

4GEON: Four Continents Connected through Playful Geoeducation

IGCP Theme: “Enhancing Societal Acceptance of the Sustainable Development of Earth’s Geological Resources”.

Project title: 4GEON: Four Continents Connected through Playful Geoeducation

(4GEON: Geoparks’ People of Four Continents Connected through Playful Earth Heritage Education)

Vision – target state

The local and indigenous communities of involved geoparks, which are facing growing pressure on the exploitation of their land including local geoheritage, are gradually implementing and evaluating novel concepts of playful geoeducation. The general public is being involved through a user-friendly geoportal which explains, how geology relates to the life of local people – accurately, enjoyably and in their own tongues. Special care is given to youths, the future of the society, especially in the fragile indigenous communities. Playful courses combining digital and outdoor activities (geobus excursions, trails augmented with QR codes, etc.) let youths understand and cherish stones, rocks and wildlife around them, connect with their traditions and heritage, creatively and accurately identify risks and challenges their environment is facing and propose meaningful solutions. From the midst of the course participants, geoambassadors are to be selected each year who will, together with geopark experts and representatives, convene at a global geo-get-together. There they will discuss their findings, views, and plans with fellows from around the world. Scientific evaluation and case studies published in scientific journals will raise awareness of the proposed concepts also within the professional community.

Long-term Vision

Our vision is that the proposed concept of immersive and playful geocourse will gradually be adopted by a growing body of both national and global geoparks to the benefit of their communities and nature. The proposed friendly competition will become „The World GeoContest“, carrying the values of geoheritage and promoting principles of humanity, sustainable development and civic participation among youths and beyond.

Aims and Rationale

Since the younger generation is the future of society, we believe in the importance and potential of changing attitudes in the whole society by educating and activating youths. The general objective of the project is to enhance societal acceptance of the sustainable development of Earth’s geological resources via involvement and activation of youths through novel, immersive and playful geoeducation.

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Applied Deliverables: „Geo is fun!“

Being aware that contemporary youths are digital natives, the following products incorporating modern digital technology will be created, evaluated and implemented:

- **Geoportal** – Interactive interpretative web, e-learning platform and information system supporting other project activities, with emphasis on accuracy, usability, user experience. Attention will be given to usability, responsivity and accessibility. For best user experience including at least partial offline support, the front-end side may be implemented as a progressive web app (PWA). As a part of the geoportal, a content management system (CMS) will be implemented. Relevant processes and responsibilities will be defined for keeping the contents updated and relevant in the long run. The content on the geoportal will be building each geopark's unique identity and value within the context of the global geopark network, through cooperation within UNESCO. A board of experts will be responsible for clarity and accuracy. The portal will serve also as an e-learning platform for geocourses created within the project and as an information system for the proposed geocontest, thus serving as a backbone of the whole project.
- **Geocourse** – Informal, interactive and playful two-semester study program, tailored to each involved geopark, combining both digital, at-home, and in-situ components, discussion and reflection of local problems and creative work. The bottom-up approach will be used extensively to create each local variation of the course, fully involving local experts, stakeholders as well as knowledgeable members of indigenous communities. Central coordination, methodical documentation, custom information system (within the geoportal) and other organizational support will be provided to achieve the necessary level of consistency among involved geoparks. Participants will be involved in teamwork such as discussion and reflection of local problems, risks, possible solutions, improvements or mitigation approaches. Besides learning about the geopark vision, they will be able to contribute with their own opinions or results of creative work.
- **Geocontest** – Gamification principles will be implemented in the geocourse, starting with collecting points, reaching levels, ultimately graduating in an annual contest, where geoambassadors will be invited to represent local youths on a geo-get-together organized in a hosting geopark.
- **Geobus** – As a recruitment, onboarding, teambuilding or experience education vehicle, trips and stays will be organized in connection with geocourse curricula and in harmony with the local situation. The visual style will be developed for geobus to highlight the purpose of the project, relevant UN goals and principles, geophenomena and the geoheritage. A comprehensive geobus guidebook will be created to provide methodical guidance for local organizers of the activity.

