Attachment - Minutes of the Third In-Person Meeting of the 4GEON

2024 – Report on the Third 4GEON Annual In-Person Meeting 20th – 30th September 2024, Tanzania

IGCP Project number 751: 4GEON: Four Continents Connected through Playful Geoeducation

Content

Report on the Third 4GEON Annual In-Person Meeting

The Introduction

The third annual meeting of the project team was held **in Tanzania**, at the **Ngorongoro Lengai UNESCO Global Geopark** headquarters with an opening session of presentations and discussion. Participants were welcomed with a welcome address by Agnes Gidna, Geopark Director. The main topics were the progress of the project work, presentation of the major activities for the geoparks Bohol Island (Philippines), Barrandien (Czech Republic), Colca and Andagua Volcano Valley (Peru), Ngorongoro Lengai (Tanzania) and presentation of the plan for future activities. Unfortunately, the representative of Rio Coco UNESCO Global Geopark (Nicaragua) was unable to attend the annual meeting of the 4GEON team.

The Ngorongoro Caldera Geointerperpretation Assessment

Meeting participants visited a key site of the host geopark, located in a range of the Great Rift Valley of Northern Tanzania. This is the Ngorongoro caldera, one of the largest volcanic calderas in the world, which has given rise to a unique savanna ecosystem of lakes, swamps and streams, and which provides habitat for many of Africa's iconic animals. In addition to the visit of the Centre of the Ngorongoro Conservation Area Authority, the 4GEON team visited the caldera area to focus on the interpretation of the natural and cultural values provided by the Ngorongoro Lengai Geopark, the potential of the area in terms of its further sustainable development of geotourism, as well as the possibilities of using information technology in the management of the area. The plans for the construction of a new interpretation center of Ngorongoro Lengai UNESCO Global Geopark were introduced to the 4GEON team. Geopark sites in the Ngorongoro Caldera are well equipped by interpretive panels.

Geosites within the Karatu District - Geointerperpretation Assessment

The next sites visited were **Endoro Falls** and the **Elephant Caves**. Elephant Caves are excavated by animals to extract minerals and trace elements needed for the good functioning of their bodily processes. Right in the field, the 4GEON team learned about the work of the rangers who maintain the tourist infrastructure, guide visitors through the paths across the bush, fight invasive plant species (such as thornapple) and the illegal activities of poachers.

Involvement of Indigenous Communities

Very important were meetings with representatives of indigenous tribes: the **Maasai** (pastoralism), **Datoga** (pastoralism and blacksmithing) **Iraqw** (agriculture), and **Hadzabe** (the only hunters and gatherers in Tanzania). These indigenous peoples try to maintain and promote their customs and values in their traditional villages open to visitors ('boma') and to present their way of life to visitors. Here it is important to avoid massive and disrespectful tourism, which could lead to an undesirable phenomenon known as staging.

Interpretation Centres and Olduvai Gorge Geosite Assessment

Another site visited was the recently established mini-museum of the geopark, which also serves as the Ngorongoro Lengai UNESCO Global **Geopark Information Centre** and therefore as a signpost to important surrounding geopark sites. One of these is the shifting sands, which are moved by the wind through the adjacent savannah at a rate of several tens of meters per year. Another is the **Olduvai Gorge**, a world-renowned paleoanthropological site famous for the discovery of the remains of the earliest hominids. Here, the 4GEON team had the opportunity to not only see the actual site, where the skull of Paranthropus boisei was found, but also subsequently visit the museum and the community center for local tribes with a gift shop.

Supporting Geo Education at Schools in Karatu

Visits were made to three selected schools in Karatu town, which together provide education to more than 2,000 pupils and students aged 6 to 18. The first was **WelWel Secondary School**, followed by **Tumaini Junior Primary School** and **Ganako Secondary School**.

At each school, there was a meeting with the students involved in the geopark club. The initial formal atmosphere was dispelled and our meeting participants managed to engage the children in an open discussion which ended with a group dance. The visits included discussions with the school management and selected teachers about the education system in Tanzania, the uses and possible ways of integrating geoscience education into the curriculum, presentations of the activities and outputs of the school 4GEON club members, Brief introduction of Bohol, Colca and Barrandien geoparks to students including video demonstrations, discussion with teachers and students about the project, its benefits so far and concrete ways to further enhance learning with the help of 4GEON in the spirit of its motto "Geo Is Fun!".

As benefits of the geopark clubs, they identified: learning new things in their studies, sharing of ideas through online meetings form different countries and help to interact with people in Tanzania and different nations. And among challenges they stressed inadequate learning resources such as cameras, projector, laptops, lack of exposure to Ngorongoro Lengai geopark sites and lack of financial support to run geopark clubs.

Supporting Geo Education at Schools in the Mang’ola / Lake Eyasi Area

There were also visits to two schools in a remote part of Arusha district, near Lake Eyasi in the central Rift Valley. In these schools, teaching in Swahili takes place. At the **Francis Lieberman Church Primary School**, they attended a meeting for parents and friends of the school, which was combined with a presentation on the activities of the Geoscience Club. This was followed by a meeting with the management and teachers of the school regarding the 4GEON activities carried out and a discussion regarding their possible further enrichment.

Similarly, at the nearby **Mang'ola Government Primary School**, Geoclub students presented the club's activities, outputs, benefits from visits to geo-sites and knowledge gained. In the ensuing discussion, the value of not only geological and other natural but also cultural assets - customs, language, traditional knowledge - was emphasized. Through the chairman and spokesperson of the club, the pupils made a request to the 4GEON team for help in securing Internet access and technical resources that the school does not yet have and that would add an important new dimension to the teaching, including, for example, the possibility of connecting with

pupils from other geoparks. Specific possibilities for assistance were then discussed with the school management.

Supporting Geo Education at Schools in the Engaruka Area

Two other schools were visited in the Engaruka area. These are schools that provide education mainly for Maasai children. The first school was a public boarding primary school called **Engaruka Juu Primary School**, in the immediate vicinity of the Engaruka site. These remnants of the original settlement, including the sophisticated irrigation system, are considered one of Tanzania's most important Iron Age archaeological sites. Juu School was very poor, it was obvious that teaching at this school required an extraordinary commitment from teachers and children. Indeed, the school management has very limited resources and some classes have as many as 160 children at a time. Discussions were also held here about how geoscience education is run and how the school could be supported.

In the second case, it was the newly established and built **Engaruka English Medium Primary School** (EEMPS) funded primarily by the non-profit organisation Maasai Education Foundation. The school aims to provide quality and motivating education to the Maasai child population in the wider area in particular. Teaching takes place in solidly equipped classrooms of adequate size (approximately 40 pupils). At the same time, there is an emphasis on capacity for individual counselling and help with life situations that pupils are going through - loss of support and motivation to learn, cases of domestic violence, forced marriage, Female Genital Mutilation (FGM), health, future career etc. In contrast to the high rate of academic failure in many schools, especially those targeting members of tribal communities, EEMPS is proud that in the few years it has been operating, not a single student has dropped out due to failure. Members of the school's 4GEON club participated in a lively debate with the visitors, demonstrated the benefits of geoscience education, and performed a staged story about the importance and impacts of natural and cultural heritage conservation for local residents. They also suggested how 4GEON could help them further, e.g., by organising and co-financing an educational trip, providing educational materials, video-conferencing discussions with pupils from other schools or organising a competition.

