’, with the dual objective of conserving a healthy environment and enhancing socio-economic development. There is also the curiosity that a logo was even presented in this work, which, with minor changes, is the one used currently by the UGGps.

At that time, there was already a set of ideas and assumptions that allowed establishing connections to the definition of the UGGps, in terms of linking the Earth

history, its geological and intangible heritage, and the involvement of local communities, traditions, and crafts, to create a direct or indirect income to these essentially rural territories (Martini, 2000). There was also a strong international recognition of the importance of geoconservation. This was visible both in terms of greater use of existing international conservation instruments, as well as in the development of new ones, aiming at the creation and promotion of a global network of significant geological sites (Dingwall, 2000). These international conservation instruments were, for instance, the BRs (1971), the Ramsar Convention<sup>1</sup> (1971), the WHC (1972), and the Antarctic Treaty<sup>2</sup> (1991). So, according to Dingwall there was already raising a movement “to further strengthen the geological conservation achieved under the BRs and WH Programmes, and UNESCO was considering the establishment of a global series of Geoparks” (2000, p. 24). In this context, it is worthwhile to highlight the statement of Dingwall who stressed that “Geoparks would be dedicated areas under national sovereignty, enclosing features of especial geological significance, rarity or beauty, and representative of a region’s geological history and the events and processes which formed it. Derived benefits would include research, environmental education, and socio-economic development.” (2000, p. 24)

In this path to the UNESCO recognition of the UGGps, Komoo & Patzak referred during the 29<sup>th</sup> Session of the UNESCO’s General Conference, held in 1997, that “it was approved an initiative to promote a ‘Global Network of Geosites’ having special geological features to be actively nurtured as a vehicle to encourage conservation and geoheritage promotion globally” (2008, p. 4). However, as far it was possible to understand from the research now carried out, this only happened in April 1999, during the 156<sup>th</sup> Session of the Executive Board of UNESCO, where it was included the *item* 3.3.4 of the Provisional Agenda - “UNESCO Geoparks Programme – a New Initiative to Promote a Global Network of Geoparks Safeguarding and Developing Selected Areas Having Significant Geological Features” (Document 156 EX/11, 15 April 1999) (UNESCO, 1999a, Jones, 2008). Following the above-mentioned Executive Board, it took place the

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<sup>1</sup> Convention on Wetlands of International Importance especially as Waterfowl Habitat, 2<sup>nd</sup> February 1971, 996 U.N.T.S. 242 (UNESCO), Ramsar.

<sup>2</sup> Protocol on Environment Protection to the Antarctic Treaty, October 4<sup>th</sup>, 1991, 2941 U.N.T.S.5778 (United Nations, Madrid).

30<sup>th</sup> Session of the General Conference of UNESCO. In the records then produced, the Geoparks issue was mentioned on four occasions (UNESCO, 1999b):

“ (...)

*§ 12.15. On the question of program concentration, the Board felt the need to avoid duplication with existing programs and the fragmentation of programs in terms of both program content and budgeting approach. As regards the proposed world network of **geoparks**, the first question to be answered is whether this new project should come under the Man and the Biosphere program or be run by the World Heritage Centre. The issue is still under consideration;*

(...)

*§ 37.13. Another new area for action would be the establishment of **geoparks** – an interesting and promising approach that would take us much further back into the past and into the history of our earth than other programs;*

(...)

*§ 41.15. The Commission then turned to Subprogramme II.2.1, Earth sciences, Earth system management, and natural disaster reduction. (...) Several delegates referred to the **geopark** initiative either in a supportive or critical manner. Others referred to the decision of the Executive Board that the proposal to launch a **geoparks** program will be examined by the Board based on the results of a feasibility study involving IGCP, MAB, and the World Heritage Centre.”*

In this context and regarding the preparation of the feasibility study on a ‘UNESCO Geoparks Programme’, during the 160<sup>th</sup> Session of the Executive Board of UNESCO (Provisional Agenda *item 3.3.1. - Report by the Director-General on the Feasibility Study on Developing a UNESCO Geosites Geoparks Programme*) (18 August 2000), it was reported the main conclusions of the study (UNESCO, 2000b) stating:

*“(...) it is considered that “hosting” geoparks as an activity within the World Network of Biosphere Reserves of the MAB Programme would offer the most appropriate mechanism for strengthening geological heritage conservation in UNESCO’s programs (...).”*

This meant that ‘Geoparks seal of excellence’ should be within the World Network of BRs of the MAB Programme, implemented mainly through extra-budgetary funds. This was reinforced by UNESCO, and it was requested to the MAB International Coordination Council, at its 16<sup>th</sup> Session, in November 2000, to examine the recommendation of the feasibility study as part of its agenda and stressing that all of this should be done with extrabudgetary sources (UNESCO, 2000b). This study comprised an evaluation of the need for a new initiative by UNESCO to promote a ‘global network of geoparks’, as well as examine how such geoparks initiative could be related to other relevant UNESCO programs. However, the feasibility study recommended that geoparks activity (UNESCO, 2000b):

- (a) should not be launched as a separate program;*
- (b) should not be launched under the IGCP;*
- (c) should not be included under the WHC which covers geological sites only if they are of OUV;*
- (d) should be integrated into the World Network of BRs / MAB Programme, through developing a “Geoparks seal of excellence”.*

Nevertheless, in the Final Report of the 16<sup>th</sup> Session of the International Coordinating Council of the MAB Programme, which took place in Paris from 7<sup>th</sup> to 10<sup>th</sup> November 2000, the Director of the Earth Sciences of UNESCO (W. Eder), presented the following statement (UNESCO, 2000a):

*“(...) doubts were raised about the advisability of making such activity an integral part of the function of the World Network of Biosphere Reserves. (...) some Council members feared that this additional administrative and financial task imposed on the Secretariat would **burden** the management of MAB; (...) MAB National Committees **lacked expertise in geology** (...). The question of possible **confusion** as a result of the **overlapping of labels** and the **inherent difficulties** (...) the need to **avoid downgrading the biosphere reserve label**, which had gained wide recognition. (...) **include geosites** (or geological sites of special interest) **in existing or future biosphere reserves** and that they might even increase the value of such reserves, **but the same did not go for geoparks**. The idea should, therefore, be studied in greater depth, **especially the question of how their integration into biosphere reserves could be envisaged**. (...). In conclusion, the Council acknowledged it to be a **sensitive matter** requiring more thorough examination*



*of all the points raised during the debate and invited the Secretariat to prepare such a review, in consultation with the members of the Council, and to submit it to the Bureau before the next session of the Executive Board (161<sup>st</sup> Session).*

Against this background, everything indicated that UNESCO systematically continued to postpone a final decision on where geoparks could fit within the existing Programs (during 1989-2000), however, not abandoning its express support for the work done by geoparks. In this context, the UNESCO Division of Earth Sciences was trying to consolidating the idea of creating 'national geoparks networks', since there was a notion that the geoparks could be a tool to understand better the geological heritage and to do wiser use of natural resources (Patzak & Eder, 1998; Eder, 1999; Martini & Zouros, 2001; Patzak, 2003; Missotten & Patzak, 2006; Komoo & Patzak, 2008; Chen *et al.*, 2015).

### **3.1.3 The European Geoparks Network (EGN) and the Global Geoparks Network (GGN): evolution and consolidation**

It was in the framework of the above-mentioned initiatives and challenges related to the 'Geopark' concept, which representatives of four European countries that had separately been promoting geological conservation and SD, came together in Greece to discuss their common socio-economic issues and how to address these through the protection of geological heritage and the promotion of geotourism (Frey, 2001a; Martini & Zouros, 2001; Mc Keever & Zouros, 2005; Zouros & Mc Keever, 2005, 2008, 2009; Mazumdar *et al.*, 2010; Zouros, & Valiakos, 2010; Mc Keever *et al.*, 2013). In indeed, during this meeting, it was created the convention declaring the creation of the European Geoparks Network (EGN) (Frey, 2001a; Martini & Zouros, 2001; Zouros & Martini, 2003; Gray, 2004; Zouros, 2004; Mc Keever & Zouros, 2005; Mazumdar *et al.*, 2010; Mc Keever *et al.*, 2010, 2013; Brilha, 2012, 2018; Fernández Álvarez, 2020; Rosado-González *et al.*, 2020b). This is a very simplistic way to summarise what led to the implementation of the EGN. But much more can be said to explain how it was possible to reach this common understanding and the relevance of such a network. As previously referred, at that time new developments occurred inside UNESCO, but what made the difference to achieve this milestone was the boost given by the EU funding programs. In this sense, what happened really to lead to the EGN creation? What can be

considered the real engine that boosted this process? Maybe the answers to these questions could be summarised metaphorically: the different theories and ideas that appeared since 1991, with the *Digne Declaration*, were like the stars that form a galaxy and the 'Geopark' concept was somehow until 2000, a hidden sun that was starting to shine and showing its brilliant light. It was in this context, that Frey *et al.*, in the first issue of the EGN Magazine, explained how it was created this network, by telling a story and stating that "the idea behind the creation of the Network arose following a discussion between (...) Guy Martini (from France) and Nickolas Zouros (from Greece) and occur when both were far from home in Beijing (China). They meet at the International Geological Congress" (2001, p. 4). This was the first time that territorial sustainable development was considered as a presupposition for the success of a conservation strategy (Zouros, 2004). In fact, from China to Europe, with the efforts and support of UNESCO, IUCN, IUGS, ProGEO, and from the EU, among others, gradually it was being recognized the value of Geoparks for social and economic advancement, in addition to their scientific research and education roles (Dingwall, 2000; Eder, 2004; Janoschek, 2005; Missotten & Patzak, 2006). However, during this research, when reading about the 'Geopark' concept there was already a conducting wire that linked three key elements: geosites, geoconservation, and geotourism.

On the other hand, through different EU financial instruments, such as LEADER or INTERREG, it was possible to encourage cooperation between different European networks of territories. The LEADER program became the first financial instrument to promote deeper cooperation between different European countries, linked by the idea of developing a regional sustainable development based on geological heritage and geotourism (Martini, 2000; Frey, 2001a; Mc Keever, 2005; Du & Girault, 2018). Indeed, LEADER is one of four initiatives financed by the EU structural funds and is designed to help rural actors (Buller, 2000; European Commission, 2012; Farsani *et al.*, 2014; Gonzalez-Tejada *et al.*, 2017). In this sense, for Buller, LEADER could be "summarized by three keywords – Local, Development, and Actors -, all of them being brought together, in policy terms, under the broad umbrella of innovation" (2000, p. 191). Bearing this in mind and all the ideas that appeared in Europe and China around the 'Geopark' concept, the transnational cooperation through LEADER act as an engine to accelerate the

objectives of the 'Geoparks', which were initially focused on the conservation of the geological heritage and also in the promotion of geotourism (Martini, 2000; Frey, 2001a; Frey *et al.*, 2001, 2006; Mc Keever, 2005; Mc Keever & Zouros, 2005; Zouros & McKeever, 2009a, 2009b; Martini & Frey, 2010; Alcalá, 2011; Hose *et al.*, 2011; Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018; Fernández Álvarez, 2020). Thus, knowing about the great potential of this EU financial instrument, it was launched an invitation to several European countries, with particular geological heritage, already highlighted by some infrastructures, such as museums, so that a network could be set out. To create such a network, it was published an explanatory leaflet about this LEADER II proposal, which was distributed to about 800 LEADER addresses across Europe (Frey, 2001a), but in the end, only four European territories were involved in this ingenious process. In this sense, the four regions were Haute Provence Geological Reserve (France), the Daun zone with the Gerolstein Geopark (Germany), the Petrified Forest of Lesvos (Greece), and the zone of Maestrazgo Teruel (Spain). The Haute-Provence Geological Reserve took the leadership of this process and engaged at that time 154 students in the Reserve to structure a European network of territories, using geotourism as a priority instrument for regional sustainable development (Martini, 2000). In this context, LEADER II became a very interesting financial tool, that would allow investments to improve museums and their surrounding areas to make them more attractive and accessible, and creating also innovative infrastructures to protect and conserve the existing geological heritage. This was a useful mechanism to promote the creation of new jobs and the engagement of the local communities (Martini & Zouros, 2001; Mc Keever, 2005; Frey *et al.*, 2006; Martini & Frey, 2010; Hose *et al.*, 2011; Barroso, 2012; Gonzalez-Tejada *et al.*, 2017; Firmino *et al.*, 2018a; Pásková, 2018).

In all the above-mentioned framework, it is important to keep in mind that LEADER II, as referred to by Buller was an innovative financial instrument that allowed the development of projects particularly related to "experimental 'bottom-up approaches', leading to the establishment of local networks and endogenous forms of development" (2000, p. 196). Considering this approach, it is relevant to observe that these four regions were selected by their geological heritage-based already in the existing infrastructures, such as their local museums (Martini, 2000; Frey *et al.*, 2001).

Therefore, in 2000, these four partners became the founder members of the EGN, which was opened to other European countries and received the support of UNESCO in 2001 (Frey *et al.*, 2001, 2006; Martini & Zouros, 2001; Zouros, 2004, 2005, 2011; Mazumdar *et al.* 2010; Brilha, 2012, 2018; Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018; Rosado-González *et al.*, 2020b). For Frey *et al.* (2001a), there were three aims with the establishment of this Network (Fig. 23):



**Figure 23** - The three aims of the establishment of EGN (Adapted from Frey *et al.*, 2001).

In this context, it was officially accepted on the 5<sup>th</sup> of June 2000, in Lesvos, Greece, the *European Geoparks Charter* and signed by the four founder members of the EGN (EGN, 2000b, 2001; Frey *et al.*, 2001, 2006; Martini & Zouros, 2001; Zouros & Martini, 2003; Zouros, 2004; Jones, 2008; Zouros & Mc Keever, 2008; Ertem, 2010; Haidarlis *et al.*, 2010; Mazumdar *et al.*, 2010; Mc Keever *et al.*, 2010, 2013; Price *et al.*, 2010; Zouros & Valiakos, 2010; Farsani *et al.*, 2011a, 2011b; Brilha, 2012, 2018; Fassoulas *et al.*, 2012, 2013; Manca & Curtin, 2012; Hose & Vasijević, 2012; Larwood *et al.*, 2013; Farsani *et al.*, 2014; Stoleriu, 2014; Ngwira, 2015; Kubalíková, 2016; Kumar, 2016; Larwood, 2016; Gonzalez-Tejada *et al.*, 2017; Halim & Ishak, 2017; Henriques & Brilha, 2017; Megerle & Pietsch, 2017; Du & Girault, 2018; EGN, 2018c; Pásková, 2018; Girault, 2019; Stoffelen *et al.*, 2019; Sulistyadi *et al.*, 2019; Stoffelen, 2020; and references therein).

In this Charter, it is stated that every territory wishing to submit candidature to become a 'European Geopark' is obligated to accept it and sign it at the moment of the official nomination. The Charter is composed of six items (Table 10).

**Table 10** – The six items of the European Geoparks Charter.

- 1. A European Geopark is a territory which includes a particular geological heritage and a sustainable territorial development strategy supported by a European programme to promote development. It must have clearly defined boundaries and sufficient surface area for true territorial economic development. A European Geopark must comprise a certain number of geological sites of particular importance in terms of their scientific quality, rarity, aesthetic appeal or educational value. The majority of sites present on the territory of a European Geopark must be part of the geological heritage, but their interest may also be archaeological, ecological, historical or cultural.*
- 2. The sites in European Geopark must be linked in a network and benefit from protection and management measures. The European Geopark must be managed by a clearly defined structure able to enforce protection, enhancement and sustainable development policies within its territory. No loss or destruction, directly or via sale, of the geological values of a European Geopark may be tolerated. In this respect European Geoparks are managed within the framework established by the Global Geoparks Network Charter.*
- 3. A European Geopark has an active role in the economic development of its territory through enhancement of a general image linked to the geological heritage and the development of Geotourism. A European Geopark has direct impact on the territory by influencing its inhabitants' living conditions and environment. The objective is to enable the inhabitants to re-appropriate the values of the territory's heritage and actively participate in the territory's cultural revitalization as a whole.*
- 4. A European Geopark develops, experiments and enhances methods for preserving the geological heritage.*
- 5. A European Geopark has also to support education on the environment, training and development of scientific research in the various disciplines of the Earth Sciences, enhancement of the natural environment and sustainable development policies.*
- 6. A European Geopark must work within the European Geopark Network to further the network's construction and cohesion. It must work with local enterprises to promote and support the creation of new by-products linked with the geological heritage in a spirit of complementarity with the other European Geoparks Network members.*

(Adapted from EGN, 2000b)

This Charter is indeed a visionary document. Although written in 2000, after twenty years of work in the field of Geoparks, and therefore celebrating nowadays twenty years of existence, this document still defines the core business of what is meant by a 'Geopark'.

This Charter can be considered the mother of all the basic guidelines that also led to the creation of the UGGps, in 2015. It is also notorious the two pillars of the concept

itself, in terms of what a “European Geopark” should have at least at that time a particular geological heritage and a sustainable territorial development strategy (Martini & Zouros, 2001; Patzak, 2003, 2005, 2010). Also, these territories must have clearly defined boundaries and sufficient surface area to achieve an important goal: true territorial economic development. Again, this document went even further by stressing that the work of the European Geoparks should contribute to the implementation of SD policies.

Consequently, in a preliminary analysis of this Charter, it is very interesting to select important details of the ‘Geopark’ concept and to match them to the three research questions of this research study. At first glance, in terms of the Five Pillars of the 2030 Agenda (United Nations, 2002b), there is a real concern about the local inhabitants, therefore a concern about the **People**. The protection of the geological heritage, which also implies a sustainable use of natural resources, so refers to the **Planet** and its history. It also stresses the importance to have an active role in the economic development of the territories, which implies also the concern with **Prosperity** for all, and the important role of cooperating through a network, based on solid **Partnerships**. Through the achievement of all these goals, it also contributes to **Peace-building efforts**, from a local to a global scale (Silva *et al.*, 2018a, 2018b).

Another relevant aspect is that *Item 5* of the mentioned Charter can also be linked, at that earlier stage, to four of the ‘Eight SDGs’ selected by IGGP (Fig. 24):



**Figure 24** – The four SDGs of the 2030 Agenda for Sustainable Development that can be related to the EGN Charter (Adapted from United Nations, 2015e).

Regarding the ‘Top 10 Focus Areas’ defined by UNESCO concerning the UGGps, it is also possible to select some of these areas from the Charter, namely six of them: Natural Resources, Education, Science, Culture, Sustainable Development, and

Geoconservation. The other four 'Focus Areas' would appear later in the activities led by the UGGps and that would be defined by UNESCO, in 2015, in the framework of the IGGP (UNESCO, 2015a, 2015b, 2015d; Silva *et al.*, 2017a, 2017b; Silva & Sá, 2018; Adiyaman *et al.*, 2018; Castro *et al.*, 2019; Rosado-González *et al.*, 2019). However, at this stage, the Charter was already in line with the main pillars of UNESCO, which would reinforce the support of this Organization to this European Network.

As highlighted by Farsani *et al.*, the main characteristic of EGN is that it works as a “network of collaborating areas, rather than a list of members. The network operates primarily by continuous electronic communication, frequent coordination meetings, and the establishment of common projects through which territories can exchange ideas, experiences, and best practices, thereby supporting each other to develop their common goals” (2014, p.3). This brings again into the debate that the Geoparks had to have their own space and a recognized designation, instead of being under the ‘umbrella’ of the WHS or even under the other option, which was discussed also at this time, the MAB Programme (Eder & Patzak, 2001; Missotten & Patzak, 2006). However, it is important to stress the support of UNESCO to the EGN, recognizing that these territories indeed promote geoconservation as well as geotourism as a useful tool to improve the local economy and therefore the local communities' lifestyles. In this sense, the EGN was established under the auspices of UNESCO (Eder & Patzak, 2001; Martini & Zouros, 2001; Frey *et al.*, 2006; Zouros & Mc Keever, 2009a, 2009b; Komoo & Patzak, 2010; Mazumdar *et al.*, 2010; Mc Keever *et al.*, 2010; Brilha, 2012, 2018; Patzak, 2015; Silva, 2017; Silva *et al.*, 2017b, 2018a; Silva & Sá, 2018; Firmino *et al.*, 2018b; Pásková, 2018; Sá & Silva, 2019). In the same line of ideas, Xun and Milly wrote:

*“The heritage of geological history is a legacy bestowed upon us by Nature. It is mankind’s obligation to protect it so that it can be a benefit to posterity forever. The best way to ensure Geoheritage conservation is by the construction of Geoparks to aid geoscientific research and serve as sites of propagation of scientific knowledge. Geoparks attract visitors, and at the same time create local jobs and develop the local economy. In addition, they are means by which the local government can enforce environmental protection based on more enthusiastic support from the local people with the development of their economy.”* (2002, p. 33).

It is important to recall that since the beginning the Geoparks were considered 'territories of science', where important research can be done to understand more our Planet, its natural resources, and to use them sustainably. This must engage the local communities and the development of the local economy (Silva, 2015a, 2015b, 2017; Belmonte Ribas & Ruiz Conde, 2016; Silva *et al.*, 2017b, 2018a; Firmino *et al.*, 2018a; Patrocínio *et al.*, 2018; Silva & Sá, 2018).

For the founder members of EGN, this network should be open to all like-minded European territories and have a democratic structure with transparent guidelines and procedures for all new partners (Zouros & Mc Keever, 2009a, 2009b). So, at the beginning of the creation of the network, there were three main objectives (Komoo & Patzak, 2008; Zouros & Mc Keever, 2009a, 2009b):

- i) Multi and bilateral cooperation on the protection and conservation of Earth heritage;*
- ii) The development of geotourism and geoeducation activities;*
- iii) The promotion of sustainable local development in the participating territories, especially in those with less economic opportunities.*

Due to all these efforts from the EGN side, the network started to have more visibility and the cooperation with UNESCO would go on stronger. In this sense, on 23<sup>rd</sup> of April 2001, the EGN and the Division of Earth Sciences of UNESCO signed an official agreement of collaboration in the Geopark Cabo de Gata – Níjar, Spain (Martini & Zouros, 2001; Zouros & Martini, 2003; Zouros & Mc Keever, 2009a, 2009b; Hose, 2016; Gonzalez-Tejada *et al.*, 2017; Henriques & Brilha, 2017; EGN, 2018b; Brilha, 2018; Du & Girault, 2018). It is interesting to note that this document does not appear in the official documents of UNESCO, but it has a full transcription in the Proceedings of the 2<sup>nd</sup> EGN Meeting (Zouros *et al.*, 2003), held in Sigri, Lesvos, Greece, in its Annex C. In this formal agreement, it is highlighted the importance given to the common goals of both entities, especially in subjects such as education, regional sustainable development, capacity-building, and scientific research (Zouros & Martini, 2003; Zouros *et al.*, 2003).

Given the core business of this research study, it is interesting to stress the content of Article III, *item 4* (Role of the Partners) of this agreement (Zouros *et al.*):



*“Co-operation between the EGN and the Division of Earth Sciences of UNESCO shall improve the situation in Education, Science, Culture, and Communication and have wide repercussions at the national and European levels. To this effect, UNESCO shall provide help and support to the coordination unit of the EGN.” (2003, p. 177).*

In this context, in Article V, UNESCO also confirms its sponsorship for joint intellectual activities or events, such as holding workshops, conferences, and congresses, as well as for co-publications between UNESCO and the EGN. And Article VII (Reciprocal Representation) highlights the role of the Organization inside the EGN. In this case and at that time (2003), it was understood that the representative of the Division of Earth Sciences should be a full member of the ‘European Geoparks Committee’, with the right to advise on its general policy and decisions regarding nominations of new territories for the EGN. In the case of the European Geoparks ‘Coordination Committee’, that representative would have the right to take part in the decision-making process and nominations of new geoparks, and both memberships would include the right of veto (Zouros *et al.*, 2003). With these functions, UNESCO was indeed completely involved in the EGN activities and especially in the creation of new European Geoparks, which means that since then UNESCO saw the potential of this concept, and the themes developed by the Geoparks, considering that they were aligned with the strategy carrying on by the Division of Earth Sciences. However, it would be the work done by the Geoparks, their particular activities, and the increasing number of Geoparks in Europe and Asia that would consolidate the Geoparks movement. This would lead to the change in the paradigm of being under the auspices of UNESCO.

The signing of this Agreement was considered by some authors as one of the key early successes for the EGN, which placed the new work under the auspices of UNESCO, thereby confirming the network’s important contributions to conservation and sustainability issues in the European Geoparks (Zouros & Martini, 2003).

In conclusion, in this document, the EGN was recognized as the responsible body for establishing Geoparks in Europe. It was also stated the participation of a UNESCO representative in the Coordination and Advisory Committees of the EGN with a veto right to all decisions and it is stated that UNESCO provides its patronage to national activities of the ‘national geoparks’ on an *ad-hoc* basis (Martini & Zouros, 2001; Zouros

*et al.*, 2003; Zouros & Mc Keever, 2007; Mc Keever *et al.*, 2013). This was indeed an important agreement that allowed UNESCO to join forces with the EGN and therefore to cooperate in a very active way (Eder, 2001; Zouros *et al.*, 2003). However, only two months later the Executive Board of UNESCO, during its 161<sup>st</sup> Session, approved the item “3.3.1. Recommendations by the MAB International Coordinating Council on the feasibility study on developing a UNESCO geosites/geoparks program” where it was stated (UNESCO, 2001):

1. *Noting the recommendation of the MAB International Coordinating Council and its Bureau **against the inclusion of a geosites/geoparks program as part of the World Network of Biosphere Reserves;***
2. *Invites the Director-General **not to pursue the development of a UNESCO geosites/geoparks program, but instead to support ad-hoc efforts with the Member States as appropriate.***

In this framework, the UNESCO role was considered as crucial in raising public awareness of geological heritage issues, achieving their fullest international recognition, and securing their most effective political impact (Patzak, 2003).

At this point, and regarding the conclusions of the 161<sup>st</sup> Session of Executive Board of UNESCO, it seemed that inside UNESCO, the proposed ‘UNESCO Geoparks Programme’ was having its first setback. However, UNESCO continued to support all the activities that would go on around the ‘Geopark’ concept, taking into account the Agreement signed in April 2001. Still, this subject would be resumed once again in 2011, ten years later, during the 186<sup>th</sup> Session of the Executive Board, held on the 18<sup>th</sup> of April, *item 41* of the Provisional Agenda ‘UNESCO Activities and Geoparks’, which was included at the request of Uruguay (Girault, 2019). This issue will be further detailed in this research study.

Nevertheless, outside the UNESCO framework, the ‘Geopark’ concept and further developments in this domain were continuously in evolution and UNESCO maintained its support to this on-going process due to the strong need expressed by numerous countries for an international framework to enhance the value of the Earth’s heritage, its landscapes and geological formations, which are key witnesses to the history of life

(Eder & Patzak, 2001, 2004; Matsuura, 2007; Zouros, 2007a, 2007b; Zouros & Mc Keever, 2007).

It is interesting also to observe that, in November 2001, it took place in Montevideo, Uruguay, the 9<sup>th</sup> Latin American Congress of Geology (EGN, 2018e), where a regional meeting of IGCP took place. In this meeting, it was focused once again on the initiative of UNESCO regarding Geoparks, which was a good sign that the Organization was continuously giving its support to the established EGN. In this sense, Patzak assumed that UNESCO, on the one side, offered its sponsorship to the interested “Member States to recognize, protect and enhance Earth heritage sites at the global level” (2003, p. 24), whereas EGN, on the other side, focused on European sites. In this context, UNESCO has played an important role in the development of the EGN and used the European model to lead to the creation of the Global Geoparks Network (GGN) (Eder, 2004; Zouros & Mc Keever, 2004; Mc Keever & Zouros, 2005; Jones, 2008; Mc Keever *et al.*, 2010). This situation would be reinforced due to a special turnover, which would mark forever the continuous growth of the Geoparks movement worldwide, especially during 2004. In this year, the GGN was also taken shape and developing itself (Silva, 2015b, 2017; Fernández Álvarez, 2020; Rosado-González *et al.*, 2020b, and references therein). This means that in parallel to the EGN growth, the pathway for the creation of the GGN was being built and formalized. During a meeting at the UNESCO Headquarters in February 2004, with representatives from the scientific board of IGCP, the International Geographical Union (IGU), and IUGS it was formally established the ‘Global Geoparks Network under the auspices of UNESCO’. This network would have the support of the Division of Ecological and Earth Sciences of UNESCO (Zouros & Martini, 2003; Mc Keever & Zouros, 2005; Missotten & Patzak, 2006; Zouros & Xun, 2006; Zouros & Mc Keever, 2007; Zouros, 2010, 2018; 2019; Silva, 2015a, 2015b, 2017; Sá & Silva, 2019; Ding *et al.*, 2020; Fernández Álvarez, 2020). At that time, the GGN was composed of eight members of the ‘National Geoparks Network of the People’s Republic of China’ and 17 members of the EGN (Zouros, 2004, 2005; Mc Keever & Zouros, 2005; Zouros & Xun, 2006; Mc Keever *et al.*, 2010; Chen *et al.*, 2015; Ding *et al.*, 2020). According to Mc Keever & Zouros, the new GGN had three main objectives when it was established, “conserving a

healthy environment; education about Earth Sciences to a wider public; and fostering sustainable local economic development” (2005, p.277).

Four months later, reflecting the increased worldwide interest in collaboration through the promotion and creation of Geoparks, UNESCO and the Chinese Ministry of Land and Resources, jointly organized for the first time the 1<sup>st</sup> International Conference on Geoparks, held in Beijing, in June 2004 (Zhao & Zhao, 2003; Zouros & Martini, 2003; Zouros, 2004; Mc Keever & Zouros, 2005; Zouros & Xun, 2006; Zouros & Mc Keever, 2009a; Chen *et al.*, 2015; Ding *et al.*, 2020). This major event culminated with the approval of the *Beijing Declaration* on the protection of the geological heritage of the world (GGN, 2004; Mc Keever & Zouros, 2005; Chen *et al.*, 2015). For many authors, this *Declaration* aimed to promote and stimulate the further expansion of the ‘Geopark’ concept across the globe (GGN, 2004; Mc Keever & Zouros, 2005;). During this congress, the GGN Office was formally founded in Beijing (Chen *et al.*, 2015). It was also during this event that the European and Chinese members of the GGN agreed on a ‘twinning process’ whereby one geopark in China twins, or partners, with a geopark in Europe, to foster co-operation and to lead to a process of exchange of experiences, personnel, knowledge, and information (Eder, 2004; Eder & Patzak, 2004; Mc Keever & Zouros, 2005; Zouros & Xun, 2006; Jones, 2008; Zouros, 2015; Gonzalez-Tejada *et al.*, 2017; Du & Girault, 2018). Following Zouros & Xun, the main goal of GGN was:

*“To provide a platform of cooperation and exchange between experts and practitioners in geological heritage matters on a worldwide scale. Under the “umbrella” of UNESCO and through cooperation with the global network partners, important national geological sites gain worldwide recognition and profit through the exchange of knowledge and expertise with other Geoparks”* (2006, p.149).

In this framework, the GGN and the EGN were designed in parallel on a common conceptual basis with almost identical guidelines (Eder, 2004; Mc Keever & Zouros, 2005, UNESCO, 2014b; Girault, 2019).

In October 2004, another milestone would take place. It was an emblematic moment for EGN, because not only it expanded the number of new European Geoparks but especially due to a second agreement signed between UNESCO and the EGN, and known as the *Madonie Declaration* (Mc Keever & Zouros, 2005; Komoo & Patzak, 2008;

Zouros & Mc Keever, 2008, 2009b; Modica, 2009; Fassoulas & Zouros, 2010; Haidarlis *et al.*, 2010; Farsani *et al.*, 2011a, 2011b, 2014; Poch & Llordés, 2011; Brilha, 2012, 2018; Fassoulas *et al.*, 2013; Kumar, 2016; Henriques & Brilha, 2017; Dowling & Newsome, 2018; Du & Girault, 2018; EGN, 2018d; Nikolova & Sinnyovsky, 2019; and references therein). For Du & Girault with this Declaration, it was clear to see that the “operating mechanism and application procedure remained quite different for European or non-European candidates” (2018, p. 9). However, this procedure changed with the approval of the IGGP, in 2015. Nevertheless, with this *Declaration*, it is also interesting to observe that the EGN had strong power and it was in its hands the promotion of other continental networks. And in fact, this growth never stopped until nowadays. However, having ‘national geoparks’ in some countries (e.g. Germany or China) would later be a problematic issue in the framework of the creation of the IGGP and the new designation of UGGps. One of the reasons is that not all ‘national geoparks’ can accomplish the obligatory criteria of the IGGP and they co-exist as a ‘national geopark’. This means having two different movements simultaneously, bringing some obstacles to the IGGP, and the recognition of the UGGp label.

Nevertheless, although UNESCO continued to support the EGN and the GGN and therefore the creation of global geoparks, since they did not benefit from UNESCO’s budgetary support, as mentioned by Du & Girault, geoparks were forced to be established “based on the political agenda of Governments and/or local authorities for the long-term financial support (2018, p.9). In this sense, maybe this could explain one of the reasons why the EGN had to become very active, promoting several activities based on innovative projects in different domains, but benefiting from European Funds, this time specifically from INTERREG III C – South Zone (EU, 2000; Zouros, 2005; Zouros & Mc Keever, 2009b). The focus would be the sharing of experience and best practices in geological monument management and the development of geotourism in Europe. In this case, from 1<sup>st</sup> of July 2003 until the 31<sup>st</sup> of March of 2006, the Lead Partner of the Project ‘*Geoparks européen. Un outil pour le Développement de geotourism en Europe*’ under the framework of INTERREG III C Programme for the South Zone (Zouros, 2005), was the Museum of Natural History of the Petrified Forest (Greece). The expected results, mentioned in the summary of the Project, were the drafting of common quality

standards and the consolidation of the network, together with increased visibility of the Geoparks as both visitor sites and as agents for local development (Zouros *et al.*, 2005).

Yet, although the number of Geoparks had increased, the visibility of EGN and GGN was still far from the visibility of the well-known UNESCO designations, such as the WHS or even the BRs. Consequently, the key to success was to promote as much as possible the visibility of these networks. In this sense, since the creation of the EGN, a new heritage brand was created in Europe. Through the years until nowadays, this label has developed from being one that was completely unknown to a brand that has been increasingly recognized and respected globally as a high-quality brand (Mc Keever & Zouros, 2005; Mc Keever, 2009, 2010; Fassoulas & Zouros, 2010; Mc Keever *et al.*, 2010; Farsani *et al.*, 2011b; Poch & Llordés, 2011; Farsani, 2012; Mei *et al.*, 2012; Xu *et al.*, 2013; Wang & Tian, 2014; Schaaf & Clamote, 2016; Zouros, 2016; Firmino *et al.*, 2018b; Pásková, 2018; Cai *et al.*, 2019; Sá & Silva, 2019; Van Geert, 2019, and references therein).

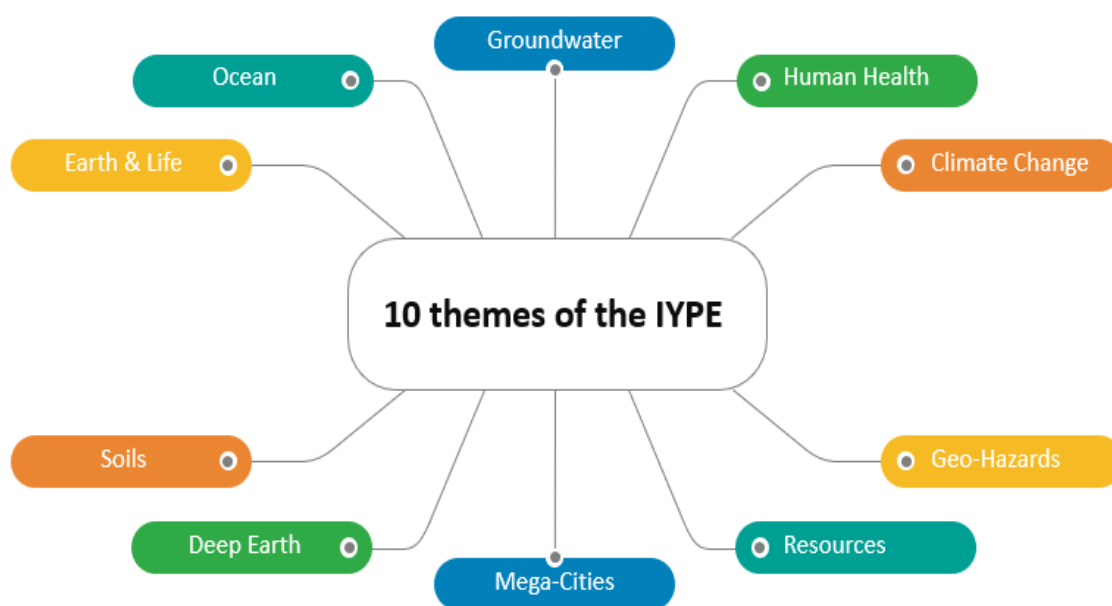
In 2006, it took place the 2<sup>nd</sup> International Conference on Geoparks, in Belfast, Northern Ireland, where it was approved the *Belfast Declaration* (EGN, 2006). This document emphasized the need for the future development of the GGN.

Another important milestone occurred in 2007 with the formalization of the Asia-Pacific Geoparks Network (APGN).

During the International Year of Planet Earth – IYPE (2007-2009) it was highlighted the relevance of communicating Earth Sciences to the general public, in a way that scientists can effectively bring the wonders of their science and the wonders of our Planet to the general public (Mc Keever, 2010). The IYPE was indeed an important milestone also in the geoparks movement because, during this special event, supported by UNESCO, the Geoparks brand gain more visibility.

It is also interesting to observe that the themes that were included in this global celebration, were in close harmony with the Geoparks activities (De Mulder *et al.*, 2006; Eder & Janoschek, 2006; De Mulder, 2008; Silva & Henriques, 2009; Henriques *et al.*, 2010a; Marques, 2012; Silva *et al.*, 2013, 2015c; Sá *et al.*, 2014). In this context, the existing Geoparks could capture the attention of all different types of vital actors, by

using the IYPE logo. This was a win-win situation for all actors involved in the promotion of the IYPE main goals. In this context, Geoparks and Geoheritage issues were highlighted in several countries (De Mulder *et al.*, 2006; Eder & Janoschek, 2006; Bolacha, 2008; Henriques *et al.*, 2008; 2010a; Dodson, 2010; Woodfork & Mulder, 2011; Marques, 2012; Silva *et al.*, 2015c; IYPE, 2018). The ten selected themes of the IYPE were completely aligned with the Geoparks activities (De Mulder *et al.*, 2006; Eder & Janoschek, 2006; De Mulder, 2008; Silva & Henriques, 2009; Henriques *et al.*, 2010a; Nakada, 2010, 2011; Marques, 2012; Fassoulas *et al.*, 2018; IYPE, 2018) (Fig. 25):



**Figure 25** – The ten selected themes of the IYPE; © Elizabeth Silva.

During these celebrations, UNESCO maintained its support to the Geopark’s movement. Therefore, the IYPE was an important event to promote both the EGN and GGN and it allowed raising awareness of the ‘Geopark’ concept worldwide.

Regarding the GGN movement and activities outside Europe, there were also important milestones to highlight, such as the organization of the 4<sup>th</sup> International UNESCO Conference on Geoparks, in April 2010, in the very first Global Geopark in the Langkawi Global Geopark, Malaysia. Also, in Latin America, new movements on geoparks were taken place. In November 2010, in the Araripe Geopark, in Ceará State, Brazil, it was organized under the auspices of UNESCO, the 1<sup>st</sup> Latin American and the Caribbean (LAC) Conference of Geoparks. It was an important milestone because it was

adopted the *Araripe Declaration* (UNESCO, 2010). Focusing on the promotion of new geoparks in this region, based on real SD, this *Declaration* followed the philosophy and vision of the 'Geopark' concept. It highlighted also the importance of the presence of the indigenous peoples, and their involvement in these processes. This document reminded the importance of networking, capacity building, and cooperation at all levels, as a way to consolidate the creation of more Geoparks in this part of the world (UNESCO, 2010).

In all this framework, another important milestone was the effort of Uruguay, in April 2011, during the 186<sup>th</sup> Session of the Executive Board of UNESCO. This Member State requested to add to the Provisional Agenda, *item 41* - "UNESCO Activities and Geoparks" (186 EX/41; UNESCO, 2011b; Girault, 2019). This request was supported by the other Member States, all of them out of Europe - Ecuador, Guatemala, Honduras, Kuwait, Malaysia, Paraguay, Peru, Saudi Arabia, and Uruguay. It was indeed an important request since it could put once again on the Agenda of the Executive Board of UNESCO the recognition of the Global Geoparks and the important role of the GGN. Also by requesting a status report to be submitted at the next session of the Executive Board, and requesting an in-depth analysis regarding the developed activities, as well as the proposals for improving cooperation between UNESCO and the GGN, it opened once again the debate inside the Organization regarding the importance of the Geoparks movement and insisting on stronger cooperation between both entities.

During the following 187<sup>th</sup> Session of the Executive Board of UNESCO it was presented in the 187/EX Decisions (approved on 30<sup>th</sup> of November 2011) *item VI* "Cooperation between UNESCO and the GGN" (187 EX/6 Part VI; UNESCO, 2011c). In this framework, the Executive Board recommended that the General Conference could adopt the draft resolution regarding the Geoparks at its 36<sup>th</sup> Session (UNESCO, 2011a). This was an important milestone inside UNESCO because it was stressed the possibility to have a *UNESCO Geoparks Programme or Initiative*. However, it was still requested the examination of the feasibility of this issue, as well as to study all the required baselines of such Programme or Initiative, exploring also fundraising opportunities regarding projects for aspiring Geoparks in developing countries. Finally, to assess options for arrangements for a formal partnership between UNESCO and the GGN. All these issues



should be presented in the next 190<sup>th</sup> Session of the Executive Board, in 2012 (UNESCO, 2012a).

All these items were of vital importance because as stressed before, it allowed once again to have a debate around the GGN and its close collaboration with UNESCO and having the possibility to create a UNESCO Programme or Initiative around Geoparks. Yet, all these issues would be again debated in the following sessions of the Executive Board (between 2011 and 2015) and the next General Conference on its 37<sup>th</sup> Session (2013) (UNESCO, 2013c), and finally to have a positive conclusion of this process with the approval of IGGP in the 38<sup>th</sup> Session, in November 2015 (Silva *et al.*, 2015, 2016, 2019; UNESCO, 2015b; Ramsay, 2016; Henriques & Brilha, 2017; Silva, 2017; Silva & Sá, 2017a, 2018; Adiyaman *et al.*, 2018; Du & Girault, 2018; Sá & Silva, 2019; Zouros, 2019, and references therein).

### **3.2 The International Geoscience and Geoparks Programme (IGGP)**

As can be inferred from all the above-mentioned, the pathway for the construction of the IGGP and the creation of a new UNESCO designation involving the Global Geoparks was a long process. Many obstacles had to be overcome and many 'stones' had to be removed from the path, but also some 'bricks' had also to be placed on the edge of that pathway, to ensure its consolidation. This was necessary to have a solid and credible designation entitled 'UGGps' to be accepted by UNESCO. However, this pathway got bigger and stronger and would not be stopped until the approval of the IGGP, as mentioned before, in 2015. In this context, in 2011, another milestone took place to consolidate the necessary pathway. During the International Congress of Geotourism – 'Geotourism in Action', Arouca, Portugal, in November 2011, it was approved the *Arouca Declaration on Geotourism* (Zouros, 2011; Henriques *et al.*, 2012; Martini *et al.*, 2012; Errami *et al.*, 2015; Fung & Jim, 2015; Giordano *et al.*, 2015; Ciobanu, 2016; Čtveráková *et al.*, 2016; Meléndez-Hevia *et al.*, 2017; Dowling & Newsome, 2018; Pásková & Zelenka, 2018; Sánchez Cortez & Simbaña-Tasiguano, 2019; Rosado-González *et al.*, 2020a, and references therein). This document resulted from a long-term negotiation between the EGN, the Centre for Sustainable Destinations of National

Geographic, and the ProGEO, allowing to clarify and update the concept of geotourism, expanding its scope beyond the 'geological tourism'. This new approach brought new light and an increased interest in this topic, stressing the importance of geotourism for the local economy by creating new jobs and establishing close collaborations with local tourist enterprises, artisans, women's agrotouristic cooperatives, and local organic food producers to promote local gastronomy (Zouros, 2011, 2016; Marcos *et al.*, 2016; Rocha *et al.*, 2016; Valiakos *et al.*, 2015, 2016; Gentilini & Thjømmøe, 2016a; Firmino *et al.*, 2018b). An example of this reality is the brand created by the Azores Geopark to value the handicraft, artisanal productions, high-quality products, and infra-structures and traditional activities spread all over the nine islands. Among those are products that are well known by the community and visitors that can be considered 'geo-products', since they incorporate the Azores volcanoes 'footprint' in several ways (Nunes *et al.*, 2011; Fig. 26).



**Figure 26** - Typical volcanic food from the Azores UGGp 'Cozido das Furnas'; © Elizabeth Silva.

It were also presented new approaches regarding education, linking it to geoconservation and geotourism (Acalá, 2011; Catana, 2011a, 2011b; Gutiérrez-Marco, *et al.*, 2011; Pereira *et al.*, 2011; Silva *et al.*, 2011, 2014a, 2014b, 2016; Sá *et al.*, 2012, 2017; Rocha, 2014; Silva, 2015b, 2015c; Silva & Sá, 2016, 2018; Sá & Silva, 2019).

Another milestone took place, this time in Unzen Volcanic Area Global Geopark, Shimabara, Japan, in May 2012, with the proclamation of the *Shimabara Declaration*. This Declaration was approved during the 5<sup>th</sup> International UNESCO Conference on Geoparks (Fassoulas *et al.*, 2018). This Declaration focused on the role of Geoparks regarding natural disasters (e.g. §2) and the education of local communities in this

domain, as stated in §1. Thus, this document also stresses the role of Global Geoparks regarding 'Climate Change debate', 'Natural Resource Management', 'Conservation and utilization of geopark heritage', 'Establishment of cooperation among geopark-related communities', 'Networking and sustainable development', and 'Geoparks for Future' (Fassoulas *et al.*, 2018).

Following this historical approach to the 'Geoparks' concept evolution, another milestone took place during the 11<sup>th</sup> European Geoparks Conference, Arouca, Portugal, in September 2012. During this event, it was approved the *Arouca Declaration* (Farsani *et al.*, 2011; Martini, 2012; UNESCO, 2012b; Dowling, 2013; Gonzalez-Tejada *et al.*, 2017). This Declaration reiterates the need for a Global Geopark to be a single, unified geographical area where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development. Also recalling the efforts led by Uruguay at UNESCO, in April 2011, once again the EGN stresses the importance of all the above-mentioned initiatives to have UNESCO recognition due to the developed work done by the Global Geoparks at this time (UNESCO, 2012b). Among other issues, it was stated in this Declaration that the Network was "anxious to ensure that future Global Geoparks should only be accepted on merit and not because of any political pressures or any other inappropriate considerations" (2012, p.3). This last remark was indeed very important since many delicate political issues would be raised during the 30<sup>th</sup> European Geoparks Meeting that occurred in parallel with the 11th European Geoparks Conference (Arouca, 2012), especially due to issues related to borders between different countries (e.g. the Republic of Korea and Japan on the case of the Oki Islands), which the Organizers and the Coordinators of the EGN had to deal with in a very diplomatic way. The Network would also face new paradigms, e.g. "One Archipelago – 9 Islands – One Geopark", located in the Autonomous Region of Azores, Portugal. At that time, this Aspiring Geopark (Azores) raised questions inside the Advisory Committee of the EGN, mainly related to its territorial management.

Therefore, many challenges appeared along the way, since the 'geoparks family' was increasing year after year. In fact, until 2013 there were 100 global geoparks.

At this stage, it is important to stress that all this movement once again was done without any substantial UNESCO financial support. And regarding the so-called 'bottom-up approach' as the planned strategy, due to so many different administrative-territorial planning and political framework in each country, this was indeed an effective obstacle to the implementation of such strategy led by the Geoparks and especially for the Aspiring ones (Firmino *et al.*, 2018b; Girault, 2019; Nikolova & Sinnyovsky, 2019; Sá & Silva, 2019; Stoffelen *et al.*, 2019; Rosado-González, 2020b). Nevertheless, the EGN and GGN continued their work and at UNESCO the Geoparks issue was still on its Agenda. That is why this issue would be on the list of the UNESCO Document - 36 C/5 Draft Resolutions Vol.1 (2012-2013). In these Draft Resolutions, the wording '*geoparks*' would occur seven times in this document correlated with capacity building, Africa, and education in Earth Sciences (UNESCO, 2011d). In this framework, it is possible to understand UNESCO's interest in the creation of Geoparks especially in Africa, having great expectations that during 2012-2013, it would at least appear two Geoparks in this Continent. However, the Organization was also concerned about the creation of regional networks of Geoparks, highlighting that this should be initiated in Latin America. With all these expectations for the biennium 2012-2013, it was explicit that UNESCO was betting on a more balanced geographical distribution of Geoparks worldwide and that they should not be concentrated mainly in Europe and Asia (especially in China). Thus, Geoparks were also connected to Earth Science education and capacity-building, which was also in close connection to the 'Geopark' concept.

Nonetheless, 2013 was the year when the Geoparks movement inside UNESCO had a real boost and shift. In effect, for the first time, the 31<sup>st</sup> Meeting of the EGN took place at UNESCO headquarters (21<sup>st</sup>-23<sup>rd</sup> March 2013). This was a strategic option, motivated by the process under evaluation by the Executive Council of this Organization, with a view to the introduction of a 'Geoparks Initiative', in the next UNESCO Budget and Program (37 C/5) and Medium Term Strategy (37 C/4), thus giving more visibility to the work than by the Global Geoparks (UNESCO, 2013g, 2013h). Consequently, to increase the awareness of Member States to this issue, the meeting was also open to representatives of the Permanent Delegations to UNESCO and NatComs.

In this context, in April 2013, the UK presented at the meeting of the 'Program and External Relations Committee' a Draft Resolution requesting the DG to present in detail to the next Executive Board (192<sup>nd</sup> Session) a set of information, proposals, and solutions for issues arising from the possible adoption of the referred Initiative as well as a proposal to strengthen the supervisory function of UNESCO and Member States in the present governance structures of the GGN. Thus, with this objective in mind, it was proposed the creation of a Working Group (WG) that should, by the end of June 2013, conclude consultations between the Member States, the UNESCO Secretariat, and the GGN itself, on the most diverse subjects duly identified in the referred Draft Resolution. This document was approved without any amendment with the full support as well as from three Observing Member States (Greece, Portugal, and the Republic of Ireland).

The above-mentioned WG was created and it had its first meeting on the 12<sup>th</sup> of June 2013. The author was invited to belong to it due to the work done in the field of Geoparks since 2005 at the Portuguese NatCom and by being the Coordinator of the Portuguese Forum of Geoparks. The second meeting took place on the 5<sup>th</sup> of July 2013 with positive discussions. The Secretariat presented a project for the "guidelines" for the possible 'Initiative on Global Geoparks' and tried to overcome the initial obstacles created by the Legal Affairs Department. In this context, it was presented a similar structure to the 'Memory of the World' Program of UNESCO, to be more 'light' and 'flexible'. However, these efforts encountered some difficulties. In fact, by reading the text that was going to be proposed to the Member States by the DG on the 11<sup>th</sup> of September 2013, in *item 9* of the Provisional Agenda of the Executive Board (Document 192 EX/9), it would be stated that (UNESCO, 2013b):

*"The DG of UNESCO (...) greatly appreciates the work carried out by the WG on Global Geoparks, as outlined in the summary report of the WG meetings below, and confirms her continued support for the geopark concept and the GGN. However, the DG is of the view that, under the present circumstances of the Organization, and **given the several formal and legal difficulties which continue to exist, there is a need to further examine the parameters of a possible UNESCO Global Geoparks Initiative, resolving outstanding issues and adopting a phased step-by-step approach.** She believes in particular that the proposal to create a Category V advisory body at this stage would create an undue reliance on the DG and **budgetary burden on the Organization.** She*

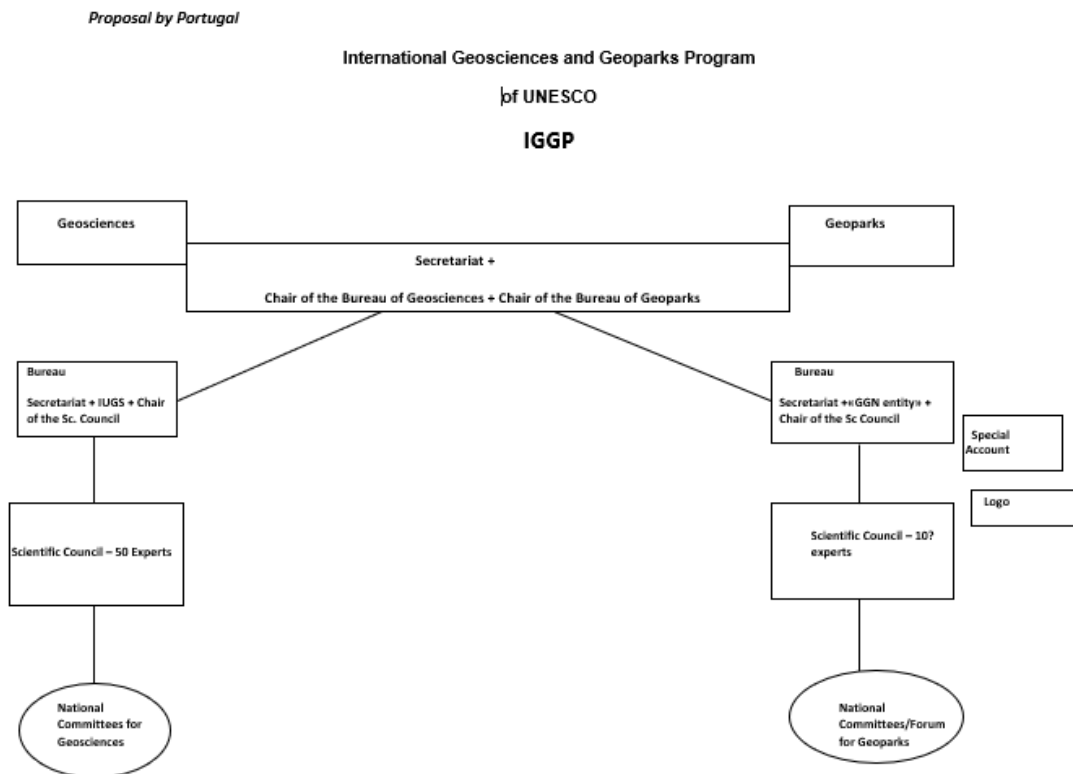
*encourages the holding of further discussions with the IUGS to deepen the mutual partnership and agree on joint support of the Geoparks Initiative, perhaps in the form of a 'Memorandum of Understanding' which might set out a pluri-annual work program in this area. Finally, she encourages a **closer relationship between the Geoparks and the Biosphere Reserves.**"*

This UNESCO Document was indeed a huge setback regarding all the efforts done until 2013, trying to have a 'Global Geoparks Programme' or 'Initiative' of UNESCO and not just under its auspices. Therefore, it was necessary to clarify this powerful and ambiguous statement by the DG, to guarantee that the Members States would understand what was really at stake, and especially to clarify that all this movement would not be a burden to the Organization. Finally, the main goal was also to have a Draft Resolution regarding this issue approved by the 38<sup>th</sup> Session of the General Conference of UNESCO, in 2015 (UNESCO, 2015b).