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Target areas

The **Barrandian National Geopark** (Czechia, Central Europe) is one of the first territories in the world where geology was passed on in a popular form to broad society; it has been operating continuously since the 1850s. The local geo-community is aware of the results of former social/political decisions forming, with a wide array of both examples of good practice and painful mistakes in the use of natural resources.



Rio Coco UGGp (Nicaragua, Central America) and **Colca y Volcanes de Andagua UGGp** (Peru, South America) are in a position of an expected onslaught of non-conservation interests; their local communities are, through participation in the UNESCO Geoparks networking, in live contact with worldwide professional institutions and individuals involved in geoheritage. The relation of these communities to Mother Earth, *Pachamama*, is for Earth heritage interpretation instrumental.



Ngorongoro Lengai UGGp (Tanzania, East Africa) is a territory whereby local and regional partnerships have been formed to promote and conserve not only the geological wonders of the geopark but also the rich cultural, biological and historical identities of the area. It is popular for its wildlife values, and it is even more necessary to involve the local community in understanding the geology that underlies all natural resources.



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Bohol Island Geopark (Philippines, Southeast Asia) proudly built upon the local rich natural and cultural heritage, from picturesque chocolate hills, through deep cave systems, to traditional rice terraces and unique culture of the Eskaya tribe. As the first aspiring UGGp in the country it is in a unique position to promote the principles of sustainability not just locally, but with an audience of more than 100 million Filipinos.



Target group: Youths and beyond

- The main target group of project activities are teens and young people in their early 20-ties, living in involved geoparks and in the surrounding areas.
- Secondly, the project will focus on the geopark team and its strategic partners, students and teachers in general.

Scientific advancement

Combining knowledge and professional networks of scientists and experts from five different geoparks, scientific understanding of geological, biological, social and cultural phenomena will be extended, leading to scientific studies published in fully peer-reviewed scientific journals, besides else. The local and indigenous knowledge will be also regarded and its conservation and transmission supported. Topics and areas of research will include:

- Comparative **case studies** in connection with the implementation of concepts and activities proposed in the project in diverse geoparks.
- The proposed innovative concept of education with blended learning characteristics, highly gamified, focusing on forming opinions and acquisition of competencies instead of pure knowledge will lead to advancements in **pedagogy**.
- Meaningfulness, usability, the effectiveness of the proposed informative, educational, activation, competitive **activities** and their combinations (in the form of a short, but comprehensive study program) will be analyzed, considering various objectives and conditions.
- **Knowledge sharing** across diverse regions facilitated within the project itself is a topic worthy of scientific attention and will be described and evaluated to externalize and communicate the lessons learned with the professional community.
- **Practical aspects** of project implementation regarding organizational, legislative, economic dimensions including different ways of local actors' involvement, multi-source funding models, etc. will be assessed, results published.

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- The proposed geoportal developed to support educational and informative activities itself will become a source of ethically acceptable and at the same time **rich data**. It opens several opportunities for scientific contributions and advancements:
 - The concept of a data-collecting interpretative & educational system may be described and serve as an inspiration.
 - The data collected will be published in the form of open data sets to the benefit of other researchers.
 - The project team will use the data to further analyze differences between involved geoparks, trends and shifts over the course of the data collection period and attempt to provide reasons for the differences and changes. It may involve e.g. patterns in behaviors of geoportal visitors, attitudes of geocourse participants.
- The project will provide a foundation for **further cooperation** on subsequent joint research, such as Horizon Europe or another scientific project application.