Manyara National Park - Geointerperpretation and Infrastructure Assessment

A visit to **Manyara National Park**, which provides protection for the diverse community of species around the lake of the same name, was also beneficial. The park area is inhabited by the Iraqw tribe. Although the national park lies in close proximity to the Ngorongoro caldera, it is dominated by other habitats - the lake itself, which is a haven for numerous bird species, and the adjacent swamps and tropical forest. Especially unique is the occurrence of the so-called tree lions. Through the visit to the park, the 4GEON team learned, among other things, about the way tourism is organised in national parks and the differences in the concept and intensity of protection in national parks compared to Ngorongoro, which is a protected area.

Workshops and Interim 4GEON Team Meetings

The annual in-person meeting included a technical workshop during which progress in the development, testing and deployment of the key 4GEON **information systems and software tools** was presented including the project website and the GeoEduGame media portal. The

Destination Management Support System and the Mobile Tourist Guide were presented to IT staff from involved geoparks. This system will be piloted in Barrandien National Geopark and subsequently in Colca and Andagua Volcano Valley Geopark. The role of **social media** platforms in the project awareness, as well as IT tools used for project **data management** were discussed. The workshop also included a presentation on the potential use of current **generative artificial intelligence** tools in promoting the activities of geoparks and enriching school education. In addition to those physically present, about 10 other participants from the Czech Republic and other geoparks.

During the meetings, M. Pásková also presented activities related to **international mobility** at the University of Hradec Králové. Subsequently, contacts were established with Dr. Elisante Mshiu, Dean of the School of Mines and Geosciences (SoMG), University of Dar es Salaam, who is the founder of the Geoheritage and Geopark Club at the University of Dar es Salaam.

Annex 7.1 provides more details about the workshops' agenda.

Wrap-up Meeting and the Action Plan

The annual meeting of the 4GEON project team in Tanzania was officially closed at the headquarters of the Ngorongoro Conservation Area Authority. The participants reviewed the proceedings, summarized the main findings and recommendations and concluded by expressing their gratitude to all those who had contributed to the organization. It was agreed that the next annual meeting of the 4GEON team will be held in Peru, at the Colca and Andagua Volcano Valley UNESCO Global Geopark.

The results of this meeting will be followed up with research on geoscience education in local schools (probably using mind maps), and the topics of sustainability of geotourism or a comparative study of indigenous knowledge (four different tribes in the Ngorongoro Lengai Geopark). The results will subsequently be published in an impacted journal.

See ***Annex 7.2*** for more details on the action plan.

Itineraries of Field Visits with Photo Documentation

Day 1: September 21st 2024 - Kick-off meeting

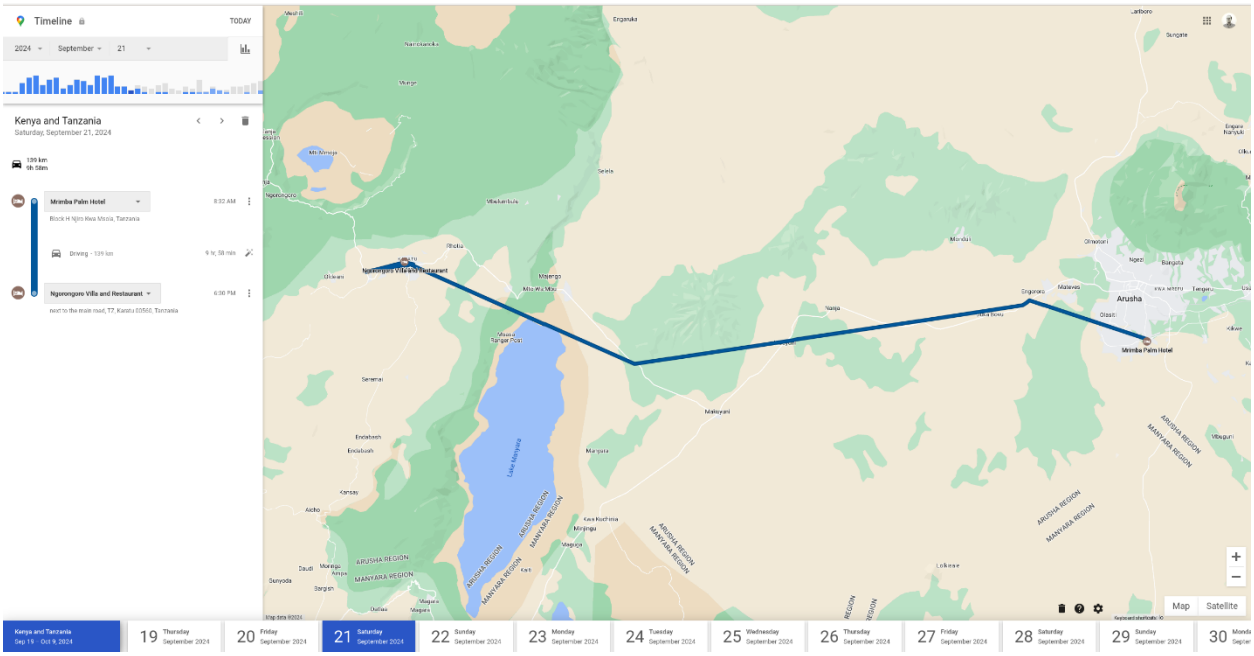

Figure 1 Arusha-Karatu transportation

Figure 2 Kick-off meeting

Day 2: September 22nd 2024 - Field trip to Ngorongoro crater, interpretation assessment

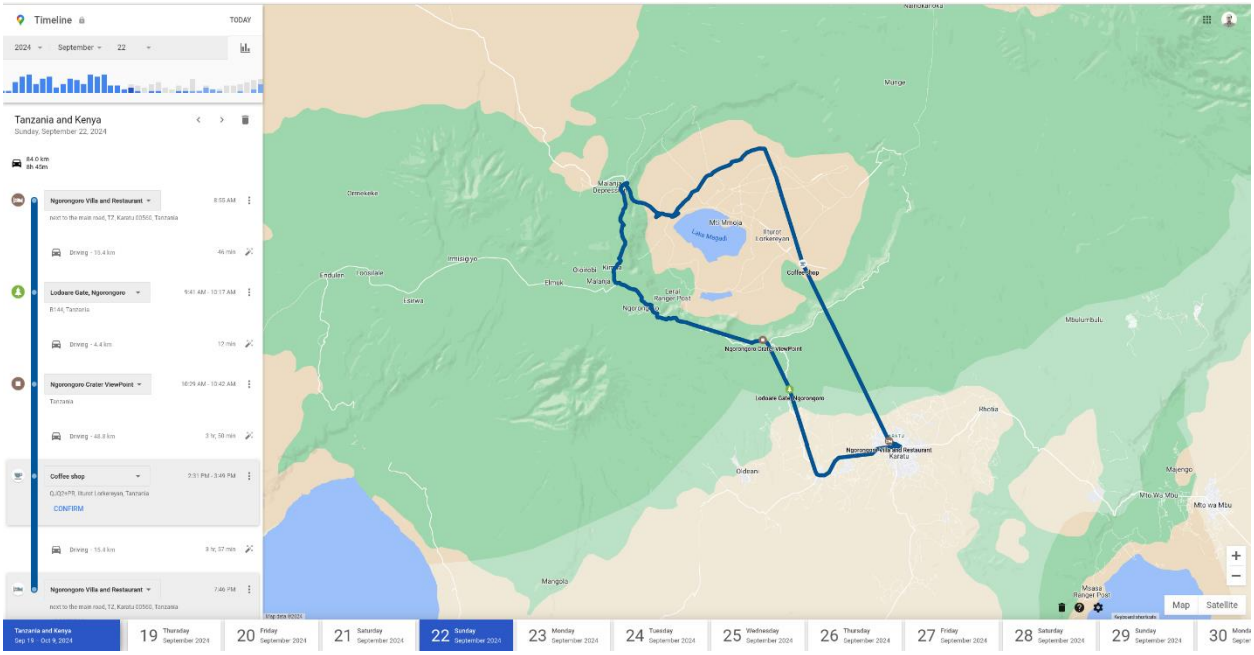

Figure 3 Field trip to Ngorongoro crater (caldera)