In continuity, the greatest effort was to put again in the center of gravity of UNESCO's work such Initiative, since it was already expressed in so many previous documents of the Organization (e.g. 36C/Resolution 31 (pg. 39 – item 31) (UNESCO, 2011d); 190 EX/ Decision 5 (I) (pg. 11) (UNESCO, 2012a); 191 EX /Decision 5 (III) (pg.10) (UNESCO, 2013e); 192 EX/ Decision 9 (pg. 21) (UNESCO, 2013f), and 192 EX/48 (Draft Decisions recommended by the Program and External Relations Commission (PX) and the Finance and Administrative Commission (FA) at their joint meetings, pg. 4 – item 9) (UNESCO, 2013d). In this sense, due to the referred odd situation of having such a UNESCO document, after so many efforts to have a 'Global Geoparks Program or Initiative', the author worked closely with the representative of the Portuguese Permanent Delegation to UNESCO, Teresa Salado, and coordinated with the support of other colleagues, such as Artur Sá (EGN), Patrick Mc Keever (UNESCO), representatives of the UK NatCom, and especially from the representative of the UK Permanent Delegation to UNESCO, Ambassador Mathew Sudders, in a Draft Resolution to overcome all the obstacles that were raised by the DG.

Despite the alarm of being a burden to the Organization, which could not afford to pay for another new structure, due to the budgetary constraints inside UNESCO, with this new proposal created by Portugal and strongly supported by the UK, the DG had to

give another chance to find a feasible solution, since many Members States were in favour of such Initiative (UNESCO, 2013b; Du & Girault, 2018). Therefore, Portugal requested the support of the UK (since this Member State had a seat at the Executive Board, and Portugal did not have it at that time), and presented a possible solution on how to overcome such an obstacle created ‘artificially’ by the DG. Consequently, Portugal understood that first, it was imperative to demonstrate that this new Programme or Initiative was not a burden; secondly, it had to prove that such an enterprise would be a true benefit for UNESCO, in the long term. Therefore, having a clear understanding of the Global Geoparks role and goals and the IGCP main objectives (which also needed to be revitalized), it was Portugal’s understanding to draw a proposal for a new working scheme between the IGCP and the Global Geoparks (Fig. 27), and that both would become the two main pillars of a new scientific program focused mainly on Geoscience and Geoparks (in other words, the future IGGP).



**Figure 27** – *Fac-simile* of the proposal for a new working scheme between the IGCP and the Global Geoparks (IGGP) presented by Portugal; © Elizabeth Silva, Teresa Salado & Artur Sá (July 2013).

Consequently, on the 8<sup>th</sup> of October 2013, during the 192<sup>nd</sup> Session of the Executive Board of UNESCO, the 58 members endorsed without any amendments the Draft

Resolution presented by the representative of the UK. During the debate, other Observers joined in and supported also such initiative (e.g. Greece, Portugal, and the Republic of Ireland). It was a major step forward to put the 'locomotive' of the Global Geoparks 'back on track' and therefore, moving again inside UNESCO. The arguments presented by the DG were not taken into special consideration, so this subject would pass to the 37<sup>th</sup> session of the General Conference of UNESCO, in November 2013 (UNESCO, 2013c, 2013g). Therefore, in the Records of the referred Session (Vol. 1 - "Resolutions), it was decided to "come back to the proposal of a *UNESCO Global Geoparks Initiative (Resolution adopted on the report of the Science Commission at the 15<sup>th</sup> plenary meeting, on 19<sup>th</sup> November 2013)* (UNESCO, 2013c). In this context, it was also agreed that the WG should meet again in 2014, and complete its work by February 2014, so that the results of its work and proposals could be presented in the next 193<sup>rd</sup> session of the Executive Board, in April 2014. On the 13<sup>th</sup> of January 2014, it was released the UNESCO Document 192 EX/Decisions, which referred to the UNESCO Global Geoparks Initiative (192 EX/9) and (192 EX/48), in *item 9*, stating the following (UNESCO, 2013b; 2013d, 2014b):

*"(...)*

*5. Thanks to the WG on a Global Geoparks initiative for its work to date, and welcomes the substantial progress made in elaborating a possible UNESCO Global Geoparks Initiative;*

*(...)*

*7. Requests the DG to further consult the Member States and the GGN on the proposed Initiative based on the draft operational guidelines and the draft statutes of the governing body of a UNESCO Global Geoparks Initiative already prepared by the WG, and in doing so, to:*

*(a) convene a further meeting of the WG on a Global Geoparks Initiative, in time for its work to be finalized before March 2014;*

*(b) provide the WG with further details of the outstanding issues noted in the recommendation by the DG contained in document 192 EX/9;*



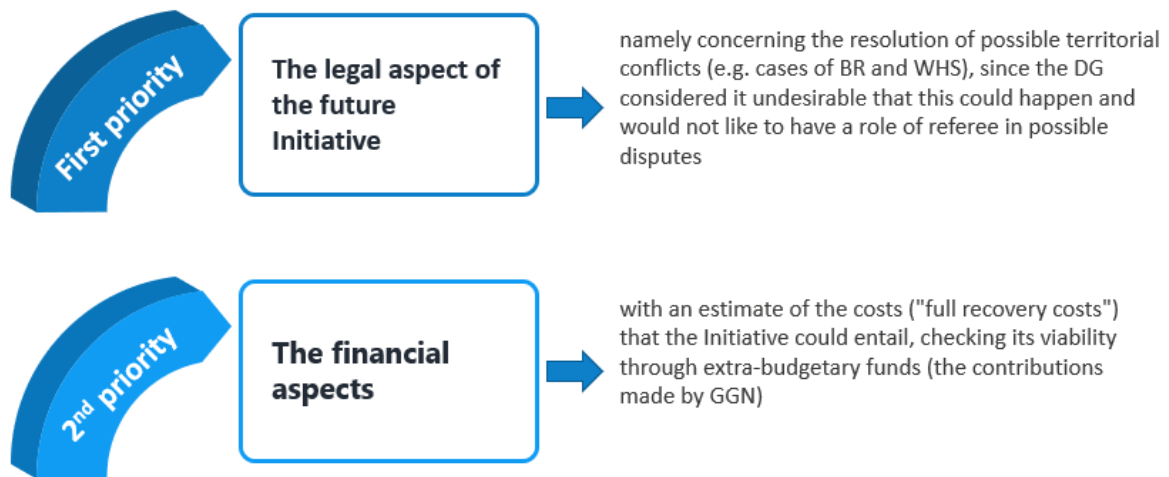
8. Requests the WG to discuss this further and report back to the Executive Board on *inter alia*:

(...)

(c) a closer relationship between the GGN and relevant UNESCO programs, such as the Man and Biosphere (MAB) Programme and the International Geosciences Programme (IGCP) may be fostered under a Global Geoparks Initiative;

9. Also requests the DG to report to it at its 194<sup>th</sup> session on the conclusions of the WG.”

Despite all these efforts, there were still doubts inside UNESCO about the proposed ‘UNESCO Global Geoparks Initiative’. Therefore, the author recalls also that the 3<sup>rd</sup> meeting of the WG had two main priorities (Fig. 28):



**Figure 28** - Two main priorities of the WG regarding the ‘UNESCO Global Geoparks Initiative’; © Elizabeth Silva.

During all this process, it is relevant to stress that it was also underway an internal restructuring of the Organization and it was foreseen the possible reduction of the staff of IGCP by the end of January 2014. So, a lot of tension was in the air and could affect the development of the mentioned Initiative.

As referred before, the third meeting of the WG took place on the 10<sup>th</sup> of February 2014. The author also participated. The meeting was co-chaired by the UK (Ambassador Mathew Sudders) and by Germany (Lutz Möller – representative of the German NatCom). In this meeting participated around 50 Member States, representatives from the five Regional Groups of UNESCO, and representatives of the GGN, as well as

representatives from the EGN and the APGN. During this meeting, it was clear that the exploratory proposal presented by the Secretariat of UNESCO aimed to integrate the GGN inside the IGGP. This situation was due to the lack of impact and visibility of the Geoparks work inside this Organization, and regrettably, their activities were unknown for most of the Member States. Thus, the assumed intention of formally admitting Geoparks within the scope of UNESCO would also be an excellent engine to revitalize the IGCP, whose activity was already largely recognized as restricted to training and financing activities for scientific research projects with very limited budgets and little impact (Turner, 2006). Nevertheless, the proposal of the Secretariat revealed the exclusion of the GGN from the future structure, as well as the merger of pure science activities (IGCP) with those of strong added value and local/regional impact that characterize the Geoparks. In this context, and to prevent this inconvenience, the representatives of Portugal (Elizabeth Silva, Teresa Salado, and Artur Sá), presented at the beginning of the meeting a counter-proposal that included aspects contained in the document prepared by the Secretariat, but including the Geoparks within IGGP, as a parallel structure, complementary to IGCP, clarifying its form of integration and suggesting a functional autonomy, as described in the scheme previously presented in the second meeting of the WG. Thus, in addition to the integration of the Geoparks individually considered inside the IGGP, it was also the intention to fully associate the GGN representation in that future Programme. This proposal was received with interest and served as a basis for the debates that followed it, and in the end, it was adopted, with some amendments, at the 4<sup>th</sup> meeting of the WG. However, other issues were dealt with during the 3<sup>rd</sup> meeting of the WG, such as the legal personality necessary for the GGN to be able to be welcomed in the governing bodies of the IGGP, as well as the financial aspects that this integration would entail, especially at a time when UNESCO's budget was strongly reduced and, for that reason, the previous UNESCO General Conference had given Geosciences a low priority.

During the 4<sup>th</sup> meeting of the WG, in May 2014, the main issue debated was if the new applications should be of competence of the *Bureau* of the IGGP or if those should be recognized by the Member States, for example through their submission for formal approval by the UNESCO Executive Board. In this meeting, for the first time, a

representative from the EU was also present. In a global assessment, this was the meeting with the most concrete results, which put the process of creating UNESCO's IGGP in good condition to be concluded by the next UNESCO General Conference in 2015. A thorough debate took place and some aspects, for example, the legal personality recognized by UNESCO or the voluntary contribution of the Global Geoparks to be made annually to UNESCO. However, the main item discussed was dedicated to the type of recognition that was intended to be obtained from UNESCO for Geoparks. Two options were considered: *i)* an intergovernmental endorsement at the end of the evaluation process, or *ii)* a simple verification of the absence of possible territorial conflicts. In this context, Portugal presented a comparative study (with two options A and B) of possible mechanisms and chronology models for each of the processes, including the duration of each cycle, and including ways for the Member States to identify legitimate territorial problems as early as possible problems, to minimize the eventual disputes of this nature within UNESCO (Fig. 29).

WITH LIGHT INTERGOVERNMENTAL ENDORSEMENT OPTION A	WITHOUT INTERGOVERNMENTAL ENDORSEMENT OPTION B
November 2015	November 2015
General Conference adopts the International Geosciences and Geoparks Program- IGGP	General Conference adopts the International Geosciences and Geoparks Program- IGGP
End of November 2015	End of November 2015
Closing date for submission of applications for new Geoparks	Closing date for submission of applications for new Geoparks
First days of December 2015	First days of December 2015
1 <sup>st</sup> communication to all UNESCO Member States of the list of valid applications received	1 <sup>st</sup> communication to all Member States of the list of valid applications received
February 2016	February 2016
Annual meeting of the Geosciences Research projects- former IGCP- item on Geoparks in the public session	Annual meeting of the Geosciences Research projects- former IGCP- item on Geoparks in the public session
2 <sup>nd</sup> information to all UNESCO Member States	2 <sup>nd</sup> information to all UNESCO Member States
From mid-May to Mid/end August 2016	From mid-May to Mid/end August 2016
Evaluation by the experts of the Geoparks' applications	Evaluation by the experts of the Geoparks' applications
Spring session of the Executive Board 2017	September 2016
"Light intergovernmental endorsement" of the ExB of the decision of the IGGP Bureau on the applications	Annual meeting of the UNESCO Global Geoparks- official announcement of the new and revalidated Geoparks
September 2017	
Annual meeting of the UNESCO Global Geoparks- Award ceremony of the new and revalidated Geoparks (certificates)	
Duration of the cycle: aprox 16 months	Duration of the cycle: aprox 10 months

Figure 29 - Comparative Study presented by Portugal during the 4<sup>th</sup> meeting of the WG; © Elizabeth Silva, Teresa Salado and Artur Sá (May 2014).

At the end of the discussions, it was chosen option A (light intergovernmental endorsement), considering that it offered guarantees regarding the neutralization of conflicts.

It was also noted that the agreement for the transition from existing Geoparks to the future IGGP to be automatic when the General Conference endorsed the designation 'UNESCO Global Geoparks', the guidelines, and related documents (UNESCO, 2014b). In this framework, it was decided that the 5<sup>th</sup> meeting of the WG would take place on the 2<sup>nd</sup> of July 2014. This one would be entirely dedicated to the definition of the guidelines and statutes of the IGGP. These proposed documents should be brought into line with the deliberations of the WG, to be presented to the Autumn Executive Board of UNESCO (October 2014).

In the meanwhile, the expansion of the GGN was in line with the *Stonehammer Declaration* approved during the 6<sup>th</sup> International UNESCO Conference on Global Geoparks, in 2014 in Saint John, Canada (GGN, 2014; Zouros, 2019).

The WG had its 6<sup>th</sup> meeting on the 9<sup>th</sup> of January 2015. In the meanwhile, it was considered that the Executive Board in its 195<sup>th</sup> Session should concentrate its attention on the operational guidelines of the IGGP and leave the statutes for the next Executive Board in the Spring of 2015. Consequently, on the 22<sup>nd</sup> of August 2014, the Executive Board of UNESCO in its 195<sup>th</sup> Session in the Information Document 195 EX/5. INF. - *Item 5 of the provisional agenda – “Drafted proposed Operational Guidelines for UGGps”*, it was shared among the Members States (UNESCO, 2014a, 2014b).

During the 196<sup>th</sup> session of the Executive Board (UNESCO, 2015d), two aspects included in the Draft Resolution have deserved attention from the Executive Board members, especially from emerging and developing countries, intending to use future extrabudgetary funds to develop capacities for the creation of Geoparks in these countries. Thus, contributing to a better geographical distribution of them, at this time and as already mentioned, very concentrated in the European continent and some Asian countries. The Executive Board adopted the Draft Decision about the IGGP (Document - Decision of the Executive Board in Part I – Programme issues (196 EX/5 Part I; 196

EX/5.INF.3) C. *UNESCO Global Geoparks Initiative*, § 11, item C), stating the following (UNESCO, 2015b, 2015d):

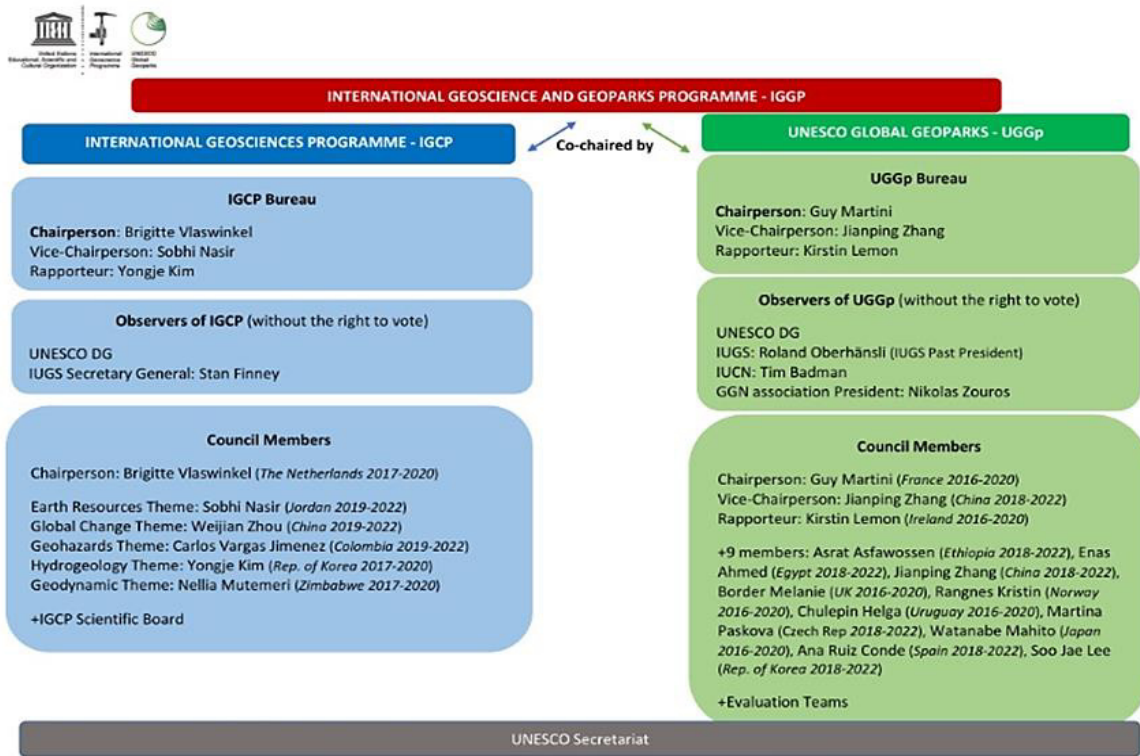
*(c) approve the establishment of UNESCO Global Geoparks within the IGGP and the incorporation of all existing Global Geoparks as UNESCO Global Geoparks subject to a letter of support from the National Commission for UNESCO or the relevant government body in charge of relations with UNESCO in each Member States as appropriate, bearing in mind the existing criteria for Global Geoparks, at the level of scientific quality and content, are essentially the same as those proposed for UNESCO Global Geoparks and recalling the ongoing four-year revalidation process which will see all the Global Geoparks reviewed, in line with the established frequency also under the new system at the latest by 2020.*

Lastly, the 7<sup>th</sup> meeting of the WG took place on February 24<sup>th</sup>, 2015, coinciding with the annual meeting of IGCP. About 40 Member States participated, as well as representatives of IUGS, IGCP, and those responsible for the GGN. The author also continued to give its contributions to the two major items discussed. In this sense, at this meeting, it was possible to conclude the IGGP Statutes and the Operational Guidelines. Finally, this long roadmap until the approval of IGGP was almost concluded. After so many meetings, obstacles, discussions, and positive contributions, it was possible to have the formal IGGP accepted by the 38<sup>th</sup> General Conference of UNESCO (38 C/14 items 4.7 of the provisional agenda – Statutes of the IGGP) on the 17<sup>th</sup> of November 2015, and the 195 Member States of UNESCO ratified the creation of a new label, the UNESCO Global Geoparks (Silva *et al.*, 2015a, 2015c, 2017, 2018, 2019; UNESCO, 2015b, 2016a, 2019f; Ramsay, 2016; Silva & Sá, 2016, 2017, 2018; Zouros, 2016; Gonzalez-Tejada *et al.*, 2017; Henriques & Brilha, 2017; Adiyaman *et al.*, 2018; Gabriel *et al.*, 2018a, 2018b; GGN, 2018b; Casadevall *et al.*, 2019; Gentilini *et al.*, 2019; Heirman & Lopes, 2019; Sá & Silva, 2019; Catana & Brilha, 2020; Fernández Álvarez, 2020; Rosado-González *et al.*, 2020b, and references therein).

The unanimous approval of the IGGP could be interpreted as a significant governmental recognition of the importance of managing territories with outstanding geological sites and landscapes, through a holistic approach (UNESCO, 2015b). Furthermore, the IGGP functions should serve as a knowledge hub of UNESCO to facilitate international scientific cooperation in the geosciences and sustainable use of

natural resources, and to advance new initiatives related to geodiversity and geoheritage as well as geohazards risk mitigation (Adiyaman *et al.*, 2018).

The previous scheme presented by Portugal was upgraded and had this final structure (UNESCO, 2018a) (Fig. 30):



**Figure 30** - The International Geoscience and Geoparks Programme (IGGP) structure; (UNESCO, 2018a).

From November 2015 until July 2020, the GGN counts already with 161 UGGps in 44 countries, which demonstrates a big effort to have a more balanced geographical distribution and to promote many initiatives based on Capacity-Building (UNESCO, 2020e). In the meanwhile, in May 2017, it was created the ‘Latin America and Caribbean Geoparks Network’ (GeoLAC), during the 4<sup>th</sup> Latin America and Caribbean Symposium of Geoparks, in Arequipa, Peru. The Constitutive Act of the GeoLAC was signed by representatives of the IGGP, GGN, and LAC UGGps and aspiring territories on the 26<sup>th</sup> May 2017, in Achoma, Peru, with the approval of the ‘*Foundational Declaration of the Network of Global Geoparks in Latin America and the Caribbean*’ (Rosado-González *et al.*, 2017; 2019, 2020a; 2020b; UNESCO, 2017c). The author had the privilege to witness such an important milestone, setting the way to have more UGGps in this part of the world (Fig. 31).



**Figure 31** - Constitutive Act of the GeoLAC signed on the 26<sup>th</sup> of May 2017, in Achoma, Peru; © GeolAC, 2017.

The creation of UGGps especially in Africa and Latin America was a clear reply to UNESCO’s request to have a more balanced geographical distribution, as referred to previously (UNESCO, 2011d). In this context, it is important to stress the major efforts that the GGN has done and continues to do in the field of networking and capacity-building. In this sense, the GGN organizes intensive courses and other formative activities to disseminate knowledge on Geoparks building and management focusing on geographical areas with less representation in the network. Capacity-building activities are implemented in collaboration with UNESCO, national authorities, and universities as well as regional and national Geopark networks, including the support of UNESCO Chairs (Amrikazemi & Silva, 2018; Sá & Silva, 2019; Zouros, 2019).

An example of this effort is the contribution of the *UNESCO Chair on Geoparks, Regional Sustainable Development, and Healthy Lifestyles* (University of Trás-os-Montes e Alto Douro, Vila Real, Portugal), created in 2016, and of the *UNESCO Chair on Geoparks and sustainable development of insular and coastal areas* (University of Aegean, Mytilene, Greece), created in 2020 (Fig. 32).



**Figure 32** - Logos of the UNESCO Chairs of the University of Trás-os-Montes e Alto Douro (Portugal) and the University of the Aegean (Greece); © UNESCO, 2015; 2020.

The first one has the main goal to create an innovative and integrated network of research, teaching, and transfer of knowledge, joint research projects, and communication for increasing social awareness on these topics, mainly focused on capacity building activities (Moreira *et al.*, 2015a, 2015b, 2015c; Sá *et al.*, 2015, 2016a, 2016b; Brito *et al.*, 2017; Henriques & Brilha, 2017; Sá, 2017; Gabriel *et al.*, 2018a; Guimarães *et al.*, 2016, 2018; Silva & Sá, 2018; Castro *et al.*, 2019; Sá & Silva, 2019; Sá & Vaz, 2019; Rosado-González *et al.*, 2020a, 2020b). The most emblematic activity of this UNESCO Chair is the annual Summer University always under the motto 'Geosciences for Society and Sustainable Development', which every year has a specific thematic.

In the referred Summer University, it is also always organized every year a specific workshop dedicated to the 2030 Agenda for SD and the 17 SDGs. Indeed, since the beginning of its editions, this UNESCO Chair has pursued the goal to create awareness about the 2030 Agenda and its 17 SDGs and how these can be implemented and developed by the UNESCO territories.

For the GGN and UNESCO, all these types of efforts are fundamental since the UGGps strive to raise awareness of geodiversity and promote protection, education, and tourism best practices. Together with WHS sites and BRs, UGGps form a complete range of SD tools and make an invaluable contribution to the awareness and implementation of the 2030 SDGs by combining global and local perspectives (UNESCO, 2015e).

Bearing in mind the importance of networking and the SDGs for achieving the objectives and missions of UGGps, it is relevant to recall the *Swabian Alb Declaration*, approved in March 2019, in Aalen, Germany. This document was approved during the 43<sup>rd</sup> European Geoparks Meeting. In this *Declaration* it was stated (EGN, 2019):

*"We strongly believe that the UNESCO Global Geoparks, a new and effective program, is a proven model for networking and collaboration among territories and for the implementation of the Sustainable Development Goals by local authorities and communities, through a bottom-up approach. (...) The constant dialogue and close collaboration between the UNESCO Secretariat and the Global Geoparks Network is vital. We underline our dedication to work with UNESCO for the worldwide advancement of the UNESCO Global Geoparks and for sustainable regional development."*

Following this important statement, in November 2019, during the 2<sup>nd</sup> National Symposium of Morocco Geological Heritage, held in Rabat (Morocco) after a declaration



signed by UNESCO, the GGN, and the UGGps in Africa and the Arab World, it was launched the 'African UNESCO Global Geoparks Network' (AUGGN) (UNESCO, 2019d). Representatives of the other regional networks – EGN, APGN, and GeoLAC – were also present to testify this important step of networking. This new regional network was a direct reply to the UNESCO request for the establishment of such a network in Africa, (e.g. UNESCO Document - 36 C/5 Draft Resolutions Vol.1, 2012-2013, UNESCO, 2011d).

Also, in 2019, for the first time, the IGGP was evaluated by the Internal Oversight Service (IOS) – UNESCO Evaluation Office. In the summary of this document it is stated (UNESCO, 2019e, 2020f):

*“The IOS Evaluation Office undertook an evaluation of the IGGP, examining its relevance; efficiency; effectiveness and impact; sustainability; partnership, and cooperation as well as key achievements and value-added of each component of the UNESCO geoscience work to the SDGs, the Sendai Framework and the African Union Agenda 2063. **The evaluation found that the IGGP delivers on the targets despite limited resources. Its international, bottom-up, expert-driven nature is a key strength, but improvements could be made to further strengthen the functioning of the Programme.**”*

This was a relevant document since the IGGP had never been evaluated before. In this sense, the evaluation done by IOS covered the entire IGGP including its two sub-programs (i.e. IGCP and UGGp) during 2014-2019. It reveals important issues concerning the findings of the referred evaluation. These were the main topics stressed in the report (UNESCO, 2019e, 2020f) (Table 11):

**Table 11** – The main topics of the evaluation of the IGGP by the IOS/UNESCO.

The relevance of the IGGP	
1.	The IGGP is designed to fulfil goals and ambitions, which are fully in line with the needs and challenges faced by its target populations and compatible with the strategic goals of institutional sponsors.
2.	There is a lack of internal coherence within the Program, illustrated by the absence of more formal programmatic links between the IGCP and the UGGp.
The efficiency of the IGGP	
1.	The expert-driven and international nature of the Program are viewed as a key asset and continue to yield positive results.
2.	The IGGP Secretariat satisfactorily performs its co-ordination role, especially given its resource limitations.
3.	Despite the introduction of recent improvements in the selection procedures and criteria for geoparks and geopark evaluators, there is scope to enhance the quality and robustness of these under the UGGp.

**Table 11** (cont.) – The main topics of the evaluation of the IGGP by the IOS/UNESCO.

<b>4.</b>	<b>The quality of program monitoring may be improved.</b>
<b>Effectiveness and Impact of the IGGP</b>	
<b>1.</b>	Given the lack of a formal results framework, the evaluation was unable to produce a solid quantitative assessment of Program effectiveness, yet the Program is yielding positive results in line with intended goals.
<b>Sustainability of the IGGP</b>	
<b>1.</b>	The funding represents the most important limitation to Program implementation and is a potential risk to Program sustainability.
<b>2.</b>	For emerging geoparks, particularly in fragile contexts, ensuring sustainable sources of funding is a major hurdle and threat to survival.

(Adapted from UNESCO, 2019e, 2020f)

Following these topics, the IOS Evaluation Office presented a set of 10 recommendations in moving forward of the IGGP, to become more consolidate and aligned with the UNESCO Programs strategies. These were the following recommendations (UNESCO, 2019e, 2020b) (Table 12).

**Table 12** - The 10 recommendations set by the IOS/UNESCO regarding the evaluation of the IGGP.

**Recommendation 1** – Make a clear statement regarding whether the Programme considers certain geographies or territories strategic priorities in the short term, and explicitly formulate and justify how these territories are to be pro-actively targeted through Programme activities.

**Recommendation 2** – Undertake further efforts to enhance cross-pollination and programmatic synergies between IGCP and UGGp within the IGCP.

**Recommendation 3** – Allocate additional resources to the IGGP Secretariat, mainly by bringing in additional staff.

**Recommendation 4** – Maintain UGGp status as an International programme with a bottom-up, expert-driven orientation.

**Recommendation 5** – Seek a more active participation of Member States in the Programme by promoting their involvement in existing UGGp mechanisms, such as the validation / sponsoring of aspiring geopark applications and participation in Council meetings as observers.

**Recommendation 6** – Increase the frequency of communication from the UGGp Secretariat to the geoparks and National Committees, on the support that can be provided by the Secretariat and to provide information on the latest UGGp developments.

**Recommendation 7** – Improve guidance to countries that do not yet have a National IGCP or Geoparks Committee, providing examples of how such Committees operate, including best practices for setting-up and maintenance.

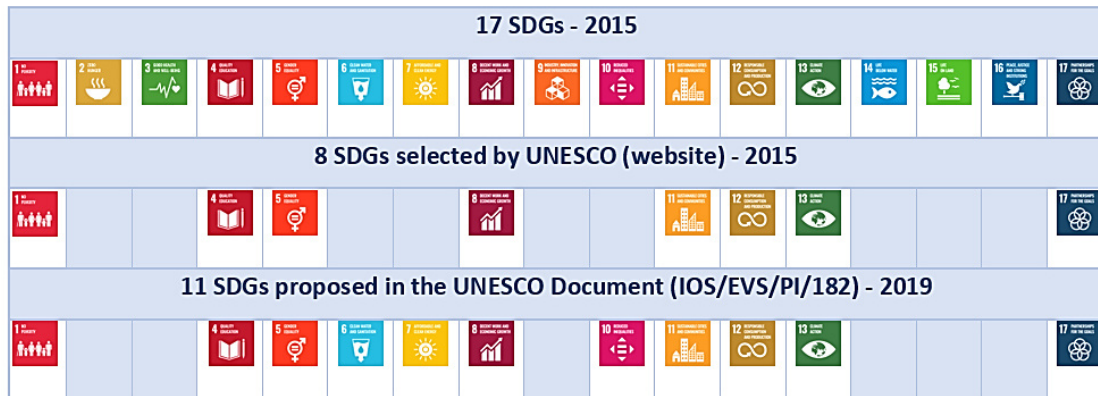
**Recommendation 8** – Implement a light, flexible, and efficient mechanism allowing an ongoing improvement of key aspects of UGGp, including its rules, regulations, and documents.

**Recommendation 9** – Develop and adopt a tailored results framework that is based on a Theory of Change and allows for the generation of quantitative assessments of Programme activities and results.

**Recommendation 10** – Strengthen the longer-term financial sustainability of IGGP, its sub-programmes, and geoparks.

(Adapted from UNESCO, 2019e)

Nevertheless, this first evaluation of the IGGP (report concerning the findings and recommendations) was taken into consideration in this research study, especially in its final remarks and future perspectives. This report reinforces the core business of this research study and brought into the arena of discussion, other new SDGs than those ‘Eight SDGs’ selected by the IGGP in 2015, passing from eight to 11 SDGs, in 2019 (Fig. 33).



**Figure 33** - Comparison of the SDGs selected by UNESCO in 2015 and the ones proposed in 2019 by IOS/UNESCO; © Elizabeth Silva.

This is a very interesting change of paradigm and stresses the important role that these UNESCO territories have in SD and for the implementation of the 2030 Agenda.

Lastly, taking into account all the above-mentioned events and documents that contributed to the development and consolidation of the new UNESCO designation – UGGps – and the creation of the IGGP, it is pertinent to summarise the main milestones that led to this long but fruitful process (Fig. 34).

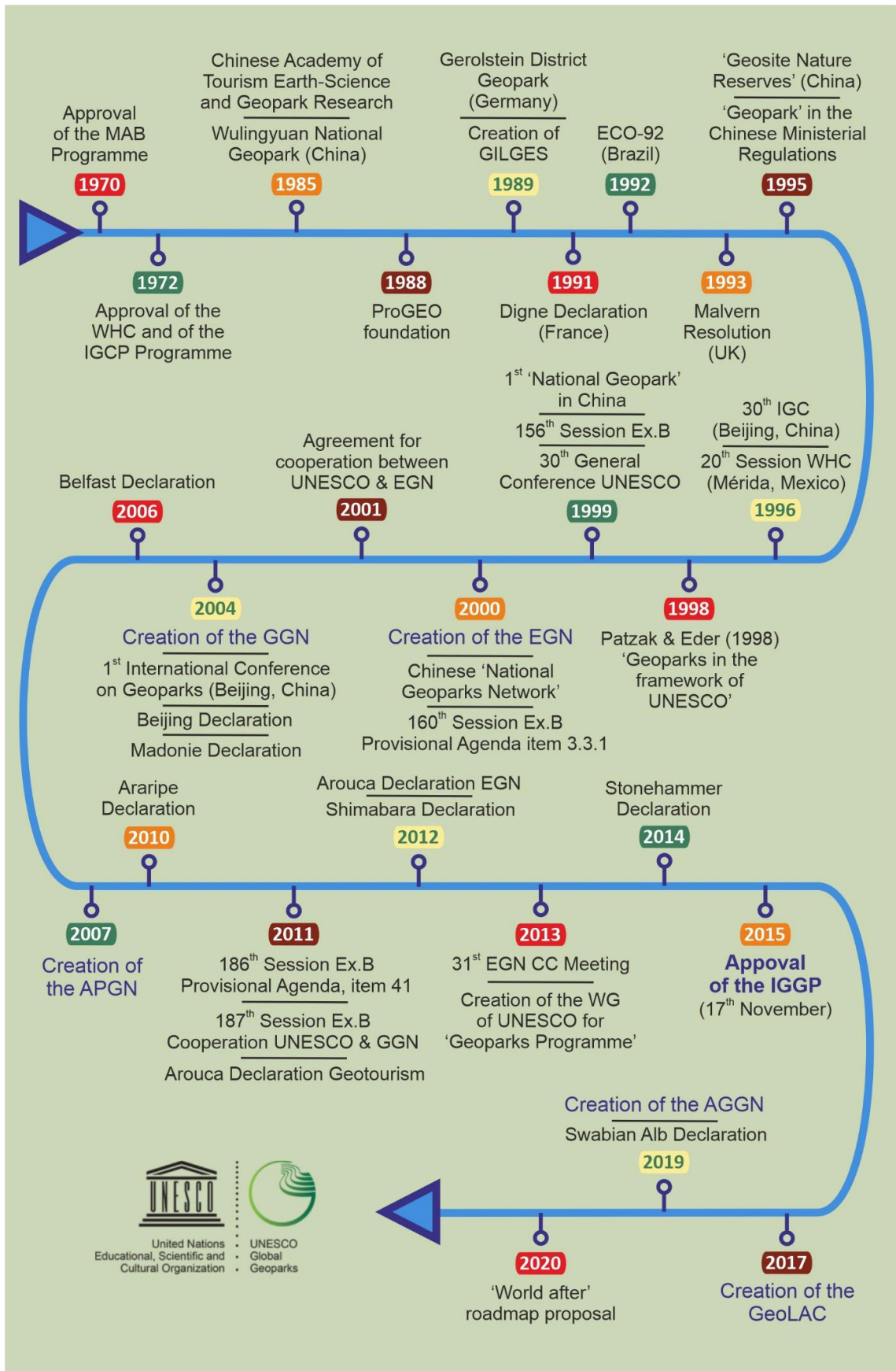


Figure 34 – The main milestones that led to the creation and consolidation of the new UNESCO designation - the UGGPs; © Elizabeth Silva.

## CHAPTER IV - THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT IN THE FRAMEWORK OF UNESCO

As stated previously along with this research study, when speaking about the UGGps it is inevitable to speak about SD. Indeed, it is the cornerstone of the UGGps. These territories ultimately aim for local development, involving the local communities, intending to improve their living conditions (Mc Keever & Zouros, 2005; Dowling, 2009, 2011, 2013; Pagès, 2009; Azman *et al.*, 2010; Fassoulas & Zouros, 2010; Mc Keever & Zouros, 2010; Farsani *et al.*, 2011a, 2011b, 2014; Burlando *et al.*, 2012; Lazzari & Alloia, 2014; Ngwira, 2015; Henriques & Brilha, 2017; Leman *et al.*, 2017; Rosado-González *et al.*, 2017, 2020a, 2020b; Han *et al.*, 2018; Silva & Sá, 2018; Silva *et al.*, 2018a, 2018b; Girault, 2019; and references therein).

It was also understood that geodiversity is one of the central pillars considered the starting point to reach the SD of these UNESCO territories. However, the maintenance of a UGGp is an ongoing process throughout generations aiming at the balance between the use of the natural resources delivered by Earth and the development of local communities of those territories. As mentioned by Girault:

*“While Geoparks (...) contribute, through their activities, to the economic life of a region, and while their success sometimes attracts a large number of foreign visitors who will, in turn, spend part of their money in hotels, restaurants, and shops, the reasons given to support the financing of these institutions must first and foremost focus on the real issues in which they participate, and in particular the preservation of a remarkable heritage, but also a social role between the inhabitants, educational issues, etc. The economic argument, if it exists, cannot make us forget these fundamental questions for the development of humanity and respect for our environment at the risk of seeing the essential disappear one day” (2019, p. 104).*

Furthermore, the ‘Top Ten Focus Areas’, that must be worked by the UGGps, are intrinsically connected and are all equally essential to the constant development of these territories throughout generations. They are also connected with the main issues of the 17 SDGs. This is the core business of this research study. It intends to demonstrate the effective contribution of the selected UGGps, in their daily activities, to the achievement of these SDGs. And being SD also a central ‘Focus Area’ for the UGGps, it is natural that it must be present in the planning and development of the strategic plans

of these territories (UNESCO, 2016a, 2018a; Annan-Diab & Molinari, 2017; Silva, 2017; Silva & Sá, 2017a, 2017b; Silva *et al.*, 2017a, 2017b, 2018a, 2018b, 2019; Weber, 2017, 2018; Adiyaman *et al.*, 2018; Han *et al.*, 2018; Henriques *et al.*, 2018; Manning *et al.*, 2018; Mc Keever, 2018; Patrocínio *et al.*, 2018; Rosado-González *et al.*, 2018; 2019; 2020a, 2020b; Silva & Sá, 2018; Silva & Weber, 2018; Agbedahin, 2019; Cai *et al.*, 2019; Sá & Silva, 2019, and references therein).

In this context, this research study takes into account the ‘Top Ten Focus Areas’, but mainly to SD, under the UNESCO perspective. This Organization assumes that all its Programs contribute to the achievement of the SDGs defined in the 2030 Agenda (UNESCO, 2017d). However, in this research, the focus is based especially on the strategy of the IGGP towards the 2030 Agenda and the contribution of the UGGps to the 17 aspirational goals.

With the gathered data collection, it was found that the UGGps can contribute far more than the ‘Eight SDGs’ selected by the IGGP, bearing in mind the ‘UGGp’ concept aligned with the referred ‘Top Ten Focus Areas’(Fig. 35).



**Figure 35** – The ‘Eight SDGs’ selected by the IGGP; © Elizabeth Silva.

Regarding the referred ‘Top Ten Focus Areas’, the IGGP states that (UNESCO, 2015f; 2018a):

*“Even if an area has an outstanding, world-famous geological heritage of outstanding universal value it cannot be a UGGp unless the area also has a plan for the sustainable development of the people who live there.”*

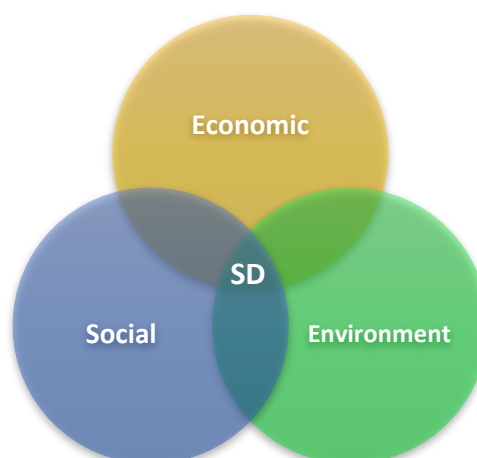
Bearing in mind this requirement, for a UGGp to succeed, its management plan must always integrate issues related to SD and have the support of the local communities. Therefore, desirably integrating the 17 SDGs of the 2030 Agenda in the developed activities, focusing on the most suitable targets and indicators, utterly aiming for the territorial SD. It is in this context, considered pertinent to recall some milestones of SD, in the framework of the work developed and supported by UNESCO.

#### **4.1 The pathway until the approval of the 2030 Agenda: the bridge between the main milestones of SD and the work developed by the UGGps in this framework**

Under the UNESCO scope, it is relevant to understand the pathway that led to the approval of the 2030 Agenda. This was the conducting wire when considering the main milestones of SD and the bridge between this concept and the UGGps work, in this field. This choice took into consideration that these territories are UNESCO designated areas, and, therefore, linked with the Organization's strategies and with the guidelines of the IGGP. In this sense, when considering the main milestones that led to the approval of the referred 2030 Agenda, it is inevitable to go back at least to 1987 and recall the Brundtland Report (United Nations, 1987). This document marked forever the consolidation of the concept around SD, despite all the theories and discussions until nowadays (Keeble, 1987; Timberlake, 1988; Godland *et al.*, 1991; McChesney, 1991; Håland, 1999; Sneddon *et al.*, 2006; Burns & Witoszek, 2012; Marques, 2012; Telfer, 2012; Borowy, 2013; Holden *et al.*, 2013; Graf, 2015; Burton & Onguglo, 2017; Agbedahin, 2019, Caffaro *et al.*, 2019; Schreiber-Barsch & Mauch, 2019; Vukić, 2019, and references therein).

This report also marked the way how SD was understood. Far more than being just an abstract concept, it brought into the light the three pillars on which this concept would lay on to reach for possible changes of behavior related to social, economic, and environmental issues. These three pillars identified in the report (Fig. 36), gave place to the emphasis based on the ‘Planet’, ‘Prosperity’, and ‘People’

(Borowy, 2013; Silva *et al.*, 2017b, 2018a, 2019; Silva & Sá, 2018; Agbedahin, 2019; Rosado-González *et al.*, 2017, 2018, 2019, 2020a, 2020b).



**Figure 36** - The three main pillars of SD according to the Brundtland Report; © Elizabeth Silva.

The term ‘Sustainable Development’ emerged globally in the 1980s in response to the growing awareness of the need to balance social and economic development with environmental stewardship (Hatting, 2002; Fien, 2004, 2005b; Agbedahin, 2019). It is in this framework that numerous critical analyzes and reflections on this matter emerged, of which those of Hatting (2002) stands out, according to which:

*“(…) one of the most remarkable things about the concept of SD is that it has become part of a small set of words like democracy, justice, fairness, equity, and transparency that almost everyone seems to support, and almost no one seems to reject. As such, the concept of SD has become part of a common vocabulary among those who are concerned about the impact of human activity on the ecological basis of our existence”.*

This is completely in line with the notion of SD when speaking about UGGps activities. However, the Brundtland Report stressed that (United Nations, 1987):

*“(…) Yet in the end, SD is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with future as well as present needs. We do not pretend that the process is easy or straightforward. Painful choices have to be made. Thus, in the final analysis, SD must rest on political will.”*

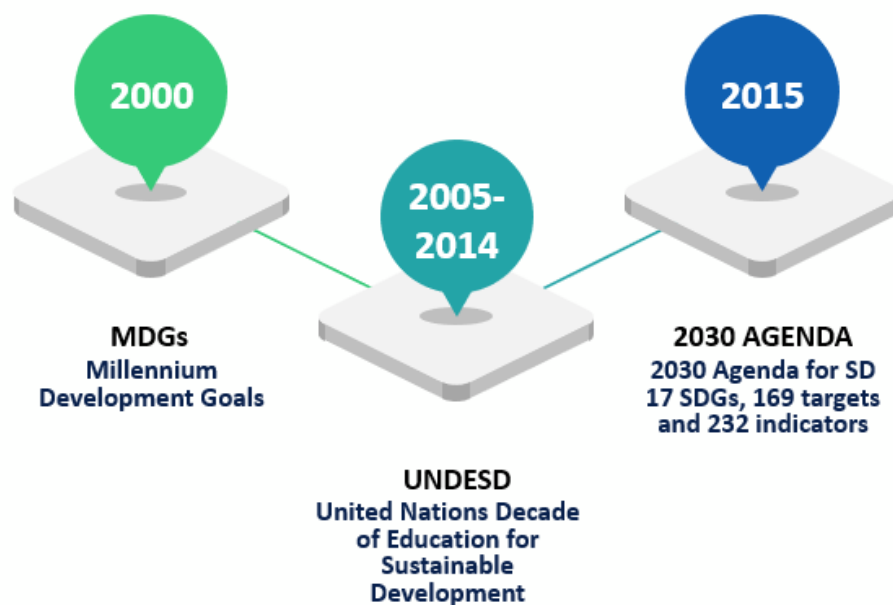


Still, this Report did not have a total consensus, due to the criticism raised among different quarters of society. It was criticized, especially because it seemed that this document was following the same line of strategies of economic growth, and not presenting objective solutions to the environmental and social problems faced by society. This was the case of Trainer, who stressed that this document:

*“(...) reinforces the belief that growth and affluence are necessary to solve problems related to the environment. (...) the report fails to identify the fundamental causes of the problems and as a result, it puts forward solutions that are the direct opposite of those required. It is a conventional statement that argues for the continuation of the same basic values, systems, and strategies, which are the very roots of the problems to which the report was intending to offer solutions” (1990, p.71).*

Nonetheless, the Report had a powerful message, very present nowadays. At least created a new awareness of human activities and especially their environmental consequences. The issues that were highlighted in this document had to do with the major concerns also felt by the UGGps. These concerns had to do with the effect of climate change, desertification, deforestation, water, air, oceans, and soil pollution, which threaten the biosphere as a whole, as well as the growing pressure on ecosystems and natural resources that represent a serious threat to the SD of societies and economies (Keeble, 1987; United Nations, 1987, Marques, 2012). Even today, it is recognized that these environmental problems, which implies also social and economic problems have no borders. These problems are constantly threatening all the living species on planet Earth. So, the Brundtland Report opened the irreversible path for the improvement and updating of the SD concept, which would lead to other important milestones (Fig. 37) ending with the approval of the 2030 Agenda, which is also the focus of this research study, (United Nations, 2015; Silva, 2017; Silva *et al.*, 2017b, 2018a, 2019; Silva & Sá, 2018).

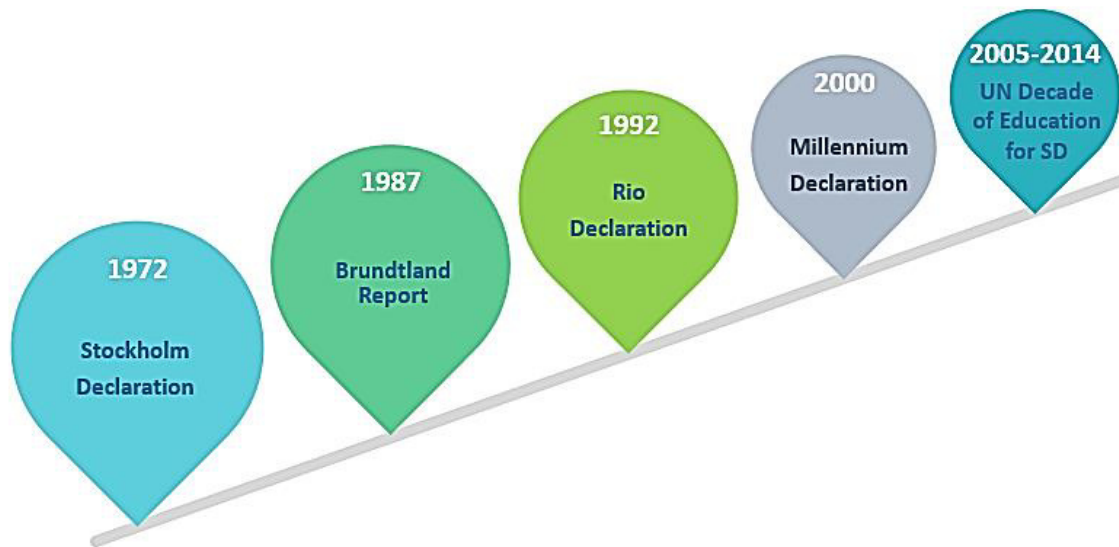
Thirty-three years after the Brundtland Report, society, in general, still faces the same and even more dramatic social, environmental, and economic problems, that were already identified at that time. And still lacking strong political will and true citizen participation (Marques, 2012, with references therein), including youth movements (such as those led, for instance, by Greta Thunberg) to find feasible solutions and to improve the life of humankind.



**Figure 37** – The three major milestones for the consolidation of the SD concept; © Elizabeth Silva.

These are the major expectations created with the proclamation of the 2030 Agenda. Nevertheless, this Report contained the necessary seeds for the consolidation of the SD concept, and especially to promote it through education.

On the other hand, from 1987 until 2015, other significant milestones helped to consolidate the SD concept. However, it would be impossible to enumerate all those milestones that occurred at different levels and areas in this chapter. Consequently, it seemed reasonable in this research study to choose just some of the most relevant milestones regarding this concept, connecting it to the main focus of the 'UGGp' concept (Fig. 38). This choice was based mainly on the importance of SD for the local communities living in these territories, and also in the definition of the UGGp supported by UNESCO through the IGGP (Patzak, 2003, 2010, 2015; Zouros & Martini, 2003; Zouros, 2004, 2006, 2010, 2012; Mc Keever & Zouros, 2005, 2010, 2011; *Martini & Zouros*, 2009; Eckhardt, 2010, 2012; Zouros & Valiakos, 2010; Wimbledon & Smith-Meyer, 2012; UNESCO, 2015a; Schaaf & Clamote, 2016; Firmino *et al.*, 2018a; Rosado-González *et al.*, 2019, 2020a, 2020b; Sá & Silva, 2019; Stoffelen *et al.*, 2019; Rosado-González, 2020; Stoffelen, 2020).



**Figure 38** – The main milestones of SD regarding the period 1972-2014; © Elizabeth Silva.

As mentioned in the first chapter of this research study, after the Declaration of the UN Conference on the Human Environment, known as the ‘Stockholm Conference’ (United Nations, 1972), SD was reinforced by the Brundtland Report (United Nations, 1987), and in the 1990s, by the *Rio Declaration on Environment and Development* approved in 1992, in Brazil (United Nations, 1992a). This Declaration was divided into ‘27 Principles’. It is interesting to observe that ‘Principle 1’ can be easily matched with the UGGps major concern: Human beings are at the center of concerns for SD. They are entitled to a healthy and productive life in harmony with nature (United Nations, 1992a; UNESCO, 2005a, 2005b; Marques, 2012; Thacher, 2015; Agbedahin, 2019). Also, the referred ‘Principles’ could be connected to several issues regarding the 17 SDGs. In this sense, ‘People’, ‘Planet’, and ‘Prosperity’ were at that time also in the center of gravity of this Declaration.