International cooperation & knowledge transfer

- The project connects **five diverse geoparks**, each from a different continent, defined by its own (hi)story, geophenomena, culture and local community, each operating in a different legislative and regulatory environment and facing different challenges. We believe, the partnership won't lead to mere **horizontal knowledge-sharing** in areas of responsibility (research, management, protection, education, etc.), but the resulting perceived connectedness will **motivate, inspire, or even enlighten** (emotions involved).
- Via educating and activating youths, public sections of geoportal, interpretative and educative events and media coverage, vertical knowledge transfer and knowledge diffusion will embrace each **geopark's community** and even wider society. Special attention will be paid to the environmental, economic, and cultural importance of the local and indigenous knowledge and its potential for sustainable use of geoheritage.
- Besides intense digital connection and cooperation between actors from involved geoparks over the course of the project, annual thematical face-to-face and hands-on **get-togethers** are on the schedule. In the second half of the project implementation, youth representatives ("geoambassadors") alongside local experts and geopark representatives will convene and discuss relevant issues as part of the proposed geocontest.
- **Stakeholders** (local governments, NGOs, research institutions, schools, informal groups, tourism actors, etc.) will be involved from the very beginning. The role of key stakeholders will even increase in the last two years, during the gradual transition from project management (and funding) to the management model sustainable in the long run.

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Technological advancement

- The proposed geoportal will become a comprehensive **information system** built on a modern technology stack – manageable, scalable and replicable (vision to gradually involve other geoparks), modular, safe and reliable, with easy-to-use (and fun-to-use), accessible and responsive front end. Its functionalities will involve geoheritage interpretation, CMS, e-learning, data-collection and APIs for bi-directional integrations.
- With rich multimedia **content** (text, pictures, audio, video), **gamified** to make it even more fun (games, quizzes, simple simulations, etc.), the interpretative potential of the geoportal will greatly exceed the present state of geoparks' presentation.
- The interpretative and educational modules of geoportal will **connect the digital and physical** and embrace innovative forms of blended learning (e.g. via non-intrusive interpretative QR links from the land, augmented reality installations, virtual reality reflections, activities combining digital preparation with hands-on experience).
- Systematic and at the same time fully legal and ethical **data-collection capabilities** of the geoportal underline its technical novelty and technological relevance.
- Implementation of the **geocontest** concept will require specific informational support in the geoportal, deeper gamification functionalities including competitive activities and relevant digital content, increasing the complexity of the system and its novelty.
- Implementation of the interpretative **geobus** concept will likely require overcoming specific local challenges such as regarding parameters of available and affordable vehicles, Internet connectivity coverage, in-vehicle presentations or installations, information support for the activity etc.

Societal benefits

- Since connectedness is a central principle of the project, a **closer and more cohesive community** in each of the involved geoparks is an expected result of the project implementation. The goal is to help locals to cherish their cultural identity but at the same time feel the global responsibility for their actions. In the social dimension, project-facilitated connecting involves the following facets:
 - respect and understanding between **diverse local cultural groups** including indigenous minorities (through learning about their legacy, appreciation for their heritage, knowledge and contribution, possibly leading even to re-activating of their indigenous identity),

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- closing the **generational gap** (building understanding between youths and the elderly),
- building mutual respect between **locals and “aliens”**, including visitors.
- Principles of **inclusion, diversity and equality** are implemented within and promoted by the project (participation of girls encouraged and supported, indigenous knowledge involved in the interpretation; local indigenous communities involved in decision making and invited to participate in educative activities; social scholarships to overcome potential financial barriers, etc.).
- Through educating and activating youths within the area we are contributing to efficient, safe, **sustainable utilization** of valuable natural resources in the involved geoparks and beyond, especially in the long run. A better understanding of the issues related to climate change and geohazards by locals will allow them to make wise choices regarding the future development of the area. Not just utilization by the local community, but through locally made formative decisions (such as regulations and land sales in connection with foreign developments and investments) even damaging utilization by external actors might be prevented as an indirect result of the provided education.
- Via their participation in geocourses, **youths** will not just gain knowledge but develop **key competencies** such as critical thinking, creativity and innovation, presentation skills, teamwork, multidisciplinary or digital literacy.
- Each geopark management and relevant local stakeholders including indigenous communities will be encouraged to come up with their own ideas regarding project activities, improving the quality of local **participative management**.
- **New jobs** with high added value (mainly via follow-up and parallel projects) will support a sustainable path for the economic development of poor areas involved in the project (other geoparks will follow later, in fulfilment of the proposed vision).

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