Figure 4 A geosite within the Ngorongoro crater

Day 3: September 23rd 2024 - Endoro Falls, Elephant Cave, Iraqw tribe

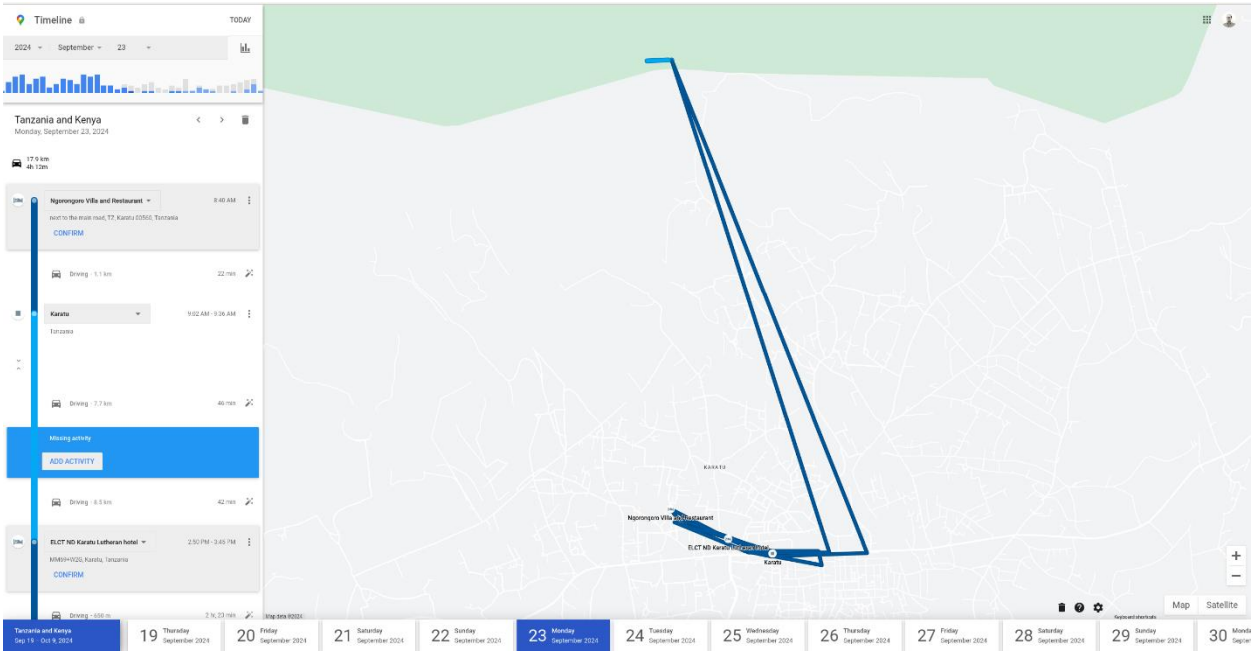

Figure 5 Field trip to geosites within the Karatu district

Figure 6 Elephant Caves

Day 4: September 24th 2024 - Olduvai Gorge interpretation assessment, Maasai tribe