Therefore, from 1992 until 2015, it is relevant to recall some major milestones of the referred roadmap of SD: *i*) the ‘Millennium Summit’, held in New York in 2000, where it was approved the *Millennium Declaration* (United Nations, 2000) which led to the approval of the eight ‘Millennium Development Goals’ - MDGs (Fig. 39) (United Nations, n.d.b); *ii*) and the World Summit on Sustainable Development, held in Johannesburg in 2002 (United Nations, 2002b). During this Summit it was approved the *Johannesburg Declaration on Sustainable Development - From our Origins to the Future* (United

Nations, 2004), giving continuity to the MDGs objectives and opening the way to create the new 2030 Agenda for SD (Petti *et al.*, 2020).



Figure 39 – The eight ‘Millennium Development Goals – MDGs’; (United Nations, n.d.b).

However, it is relevant to stress that all these international conferences and UN Declarations, took place at a higher and political level, trying to have a consensus on shared values, goals, and strategies. Nonetheless, despite all these efforts from the international community, it seemed that all these goals did not reach realistically the common people, the inhabitants of local communities, although many positive results were reached, for instance, with the implementation of the eight ‘MDGs’. So, it seemed that it was time for the Member States to create a more effective way to reach people, to create awareness, and try to push a change of attitudes and behaviors, through the most powerful mechanism: Education for Sustainable Development (ESD) (Faure, 1972; Sluga, 2010; UNESCO, 2011e; Marques, 2012; UNESCO, 2012c, 2012d, 2012e, 2015g, 2015h, 2015i; Power, 2014). It was in this framework which was established the ‘UN Decade of Education for Sustainable Development’ - UNDESD, regarding the period 2005-2014 (United Nations, 2002a; UNESCO, 2005b, 2012c, 2014d) (Fig. 40).

UNESCO supported the proclamation of this Decade recognizing that (UNESCO, 2012d):

*“(…) moving towards SD cannot be achieved by political agreements, financial incentives, or technological solutions alone. To safeguard the natural environment and promote greater global equity, we need a fundamental change in the ways we think and act. This can only be achieved if all individuals and societies are equipped and*

*empowered by knowledge, skills, and values as well as heightened awareness to drive such change”.*



**Figure 40** - Logo of the United Nations Decade of Education for Sustainable Development - UNDESD (2005-2014) (UNESCO, 2002b).

It was in this context that ESD was seen as a dynamic concept and a term that incorporates a new vision of a kind of education that seeks to empower people of all ages to take up the responsibility of creating a sustainable future (Fien, 2004, 2005a, 2005b, 2012e; Marques, 2012; Agbedahin, 2019).

Bearing in mind the core business of this research study, it is worthwhile to recall at this point that the EGN was already created in 2000, and in 2004 it was established the GGN. So, it is interesting to realize that all these high-level discussions around the SD concept, somehow it seems that this concern was already empirically integrated into the primary definition of a 'Global Geopark'. And lately, the concept of a UGGp, stressed, even more, the role of the SD in the UGGps activities according to its official definition "the UGGps are managed with a holistic concept of protection, education, and SD" (UNESCO, 2014b, 2015a, 2015b, 2015c).

In this framework, and considering the main goals of the UNDESD (United Nations, 2002a; UNESCO, 2005b), it seemed that the UGGps could be vibrant actors or even effective partners in the implementation of this Decade since one of its pillars is indeed Education (Missotten & Patzak, 2006; Paz *et al.*, 2010; Silva *et al.*, 2010, 2011, 2012, 2013a, 2013b, 2014; Pereira *et al.*, 2011; Marques, 2012; Pásková & Zelenka, 2018; Silva & Sá, 2018, 2019; Sá & Silva, 2019). Education, besides belonging to one of the 'Top Ten Focus Areas' developed by the UGGps, is also a 'pre-requisite' for these territories

(UNESCO, 2016a), since it obliges the management structures to develop a line of action, (Fig. 41):



**Figure 41** – The importance of ‘Education’ in the developed activities of the UGGps; © Elizabeth Silva.

It is in this context that ‘Geoeducation’ is one of the required lines of action in the management plan of each UGGp and aspiring geoparks. At this point, it is important to reinforce that ‘Geoeducation’ is not only the education related to Earth Sciences but, essentially, with all the educational issues related to ‘Mother Earth’. In effect, without educational programs, it is impossible to have a UGGp functioning accordingly to the application dossier required by the IGGP (Part E.1.5 *item 3* - “Information, Education and Research” and Part E.5. – “Educational Activities” (UNESCO, 2018b) (Table 13).

**Table 13** – Excerpt of the application form for UGGps related to ‘Education’ (version October 2018).

<p><b>E.1.5 INFORMATION, EDUCATION AND RESEARCH</b></p> <ol style="list-style-type: none"> <li>1. What information and interpretation do you provide to the broad public and on what medium?</li> <li>2. Demonstrate that information on boards, in brochures and leaflets are understandable by a non-specialist audience.</li> <li>3. <b>Indicate what educational programmes you run and how good or innovative they are, commenting on what could be improved. Present what kind of educational activities</b> (not only on geology but also on nature, culture, intangible heritages, as well as on climate change and natural hazard) <b>your Geopark offers</b> (university field courses, school environmental educational programmes, vocational training, programmes for families and kids, etc.).</li> <li>4. Explain what scientific research is conducted by or in cooperation with a UGGp in geosciences as well as in other fields of different heritages.</li> </ol> <p><b>E.5 EDUCATIONAL ACTIVITIES</b>  <b>Present the progress and success of education activities related to your UGGp and any projects.</b></p>
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(Adapted from UNESCO, 2018b)

When analyzing the developed activities of the UGGps, it is possible to connect those activities to the development of the four pillars of UNESCO: Education, Science, Culture, and Communication. It is also possible to identify activities developed in the framework of the 2030 Agenda, and those related to education. By definition, the UGGps recognize the importance of education as a vital engine to promote a transformative change, lifelong learning opportunities for all, and to foster quality inclusive education as expressed in 'SDG 4 - Quality Education' (United Nations, 2015e; Silva & Sá, 2018; Sá & Silva, 2019).

Nevertheless, other authors, such as Fernández Álvarez stressed the "importance of Geotourism as an important tool also for education, inside the UGGps. It is considered that it contributes to the development of educational programs for school communities, local inhabitants, and visitors" (2020, p. 2). For this author, this new way of approaching the tourist phenomenon has given rise to the notion of 'geoeducation'. The same author refers that this "may act as a nexus of union between sustainable tourist initiatives and awareness in environmental matters, nurturing the transfer of knowledge from scientific circles to the local population, and from them to visitors (2020, p.2).

All these arguments are very pertinent because through 'Geoeducation' and 'Geotourism' it is possible to preserve and conserve the geological heritage throughout generations. In this sense, the educational programs offered by the UGGps, and the geotourism activities do not just intend to explain in a more accessible way the geological heritage and all other aspects related to it, but also connecting and creating bonds between this heritage and the local communities, promoting their sense of pride on the territories.

Moreover, this means that through formal and informal education it is possible to reach the local inhabitants, students, visitors, and stakeholders, and try to change their perception regarding the landscape that surrounds them. It also stresses the importance to preserve and value the geological heritage, and ultimately to have the local communities engaged in the UGGps main goals.

Additionally, especially through ESD, it is expected to contribute to the change of behaviors and attitudes, to achieve a better balance between human activities and Nature, demonstrating that a multitude of small actions can make a major difference (Burns & Witoszek, 2012). This is one of the flagships of the UGGps when visiting the

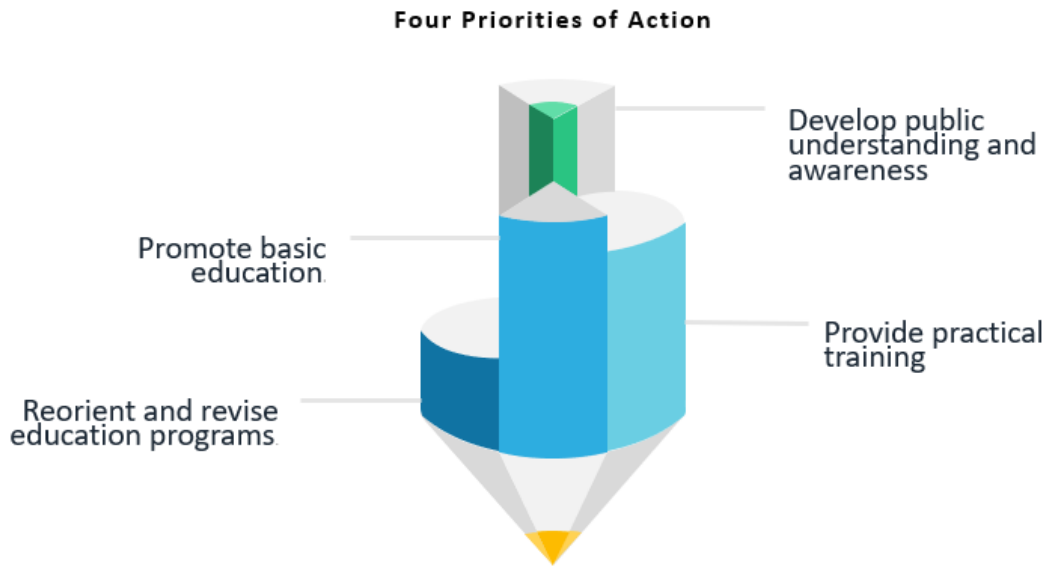
schools and developing their educational programs among these educational communities. But also, when the students of all ages have the opportunity to visit these UNESCO territories. Locally, they have a 'book of stone' that makes it possible for the elements of the staff teams to explain *in loco* the geological heritage, and consequently the need to preserve it and value it. Furthermore, Fernández Álvarez also states that the UGGps are understood to be "assets that contribute to the economic diversification of the areas where they are located, as spaces for generating knowledge and raising the public's environmental awareness" (2020, p.3). As previously mentioned, the UGGps are assumed as 'territories of science' and education, so cooperation with universities and research centers is crucial for a permanently updated and appealing educational offer. This also implies the need to operate capacity-building for both staff members, the school community, and the local population. This reveals the importance of EDS and the goals that were established by the UNDESD (2005-2014). It also stresses that the UGGps could have been more recognized as important actors in the implementation of the UNDESD goals, due to their mission and cooperation in the field of education and acting as referred to as 'territories of science'. However, at that time it seemed that the UGGps belonging to the GGN were not so familiar with the main goals of this Decade, and also regarding the role of UNESCO in this domain.

This Organization had indeed the task to promote the referred Decade, which aimed to promote sustainable skills and behavior, inspired by creative and critical ways of thinking, to encourage the resolution and management of problems that stand in the way of SD (UNESCO, 2005a, 2005b). In this sense, the Decade had four priority areas of action (Fig. 42).

Under the International Implementation Scheme, the UNDESD was implemented in two distinct phases: the **first phase (2005-2008)** was invested in defining and promoting ESD, identifying actors, and developing partnerships. From the **second phase (2009-2014)**, the emphasis shifted towards a renewed focus on advancing ESD in the context of quality education, with the focus on three key issues: climate change, biodiversity, and disaster risk reduction (UNESCO, 2005a, 2005b, 2014d; Marques, 2012; Agbedahin, 2019). It was also expected that during this Decade, it would be possible to reinforce the goals of the 'UN Literacy Decade: Education for All' (2003-2012) (United Nations, 2002c).



## UN Decade of Education for Sustainable Development



**Figure 42** – The four ‘Priority Areas of Action’ of the UNDESD; © Elizabeth Silva.

All these commitments were expected to put education at the heart of SD, matching also with the ‘MDGs’, particularly those of achieving universal primary education and gender equality (UNESCO, 2005b). In this scope, in 2009 UNESCO published the First Report “Learning for a Sustainable World: Review of Contexts and Structures for ESD” (Wals, 2009), which presents a review of the progress achieved and the challenges encountered during the first five years of the Decade. This report established forecasts, strategies, mechanisms, and contexts that could support the development and implementation of an ESD, and culminated in the *Bonn Declaration* (UNESCO, 2009). Several principles were agreed upon, namely that investment in ESD represents an investment in the future (UNESCO, 2009, 2012e; Marques, 2012).

During Phase II of the Decade evaluation (2010-2011), it was focused on the processes and learning for an ESD, which implied approaches, teaching, and learning styles adopted to implement ESD in different types, levels, and goals of education. This phase also focused on what has been changing since the proclamation of the Decade (UNESCO, 2011e; Marques, 2012; UNESCO, 2012c, 2012d, 2012e) and led to a Second Report “Education for Sustainable Development - An Expert Review of Processes and Learning, released in 2011 (UNESCO, 2011e; Marques, 2012).

What is interesting when analyzing these reports, and bearing in mind that the UGGps put in the center of their work the SD of the local communities, it could be concluded that although not familiar with all these UN and UNESCO documents, the UGGps were following empirically the concept of SD, and giving their first steps in the defined principles that would become the background of the 2030 Agenda for SD.

Lately, during the 190<sup>th</sup> Session of the Executive Board of UNESCO, in 2012, it was discussed the ‘Strategic Vision and Plan for UNESCO’s Advocacy Efforts for Education for All’ (UNESCO, 2012f). This document stressed three strategic aims (UNESCO, 2012f) (Fig. 43):



**Figure 43** - The three strategic aims of ‘Education for All’ (EFA); © Elizabeth Silva.

It was in this context that EDS brought a new paradigm to sustainability, putting ‘People’ and the ‘Planet’ in its center. Also, with the evolution of this concept, it was possible to consolidate the roadmap to the 2030 Agenda. This paradigm could also be matched with the perception that the UGGps ‘*are for the people and built with the people*’ (Sá & Silva, 2019). Moreover, taking into consideration the UGGp concept and their ‘Top Ten Focus Areas’, it is possible to assume that the UGGps contribute to the other remaining pillars of the 2030 Agenda: ‘Peace’, ‘Prosperity’, and ‘Partnerships’.

Throughout all these milestones, it is clear that since the 1980s, the SD concept evolved through time, as well as the ESD strategies. And many other milestones related to this issue were giving progressive relevance to the well-being of people on the Planet.

In this context, when the ‘MDGs’ were concluded by the end of 2015, a new agenda was already being prepared. Yet, in the background of such a process, it was released the Report “A Life of Dignity for All”, presented in 2013, by the Secretary-General of the UN, Ban Ki-moon (United Nations, 2013). In the outcome document adopted by the Member States, it was renewed the commitment to meet the ‘MDGs’ targets and agreed to hold a high-level Summit in 2015 to adopt a new set of goals building on the achievements of the ‘MDGs’ (United Nations, 2015; Kwon, 2017). In this document, it was also stressed the key elements of the **emerging vision for the post-2015 development agenda**, which include the following items (United Nations, 2013):

- i) **Universally**, to mobilize all developed and developing countries and leave no one behind;
- ii) **Sustainable Development**, to tackle the interlinked challenges facing the world, including a clear focus on ending extreme poverty in all its forms;
- iii) **Inclusive Economic Transformations**, ensuring decent jobs, backed by sustainable technologies, and to shift to sustainable patterns of consumption and production;
- iv) **Peace and Governance**, based on the rule of law and sound institutions, as key outcomes and enablers of development;
- v) **A New Global Partnership**, recognizing shared interests, different needs, and mutual responsibilities, to ensure commitment to and means of implementing this new vision;
- vi) **Being ‘Fit For Purpose’**, to ensure the international community is equipped with the right institutions and tools to address the challenges of implementing the SD agenda at the national level.

Finally, in this report, it was described three measures of the UN for a new post-Agenda 2015 (United Nations, 2013) (Fig. 44):

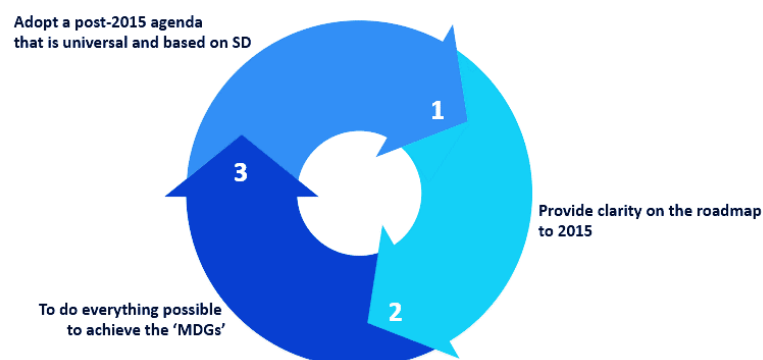


Figure 44 - Three measures proposed by the UN for a new post-agenda 2015; © Elizabeth Silva.

In this framework, the message was clear, and a new agenda was already being built based on the knowledge and challenges during the implementation of the 'MDGs'. As stated by Petti *et al.*, the SDGs were intended to “redress many of the shortfalls of the MDGs” (2020, p.3). Therefore, the way for a new agenda for SD was opened and the 'MDGs' would be divided into more goals, **going from eight to 17 goals**, and this time with 169 targets and 232 indicators. This would result in a more ambitious agenda for SD worldwide (United Nations, 2015e; Annan-Diab & Molinari, 2017; Sá *et al.*, 2017, 2019; Silva, 2017; Silva & Sá, 2018; Silva *et al.*, 2018a, 2018b, 2019; Rosado-González *et al.*, 2018, 2019, 2020a, 2020b; Agbedahin, 2019; Sá & Silva, 2019; Petti *et al.*, 2020; Rosado-González, 2020).

Following this Report, UNESCO endorsed the 'Global Action Programme (GAP) on ESD' through the 'Follow-up of the UN Decade of ESD post-2014 – GAP' (UNESCO, 2013h). This Programme was launched at the World Conference on ESD, in 2014, in Aichi-Nagoya, in Japan (UNESCO, 2014e). During this occasion, UNESCO also launched the “UNESCO Roadmap for implementing the GAP on ESD”. As stated by the Director-General of UNESCO in its Foreword “I hope that the GAP (...) will succeed in mobilizing the community of stakeholders for ESD and provide practical guidance for its effective implementation” (UNESCO, 2013h).

Consequently, UNESCO's next step was the release of the Final Report “Shaping the Future We Want: UN Decade of Education for Sustainable Development” (UNESCO, 2014d). This report would constitute an effective contribution to the consolidation of the negotiations on the global post-2015 agenda and the launch of a set of new SDGs (UNESCO, 2014d, 2015h). Taking into consideration the three strategic perspectives of the referred Decade (Table 14), it is possible to make a connection between these and the themes covered by the 17 SDGs of the 2030 Agenda (UNESCO, 2005b).

Although the referred report recognized that the Decade reached many of its objectives, especially to learn to live and work sustainably and that the ESD has galvanized pedagogical innovation, based on extensive partnerships and networks, it also recognized that considerable challenges remained in realizing the full potential of ESD. These included the need for further strong political support to implement ESD, and also the need for more research, innovation, monitoring, and evaluation to develop and prove the effectiveness of ESD good practices (UNESCO, 2014d).

**Table 14** – The main strategic perspectives of the UNDESD.

Socio-Cultural perspectives	Environmental perspectives	Economic perspectives
Human Rights	Natural Resources (water, energy, agriculture, biodiversity)	Poverty Reduction
Peace and Human Security	Climate Change	Corporate Responsibility and Accountability
Gender Equality	Rural Development	Market Economy
Cultural Diversity and Intercultural Understanding	Sustainable Urbanization	
Health	Disaster Prevention and Mitigation	
HIV/AIDS		
Governance		

(Adapted from UNESCO, 2014d)

Furthermore, in this Report, it was mentioned also three important challenges still needed to put into action, recognizing the possible lack of knowledge in general, about the goals of the Decade during 2005-2014 (Fig. 45).



**Figure 45** – The three important challenges of the UNDESD (UNESCO, 2014d); © Elizabeth Silva

After this UNESCO report, also in 2014, during the 68<sup>th</sup> session, the General Assembly of the UN has presented the Report of the ‘Open Working Group on Sustainable Development Goals’ (United Nations, 2014). Following this report, the DG of the UN presented at the General Assembly a ‘synthesis report’, as a guide for future negotiations for a new global agenda centered on people and the planet, and underpinned by human rights, proposing one universal and transformative agenda for SD (United Nations, 2015a). Consequently, the SDGs were described as action-oriented, global, and universally applicable, taking into account different national realities, capacities, and levels of development. It sought to combine aspirational global targets, with country-specific targets to be set nationally (United Nations, 2015e; Silva *et al.*, 2018a, 2018b, 2019). This UN document was indeed remarkable since it opened the path to the proclamation of the 2030 Agenda for SD, in September 2015, by the General

Assembly of the United Nations (United Nations, 2015e; Weber, 2015, 2017, 2018; Annan-Diab & Molinari, 2017; Balogh *et al.*, 2017; Barbier & Burgess, 2017; Biermann *et al.*, 2017; Bloomfield *et al.*, 2017; Borges *et al.*, 2017; Collste *et al.*, 2017; Fleming *et al.*, 2017; Frey, 2017; Gill & Bullough, 2017; Gratzner & Keeton, 2017; Henriques & Brilha, 2017; King, 2017; MacFeely 2017; MacNaughton, 2017; Maduekwe *et al.*, 2017; Pradhan *et al.*, 2017; Reyers *et al.*, 2017; Saito, *et al.*, 2017; Saiz & Donald, 2017; Vasseur *et al.*, 2017; Winkler & Williams, 2017; Crofts, 2018; Engberg-Pedersen & Zwart 2018; Henriques *et al.*, 2018; Leal Filho *et al.*, 2018; Pásková & Zelenka, 2018; Rosado-González *et al.*, 2018, 2019, 2020a, 2020b; Silva *et al.*, 2018a, 2018b, 2019; Silva & Sá, 2017a, 2018; Silva & Weber, 2018; Mc Keever, 2018; Sá & Silva, 2019; Sá *et al.*, 2019; Catana & Brilha, 2020; Petti *et al.*, 2020; Rosado-González, 2020, and references therein).

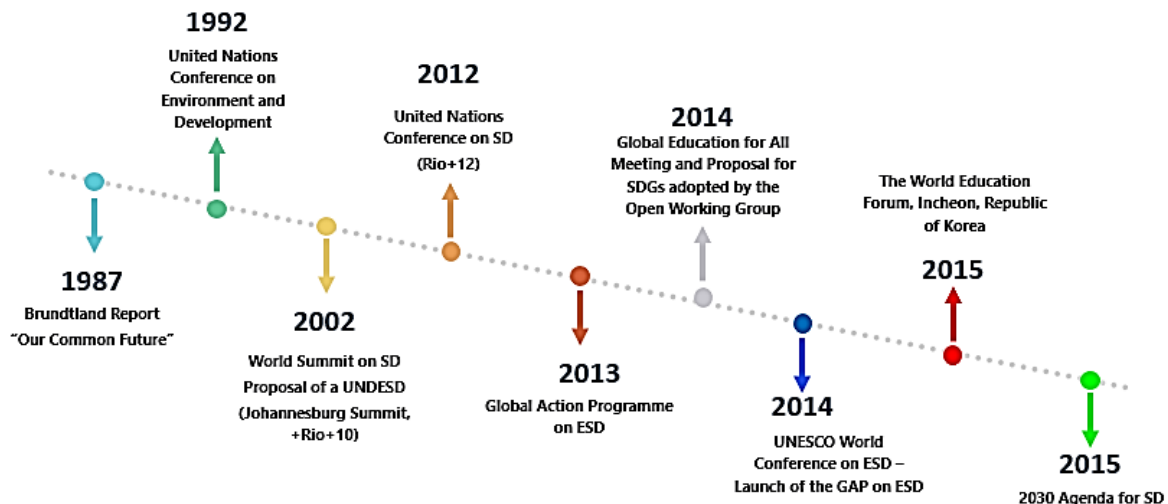
So, after the ‘MDGs’, it was globally accepted that the challenges continue to be complex, and more action was needed to achieve those basic goals and also the aspirational goals of a new agenda for SD in the next 15 years.

In this context, it is relevant to also mention three major conferences that contributed also to the consolidation of the implementation of the 2030 Agenda for SD (United Nations, 2015b, 2015c, 2015d):



**Figure 46** – The three conferences aiming to consolidate the implementation of the 2030 Agenda for SD © Elizabeth Silva.

As a summary, the following milestones were the roadmap that contributed to the consolidation of the efforts taken to achieve an EDS and to reach an Agenda for SD (Fig. 47).



**Figure 47** – The major milestones that lead to the proclamation of the 2030 Agenda for SD; © Elizabeth Silva.

Consequently, in October 2015, the 2030 Agenda for SD was adopted, during the 70<sup>th</sup> session of the General Assembly of the UN, under the motto: *Transforming our world: the 2030 Agenda for Sustainable Development* (United Nations, 2015e).

Following this process, in 2017, the DG of UNESCO, Irina Bokova created a ‘Task Force on the 2030 Agenda’, to “ensure sharp, effective, and coordinated action for countries as they take forward, implement and review the new agenda” (UNESCO, 2017d, p. 1). At this time, UNESCO recognized the vital importance of SDG 4 – ‘Quality Education’. This SDG would be the center of the Organization's strategy towards the 2030 Agenda. However, UNESCO was also embedding the principles of the 2030 Agenda into all of its programs, involving conceptual work as well as capacity-building efforts, bearing in mind always two global priorities: Gender Equality (SDG 5) and Africa (UNESCO, 2017d, 2019i, 2020d). It was in this context, that due to UNESCO’s mandate to contribute to the building of peace, the eradication of poverty, SD, and intercultural dialogue through education, the sciences, culture, communication, and information (UNESCO, 2017d), that it recognized its major action in nine SDGs: 4, 5, 6, 9, 11, 13, 14, 15, and 16. It was also identified other three SDGs (SDGs 1, 10, and 17) as cross-cutting and relevant to the Organization’s action (UNESCO, 2017d).

Regarding the UNESCO Science Sector Programs, also in 2017, under the main line of action ‘Harness science, technology, innovation, and knowledge’, it was highlighted five major SDGs where science plays a decisive role (Fig. 48).



**Figure 48** - Five SDGs where science plays a decisive role according to UNESCO action (UNESCO, 2017d); © Elizabeth Silva.

It is relevant to observe that at this point, UNESCO also mentioned specifically the role of the BRs and UGGps in the achievement of two SDGs, under the referred line of action (UNESCO, 2017d):

- i) **SDG 12 – ‘Responsible Consumption and Production’** – *UNESCO designated BRs and UGGps are observatories of responsible consumption and production;*
- ii) **SDG 16 – ‘Peace, Justice and Strong Institutions’** – *Promote international scientific cooperation and peacebuilding, including through the management of transboundary BRs and UGGps.*

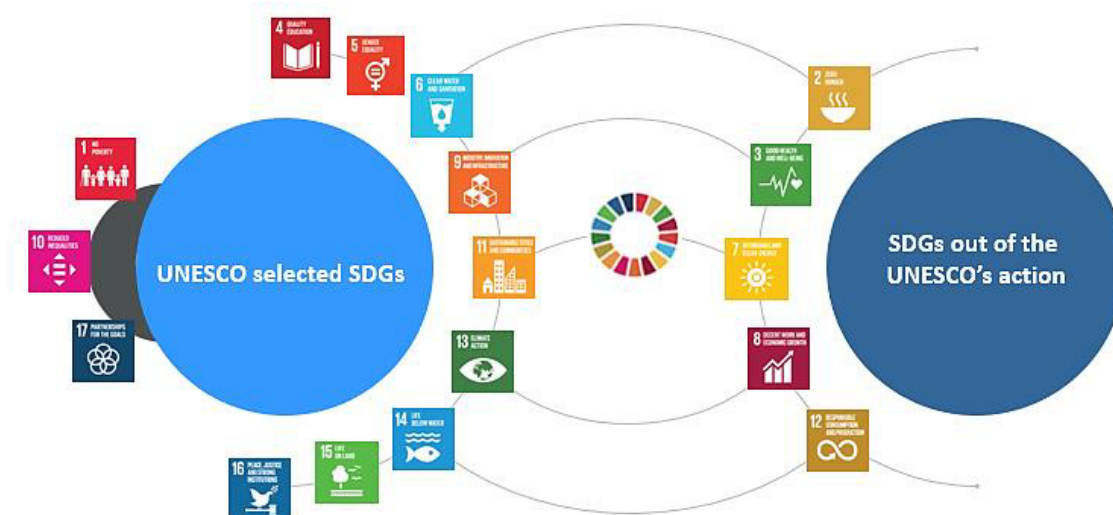
Also, in the Natural Sciences, UNESCO expressed that SDGs 6, 11, 13 and 15, would be the focus of the IHP, the MAB Programme, and the IGGP in the fields of freshwater, the ecological and earth sciences, as well as science for disaster risk reduction (DRR) and climate change action (UNESCO, 2017d). Regarding the Social and Human Sciences, under the line of action ‘Understand social transformations for peaceful, inclusive and right-based societies’ (UNESCO, 2017d), the Organization also selected the SDGs 11 and 16 as two major goals.

With the adoption of the 2030 Agenda, UNESCO reassessed its strategic orientations to target those core areas where the Organization had a recognized international role of coordination, benchmarking and monitoring, advocacy, capacity



development, and policy advice. All these actions are developed in all its Programs and its different sectors.

In this sense, UNESCO's action would be concentrated in nine selected SDGs, having three cross-cutting SDGs also relevant to the Organization strategy, and leaving out from its sphere of action five SDGs (Fig. 49).



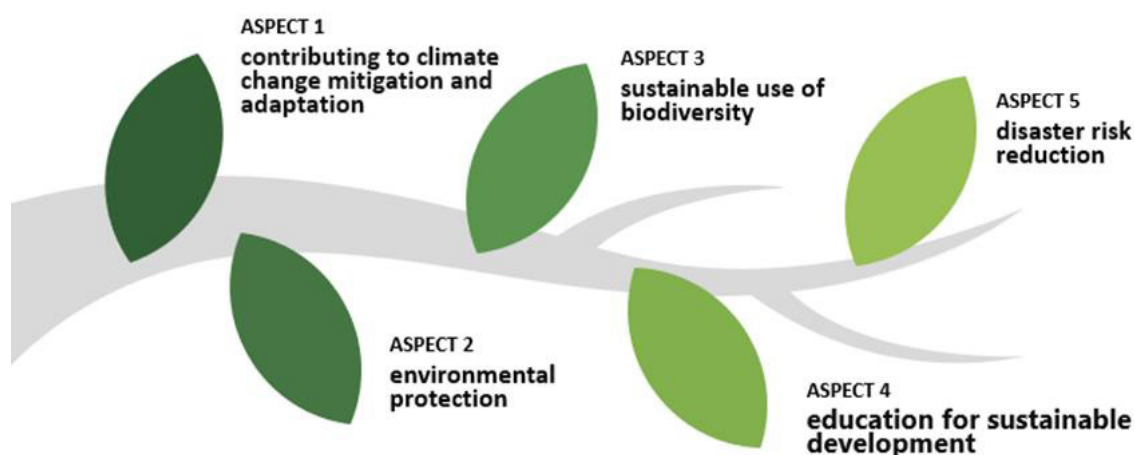
**Figure 49** - Comparison of the selected SDGs in the UNESCO's action and those left out; © Elizabeth Silva.

However, the Members States were concerned about the slow progress towards the achievement of several SDGs. Consequently, UNESCO clarified its strategic role and contribution to the achievement of the SDGs during the 40<sup>th</sup> session of the General Conference (UNESCO, 2020a). This would be the last General Conference of UNESCO to be taken into consideration during this research study, regarding the 2030 Agenda. Nevertheless, by analyzing the conclusions approved by UNESCO regarding the SDGs, during this occasion, it was possible to make a comparison between the nine selected SDGs chose by UNESCO with the 'Eight SDGs' selected by the IGGP. It was also possible to do a comparison with the SDGs effectively promoted by the 33 selected European UGGps, based on the data collection gathered during this research study. These comparisons and their results are presented in chapters V and VI of this work.

It is also important to stress that from the Records of the 40<sup>th</sup> session of the General Conference, especially 'Annex I - Summary of the Science Commission's debates', the UGGps were considered active observatories for the achievement of the SDGs (UNESCO, 2020a) (Fig. 50).

## **Global Geoparks as global observatories for the achievement of the SDGs**

*The UGGps represent living and learning places that demonstrate how SD is achieved in all types of ecosystems*



**Figure 50** - UGGps as 'global observatories for the achievement of the SDGs' (Adapted from UNESCO, 2020a); © Elizabeth Silva

In this scope, it is very interesting to observe that the main guidelines of this report are completely in line with the three research questions of this research study. It is once more reaffirmed that not only the BRs but also the UGGps, play an important role to achieve the selected SDGs.

Additionally, UNESCO reiterates that the UGGps are laboratories for SD which promote the recognition and management of Earth heritage, and the sustainability of local communities, covering a total area of 325, 179 km<sup>2</sup>, within 161 UGGps from a total of 44 Member States (UNESCO, 2020b). It also highlights the role of the UGGps and their contribution to the selected 'Eight SDGs' by the IGGP (UNESCO, 2017e).

Lastly, during the 40<sup>th</sup> session of the General Conference, it was also presented the 'Report on the Councils of the IGGP for the biennium 2018-2019' (UNESCO, 2019f), which also stressed the important role of the IGGP in capacity-building efforts and the positive partnership between UNESCO and the UGGps. It was also emphasized the launch of the pilot phase of a 'Mentorship and Knowledge Exchange Program'. The main objective of this program is to further knowledge exchange and capacity building to trigger new high-quality applications and creating new partnerships between the Member States (UNESCO, 2019f, p.3).

## **4.2 Some examples of good practices developed by the UGGps in the framework of the 2030 Agenda**

From all the previous UNESCO documents, it was understood that the UGGps are considered as an exceptional global network of sites dedicated to SD (UNESCO, 2017d). In this sense, these territories are recognized as important actors to promote ESD and contribute to the implementation of the 2030 Agenda. In this framework, Manning *et al.*, referred that the UGGps are “especially suited to guide any learning and education activity” (2018, p. 46). These authors also considered that the UGGps are “model regions for SD and play a crucial role in identifying, promoting, and living sustainable lifestyles” (2018, p.46).

It is important to highlight that the educational programs created specifically by the UGGps through time seem to meet the goals of the ESD. In this framework, the UGGps have demonstrated that they contribute effectively to the achievement of the SDG 4 (Silva & Sá, 2018; Catana & Brilha, 2019, 2020). According to Silva & Sá, the targets proposed for this particularly SDG “place ESD at the center of this Agenda, and it is understood as a means to empower learners to make informed decisions and responsible actions for environmental integrity, economic viability, and just society, for present and future generations, while respecting cultural diversity” (2018, p.96). However, during this research study, it was noticed that few scientific articles give particular emphasis to the UGGps role in the framework of the SDG 4. As stated by Kohmoto, “(...) there are few papers on relationships between ESD and education on geoparks, and few schools within geoparks are members of the UNESCO Associated Schools Project Network (ASPnet)” (2016, p. 893). This aspect has been improved, for instance, in the case of the schools located in the Portuguese UGGps and aspiring ones. This is due to the efforts of the Portuguese NatCom for UNESCO (Science Sector), in straight collaboration with the Portuguese Forum of Geoparks, with the support of the Portuguese National Committee for IGCP. However, this situation could be indeed revised by the IGGP, so that more ASPnet could become more engaged with the UGGps. This way, these schools could be important recipients of the educational programs developed by these territories, also belonging to the ‘UNESCO family’. Since these particular schools have special UNESCO flagship Projects (*e.g.* ‘Climate Change Education’) (UNESCO Associated Schools Network, n.d.), it would be very beneficial for

both parties to have closer cooperation. The educational programs developed by the UGGps and their specific themes, in line with the 'Top Ten Focus Areas' could also become UNESCO flagships for these schools and involve this way all the school communities. In this sense, it is relevant to stress that these schools are committed to contributing to the quality of education as advocated by the 'Education for All (EFA) Dakar Framework for Action' and to reaching the UN 'MDGs' (UNESCO, 2000c). Thus, in the field of ESD, there are many examples of good practices of educational projects developed by the UGGps. These projects aim especially to make the school communities understand, preserve, and, therefore, care about the geological heritage, especially beyond the walls of schools and universities. An example of good practice in this field was the educational project promoted in the first phase by three partners – Portuguese NatCom, Arouca UGGp, and Naturtejo da Meseta Meridional UGGp. In a second phase, other Portuguese UGGps and aspiring ones joined this project who, under the umbrella of the UNDESD, promoted several school contests based on ESD themes, since 2009 (Silva *et al.*, 2010, 2011, 2012, 2013a, 2013b, 2014, 2015a, 2015b, 2015c, 2016, 2017a, 2017b, 2018a; Silva & Sá, 2013, 2016, 2018; Silva, 2015b, 2017). Later on, in 2011, these school contests were developed with the support of the Portuguese Geoparks Forum. These initiatives had three main objectives (Silva *et al.*, 2012, p. 271):

- i) to create awareness among students, teachers, and local communities about issues related to the Decades and International Years promoted by UNESCO, in the field of science, environment, and SD;*
- ii) promote the curiosity of the young people and encouraging them to create posters, videos, written works, prototypes, models, and advertising spots appealing to their imagination and creativity;*
- iii) contribute to the implementation of an ESD involving in this process teachers, students, and even their families and also the existing Municipalities (...) and capturing the interest of the media about this activity;*
- iv) The school contests also aimed to increase the knowledge about the Portuguese Geoparks and the EGN/GGN and their contribution to the UNDESD;*
- v) It also had the aim to stimulate student's desire to learn and to explore more, to undertake research and analyze the findings, to draw conclusions and find solutions, and to take responsible action. Such an approach enabled teachers to become facilitators and students to be at the center of the learning process."*

These particular school contests were mainly focused on real solutions given by the students. For Silva *et al.*, this kind of partnership could “inspire many other schools and other Geoparks to undertake similar projects in favor of ESD while enhancing quality education and learning throughout life” (2012, p. 272). This positive initiative leads to the creation of the Educational Program ‘GEA – Terra Mãe’ (‘GEA- Mother Earth’), which gain a new dynamic when the Portuguese Forum of Geoparks started giving its institutional support and assistance.

In this domain, it is important to stress the role of the referred Portuguese Forum of Geoparks, created in April 2011, under the aegis of the Portuguese NatCom. Since its creation, it gave special attention to increasing knowledge among its members, encouraging the share of knowledge and experiences, and defining common strategies and methods for joint activities (Silva *et al.*, 2015b, 2017a). In 2015, with the adoption of the IGGP, the official name of this entity was changed into Portuguese Forum for UGGps (Fig. 51).



**Figure 51** – Official logo of the Portuguese Forum for UGGps; © UNESCO, 2015.

It is important to reinforce that, especially in the field of education, the Portuguese Forum for UGGps has been coordinating joint educational initiatives among the Portuguese UGGps and involving also the new aspiring territories in this process. Some of these initiatives have involved also the ASPnet schools, BRs, UNESCO Clubs, UNESCO Chairs, and even the Portuguese Parliament (Catana, 2009, 2011a; Paz *et al.*, 2010; Silva *et al.*, 2010, 2011, 2012, 2013a, 2013b, 2013c, 2014, 2015a, 2015b, 2015c; 2016, 2017a, 2017b, 2018a, 2018b; Henriques *et al.*, 2012; Silva, 2014, 2015a, 2015b, 2015c, 2017; Sá *et al.*, 2015, 2016a, 2016b; Silva & Sá, 2018; Castro *et al.*, 2019; Sá & Silva, 2019).

With the approval in 2016, of the UNESCO Chair on ‘Geoparks, Regional Sustainable Development, and Healthy Lifestyles’ (UTAD), this educational program also counted with its institutional support, until nowadays and gain that way a new dimension, especially with the development of workshops about the IGGP and the 2030 Agenda.

In a very short period, this educational program expanded from a national level to an international level. In this context, it has been implemented in Africa (Cape Verde and S. Tomé and Príncipe) and in Brazil, the last one through the partnership with the Araripe UGGp (Fig. 52), integrating ESD in classroom learning as well as in out-of-school and extracurricular activities (Galvão *et al.*, 2016; Silva & Sá, 2016, 2018).



**Figure 52** - Educational Program ‘GEA – Terra Mãe’ / ‘GEA – Mother Earth’ developed in Araripe UGGp, Brazil (2019/2020). Mural painting in the Regional University of Cariri, Crato, CE/Brazil; © Artur Sá

What is interesting in this particular educational program is that all the school contests (Fig. 53), training courses, and itinerary exhibitions, that compose the ‘GEA – Mother Earth’ Program are aimed at all levels of education and address various themes, always taking into account the local geodiversity and diversifying by geography, fauna and flora, history, culture, and sport (Rocha 2012, Silva *et al.*, 2012; Silva & Sá, 2016, 2018), including also the ‘Top 10 Focus Areas’ of the UGGps.



**Figure 53** – Awards created by students and delivered to the winner students of the school contests ‘GEA – Terra Mãe’ in Araripe UNESCO Global Geopark (Brazil) (first and fifth edition awards); ©Elizabeth Silva

In this framework, as mentioned by Rangnes “the UGGps by being part of the UNESCO family” (2019, p. 14), recognize the importance of education as a vital engine to promote a transformative change, through its work to ensure that all learners have the skills and knowledge they need to become responsible, green, global citizens, supporting the development of education systems and promoting lifelong learning opportunities for all and as expressed by SDG 4 (Silva *et al.*, 2016, 2017b, 2018a, 2019; UNESCO, 2017d; Silva & Sá, 2018; Catana & Brilha, 2019, 2020).

In this sense, these educational programs have been using the existing territorial infrastructures, such as interpretive centers and geological relevant outcrops (Fig. 54) or old mining areas, among others, to tell interesting stories about the planet Earth’s history (Rocha *et al.*, 2006, 2008b, 2009; Catana, 2008, 2009, 2011; Figueiredo & Sá, 2009; Sá *et al.*, 2009, 2010, 2012; Catana *et al.*, 2011b; Rocha, 2014; Silva, 2015b, 2015c; Silva *et al.*, 2016, 2018a; 2018b; Silva & Sá, 2018; Catana & Brilha, 2019, 2020).

It is also very pertinent to realize that through educational programs, it is possible to improve cooperation between UGGps from different countries.



**Figure 54** – ‘Pedras Parideiras / Rocks Delivering Stones’ outcrop in the Arouca UGGp; © Arouca UGGp

This was the case, for example, of the EU Project Leonardo da Vinci: ‘GeoEducation in Action’ (EGN, 2020a). This educational project was based on a balanced geographical and cultural partnership of four European UGGps (Lesvos Island UGGp, Greece; Beigua UGGp, Italy, Arouca UGGp, Portugal, and North Pennines UGGp, in the UK). These four UGGps with different experiences in geoeducation and different national systems of training and certification, of trainers and trainees, aimed to establish the requirements for professional training and certification in geoeducation. It also promoted the development of common standards and tools for training (Fig. 55), and defined the links between geoeeducational activities with the labor market, at the European level (Rozakis *et al.*, 2015; EGN, 2020a).

According to Weber (2018, p. 296; 2019, p. 20), the development of Geoparks projects and programs naturally take into account relevant SDGs and contribute towards creating a regional identity. The most important aspect in this context is the ability of the UGGps to transform the rather abstract SDGs into hands-on activities and projects, which help to raise awareness about these goals.



**GEOEDUCATION  
IN ACTION:  
GOOD PRACTICES  
IN EUROPEAN  
GEOPARKS**

**27<sup>th</sup> MARCH 2015**

**INTERNATIONAL WORKSHOP**  
AROUCA INTERACTIVE TOURISM STORE  
FREE WORKSHOP REGISTRATION REQUIRED.

**PROGRAMME:**

- 08H30.** Delivery of documentation
- 09H00.** Opening Session
- 09H30.** Geoeeducation in Action: good practices in European Geoparks – Part I  
LESVOS GEOPARK (GREECE)  
BIGUA GEOPARK (ITALY)
- 10H30.** Coffee-break
- 10H45.** Geoeeducation in Action: good practices in European Geoparks – Part II  
NORTH PENNINES GEOPARK (ENGLAND)  
AROUCA GEOPARK (PORTUGAL)
- 12H00.** Discussion
- 12H30.** Lunch
- 14H00 - 19H00.** Fieldtrip "Geoeeducation in action in the Arouca Geopark"

**REGISTRATION REQUIRED BY**  
00351 256 940 254 OR [SERAL@GEOPARQUEAROUCA.COM](mailto:SERAL@GEOPARQUEAROUCA.COM)

WORKSHOP CERTIFIED BY AVCOA and Terras de Santa Maria formative centre

**TARGET AUDIENCE:** Teachers and students, scientific community, municipality technicians, protected areas technicians, local and regional development entities technicians and the general public.

ORGANIZATION: AROUCA

PARTNERS:

SUPPORT:

**Figure 55** - European Workshop ‘Geoeeducation in Action: good practices in European Geoparks’; ©Arouca UGGp.

Taking into consideration the above-mentioned good practices examples, in the framework of the 2030 Agenda, the next chapter is dedicated to the analysis of the data collection and its processing.

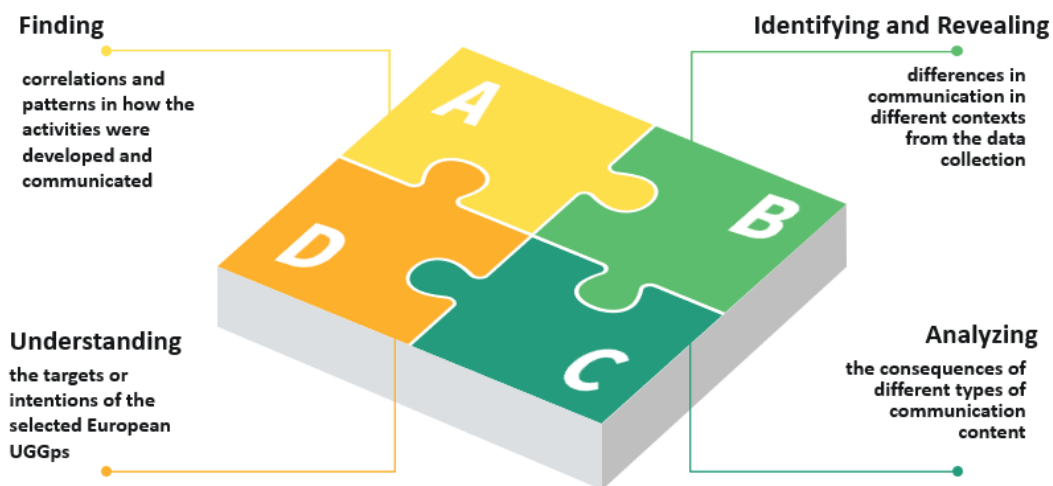
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## CHAPTER V - DATA COLLECTION AND PROCESSING

The data collection of this research study was done taking into account the three main research questions, as mentioned before:

- 1) *How do the European UGGps effectively contribute to the achievement of the 17 SDGs of the 2030 Agenda for Sustainable Development? And if so, do they contribute far more than the 'Eight SDGs' selected by the IGGP?*
- 2) *How can these contributions be accounted for, in a qualitative approach?*
- 3) *How can some of these contributions be used as examples of good practices, demonstrating the real impact in the achievement of some of the 17 SDGs, within the scope of UNESCO's strategies, in this field?*

In this framework, the collected data was contextualized with a review of relevant and more recent literature on the 'Geopark' concept and in the context of the 2030 Agenda for SD. In this sense, all the data collection had four main goals: *i) Finding; ii) Identifying and Revealing; iii) Analyzing; iv) Understanding* (Fig. 56).



**Figure 56** - Four main goals of the data acquisition in this research; © Elizabeth Silva.

As mentioned in the methodological approach, was used a mixed-method in this research study, combining data collection from the quantitative and qualitative approaches. This allowed to test and build theories about the main theme of this research. It also allowed being able to employ deductive and inductive analysis.

The referred mixed-method approach seemed to provide the ability to design a research study that could find the answers to the three research questions about the complex nature of the phenomenon that was under analysis. This was done, based on the relationship between the measurable variables, namely when analyzing the Progress Reports (PRs), the abstracts, and the chosen SDGs by the managers, in the questionnaires. But it was also based on the participants' point of view (interviewees) in the open and closed questions posed in the questionnaires, as well as in the five interviews carried on. Therefore, the mixed-method approach seemed to do 'what it works' within the principles of research to investigate, to predict, to explore, to describe, and to understand the phenomenon at stake (Carr, 1994; Mingers, 2001; Sale *et al.*, 2002; Creswell, 2003; Tashakkori & Teddlie, 2003; Johnson & Onwuegbuzie, 2004; Williams, 2007). However, as stated by Williams, although "each approach seeks to validate sensory knowledge as truth, neither is absolute in its form" (2007, p. 70).

In this context, based especially on a qualitative approach, the author did not have any influence on the results of the data collection, since the activities were already developed and described in the PRs, abstracts, and in the chosen SDGs mentioned in the questionnaires. In the case of the posed questions to the interviewees, there was also no interference from the author in the given answers. They had total freedom to express their points of view on their terms.

In this framework, as stated before, the major challenge was to select the most suitable sources, based on the main concern to have solid, feasible, and valid results. Therefore, the data collection was done, bearing in mind, four main pillars: *i)* the five assumptions; *ii)* the six objectives; *iii)* the three research questions; *iv)* and the current state of the art.

### **5.1 Analysis of the Progress Reports (PRs)**

Consequently, the starting point of the chosen sources was focused especially on the analysis of the PRs of the 33 selected European UGGps. This decision had to do with the fact of possibility of comparing the data, and therefore the obtained results. Through the analysis of the PRs, it was expected to have more accurate results, and if possible, to bring a new light regarding the contributions of the UGGps to the implementation of

the 2030 Agenda. It was also considered that this source would be a solid one since every UGGps are obliged to send their PRs to the EGN Coordination, twice a year (EGN, 2018a). These reports are available online (EGN, 2018a), and for this reason, they were not included in the annexes of this research study. In this framework, the three selected PRs for this study, had a specific time frame: from March 2015 to September 2016 (Fig. 57):

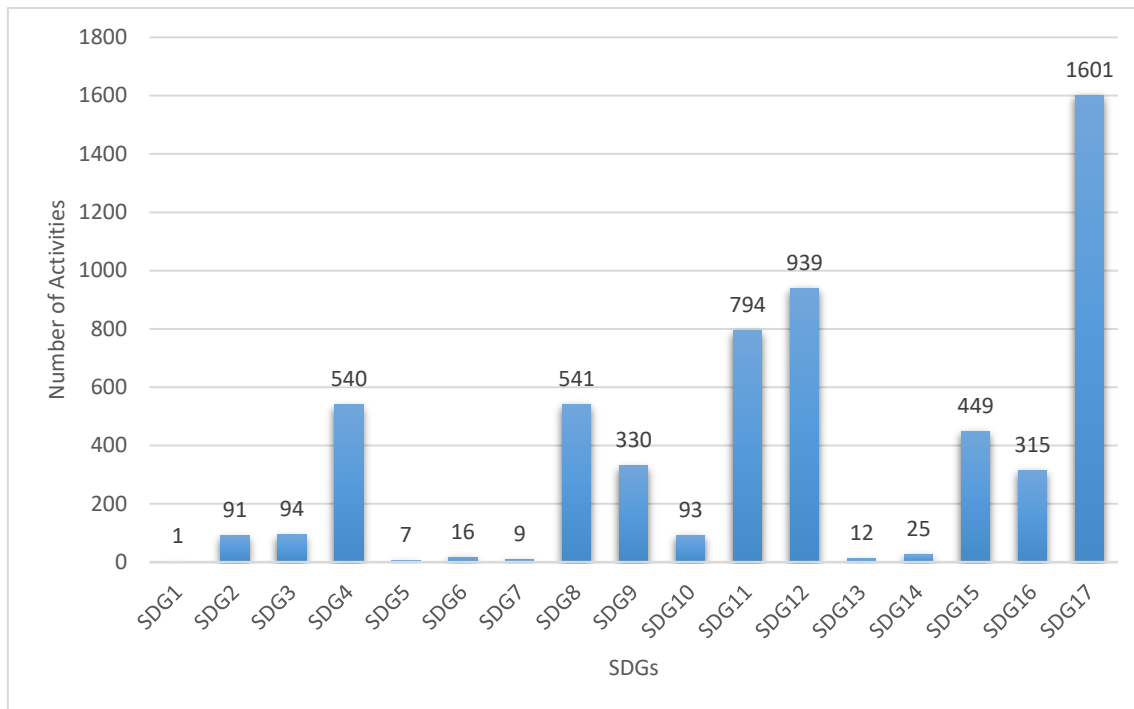


**Figure 57** – The PRs analyzed regarding the period 2015-2016; © Elizabeth Silva.

Through this process, it was intended to quantify the total number of PRs sent to the EGN Coordination and the developed activities by the 33 UGGps, during that period. Through this procedure, it was also possible to obtain the number of developed SDGs, and correlate the described activities to the 17 SDGs. It is pertinent to notice that from the analysis done to the PRs, one of the 33 selected UGGps did not present its PRs during the time frame of this research, which of course influenced the obtained results.

In this sense, during 2015-2016, it was analyzed a total number of **91 PRs**, which gave a total number of **2098 analyzed activities**, which were correlated to a total number of **5857** contributions to the **SDGs**. Through this analysis, it was possible to obtain the number of developed activities *per* SDGs (Fig. 58).

When observing the total number of the developed activities and correlating them to the 17 SDGs, the **SDG 17** – ‘Partnerships for the Goals’ as the largest number of activities related to this goal, counting a total of **1601 activities**. This is followed by **SGD 12** – ‘Responsible Consumption and Production’, with a total number of **939 activities**. The third SDG with more developed activities is **SDG 11** – ‘Sustainable Cities and Communities’, with a total number of **794 activities**.



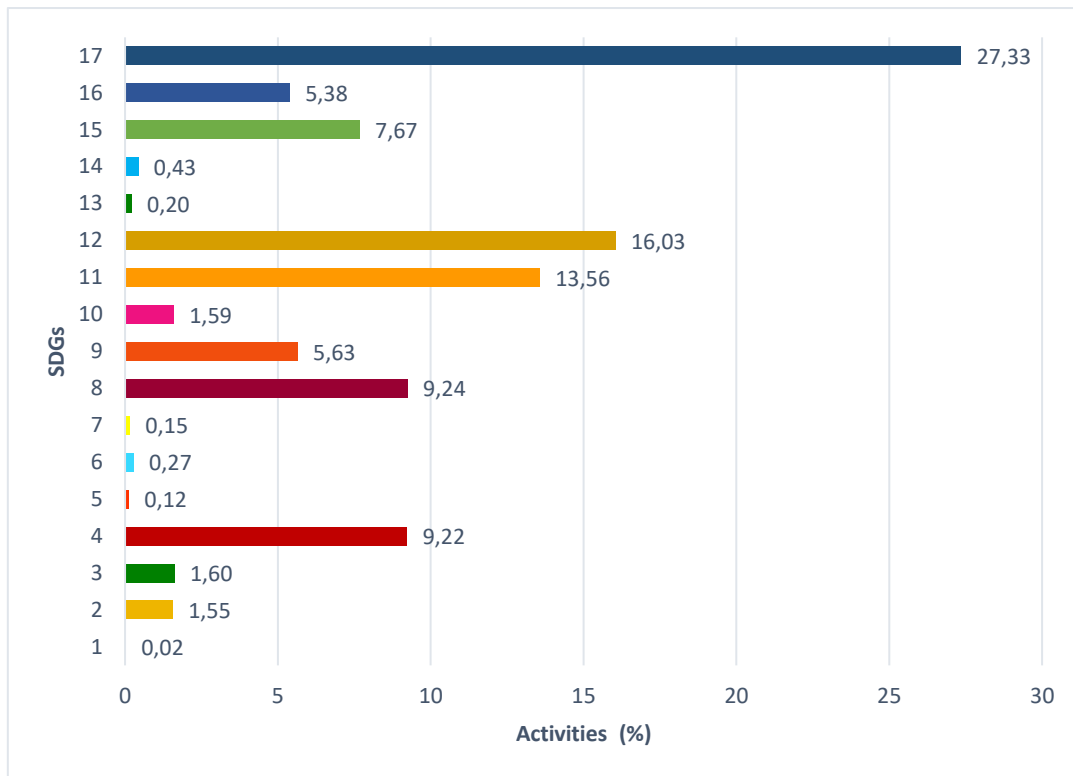
**Figure 58** – Number of activities per SDG obtained from the analysis of the PRs; © Elizabeth Silva.

The following SDGs are **SDG 8** – ‘Decent Work and Economic Growth’, with **541 activities**; **SDG 4** – ‘Quality Education’ with **540 activities**; **SDG 15** – ‘Life on Land’ with **449 developed activities**; **SDG 16** – ‘Peace, Justice and Strong Institutions’ with **315 activities**. These were the SDGs with higher scores obtained.

Subsequently, appeared **SDG 3** – ‘Good Health and Well-Being’, with **94 activities**; **SDG 10** – ‘Reduced Inequalities’ with **93 activities**; **SDG 2** – ‘Zero Hunger’ with **91 activities**. Below the line of a total of 30 activities is **SDG 14** - ‘Life Below Water’, with **25 activities**; **SDG 6** – ‘Clean Water and Sanitation’ with **16 activities**; **SDG 13** – ‘Climate Action’ with **12 activities**; **SDG 7** – ‘Affordable and Clean Energy’ with **nine activities**; **SDG 5** – ‘Gender Equality’ with **seven activities**; and **SDG 1** – ‘No Poverty’ with only **one** developed activity.

In this context, these are the corresponding percentage of activities per SDGs obtained with the analyzed PRs (Fig. 59).

The analysis of these two graphics allows observing which contributions for the SDGs were most effective in the described activities of the PRs.



**Figure 59** – Percentage of activities per SDGs obtained in the analysis of the PRs; © Elizabeth Silva.

Thus, using the same approach of the IGGP - the UGGps and their contribution to the ‘Eight SDGs’ (UNESCO, 2017e) -, it was possible to obtain, also through the analysis of the PRs, the ‘Top Eight SDGs per UGGp’. In this sense, it was possible to obtain the total sum of the most developed ‘eight SDGs per UGGp’ (Table 15).

By doing this analysis, it was possible to observe the similarities and differences between the ‘Eight SDGs’ selected by the IGGP (UNESCO, 2017e) when comparing those, with the total sum of the ‘eight SDGs obtained per UGGp’ with the analysis of the PRs (Fig. 60).



**Figure 60** - Similarities and differences between the selected SDGs by the IGGP and the total sum of the ‘eight SDGs per UGGp’ obtained with the analysis of the PRs; © Elizabeth Silva

**Table 15** - Total sum of the most developed 'eight SDGs per UGGp' based on the PRs.

	SDG1	SDG2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16	SDG17
Styrian Eisenwurzten	+			+				+			+	+			+	+	+
Papuk				+				+	+		+	+			+	+	+
Bohemian Paradise				+				+	+		+	+			+	+	+
Odsherred	+			+				+		+	+	+			+	+	+
Rokua				+				+	+		+	+			+	+	+
Haute-Provence				+				+	+	+	+	+			+	+	+
Luberon			+	+				+	+		+	+			+	+	+
Vulkaneifel				+				+	+		+	+			+	+	+
TERRA.vita	+			+				+		+	+	+			+	+	+
Muskauer Faltenb./Luk Muzak.				+				+	+	+	+	+			+	+	+
Lesvos Island				+				+	+		+	+			+	+	+
Psiloritis				+				+	+		+	+			+	+	+
Bakony-Balaton				+				+	+		+	+			+	+	+
Novohrad-Nógrád				+				+		+	+	+			+	+	+
Katla				+				+	+		+	+			+	+	+
Copper Coast	+			+				+	+		+	+			+	+	+
Madonie				+				+	+		+	+			+	+	+
Beigua				+				+	+		+	+			+	+	+
De Hondsrug				+				+	+		+	+			+	+	+
Gea Norvegica				+				+	+		+	+			+	+	+
Magma		+		+				+	+		+	+			+	+	+
Naturtejo				+				+	+		+	+			+	+	+
Arouca				+				+	+		+	+			+	+	+
Açores				+				+	+		+	+			+	+	+
Terras de Cavaleiros				+				+	+		+	+			+	+	+
Hateg				+				+	+		+	+			+	+	+
Idrija				+				+	+		+	+			+	+	+
Cabo de Gata-Níjar				+				+	+		+	+			+	+	+
Sobrarbe-Pirineos				+				+	+		+	+			+	+	+
Kula Volcanic				+				+	+		+	+			+	+	+
North Pennines AONB	+		+	+				+	+		+	+			+	+	+
Fforest Fawr				+				+	+		+	+			+	+	+
Marble Arch Caves				+				+	+		+	+			+	+	+
<b>TOTAL</b>	<b>0</b>	<b>6</b>	<b>3</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>28</b>	<b>5</b>	<b>32</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>27</b>	<b>32</b>



Furthermore, the analysis of each PR, regarding 2015-2016, allowed to obtain the 'eight most developed SDGs per UGGp' (Fig. 61 and 62).

Through an in-depth analysis of this valuable source, it was also possible to observe the distribution of activities developed and reported in the PRs by the 33 selected European UGGps, during 2015-2016. It was also possible to use 'Pie Charts' to show the percentages of each of the 'eight most developed SDGs per UGGp'. The related 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs (Fig. 62).

However, considering the three research questions and the five assumptions of this research study, it was considered that using just the PRs, would not be sufficient to demonstrate if the UGGps effectively contribute to the achievement of all the SDGs of the 2030 Agenda or far more than the 'Eight SDGs' selected by the IGGP. This was the main reason behind the choice of analyzing the other three sources, to obtain a larger data collection (abstracts, questionnaires, and interviews) and consequently more solid and consistent results.

## **5.2 Analysis of the abstracts of the two conferences on Geoparks (Rokua - 2015 and English Riviera - 2016)**

The second source used in this research was the analysis of the abstracts of the 13<sup>th</sup> EGN Conference (Rokua, Finland, 2015) and the 7<sup>th</sup> GGN Conference (Torquay, UK, 2016). The abstracts analyzed were just those related to the 33 selected UGGps in these two conferences. It was expected that this source could complement the activities listed in the analyzed PRs. In this sense, each content of the abstracts was analyzed and done the possible correlation to the 17 SDGs and their corresponding targets. This was also another way to assess the contributions given by the UGGps towards the achievement of the 17 SDGs.

Through this source, it was possible to have the total number of abstracts (**95**) presented in the two conferences, the total number of activities described (**95**), and their correlation with the SDGs. Through this method, it was possible to obtain the total sum of contributions to the SDGs (**448**).

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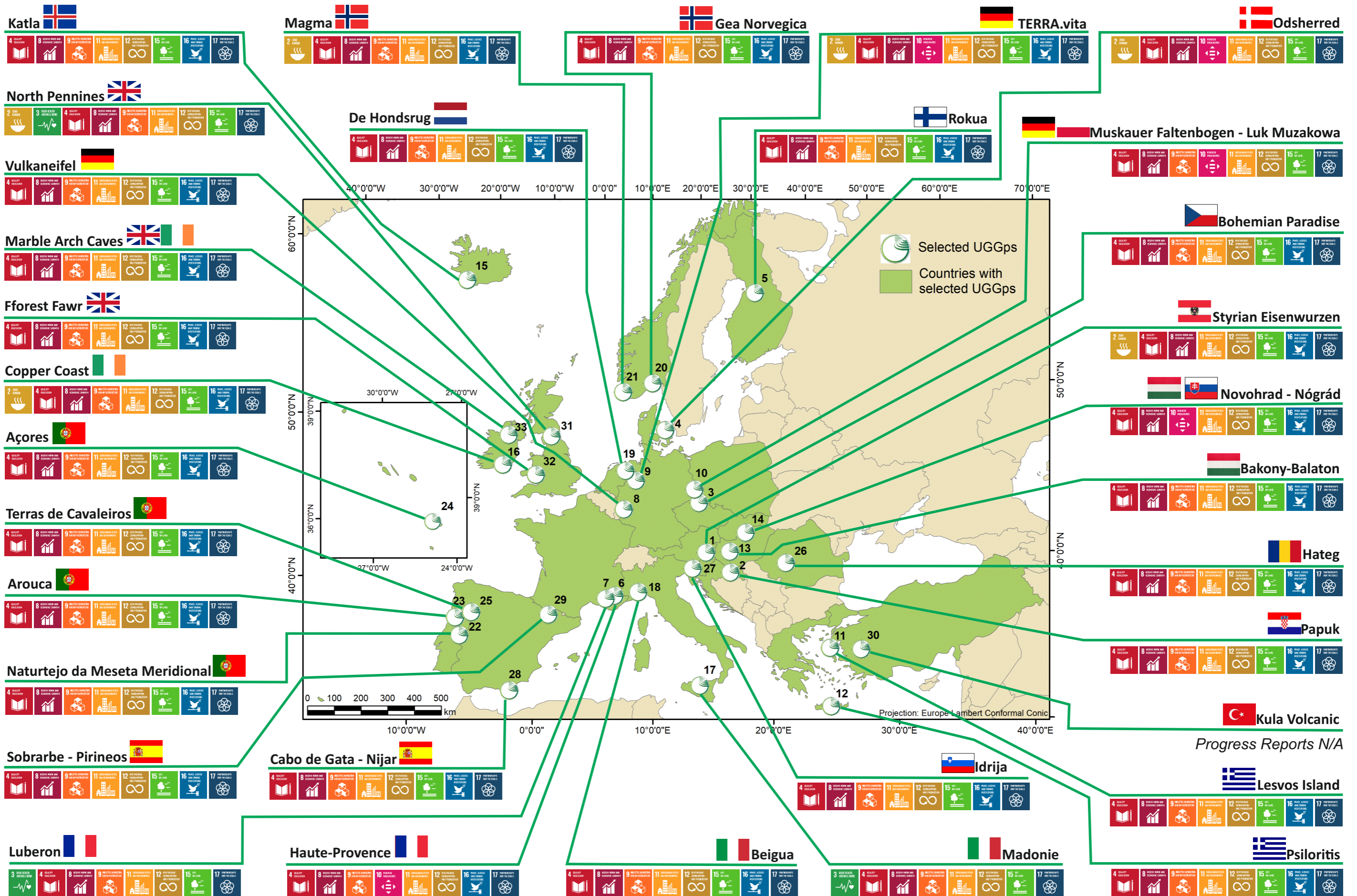
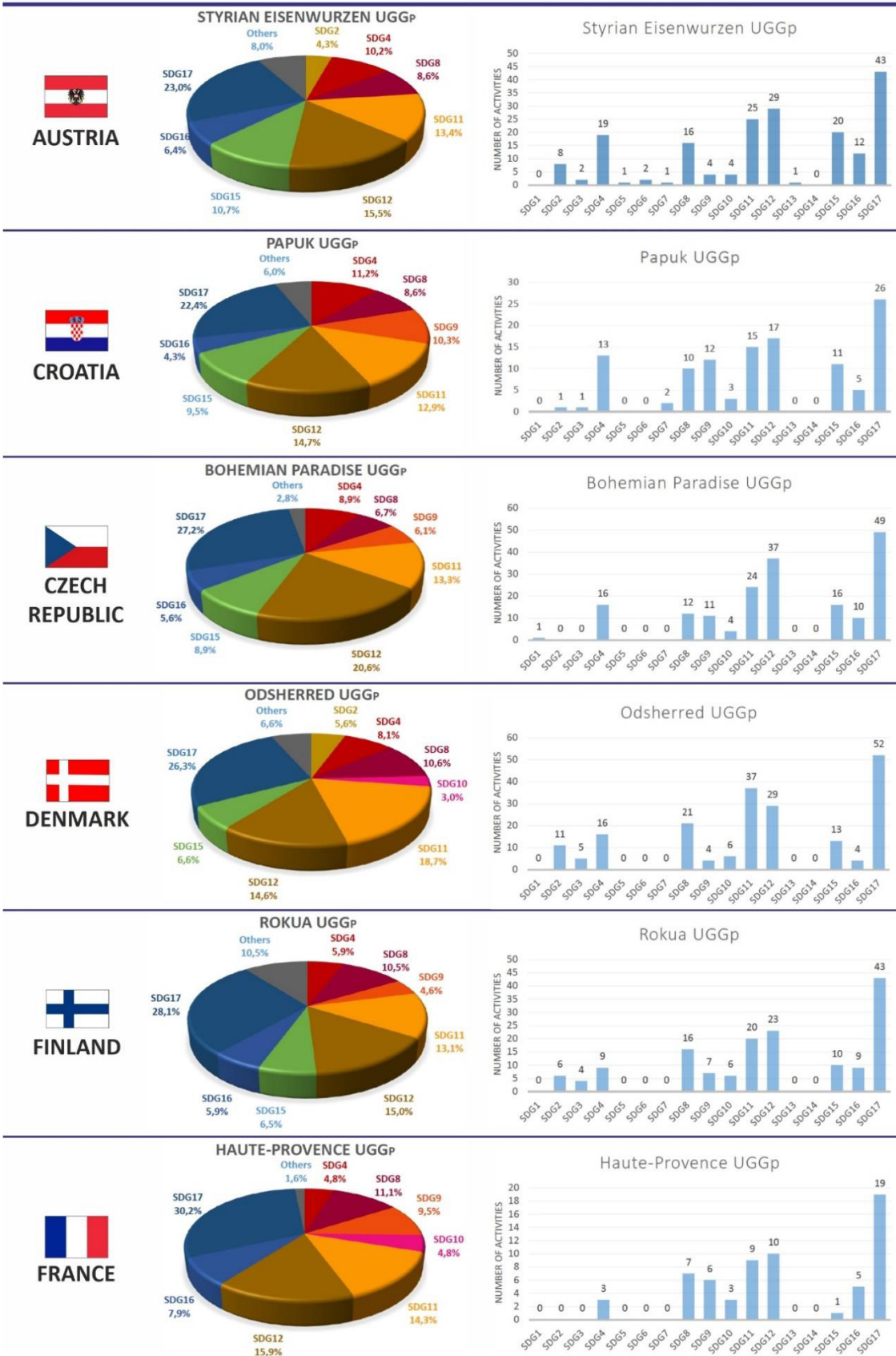
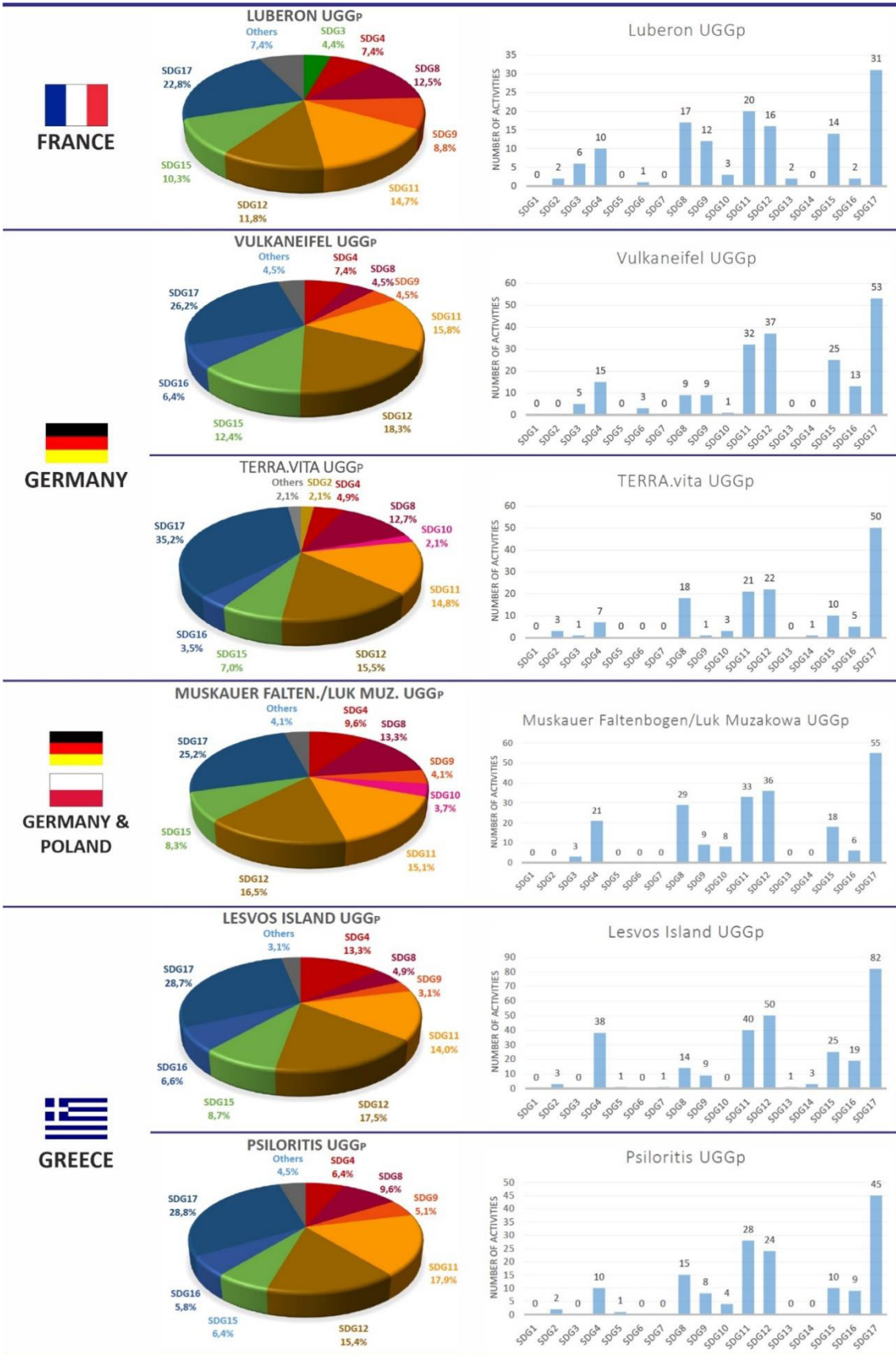


Figure 61 - The 'eight most developed SDGs per UGGP/country' obtained through the analysis of the PRs; © Elizabeth Silva.

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**Figure 62** - Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The 'Pie Charts' show the percentages of the 'eight most developed SDGs per UGGp' and the 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs © Elizabeth Silva.



**Figure 62 (cont.)** – Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The 'Pie Charts' show the percentages of the 'eight most developed SDGs per UGGP' and the 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs © Elizabeth Silva.

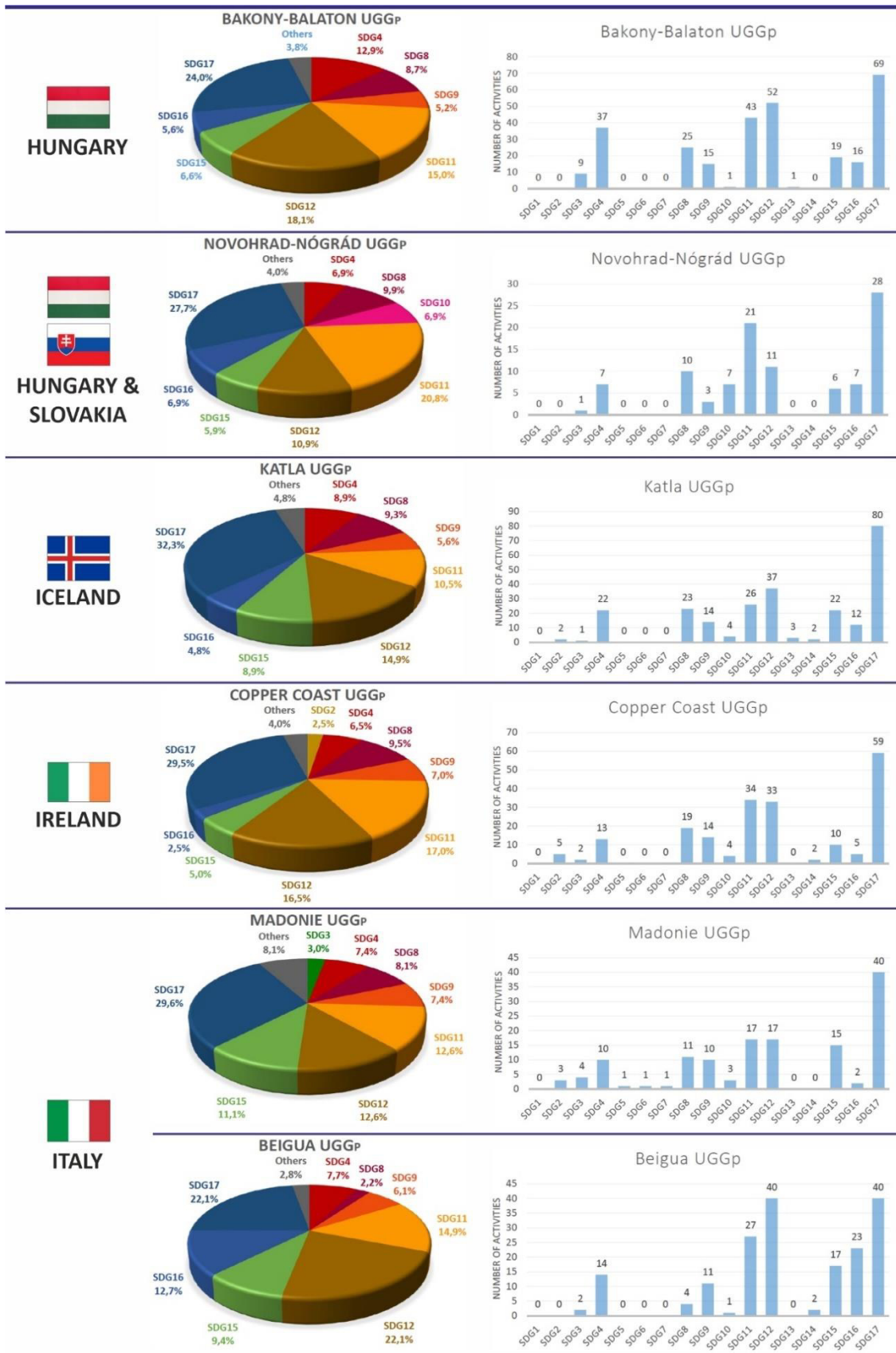
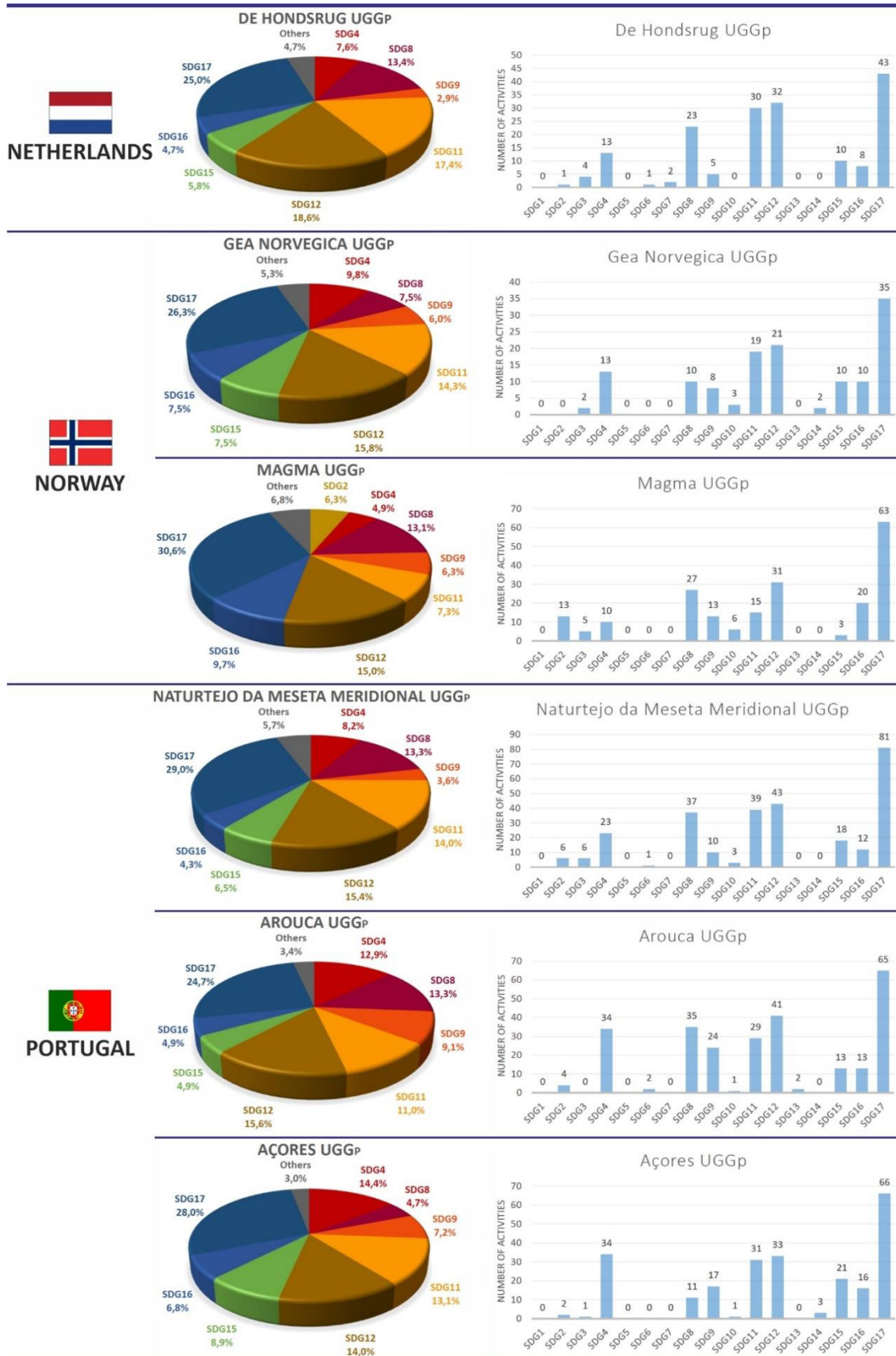


Figure 62 (cont.) – Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The 'Pie Charts' show the percentages of the 'eight most developed SDGs per UGGp' and the 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs © Elizabeth Silva.



**Figure 62 (cont.)** – Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The 'Pie Charts' show the percentages of the 'eight most developed SDGs per UGGP' and the 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs © Elizabeth Silva.



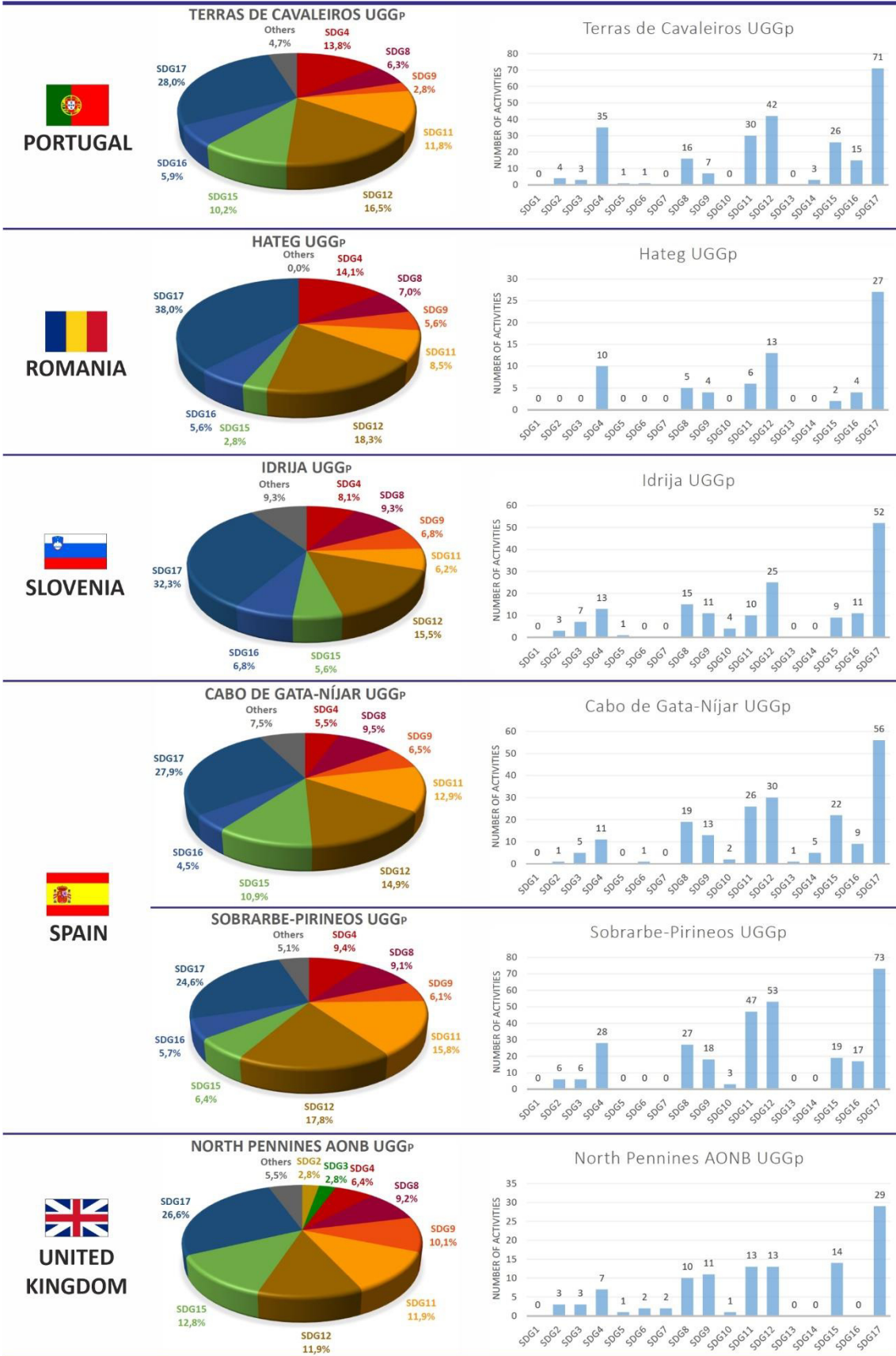
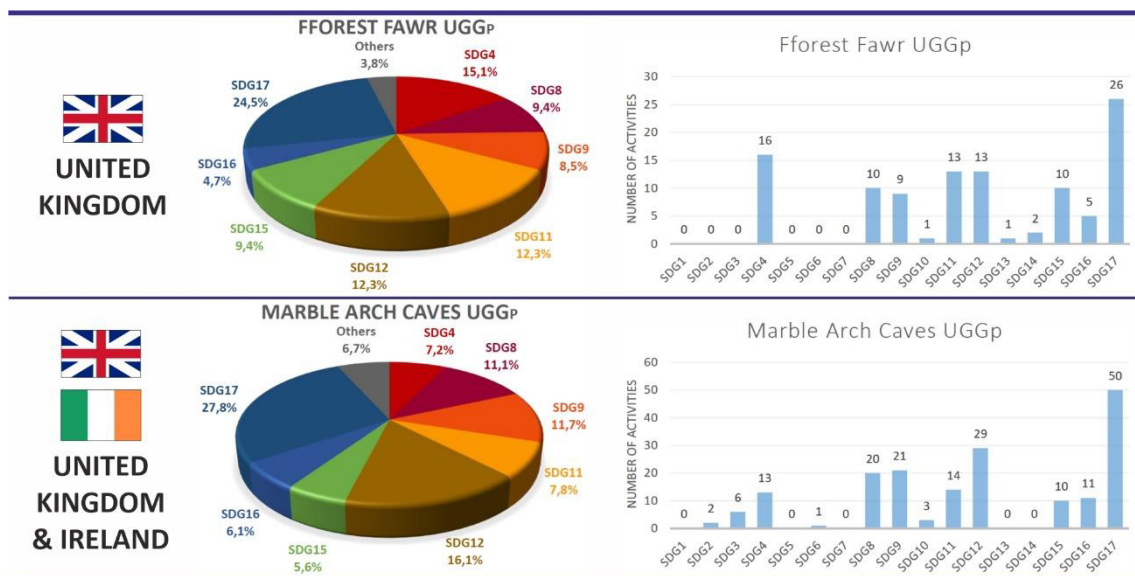


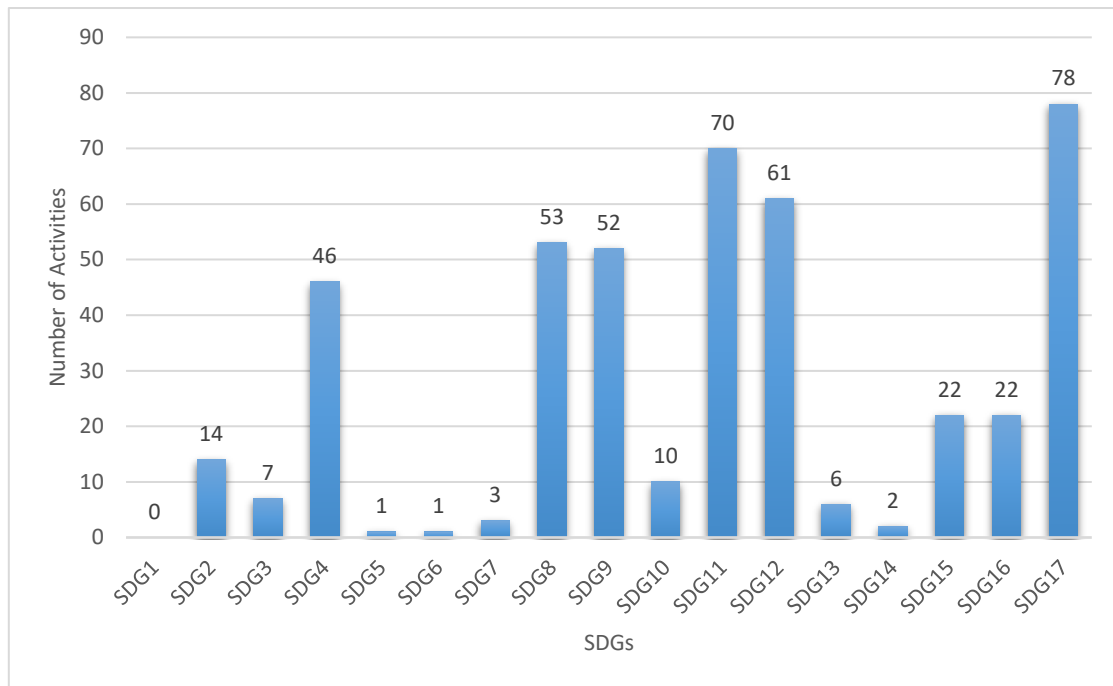
Figure 62 (cont.) – Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The 'Pie Charts' show the percentages of the 'eight most developed SDGs per UGGp' and the 'Graphic Bars' display the number of activities assigned to each of the 17 SDGs @ Elizabeth Silva.



**Figure 62 (cont.)** – (Cont.) Distribution of activities described in the PRs of the 33 selected European UGGPs (2015-2016). The ‘Pie Charts’ show the percentages of the ‘eight most developed SDGs per UGGP’ and the ‘Graphic Bars’ display the number of activities assigned to each of the 17 SDGs © Elizabeth Silva.

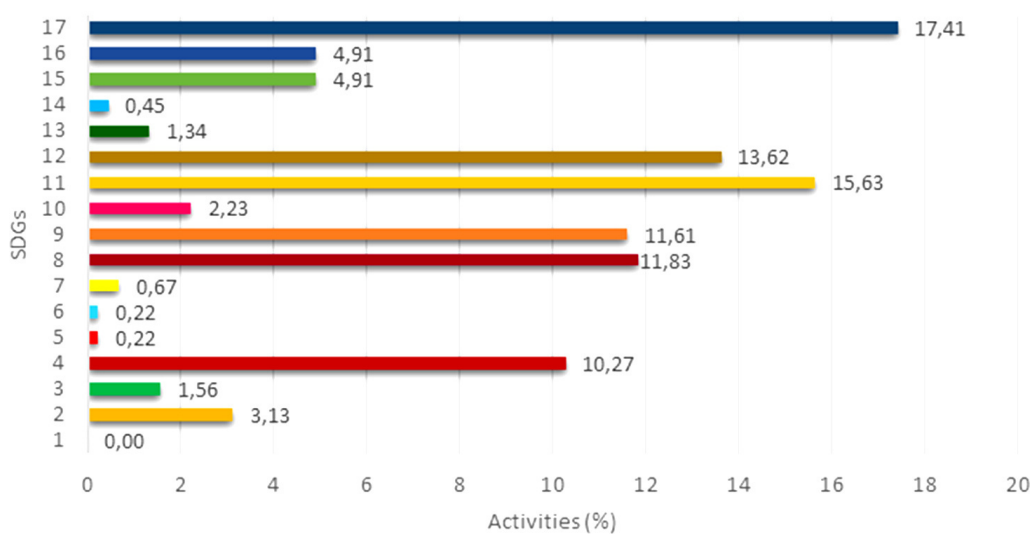
This analysis allowed to have information regarding the number of activities described in the abstracts per each SDG. In this sense, **SDG 17** - ‘Partnerships for the Goals’, had a total of **78 activities**. Followed by **SGD 11** - ‘Sustainable Cities and Communities’ with **70 activities** and **SDG 12** - ‘Responsible Consumption and Production’ with **61 activities**. The other three SDGs with more activities were **SDG 8** - ‘Decent Work and Economic Growth’, with **53 activities**; **SDG 9** - ‘Industry, Innovation, and Infrastructure’ with **52 activities** and **SDG 4** - ‘Quality Education’ with **46 activities**.

Below the 25 activities, **SDG 15** - ‘Life on Land’ and **SDG 16** - ‘Peace, Justice, and Strong Institutions’ were related to **22 activities**; **SDG 2** - ‘Zero Hunger’, with **14 activities**; **SDG 10** - ‘Reduced Inequalities’ accounted for **10 activities**, followed by **SDG 3** - ‘Good Health and Well-Being’ with **seven activities**; **SDG 7** - ‘Affordable and Clean Energy’ accounted for **three activities**; **SDG 14** - ‘Life Below Water’, with **two activities**; **SDG 5** - ‘Gender Equality’ and **SDG 6** - ‘Clean Water and Sanitation’, with **one activity** each. Finally, **SDG 1** - ‘No Poverty’ had **zero activities** (Fig. 63).



**Figure 63** – Number of activities described in the abstracts per SDG (2015-2016); © Elizabeth Silva.

With this analysis, it was possible also to obtain the percentage of activities described in the contents of the abstracts per SDGs (Fig. 64).



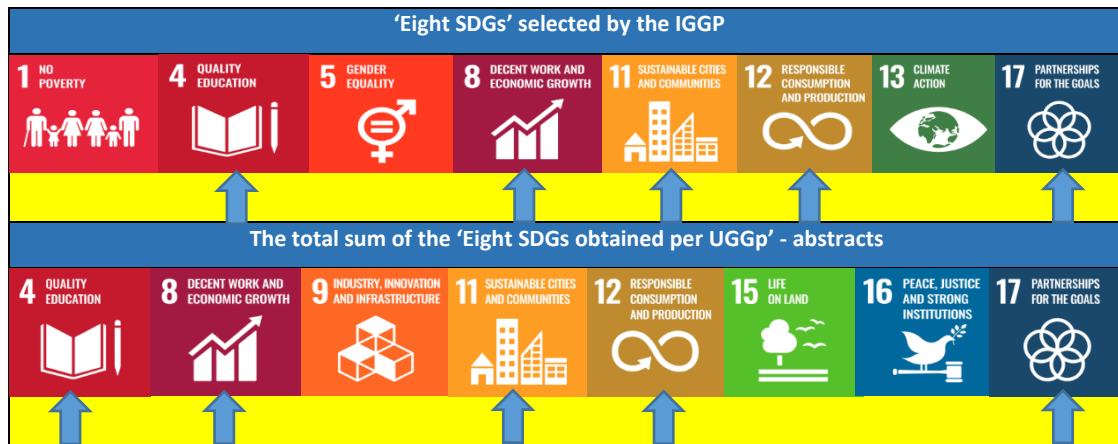
**Figure 64** - Percentage of activities described in the contents of the abstracts per SDGs (2015-2016); © Elizabeth Silva.

In this framework, the merge of the total abstracts presented in the two referred conferences allowed to obtain all the above-mentioned data. Consequently, through this procedure, it was possible to understand which SDGs had more contributions from the UGGps activities, and through that, it was possible to obtain the total sum of the most developed ‘eight SDGs per UGGp’ when analyzing each abstract (Table 16).

**Table 16** - Total sum of the most developed eight SDGs per UGGp based on the abstracts.

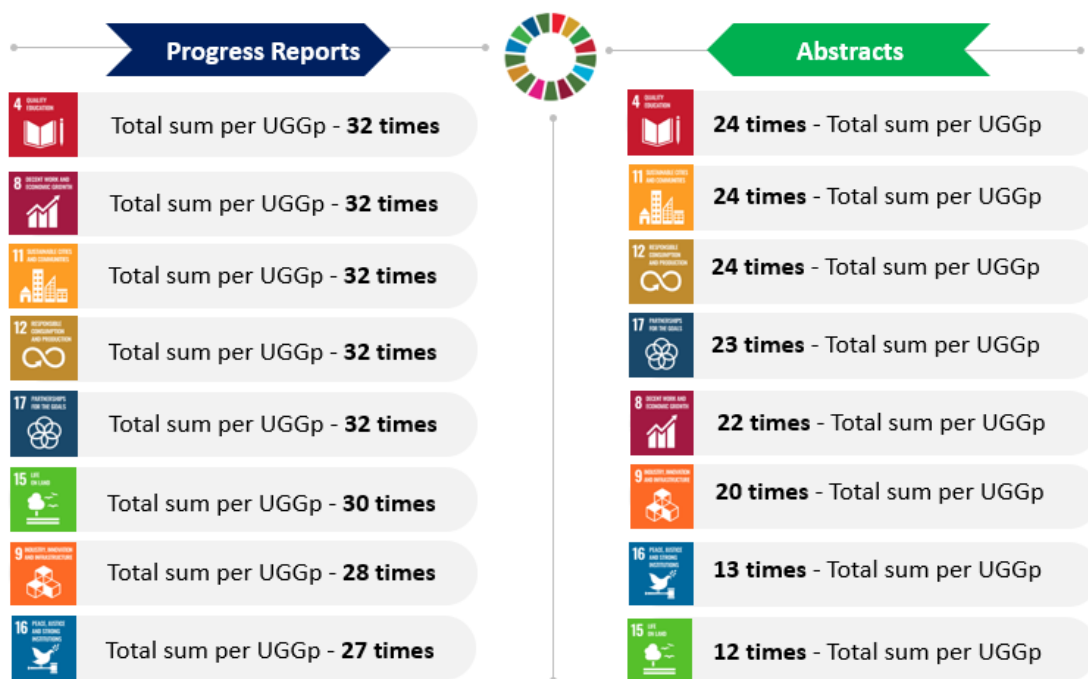
	SDG1	SDG2	SDG3	SDG4	SDG5	SDG6	SDG7	SDG8	SDG9	SDG10	SDG11	SDG12	SDG13	SDG14	SDG15	SDG16	SDG17
Styrian Eisenwurzen		+	+	+				+			+	+				+	+
Papuk																	
Bohemian Paradise																	
Odsherred		+		+			+	+	+	+	+	+					+
Rokua		+		+			+	+	+		+	+			+		+
Haute-Provence				+			+	+	+		+	+					+
Luberon			+	+			+	+	+	+	+	+					+
Vulkaneifel				+			+	+			+	+				+	
TERRA.vita																	
Muskauer Futenb./Luk Muzak.											+	+					+
Lesvos Island				+			+	+	+	+	+	+			+	+	+
Psiloritis				+			+	+	+	+	+	+	+		+	+	+
Bakony-Balaton				+			+	+	+		+	+			+		+
Novohrad-Nógrád																	
Katla				+			+	+	+		+	+			+	+	+
Copper Coast																	
Madonie																	
Beigua				+			+	+	+		+	+	+			+	+
De Hondsrug				+							+	+			+		+
Gea Norvegica							+	+			+	+					
Magma		+		+			+	+	+	+	+	+				+	+
Naturtejo		+	+	+			+	+	+		+	+			+	+	+
Arouca			+	+			+	+	+		+	+			+	+	+
Açores				+			+	+	+		+	+				+	+
Terras de Cavaleiros		+		+			+	+	+	+	+	+				+	+
Hateg				+			+	+	+		+	+			+	+	+
Idrija				+			+	+	+		+	+				+	+
Cabo de Gata-Níjar																	
Sobrarbe-Pirineos				+			+	+	+		+	+			+	+	+
Kula Volcanic				+			+	+	+		+	+			+	+	+
North Pennines AONB				+			+	+	+		+	+			+	+	+
Fforest Fawr				+			+	+	+		+	+	+		+	+	+
Marble Arch Caves			+	+			+	+	+		+	+	+		+	+	+
<b>TOTAL</b>	<b>0</b>	<b>6</b>	<b>5</b>	<b>24</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>22</b>	<b>20</b>	<b>5</b>	<b>24</b>	<b>24</b>	<b>3</b>	<b>0</b>	<b>12</b>	<b>13</b>	<b>23</b>

This process allowed to compare, as done for the PRs, the SDGs selected by the IGGP with the ones obtained by each selected UGGp based on the referred abstracts (Fig. 65).



**Figure 65** - Similarities and differences between the selected SDGs by the IGGP and the total number of the ‘eight SDGs per UGGp’ obtained with the analysis of the abstracts; © Elizabeth Silva.

When comparing the total sum of the eight most developed SDGs per UGGp from the PRs and the same for the abstracts per UGGp, these are the following rankings of the obtained SDGs (Fig. 66):



**Figure 66** - Comparison of the total sum of the ‘eight SDGs per UGGp’ between the PRs and the abstracts; © Elizabeth Silva.

Besides allowing to perceive which SDGs were more developed and, therefore, their ranking, it was possible to recognize some interesting examples of good practices when analyzing the content of the abstracts and correlating the described activities to the 17 SDGs. Those good practices will be detailed in chapter VI.

### 5.3 Analysis of the questionnaires

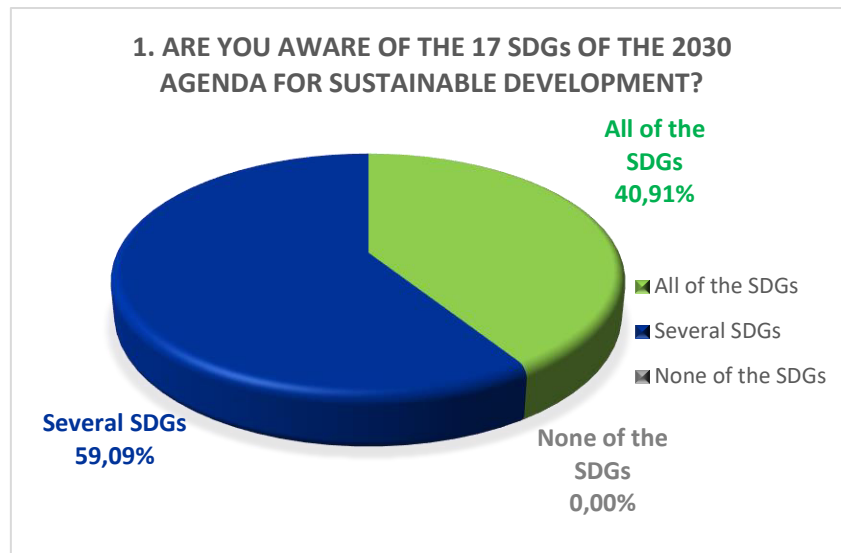
The third source used was the produced questionnaires on purpose for this research study. These were fulfilled by the UGGps managers, during the 39<sup>th</sup> European Geoparks Meeting, in March 2017, in Burren and Cliffs of Moher UGGp (Republic of Ireland). Once again, the objective was to obtain more reliable data, this time making direct inquiries to the managers of the selected UGGps. This need was once more based on the notion of having more valid and solid results. On the other hand, through these questionnaires, it would be possible to understand more the level of knowledge of the managers regarding the 2030 Agenda and its 17 SDGs. Empirically, there was a notion that the majority of the managers knew about the referred Agenda, but this research intended to obtain solid data regarding this issue. Another important issue was the need to understand if they had already incorporated in their strategic plans the SDGs and their corresponding targets.

In this sense, from a total of 33 questionnaires, it was possible to receive 22 replies. Although delivering these questionnaires personally and hoping that all the contacted managers would be able to reply, some of them took the document with themselves and never sent it back, but also some managers did not attend the meeting. So, although insisting through e-mail with an expressed deadline, only some managers sent back the missing questionnaires.

The questionnaires were organized into two parts. The **first part** had two questions:

1. *Are you aware of the 17 SDGs of the 2030 Agenda for Sustainable Development?*
2. *Do you consider that several of the activities developed by your UGGp during 2015-2016 can be already accounted for as a contribution to the 17 SDGs?*

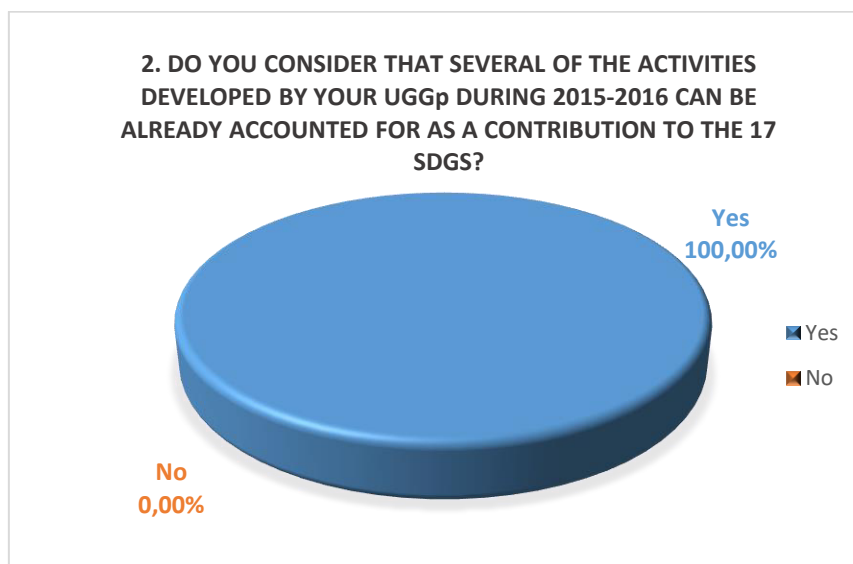
Concerning the first question, these were the obtain replies (Fig. 67):



**Figure 67** – Replies of the managers of the selected UGGps to the first question of the questionnaire;  
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In this sense, **59,09%** of the respondents replied that they were aware of **several SDGs**. On the other hand, **40,91%** of the respondents replied that they were aware of **all the SDGs**. And none of the respondents (**0%**) replied that they **did not know about any of the 17 SDGs**.

Regarding the second question, all the respondents replied ‘**Yes**’ (**100%**), stating this way that several of their activities during 2015-2016 could be already accounted as a contribution for the 17 SDGs (Fig. 68).