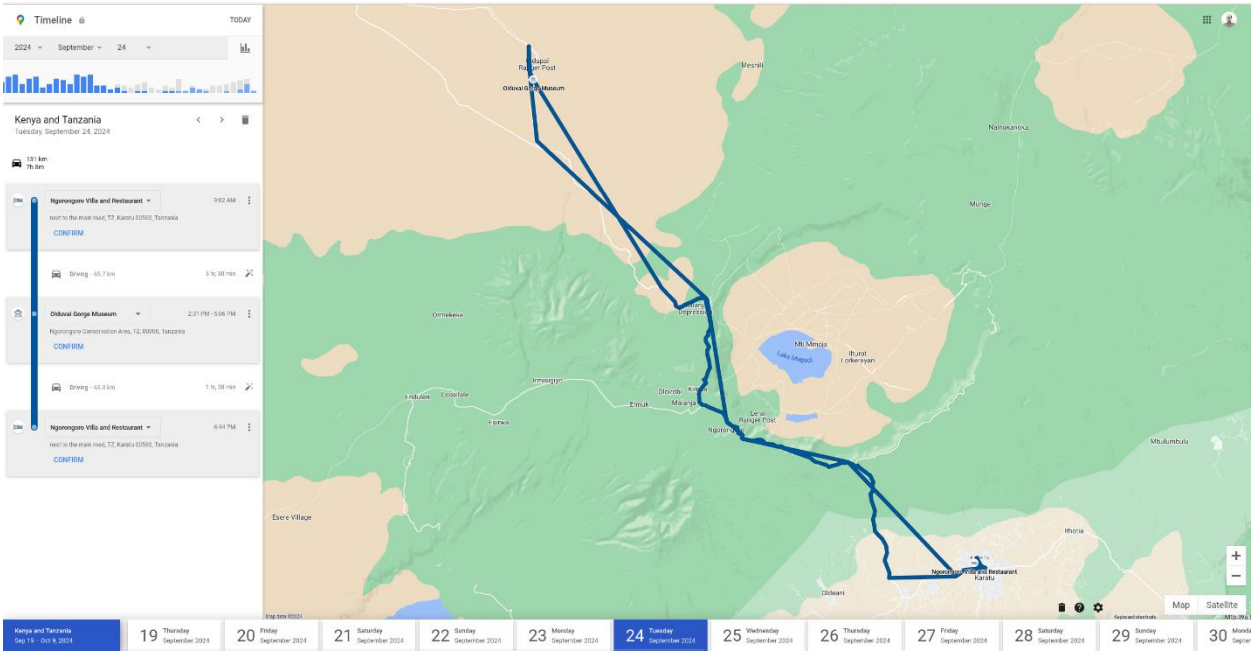

Figure 7 Field trip to Olduvai Gorge

Figure 8 Maasai tribe

Day 5: September 25th 2024 - Karatu geoschools visits and collaboration planning

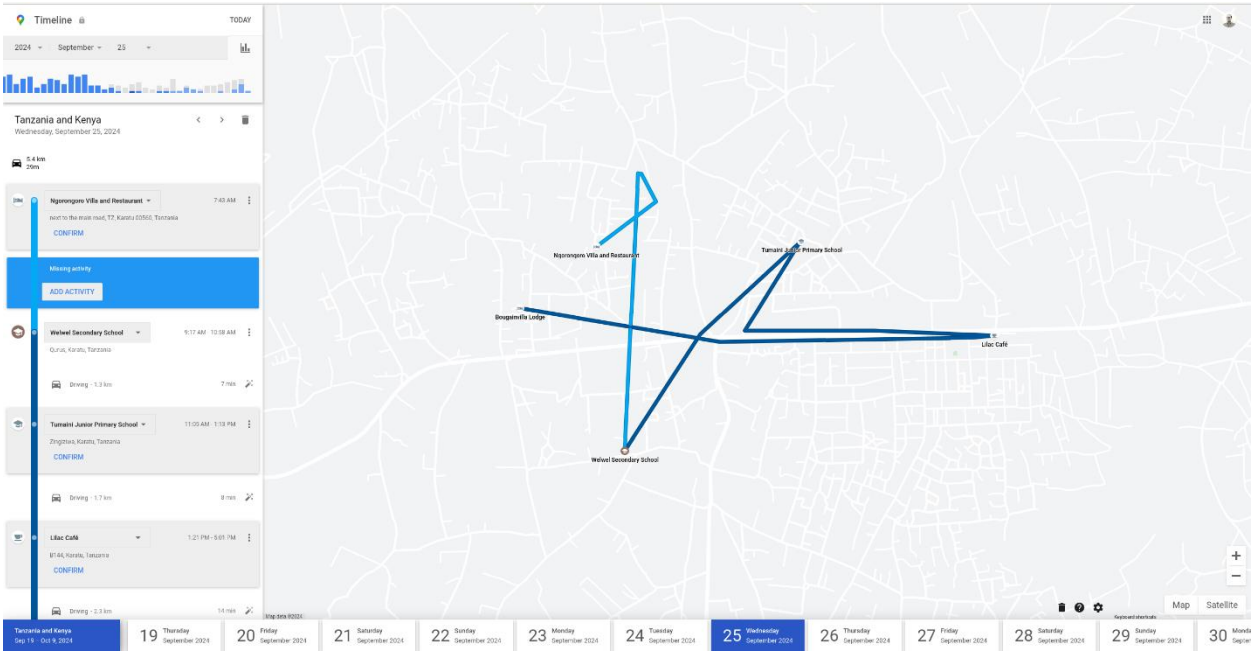

Figure 9 Visiting geoschools within the Karatu city

Figure 10 Visit to WelWel Secondary School in Karatu

Figure 11 Visit to Tumaini Junior Primary School, Karatu

Figure 12 Meeting geoclub in Tumaini Junior Primary School, Karatu

Figure 13 Activities involving Tumaini Junior Primary School geoclub members

Figure 14 Ganako Secondary School

Day 6: September 26th 2024 - IT-related workshop in Karatu, Museum of Tanzanite

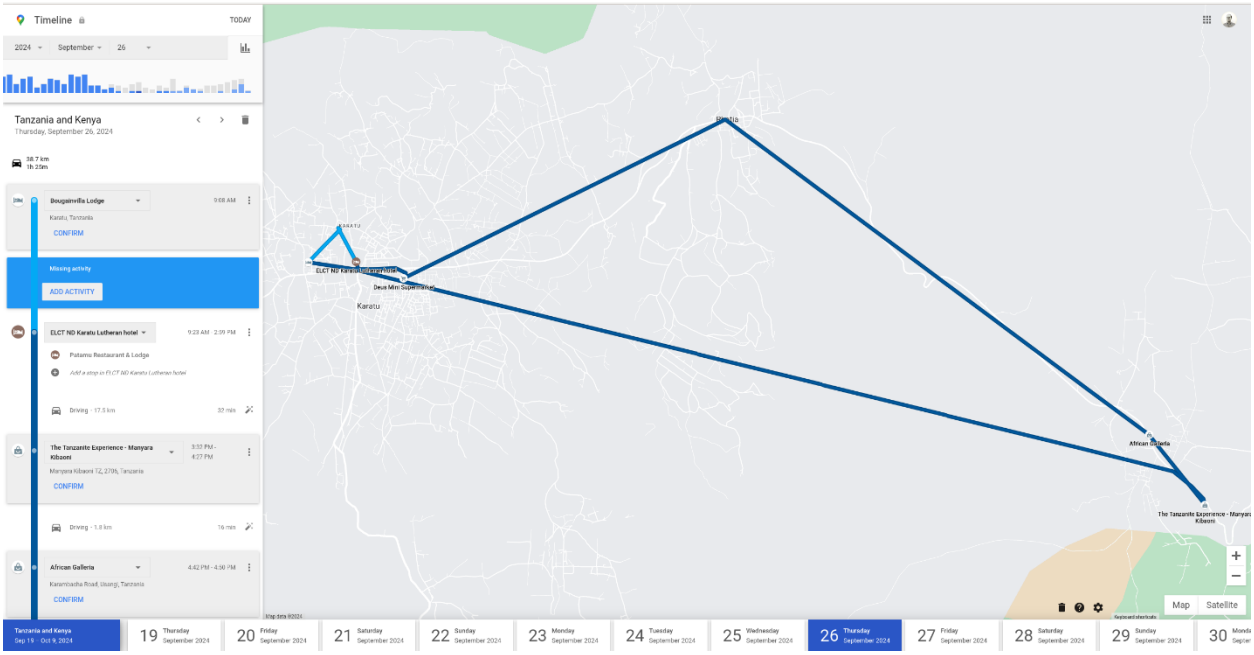

Figure 15 Field trip to geosites in the Karatu district

Figure 16 IT-themed workshop, Karatu

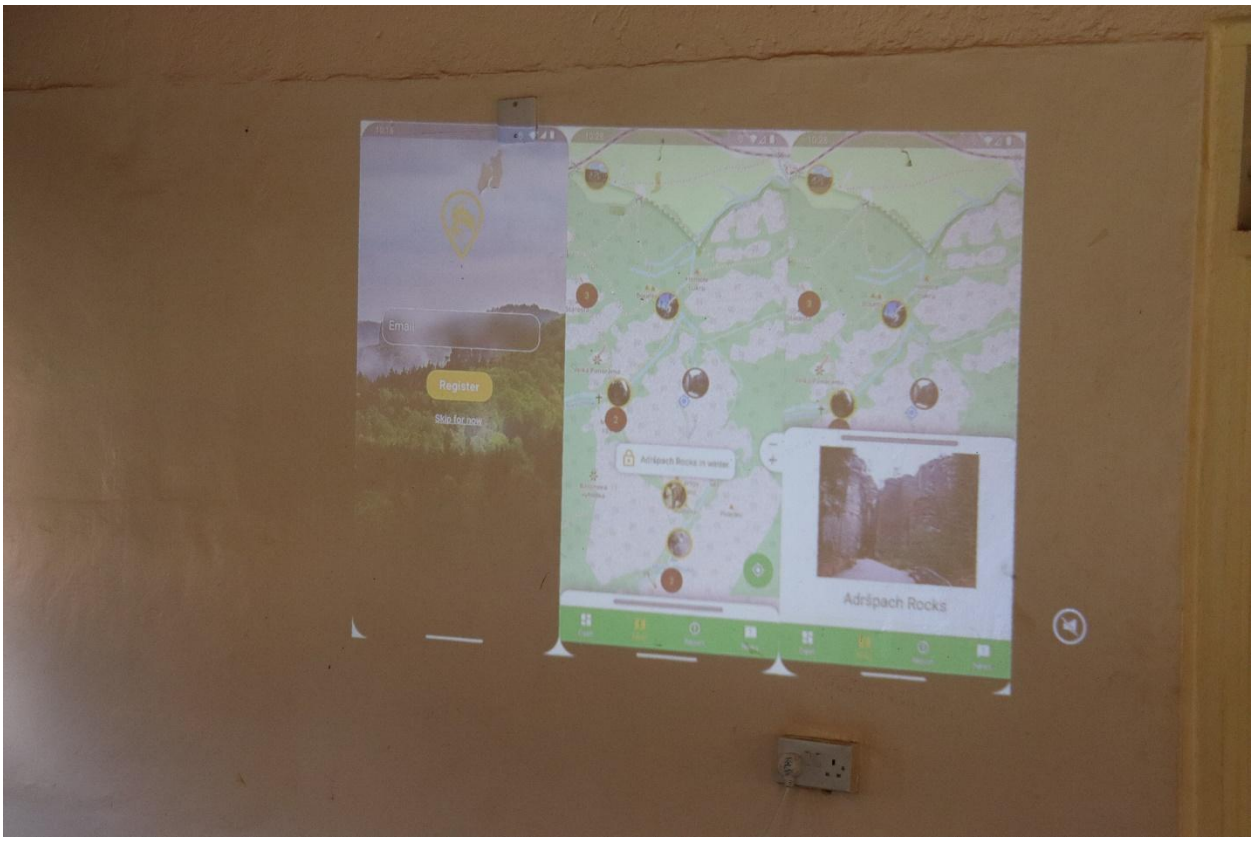

Figure 17 IT-themed workshop - presenting the Mobile Tourist Guide app and its Tanzania field tests