**Figure 68** - Replies of the managers of the selected UGGps to the second question of the questionnaire;  
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In the **second part** of the questionnaire, it was posed the subsequent issue “*Taking into account the Progress Reports during 2015-2016, please choose the following options for each SDGs in the activities developed by your UGGp*”. In this framework, the managers had to choose the 17 SDGs according to *three options*:

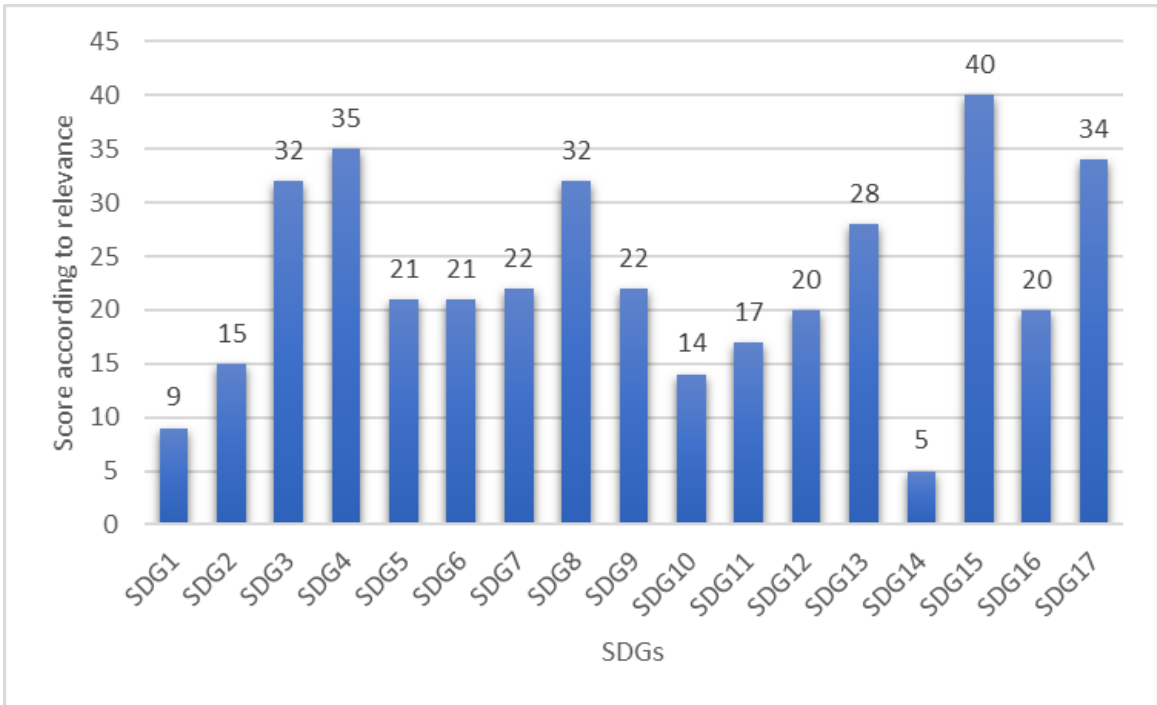
- i) **Very important** (scored with two points);
- ii) **Relative important** (scored with one point);
- iii) **Not important** (scored with zero points).

In this framework, it was obtained the total sum of points per SDG when analyzing the replies given by each manager of the selected UGGps regarding the three options (Fig. 69). With this analysis, it was possible to understand which SDGs were considered more relevant by the referred managers. In this sense, these were the total sum of points per SDG with higher scores: **SDG 15** - ‘Life on Land’ - **40 points**; **SDG 4** - ‘Quality Education’ - **35 points**; **SDG 17** - ‘Partnerships for the Goals’ - **34 points**; **SDG 3** - ‘Good Health and Well-Being’ and **SDG 8** - ‘Decent Work and Economic Growth’ both with **32 points**, and **SDG 13** - ‘Climate Action’ with **28 points**. The following SDGs were: **SDG 7** - ‘Affordable and Clean Energy’ and **SDG 9** - ‘Industry, Innovation, and Infrastructure’, both with **22 points**; **SDG 5** - ‘Gender Equality’ and **SDG 6** - ‘Clean Water and Sanitation’ both with **21 points**; **SDG 12** - ‘Responsible Consumption and Production’ and **SDG 16** - ‘Peace, Justice and Strong Institutions’, both with **20 points**; **SDG 11** - ‘Sustainable Cities and Communities’ with **17 points**; **SDG 2** - ‘Zero Hunger’ with **15 points**, and **SDG 10** - ‘Reduced Inequalities’ with **14 points**; **SDG 1** - ‘No Poverty’ with **nine points**, and **SDG 14** - ‘Life Below Water’ with **five points**.

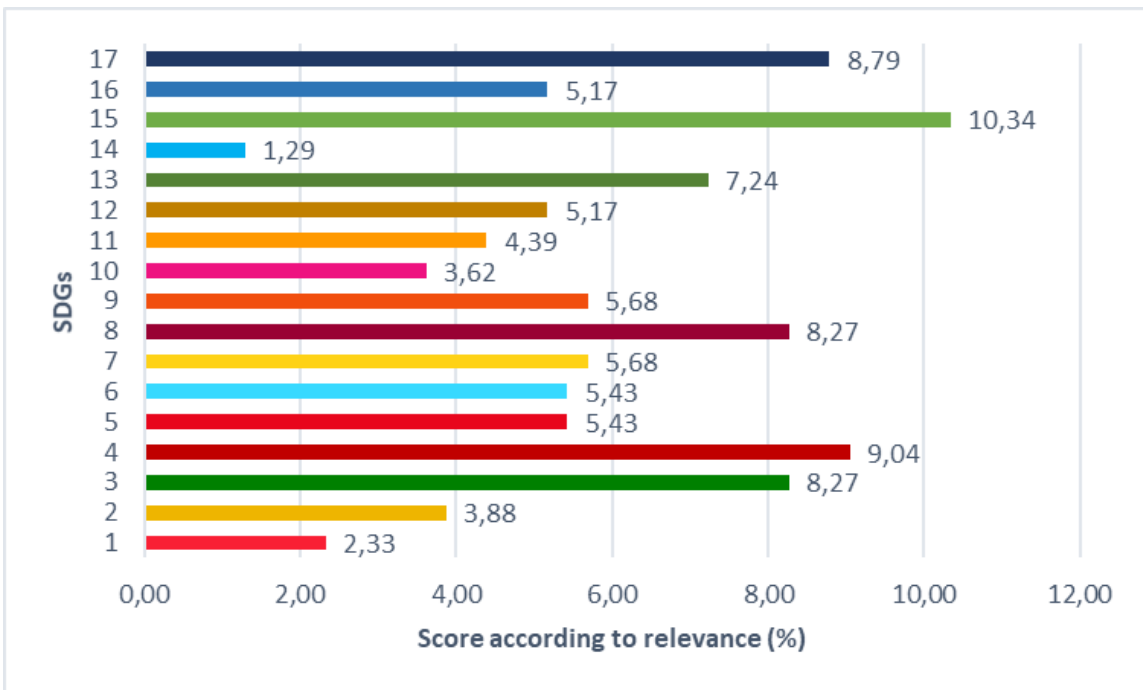
Through this process, it was possible also to obtain the percentage of the total sum of points per SDG regarding the three options posed in the questionnaire (Fig. 70).

With this in-depth analysis, it was also possible to quantify the total number of each option per SDGs. Through this process, it was possible to observe for each SDG the score obtained related to the options given: ‘Very important’, ‘Relative important’, and ‘Not important’ (Fig. 71).

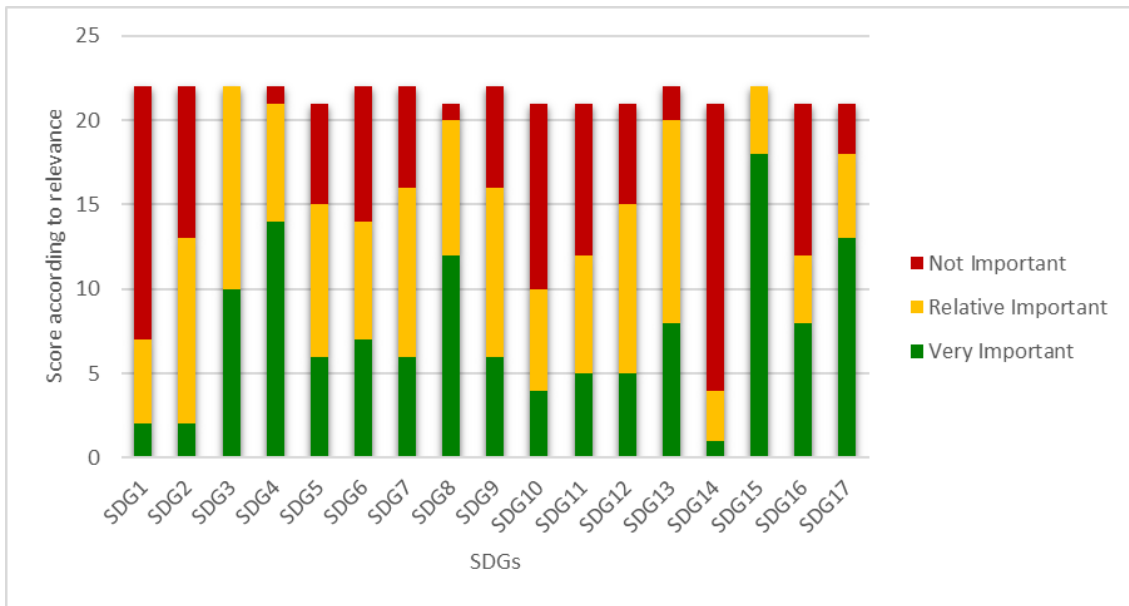




**Figure 69** - Total sum of points per SDG obtained with the replies given by each manager regarding the three options posed by the questionnaire; © Elizabeth Silva.

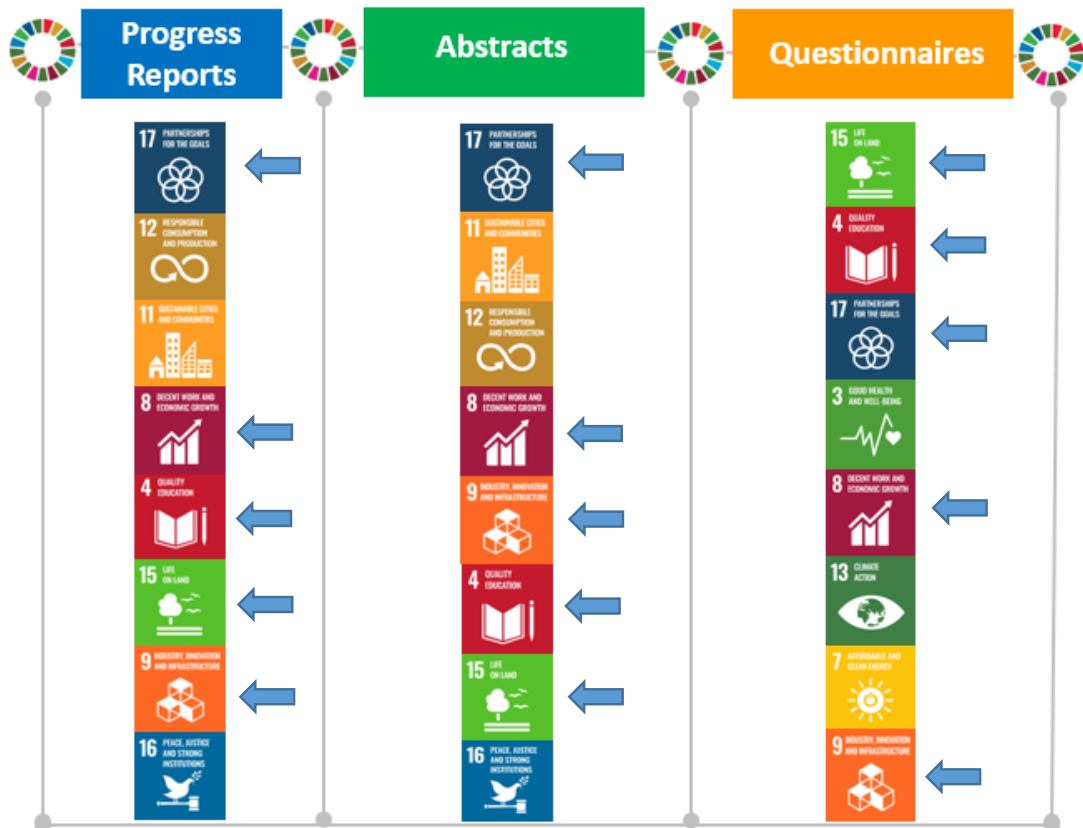


**Figure 70** - Percentage of the total sum of points per SDG regarding the three options posed in the questionnaire according to the replies of the managers; © Elizabeth Silva.



**Figure 71** – Total number of each option selected by the UGGps managers in the questionnaires (‘Very important’, ‘Relative important’, and ‘Not important’) per SDGs; © Elizabeth Silva.

From the three sources analyzed until this point (PRs, abstracts, and questionnaires), although using different data collection methods, it is possible to observe the ranking of the ‘Eight SDGs’ between them (Fig. 72).



**Figure 72** – Ranking of the ‘eight SDGs per UGGp’ between the different sources (PRs, abstracts, and questionnaires); © Elizabeth Silva.

#### 5.4 Analysis of the interviews

During this research study, it was possible to do five interviews with some elements of the staff of the transnational Marble Arch Caves UGGp (Republic of Ireland & United Kingdom of Great Britain and Northern Ireland) and some local inhabitants/stakeholders, as mentioned before, and accordingly with the referred methodological approach. This means using the mixed-method (quantitative and qualitative) but based mainly on the qualitative approach.

In this context, the interviews were tape-recorded and then transcribed and run through the computer Software MAXQDA®. This software is used for the analysis of qualitative data and, therefore, belongs to the family of CAQDAS, the acronym for Computer Assisted Qualitative Data (Silver & Lewins, 2014; Kuckartz & Rädiker, 2019). It was also used the Software 'WordClouds.com', to understand which words were constantly mentioned by the interviewees, and therefore more repeated during the interviews. Through the qualitative approach, this would also be very useful when discussing the results obtained with this source.

The interviews were conducted with open and closed questions, using a short 'interview guide'. In the first part of the interview, the author explained thoroughly, the main purpose and objectives of the interview, and requested the necessary authorization to record it. It was explained that all the information collected would be treated confidentially. It was also explained that during the interview, the author would be using 17 cards (Annex 2) related to the 17 SDGs of the 2030 Agenda. Finally, it was given a brief explanation about what was going to be done with the interviews, in terms of the research study that was being carried on. Consequently, following the 'interview guide', first it was collected data related to general information (interviewee name, job function, date, place, and duration of the interview). Then, in the second part of the interview, the author posed the following five questions (Fig. 73):

With the received answers it was possible to achieve the necessary data that it was intended to analyze and then compare it with the results obtained with the PR, abstracts, and questionnaire related to the Marble Arch Caves UGGp.

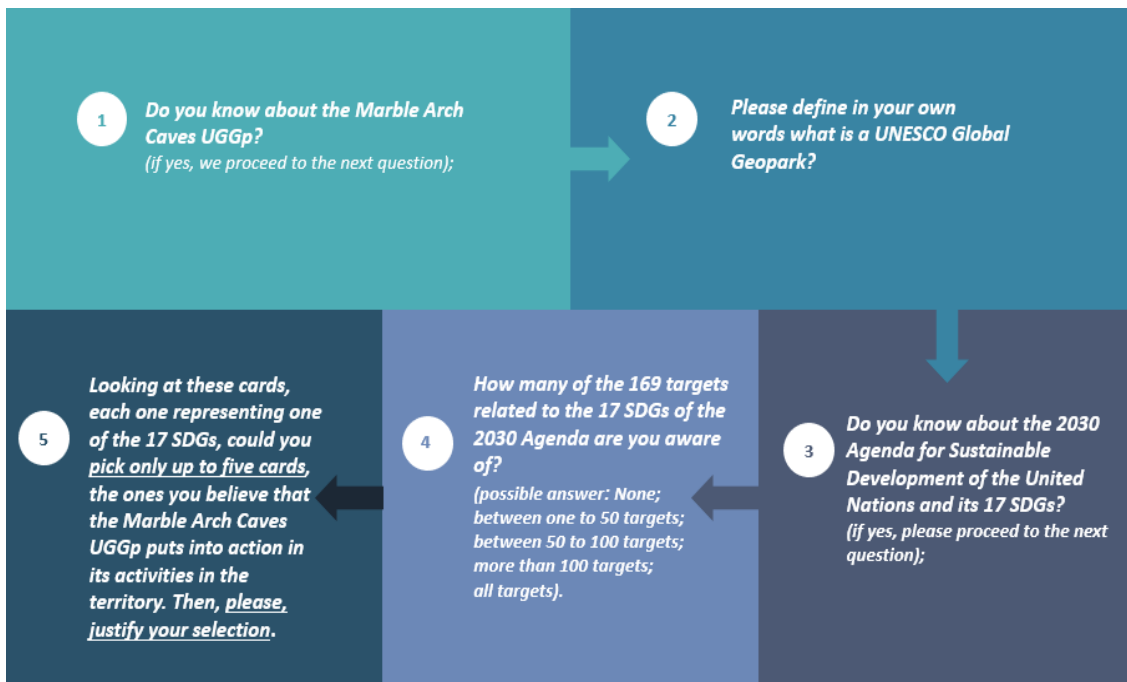


Figure 73 – Five questions of the ‘interview guide’ of this research study; © Elizabeth Silva.

Through that comparison, it would be possible to make a qualitative interpretation of the collected data. In this sense, it was expected to perceive and understand the similarities and differences between the obtained data collected from the used sources.

It is important to stress, that although the author had the opportunity to make six interviews, one of them could not be accepted since the interviewee replied to know nothing about the 2030 Agenda and its 17 SDGs. Therefore, it was not possible to continue with the interview. Consequently, the author had only five valid interviews.

However, following the methodological approach regarding the analysis of the content of the five interviews, which were processed through computer Software MAXQDA, it was possible to reach three categories, then divided into subcategories and several items (Table 17):

1. Understanding and practice;
2. Challenges;
3. Sustainable Development Goals.

The **first category** ‘Understanding and practice’ was divided into seven subcategories (‘Understanding what it is a UGGp’; ‘Global perception of the impact’; ‘Sense of ownership’; ‘Governance, Partnerships, and Strategy’; ‘Environmental Dimension’; ‘Economic Dimension’; and ‘Social Dimension’). These subcategories

include 13 distinct items. This category had to do directly with the replies given to questions number one, two, and three of the ‘interview-guide’. However, with question number five, being an open question, it was also possible to relate some of the raised issues with the mentioned subcategories and items.

The **second category** ‘Challenges’ was divided into eight subcategories (‘Sustainable Development; ‘Governance’; ‘Partnerships’; ‘Brexit’; ‘Awareness’; ‘Environmental Dimension’; ‘Economic dimension’; ‘Social dimension’).

The **third category** ‘Sustainable Development Goals’ was divided into three subcategories (‘Experience with SDGs’; ‘Chosen SDGs’; and ‘Attitudes towards the SDGs’). These subcategories would include 17 items.

The two last categories were directly related to question number five 5 because when developing their replies, the interviewees had to justify the selection of the five selected SDGs. Therefore, by giving them the freedom to speak about the reasons behind their choice it was also possible to identify also the challenges that were raised by the interviewees when talking about the Marble Arch Caves UGGp activities and responsibilities, but also to sense their concerns related especially with this cross-border territory.

**Table 17** - The obtained ‘Categories’, ‘Subcategories’, and ‘Items’ resulting from the analysis of the content of the five interviews.

Categories	Subcategories	Items
<b>1. Understanding and practice</b>	1.1 Understanding what it is a UGGp	
	1.2 Global perception of the impact	
	1.3 Sense of ownership	
	1.4 Governance, Partnerships, and Strategy	
	1.5. Environmental Dimension	1.5.1. Landscape and Geology 1.5.2. Biodiversity 1.5.3. Climate Change
	1.6. Economic Dimension	1.6.1. Local enterprises and products 1.6.2. Tourism 1.6.3. Employment
	1.7. Social Dimension	1.7.1. Reducing inequalities 1.7.2. Well-being 1.7.3. Peace 1.7.4. Gender equality 1.7.5. Education 1.7.6. Volunteer work 1.7.7. Cooperation and community development

**Table 17** (cont.) – The obtained ‘Categories’, ‘Subcategories’, and ‘Items’ resulting from the analysis of the content of the five interviews.

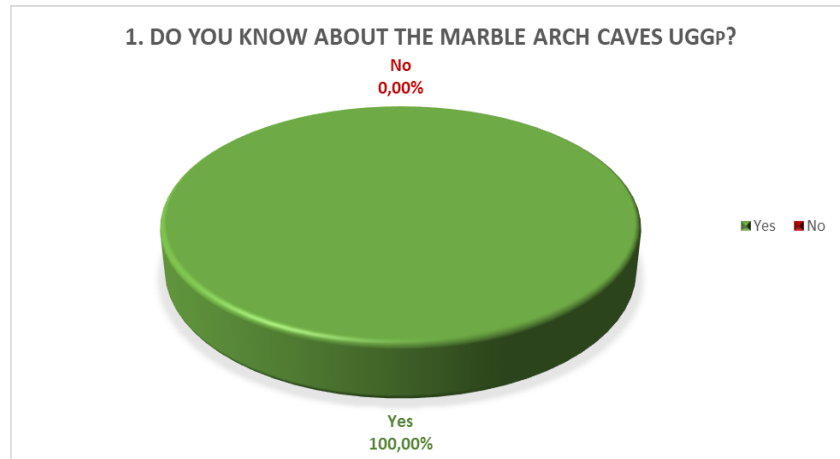
Categories	Subcategories	Items
<b>2. Challenges</b>	2.1. Sustainable Development	
	2.2. Governance	
	2.3. Partnerships	
	2.4. Brexit	
	2.5. Awareness	
	2.6. Environmental Dimension	2.6.1. Pollution 2.6.2. Biodiversity conservation 2.6.3. Landscape 2.6.4. Climate change 2.6.5. Water management
	2.7. Economic dimension	2.7.1. Tourism activities 2.7.2. Local enterprises and products 2.7.3. Infrastructures 2.7.4. Resources 2.7.5. Employment development
	2.8. Social dimension	2.8.1. Education 2.8.2. Reducing inequalities 2.8.3. Peace and justice 2.8.4. Gender equality 2.8.5. Well-being 2.8.6. Local communities 2.8.7. Connecting generations 2.8.8. Depopulation
<b>3. Sustainable Development Goals</b>	3.1. Experience with SDGs	3.1.1. SDGs knowledge 3.1.2. SDGs targets knowledge 3.1.3. SDGs put into action in the Marble Arch Caves UGGp 3.1.4. Applied experiences
	3.2. Chosen SDGs	3.2.5. SDG 3 3.2.6. SDG 4 3.2.7. SDG 5 3.2.8. SDG 6 3.2.9. SDG 8 3.2.10. SDG 9 3.2.11. SDG 10 3.2.12. SDG 11 3.2.13. SDG 13 3.2.14. SDG 14 3.2.15. SDG 15 3.2.16. SDG 16 3.2.17. SDG 17
	3.3. Attitudes towards the SDGs	

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In this sense, it was possible to have quantitative data but also qualitative data, which would bring a deeper understanding of how the interviewees perceive or knew

about the Marble Arch Caves UGGp activities and their effective contribution to the 17 SDGs of the 2030 Agenda.

In this framework, regarding the **first question** posed in the interview **“Do you know about the Marble Arch Caves UNESCO Global Geopark?”**, the five interviewees replied ‘Yes’, which corresponded to **100%** of the answers. So, all the interviewees confirmed that they knew about this particular transnational UGGp (Fig. 74).



**Figure 74** – Percentage results of the replies to the first question of the interview; © Elizabeth Silva.

Regarding the **second question**, running all the given answers, using the referred MAXQDA® computer software it was possible to obtain the following statements (Table 18):

**Table 18** – Some excerpts of the replies given by the interviewees to the 2<sup>nd</sup> question of the interview.

<b>2<sup>nd</sup> Question: <i>Please define in your own words what is a UNESCO Global Geopark?</i></b>	
<b>1.</b>	<i>"Ok, well for me a geopark, I supposed, first of all, is an area with international important rocks and landscapes. We always use the word "Geological Heritage" but most people don't really understand what that means. So, we would say 'a really important area with rocks and landscapes'. But it is not good enough to have really important rocks and landscapes if they are haven't been managed holistically for conservation, tourism, and education. And all this has to be done using a bottom-up approach. So, if I had to summarise it 'this is what really a UNESCO Global Geopark had to be'."</i>
<b>2.</b>	<i>"So, for me a geopark is a fantastic tool to promote the local area, with all its beauty, landscapes, and to support our local communities, helping them to improve their business and promote tourism. You know, a lot of the time people think that geology is just for the academics and science staff, but through the geoparks work, it is so important for us to make geology so related to people."</i>

**Table 18** (cont.)– Some excerpts of the replies given by the interviewees to the 2<sup>nd</sup> question of the interview.

<b>2<sup>nd</sup> Question: <i>Please define in your own words what is a UNESCO Global Geopark?</i></b>	
<b>3.</b>	<i>"I think for us the geopark is fundamentally about our people. It's about our community, it's about involving and engaging those people in their landscape and embedding them in their culture, in their history, in their heritage and making them feel connected to that landscape so that they get a sense of ownership and pride in their place and as part of that we can learn and exploring ways and mechanisms that we can engage them and in economic activities and sustainable economic activity to help them to benefit and engaging the communities in the area. And as I said engaging those communities with a sense of ownership and of pride of place of this particular place, backed by a natural geological and heritage."</i>
<b>4.</b>	<i>"For me, it means something that is a sustainable way of promoting communities, promoting economic development, promoting geotourism, and other types of tourism as well, in a sustainable manner and to bring economic benefit to the area. So, it is a really good method for doing it. That and using a really recognized brand and a well-respected brand in that regard, and also conservation and heritage and at the heart, education."</i>
<b>5.</b>	<i>"Well, a UNESCO Global Geopark is a really unique and special area of interest both for scientific, archaeological, historical and also from conservation and education point of view. So, it is a very unique special landscape."</i>

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To the **third question**: *"Do you know about the 2030 Agenda for Sustainable Development of the United Nations and its 17 SDGs? (if yes, please proceed to the next question)"*, **83,33%** of the replies were 'Yes', and the rest of the replies, **16,67%** were 'No'. This second percentage is related to one of the six interviewees who stated: "never heard about the 2030 Agenda and its 17 SDGs" (Fig. 75).

Following the 'interview guide', the **fourth question** was *"How many of the 169 targets related to the 17 SDGs of the 2030 Agenda are you aware of?"* (possible answer: None; between one to 50 targets; between 50 to 100 targets; more than 100 targets; all targets) (Fig. 76):

- **50%** of the interviewees replied 'none';
- **33,33%** of the interviewees replied 'between one to 50 targets';
- **16,67%** of the interviewees replied 'between 50 to 100 targets';
- **0%** of the interviewees replied 'more than 100 targets';
- **0%** of the interviewees replied 'all targets'.



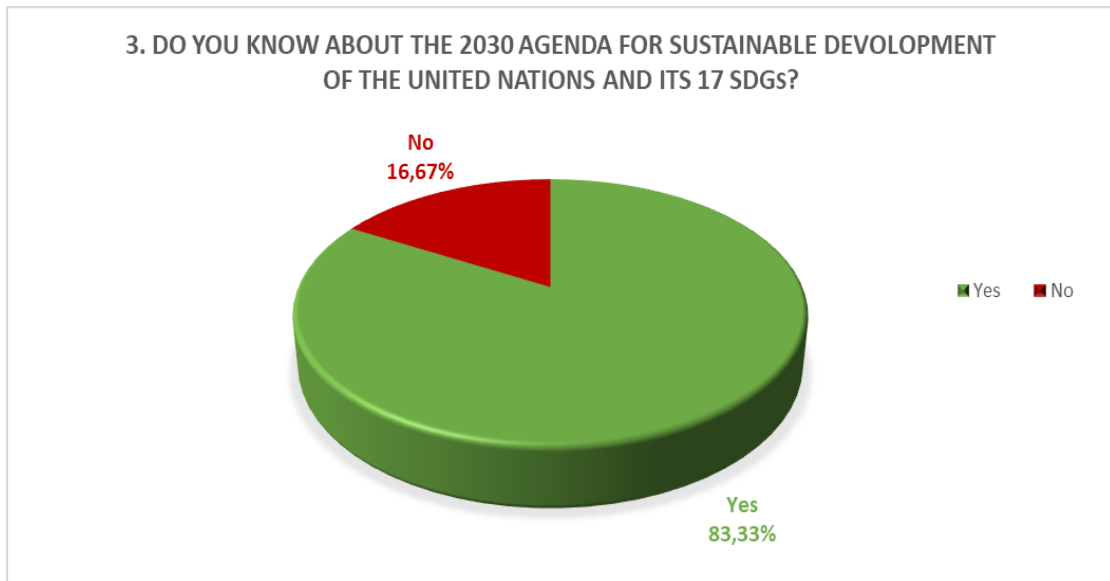


Figure 75 – The percentage results of the replies to the third question of the interview; © Elizabeth Silva.

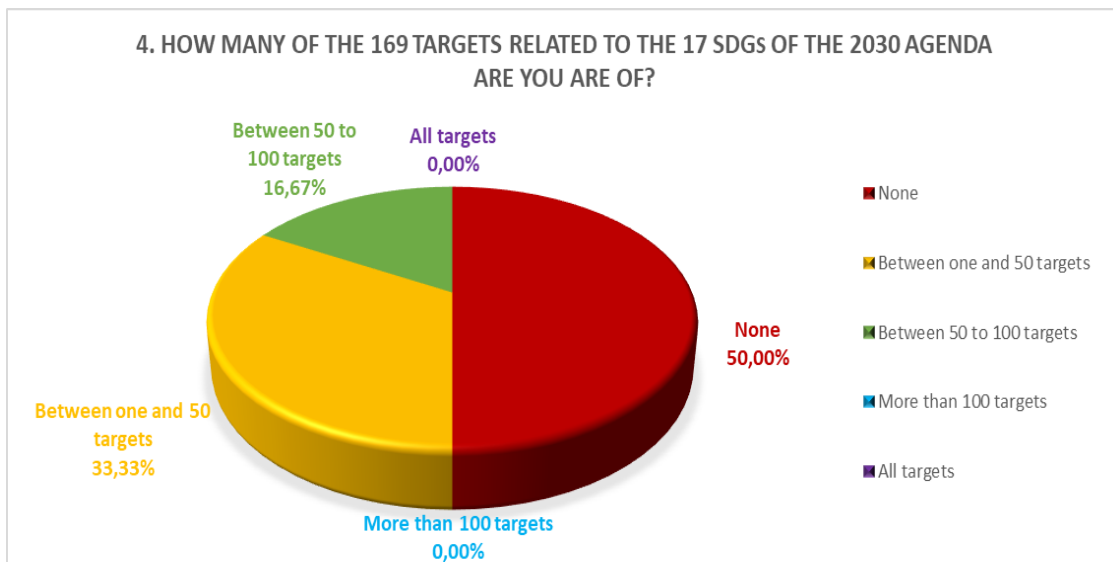
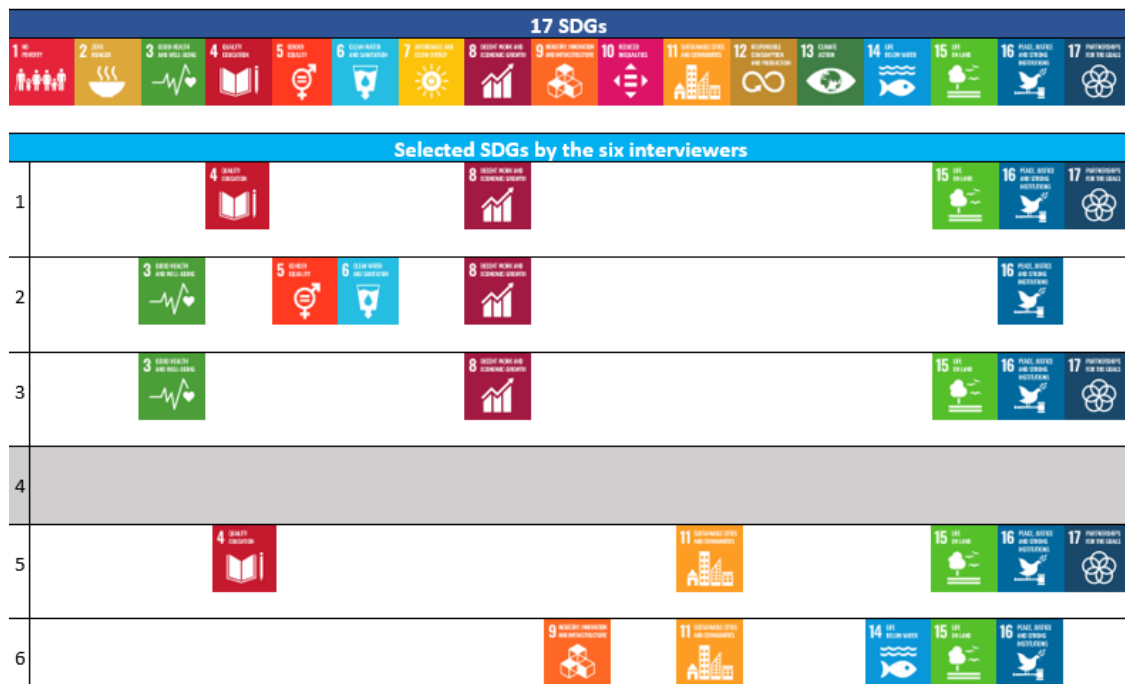


Figure 76 – The percentual results of the replies to the fourth question of the interview; © Elizabeth Silva.

Finally, in the **fifth question**, it was requested to the interviewees to look at the 17 cards, each one representing one of the 17 SDGs. **The five interviewees had to pick only up to five cards/five SDGs**. It was highlighted that they should only pick the cards/SDGs which they believed that the Marble Arch Caves UGGp was putting into action in the developed activities in the territory (Fig. 77).



**Figure 77** – Selected SDGs by the interviewees regarding the fifth question of the interview; © Elizabeth Silva.

Through this procedure, it was possible to identify the chosen SDGs and compare them among the five interviewees, and, therefore, to have the perception of the similarities and differences between the selected SDGs. In this sense, these were the similarities:

- **Two interviewees** picked **SDG 3** - ‘Good Health and Well-Being’;
- **Two interviewees** picked **SDG 4** - ‘Quality Education’;
- **Two interviewees** picked **SDG 5** – ‘Gender Equality’;
- **Two interviewees** picked **SDG 8** - ‘Decent Work and Economic Growth’;
- **Two interviewees** picked **SDG 11** - ‘Sustainable Cities and Communities’;
- **Four interviewees** picked **SDG 15** - ‘Life on Land’;
- **Five interviewees** picked **SDG 16** - ‘Peace, Justice and Strong Institutions’;
- **Four interviewees** picked **SDG 17** - ‘Partnerships for the Goals’.

Regarding **SDG 6** - ‘Clean Water and Sanitation’, and **SDG 9** - ‘Industry, Innovation, and Infrastructure’ these SDGs were **picked only once**. Regarding these choices, it is interesting to observe some of the statements given by the interviewees (Table 19).

Then, following the fifth question, it was also requested to the interviewees to justify their selection based on the five chosen cards/SDGs.

**Table 19** – Some excerpts of the statements given by the interviewees regarding the fifth question of the interview.

<b>5<sup>th</sup> Question: <i>Please kindly pick only up to five cards/five SDGs, that you believe that the Marble Arch Caves UGGp is putting into action in the developed activities in the territory.</i></b>	
<b>i)</b>	<i>“Well, give me just a few minutes... I would say that I could pick the cards related to <b>SDG 4</b> – Education, <b>SDG 5</b> – Gender equality, <b>SDG 15</b> – very important for the Geopark, <b>SDG 16</b> with any doubt...and also, of course, <b>SDG17</b> – partnerships, these are essential.”</i>
<b>ii)</b>	<i>“Well, first I would pick up <b>SDG number 3</b> ‘Good Health and Well-Being’... then, I think ‘Gender Equality’, <b>SDG 5</b>, then “Decent Work and Economic Growth”, <b>SDG8</b>, and then <b>SDG16</b> ‘Peace and Justice’ speaks for itself...we all like to live in a place where there’s peace, that’s very important, and also <b>SDG 6</b> ‘Clean Water and Sanitation’.”</i>
<b>iii)</b>	<i>“Well, let me see... I guess I will pick the cards related to <b>SDG 3</b>, <b>SDG 8</b>....<b>SDG 15</b>, <b>SDG 16</b> of course, and definitely <b>SDG 17</b>.”</i>
<b>iv)</b>	<i>“Ok, let me see...they are all connected, so it is difficult to select, but I would say, from all the 17 SDGs, ... if I have to select up to five cards, I would pick <b>SDG 4</b> ‘Quality Education’, <b>SDG 11</b> ‘Sustainable Cities and Communities’, obviously <b>SDG 15</b> ‘Life on Land’, definitely <b>SDG 16</b>, and finally, <b>SDG 17</b>.”</i>
<b>v)</b>	<i>“Well, there are many challenges for this especial geopark... but I would pick <b>SDG 9</b> ‘Industry, Innovation and Infrastructure’, <b>SDG 11</b> ‘Sustainable Cities and Communities’, and not forgetting <b>SDG 15</b> ‘Life on Land’, and also <b>SDG 16</b> ‘Peace, Justice and Strong Institutions’ and maybe finally, <b>SDG 17</b> ‘Partnerships for the Goals’.”</i>

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These were some of the excerpts related to the selection of each SDG and its corresponding justification. Starting with SDG 3 (Table 20), SDG 4 (Table 21), SDG 5 (Table 22), SDG 6 (Table 23), SDG 8 (Table 24), SDG 9 (Table 25), SDG 11 (Table 26), SDG 15 (Table 27), SDG 16 (Table 28), and finally SDG 17 (Table 29).

**Table 20** – Excerpts of the justification given by the interviewees with the selection of the SDG 3

<b>5th question – <i>Please justify your choice: SDG 3</i></b>	
	<i>“(...) First, I would pick up SDG number 3 ‘Good Health and Well-Being’ because I think it is very important to all the people in the area and the younger generations, so I think that it is very important. The geopark looks for the well-being and the fitness of the local people in this area, and that means a lot...”.</i>
	<i>“Well for SDG 3 ‘Good Health and Well-Being’ we work quite strongly this SDG in terms of that aspect, I mean good health and well-being of our communities...one of the main key areas that we focus on the geopark... has been providing recreational products or our tourism products and within the Geopark area. As part of that, we have over one hundred kilometers of recreational trails that we have provided and maintained to very high standards and within the Geopark. These are providing opportunities for people to get out into the countryside and make them aware of the uniqueness and the sensitivities in that landscape, but improving their health and well-being and again. So, we also deliver event programs at wider events ...over eighty events directed by the Geopark on an annual basis, so guide walks, guided talks, foraging for food, and for example, all the tour around a tour line on good health and well-being agenda and the promotion of those, which are actually key milestones and both on our county councils and corporate plans, as well.”</i>

**Table 21** – Excerpts of the justification given by the interviewees with the selection of the SDG 4**5th question – Please justify your choice: SDG 4**

*“Sure, well starting with SDG 4 – ‘Quality Education’, one of the main goals in my work at the Geological Survey and the Marble Arch Caves Geopark is to provide inclusive education concerning geoscience education, and that means working with schools, from both sides of the border, the Northern Ireland and the Republic of Ireland, but also means working with students and up way to adults and lifelong learning so to provide geoscience education for everybody and also about the learning about the local area and their environment. So, that’s number four, ok?”*

*“Well, justifying my choice, let me see... For SDG4, we work at the primary level up to the third level of education, to develop education programs to promote visiting by schools to our geopark, to work with teachers to develop programs, and for example, we are currently working with the university in Dublin, the University in Dublin, on Archeologic project in one of our geosites to do Ph.D. research papers and to have archaeological students to come and visit us and using that place to do their research. So, this is going on all the time. We also talk about ‘Climate Change’ to our students and use our geosites to explain some issues related to this important challenge...”*

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**Table 22** – Excerpts of the justification given by the interviewees with the selection of the SDG 5**5th question – Please justify your choice: SDG 5**

*“Also, number five, SDG 5 – ‘Gender Equality’, because in the Marble Arch Caves Geopark we work very hard to make sure that we have a considering representation of females and males at a single level. So, the geopark management team has actually doubled by women... yes, a lot has changed over the years and it has become more and more that way.”*

*“(...) Then, I think ‘Gender Equality’, SDG number 5, that’s important as well because of what’s all happened in Ireland at the moment...you know, and in the past that we had... but the role of women has changed, you know, women are just equal as men, as far as I can see...”*

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**Table 23** – Excerpts of the justification given by the interviewees with the selection of the SDG 6**5th question – Please justify your choice: SDG 6**

*“Also SDG 6 ‘Clean Water and Sanitation’ is important because the geopark is also looking after the rivers and everything, you know...”*

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**Table 24** – Excerpts of the justification given by the interviewees with the selection of the SDG 8

**5th question – Please justify your choice: SDG 8**

*“Then ‘Decent Work and Economic Growth’, SDG8, we would look at the villages and help them to have more incomes, having more workers and more young people staying instead of traveling abroad you know ...”.*

*“So, I selected SDG8 ‘Decent Work and Economic Growth’. Well, Elizabeth as you know, inherently sustainable tourism, sustainable development, geotourism are at the heart of what the geoparks should do, and we contribute significantly directly, and indirectly to the tourism economy in both counties. Directly, we the geopark employs a significant body staff. So, we have seven permanent and up to 45 elements of the staff that work directly for the geopark and indirectly that delivers, I think, over four and a half million Euros of funding since 2011 and external funding for the operations of the geopark as well mean a huge investment in the tourism infrastructure and tourism products that we have and within the geopark. I suppose outside of that in terms of the activities we have, for example, our “Geoparks Ambassadors” Program, which we so encourage members of the public to come on board to work with us and concerning developing and enhancing tourism products or experiences within the geopark area which actually they can charge for under our guidance and mentorship and doing so, creating those employment opportunities and sustaining those opportunities as well.”*

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**Table 25** – Excerpts of the justification given by the interviewees with the selection of the SDG 9

**5th question – Please justify your choice: SDG 9**

*“Well, I picked card number 9 ‘Industry, Innovation and Infrastructure’, because we need to build more resilient infrastructures, to promote our territory, sustainably. So, for instance, sidewalks, path walks, accessible for all, and innovating, so that we can explain better the geological heritage that we have here, which is amazing, and that way also to attract more visitors. I suppose the geopark has done a lot in this sense, and the panels explaining the geosites and especially near the beautiful and fantastic lakes... it is a wonderful way to show the beauty of our landscape and explain to everybody what is behind the geology that we find here. And I think that this is completely linked with SDG 11 ‘Sustainable Cities and Communities’.”*

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**Table 26** – Excerpts of the justification given by the interviewees with the selection of the SDG 11

**5th question – Please justify your choice: SDG 11**

*“I am picking SDG 11 ‘Sustainable Cities and Communities’. You see, the geopark is in the interest of the communities. So here we work daily with the local communities. I am a guide, so what motivates me is to see the involvement of the local communities in the activities of the geopark. I have been trained by the geopark to explain in a very simple way our landscape, our heritage, make people stay, and have sustainable communities is what we would like to see... here we have a lot of degradation and depopulation in the area because people are leaving, so we need to innovate and create conditions so that the can stay and live here sustainably. So, the geopark is driven by the communities, and many of our centers have to do with community work, being a volunteer, and so on... the tourism office is a very important infrastructure to create awareness about the geopark. In this sense, it is vital to have our community embedded in what the geopark tries to do every day, which is to create awareness to have sustainable communities, to make them understand better the heritage that surrounds us and that these communities can understand what is need from their side, to be safe and resilient.”*

*“Then SDG 11 ‘Sustainable Cities and Communities’, we work very closely with the community within the geopark and we bear in mind that these are the people who drive the geopark, and these are the base of the geopark... and it has to be sustainable, so we work with the communities from both sides of the borders. We sustainably work with them through the development of community coffee-shops. So, building these important local enterprises, makes the communities more resilient and more sustainable, and economic development is a very important pillar for us.”*

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**Table 27** – Excerpts of the justification given by the interviewees with the selection of the SDG 15

**5th question – *Please justify your choice: SDG 15***

*“Then, SDG 15 ‘Life on Land’, this probably just has a less degree than the others, but again one of the things that we do as an organization is to look at the geological conservation and see the sites that have got significance geological interest, that has to be protected so that there is no significant degradation of those sites”.*

*“I would also choose SDG 15 ‘Life on Land’. So, having in mind that 50% to 60% of our land area is actually freshwater, freshwater lakes, the other part of our free land is forestry it is a huge part of our Geopark. We have an official embedding agreement partnership in place with the Forest Services and the equivalent partners in the Republic of Ireland. In the turn of working through the management of those forests and the forests system. We try to ensure that the Geopark is managed in a sustainable fashion way and also the people are provided with opportunities to get the recreational and social benefits from accessing those areas as well, that is right away to cross the border and for example, in terms of biodiversity laws, we are actively involved in the Biodiversity action planning process for both county councils. The Geopark is a key partner and in the delivery of those plans, as well, so we are actively involved in that at all levels and indeed, I say that at sustainable development and looking to the 2030 Agenda sustainable development issues and the SDGs are all linked to our life on land. In fact, at the moment we are working in one of our sites, designated as a local nature reserve, as well, for example. So, lots of activities at every different level are linked with that particular SDG.”*

*“Number 15 ‘Life on Land’, so this is absolutely inherent to the geopark because everything we do is about protecting and conserving our landscape, so what we really want to prove is that this is a fantastic area to live in and to do that, and in everything that we do, we need to protect our landscape. All geoparks should work this SDG. We need to educate people on the value of our landscape and the diversity of our landscape ... like we have mountains, we have rivers, we have faults, we have caves, and geologically we have such a huge amount in the geopark, so a lot of the time people think that geology is just for the academics and science staff, but it is so important for us to make geology so related for people, and in that tune in our geopark, guides bring that to life, and we want to attract people to live here and also to attract people to visit here, and that’s why the sustainably managing of all our landscapes is hugely important... for example, what we do with our Forestry Service in a close future, to manage the huge vast amount of land that they have, and the biodiversity projects and recreational projects, because at the end of the day, their main thing is a national gain that we need to try as much as possible to influence them to think about biodiversity, to think about recreation and protection of the environment, so life on land is inherent in everything we do, in terms of biodiversity and biodiversity loss, as well.”*

*“I also choose SDG 15 ‘Life on Land’. Because we are essentially a rural area, where agriculture is the main activity, we have also amazing biodiversity in the geopark. But I am concern that all we have achieved with the geopark, can be threatened by what is on the horizon... As you know, we have this situation of Brexit, so all the work is done in true cooperation, protecting from both sides our biodiversity and working to revert the loss of biodiversity, we can lose all these efforts if Brexit separates again the local communities and local organizations that work together for so many years.*

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**Table 28** – Excerpts of the justification given by the interviewees with the selection of the SDG 16

<b>5th question – Please justify your choice: SDG 16</b>
<i>“Well SDG 16, is probably one of the most important ones. Peace, justice, and strong institutions. Being a cross-border geopark in an area of a former conflict creating peace, I think it's one of our proudest achievements, not that we achieved that peace ourselves, but we try to instill a strong and collaborative attitude amongst everybody that lives here. That will be through education, which will be through community groups, that will be working with the various organizations from both sides of the border and by working with the geopark we have definitely helped to improve peace in the area and hope to make a long and lasting peace as well.”</i>
<i>“Well, SDG 16 ‘Peace, Justice and Strong Institutions’... this is a fundamental SDG for us... I also believe that SDG 10 ‘Reduce Inequalities’ is very connected with this one. You see, the fact that we are a cross-border geopark and having only four cross-border geoparks in the Network, is something that we have worked on and consistently trying to reduce any social, economic, or indeed environmental inequalities that exist within the two areas of both counties and that stands in all aspects of our work and what we do in sustainable development in a border sense and so it is there and firmly embedded in anything that we do. All our work is direct for the local communities, and educating and guiding them in everything we do.”</i>
<i>“We don’t know how things will work after Brexit, regarding, for instance, the management of the geopark territory, and especially about the continuity of the funding and of course, the cross-border cooperation. For example, the geopark has created nature reserves and doing its conservation... to maintain biodiversity... For all these reasons, I would choose also SDG number 16 ‘Peace, Justice and Strong Institutions’. It is difficult to answer if the geopark has contributed effectively to peace, but being a cross border territory, and promoting cross border cooperation, so promoting common projects and interests, shared interests, I think that our geopark is a product of the peace process and what we need is to sustain that peace process from both sides of the border...it maybe has a political boundary, but we are still one people and we have common interests, we don’t see the borders here between the two counties councils, because for us it is just the same territory.”</i>
<i>“And number 16 – SDG ‘Peace, Justice and Strong Institutions’, this is probably the most important SDG for us, because we are a cross border geopark and you know the embedding of the geopark in relationships cross the border has been translated into a huge amount of cross border projects especially in cross border villages, we have done projects with local artists and there is actually one recently called “Soften the Border”, which was all related with Brexit”.</i>
<i>“... and then SDG16 ‘Peace and Justice’ speaks for itself...we all like to live in a place where there’s peace, that’s very important, and the geopark can help for peace to work here...”.</i>

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**Table 29** – Excerpts of the justification given by the interviewees with the selection of the SDG 17

<b>5th question – Please justify your choice: SDG 17</b>
<i>“Finally, SDG 17 – Partnerships. Our geopark could not function and I am sure that all the geoparks do the same, I am sure without the partnerships that we have, so the Marble Arch wider is led and manage by two different types of councils. It also lies in many partners to deliver the main goals, that would be me for the Geological Survey of Ireland... we all have such a significant achievement to what regards the Sustainable Developments Goals that we all have worked together to do that the goal of the partnership.”</i>

*“The last one, SDG 17 ‘Partnerships for the Goals’... well, partnerships are inherent I think to any organization, but to GGN in particular, everything that we do is in partnership. We firmly believe that we are stronger together than we are as a single entity... we are managed by both county councils, we cannot achieve anything in isolation, so we like to think that our rule is working to develop and facilitate those partnerships to make sure that they are mean full, that they are tangible and that they do deliver the benefits that we need as stakeholders, but also as our communities need as well as significant being more importantly so it is something that we are actively and consistently doing and throughout the work as being a UNESCO Global Geopark, so that will always be in the ‘Top Three’ of what will continue to do.”*

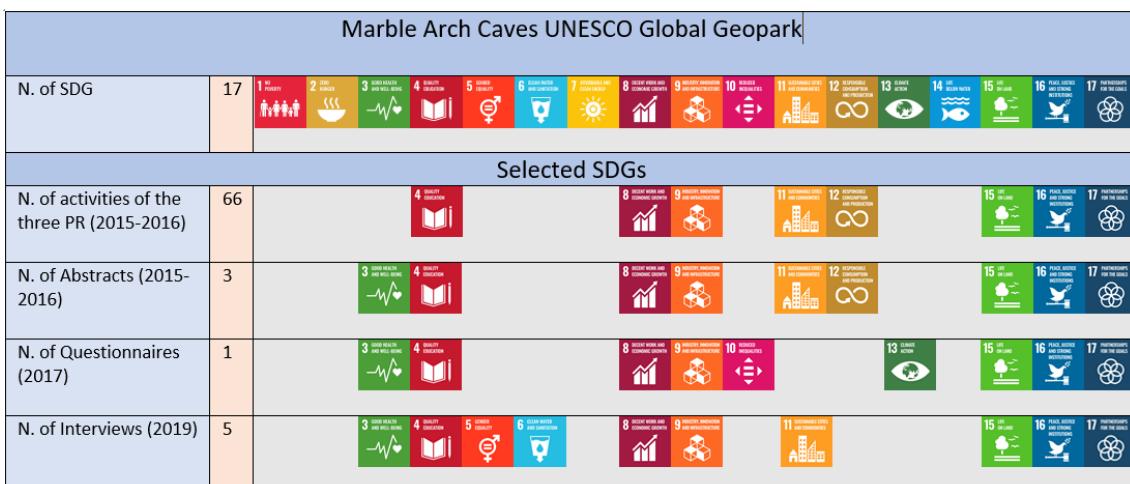
*“ (...) Number 17 ‘Partnerships for the Goals’ for us, in the mid-Atlantic area, what is important is to have different partners and to put them working together and to network with so many partners across Europe, sharing knowledge, sharing experiences is absolutely unbelievable too. But also, at a more local level, the partnerships that we have, like the Forest Service, or our National Environmental Agency, are huge. We do not effectively manage the land, but we are really only the guiding in this vast land, so we really have to work on these partnerships and in the future. We can’t work as a geopark unless we have these partnerships.”*

*“So, it would be important if people would be more connected with these issues, especially to understand what SDG 16 stands for in terms of Peace and also SDG 17 in terms of cooperation... People must also understand the value of their territory if UNESCO has designated this territory as especial enough to be designated as a UNESCO Global Geopark, I think people should understand better the reasons behind this international designation...”*

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The interviews allowed having a perception of how these different individuals saw the activities developed by this UGGp and their effective knowledge about the 17 SDGs.

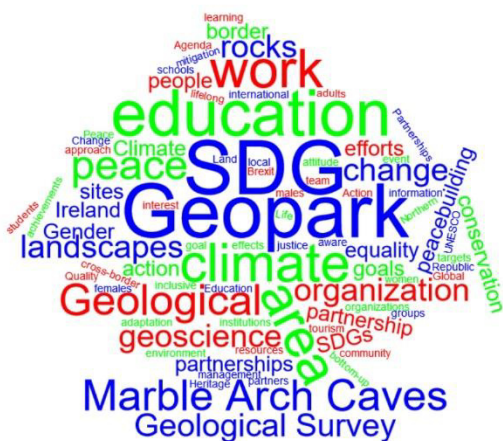
Comparing the data obtained with the four used sources regarding this UGGp, it was possible to perceive the differences and similarities regarding the chosen SDGs (Fig. 78).



**Figure 78** - Selection of the most relevant SDGs according to the different sources regarding the Marble Arch Caves UGGp; © Elizabeth Silva.



The interviews were also very valuable to highlight the interviewee's point of view. In this framework, when applying the online software available at 'WordClouds.com', it was even more interesting to obtain the most frequent words from each interviewee - one-word cloud for each interview -, and then have a broader view when merging all the five-word clouds into one and obtain this way the result of the most repeated words (Fig. 79). It was very interesting to have the notion about the main concerns of the interviewees. So, words such as 'SDG', 'Geopark', 'Education', 'Climate', 'Geological', 'Communities', 'Generations', 'Tourism', 'Brexit', 'Border', 'Partnerships', etc., were undoubtedly in line with the 'Geopark concept' and with the major topics that were focused during the interviews. In this sense, it was very revealing the total interviews word cloud (Fig. 79 lower right word cloud), which brought to the surface all the main words that can be related to the 'Geopark concept', and especially when speaking about this particular cross-border UGGp. In this context, it was notorious the real concern about peace, due to the current shadow associated with 'Brexit', but also the understanding of what is a geopark and what does it mean to the local communities. For these interviewees, the geopark means engaging the local communities in the developed activities, the importance of promoting partnerships, and the effective need for sustainable development of the territory, and consequently, contributing to peace-building efforts based on the geopark activities, putting people working together for common goals and aspirations.



First interview word cloud



Second interview word cloud



Third interview word cloud



Fourth interview word cloud



Fifth interview word cloud



Total interviews word cloud

Figure 79 – The word clouds obtained with each interview and the word cloud achieved from the total of the five interviews; ©Elizabeth Silva

## **CHAPTER VI - DISCUSSION OF THE RESULTS AND A PROPOSAL OF A WORKING TOOL**

As mentioned previously, this research study arose from the need to understand how do the European UGGps effectively contribute to the achievement of the 17 SDGs of the 2030 Agenda. It was also considered pertinent to comprehend if the 33 selected European UGGps could work far more than the 'Eight SDGs' selected by the IGGP, and if so, which ones. It was also relevant to know how these contributions can be accounted, in a qualitative approach. In this sense, it was considered important to clarify all these issues, not empirically, but based on a set of data collection that could bring new light to the research questions. In this context, it was important to review what was done in the past and to follow very closely what is being decided in the present (July 2020) by the IGGP, in this field. With this research study, it is also expected to make positive proposals to assist the UGGps, in the future, in this domain.

In this framework, the first step was to reach for answers posed by the three research questions, through the processing of the data collection. Consequently, besides the analysis of the PRs, it was intended to have more objective data, so that a deeper overview could be done over time, regarding the activities promoted by the selected UGGps and their correlation with the 17 SDGs.

During this research study, it was recognized that through this process analysis, 17 SDGs are very extensive and cover a wide field (VVSG, 2018). However, when analyzing the different sources and the obtained data, it was possible to obtain interesting results, based on a qualitative interpretation.

### **6.1 Discussion of the results**

The analysis of the four sources used in this research study and the huge amount of the obtained data revealed several pertinent results, some of them in line with the three research questions and with the several specific objectives posed by this research. However, new results were obtained which will be discussed in this chapter. The results obtained were the following:

- 1.** All the 17 SDGs were developed either directly or indirectly in the obtained data collection.

This means that when analyzing the data, this result was reflected in the activities described in the PRs, or in the abstracts, or even in the selected 'very important SDGs' by the managers when answering the questionnaires. This was also, reinforced by the answers obtained with the interviews. In this regard, it was interesting the following statement of one of the interviewees, *"But, once again, I believe that our Geopark promotes essentially almost every SDG"*.

Through the sum of all the data collection, it was possible to identify the SDGs that were developed by the 33 selected UGGps. In this sense, it was interesting to observe that from the obtained data, although with higher or fewer scores, all the 17 SDGs could be correlated with the described activities.

**2. The SDG 17 - 'Partnerships for the Goals'** was undoubtedly the SDG more promoted by the UGGps from the described activities in the PRs and the abstracts. In fact, from the total sum of the 5857 developed activities described in the PRs, 1601 activities were related to the SDG 17, obtaining this way the highest score (27,33%). The same happened with the abstracts, which from a total sum of the 448 described activities, 78 activities were correlated to this SDG, obtaining this way also the highest score (17,41%). With the questionnaires, this SDG obtained third place between the six SDGs with higher scores (with 34 points). In this framework, these results are aligned with the statement of UNESCO (2016a) according to which a UGGp is not only about cooperation with the local people living in the UGGp area, but also cooperating with other UGGps through the GGN and regional networks for UGGps, to learn from each other and, as a network, improve the quality of the label 'UGGp'.

By analyzing the used sources and the obtained data, it was evident that the UGGps when describing their activities gave great importance to their cooperation with other UGGps. Thus, it was also mentioned the multiple partnerships developed at a local level. It was also stressed several activities related to international cooperation between different UGGps, based mainly on EU funding projects. This aspect reinforced the importance of the SDG 17, which confirmed that working together with international partners is the main reason for a UGGp to be a member of an international network such as the GGN (UNESCO, 2016a). This result was also in line with the IGGP selection of the 'Eight SDGs' most developed by the UGGps. However, besides the targets especially indicated by the IGGP for the SDG 17, focusing especially on targets 17.6, 17.9, and

17.16, through the gathered data it was possible to identify activities also related to targets 17.14 and 17.17. This was also a result of the analysis of the interviews regarding SDG 17. This SDG also obtained a higher score with the interviews, and four out of five of the interviewees justified the selection of this SDG, as described in the previous chapter. Through that choice, they made it clear how this SDG is crucial not only for the local communities/stakeholders but also in the activities developed by the Marble Arch Caves UGGp. Some interesting statements reinforced the importance of SDG 17. In this sense, it is worthwhile to mention other short statements that stress the importance of this SDG for the staff members of this particular UGGp and local inhabitants /stakeholders:

*“(...) we can’t work as a geopark unless we have these partnerships.”, or;*

*“(...) we all have such a significant achievement to what regards the Sustainable Development Goals that we all have worked together to do that goal of the partnership”.*

Furthermore, with the use of computer Software MAXQDA®, SDG 17 also contributed to the achievement of the three categories, but also for some subcategories, and items. This was the case of Category 1. ‘Understanding and practice’, followed by subcategory 1.4. ‘Governance, Partnerships, and Strategy”, and subcategory 1.7. ‘Social Dimension’ which under this one was possible to relate to item 1.7.6. ‘Volunteer work’ and item 1.7.7. ‘Cooperation and community development’. Other statements regarding SDG 17 were also related to Category 2 ‘Challenges’ followed by subcategory 2.3. ‘Partnerships’ and subcategory 2.7. ‘Economic Dimension’. Under this one, this SDG was also related to item 2.7.2. ‘Local Enterprises and products’ linked directly to item 2.7.1. ‘Tourism activities’. Finally, still analyzing the statements concerning SDG 17, it was obvious the connection to Category 3 ‘Sustainable Development Goals’. And under the subcategory 3.2. ‘Chosen SDGs’, there were several statements linked directly to item 3.2.17. ‘SDG 17’.

Through this deep analysis of the interviews, it was possible to reach so many pertinent statements that consolidate the importance of SDG 17. The last example can be this vigorous statement:

*“(...) everything that we do is in partnership. We firmly believe that we are stronger together than we are as a single entity... we are obviously managed by both county councils, we*

*cannot achieve anything in isolation, so we like to think that our rule is working to develop and facilitate those partnerships to make sure that they are mean full, that they are tangible and that they do deliver the benefits that we need as stakeholders, but also as our communities (...) so it is something that we are actively and consistently doing and throughout the work as being a UNESCO Global Geopark”.*

Bearing in mind that the SDG 17 was reviewed in-depth at the high-level political forums of the United Nations during 2017-2019 (United Nations, 2020), the UGGps through their developed activities also seemed to update their actions regarding this SDG and its targets. In this context, from the analyzed data it was possible to observe that the UGGps focused especially on joint projects and activities, as well as, funding and capacity-building, through numerous different partnerships. So, in this case, the results obtained with the data collection related to the SDG 17, coincide with the importance given by the IGGP (UNESCO, 2017e, 2020b).

**3.** The analysis of the data regarding the PRs and abstracts revealed the most developed SDGs during 2015-2016 and made it possible to compare the ranking of those SDGs with the ‘Eight SDGs’ selected by the IGGP. In this sense, it was interesting to observe that the total number of the ‘Eight SDGs’ most developed by the 33 selected UGGps was the same between these two different sources (PRs and abstracts). Therefore, in both sources, the most developed SDGs were **SDG 4, SDG 8, SDG 11, SDG 12, and SDG 17**. However, when comparing the most developed SDGs of these two sources, with the ‘Eight SDGs’ selected by the IGGP, only five SDGs coincided with those. This was the case of SDG 4, SDG 8, SDG 11, SDG 12, and SDG 17. On the contrary, three SDGs were left out from the UGGps activities: **SDG 1; SDG 5, and SDG 13** (Fig. 80).

In this context, **SDG 1** – ‘No Poverty’, **SDG 5** – ‘Gender Equality’, and **SDG 13** – ‘Climate Action’, were not scored in the ‘Eight SDGs’ that the IGGP refers to as the most developed by the UGGps. This means that in the described activities written in the PRs and abstracts, these three SDGs had very low or even zero activities, regarding 2015-2016 (Table 30).



**Figure 80** – The SDGs obtained with the analysis of the PRs and abstracts compared with the ‘Eight SDGs’ selected by the IGGP; © Elizabeth Silva.

However, for the IGGP, these three SDGs are considered fundamental (UNESCO, 2017e):

**SDG 1 – End Poverty in all its forms everywhere (especially target 1.5.):** Disaster risk reduction is essential to ending poverty and fostering SD. The bottom-up approach of the UGGps reduces the vulnerability of local communities to extreme events and other shocks and disasters through active risk awareness and resilience training;

**SDG 5 – Achieve gender equality and empower all women and girls (especially target 5.5):** UGGps strongly emphasize the empowerment of women through educational programs or the development of women’s cooperatives. Such cooperatives provide an opportunity for women to obtain an additional income in their own area and their own terms;

**SDG 13 – Take urgent action to combat climate change and its impacts (especially target 13.3):** All UGGps hold records of past climate change and are educators on current climate change. Through educational activities awareness is raised on the issue and people are provided with the knowledge to mitigate and adapt to the effects of climate change.

What is even more interesting is to acknowledge that the UGGps in their PRs and abstracts, regarding 2015-2016, gave less importance to two of the ‘Top Ten Focus Areas’: ‘Climate Change’ and ‘Women’ (UNESCO, 2015f, 2018b, 2020b).

**Table 30** - Comparison between the PRs and abstracts data based on the ‘number of activities per SDG’.

PRs / number of activities per SDG	Abstracts/number of activities per SDG
<b>The lower number of activities per SDG</b>	
<b>SDG 1 ‘No Poverty’ – one activity</b>	<b>SDG 1 ‘No Poverty’ – zero activity</b>
<b>SDG 5 ‘Gender Equality’ – seven activities</b>	<b>SDG 5 ‘Gender Equality’ – one activity</b>
<b>SDG 13 ‘Climate Action’ – 12 activities</b>	<b>SDG 13 ‘Climate Action’ – six activities</b>
<b>The higher number of activities per SDG</b>	
<b>SDG17 ‘Partnerships’ – 1601 activities</b>	<b>SDG17 ‘Partnerships for the Goals’ – 78 activities</b>
<b>SDG12 ‘Responsible Consumption and Production’ – 939 activities</b>	<b>SDG11 ‘Sustainable Cities and Communities’ – 70 activities</b>
<b>SDG11 – ‘Sustainable Cities and Communities’ – 794 activities</b>	<b>SDG12 ‘Responsible Consumption and Production’ – 61 activities</b>

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This means that in their strategic plans and developed activities, including the themes of the abstracts analyzed, these two ‘Focus Areas’ were not on the UGGps’ radar or major concern or at least were not mentioned in the PRs and the abstracts, during the time-frame of this study. This result can be considered a strong contradiction, bearing in mind what is stated by UNESCO (UNESCO, 2015f, 2018b, 2020b):

*“Climate Change” – UGGps hold records of past climate change and are educators on current climate change as well as adopting a best practice approach to utilizing renewable energy and employing the best standards of ‘green tourism’. While some UGGps stimulate green growth in the region through innovative projects, others serve as outdoor museums on the effects of current climate change, thus giving the opportunity to show visitors how climate change can affect our environment. Such community and educational activities and projects are important in order to raise awareness on the potential impact of climate change on the region, and to provide the local communities with the knowledge to mitigate and adapt to the potential effects of climate change;*

*“Women” – UGGps have a strong emphasis on empowering women whether through focused education programs or through the development of women’s cooperatives. UGGps are a platform for the development, nurturing, and promotion of local cottage industry and craft products. In some, UGGps women’s cooperatives also provide an opportunity for women to obtain additional income in their own area and on their own terms. They can, for example, operate accommodation services for visitors.*

Furthermore, these two ‘Focus Areas’ are intrinsically related to **SDG 1** - ‘No Poverty’. However, in the PRs and abstracts, these issues were almost completely left



out from the strategies and actions led by the UGGps, or once again not described or mentioned in these two sources. However, it is undeniable, that from the total sum of 5857 activities described in the PRs, only 12 of them were related to **SDG 13** - 'Climate Action'. In the case of the abstracts from a total sum of 448 activities, only six were related to this major global concern.

With all the evidence of so many risk disasters and their consequences for the health and well-being and related to the increasing of poverty worldwide, it is pertinent to stress that many UGGps suffer in their territory, in a very dramatic way, the consequences of climate change. Therefore, the SDG 13 should have had a higher score with more developed activities, engaging actively their inhabitants, local school communities, academia, and other partnerships around this major theme.

Still, when comparing the data obtained with the questionnaires, the managers considered 'Very Important' SDG 13, scoring it in the sixth position, in the ranking of the 'eight most selected SDGs'. Regarding the interviews, although card 13/ SDG 13 was not selected, one interviewee mentioned its importance in the activities developed by the Marble Arch Caves UGGp by stating that: *"(...) So, every geoscience event, for example, that we organize we always have climate change, climate action at its core"*.

Nevertheless, this result was not reflected in practice in the analysis of the PRs and abstracts.

Regarding **SDG 5** - 'Gender Equality', UGGps are very far from what could be expected in their developed activities, involving women and gender equality. In the PRs, once again from a total sum of 5857 activities, only seven were related to this particular SDG. And, in the case of the abstracts, from a total sum of 448 activities, only one abstract focused on the role of women in the UGGp activities, from the 33 selected UGGps. This is even more pertinent when recalling the UNESCO global priority – 'Gender Equality' - when stressing the importance of the role of 'Women and the SDGs' (UNESCO, 2019g):

*(...) UNESCO believes that all forms of discrimination based on gender are violations of human rights, as well as a significant barrier to the achievement of the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals.*

*(...) Our message is clear: women and men must enjoy equal opportunities, choices, capabilities, power, and knowledge as equal citizens. Equipping girls and boys,*

*women, and men with the knowledge, values, attitudes, and skills to tackle gender disparities is a precondition to building a sustainable future for all.*

It is also interesting to verify that the SDG 5 does not appear in the ranking of the 'Eight SDGs' considered 'Very Important', by the managers in the questionnaires. In this sense, one interpretation of this result can be that the vast majority of managers do not consider, in their daily activities, the relevance of this SDG, when elaborating their 'action plans'. However, some UGGps have clear concerns about this issue. This is, for example, the case of the Lesvos Island UGGp, with the long-term promotion and support of women cooperatives, as mentioned previously in this research study.

Also, in the interviews, SDG 5 was a concern, at least for two interviewees. Due to these two participants, it was possible to link this SDG to Category 1 'Understanding and practice', with subcategory 1.7. 'Social Dimension', linking it to item 1.7.4. 'Gender equality'. Regarding Category 2 'Challenges', this SDG would be integrated into subcategory 2.8. 'Social Dimension', and linked to item 2.8.4. 'Gender equality'. Regarding Category 3 'Sustainable Development Goals', this SDG was integrated into subcategory 3.2. 'Chosen SDGs', and linked directly to item 3.2.7. 'SDG 5'. In this framework, it is also worthwhile to stress some short statements related to this SDG:

*"SDG 5 – 'Gender Equality', because in the Marble Arch Caves Geopark we work very hard to make sure that we have a considering representation of females and males at a single level. So, the geopark management team has actually doubled by women... yes, a lot has changed over the years and it has become more and more that way", or;*

*"Then, I think 'Gender Equality', SDG number 5, that's important as well because of what's all happened in Ireland at the moment...you know, and in the past that we had... but the role of women has changed, you know, women are just equal as men, as far as I can see..."*

However, from the analysis of all the data collection, it was evident that only a few UGGps pay their attention to the SDG 5. Nevertheless, this goal is highlighted by UNESCO, due to the two main priorities of this Organization: 'Gender Equality' and 'Africa' (UNESCO, 2019g, 2020d). This also happens with the importance given by the EGN and the GGN (Mc Keever & Zouros, 2005; Ramsay *et al.*, 2010; Ramsay, 2016; UNESCO, 2016a, 2017b).

**4.** In the described activities of the PRs and abstracts, the selected UGGps developed other SDGs than those 'Eight SDGs' selected by the IGGP. This was the case

of **SDG 9**, **SDG 15**, and **SDG 16** (Fig. 81). It is also relevant to observe that these same SDGs were also chosen by the five interviewees.

5. This is even more important because these three SDGs are in line with those highlighted by UNESCO when describing the most important SDGs promoted by the Science Programmes (UNESCO, 2017d). It is also relevant when bearing in mind that the UGGps are considered ‘territories of science’. As stated by UNESCO, these three SDGs are crucial in science areas:

**SDG 9** - ‘Industry, Innovation and Infrastructure’: Supporting inclusive Science, Technology, and Innovation (STI) systems and strengthen the capacity of Members States to monitor and critically assess STI for SD;

**SDG 15** - ‘Life on Land’: UNESCO-designated BRs and UGGps as learning sites for biodiversity and sustainable management of natural resources;

**SDG 16** - ‘Peace, Justice and Strong Institutions’: Promote international scientific cooperation and peacebuilding, including through the management of transboundary water resources and transboundary BRs and UGGps (2017d, p. 11).



**Figure 81** – The three SDGs promoted by the 33 selected UGGps but not included in the ‘Eight SDGs’ selected by the IGGP; © Elizabeth Silva.

Consequently, through the analysis of the PRs, abstracts, questionnaires, and interviews, it was clear the importance given by the select 33 UGGps to these three SDGs, in the developed activities.

In the case of **SDG 9**, through the analysis of the above-mentioned sources, it was identified activities related to targets 9.1, 9.5, and 9.C (United Nations, 2015). This can mean that the managers are committed, and the local inhabitants are aware of the role of the UGGps to contribute to the development of sustainable and resilient infrastructures, which can lead to support economic development and human well-being. This can be one of the explanations why especially the managers in their strategic plans have been promoting new and innovative infrastructures or have been partners in the rehabilitation of old infrastructures, which in many cases have been providing regional economic growth and also promoting the health and well-being of the local inhabitants and the visitors. Thus, these infrastructures also provide information, using affordable technologies, such as the Internet, and developing, for instance, electronic devices to have more detailed information about these territories, *e.g.* bike trails, hiking trails, etc. (Gabriel *et al.*, 2017, 2018a, 2018b).

Many of the infrastructures have promoted the local economy, by contributing to the creation of new jobs, but have also motivated the creation of innovative enterprises who got engaged in the UGGps strategies, regarding geotourism, and becoming in this sense, also partners of the geoparks, promoting the visiting and enjoyment of such infrastructures (Portuguese National Commission for UNESCO, 2014; Bernardo, 2018; Duarte *et al.*, 2018). This is the case, for example, of the 'Paiva Boardwalk' (Passadiços do Paiva, Fig. 82), created in 2015, located in the Arouca UGGp, in Portugal, which has attracted thousands of national and international visitors, including students of all levels of education and training (Rocha *et al.*, 2015, 2016, 2017; Bernardo, 2018; Duarte *et al.*, 2018; Moreira, 2018; Mota 2019; Liberato *et al.*, 2020; Sá & Rocha, 2020).

Although created as a touristic attraction, this infrastructure has been used by the Arouca UGGp from the scientific point of view, having as a main concern the protection and conservation of the geological features and highlighting the several important wildlife species of fauna and flora (Portuguese National Commission for UNESCO, 2014; Rocha *et al.*, 2015, 2016, 2017; Bernardo, 2018; Duarte *et al.*, 2018). In the same line of action, the following target 9.1. of the SDG 9, another positive example is the cross-border Marble Arch Caves UGGp, which has also promoted the 'Walkway of Mahgo Cliffs', in Cavan County, Republic of Ireland.



**Figure 82** - Students from the 3<sup>rd</sup> International Summer University of the UNESCO Chair on ‘Geoparks, Regional SD and Healthy Lifestyles’ (UTAD) visiting the Paiva Boardwalk, Arouca UGGp, Portugal, 2019; © Elizabeth Silva.

The local inhabitants and the elements of the staff of this geopark have highlighted in the interviews, the importance of these walkways, in the region.

It was mentioned that this type of infrastructure allows the visitors to know better the landscape and at the same time, supporting the economic development and human well-being in this territory.

Bearing in mind that the SDG 9 also includes ‘Supporting inclusive Science’ (UNESCO, 2017d), it is interesting to highlight the grant program for researchers, given since 2009 by the Sobrarbe-Pirineos UGGp, Aragón, Spain. In this sense, every year, two projects are selected according to the main interests of the geopark. All the projects are one year long and have to be developed by official research institutions or by individuals with the support of those referred institutions (Belmonte Ribas & Ruiz Conde, 2016). These authors justify this initiative because the geological characteristics of the area

demand a permanent revision and they recognize that the territory still has interesting geological problems to be solved (2016, p. 109).

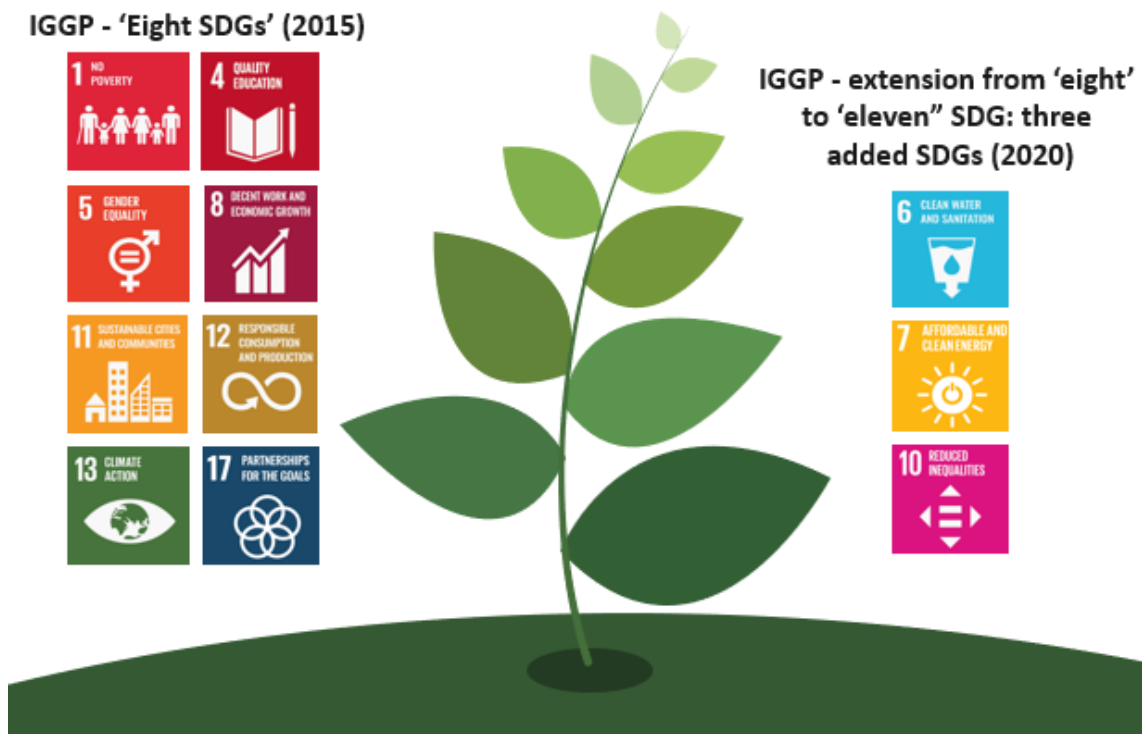
Regarding the interviews, it is also important to highlight the importance given to SDG 9. Through several statements, it was possible to match them with Category 2 'Challenges', followed by subcategory 2.7. 'Economic Dimension', linked with item 2.7.3. 'Infrastructures', as well as with Category 3 'Sustainable Development Goals', followed by subcategory 3.2. 'Chosen SDGs' linked directly to item 3.2.10 'SDG 9'. In this context, it is relevant to highlight one statement, as a good example:

*"(...) we need to build more resilient infrastructures, to promote our territory, sustainably. So, for instance, sidewalks, path walks, accessible for all, and innovating, so that we can explain better the geological heritage that we have here, which is amazing, and that way also to attract more visitors. I suppose the geopark has done a lot in this sense, and the panels explaining the geosites (...).*

**6.** Regarding **SDG 15** – 'Life on Land', although not included in the 'Eight SDGs' selected by the IGGP, this SDG stood out from the analysis made to the data collection. From the collected data and its analysis, it was possible to link the described activities with this SDG. This happened with all the used sources. Especially in the questionnaires, the managers considered SDG 15 'Very important', scoring a total of 40 points, becoming this way the first SDG in the ranking of the SDGs selected by the managers.

However, in the 'Evaluation Report of the IGGP' presented by the Internal Oversight Service of UNESCO (IOS) (UNESCO, 2019e) as well as in the approved Draft Decision regarding *Item 9* – 'Evaluation of the IGGP' of the provisional agenda the 209<sup>th</sup> Session of the Executive Board of UNESCO, held on the 10<sup>th</sup> of July 2020 (UNESCO, 2020c), the SDG 15 was not included in the proposal to extend the number of SDGs from 'Eight' to 'Eleven' (Fig. 83). As stated in both documents (UNESCO, 2019e, 2020c):

*xiii. Geoscience and the increased understanding of geological structures and processes are relevant to several SDGs, such as **Goals 1, 4, 5, 6, 7, 8, 10, 11, 12, 13, and 17.** The thematic areas that they refer to play a direct role, for example, in the sustainable use of natural resources (oil, gas, minerals) and the management of water resources and agricultural land. The IGGP is thus highly relevant to UNESCO's mandate and ambitions to contribute to the SDGs as defined in the 2030 SD Agenda.*



**Figure 83** – Proposal of the extension from ‘Eight SDGs’ to ‘Eleven SDGs’ selected by IGGP in 2020 (UNESCO, 2019e, 2020f); © Elizabeth Silva.

This is a very pertinent issue because especially from the data obtained with the PRs, abstracts, and interviews, it was clear the connection between several developed activities with targets 15.4, 15.5, 15.9, and 15 C (United Nations, 2015).

In the case of the PRs, from a total sum of 5857 developed activities, SDG 15 - ‘Life on Land’ was correlated with 449 activities (7,67%). The vast majority of the developed activities had to do with the main lines of concern with this particular goal: forests, desertification, and biodiversity. The same happened with the abstracts. From a total sum of 448 developed activities, 22 activities (4,91%) were correlated with SDG 15. In this context, it seemed that the selected UGGps realized that although the geological heritage of each UGGp is the center of gravity or the lighthouse of all developed activities in the territories, they also bear in mind the need to develop activities accordingly to the ‘Top Ten Focus Areas’, which some of them have a close relationship with biodiversity (UNESCO, 2015f). Moreover, many of these UGGps have protected areas in their territory, belonging for instance, to NATURA 2000 Network (EEA, 2020) or RAMSAR sites (RAMSAR Convention, 1971), or even World Heritage Natural Sites (UNESCO, 1972a; Dingwall *et al.*, 2005). Some of them also have the overlapping of BRs, and many other designated areas, such as National or Natural Parks. All these areas or

sites are managed with a view of conservation and SD (Haidarlis *et al.*, 2010; Schaaf & Clamote, 2016; Deguignet *et al.*, 2017; Megerle & Pietsch, 2017; Price, 2017; Pavlova, 2019; Sá & Silva, 2019). An example of this reality is the case of the Azores UGGp, located in the Autonomous Region of Azores, Portugal, which covers the entire Azores Archipelago. It is composed of nine volcanic islands and several islets located in the North Atlantic Ocean. Four of the nine islands are also BRs: Graciosa, Corvo, Flores, and Fajãs de S. Jorge. Furthermore, the archipelago has also 13 Ramsar Sites, 23 Special Areas of Conservation, and 15 Special Protection Areas belonging to the Natura 2000 Network (Machado *et al.*, 2016; Paulino *et al.*, 2016; Schaaf & Clamote, 2016; Lima *et al.*, 2018). In this case, SDG 15 is a central goal for this European UGGp, due to its rich and high biodiversity.

Also, in the context of SDG 15, it is relevant to mention the ‘Management Plan’ (2019-2024) already in practice by the North Pennines AONB UGGp, across large parts of the counties of County Durham, Northumberland, and Cumbria, in the UK (North Pennines, 2019).

Regarding the interviews, SDG 15 was chosen by four interviewees, which demonstrates the importance given to this particular goal. It was very interesting to analyze the several statements related to the main targets of this goal. Consequently, those statements were classified under the three achieved categories. In Category 1, it was followed by subcategory 1.5. ‘Environmental Dimension’, linked to the three items 1.5.1. ‘Landscape and Geology’, 1.5.2. ‘Biodiversity’, and 1.5.3. ‘Climate Change’. In Category 2, it was integrated into subcategory 2.6. ‘Environmental Dimension’ and, therefore linked specifically with item 2.6.2. ‘Biodiversity Conservation’, but also integrate into the rest of the other items of this subcategory, namely items 2.6.1., 2.6.3., 2.6.4., and 2.6.5. Furthermore, in Category 3, it was integrated into subcategory 3.2. ‘Chosen SDGs’ linked directly with item 3.2.15 ‘SDG 15’. The importance given to this SDG was unequivocal, as demonstrated in the statements of the interviewees. In this context, it is worthwhile to give another good example of this evidence:

*“(…) I would also choose SDG 15 ‘Life on Land’. So, having in mind that 50% to 60% of our land area is actually freshwater, freshwater lakes, the other part of our free land is forestry it is a huge part of our Geopark. We have an official embedding agreement partnership in place with the Forest Services and the equivalent partners in*



*the Republic of Ireland. In the turn of working through the management of those forests and the forests system. We try to ensure that the Geopark is managed in a sustainable fashion way and also the people are provided with opportunities to get the recreational and social benefits from accessing those areas as well, that is right away to cross the border and for example, in terms of biodiversity laws, we are actively involved in the Biodiversity action planning process for both county councils.”*

7. Concerning **SDG 16** – ‘Peace, Justice, and Strong Institutions’, this is also an SDG not selected by the IGGP, or even introduced in the proposal to extend the number of SDGs, in the evaluation report about the IGGP (UNESCO, 2019e, 2020f). So, besides the SDG 9 and the SDG 15 were not included in the ‘Eight SDGs’ selected by the IGGP, the same happens with the SDG 16. However, this SDG has a major relevance, especially for the four Transnational UGGps, existing until July 2020 (UNESCO, 2017f):

- Karavanke – Karawanken UGGp Austria/Slovenia);
- Marble Arch Caves UGGp (Ireland & United Kingdom of Great Britain and Northern Ireland);
- Muskau Arch UGGp (Germany/Poland);
- Novohrad – Nograd UGGp (Hungary/ Slovakia).

When analyzing the activities of the selected UGGps, it was understood that the SDG 16 was linked to many activities described in the four used sources. In the ranking of the ‘Eight SDGs’ of the PRs and abstracts, this SDG although the last of the ranking still had a high score. In the case of the PRs, it was possible to identify 315 activities (5,38%) related to SDG 16, and 22 activities (4,91%) in the case of the abstracts. Regarding the questionnaires, this SDG scored 20 points (5,17%). Thus, concerning the interviews, this SDG was always mentioned as a central SDG (100%) for the preservation of the cross-border Marble Arch Caves UGGp.

During the interviews with some elements of the staff of this particular UGGp, and to some local inhabitants/stakeholders, their statements were in line with UNESCO’s conceptual idea of a transnational Geopark (UNESCO, 2016a, 2020i):

*UGGps, too, do not always follow human-made borders. Some UGGps therefore naturally cross national borders, connecting the peoples of different countries and encouraging intimate regional, cross-border cooperation.*

It is through this strong cross-border cooperation that transnational UGGps strengthen the relationship between countries and contribute to peace-building efforts (UNESCO, 2016a, 2020i; Silva *et al.*, 2019). This seemed to be the case when in 2008, the Marble Arch Caves UGGp expanded from Northern Ireland across the border into the Republic of Ireland. Therefore, located in a former conflict area, this UGGp is now seen as a global model for peacebuilding and community cohesion (Mc Keever *et al.*, 2010; Lemon & Watson, 2014; UNESCO, 2016a; Silva *et al.*, 2019).

When comparing the data collection of the Marble Arch Caves UGGp gathered from the referred sources, it was notorious the importance given to the SDG 16 due to the obtained results.

Already in a preliminary study regarding this UGGp, Silva *et al.* stated “(...) the analysis of the PRs showed that the SDG 16 appears in the seventh position out of the ten most relevant SDGs. (...) In the interviews carried on in the territory, this SDG appears in the first position, since it is considered very important to maintain peace, cooperation, and SD among the local communities. The main explanation for this reality is the fact of the discussion around Brexit and the uncertainty of the future for the local communities” (2019, p. 175). Consequently, in this research study, it was possible to compare the results obtained with the four sources regarding this SDG. In this sense, with the obtained data, it was possible to demonstrate that the SDG 16 was considered ‘Very Important’ for this UGGp. As mentioned before, in the PRs, this SDG scored the seventh position when compared with the total 17 SDGs, having 11 activities related to it. From a total of three abstracts presented in the Conferences, this SDG was related once to the activities carried out by this UGGp. In the questionnaire, the manager considered this SDG as a ‘Very Important’ and closely related to the activities promoted by this UGGp. In the case of the interviews, it scored 100%, since all the interviewees chose card 16 (SDG 16) and justify their choice, believing that the geopark was very important also for the promotion of peace. In this context, and bearing in mind the Brexit issue, as stated by Silva *et al.*, “Marble Arch Caves UGGp can be considered a vital territorial tool for peace and SD” (2019, p. 175). This was highlighted by one of the interviewees when stating that “geoparks don’t build walls, geoparks build bridges...”.

In this framework, during the analysis of the collected interviews done on purpose for this research study, it was revealed that all the five interviewees picked card 16/SDG

16. This result brought a new light to this study because it demonstrated that the UGGps also have a word to say about other fields, such as 'Peace' and 'Ethics', among others (Sá *et al.*, 2015; Silva *et al.*, 2015c; Sá & Silva, 2016; Silva & Sá, 2017a, 2017b). It is a fact that Marble Arch Caves UGGp being a cross border territory, and a former conflict area, peace-building efforts, and the shadow of Brexit, are major concerns for the staff members of this geopark, but also the local communities and stakeholders. In this sense, SDG 16 was related to all the three categories applied to the interviews. Consequently, it was related to Category 1 'Understanding and practice', divided into subcategory 1.4. 'Governance, Partnerships, and Strategy' and subcategory 1.7. 'Social Dimension', linked directly to item 1.7.3. 'Peace'. On the other hand, it was also related to Category 2 'Challenges', subcategory 2.8. 'Social Dimension', linked directly to item 2.8.3. 'Peace and Justice', and item 2.8.7. 'Connecting generations'. In Category 3 'SDGs', it was classified into subcategory 3.2. 'Chosen SDGs' linked to item 3.2.16. Through this applied method based on the declarations of the interviewees, it was possible to have very emotional statements, such as these good examples:

*"(...) SDG 16 with any doubt, because of peacebuilding efforts..."; or "Well, number 16, SDG 16, is probably one of the most important ones. Peace, justice, and strong institutions. Being a cross-border geopark in an area of a former conflict creating peace I think it's one of our proudest achievements, not that we achieved that peace ourselves, but we try to instill a strong and collaborative attitude amongst everybody that lives here."*

But, also in this framework, it was even more interesting the statement that reveals that the 2030 Agenda and its goals are still far from being fully incorporated in peoples mind, the common people, which is indeed still a huge challenge to overcome, as stated:

*"(...) But I am also concerned that people here are not aware of the 2030 Agenda... they don't know anything about this. Well, this is my perception... So, it would be important if people would be more connected with these issues, especially to understand what SDG 16 stands for in terms of Peace"*

**8.** This research study took into consideration when analyzing the data collection, the extension of the number of SDGs selected by the IGGP from 'Eight SDGs' to 'Eleven SDGs'. In this context, given the methodological approach based on a longitudinal model (Sampieri *et al.*, 2006; Marques, 2012), this research study was also able to analyze some

of the adjustments achieved overtime related to the 17 SDGs by the IGGP, from September 2015 until July 2020. In this framework, it seemed pertinent to analyze the results obtained from the data collection related also to these 'extra' three SDGs (United Nations, 2015):

- **SDG 6** - *Ensure availability and sustainable management of water and sanitation for all (eight targets);*
- **SDG 7** - *Ensure access to affordable, reliable, sustainable, and modern energy for all (five targets);*
- **SDG 10** - *Reduce inequality within and among countries (10 targets).*

Regarding the PRs, from a total sum of 2098 developed activities related to a total sum of 5857 contributions to the SDGs, these three SDGs were the lowest SDGs developed by the 33 UGGps:

- **SDG 6** – 16 activities developed (0,27%);
- **SDG 7** – 9 activities developed (0,15%);
- **SDG 10** – 93 activities developed (1,59%).

Also, from the 95 activities identified in the abstracts and related to the total sum of 448 contributions to the SDGs, these three SDGs had a very low score:

- **SDG 6** – 1 activity (0,22%);
- **SDG 7** – 3 activities (0,67%);
- **SDG 10** – 10 activities (2,23%).

However, when replying to the questionnaires, the managers had a different perspective. These three SDGs had higher scores when compared to all the 17 SDGs. So, it seemed that empirically, the managers of the selected UGGps considered that in their line of work these SDGs were very relevant and promoted in their action plans. Consequently, these SDGs were listed in the 'Top Ten SDGs' considered 'Very Important' in the questionnaires:

- **SDG 6** – 21 points (5,43%);
- **SDG 7** – 22 points (5,68%);
- **SDG 10** – 14 points (3,62%).

Nevertheless, when analyzing the data gathered from the interviews, these three SDGs had a very low score or were not even chosen by the five interviewees:

- **SDG 6** – chosen only once from the five cards out of 17;

- **SDG 7** – not chosen;
- **SDG 10** – not chosen.

In this sense, depending on the used sources these three SDGs – SDG 6, SDG 7, and SDG 10 - had different scores or rankings.

Still, it is important to clarify that during the interviews, SDG 6 was mixed up with SDG 14. The interviewees had the idea that SDG 14 – ‘Life Below Water’, was related to rivers and lakes, overfishing, freshwater, water quality, pollution of the rivers, water resources, among other issues. So, when speaking about SDG 14, these were some of their concerns, which in reality were related to SDG 6 and its targets.

In this framework, it is important to stress that SDG 6 is connected to the ‘Water Action Decade 2018-2028’ (Fig. 84), launched by the UN General Assembly, in March 2018, having as the main objective to mobilize action that will help transform how we manage water (United Nations, 2018a).



Figure 84 – Logo of the “Water Action Decade” 2018-2028; © United Nations (2020).

It is also relevant to mention that **SDG 6** and **SDG 7** are linked by the Network “Sustainable Water and Energy Solutions”, created in 2018, by the UN, in partnership with ITAIPU Binacional (Paraguay – Brazil) and the UN Department of Economic and Social Affairs (United Nations, 2018b).

UNESCO also gives high importance to SDG 6, due to the main objectives and strategies of the International Hydrological Programme (IHP). In this context, since UNESCO belongs to the ‘Water Family’ of the UN, it was published by this Organization the ‘UN World Water Development Report 2020 - Water and Climate Change’. In this report, it is demonstrated that ‘water’ is linked to several SDGs, and not just to SDG 6 (UNESCO World Water Assessment Programme, 2020):

*The 2020 edition of the UN World Water Development Report addresses the critical linkages between water and climate change in the context of SD. It also serves as a guide for concrete actions to address these challenges. It outlines actions (...), in three areas: i) enabling people to adapt to the impacts of climate change; ii) improving the resilience of livelihoods; and, iii) reducing the drivers of climate change. (...) water is inextricably linked to multiple SDGs. These include those related to zero hunger (**SDG 2**), availability and access to water (**SDG6**), climate action (**SDG 13**), and promoting the sustainable use of ecosystem services (**SDG 15**). The Report concludes that reducing both the impacts and drivers of climate change will require substantial changes in the way we use and reuse the Earth's limited water resources.*

In this framework, UNESCO gives great importance to SDG 6 and intrinsically to SDG 7, when considering that the “UGGs along with the BRs are learning sites for sustainable management of natural resources” (UNESCO, 2017d). It even considers that these types of territories can manage not only sustainable natural resources but also develop resilient societies. So, it seemed that UNESCO had an empirical idea that the UGGs are pivotal for SD, and contribute effectively to these SDGs, but especially to SDG 6 (UNESCO, 2017d). Consequently, it is relevant to mention, for example, the importance given by Rokua UGGp to SDG 6. As stressed by Rossi *et al.*,“(...) part of the Geopark network and under Natura 2000 protection, is an important hydrogeological study site. It represents esker areas, which are the most common groundwater resource type within Northern Europe. Rokua esker is a diverse hydrological system where lakes intertwine with pine-lichen forests on dry sandy soils. (...). The multidisciplinary approach has resulted in a successful research outcome that has benefited the locals as this groundwater-surface water system is better understood but also the scientific community, because new ideas and knowledge on groundwater management have been developed” (2015, p. 109).

Regarding **SDG 7**, it is worth mentioning the work carried out by the Bakony-Balaton UGGp, in Hungary. This UGGp developed a project supported by the EU, with the co-financing of the European Regional Development Fund. As stated by Korbély “this financing allowed to do the reconstruction of the Lake Cave of Tapolca, stabilizing sections, and installation of an energy-saving LED lighting system” (2016, p. 98).

Concerning **SDG 10** - ‘Reduce Inequalities - Among and Within Countries’, bearing in mind that the UGGs are spreading around the world (at present, there are 161

UGGps in 44 countries, July 14, 2020), and also two of the 'Four Essentials' – 'Management' and 'Networking' (UNESCO, 2016a), the UGGps also contribute to reducing inequalities. In this context, the UGGps provide for the social and economic needs of the local populations, protecting the landscape in which they live, and conserving their cultural identity, contributing this way to increase the understanding among different communities, and as such helping in peace-building processes (UNESCO, 2016a).

Taking into account the above-mentioned, it is interesting to analyze the data collection regarding these three SDGs: 6, 7, and 10, and to realize the contradiction between the different replies/data, when considering the four used sources. From the PRs and abstracts, it is obvious that the UGGps were not developing that much or including in a very strong way in their plans of actions directly these three SDGs. However, empirically, the managers when fulfilling the questionnaires, considered these SDGs as 'Very Important' in their daily work. Nevertheless, this did not coincide completely with the activities described in the PRs and abstracts. On the other hand, the interviews also revealed that the local inhabitants/stakeholders and even some elements of the staff of the Marble Arch Caves UGGp had a different perception regarding these SDGs. It was demonstrated through the replies given, that the interviewees did not perceive that these three SDGs were present in the developed activities of this UGGp. However, one of the interviewees picked the card related to SDG 7, not because it understood that the UGGp was developing activities in this area, but because it was a personal concern with this issue.

Regarding SDG 10, although not selected by the five interviewees, still it was mentioned by some participants, particularly by the one who stated:

*"Well, SDG 16 'Peace, Justice and Strong Institutions'... this is a fundamental SDG for us... I also believe that **SDG 10 'Reduce Inequalities'** is very connected with this one. You see, the fact that we are a cross-border geopark and having only four cross-border geoparks in the Network, is something that we have worked on and consistently trying to reduce any social, economic, or indeed environmental inequalities that exist within the two areas of both counties and that stands in all aspects of our work and what we do in sustainable development in a border sense and so it is there and firmly embedded*

*in anything that we do. All our work is direct for the local communities, and educating and guiding them in everything we do.”*

In this sense, although not selected, by mentioning the importance of SDG 10, it was possible to classify some statements in the three categories created for an in-depth analysis of the contents of the interviews. Consequently, it was possible to relate those statements with Category 1 ‘Understanding and practice’, followed by three subcategories, 1.1. ‘Understanding what is a UGGp’, 1.2. ‘Global Perception of the impact’, and 1.7. ‘Social Dimension’, linked with item 1.7.1. ‘Reducing Inequalities’; then with Category 2 ‘Challenges’, related to subcategory 2.8. ‘Social Dimension’, linked to item 2.8.2. ‘Reducing inequalities’, and finally Category 3 ‘SDGs’, with subcategory 3.2. ‘Chosen SDGs’ linked to item 3.2.11 ‘SDG 10’.

This result is closely connected with the first result already pointed out in this research study. Once more, it is demonstrated that directly or indirectly, the UGGps contribute to the 17 SDGs. Moreover, it is also proved that since the 17 SDGs are all connected, it is possible that however not always mentioned at the same level in the used sources, all the developed activities directly or indirectly contribute to these aspirational goals. In this context, it is interesting one of the statements obtained with the interviews: *“(…) Ok, let me see...they are all connected, so it is difficult to select, but I would say, from all the 17 SDGs, I think that we do not work SDG2 ‘Zero Hunger’ and number 10 ‘Reduced Inequalities’, at least in a direct way...”*.

In this framework, it is also relevant to mention that the four sources that formed the data collection of this research, were complementary, and therefore, brought new light to the results obtained.

**9.** From the analysis of the data collection, it is interesting to observe that the UGGps gave high importance to **SDGs 8, 11, and 12** (Fig. 85). These SDGs were highly scored in the analyzed sources of this research study. Therefore, they were completely in line with the ‘Eight SDGs’ selected by the IGGP (UNESCO, 2017e).





**Figure 85** – The three SDGs highly scored and coinciding with the ‘Eight SDGs’ selected by the IGGP; © Elizabeth Silva

UNESCO highlighted these SDGs regarding the role of the UGGps in these domains, according to the selected targets (UNESCO, 2017e):

- **SDG 8** – *Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all: especially target 8.9* – *The promotion of sustainable local economic development through sustainable (geo)tourism is one of the key pillars of a UGGp. This creates job opportunities for the local communities through tourism, but also through the promotion of local culture and products;*
- **SDG 11** – *Make cities and human settlements inclusive, safe, resilient, and sustainable: especially target 11.4.* – *Protecting, safeguarding, and celebrating our cultural and natural heritage are the foundation of the holistic approach of the UGGps. UGGps aim to give local people a sense of pride in their region and strengthen the identification with the area;*
- **SDG 12** – *Ensure sustainable consumption and production patterns: especially target 12.8 and 12.b* – *UGGps educate and create awareness on sustainable development and lifestyles. They teach the local communities and visitors to live in harmony with nature.*

However, as stated previously, when analyzing the obtained data, it was possible to relate many of the described activities to more targets, than those especially highlighted by the IGGP. In this sense, it was possible to identify activities corresponding to other targets, such as:

*i) SDG 8 – **target 8.3**: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation,*

and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services. As an example of good practice in the framework of this target, could be mentioned the project developed in the Nisiopi islet in the Lesvos Island UGGp. This project allowed to have the *Nisiopi Petrified Forest Marine Park*, with an innovative glass-bottom boat for visiting and observing the submarine sites as well as for the transportation of the visitors to the islet of Nisiopi. This park contributes to the development of geotourism and the improvement of the economic and social development of the region through the creation of new jobs and contributes to the protection and preservation of the natural environment (Valiakos *et al.*, 2015, 2016).

*ii) SDG 11 – target 11.7: By 2030, provide universal access to safe, inclusive, and accessible, green and public spaces, in particular for women and children, older persons, and persons with disabilities.* As referred by Henriques *et al.*, despite the difficulties often encountered by the managers of the UGGps “the constraints on the implementation of programs aimed at disabled visitors can be partially overcome if geoparks’ leaders seek to integrate partners that currently develop activities for persons with disabilities” (2019, p. 471). Nevertheless, the Azores UGGp develops the social inclusion program ‘Geopark accessible to all’. This program aims to create a series of activities and materials that can be adapted to any group, depending on their needs, to promote social inclusion allowing to embracing persons with disabilities and persons generally excluded from society. In this sense, Azores UGGp has established partnerships with various socially inclusive organizations. As referred by Machado *et al* “the Program includes information in different formats, such as Braille and audio-guides, and it includes activities about volcanoes for institutions for children with disabilities” (2016, p. 208).

On the other hand, **target 11.b** considers that *By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.* In this framework, Fassoulas & Burlando stated that “geoparks, as rural areas are more vulnerable in various Natural Hazards and have to face their consequences, in

most cases, without the proper resources and relationships with local authorities, are benefited to develop initiatives for knowledge transfer, awareness-raising, capacity building, and increase of preparedness of local communities against natural disasters” (2015, p. 47). However, the same authors gave a good example of how to overcome this situation. In this sense, the Psiloritis Natural Park UGGp and Beigua UGGp developed a joint project called ‘Evande’, with funding from the EU. This project allowed to establish a web platform to host educational and e-learning activities addressed to volunteers and local authorities’ civil protection actors. This project analyses and assesses the knowledge, methodologies, and best practices for prevention, preparedness, adaption, and resilience against wildfire, floods, and earthquakes (Fassoulas & Burlando, 2015, 2016).

In the case of **SDG 12**, when analyzing the data collection, it was identified the same targets like the ones identified by the IGGP - **targets 12.8 and 12.b**. So, these two targets were already highlighted by the IGGP.

*iii) SDG 12 – **target 12.8**: by 2030, ensure that people everywhere have the relevant information and awareness for SD and lifestyles in harmony with nature.* According to Gabriel *et al.*, the “importance of human interactions with the natural environment to promote healthy lifestyles was primarily a response to the need to preserve and enhance the value of the UGGps, as well as highlighting their usefulness for the SD of local populations” (2018a, p. 66). In this sense, these authors suggested an “interdisciplinary approach be applied to UGGps for a standardized survey and grading methodology that can be used to assess the ability to provide and promote healthy lifestyles, which is called the ‘Ecosystem’s Health Provision Spectrum’ (EHPS) on an ecological scale” (2018a, p. 66). Therefore, this can be another important tool for UGGps, facilitating efficient management, and promoting economic development, wellbeing, and health.

Regarding **target 12.b** - *Develop and implement tools to monitor SD impacts for sustainable tourism that creates jobs and promotes local culture and products*, a good practice is given by the Adamello Brenta UGGp. This European UGGp developed the ‘BIOMITI’ Project. As mentioned by Masè & Mustoni, this geopark has “reorganized its departments, merging the Environmental Education office with the Scientific Research

office, to bring into the environmental education the results of the scientific research carried on the field” (2019, p. 48).

From the analysis of the data collection regarding these **three SDGs 8, 11, and 12**, it was pertinent to observe the results obtained and compare them with the ‘Eight SDGs’ selected by the IGGP. In this sense, these were the results obtained for each SDG:

- **PRs** - From the total sum of 2098 activities correlated to a total number of 5857 contributions to the SDGs, these were the ranking of the three SDGs when compared with the ‘Eight SDGs’ selected by IGGP:
  - **SDG 8** – 541 activities (9,24%) – **fourth place** in the ranking;
  - **SDG 11** – 794 activities (13,56%) – **third place** in the ranking;
  - **SDG 12** – 939 activities (16,03%) – **second place** in the ranking.

So, indeed these three SDGs had a higher score when analyzing the PRs. This means that according to the ‘action plan’ of each selected UGGp, the PRs revealed the importance given to these three SDGs, which are completely in line with the IGGP vision, regarding the role of the UGGps, in the achievement of these particular goals (UNESCO, 2017e).

- **Abstracts** - From the total number of 95 described activities correlated to a total sum of identified 448 activities, these were the ranking of the three SDGs when compared with the ‘Eight SDGs’ selected by the IGGP:
  - **SDG 8** – 53 activities (11,83%) – fourth place in the ranking;
  - **SDG 11** – 70 activities (15,63%) – second place in the ranking;
  - **SDG 12** – 61 activities (13,62%) – third place in the ranking.