Figure 18 - From the meetup with Datoga tribe members

Day 7: September 27th 2024 - Lake Eyasi geoschools visits, Hadzabe and Datoga tribes

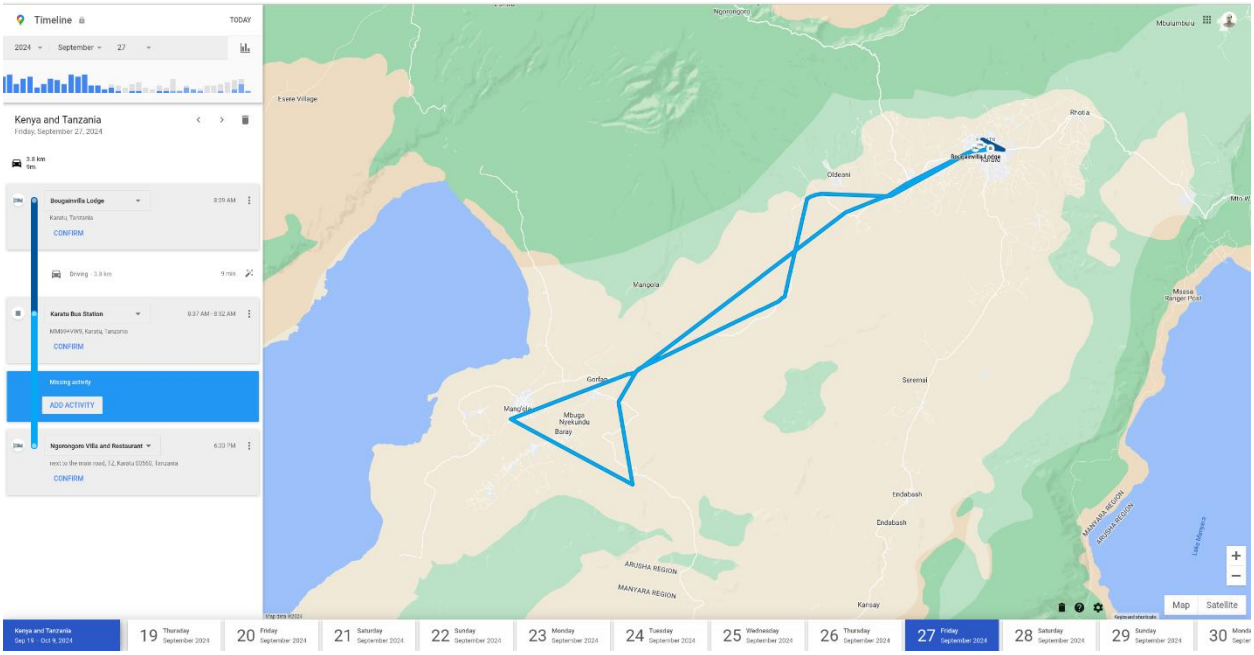

Figure 19 Field trip to Mangola / Lake Eyasi area widely populated by Maasai, Datoga, Hadzabe

Figure 20 Francis Lieberman Church Primary School visit, geoclub activity presentation

Figure 21 Mang'ola Government Primary School geoclub meeting, presentation, activity planning

Figure 22 Mang'ola Government Primary School geoclub farewell

Figure 23 Hadzabe tribe involvement - the lifestyle and traditions presentation

Figure 24 Hadzabe tribe meets 4GEON

Day 8: September 28th 2024 - Engaruka ruins geosite, Engaruka geoschools visits

Figure 25 Engaruka field trip

Figure 26 Engaruka Juu Primary School meetup, geoclub activity presentation and planning

Figure 27 Engaruka Juu Primary School geoclub activity presentation

Figure 28 Engaruka Juu Primary School geoclub activity presentation

Figure 29 Engaruka Ruins geosite visit, interpretation assessment, discussion

Figure 30 Engaruka English Medium Primary School geoclub visit, activity presentation and planning

Figure 30 Engaruka English Medium Primary School - enactment of geo-topics

Figure 31 EEMPS enactment on the roles of the geopark, the government and the society