In this case, the staff elements of the selected UGGps presented abstracts with contents related to these three SDGs.

In this framework, it is positive to highlight the project developed among several UGGps, entitled ‘GEOFood’, which links quite well these three SDGs. This project is led by Magma UGGp and started in 2014. It was developed initially in partnership with Odsherred, Rokua, Reykjanes, and Stonehammer UGGps. As explained by Gentilini & Thjømøe (2016a, 2016b), this consortium has been working on two different levels: locally with producers and users, and internationally within Geoparks. Thus, with the GEOFood products, it is given a strong emphasis on the geological and cultural story, along with the local production behind the locally grown and produced food, promoting

the local economy and having a sustainable production and consumption of local products (Gentilini & Thjømmøe, 2016a, 2016b; Krökki, 2016).

Considering this reality, these three SDGs were ranked in the 'Top Five SDGs', from the data collection based on the PRs and abstracts.

- Also, when analyzing the **questionnaires** fulfilled by the managers, these three SDGs obtained higher points:
  - **SDG 8** – 32 points (8,27%);
  - **SDG 11** – 17 points (4,39%);
  - **SDG 12** – 20 points (5,17%).

However, undoubtedly, SDG 8 was considered by the managers of the 33 selected UGGps as 'Very Important', and was included in the ranking of the 'Eight SDGs', when considering the PRs, abstracts, and questionnaires. Nevertheless, SDG 11 and SDG 12, although with fewer points, were also considered 'Very Important', but not reaching the ranking of the 'Eight SDGs' selected by the IGGP. However, this score also matches with what was described in the PRs and stressed by the themes and activities highlighted in the abstracts. This could mean that for the managers, there is no doubt that these three SDGs are closely related to the UGGps work in the field, and involving the local communities and visitors.

- Taking into account the five **interviews**, the results are the following:
  - **SDG 8** – three interviewees picked card 8;
  - **SDG 11** – two interviewees picked card 11;
  - **SDG 12** – No interviewees picked card 12.

Considering that the interviewees could only pick up to five cards, choosing the most important SDGs for them and bearing in mind the work done by the Marble Arch Caves UGGp, it is interesting to observe that for them, SDG 8 was 'very important' (more than 50% of the interviewees made this choice), but SDG 11 was chosen in a lower scale, and more interesting, SDG 12 was not chosen at all. One of the reasons for this situation could be the title of this SDG 'Ensure sustainable consumption and production patterns'. It seemed during the interviews that the interviewees were not interested in this issue, but much more interested in other particular subjects, such as SDG 15, SDG 16, or SDG 17.

Regarding SDG 8, from the collected statements of the interviews, it was possible to reach the three categories, and respective subcategories and items. In this sense, regarding Category 1, it was possible to connect to the subcategories 1.1, 1.2., 1.3., and 1.4. Concerning subcategory 1.6. 'Economic Dimension', it was possible to link it to the following items: 1.6.1 'Local enterprises and products'; 1.6.2. 'Tourism', and 1.6.3. 'Employment'. For subcategory 1.7. 'Social Dimension', was linked to items 1.7.1. 'Reducing inequalities', 1.7.6. 'Volunteer Work', and 1.7.7. 'Cooperation and community development'. In Category 2 'Challenges', the statements were also related to subcategory 2.1. 'Sustainable Development', and subcategory 2.7. 'Economic Dimension', linked with the following items: 2.7.1. 'Tourism activities'; 2.7.2. 'Local Enterprises and products; and 2.7.5. 'Employment development'. Also, in subcategory 2.8. 'Social Dimension', it was possible to link to item 2.8.2. 'Reducing inequalities'. Finally, concerning Category 3, it was related to subcategory 3.2. 'Chosen SDGs' linked directly with item 3.2.9. 'SDG 8'.

During the interviews, it was notorious the importance given to SDG 8 and the work developed by the Marble Arch Caves UGGp, in this field, as demonstrated in the different subcategories and items that the collected statements were related with. In this context, it is interesting to highlight just some of those statements by some of the interviewees, that justify the selection of this SDG:

*"(...) Then "Decent Work and Economic Growth", SDG8, we would look at the villages and help them to have more incomes, having more workers and more young people staying instead of traveling abroad you know..."; or;*

*"(...) So, I selected SDG8 'Decent Work and Economic Growth'. Well, Elizabeth as you know, inherently sustainable tourism, sustainable development, geotourism are at the heart of what the geoparks should do, and we contribute significantly directly, and indirectly to the tourism economy in both counties. Directly, we the geopark employs a significant body staff. So, we have seven permanent and up to 45 elements of the staff that work directly for the geopark and indirectly that delivers, I think, over four and a half million Euros of funding since 2011 and external funding for the operations of the geopark as well mean a huge investment in the tourism infrastructure and tourism products that we have and within the geopark."*

**10.** Taking into account the importance given to **SDG 4** – 'Quality Education', the data analysis of the collected data revealed an important contradiction. In this scope and recalling the UNESCO UGGp concept, is extensively mentioned through the last

years that the UGGps are managed with a holistic concept of protection, education, and SD (Silva, 2015b, 2017; Silva *et al.*, 2015a, 2015c, 2016, 2017b, 2018a, 2018b, 2019; Silva & Sá, 2016, 2018; Zouros, 2016, 2018, 2019; Gonzalez-Tejada *et al.*, 2017; UNESCO, 2017d, 2018a, 2019f; Mc Keever, 2018; Rosado-González *et al.*, 2018; Silva & Weber, 2018; Gentilini *et al.*, 2019; Grigorescu, 2019; Henriques *et al.*, 2019; Nikolova & Sinnyovsky, 2019; Rivero *et al.*, 2019; Sá & Silva, 2019; Weber, 2019; Carvalho *et al.*, 2020; Catana & Brilha, 2020; Ferraro *et al.*, 2020; Maltesics, 2020, and references therein). In this sense, bearing in mind that the concept of a UGGp considers the importance and strategic role of education in the management plans, it is also reinforced in the 'Top Ten Focus Areas' stipulated by the IGGP (UNESCO, 2017a):

*Education is a pre-requisite that all UGGps develop and operate educational activities for all ages to spread awareness of our geological heritage and its links to other aspects of our natural, cultural and intangible heritages. UGGps offers educational programs for schools (...). UGGps also offer education, both formal and informal, for adults and retired people while many provide training for local people who can then, in turn, teach others.*

Nevertheless, it is interesting to observe that SDG 4 in the gathered data collection from the PRs and abstracts, and when comparing with the selected 'Eight SDGs' by the IGGP, this SDG did not achieve the highest ranking when compared to other SDGs. This is very pertinent, taking into consideration the special importance given by the concept itself to education and, therefore, to the commitment of the UGGps towards the development of educational programs and projects. In this sense, in the case of the **PRs**, SDG 4 was correlated with 540 activities (9,22%) out of a total sum of 2098 activities. This means that SDG 4 when compared with the 'Eight SDGs' selected by the IGGP, obtained the fifth position among the 'Eight SDGs' by the IGGP.

Regarding the **abstracts**, this particular SDG was correlated with 46 activities (10,27%) out of a total sum of 95 described activities. In this sense, it obtained the sixth position from the select 'Eight SDGs'. However, in the **questionnaires**, it was very pertinent to observe that the managers fully understand the importance given to education and the promotion and development of educational programs at all levels. So, they have a real notion that it is through education that they can create awareness about the 'Top Ten Focus Areas' that the UGGps are engaged with. In this framework, from the data gathered especially with the questionnaires, it is unquestionable that the

managers value education, and they have the notion of their role in this domain. Probably could be one explanation for the achievement of the second position of SDG 4 when analyzing the results achieved in the questionnaires, with a total of 35 points (9,04%). Nonetheless, in the case of the interviews, it is interesting that only two interviewees, out of five, picked card number 4 – SDG 4, so less than 50%.

It is important to stress that during the interviews when comparing the importance given to the rest of the 17 SDGs, the interviewees considered this SDG as a fundamental issue of the work developed by the Marble Arch Caves UGGp, as stated:

*“(...) For me, SDG 4 ‘Quality Education’ is the main conducting wire of everything we do. So, in this case, I am going to select other SDGs that we all feel important for us”.*

In this sense, they considered that this SDG was not even an issue to be considered, because intrinsically for them all UGGps develop educational activities. Thus, SDG 4 was somehow considered a key element of a well-designed UGGp.

However, for the two interviewees, this SDG was really important and, therefore, it was possible through their statements to have this goal in the three achieved categories. In this sense, in Category 1, this subject would be related to subcategory 1.7. ‘Social Dimension’, linked directly with item 1.7.5. ‘Education’. In Category 2, it would be classified in subcategory 2.8. ‘Social Dimension’, linked to item 2.8.1. ‘Education’, and finally in Category 3, it would be connected with subcategory 3.2. ‘Chosen SDGs’ linked to item 3.2.6. ‘SDG4’. In this framework, it is worthwhile to stress some of the statements regarding SDG 4 and its importance for the interviewees:

*“Sure, well starting with SDG number 4 – ‘Quality Education’, one of the main goals (...) is to provide inclusive education concerning geoscience education, and that means working with schools, from both sides of the border, the Northern Ireland and the Republic of Ireland, but also means working with students and up way to adults and lifelong learning so to provide geoscience education for everybody and also about the learning about the local area and their environment”;*

*“(...) for example, we are currently working with the university in Dublin, the University in Dublin, on the Archeologic project in one of our geosites to do Ph.D. research papers and to have archaeological students come and visit us and using that place to do their research. So, this is going on all the time. We also talk about ‘Climate Change’ to our students and use our geosites to explain some issues related to this important challenge...”.*



In this framework, and especially in the abstracts there were numerous examples of good practices in the field of educational programs. In this framework, and as mentioned by Hansen, can be highlighted the experience led by Odsherred UGGp with the “Geoguides – active Ambassadors activity” (2016, p. 180). Also, in the Hateg Country Dinosaurs UGGp, as stressed by Andrasanu *et al.*, it is developed a good practice of “cooperation between researchers and young students. through the ‘Geopark Ambassadors’ Program, they increased the level of understanding, appreciation, conservation, promotion, and development of the territory” (2016, p.179).

Other positive examples are the Educational Program ‘GEA – Mother Earth’ (Sá *et al.* 2014; Silva & Sá, 2016, 2018; Silva *et al.*, 2010; 2011; 2012; 2013c; 2014, 2015a; 2015c; 2016, and references therein), the project ‘Learning from others: An Erasmus + Project involving Geoeducation’, as mentioned by Sigursveinsson (2016, p.309), and the educational Program ‘Geokids’, as highlighted by Donslund & Lemkov (2015, p. 51).

Through the analysis of the PRs and especially from the abstracts, it would be possible to give so many other good examples. However, it was decided to focus just on those reported in the content of the abstracts, due to the time frame of this research.

Being aware that it is not mandatory that the UGGps must or should work the entire 17 SDGs, directly or indirectly, from the data collection it was possible to perceive, however, that the developed activities could be related to all the 17 SDGs, even if some of them would have lowest scores or fewer points. This was the case of the results obtained with **SDG 2**, **SDG 3**, and **SDG 14**.

Regarding **SDG 2 – End hunger, achieve food security and improved nutrition and promote sustainable agriculture**, the data analysis of the **PRs** demonstrated that 91 activities (1,55%) out of a total sum of 2098 activities were related to this goal. On the other hand, when analyzing the content of the **abstracts**, from the total number of 95 activities correlated to a total sum of identified 448 activities, it was recognized 14 activities (3,13%) could be correlated also with this SDG. In the **questionnaires**, the managers seemed to understand that this was not a direct contribution of the UGGps, in their daily work in the territories and with the local communities. Still, SDG 2 obtained 15 points (3,88%). Finally, in the **interviews**, this SDG (card 2) was not selected by any of the interviewees.

Nevertheless, there were some good examples, of how the UGGps also give their contribution to this SDG. Two positive examples are the already mentioned 'GEOFood Project', but also the Project 'Arouca Agrícola – Local Market', both aiming to encourage and enhance agricultural production and the consumption of what the local farmers produce, in several UGGps.

Concerning **SDG 3 – Ensure healthy lives and promote well-being for all of all ages**, it was possible to find many links to this goal, in the developed activities. From the **PRs**, this goal was correlated with 94 activities (1,60%). Regarding the **abstracts**, it was identified only seven activities (1,56%). However, with the **questionnaires**, the reality was quite different. The managers gave higher importance to this SDG, scoring it with 32 points (8,27%), obtaining this way the fourth position in the ranking when compared with the 'Eight SDGs' selected by IGGP. In the case of the **interviews**, this SDG (card 3) was picked twice, out of the five interviewees. Although, less than 50%, the interviewees also took into consideration the importance of this SDG in their daily life and the work developed by the Marble Arch Caves UGGp. In this context, and once again recalling the obtained categories when analyzing all the statements, this SDG was integrated into Category 1, particularly in subcategory 1.7. 'Social Dimension, in item 1.7.2. 'Well-being'. It was also integrated into Category 2, in subcategory 2.8. 'Social Dimension', in item 2.8.5. 'Well-being', and finally into Category 3, subcategory 3.2. 'Chosen SDGs', item 3.2.5. 'SDG3'. In this framework, from the results obtained with the statements, it was possible to understand the importance given to this SDG. Especially the local inhabitants/stakeholders believe that the Marble Arch Caves UGGp contributes with its action for the well-being of the local communities, as stressed in some excerpts of the referred statements:

*“Well, first I would pick up SDG number 3 'Good Health and Well-Being' because I think it is very important to all the people in the area and the younger generations, so I think that it is very important. The geopark looks for the well-being and the fitness of the local people in this area, and that means a lot...”*, or;

*“Well for SDG 3 'Good Health and Well-Being' we work quite strongly this SDG in terms of that aspect, I mean good health and well-being of our communities...one of the main key areas that we focus on the geopark...”*.

However, despite these statements and the importance given by the managers when fulfilling the questionnaires, considering 'Very Important' SDG 3, a strong contradiction is found, when analyzing the developed activities, described in the PRs and abstracts, where a low number of activities were connected with SDG 3. Nevertheless, it is a fact, that for the vast majority of the 33 selected UGGps, SDG 3 is intrinsically connected with geotourism. In this sense, the activities are linked also to Nature and healthy lifestyles. Also, when promoting the 'Top Ten Focus Areas', it is possible to understand the connection to this particular SDG with these ten themes. By developing so many other activities related to those themes, and bearing in mind that the UGGps are mainly rural areas, it is natural the strong connection to Earth and, therefore, to live in harmony with Nature, promoting at the same time healthy lives and well-being for the local communities and visitors.

Concerning **SDG 14 – Life Below Water**, this was the one with the lowest scores and points. From the analyzed PRs, only 30 activities (0,43%) could be related to this goal. In the case of the abstracts, it was only identified two activities (0,44%) related to 'Life Below Water'. Vis-à-vis the questionnaires, the managers did not find this SDG 'Very Important', and few found it 'Relative Important', but a vast majority found it 'Not Important'. So, this SDG only scored five points (1,29%). Regarding the interviewees, only one picked card 14. Nevertheless, during the conversation to justify this choice, it was understood that the interviewee was mixing this SDG with SDG 6 – 'Clear Water and Sanitation', and the importance was given to the rivers and lakes, that characterize the Marble Arch Caves UGGp. The obtained result was achieved when analyzing the statement given by one of the interviewees:

*“Well, then as I said I pick card number 14 'Life Below Water'. This is a very important issue here. People with their farming are polluting a lot our water, our rivers, and also the problem of overfishing... you see, we are a cross border geopark, which makes us very special and unique and we have to conserve sustainably our lakes and the use of our lakes, as a whole from both sides of the border. But being a cross border geopark is probably the best that happen to us in the past 20 years! But I would say that SDG 14 is linked with SDG 15 'Life on Land'.*

In this sense, despite all the efforts done by this UGGp raising awareness regarding the 17 SDGs, it is clear that more efforts need to be done, to clarify exactly what are the

targets for each Goal, and what is indeed their main core business, not just by the title of each SDG, but especially by its content, linked, of course to its respective targets and indicators.

In this particular case, SDG 14 still needs more promotion and awareness, and more involvement especially at the level of the school communities and local communities. But the scientific coordinators should also be more conscious regarding this issue and create innovative ways to explain the importance of this important SDG, especially in coastal and insular UGGps and aspiring ones.

From the discussed results, it is possible to recall some of the main lines that were stressed during this analysis (Table 31):

**Table 31** - Summary of the main lines regarding the discussion of the results.

✓	All the 17 SDGs were developed by UGGps, either directly or indirectly, by the obtained data
✓	The analysis of the data regarding the PRs and abstracts revealed the most developed SDGs during 2015-2016 and made it possible to compare the ranking of those SDGs with the 'Eight SDGs' selected by the IGGP
✓	SDG 17 was undoubtedly the goal with the highest number of contributions by the selected UGGps and the obtained rank is in line with its inclusion in the 'Eight SDGs' selected by the IGGP
✓	This research reveals also that the UGGps gave the highest-ranking to SDGs 8, 11, and 12, which are also included in the 'Eight SDGs' selected by the IGGP
✓	In the PRs and abstracts, the selected UGGps gave higher values to other SDGs than those 'Eight SDGs' selected by the IGGP. This is the case of SDG 9, SDG 15, and SDG 16
✓	Regarding SDG 1, SDG 5, and SDG 13, instead of to what it is defined by the IGGP, these goals were not identified as priorities by the selected UGGps
✓	The results obtained for SDG 1, being purely residual, can be justified by the European socio-economic framework, where the selected 33 territories of this research are located
✓	Concerning SDG 15, although not included in the 'Eight SDGs' selected by the IGGP, this goal stood out from the analysis made to the data collection. On the other hand, SDG 16 does not appear in the 'Eight SDGs', neither in the extended number of SDGs by the IGGP in 2020. However, this goal also stood out in the developed activities and it was scored with a high degree of importance by the managers and interviewees
✓	SDG 16 was selected by all the interviewees in the transnational Marble Arch Caves UGGp. This reality highlighted the importance given to this goal related particularly to peacebuilding efforts and due to the ongoing discussions about the Brexit impact in this territory
✓	Considering the 'Eleven SDGs' selected by the IGGP, depending on the four sources used in this research, SDG 6, SDG 7, and SDG 10 obtained different scores or rankings and not always were recognized as priorities
✓	SDG 4 was revealed as a contradictory case because all the UGGps assumed its strategic importance. Despite the managers considered this goal as a vital one (questionnaires), when analyzing the PRs, and abstracts it was verified that this goal was ranked at a medium level of importance. This can be interpreted as a fact that education is something intrinsic to the daily basis operation of any UGGp, and it seems that it is often neglected or omitted in the referred data sources

**Table 31** (cont.) - Summary of the main lines regarding the discussion of the results.

- ✓ Regarding the SDG 3, despite the managers consider it 'Very Relevant' in terms of effectively developed activities, this goal is in a very low rank. This can be interpreted as a misunderstanding about the targets and indicators of this goal since the managers link this SDG to geotourism activities. However, in carrying out the data analysis of PRs and abstracts, these activities were distributed by SDGs 8, 11, and 12. Nevertheless, two of the interviewees considered this SDG very important and the role of the Marble Arch Caves UGGp for the well-being of the local communities and young generations
- ✓ SDG 2 had a very residual score in the ranking or fewer points from the data collection. The managers seemed to understand that this was not a direct contribution of the UGGps, in their daily work in the territories and with the local communities. This result can be also justified by the European socio-economic framework, despite the efforts done in terms of agricultural products and supporting local farmers and interesting projects, such as 'GeoFood'
- ✓ Finally, SDG 14 was the goal with the lowest score and points. Considering that many of the 33 UGGps are coastal areas, islands, or are located in major river basins, it is paradoxical that this goal has not relevant contributions. This can only be justified by a misunderstanding of the targets and corresponding indicators, or because these territories neglect in their action plans this SDG of global importance

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## 6.2 Proposal of a working tool to correlate the UGGps activities and the SDGs

The research done on the scope of this study demonstrated that there are discrepancies between the PRs forms of the EGN (Annex 4) and the GGN (Annex 5), as well as in between the PRs and the criteria used in the IGGP Self-Evaluation (Evaluation Document A; Annex 6) and Progress Evaluation (Evaluation Document B; Annex 7) documents, provided to the UGGps staff members and the roster of evaluators for UGGps. This reality justifies the need to analyze critically and constructively these incongruities, including the proposal of a tool that could facilitate the correlation between all these official documents and their direct links to the corresponding SDGs and targets.

Regarding the layout of the EGN PRs, which were used in this research study, they allow the UGGps management structures to report to the EGN Coordination a set of activities developed in a more or less random manner. Regarding the annual report to be sent to the GGN, its layout already allows the definition of some categories of information. However, after two decades of the existence of the EGN and 16 years of the GGN, there is no work of systematization of this information, which, unfortunately, ends up being spilled only in a document available online for the curiosity of some or,

less frequently, for research works, as it is the case of the present study. As observed, the content of these documents is of enormous relevance, not only to demonstrate the EGN's operationality and robustness but, essentially, because their analysis and systematization would help the UGGps to adjust their 'action plans' according to the strengths, weaknesses, opportunities, and threats that they face. At the same time, this procedure would allow to highlight examples of good practices, so that they could be replicated by other UGGps, properly adjusted to different territorial contexts, strengthening the 'four essentials' pillars, particularly regarding networking and visibility (UNESCO, 2016a). Besides, this reality would also allow that during the revalidation missions, the evaluators could have prior knowledge about the work carried out in the territory, based on indicators, which result from a previous analysis of the PRs. This would allow, among others, to do some adjustments to the proposed visit program to the UGGp under revalidation, initially provided by the management structure. The previous PRs analysis should be carried out by a suitable entity within the structure of the GGN or recognized as such by the latter. In this sense, the evaluators could be more assertive and specific in the recommendations to be proposed, contributing in this way that the UGGp management structure could implement more concrete and effective actions in the territory so that it could be a more robust, proactive, and vibrant member of the network. On the other hand, if the UGGps are considered by the IGGP as vital actors for the promotion of the SDGs, as can be seen in 'Recommendation 9' of the UNESCO IOS Report (UNESCO, 2019e, 2020f), then the PRs should be adapted to this reality, allowing that the reported activities can be easily related with the targets and, eventually, with the indicators of the SDGs. This would allow the EGN, the GGN, and the IGGP to acknowledge and monitoring the results and the impacts achieved by the UGGps while allowing the provision of multiple databases for the global assessment of the SDGs.

A first step towards achieving this goal is a necessary revision of the Document of Self-Evaluation (Document A), in which there are several redundant categories and sub-themes, a reality that may cause unnecessary doubts and repetitions. Besides, the writing of this document also needs to be revised, as it presents some semantic issues.

The next step would be the necessary standardization of the PRs of the EGN with those of the GGN, with ideally of having a single document. Although the existence of semi-annual PRs is rooted in the EGN foundational history, associated with the deliverables requested by the EU regarding INTERREG projects, the fact that they are not analyzed or discussed in the Coordination Committee's semi-annual meetings, may be sufficient reason for an annual report, to allow the evaluation of the work developed by the UGGps. In this sense, this report may have a layout that, on the one hand, is in line with the categories and subcategories included in the Document of Self-Evaluation (Document A) and, on the other hand, associates each of the categories and subcategories with the targets of the SDGs that can be specifically considered.

It was in this context that, when analyzing in detail each of the categories, subcategories, and items considered in Document A, a careful correlation analysis was carried out, considering the 169 targets of the SDGs and their connection to the UGGps holistic approach. This allowed the proposal of a new layout for an annual progress report, which provides the managers effective guidance to proceed with a correlation of the activities developed with a restricted set of 49 SDGs and specific targets associated (Annex 8). A **first category**, dedicated to the knowledge and reporting of the activities developed related to 'Geology and Landscape', the two established subcategories ('geoconservation' and 'natural and cultural heritage') were correlated with five SDGs and five targets (Fig. 86).

# 1. GEOLOGY AND LANDSCAPE

## 1.1 - Geoconservation



## 1.2 - Natural and Cultural heritage



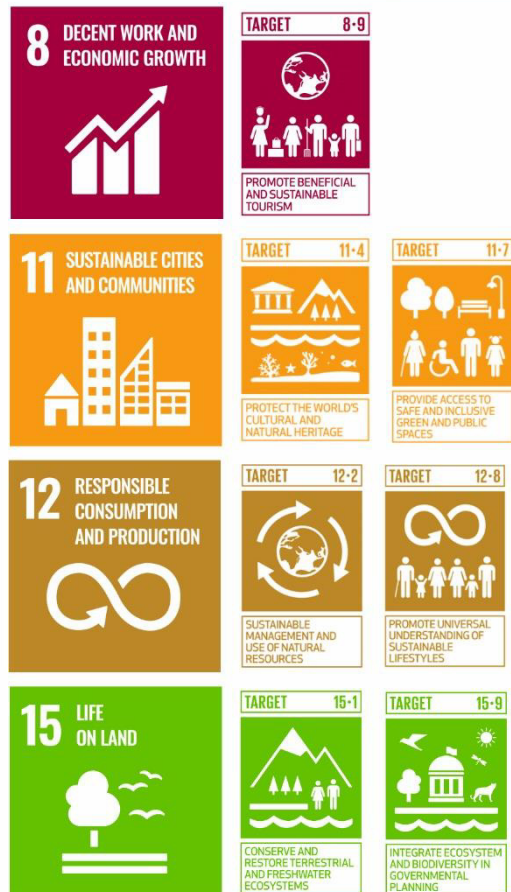
**Figure 86** – Correlation of SDGs and respective targets with the category 'Geology and Landscape' and the subcategories 'geoconservation' and 'natural and cultural heritage'. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.



A **second category**, dedicated to the knowledge and reporting of the activities developed related to 'Management Structure', has four established subcategories. The first one is 'Protection of geological heritage' and was correlated with four SDGs and seven targets (Fig. 87).

## 2. MANAGEMENT STRUCTURE

### 2.1 - Protection of geological heritage



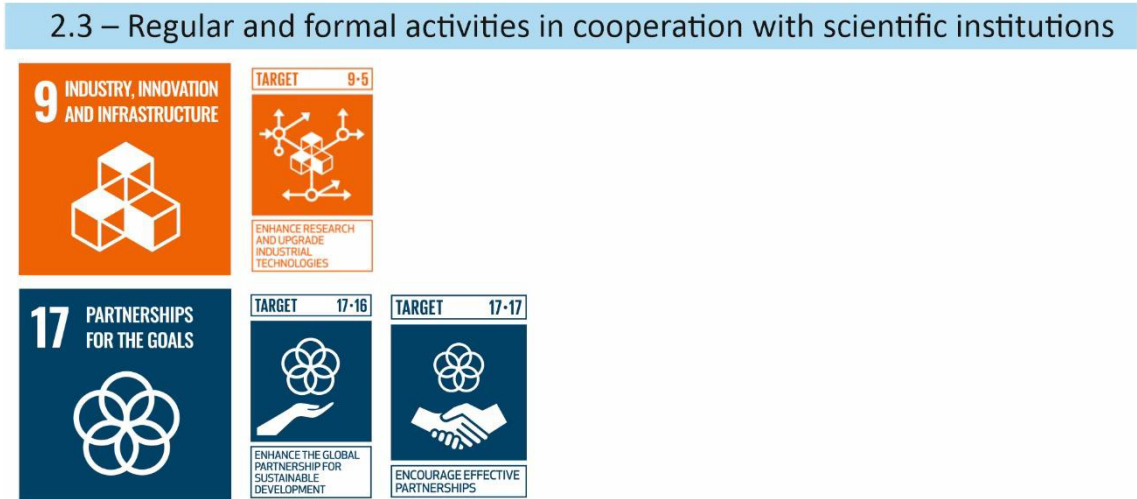
**Figure 87** – Correlation of SDGs and respective targets with the category 'Management Structure' and the subcategory 'Protection of geological heritage'. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The second subcategory 'Promotion of natural and cultural heritage' was correlated with five SDGs and 10 targets (Fig. 88).



**Figure. 88** – Correlation of SDGs and respective targets with the category 'Management Structure' and the subcategory 'Promotion of natural and cultural heritage'. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevlopmentmekong.net/topics>.

The third subcategory 'Regular and formal activities in cooperation with scientific institutions' was correlated with two SDGs and three targets (Fig. 89).



**Figure 89** – Correlation of SDGs and respective targets with the category 'Management Structure' and the subcategory 'Regular and formal activities in cooperation with scientific institutions'. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The fourth subcategory 'Infrastructures' was correlated with five SDGs and six targets (Fig. 90).

## 2.4 – Infrastructures

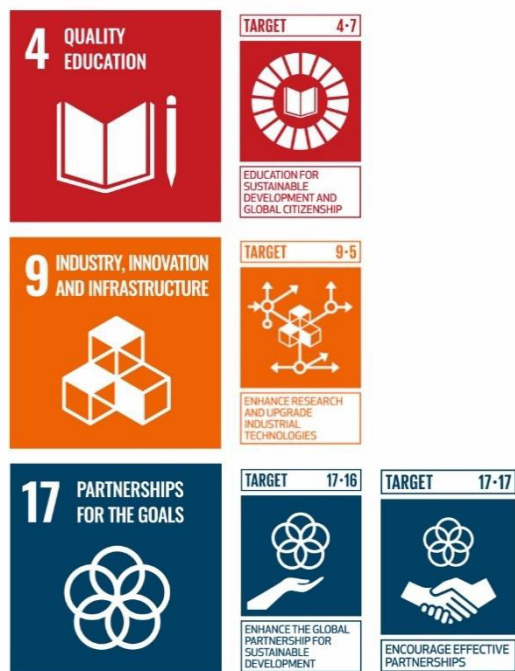


**Figure 90** – Correlation of SDGs and respective targets with the category 'Management Structure' and the subcategory 'Infrastructures'. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

A **third category**, dedicated to the knowledge and reporting of the activities developed related to 'Information and Environmental Education', has three established subcategories. The first one is 'Research and educational activities in Earth Sciences' and it was correlated with three SDGs and four targets (Fig. 91).

### 3. INFORMATION AND ENVIRONMENTAL EDUCATION

#### 3.1 - Research and educational activities in Earth Sciences



**Figure 91** – Correlation of SDGs and respective targets with the category ‘Information and Environmental Education’ and the subcategory ‘Research and educational activities in Earth Sciences’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

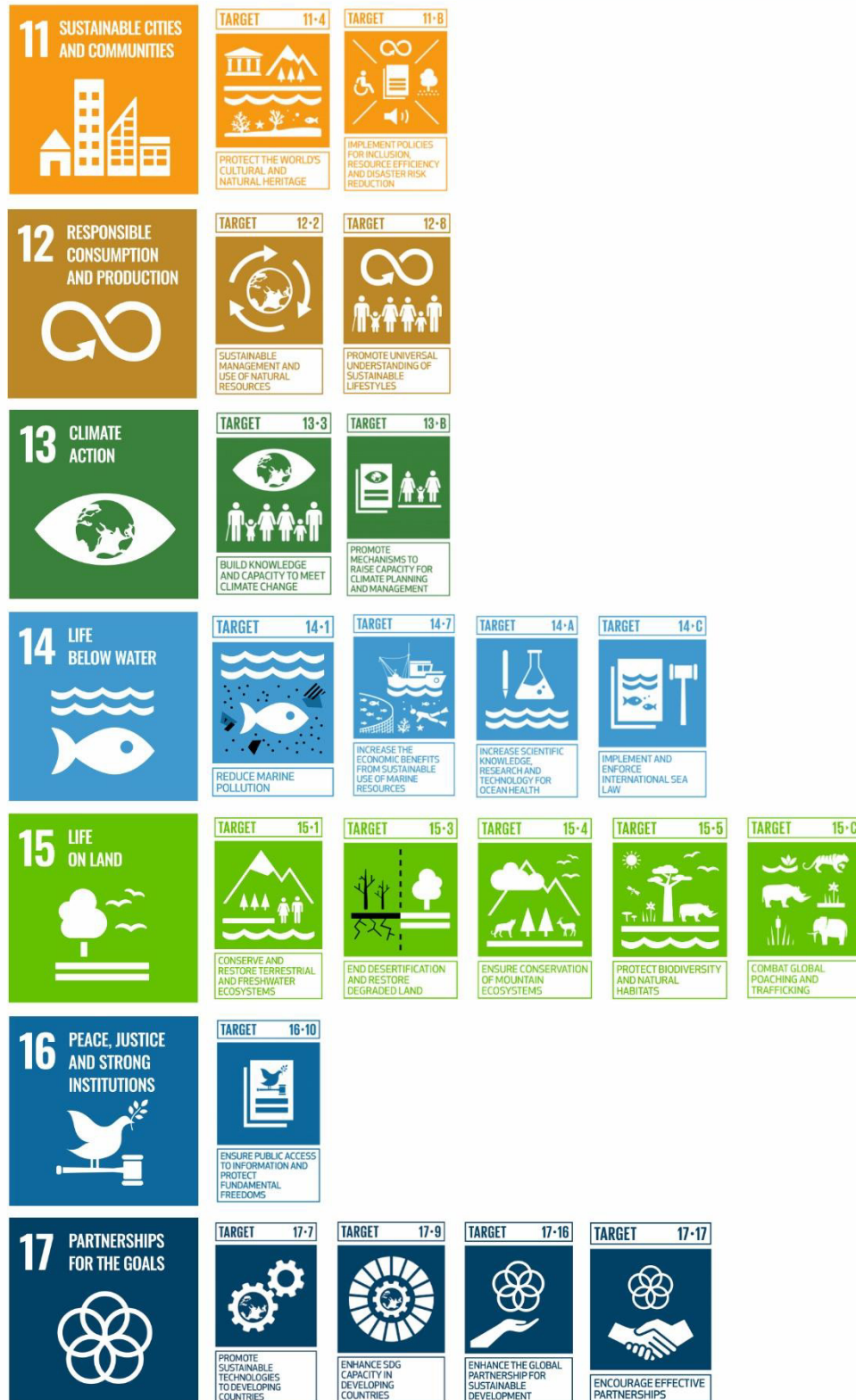
The second subcategory ‘Environmental Educational programs, educational materials, information and access to communications technologies’ was correlated with 14 SDGs and 30 targets (Figs. 92, and 93). The number of SDGs and targets are deeply related to the themes developed in the educational programs, as observed in the analyzed sources.

## 3.2 – Environmental Educational programs, educational materials, information and access to communication technologies



**Figure 92** – Correlation of SDGs and respective targets with the category ‘Information and Environmental Education’ and the subcategory ‘Environmental Educational programs, educational materials, information and access to communications technologies’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

### 3.2 – Environmental Educational programs, educational materials, information and access to communication technologies (cont.)



**Figure 93 (Cont.)** – Correlation of SDGs and respective targets with the category ‘Information and Environmental Education’ and the subcategory ‘Environmental Educational programs, educational materials, information and access to communications technologies’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevlopmentmekong.net/topics>.

The third subcategory ‘Training courses’ was correlated with five SDGs and seven targets (Fig. 94).



**Figure 94** – Correlation of SDGs and respective targets with the category ‘Information and Environmental Education’ and the subcategory ‘Training courses’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The **fourth category**, dedicated to the knowledge and reporting of the activities developed related to ‘Geotourism’, has five established subcategories. The first one is ‘Promotional and marketing materials and activities’ and was correlated with seven SDGs and eight targets (Fig. 95).



## 4. GEOTOURISM

### 4.1 – Promotional and marketing materials and activities



**Figure 95** – Correlation of SDGs and respective targets with the category ‘Geotourism’ and the subcategory ‘Promotional and marketing materials and activities’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The second subcategory ‘Information centres and exhibitions inclusive and accessible for all’ was correlated with five SDGs and seven targets (Fig. 96).

4.2 – Information centres and exhibitions inclusive and accessible for all



**Figure 96** – Correlation of SDGs and respective targets with the category ‘Geotourism’ and the subcategory ‘Information centres and exhibitions inclusive and accessible for all’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

A third subcategory ‘Public transports and facilities’ was correlated with seven SDGs and 12 targets (Fig. 97).

### 4.3 – Public transports and facilities



**Figure 97** – Correlation of SDGs and respective targets with the category ‘Geotourism’ and the subcategory ‘Public transports and facilities’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The fourth subcategory ‘Trails, guided tours and geotouristic offers’ was correlated with nine SDGs and 16 targets (Figs. 98, and 99).

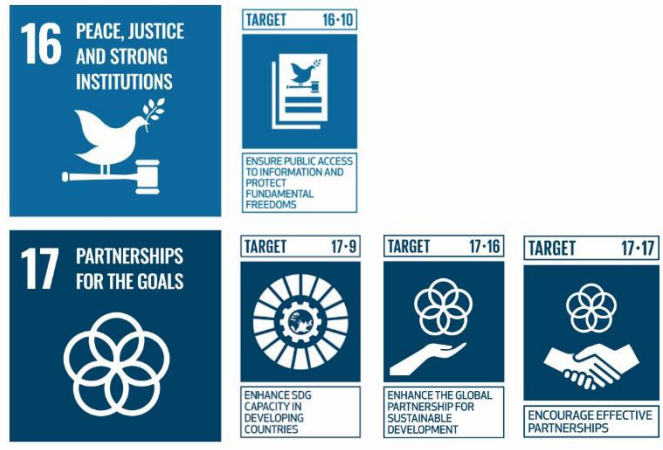
## 4.4 – Trails, guided tours and geotouristic offers



**Figure 98** – Correlation of SDGs and respective targets with the category ‘Geotourism’ and the subcategory ‘Trails, guided tours and geotouristic offers’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The fifth subcategory ‘Monitoring impacts of sustainable tourism’ was correlated with nine SDGs and 16 targets (Fig. 99).

#### 4.4 – Trails, guided tours and geotouristic offers (cont.)



#### 4.5 – Monitoring impacts of sustainable tourism



**Figure 99** – Correlation of SDGs and respective targets with the category ‘Geotourism’ and the subcategories ‘Trails, guided tours and geotouristic offers’ (Cont.) and ‘Monitoring impacts of sustainable tourism’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The **fifth category**, dedicated to the knowledge and reporting of the activities developed related to ‘Sustainable Regional Economy’, has two established

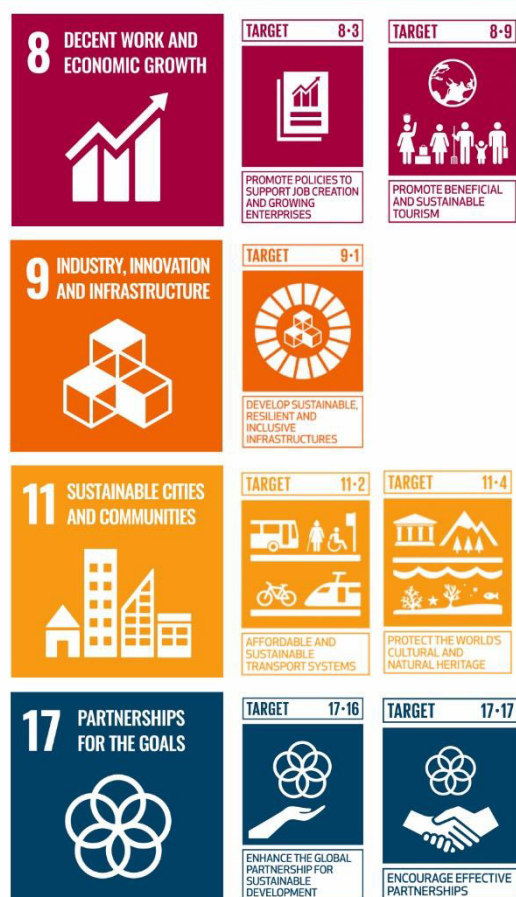
subcategories. The first one is ‘Promotion of regional food and craft products’ and was correlated with four SDGs and seven targets (Fig. 100).



**Figure 100** – Correlation of SDGs and respective targets with the category ‘Sustainable Regional Economy’ and the subcategory ‘Promotion of regional food and craft products’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

The second subcategory ‘Strategic partnerships and networking’ was correlated with four SDGs and seven targets (Fig. 101).

## 5.2 – Strategic partnerships and networking



**Figure 101** – Correlation of SDGs and respective targets with the category ‘Sustainable Regional Economy’ and the subcategory ‘Strategic partnerships and networking’. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.

Because during this research study, based especially on the PRs and abstracts presented at conferences in 2015-2016, the survey of keywords revealed the correlation of a set of SDGs and respective targets that were not identified in the topics covered in Document A. For this reason, it was decided to create the last category, designated 'Other relevant activities and achievements'. This includes a single subcategory, entitled 'Other activities developed on the scope of the 'Top Ten Focus Areas'', and was designed to allow the association of a significant set of relevant activities carried out by UGGps

and which correlate with seven SDGs and 10 targets of the 2030 Agenda (Fig. 102).

## 6. OTHER RELEVANT ACTIVITIES AND ACHIEVEMENTS

### 6.1 – Other activities developed on the scope of the 'Ten Topic Areas'



**Figure 102** – Correlation of SDGs and respective targets with the category 'Other relevant activities and achievements' and the subcategory 'Other activities developed on the scope of the 'Top Ten Focus Areas''. © Elizabeth Silva, with SDGs logos from <https://sdgs.un.org/goals> and targets logos from <https://opendevelopmentmekong.net/topics>.



After a careful and in-depth analysis of the ‘template’ used by the UGGps in the PRs presented particularly at the EGN, but also to the GGN, and based on the topics requested especially in Document A, this research study had a specific objective mentioned previously:

- *Propose a working tool where can be done the immediate correlation between the developed activity and the SDG / SDGs and corresponding targets*

In this sense, it was possible to present a proposal for a new ‘template’ (Fig. 103) based on a qualitative approach. This working tool aims to allow the UGGps managers to associate, expeditiously, each developed activity with the SDG/ SDGs and corresponding targets. This way, it is intended to be easier to indicate which SDGs and targets the activity in question contributes to.

## **‘ANNUAL PROGRESS REPORT’**

**UNESCO Global Geopark name:**

**Country:**

**Contacts / Contact person:**

**Year:**

### **1. GEOLOGY AND LANDSCAPE**

<b>1.1 – Geoconservation</b>
SDG 11 / 11.4
Activities developed and their connection to the SDGs and targets achieved: 1. 2. 3. (...)
<b>1.2 – Natural and cultural heritage</b>
SDG 4 / 4.7; SDG 11 / 11.4; SDG 12/12.8; SDG 16 / 16.10; SDG 17 / 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. 3. (...)

## 2. MANAGEMENT STRUCTURE

<b>2.1 – Protection of geological heritage</b>
SDG 8 / 8.9; SDG 11 / 11.4, 11.7; SDG 12 / 12.2, 12.8; SDG 15 / 15.1, 15.9.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)
<b>2.2 – Promotion of natural and cultural heritage</b>
SDG 4 / 4.7; SDG 8 / 8.3, 8.9; SDG 11 / 11.4; SDG 12 / 12.2, 12.8, 12.b; SDG 17 / 17.14, 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)
<b>2.3 – Regular and formal activities in cooperation with scientific institutions</b>
SDG 9 / 9.5; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

<b>2.4 – Infrastructures</b>
SDG 9 / 9.1; SDG 11 / 11.7; SDG 12 / 12.8; SDG 15 / 15.1; SDG.17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

## 3. INFORMATION AND ENVIRONMENTAL EDUCATION

*N.B.* Mention the number of participants involved in each activity

<b>3.1 – Research and educational activities in Earth Sciences</b>
SDG 4 / 4.7; SDG 9 / 9.5; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)
<b>3.2 – Environmental educational programs, educational materials, information, and access to communication technologies</b>
SDG 2 / 2.4; SDG 4 / 4.7; SDG 6 / 6.b; SDG 7 / 7.a; SDG 8 / 8.3, 8.9; SDG 9 / 9.1, 9.5, 9.c; SDG 10 / 10.2; SDG 11 / 11.4, 11.b; SDG 12 / 12.2, 12.8; SDG 13 / 13.3, 13.b; SDG 14 / 14.1, 14.7, 14.a, 14.c; SDG 15 / 15.1, 15.3, 15.4, 15.5, 15.c; SDG 16 / 16.10; SDG 17 / 17.7, 17.9, 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

<b>3.3 – Training courses</b>
SDG 4 / 4.7; SDG 8 / 8.3, 8.9; SDG 11 / 11.4; SDG 12 / 12.8; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. 3. (...)

#### 4. GEOTOURISM

*N.B.* Mention the number of participants involved in each activity

<b>4.1 – Promotional and marketing materials and activities</b>
SDG 4 / 4.7; SDG 8 / 8.9; SDG 9 / 9.c; SDG 10 / 10.2; SDG 12 / 12.8; SDG 16 / 16.10; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. 3. (...)

<b>4.2 – Information centres and exhibitions inclusive and accessible for all</b>
SDG 9 / 9.1, 9.c; SDG 11 / 11.7; SDG 12 / 12.8; SDG 16 / 16.10; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

<b>4.3 – Public transports and facilities</b>
SDG 8 / 8.9; SDG 9 / 9.1, 9.c; SDG 11 / 11.2, 11.7; SDG 12 / 12.8; SDG 15 / 15.1, 15.4, 15.9; SDG 16 / 16.10; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. 3. (...)

<b>4.4 – Trails, guided tours, and geotouristic offers</b>
SDG 3 / 3.4; SDG 7 / 7.a.; SDG 8 / 8.9; SDG 9 / 9.1; SDG 11 / 11.2, 11.4, 11.7, 11.a; SDG 12 / 12.8; SDG 15 / 15.1, 15.4, 15.9; SDG 16 / 16.10; SDG 17 / 17.9, 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

<b>4.5 – Monitoring impacts of sustainable tourism</b>
SDG 8 / 8.9; SDG 11 / 11.a; SDG 12 / 12b.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

## 5. SUSTAINABLE REGIONAL ECONOMY

*N.B.* Mention the number of participants involved in each activity

<b>5.1 – Promotion of regional food and craft products</b>
SDG 2 / 2.3, 2.4, 2.c; SDG 8 / 8.9; SDG 11 / 11.4; SDG 17 / 17.16, 17.17
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)
<b>5.2 – Strategic partnerships and networking</b>
SDG 8 / 8.3, 8.9; SDG 9 / 9.1; SDG 11 / 11.2, 11.4; SDG 17 / 17.16, 17.17.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

## 6. OTHER RELEVANT ACTIVITIES AND ACHIEVEMENTS

*N.B.* Mention the number of participants involved in each activity

<b>6.1 – Other activities developed on the scope of the ‘Ten Topic Areas’</b>
SDG 1 / 1.5, 1.a; SDG 3 / 3.9; SDG 5 / 5.5, 5.a; SDG 6 / 6.5, 6.6; SDG 14 / 14.2; SDG 16 / 16.b; SDG 17 / 17.6.
Activities developed and their connection to the SDGs and targets achieved: 1. 2. (...)

**Figure 103** – Proposal of a new working tool/layout for an ‘Annual Progress Report’; ©Elizabeth Silva

Taking into consideration the above mentioned, this research demonstrates the need for review and adjust Document A in quantitative and qualitative terms. Furthermore, it is demonstrated the necessity and importance of the UGGps PRs, and the evaluation documents layouts to be properly aligned with the achievement of the SDGs.

The last proposed category demonstrates that the holistic approach that characterizes the UGGps goes beyond what is considered and evaluated in Document A. Furthermore, Document B (Annex 7), used only for revalidations, is purely quantitative regarding the figures of the UGGps under evaluation and in line with Document A and does not contemplate the possibility to consider different SDGs correlation. Once again, this demonstrates the need that the PRs layout should include the proposed new category 'Other relevant activities and achievements'. However, taking into account the dynamics and diversification of activities developed by the UGGps, the correlation here suggested for this category should remain open, to allow a possible link with other SDGs and targets.

## CONCLUSIONS

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## CHAPTER VII - CONCLUSIONS

When reaching the end of this research study, it is pertinent to understand if with the chosen methodological approach and with the three posed research questions, it was possible to demonstrate the contribution of the European UGGps in the implementation of the 2030 Agenda for Sustainable Development and its 17 SDGs.

### 7.1 Final remarks, future perspectives, and challenges

Through the gathered data collection, and the enlargement of the data sources, not just based on the PRs regarding the time frame 2015-2016, but also with the abstracts, questionnaires, and interviews, it was possible to have feasible and reliable data to answer positively to the three research questions. Consequently, when analyzing the obtained results, it was possible to verify that the contributions of the UGGps to the SDGs initially ascribed empirically by the IGGP and more recently proposed their extension, remain far from the reality of the facts. This research demonstrated that, on the one hand, the SDGs gained new arrangements or even other hierarchies and, on the other hand, the UGGps develop initiatives that contribute, directly or indirectly, to all 17 SDGs. In this regard, it should be noted that there is a set of SDGs - **SDG 1, SDG 5, SDG 13** - assumed by the IGGP as nuclear, for which the contribution of the UGGps verified in the data collection proved to be residual. In fact, concerning the issue of 'Disaster Risk Reduction', the number of activities reported in the PRs, which can be correlated with targets 1.5 and 11.b, were very residual and, in some cases, only indirectly inferred. Regarding the last target, it was not identified policies or plans in line with the 'Sendai Framework for Disaster Risk Reduction 2015-2030'. Additionally, although target 1.a has been correlated with fewer activities in the PRs, it appears that it is closely connected to target 1.5 and, therefore, it should be also included in the UGGps action plans since it requires the implementation of programs and policies to end poverty in all its dimensions.

Regarding Gender Equality, which is a strategic and a priority theme for UNESCO, the data collected showed that the **SDG 5** (targets 5.5, 5.a) received incipient contributions by the UGGps. Although there are examples of good practices such as

women's cooperatives, the role of women in these mostly rural territories is essentially related to activities based on intangible cultural heritage and subsistence economy. In this sense, this work demonstrates, on the one hand, that there is a deficit of women in the management structures at the level of decision-making and coordination positions, and on the other hand, there is a notorious lack of broader empowerment of women in the activities developed and supported by the management structures of the UGGps.

Concerning **SDG 13** (targets 13.3, 13.b), universally recognized as a problematic issue that impacts all the activities developed in the territories, the data collection obtained revealed that the contributions of the UGGps towards this goal end up being only perceived in their educational programs and not in initiatives to create awareness of how to mitigate, adapt and contribute for the resilience regarding the growing effects of 'Climate Change'. However, it is important to stress that this result was obtained during the time-frame 2015-2016. Therefore, it is a result that can be quite different in more recent years, bearing in mind that the UGGps celebrate, for instance, the *International Day of Risk Reduction* and that it was also established a Working Group on this issue (Dierickx *et al.* 2016; Fassoulas *et al.*, 2018).

A remark can also be highlighted regarding the fact that these specific issues are not directly considered in Document A. Therefore, they should be considered in a future reformulation of this document, given their importance for the sustainable territorial development of the UGGps. In this context, it is also relevant to stress that this type of information is also not requested in the semi-annual PRs sent to the EGN or the GGN, although it is included in the PR for the evaluation/revalidation process.

Once again, it is also important to take into account the huge amount of work done by the managers and their teams, daily, among their local communities, promoting so many activities, such as promoting local food, local enterprises, local heritage, school activities, among others.

It is also important to focus on the fact that the contribution of the UGGps to the achievement of **SDGs 6, 7, and 10** has also been inferred indirectly. Coincidentally, these three SDGs were recently proposed by the IGGP in the framework of the so-called 'Theory of Change' (UNESCO, 2019e, 2020f), as a result of the evaluation made to this Programme. This reality demonstrates the need of UNESCO and the GGN to develop capacity-building activities in these topics so that the management structures can



understand the need to include in their strategic plans activities that contribute to achieving the targets of these goals. It is worthwhile to highlight that these three SDGs were created based on the inclusion and participation of the local communities in these issues. At this point, it is important to mention that in the course of this research it was difficult to access updated data regarding the number of inhabitants in each of the 33 selected UGGps. In some cases, this proved to be an impossible mission, given the absence of this information. However, this reality has proved to be paradoxical insofar as the UGGps, which should be primarily focused on working for the benefit of local communities in a 'bottom-up development strategy', yet they are mainly focused on counting the number of visitors to the territory and on the number of followers on social networks. In this background, the research carried out also revealed relevant disparities between the data on the UNESCO website and the EGN website, particularly about the information on the year of admission and the territorial dimension of the UGGps. Therefore, it is important to reformulate and update all this valuable information.

It is also relevant to note that 11 of the 33 UGGps selected for this research are located in insular and coastal areas. However, contradictorily, **SDG 14** is not a priority for these UGGps since the contributions to this goal were only inferred by their inclusion in a few educational programs or geotourism activities. In this context, the management structures of these territories should include in their action plans initiatives that contribute to the achievement of this goal and respective targets.

Another important aspect that results from this research is related to the lack of a common dataset established to monitor the contributions for the SDGs by the UGGps. This can be justified due to the complexity and diversified actions and initiatives, as well as different socio-economic contexts, of the selected UGGps, which differ from country to country. This reality can be easily extrapolated to other continental regions and, therefore, should be considered in future research studies.