Figure 32 Engaruka English Medium Primary School farewell

Day 9: September 29th 2024 - Manyara Lake National Park visit and assessment

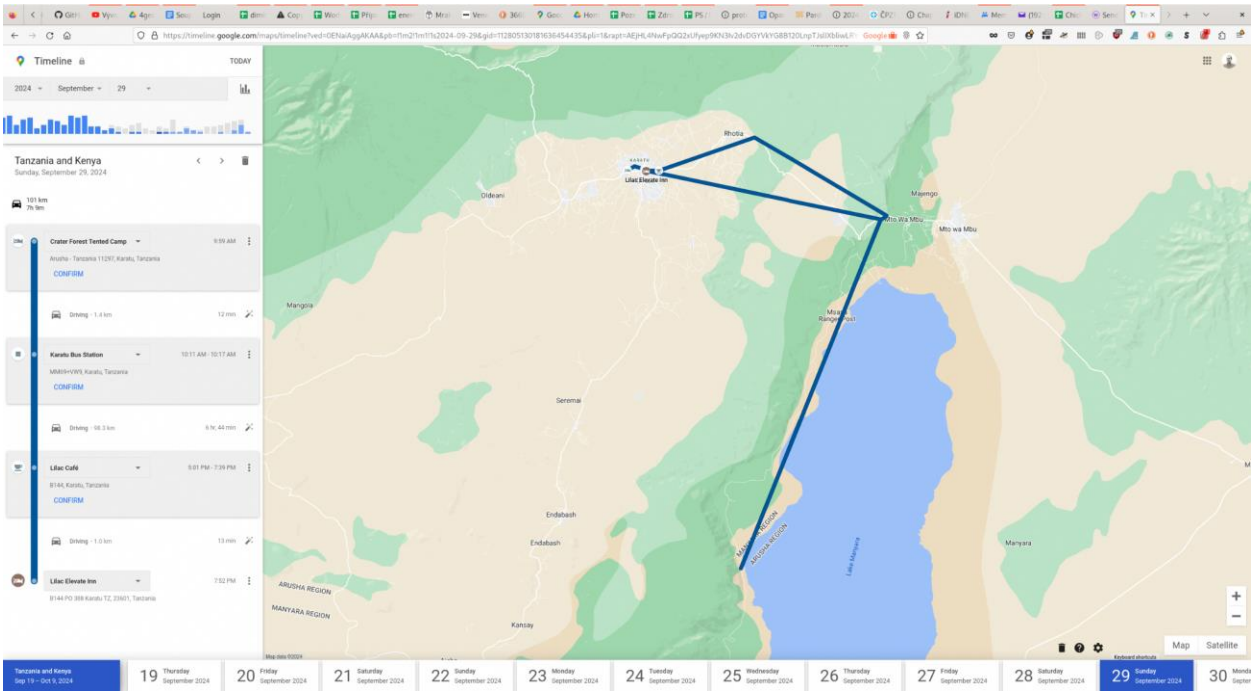

Figure 33 Manyara Lake National Park field trip

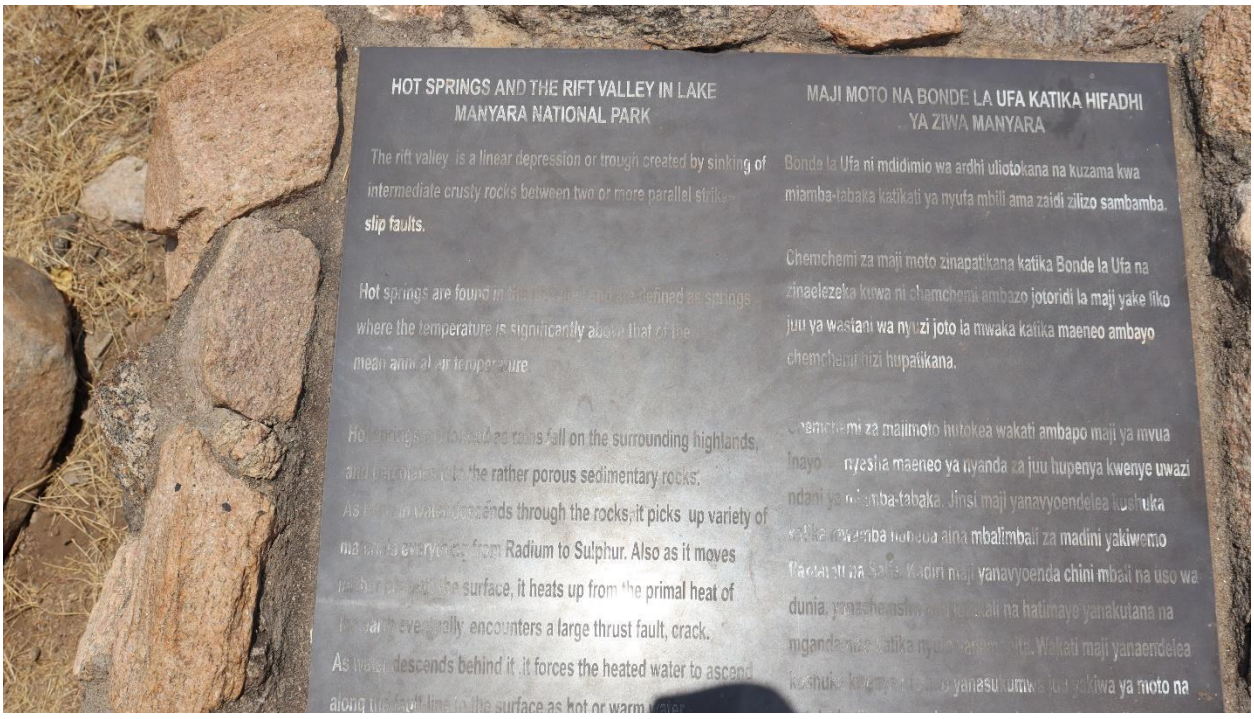

Figure 34 A geosite within the Manyara Lake National Park area

Day 10: September 30th 2024 - Geopark Museum construction site, debriefing meeting

Figure 35 Geopark Museum construction site

Figure 36 Geopark Museum construction site

Figure 37 Debriefing meeting

Figure 38 Debriefing meeting with NCAA participants

_____December 15, 2024____

ANNEXES:

1. Minutes of key individual meetings and workshops
2. Summary of action items

ANNEX 1: MINUTES OF KEY INTERIM MEETINGS AND WORKSHOPS

21 September, 2024/ 13:00 a.m. CET

Opening

The Project Update and Planning Meeting held on September 21, 2024, focused on a collaborative initiative involving geoparks from multiple continents, emphasizing the sharing of geoscience knowledge and the engagement of local and indigenous communities. Participants from Tanzania, the Philippines, Peru, and the Czech Republic introduced their respective roles and discussed the Ngorongoro Conservation Area's geological and cultural significance. Key objectives included fostering educational initiatives, enhancing project visibility through social media and promotional materials, and ensuring intergenerational knowledge exchange.

Attendee's List

- Luboš Gardon Junior
- Luboš Gardon Senior
- Martina Pásková
- Karl Michael Din
- Alexes Amante Ates
- Rama Khatibu
- Lightness Kyambile
- Jupiter I. Maboloc
- Lasisi Taiwo Temitope
- NCAA representatives

Agenda

- Participant introduction.
- Presentation of the results and outputs of the project so far in English
- Progress of the project - Martina Pásková
- TOURSMAN and social media - David Zejda
- Presentation by Philippines and Tanzania participants
- Presentation geoportal GeoEduGame by National Geopark Barrandien
- Plan of further activities

Discussion

- **Participants' introduction**
  - Introductions from various participants representing different geoparks and institutions.
  - Participants from Tanzania, the Philippines, Peru, and the Czech Republic
  - Discussion on roles and responsibilities within respective geoparks.
- **Opening Speech by Agnes Gidna, Geopark Director**
  - Victoria Shayo introduces the Ngorongoro Conservation Area
  - Highlights geological features, indigenous tribes, and biodiversity.
  - Emphasizes the importance of learning and sharing experiences between geoparks.
- **Presentation of the Project Progress by Martina**
  - **Project Introduction and Overview**
    - The project involves multiple geoparks from different continents.

        - Main mission: Share experiences, and knowledge, and involve local people.
        - Focus on geoscience education and involving indigenous communities.
        - Respectful of local Indigenous knowledge
    - **Project Details and Objectives**
        - Focus on involving local and indigenous people in geoscience education.
        - Aim to improve quality of life and economic benefits for local communities.
        - Importance of holistic approach combining various disciplines
    - **Project Visibility and Promotion**
        - Discussion on project visibility through websites and social media
        - Creation of posters for international days and UNESCO focus areas
        - Importance of promoting project activities and outputs
    - **Educational Initiatives and Collaboration**
        - Emphasis on collaboration with schools, including UNESCO schools.
        - Plans for cooperation between schools in Tanzania and the Czech Republic
        - Importance of connecting with local communities and indigenous knowledge
    - **Scientific Outputs and Dissemination**
        - Discussion on scientific publications and presentations at conferences
        - Importance of disseminating knowledge gained by researchers from various disciplines.
        - Presentation of the project at UNESCO global geoparks conferences
    - **Community Involvement and Education**
        - Focus on involving all generations, from kindergarten to seniors.
        - Importance of inter-generational knowledge exchange
        - Discussion on UNESCO evaluation and recommendations for project improvement
    - **Project Achievements and Future Plans**
        - Review of project achievements and visibility improvements
        - Discussion on future annual meetings and workshops
        - Plans for training on geotourism and interpretation techniques
    - **Innovative Approaches and Tools**
        - Use of artificial intelligence for creating promotional materials
        - Discussion on Pinterest as a tool for education and promotion
        - Importance of making geoscience education accessible through various media
    - **Project Innovation and Conclusion**
        - Emphasis on the project's innovative approach combining different continents and disciplines.

        - Focus on the gradual implementation of technology with indigenous communities.
        - Conclusion highlighting the project's unique focus on indigenous and local people.
- **Presentation of the Bohol Island Geopark**
    - **Bohol Island Geopark Management**
        - Overview of Bohol Island Geopark management structure and partnerships
        - Discussion on renovation projects and visitor center development
        - Explanation of geopark programs and collaboration with various agencies
    - **Educational Programs and Partnerships**
        - Description of Bohol Island Geopark youth camp and educational activities
        - Partnerships with educational institutions and social media influencers
        - Discussion on geo contests and cultural celebrations within the geopark

Submitted by: Lasisi Taiwo Temitope
Approved by: Martina Pásková

26 September, 2024/ 8:00 a.m. CET

Opening

In the September 26, 2024, meeting, the meeting commenced with a welcome address by Agnes Gidna, Director of the Ngorongoro Lengai UNESCO Global Geopark. The team conducted a comprehensive demonstration of the Geo Education Portal and its accompanying Toursman mobile app, led by Martina Pásková and David Zedja. The session began with an introduction to the portal's functionalities, including multilingual support and user tutorials for creating content such as articles and quizzes. Discussions then moved to account management, highlighting the need for tailored access rights for different geoparks. The mobile application was showcased, featuring its user interface, points of interest, offline capabilities, and its application in educational contexts, particularly for field trips and outdoor activities. Data security, compliance, and hosting options were also addressed, emphasizing the importance of safeguarding user data. The meeting concluded with insights into visitor monitoring and data analysis strategies to manage over-tourism effectively, along with action items related to enhancing app features, ensuring compliance, and optimizing geopark data access for geoparks. Additionally, how to create AI-generated images, utilizing the Night Café and Bing platform was discussed.

Attendee's List

- Luboš Gardon Junior
- Luboš Gardon Senior
- Martina Pásková
- David Zejda
- Karl Michael Din
- Rama Khatibu
- Lightness Kyambile
- Lasisi Taiwo Temitope
- Evelina Amalthea Ebeler
- Martin Rohr

- Jupiter I. Maboloc
- Bohol Geopark
- Abraham Caceres cabana
- Ngorongoro Lengai UNESCO Global Geopark (Tanzania)
- Representatives of indigenous communities: Maasai, Iraqw, Hadzabe, and Datoga tribes.
- Hana Lina Hachfeld

Agenda

- Participant introductions and their roles in respective geoparks.
- Presentations of major activities, outputs, and project progress.
- Visits to key sites in the Ngorongoro Lengai Geopark.
- Technical workshops on IT tools and AI applications (Presentation of Nightcafe and Bing – David Zejd, presentation created by Josef Zelenka)
- Educational initiatives: challenges and opportunities in schools.
- Presentation of GeoEdu portal - Luboš Gardon Junior
- TOURSMAN - David Zejda
- Future plans and international collaborations.

Discussion

- **Participants' Introduction**
- Representatives from each geopark shared updates on their activities and focus areas.
  - Insights into the unique geological and cultural features of the participating geoparks.
  - Discussion on the roles of schools, local communities, and indigenous groups in geopark development.
- **Presentation of the Project Progress**
  - Key Themes and Objectives:
    - Sharing experiences and knowledge across continents.
    - Promoting geoscience education among local communities.
    - Integrating traditional knowledge with modern geotourism practices.
  - Achievements to Date:
    - Enhanced visibility of geoparks through promotional materials and social media campaigns.
    - Initiatives fostering collaboration between schools in different countries.
    - Use of AI tools for creating engaging educational content.
  - Educational Initiatives and Collaboration
    - School Visits in Karatu and Arusha:
      - Introduction to geopark clubs at secondary and primary schools.

        - Presentations by students on their learning experiences.
        - Discussions on curriculum integration of geoscience education.
      - Challenges Identified:
        - Limited resources such as projectors and internet connectivity.
        - Financial constraints in running geopark clubs.
      - Proposed Solutions:
        - Fundraising for equipment and educational trips.
        - Establishing virtual exchanges between schools.
    - Engaruka Region Schools:
      - Focus on Maasai students and challenges in remote education.
      - Success stories of student engagement in heritage conservation activities.
  - Community Involvement
    - Meetings with indigenous tribes:
      - Maasai: Insights into pastoral life and cultural preservation.
      - Hadzabe: Knowledge of sustainable hunting and gathering practices.
      - Discussions on avoiding mass tourism that could erode cultural authenticity.
    - Presentation on balancing tourism development with environmental conservation.
  - Innovative Approaches
    - AI Tools in Education and Tourism:
      - Demonstrations of GeoEduGame and Toursman systems.
      - Use of generative AI for promotional content and educational games.
    - Pilot testing of tools in Barrandien Geopark, with plans for expansion.

- **Presentation of GeoEdu** Portal by Luboš Jnr
  - **Introduction to GeoEdu Portal**
    - Martina Pásková introduces the Geo Education Portal
    - Junior presents how to operate the GeoEdu game portal.
    - Tutorials available for registration, creating articles, quizzes, and other features.
    - Portal supports multiple languages (English, Czech, Spanish)
    - Discussion on account creation and access rights for different geoparks.
- **Access Rights and Account Management**

- Discussion on limiting access rights for specific geoparks.
- Possibility of creating separate access for each geopark's data
- Explanation of account creation process for non-geopark members.

- **Presentation of the Toursman by David Zedja** (figures are in Appendix)
  - **Mobile Application Features**
    - Demonstration of the app's interface and map functionality
    - Explanation of points of interest and reward system
    - Discussion on offline functionality and base map download
    - Presentation of potential educational use cases for the app
  - **Educational Applications**
    - Suggestions for using the app in educational field trips.
    - Discussion on creating specific scenarios for educational purposes.
    - Potential for outdoor games and activities using the app.
  - **Data Security and Hosting**
    - Discussion on data security and hosting options
    - Explanation of government compliance requirements
    - Options for hosting the system on local infrastructure or external servers.
  - **Visitation Monitoring and Data Analysis**
    - Introduction to visitation monitoring data module
    - Explanation of prediction algorithms for visitor numbers
    - Discussion on using the app for visitor feedback and data collection.
    - Presentation of agent simulation for visitor flow analysis
    - Explanation of the system's potential for managing over-tourism
    - Discussion on pricing and future development plans for the system
- **Presentation of Nightcafe and Bing by David Zedja**
  - **AI-Generated Images Presentation**
    - David discussed using AI to generate images.
    - Examples included rock city landscapes and anthropological scenes.
    - Night Cafe platform recommended for easy image generation.
    - Different AI models produce varied results.
    - Prompts can include specific details like time of day, season, or color preferences.

- **How to Use AI Image Generation**
  - Creating an account on Night Cafe is simple.
  - Users can input prompts to generate desired images.
  - Professor Zelenka is available (after registering to Nightcafe via this link: https://creator.nightcafe.studio/?ru=kacerka) for guidance on using AI image tools, including Bing AI generator (https://www.bing.com/images/create/).
  - AI can modify existing images by adding elements or changing features.

Action Items

- Address resource gaps in schools for geoscience education.
- Expand collaborations with indigenous groups and local stakeholders.
- Implement and refine new IT tools to enhance geopark experiences.
- Investigate the possibility of implementing separate access rights for each geopark's data.
- Consider implementing a feature for users to upload pictures directly through the mobile app.
- Explore the possibility of adding 3D picture support to the app.
- Discuss implementing panorama pictures with Martin.
- Prepare necessary information for government compliance and approval process.

- Decide on hosting options (local infrastructure or external servers) based on compliance requirements.
- Implement a feature for visitors to provide feedback through the app.
- Look into implementing a feature for embedding the map on geopark websites.
- Send the Nightcafe registration link to participants.