Another important remark is related to the interpretation of the data, which in some aspects was affected by a degree of subjectivity, inherent to the correlation between the developed activities and the 17 SDGs. The fact that there is no monitoring and consequent systematization of data, regarding the UGGps PRs, implied the need to develop an innovative analytical approach, which allowed to obtain an overview of the contribution of the UGGps to the achievement of the SDGs and respective targets. In

this sense, it is understood that this approach, as it has proved to be suitable for this research study, may serve as a basis for future studies in this field. In this framework, it stands out the proposal of a new layout for the UGGps 'Annual Progress Report', which allows a direct correlation with the categories and subcategories of Document A. At the same time, this layout proposal already incorporates a synthesis of the SDGs and targets so that each of the referred categories and subcategories, allowing to compile and systematize information on this theme. In this way, the data can be easily processed and analyzed, providing valuable contributions to improve the performance of UGGps under the 2030 Agenda framework. In this context, the UGGps will be able to contribute in a more solid and structured way for a more egalitarian, fair, resilient, prosperous, and peaceful society.

Given the necessity of the UGGps strategic plans to be permanently updated, it becomes imperative that in the next decade these plans should be designed to contribute objectively to the achievement of multiple SDGs and respective targets. Additionally, the UGGps management structures should assume this commitment as a way of promoting their territories, while educating and sensitizing local populations and visitors to the relevance of their work and their contribution to this global endeavor. However, this strategy must be defined in an articulated way considering the needs of the local inhabitants. This could be of great usefulness to know what do the local communities expect from the UGGps and how can they be more involved in the process, through time, and not just leave the entire decisions to the managers, politicians, or local authorities, among others, who have their agenda and set of interests. This would be a way to have more solid bonds between the managers and the local communities and to accomplish the 'territorial bottom-up approach strategy', reinforced by the recent IGGP recommendations. This issue was stressed by the interviewees. In this context, it is worthwhile to stress the following statement by one of the interviewees:

*"(...) But also, our community should be more involved in the management of the geopark. Be more involved so that the community can understand and adopt other attitudes and behaviors regarding our territory, its resources, to value our culture, our history, to protect our biodiversity and our geological heritage. Well, this is what I think..."*

So, this issue should be better explored in the future, by making more accurate surveys among the local communities, promoting more participatory citizenship, and

not just focused on the monitoring of the visitor's figures and profiles. On the other hand, it is important to be aware that the IGGP is still a very recent program, and therefore requiring some adjustments. This can be one of the reasons why the Member States representatives still do not understand quite well what the practical achievements are reached by the UGGps, working closely with their local communities and visitors. This vulnerability pointed out by this research study coincides with the recommendation also stated in the recent Evaluation Report of the IGGP. However, it is important to reinforce the need of the Secretariat of the IGGP and even the Permanent Delegations of each Member States to be more aware of the activities and initiatives developed by the UGGps in their countries, as well as, by the aspiring projects. The same is also valid for the NatComs for UNESCO and the National Fora or National Committees for Geoparks. But this situation is just not a UNESCO issue, being also a vulnerability among the UGGps themselves. In the vast majority of the cases, the UGGps are so focused on the 'by-the-book' procedures to maintain the standards imposed by the IGGP, to safeguard the so-called 'green card', that often communicating their activities in different platforms is sometimes left behind, although being mandatory by the GGN and reinforced by the regional geoparks networks. However, this situation suffered an unexpected turnover due to the COVID-19 pandemic. This reality forced a reconceptualization of the communicating processes, capacity-building courses, and even seasonal meetings and annual conferences. This was only possible due to the use of electronic platforms of communication, particularly for videoconferences. This new experience brings the opportunity to create a new paradigm for the management and networking inside the GGN. The facility, low cost, and even less carbon footprint associated with these new technologies shift the pre-COVID-19 archetype to another level of cooperation among the UGGps. This allows bringing all together, in a very easy way and more frequently, the different actors involved in the UGGps processes, like managers, staff members, stakeholders, educators, local inhabitants, policymakers at different levels of decision, and the GGN and UNESCO representatives, among others. This new reality will allow closer networking, with a reinforced share of knowledge, experiences, and good practice examples. Naturally, this implies the need to have universal access to Information and Communication Technologies. An example of the above-mentioned is the production of the promotional video highlighting the potential

of the UGGps as sites of regional sustainable development. In this scope, the EGN took the lead and demonstrated that the UGGps can also be vital actors in pandemic situations, working as ‘Territories of Resilience’ (EGN, 2020b; Fig. 104).

### European UNESCO Global Geoparks – Territories of Resilience



**Figure 104** – Promotion of the European UGGps as ‘Territories of Resilience’ (EGN, 2020b)

In this sense, this initiative brought other fields related to humanitarian issues to the context of the holistic approach of the UGGps, such as ‘Economic crisis’, ‘Epidemics’ (e.g. COVID-19 pandemic), ‘Terrorism’, ‘War’, and ‘Refugees’.

In this framework, it is also relevant to understand that the local communities and the staff members of the UGGps can face these types of problems, that can provoke instability or uncertainty regarding the future, and the need to readjust their strategic plans. This was quite clear in the data collection gathered with the interviews. It was not a coincidence that the five interviewees picked card 16 / SDG 16, because they linked this goal to the ‘Brexit issue’. The statements regarding this complex subject were very pertinent, but reinforcing the Geopark role in peace-building efforts. In this regard, it is relevant to stress that ‘Brexit’ was mentioned 18 times by the interviewees in all three categories, and subcategories. In this sense, it is suitable to give some examples of the statements received voluntarily by the participants:

*“(... ) But to be honest, Brexit is a very important issue, nobody knows what is going to happen, so I believe that the Marble Arch Caves Geopark will continue to work together, and maintain this strong partnership and working definitely for peacebuilding efforts.”;*

*“As you know, we have this situation of Brexit, so all the work is done in true cooperation, protecting from both sides our biodiversity and working to revert the loss of biodiversity, we can lose all these efforts if Brexit separates again the local communities and local organizations that work together for so many years. This is uncertain because we do not know what Brexit will bring to us. We don’t know how things will work after Brexit, regarding, for instance, the management of the geopark territory, and especially about the continuity of the funding and of course, the cross-border cooperation.”;*

*“(…) I am very positive about this, I believe that with the proper partnerships, we can overcome many of our difficulties and even the shadow of Brexit can be less harmful to the geopark if we continue to have more and more partners and close cooperation between the two counties.”;*

*“I am very worried about Brexit and all these fast changes... for me, Brexit is something crazy... from ancient history we had no difference between the two Irelands, this was artificially created by men, so Northern Ireland is artificially, and because of this, kids are educated believing that we have different cultures and principles, history, etc. So, I hope that if Brexit comes, I hope that the geopark stays unified, as it is. I even think that the geopark could adopt the slogan “Geoparks don’t do Borders, but build bridges!” or something like that... For me, Brexit is threatening the peace here, it is ill-conceived... Brexit is about narrow nationalism, so I hope that the geopark can be strong to maintain its concept, I am not saying that it will happen, but I hope so. I hope that the geopark survives to what can happen in a near future. I hope that it can be an instrument for peace, for education...”.*

But as expressed before, other issues are relevant, such as refugees. This is a problematic issue in the Lesvos Island UGGp and closely connected with Covid-19. Due to the settlements of refugees, having far a greater number of people for the capacity of these improvised settlements, and having so many vulnerable people not just to COVID-19, but to other diseases, hunger, water scarcity, and death.

Regarding the 2030 Agenda and its 17 SDGs, by the gathered data collection it is notorious that this global concern still requires to reach the common people, the local communities. In this sense, the UGGps must strengthen their efforts to create more awareness regarding this subject, which is so closely connected with the work expected from the UGGps and the concept itself. Once again, the interviews revealed this important lack of knowledge around these global aspirational goals:

*“But I am also concerned that people here are not aware of the 2030 Agenda... they don’t know anything about this. Well, this is my perception... So, it would be important if people would be more connected with these issues, especially to understand what SDG 16 stands for in terms of Peace and also SDG 17 in terms of cooperation... People must also understand the value of their territory if UNESCO has designated this territory as especial enough to be designated as a UNESCO Global Geopark, I think people should understand better the reasons behind this international designation...”;*

*“ (...) However, to put in action the 2030 Agenda in our territory we face several challenges, such as funding, Brexit, to educate people and embedding the local communities and maintaining our partnerships and having new partnerships, and also creating awareness and ownership... it is not just a designation you know... it is much more than that. So, to put in action the SDGs, I think the best way is to do it locally. The local communities must understand these SDGs, and for that, we have to work locally, because, for them, the SDGs seem so far away, up in the sky, it’s something that ‘we can’t do now, it is something that only the government must do, or up to UNESCO to do’, but really the small changes that we make and working with the groups (...), working with the communities, (...) into the change of thinking, for example, when talking about the change in partnerships, that the geopark needs to be included in more things, centrally, government centrally, that you know when you talk about, we need to do a new road so that they can say ‘oh, maybe we should consult the geopark?’, you know?. It is not just about tourism, it is about everything inherent. So, I do think that is the way. I think as well working up with the communities to know which actions they may take, can do a huge difference.”*

Despite these major statements, and also the many difficulties and challenges faced during the development of this research study, it was possible to achieve its main objectives and to give a positive reply to the three research questions.

It is also very important to stress that in the case of the analyzed PRs, the obtained results were related to a specific period, 2015-2016. In this sense, it is important to highlight that the frequencies obtained with the correlation of the activities developed by the 33 UGGps to the 17 SDGs, were analyzed in a very early period of the implementation of the 2030 Agenda. So, in future research studies, these results may be quite different than those obtained in the above-mentioned time-frame. In more recent years, this can be demonstrated on one hand, for instance, by the efforts done by the WG of the GGN for the SDGs, aiming to create more awareness regarding the

developed activities of the UGGps, in the framework of the 17 SDGs. But also, on another hand, in a deeper and different concern from the managers of the UGGps side, to include these aspirational goals in their developed activities. This may reflect an upgrade in their strategic plans and respective semi-annual and annual PRs. This can be also a new path to be explored by other researchers, bringing future perspectives and achievements in this domain.

It is important to reinforce and make it clear without ambiguity that this work was based on the interpretation of data reported by the UGGps concerning the activities promoted and developed in their territories. At no time was intended to establish a ranking regarding the achievement of the SDGs or to compare the contribution capacity among territories. Therefore, it is important to keep in mind that this research work has shown that all the studied UGGps contribute to the achievement of the 17 SDGs, with different realization rates, subordinated to the socioeconomic differences and development priorities of each territory.

Consequently, it is expected that this study may open new ways and generate new ideas for scientific projects related to the contribution of the UGGps to the 2030 Agenda and its 17 SDGs, 169 targets, and 232 indicators.

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## ANNEXES

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## Annex 1: Questionnaire



*The contribution of the European UNESCO Global Geoparks for the 2030 Agenda for Sustainable Development – a study based on several data sources*

Elizabeth Silva

This research study will be developed in the framework of the 2030 Agenda for Sustainable Development based especially on the analysis of the contents of 33 selected European UGGps EGN Progress Reports, located in 22 European countries, during 2012-2016 (among other sources).

### EXPLORATORY QUESTIONNAIRE

**N.B. All the collected data will be confidential and used only for this research study (Ph.D. thesis)**

Name of the European UGGp: \_\_\_\_\_

**1. Are you aware of the 17 SDGs of the 2030 Agenda for Sustainable Development?**

*(Please cross the chosen box)*

All of the SDGs

Several SDGs

None of the SDGs

**2. Do you consider that several of the activities developed by your UGGp during 2015-2016 can be already accounted for as a contribution to the 17 SDGs?** *(Please cross the chosen box).*

Yes

No

**3. Taking into account the Progress Reports during 2015-2016, please choose the following options for each SDGs in the activities developed by your UGGp:**

## Annex 1: Questionnaire (cont.)

17 Sustainable Development Goals				
		Very important	Relative important	Not important
1	 <b>End poverty</b> in all its forms everywhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	 <b>End hunger</b> , achieve food security and improved nutrition and promote sustainable agriculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	 <b>Ensure healthy lives and promote well-being</b> for all at all ages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	 <b>Ensure inclusive and equitable quality education</b> and promote lifelong learning opportunities for all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	 <b>Achieve gender equality</b> and empower all women and girls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	 <b>Ensure availability and sustainable management of water and sanitation</b> for all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	 <b>Ensure access to affordable, reliable, sustainable and modern energy</b> for all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	 <b>Promote</b> sustained, inclusive and sustainable <b>economic growth</b> , full and productive employment <b>and decent work</b> for all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	 <b>Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	 <b>Reduce inequality</b> within and among countries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	 <b>Make cities and human settlements</b> inclusive, safe, resilient and sustainable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	 <b>Ensure sustainable consumption and production</b> patterns	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	 Take urgent action to <b>combat climate change</b> and its impacts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	 <b>Conserve and sustainably use the oceans, seas and marine resources</b> for sustainable development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	 <b>Protect, restore and promote sustainable use of terrestrial ecosystems</b> , sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	 <b>Promote peaceful and inclusive societies</b> for sustainable development, <b>provide</b> access to <b>justice</b> for all and <b>build effective, accountable and inclusive institutions</b> at all levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	 <b>Strengthen</b> the means of implementation and revitalize the <b>global partnership</b> for sustainable development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your kind collaboration!

**Annex 2: The 17 cards (17 SDGs) used in the interviews**



### Annex 3: Interview Guide

INTERVIEW GUIDE	
Part I - Introduction to the interview	
a)	Thanking the participant for collaborating in the interview;
b)	Introduction about the interviewer (name, job function, explanation about her presence in the Marble Arch Caves UNESCO Global Geopark);
c)	Information regarding the duration of the interview (approximately 25 minutes);
d)	Summary of the main purpose/objectives of the interview (research study for a Ph.D. thesis about the contribution of the European UNESCO Global Geoparks (UGGps) for the 2030 Agenda for Sustainable Development. A study based on several data sources focused on the 17 Sustainable Development Goals (SDGs);
e)	Explanation about the information that is going to be collected: <ul style="list-style-type: none"><li>i) General information about the interviewee (name, job function/role in the Marble Arch Caves UGGp, date, place);</li><li>ii) Open-ended questions:<ul style="list-style-type: none"><li>- the interviewee can give his/her opinion about issues that can be related to the main purpose of the interview;</li><li>- it can be asked for further clarification by the interviewer;</li><li>- the interviewee can also ask questions;</li><li>- or provide information that may be considered useful in this context;</li><li>- the interviewee is free to stress other issues that may believe the interviewer should be aware of in the context of the subject of this research).</li></ul></li></ul>
f)	Stating that the gather data collection is strictly confidential;
g)	Use of 17 cards related to the 17 SDGs of the 2030 Agenda;
h)	Summary about what was going to be done with the interviews, in terms of the research study carried on, and what is expected from the interviewees;
i)	Request for the necessary authorization of the interviewee by signing an ' <b>Interview Data Release Consent Form</b> ', in the presence of witnesses, to record all the interview (tape-recorded, transcript, and run through the MAXQDA computer Software), to take some photographs only when choosing the cards, and to take notes during the interview (key findings and gaps to be filled in the subsequent interviews).

### Interview Data Release Consent Form

*I, hereby give my consent to be used my image and my full interview, with the duration approximately of 25' minutes, in the framework of the research carried out for a Ph.D. thesis conducted by Ms. Elizabeth Silva (interviewer), a Ph.D. student of the University Nova de Lisboa, Department of Geography and Regional Planning, Portugal. I also allow that the referred interviewer may take notes during the interview. I also give my consent that the recording of my interview and the gathered data can be used for scholarly publications or other related educational purposes. In this context, I, knowingly and voluntarily permit Ms. Elizabeth Silva the full use of this information and authorize her to publish this information. Nevertheless, my identification will be strictly confidential and will always remain anonymous, in any circumstance.*

(Interviewee signature) \_\_\_\_\_ / (Date) \_\_\_\_\_

## Part II - Structure of the interview

j) The interview is composed of five questions:

- i) *Do you know about the Marble Arch Caves UGGp? (if yes, we proceed to the next question);*
- ii) *Please define in your own words what is a UNESCO Global Geopark?*
- iii) *Do you know about the 2030 Agenda for Sustainable Development of the United Nations and its 17 SDGs; (if yes, please proceed to the next question);*
- iv) *How many of the 169 targets related to the 17 SDGs of the 2030 Agenda are you aware of? (possible answer: none; between one to 50 targets; between 50 to 100 targets; more than 100 targets; all targets);*
- v) *Looking at these cards, each of one representing one of the 17 SDGs, could you pick only up to five cards, the ones you believe that the Marble Arch Caves UGGp puts into action in its activities in the territory. Then, please, justify your selection.*

## Part III - Wrap up of the interview

- k) Thanking the interviewee for his/her kind collaboration;
- l) Information about the next steps and time frame of the research study.

**Annex 4: Example of the Progress Report Form – EGN  
(main topics of the ‘template’ - version 2018)**

\*Available: [http://www.europeangeoparks.org/wp-content/uploads/2012/03/EGN\\_Progress\\_Reports\\_March-September\\_2018.pdf](http://www.europeangeoparks.org/wp-content/uploads/2012/03/EGN_Progress_Reports_March-September_2018.pdf)

**Name of the Geopark/ Country:**

**Progress Report** (Period: semester / Year)

**Geopark activities**

1.

2.

(...)

**Networking**

1.

2.

(...)

**Activity by Partners**

1.

2.

(...)

**Contact (E-mail):**



**Annex 5: Example of the Annual Progress Report Form – GGN  
(main topics of the ‘template’ - version 2018)**

\*Available: [http://www.europeangeoparks.org/wp-content/uploads/2012/03/EGN\\_annual\\_reports\\_2018\\_binder.pdf](http://www.europeangeoparks.org/wp-content/uploads/2012/03/EGN_annual_reports_2018_binder.pdf)

**GGN/EGN – Geopark Annual Report \_\_\_\_\_ (year)**

**1. Geopark Identity**

Geopark name, country, regional network:

Year of inscription/ year of the last revalidation:

**(PHOTOGRAPH)**

**2. Geopark Figures**

The number of Geopark staffs:

The number of visitors:

The number of Geopark events:

The number of school classes realizes Geopark educational programmes:

The number of Geoparks press release:

**3. Geopark activities**

Major achievements in \_\_\_\_\_ (year)

Contribution towards GGN – Networking and participation

Management and financial status

Geoconservation

Sustainable Tourism (Geotourism)

New education programmes on geoconservation, sustainable development, and disaster risk reduction

Strategic Partnerships

Promotional activities

**4. Contacts:**

Manager:

Geologist:

## Annex 6: Self-Evaluation: Evaluation Document A

### 1. Geopark Identity



Updated: 11 February 2016

### Identity

#### 1. Name and country of the territory

#### 2. Name of the management body

Region	
Country	
Telephone	
Fax	
E-mail	

#### 3. Address of the management body

#### 4. Size of territory and geographical coordinates

Size in km <sup>2</sup>	
Geographical coordinates	

#### 5. Contact persons

Management body director		
Geoscientist		
Specialist on regional development		
<b>Submitted by:</b>		
Name	Position	Date
Signature		

## 2. Overview

Overview				
	Category	Weighting	Self Assessment	Evaluators' Estimate
		(%)		
<b>I</b>	Geology and Landscape			
<b>1.1</b>	Territory	5	0	0
<b>1.2</b>	Geoconservation	20	0	0
<b>1.3</b>	Natural and Cultural Heritage	10	0	0
<b>II.</b>	Management Structure	25	0	0
<b>III</b>	Interpretation and Environmental Education	15	0	0
<b>IV</b>	Geotourism	15	0	0
<b>V</b>	Sustainable Regional Economic Development	10	0	0
	<b>Total</b>	100	0	0

EVALUATORS VERIFICATION		
Name	Position	Date
Signature		
Name	Position	Date
Signature		

### 3. Geology and Landscape

I. Geology and Landscape		Points Available	Self Assessment	Evaluators' Estimate
<b>1.1 Territory</b>				
<b>1.1 Geosite list</b>				
List of "Geosites" located within the territory identified for use (Please provide a geosite list)				
	20 "Geosites" or more	100		
	40 "Geosites" or more	200		
	<b>Maximum Total</b>	<b>200</b>	<b>0</b>	<b>0</b>
<b>2 Geodiversity</b>				
2.1	How many geological periods are represented in your area? (10 points each, maximum 100 points) (Please provide a list)	100		
2.2	How many clearly defined rock types are represented in your area? (10 points each, maximum 100 points) (Please provide a list)	100		
2.3	How many distinct geological or geomorphological features are present within your area? (Please provide a list) (10 points each, maximum 100 points).	100		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>
<b>3 Public interpretation of the Geopark's sites of interest</b>				
<b>3.1 Number of sites with public interpretation (trails, interpretation panels or leaflets) (Please provide a list)</b>				
	5-10	40		
	10-20	80		
	20 or more	120		
3.2	Geosites of scientific importance (Please provide a list)	> 25 %	40	
3.3	Geosites used for education (Please provide a list)	> 25 %	40	
3.4	Geosites used for geotourism (Please provide a list)	> 25 %	40	
3.5	Non-geological sites used by the Geopark (intergraded in Geoparks' activities) (Please provide a list)		40	
	<b>Maximum Total</b>	<b>200</b>	<b>0</b>	<b>0</b>
<b>4 Comparison to UNESCO Global Geoparks (select one from the following options)</b>				
4.1	There is no comparison with any other UNESCO Global Geopark.	300		
4.2	There is another UNESCO Global Geopark with comparable geology.	200		
4.3	There is another UNESCO Global Geopark with comparable geology or infrastructure in the same country.	100		
4.4	There is another UNESCO Global Geopark with comparable geology or infrastructure in the same country's geographical region (Clarification in time and distance)	50		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>
<b>Territory Subtotal</b>		<b>1000</b>	<b>0</b>	<b>0</b>

Please provide lists and details as a separate annex referring to the corresponding item numbers

## 4. Geological Conservation

I. Geology and Landscape 1.2 Geological Conservation		Points Available	Self Assessment	Evaluators' Estimate
<b>1</b>	<b>Inventory and significance of the geosites that can be found in your area (SELF AWARDED total cannot exceed 300).</b>			
1.1	At least one geosite of international geological significance (100 for each) (Give a list and justification)	160		
1.2	At least five geosites of national significance (Give a list and justification)	100		
1.3	At least 20 geosites of educational interest and used by schools and universities. (Give a list and justification)	100		
1.4	Do you have a geosites' database for the Geopark? (Please give details)	50		
1.5	Do you have a geosites' map for the Geopark? (Please give details)	50		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>
<b>2</b>	<b>Strategy and legislation to protect against damage of geological sites and features (one answer only)</b>			
2.1	The entire territory has legal protection because of its geological values.	300		
2.2	Part of the area is protected by law for its geological interest. (Please refer to which part and why)	150		
2.3	Prohibition of destroying and removing parts of the geological heritage.	150		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>
<b>3</b>	<b>How are the geosites protected against misuse and damage?</b>			
3.1	General announcement of regulations to prevent misuse and damage in the entire Geopark area	100		
3.2	Announcement of regulations to prevent misuse and damage at individual sites of the Geopark	50		
3.3	Use of observation posts, guarding and patrolling by wardens	60		
3.4	Provision for enforcement of regulations (no digging and collecting) on the website, in flyers, etc.	40		
3.5	Offering collecting of geological specimens under supervision at selected sites (clarification)	40		
	<b>Maximum Total</b>	<b>200</b>	<b>0</b>	<b>0</b>
<b>4</b>	<b>What measures are taken to protect geosites and infrastructure from damage and natural degradation?</b>			
4.1	Regular maintenance and cleaning (Please give details. How often are they checked?)	60		
4.2	Conservation measures (Please give details)	70		
4.3	Protective measures (preparation, sealing to avoid natural degradation) (Please give details)	70		
	<b>Maximum Total</b>	<b>200</b>	<b>0</b>	<b>0</b>
	<b>Geoconservation Subtotal</b>	<b>1000</b>	<b>0</b>	<b>0</b>

## 5. Natural and Cultural Heritage

I. Geology and Landscape 1.3 Natural and Cultural Heritage		Points Available	Self Assessment	Evaluators' Estimate
<b>1</b>	<b>Natural Rank (SELF AWARDED total cannot exceed 300)</b>			
1.1	International designation in part of the Geopark territory (except World Heritage Sites and Biosphere Reserves) (Please give a list and justification)	250		
1.2	National designation in part of the Geopark territory (Please give a list and justification)	150		
1.3	Regional designation in part of the Geopark territory (Please give a list and justification)	75		
1.4	Local designation in part of the Geopark territory (Please give a list and justification)	50		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>
<b>2</b>	<b>Cultural Rank (SELF AWARDED total cannot exceed 300)</b>			
2.1	International designation in part of the Geopark territory (except World Heritage Sites) (Please give a list and justification)	250		
2.2	National designation in part of the Geopark territory (Please give a list and justification)	150		
2.3	Regional designation in part of the Geopark territory (Please give a list and justification)	75		
2.4	Local designation in part of the Geopark territory (Please give a list and justification)	50		
	<b>Maximum Total</b>	<b>300</b>	<b>0</b>	<b>0</b>

<b>3 Promotion and maintenance of Natural and Cultural Heritage</b>				
3.1	Promotion of the links between Geological Heritage sites and the existing Natural and Cultural sites within the Geopark (Prove with examples) (Please give details)	100		
3.2	Interpretation (Please give details)	100		
3.3	Communication (Please give details)	100		
3.4	Education programmes (Please give details)	100		
<b>Maximum Total</b>		<b>400</b>	<b>0</b>	<b>0</b>
<b>4 Overlapping UNESCO designations</b>				
4	Your Geopark overlaps partly or totally with a World Heritage Site and/or Biosphere Reserve (If yes, please provide justification and evidence on how UNESCO Global Geopark status will add value by being both independently branded and in synergy with the other designations)	Yes/No		

Natural and Cultural Heritage Subtotal	Maximum Points	Self Assessment	Evaluators' Estimate
	<b>1000</b>	<b>0</b>	<b>0</b>

Please provide requested lists and details, but do not send entire publications, brochures, etc. (these should be provided only to field evaluators)

Total Points Awarded For Section I: Geology and Landscape	Maximum Points	Self Assessment	Evaluators' Estimate
	<b>3000</b>	<b>0</b>	<b>0</b>

## 6. Management Structure

<b>II. Management Structure</b>		Points Available	Self Assessment	Evaluators' Estimate
<b>1 How is the Geopark's management structure organised?</b>				
1.1	Does the Geopark have a clear and well-defined boundary? (Please give details)	50		
1.2	Does the Geopark have a well-defined and effective management structure able to take and implement decisions to enhance protection of Geological Heritage and promote sustainable regional development for the Geopark area? (Please give details)	50		
1.3	Is the Geopark staff employed directly, or indirectly by Geopark partners? (Please elaborate)	50		
1.4	Does the Geopark have an independently administered budget? (Please give details)	50		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>
<b>2 Does a management or Master Plan exist?</b>				
2.1	Management or Master Plan exists (not older than 10 years) (You should refer to the main components in accompanying documentation)	40		
<b>Maximum Total</b>		<b>40</b>	<b>0</b>	<b>0</b>

<b>3 The Master Plan - What components does it include?</b>				
3.1	Earth Heritage (Geosite and Landscape)	10		
3.2	Other Natural and Cultural Heritage	10		
3.3	Links between Natural and Cultural Heritage	10		
3.4	Tourism development (infrastructure and activities)	10		
3.5	Education activities	10		
3.6	Local development	10		
3.7	Regional products (agrotourism)	10		
3.8	Community links	10		
3.9	Funding	10		
3.10	Marketing strategy	10		
3.11	Strengths and weaknesses analysis of management and administration	20		
3.12	An audit of the geological and other resources	20		
3.13	Do you have specific targets for goals in the following areas? (Identify specific goals)			
	Geology	5		
	Landscape protection	5		
	Tourism "geotourism"	5		
	Agriculture and forestry	5		
3.14	Analysis of opportunities for local and/or regional development	10		
<b>Maximum Total</b>		<b>160</b>	<b>0</b>	<b>0</b>
<b>4 Does your Geopark have a Marketing Strategy?</b>				
4.1	Strategy exists (not older than 10 years) (You should refer to the main components in accompanying documentation)	50		
<b>Maximum Total</b>		<b>50</b>	<b>0</b>	<b>0</b>
<b>5 A Geopark should protect its geological heritage and create sustainable geotourism. What has been done to fulfil this duty?</b>				
5.1	Defined areas which will be the focus of tourism development	25		
5.2	Defined areas where no tourism is allowed (with focus on protection and research)	20		
5.3	Measures taken to regulate and reduce traffic (restricted access, central parking lots, traffic guiding system, signposting etc.)	15		
5.4	Environmental friendly hiking path system	10		
5.5	Clearly defined cycle or other trails such as bridleways or river trails	10		
<b>Maximum Total</b>		<b>80</b>	<b>0</b>	<b>0</b>
<b>6 Are there any initiatives or working groups that discuss promotion of natural and cultural heritage? (SELF AWARDED total cannot exceed 20)</b>				
6.1	Regular "Working Group" meetings on specific topics	20		
6.2	Individual cooperation and contracts between the Geopark, tourism organisations and other interest groups	10		
6.3	Other regular activities, not described by the answers above	10		
<b>Maximum Total</b>		<b>20</b>	<b>0</b>	<b>0</b>
<b>7 Has your Geopark area received any awards or other formal recognition for its activities in the field of geodiversity, conservation or sustainable geo-tourism during the last five years? (SELF AWARDED total cannot exceed 100)</b>				
7.1	International awards (name and date of award)	100		
7.2	National awards (name and date of award)	50		
7.3	Other (e.g. from industry) (name and date of award)	20		
<b>Maximum Total</b>		<b>100</b>	<b>0</b>	<b>0</b>

<b>8</b>	<b>Are competent geological and scientific experts available to promote further scientific research?</b>			
8.1	At least one person with a degree in geosciences or other related discipline in the permanent staff (employed directly) (Add 10 points for each geoscientist)	40		
8.2	At least five people with a degree in geosciences or other related discipline on the staff of the Geopark (employed by partner)	25		
8.3	Additional experts exist in the permanent staff (e.g. biologists)	10		
8.4	Regular and formal joint activity with at least one scientific institution (University, National Geological Survey)	20		
8.5	Regular consulting is maintained by:			
	Persons with a scientific background in geosciences	15		
	Persons with experience in geosciences	10		
	Amateurs available from local community	5		
8.6	How many different scientific disciplines are represented in the expert network?			
	< 5	5		
	> 5	10		
8.7	Does a marketing expert exist? If not, who does the work?	5		
8.8	Does a press office exist? If not, who does the work?	5		
8.9	Are staff members available to run field trips/guided walks?	5		
<b>Maximum Total</b>		<b>150</b>	<b>0</b>	<b>0</b>

<b>9</b>	<b>Does your Geopark area have the following infrastructure?</b>			
9.1	Museum within the area of the Geopark managed by yourself or a partner in your organization	100		
9.2	Information centre within the area of the Geopark	80		
9.3	'Info-kiosks' or other 'local information points' within the area that provide information about the Geopark, its aims and work	40		
9.4	Information panels within the area	40		
9.5	Geological trails within the area of the Geopark (which have been developed by the Geopark, or the Geopark has been involved in developing)	40		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>

Total Points Awarded For Section II: Management Structure	Maximum Points	Self Assessment	Evaluators' Estimate
	<b>1000</b>	<b>0</b>	<b>0</b>

## 7. Information and Environmental Education

<b>III. Information and Environmental Education</b>		Points Available	Self Assessment	Evaluators' Estimate
<b>1</b>	<b>Research, information and education scientific activity in Earth sciences within the territory</b>			
1.1	At least one scientific/academic institution working in the Geopark's area	50		
1.2	At least one student final report (mapping etc.) on the Geopark's area per year	40		
1.3	At least one PhD thesis on the Geopark's area within the past three years	50		
1.4	At least five scientific or tourism focused academic papers from work within the Geopark's area during the last 5 years	40		
<b>Maximum Total</b>		<b>180</b>	<b>0</b>	<b>0</b>

<b>2</b>	<b>Do you operate programmes of environmental education in your Geopark area?</b>			
2.1	Does your permanent staff include specialists in environmental education, who undertake such work as part of their main role within your team?	50		
2.2	Do you operate at least one formal education programme? (Please outline the nature of the programme(s))	30		
2.3	Do you contribute to at least one formal education programme developed by other organisations? (Museums, etc.)	20		
2.4	Do you offer personal and individual programmes for children visiting the Geopark's area?	20		
2.5	Do you operate a special programme for primary/elementary school classes?	20		
2.6	Do you operate a special programme for secondary/high school classes?	20		
2.7	Do you operate a special programme for university students?	20		
2.8	Are there any university camps/education centres in the Geopark's area?	20		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>



<b>3</b>	<b>What kind of educational materials exist? (to be checked by field evaluators on site)</b>			
3.1	Have you developed new educational material for school classes?	20		
3.2	Films, video, slideshow etc.	20		
3.3	Interactive (online) elements	20		
3.4	Different special exhibitions changing on a regular basis	20		
3.5	Special education equipment (puzzles, special constructions, etc)	20		
3.6	Do you produce other material for children below the age of 8?	20		
	<b>Maximum Total</b>	<b>120</b>	<b>0</b>	<b>0</b>

<b>4</b>	<b>What kind of published information is available in your Geopark area? (to be checked by field evaluators on site)</b>			
4.1	Protection of geological heritage	20		
4.2	Geology of the area	15		
4.3	Publication linking geology, nature and culture of the area	20		
4.4	Environmentally friendly behaviour in the area	15		
4.5	Other aspects of natural history which can be found within the area	15		
4.6	Historical elements	15		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>

<b>5</b>	<b>Geology provision for school groups (for example, organized visits, etc.) (The SELF AWARDED total cannot exceed 100)</b>			
5.1	Guided tours by Geopark's staff (explain and justify)	30		
5.2	Guided tours through a member organisation (explain and justify)	15		
5.3	Standard programmes, regularly offered for all park visitors (explain and justify)	10		
5.4	Limited group size (max. 30 persons per guide) (explain and justify)	10		
5.5	Are alternatives available if tours are not possible due to bad weather conditions? (explain and justify)	10		
5.6	Do programmes exist aimed at different age groups? (explain and justify)	20		
5.7	Do special scientific programmes exist? (explain and justify)	20		
5.8	Is teacher training offered in matters relating to the Geopark? (explain and justify)	20		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>

<b>6</b>	<b>Education – Guides (The SELF AWARDED total cannot exceed 100)</b>			
6.1	Do you have at least one qualified expert in the Geopark's permanent staff providing guided visits that your organization has a role in developing? (explain and justify)	20		
6.2	Do you have at least one qualified expert in a partner organization providing guided visits that your organization has a role in developing? (explain and justify)	15		
6.3	Personal guides as part of the Geopark's permanent staff (explain and justify)	20		
6.4	Personal guides by partner organisation (explain and justify)	15		
6.5	Freelance guides whose training and/or programme your organization supports (explain and justify)	20		
6.6	Training courses for guides (explain and justify)	20		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>

<b>7</b>	<b>What kind of information do you provide to educational groups to encourage them to visit your area?</b>			
7.1	Letters to schools and universities	20		
7.2	Brochure	20		
7.3	Press announcements (Newspapers, Radio, TV)	20		
7.4	Newspaper or newsletter	20		
	<b>Maximum Total</b>	<b>80</b>	<b>0</b>	<b>0</b>

<b>8</b>	<b>Do you use the internet for school programmes? What kind of service do you provide?</b>			
8.1	Own website with general information about environmental education within the area	50		
8.2	Those responsible for the education programme may be reached by e-mail	30		
8.3	Regular electronic newsletter	20		
8.4	Up-to-date calendar of activities	20		
	<b>Maximum Total</b>	<b>120</b>	<b>0</b>	<b>0</b>

**Please do not send information material, brochures, etc. (these should be provided only to field evaluators)**

<b>Total Points Awarded For Section III: Education</b>	<b>Maximum Points</b>	<b>Self Assessment</b>	<b>Evaluators' Estimate</b>
	<b>1000</b>	<b>0</b>	<b>0</b>

## 8. Geotourism

IV. Geotourism		Points Available	Self Assessment	Evaluators' Estimate
<b>1</b>	<b>What kind of promotional material of the area is available?</b>			
1.1	Printed material (e.g. leaflets, magazines)	25		
1.2	Popular literature for public (e.g. books, guide books)	15		
1.3	CD or video material	15		
1.4	Other promotional material or merchandise	15		
	<b>Maximum Total</b>	<b>70</b>	<b>0</b>	<b>0</b>
<b>2</b>	<b>In how many languages is the marketing material produced? (The SELF AWARDED total cannot exceed 80)</b>			
2.1	English	10		
2.2	French	10		
2.3	Spanish	10		
2.4	Russian	10		
2.5	Chinese	10		
2.6	Arabic	10		
2.7	Add 10 points for each other language (explain and justify)			
2.8	Multiple languages in one publication	10		
	<b>Maximum Total</b>	<b>80</b>	<b>0</b>	<b>0</b>
<b>3</b>	<b>Are the information centres or exhibitions regarding the area in the Geopark's area?</b>			
3.1	At least one information centre, managed directly by the Geopark or one of the partner organizations	30		
3.2	Info points' or similar facilities throughout the area managed directly by the Geopark or one of the partner organizations	20		
3.3	Information centre "meeting and starting" point for excursions	10		
3.4	Is the Information centre accessible for wheelchair users and does it cater for individuals with other disabilities?	10		
3.5	Personal and individual information offered to visitors about possible activities in the area	10		
3.6	Centre open to the public at least 6 days a week, all year round (if the weather permits it)	20		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>
<b>4</b>	<b>How is information and interpretation about the area presented at info centres, information points, etc.?</b>			
4.1	Static display material	10		
4.2	Films, video, slideshow, etc.	10		
4.3	Interactive displays	10		
4.4	Different special exhibitions changing on a regular basis	40		
	<b>Maximum Total</b>	<b>70</b>	<b>0</b>	<b>0</b>
<b>5</b>	<b>Public access and facilities (SELF AWARDED total cannot exceed 100)</b>			
5.1	Is it possible to reach the Geopark area by public transport?	50		
5.2	Do you provide your own tourist transport?	20		
5.3	Is public transport integrated with walking, cycling trails?	20		
5.4	Do you have car park facilities connected to the trails which your organization has developed?	20		
5.5	Are there toilets available in the parking areas?	20		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>
<b>6</b>	<b>Are visitors informed about public transport in the area and encouraged to use it before their arrival?</b>			
6.1	Promotional material about the area (leaflets, brochures, internet) contains information about public transport	20		
6.2	The website(s) of the Geopark and/or local tourism organizations are linked to web-based timetables and transport information held by others	20		
6.3	Special offers for tourists using public transport, bicycle or other forms of sustainable transport	10		
	<b>Maximum Total</b>	<b>50</b>	<b>0</b>	<b>0</b>

<b>7</b>	<b>What kind of guided tours have been developed by your management body and/or partners?</b>			
7.1	Tours for groups with special a interest in geology and geomorphology	10		
7.2	Tours take place regularly during the season	10		
7.3	Tours for a broad audience	20		
7.4	Tours for disabled visitors	10		
7.5	Available alternatives if tours are not possible due to bad weather conditions	10		
7.6	Flexible registration system (day to day basis) for participants or no registration required	10		
	<b>Maximum Total</b>	<b>70</b>	<b>0</b>	<b>0</b>
<b>8</b>	<b>What else do you use to inform visitors about your area?</b>			
8.1	Easy to read interpretation panels at entrance areas and/or tourist locations	20		
8.2	There is at least one promoted trail dealing with geological subjects, developed by your team, alongside any developed by partners.	20		
	<b>Maximum Total</b>	<b>40</b>	<b>0</b>	<b>0</b>
<b>9</b>	<b>How is the information and are activities of different organisations co-ordinated?</b>			
9.1	Joint information and/or promotional material	20		
	<b>Maximum Total</b>	<b>20</b>	<b>0</b>	<b>0</b>
<b>10</b>	<b>Do you use the internet and what kind of online service do you provide? (SELF AWARDED total cannot exceed 80)</b>			
10.1	Own website with general information about the area	40		
10.2	Links to other websites of tourist board, communities, local government, which provide a broad range of information on the Geopark's area.	10		
10.3	Geopark's management body may be reached by email	5		
10.4	Regular electronic newsletter	10		
10.5	Facility to order publications online	10		
10.6	Up-to-date calendar of activities	15		
10.7	Guidance for visitors on potential excursions	10		
	<b>Maximum Total</b>	<b>80</b>	<b>0</b>	<b>0</b>
<b>11</b>	<b>What kind of infrastructure is available for activities such as horse riding, canoeing and cycling ?</b>			
11.1	Network of footpaths, which include the main touristic and scientific points of interest	10		
11.2	Uniform/standard signposting of paths	10		
11.3	Regular checks of infrastructure and immediate repair guaranteed	10		
11.4	Special maps and information sheets for hikers, cyclists, etc.	10		
11.5	At least one path concerning a special subject (mining, archaeology, architecture - not previously counted in your score under another heading)	10		
11.6	Guided cycling -, walking tours, etc. provided or actively supported by a partner organization	10		
11.7	All inclusive offers (e.g. hotel, half or full board) of several days for tours (for example, hiking - and/or cycling tours) offered or actively supported by a partner organization	10		
11.8	All inclusive tour package with luggage transport of several days provided or actively supported by a partner organization	10		
11.9	There is a network of hiking/biking friendly hotels/pensions, defined by a catalogue of criteria who work in partnership with your organisation.	20		
	<b>Maximum Total</b>	<b>100</b>	<b>0</b>	<b>0</b>
<b>12</b>	<b>How do you communicate the goals of geotourism, especially to those responsible for tourism?</b>			
12.1	Direct personal meetings and/or through their involvement in your organization	10		
12.2	A regular award scheme to promote good practice	20		
12.3	The selection and nomination of official partners/mentors/sponsors	20		
	<b>Maximum Total</b>	<b>50</b>	<b>0</b>	<b>0</b>
<b>13</b>	<b>Do you have the following sustainable (e.g. non car based) trails?</b>			
13.1	Geo-trails	20		
13.2	Cultural trails	10		
13.3	Forest trails	10		
13.4	Other trails	10		
13.5	Other out-door activities not mentioned elsewhere	10		
	<b>Maximum Total</b>	<b>60</b>	<b>0</b>	<b>0</b>

14	Visitor evaluation			
14.1	Do you count visitors?	20		
	By entrance tickets / trail counters			
	By field trip participants			
	By estimation			
	By visitor survey			
14.2	Do you evaluate where your visitors come from?	20		
	By booking addresses			
	By market analysis			
	By university study			
14.3	Do you use visitor evaluation for your forward planning?	20		
14.4	Do you analyse the socio-economic profile of your visitors (families, school classes, pension groups, tourist groups, etc.)?	10		
14.5	Do you use questionnaires to assess visitors' satisfaction levels?	10		
<b>Maximum Total</b>		<b>80</b>	<b>0</b>	<b>0</b>

**Please do not send information material, brochures, etc. (these should be provided only to field evaluators)**

Total Points Awarded For Section IV: Geotourism	Maximum Points	Self Assessment	Evaluators' Estimate
	<b>1000</b>	<b>0</b>	<b>0</b>

## 9. Sustainable Regional Economy



V. Sustainable Regional Economy		Points Available	Self Assessment	Evaluators' Estimate
1	What efforts are undertaken to promote regional food and craft products, and to integrate the catering trade?			
1.1	Initiatives promoting food from regional and/or ecological production, which your organisation develops or actively supports	50		
1.2	Meals from regional and/or ecological production are available in restaurants	30		
1.3	The Geopark organizes markets, where mainly regional agricultural products are sold	50		
1.4	A label for regional food products or local gastronomy exists	30		
1.5	Direct marketing of regional agricultural products	40		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>
2	What efforts are undertaken to create and promote regional geotourism products?			
2.1	Initiatives to promote the production of geological replicas	50		
2.2	Casts and souvenirs from local production are available	100		
2.3	The organization or its active partners has (a) retail outlet(s) where mainly regional products are sold.	50		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>
3	How are regional crafts promoted?			
3.1	The marketing of local craft products is actively supported	50		
3.2	Local craft products are showcased	100		
<b>Maximum Total</b>		<b>150</b>	<b>0</b>	<b>0</b>
4	What efforts are undertaken to promote links between the Geopark and local businesses? (SELF AWARDED total cannot exceed 100)			
4.1	A label for regional services/products has been developed by the Geopark or in partnership with others	50		
4.2	Direct marketing of regional products is undertaken by your organization	50		
4.3	Tourism offers include tours in collaboration with local businesses	20		
<b>Maximum Total</b>		<b>100</b>	<b>0</b>	<b>0</b>
5	What kind of contracts are regularly offered to businesses in your area? (SELF AWARDED total cannot exceed 150)			
5.1	Services (repair, management)	50		
5.2	Design, Print	50		
5.3	Other equipment and/or services to support geotourism and interpretation, e.g. transport, display cabinets etc. (give details)	80		
<b>Maximum Total</b>		<b>150</b>	<b>0</b>	<b>0</b>

<b>6</b>	<b>Networking (SELF AWARDED total cannot exceed 200)</b>			
6.1	A network of co-operating enterprises exists, fostered by the Geopark.	100		
6.2	There is a formal contract between the Geopark and its partners	100		
6.3	There are jointly financed projects between the Geopark, private businesses and local authorities.	50		
<b>Maximum Total</b>		<b>200</b>	<b>0</b>	<b>0</b>

Total Points Awarded For Section V: Sustainable Regional Economy	Maximum Points	Self Assessment	Evaluators' Estimate
	<b>1000</b>	<b>0</b>	<b>0</b>

## Annex 7: Progress Evaluation – Document B

### 1. Geopark identity

 United Nations Educational, Scientific and Cultural Organization	 UNESCO Global Geoparks				
<b>Evaluation Document B</b> <b>Progress Evaluation</b>					
<i>Updated: 9 January 2018</i>					
<b>1. Name of the Geopark</b>					
<b>2. Date of revalidation</b>					
Revalidation period	<table border="1"> <tr> <td>Four year</td> <td style="background-color: #92d050;"> </td> </tr> <tr> <td>Two year</td> <td style="background-color: #92d050;"> </td> </tr> </table>	Four year		Two year	
Four year					
Two year					

### 2. Revalidation Overview

Revalidation Overview				
	Section	Maximum Score	Self-Awarded Score	Evaluators' Estimate
<b>I</b>	Contribution towards the Work of the GGN	320	0	0
<b>II.</b>	Management Structure and Financial Status	160	0	0
<b>III</b>	Conservation and Geoconservation Strategy	100	0	0
<b>IV</b>	Strategic Partnerships	100	0	0
<b>V</b>	Marketing and Promotional Activities after the Official Designation as a UNESCO Global Geopark	200	0	0
<b>VI</b>	Sustainable Economic Development	120	0	0
	<b>Total</b>	<b>1000</b>	0	0

### 3. Contribution towards the work of the GGN

I. Contribution towards the Work of the Global Geoparks Network (GGN)						
1.0	Participation in Geopark conferences and networking events (Award 10 points for each meeting attended)					
	Meetings	Place	Date	Representatives	Self-awarded Score	Evaluators' Estimate
<b>Regional Geopark Conferences</b> (i.e. European Geoparks Conference, Asian Pacific Geoparks Conference; Latin American Conference, etc.)						
			2014			
			2015			
			2016			
			2017			
<b>International Geoparks Conference</b>						
6th International Geoparks Conference 2014	Stonehammer, Canada		September 2014			
7th International Geoparks Conference 2016	English Riviera, UK		September 2016			
<b>International Intensive Course on Geoparks</b>						
<b>International Geoparks Fair</b>						
<b>Network Internal Meetings</b> (i.e. GGN General Assembly, EGN / APGN Coordination Meetings, etc.)						
<b>TOTAL SCORE</b> (Score cannot exceed 100)					0	0
Explanation for any meetings missed.						

1.1 Participation in common projects (Award 30 points for each project)			
Common Project	Position (leader, partner, observer)	Self-awarded Score	Evaluators' Estimate
<b>TOTAL SCORE (Score cannot exceed 60)</b>		<b>0</b>	<b>0</b>
Comments - Details			
1.2 Participation in common activities (Award 15 points for each activity)			
Common Activity	Role	Self-awarded Score	Evaluators' Estimate
EGN Week 2014 (for EGN Members only)			
EGN Week 2015 (for EGN Members only)			
EGN Week 2016 (for EGN Members only)			
EGN Week 2017 (for EGN Members only)			
Common exhibition			
Exchange of exhibition			
Exchange of personnel			
Knowledge transfer			
Other (details)			
<b>TOTAL SCORE (Score cannot exceed 80)</b>		<b>0</b>	<b>0</b>
Comments - Details			
1.3 Participation in common communications (Award 15 points for each activity)			
Common Communication	Role	Self-awarded Score	Evaluators' Estimate
GGN Newsletter			
EGN Magazine No 11 (for EGN Members only)			
EGN Magazine No 12 (for EGN Members only)			
EGN Magazine No 13 (for EGN Members only)			
EGN Magazine No 14 (for EGN Members only)			
Contributed to an article for the GGN website			
Contributed to an article for the EGN website			
Common leaflets			
Common website			
Other			
Other			
<b>TOTAL SCORE (Score cannot exceed 80)</b>		<b>0</b>	<b>0</b>
Comments - Details			
<b>Total Score for Section I: Contribution towards the Work of the GGN (Score cannot exceed 320)</b>		<b>0</b>	<b>0</b>



## 4. Management Structure and Financial Status

II. Management Structure and Financial Status	
<b>2.0</b>	<b>Management structure</b>
This section reviews the management structure and legal status of the Geopark. Please provide a brief summary of how the management structure has changed since designation or after the last revalidation event.	
<b>Description of management structure, organisation and legal status</b>	

2.1 Management structure staff					
	2014	2015	2016	2017	Future prospects
Scientific Staff (permanent)					
" (by contract)					
Technical Staff (permanent)					
" (by contract)					
Administrative Staff (permanent)					
" (by contract)					
Ranger (permanent)					
" (by contract)					
<b>TOTAL</b>	0	0	0	0	0

2.2 Financial stability				
This section reviews the financial situation of the Geopark and its long term financial viability. Please provide a brief summary of how the financial status of the Geopark has changed since designation or after the last revalidation event.				
<b>Description of financial status</b>				
BUDGET	INCOME	EXPENDITURE	BALANCE	COMMENTS
2014				
2015				
2016				
2017				

2.3 Management structure and financial status	Comments	Self-awarded Score	Evaluators' Estimate
Geopark management structure (total score cannot exceed 50)			
Geopark financial status (total score cannot exceed 50)			
Significant policy changes since designation/last revalidation (total score cannot exceed 20)			
Geopark staff – number of new jobs created (total score cannot exceed 20)			
Comments on the improvement of the financial stability of the Geopark since designation/last revalidation (total score cannot exceed 20)			
<b>TOTAL SCORE</b> (Score cannot exceed 160)		<b>0</b>	<b>0</b>
<b>Total Score for Section II: Management Structure and Financial Status</b> (Score cannot exceed 160)		<b>0</b>	<b>0</b>

## 5. Conservation and Geoconservation Strategy

<b>III. Conservation and Geoconservation Strategy</b>				
This section measures the success of conservation and geoconservation initiatives undertaken by the Geopark since designation or after the last revalidation event.				
<b>3.0 Conservation and geoconservation strategy</b>				
<b>Confirmation that geological material is not being sold by the Geopark partners</b>	<b>Yes</b>		<b>No</b>	
	<b>Details</b>			
Has the Geopark experienced any significant successes with regard to conservation issues?				
Has the Geopark experienced any significant problems with regard to conservation issues?				
Number of sites conserved since designation/last revalidation				
<b>3.1 Initiatives taken to improve the links between geodiversity and cultural, biological and other associated heritage</b>				
	<b>Details</b>			
Organization of Geopark events at cultural sites				
Inclusion of cultural sites in geological trails				
Inclusion of sites of ecological interest in geological trails				
Organization of nature observation events at geological sites				

3.2	Summary	Comments	Self-awarded Score	Evaluators' Estimate
	Conservation and geoconservation Strategy (total score cannot exceed 50)			
	Geological and cultural heritage (total score cannot exceed 50)			
		<b>Total Score (Score cannot exceed 100)</b>	<b>0</b>	<b>0</b>
		<b>Total Score for Section III: Conservation and Geoconservation Strategy (Score cannot exceed 100)</b>	<b>0</b>	<b>0</b>

## 6. Strategic Partnerships

<b>IV. Strategic Partnerships</b>				
<b>4.0</b>	<b>National partnerships (Award 10 points for each partnership)</b>			
	<b>Organisation</b>	<b>Details</b>	<b>Self-awarded Score</b>	<b>Evaluators' Estimate</b>
	Museums			
	Geological survey			
	Universities			
	Tourism agencies			
	Co-operative ventures			
	Institutions			
	Conservation organisations			
	<b>TOTAL SCORE (Score cannot exceed 60)</b>		<b>0</b>	<b>0</b>
<b>4.1</b>	<b>International partnerships (Award 20 points for each partnership (official partnership agreement required))</b>			
	<b>Organisation</b>	<b>Details</b>	<b>Self-awarded Score</b>	<b>Evaluators' Estimate</b>
	With other UNESCO Global Geoparks			
	With international organisations (UNESCO, IUGS, Europarks, Eurosites etc...)			
	<b>TOTAL SCORE (Score cannot exceed 40)</b>		<b>0</b>	<b>0</b>
	<b>Total Score for Section VI: Strategic Partnerships (Score cannot exceed 100)</b>		<b>0</b>	<b>0</b>

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