Closing

The meeting concluded with reflections on achievements and challenges. Plans for the next meeting in Peru were confirmed. Participants expressed gratitude to the Ngorongoro Geopark team for their hospitality and collaboration. The meeting was closed at 11:25 am CET.

Submitted by: Lasisi Taiwo Temitope

Approved by: Martina Pásková

30 September, 2024

Opening

The exit meeting summarized the achievements of the 4GEON initiative and discussed feedback from participants on school and community engagement, suggestions for improving visitor and educational experiences, and the Ngorongoro Conservation Area Authority's (NCAA) vision for the future.

Attendee's List

- 4GEON Team Members: Representatives from participating countries.
- NCAA Officials: Staff overseeing geopark operations and community engagement.

Agenda

- Reflection on the progress of 4GEON activities.
- Feedback on geoscience education and community integration.
- Recommendations for infrastructure and resource improvements.
- NCAA's response and plans for future collaborations.

Discussion

- **Highlights of the Meeting**
  - 4GEON Team Feedback:
    - Educational Engagement:
      - Continued support needed for schools through digital tools and interactive geoscience activities.
      - Importance of engaging students with hands-on experiences and access to geosites.
    - Community Integration:
      - Indigenous tribes' involvement in preserving heritage and promoting sustainable tourism.
      - Avoiding commercialization that undermines cultural authenticity.
    - Technical Suggestions:
      - Enhanced interpretive maps and educational materials for geosites.
      - Suggestions to integrate AI tools for promoting geoscience education
- **NCAA Response:**
  - Commitment to Education:
    - Continued facilitation of school trips to geoparks.
    - Enhancing collaboration with schools through provision of educational tools.
  - Infrastructure Development:
    - Plans for a new museum showcasing Ngorongoro's geological and ecological features.
    - Improved signage and interpretive panels at key sites.

- Future Growth:
    - Expansion plans for new geopark sites in Kilimanjaro and Meru regions.
    - Collaboration with 4GEON for project planning and execution.

Action Items

- Support schools with resources for interactive learning.
- Develop the museum and improve educational infrastructure.
- Strengthen partnerships with international stakeholders for resource sharing and best practices

Closing

The meeting concluded with mutual appreciation and a commitment to strengthening future collaborations. Plans were discussed for early coordination of the next meeting in Peru.

Next Meeting

Submitted by: Jupiter I. Maboloc

Approved by: Martina Pásková

ANNEX 2: SUMMARY OF ACTION ITEMS

Ngorongoro Lengai Geopark:

1. Continue to increase the intensity and level of interpretation of the geological heritage of the geopark, significantly supported by Chinese funding.
   a) As part of the completion of the construction of the geopark museum (and beyond), use the outputs of the 4GEON project in equipping the interpretive elements and actively influence the interpretive interior of the museum
   b) Information about the volcano at the entrance of the crater, lack of explanation of the geological phenomenon
   c) Suggestion to complete the presentation and interpretation of rocks of local origin
   d) Focus more on a stronger link between contemporary nature and the geological phenomena and features of the geopark area
2. Geoschools
   a) All seven cooperating geoSchools have been visited
   b) Differences between public and private schools
   c) Identified interest in helping 4GEON - sharing and supporting internet access, providing PCs, tablets, access to GeoEduGame teaching materials
   d) Arranging online meetings between Tanzanian and Czech schools (intention to start with Tumaini Junior School in Karatu)
   e) Explore interest (also from the Czech side) and possibilities and exchange of students
   f) Study programme at the University of Hradec Kralove in the Czech Republic under the Mobility Programme (see contact established with the Dean of the School of Mines and Geosciences at University of Dar es Salaam, the founder of the university Geoheritage and Geopark Club
3. Geobus and geocompetition
   a) Modification of the school bus
   b) Regular visits, not one random one, to start with a pilot school (Tumaini Junior School in Karatu?)
   c) Need to establish rules and selection criteria, e.g., by setting up a hierarchy of Geopark Club "ambassadors"
   d) Issue of price for schools to enter the crater - check the possibility of discounts or fee waivers for school field trips organized by the Geopark
   e) It should be a geoscience excursion with feedback (e.g., presentations to the Geopark Club), not just a field trip
   f) Encourage interpretation, link it to experience (memorization without experience is not that effective), use interpretive centres like in Olduvai (IC and museum) for this
   g) "Schools to geoparks" approach, not only "Geoparks to schools", it is necessary to promote the relationship with the place (without contact with it it is not possible), to run at least educational walks to the nearest geopark sites, to combine with physical education (e.g. running, cycling)
   h) Increase the presentation of the Geopark in schools
   i) Possibility to support the purchase of fuel for the bus
   j) Consider involvement of volunteers - already discussed with positive feedback with the representative of the Kulturweit programme of the German UNESCO Commission
4. GeoEduGame

   a) Authorization of persons and verification of their access to each editable block (Game, Geo, Edu)
   b) Geopark articles in English
   c) Description of sites and geological attractions in English
5. Geoquizzes: create with care, the problem in translation
6. Toursman system
   a) What is the overlap with the system introduced from Chinese sources
   b) Off-line solution, GPS coverage, coordinates of geopark sites
   c) Information (QR code, animation, description)
7. Awareness and visibility: increase the proportion of geopark information on the interpretation panels in the crater and in the information centre at the entrance to the crater
8. Indigenous Peoples
   a) Seek greater involvement of the Maasai, Datoga, Iraqw and Hadzabe tribes in Geopark activities
   b) Promote the transfer of their Indigenous knowledge

Recommendations, ideas:

- Work to understand the importance and benefits of the Ngorongoro Lengai Geopark and to increase support from the Conservation Area Authority, creating greater equity and synergy between the World Heritage, Biosphere Reserve and UNESCO Global Geopark designs
- Work towards understanding the role of geology in local ecosystems and the importance of geology to local fauna
- Use image photos and videos to promote the geopark and the 4GEON project, work more with maps (in interpretation and school lessons)
- Create a hierarchy of Geopark Club (4GEON Club) "ambassadors" based on the level of involvement and effort shown in the activities of these school clubs
- Continue to promote the involvement of indigenous tribes in Geopark activities, including the opportunities offered by Open Science and participatory management, while seeking to promote the preservation of their access to nature, to stimulate the transfer of their Indigenous knowledge, including their indigenous languages, and to increase education
- Develop a training and certification system for geopark guides

Colca and Andagua Volcano Valley Geopark

- Geoschools
   a) Promotion of internet connectivity and the creation of the 4GEON Club
   b) PC support (10x laptop, tablet)
   c) Access to educational materials in GeoEduGame
- Geobus x geo-colectivo
   a) Rental
   b) Coating
- GeoEduGame: Outreach to teachers (volcano materials, etc.)
- Toursman system

a) Question of GPS coverage, map layers
b) Map out sites in both parts of the geopark (Colca Canyon and Volcanos Valley) - pilot sites already for

- Preparation of the 4GEON's Annual Meeting
  a) Accommodation (options, costs)
  b) Transportation around the geopark - possibility of regional, provincial support?
  c) Route Arequipa - Andagua, stop in Colca Canyon (adaptation to altitude)
  d) What can the Czech team help with?
  e) The 4GEON project will cover the transport of participants to Peru, accommodation, food, transport
- Provide photos and videos

Bohol Island Geopark

1. Geoschools and geobus
   a. Internet connection issue
   b. Access to GeoEduGame teaching materials
   c. Question of interest in contact with Czech schools
   d. Consider geo-ship
   e. posting
   f. Governor's involvement to secure an exemption for geo-schools to hold field events
2. GeoEduGame: reach out to information centers, airports
3. Toursman system
   a) Question of GPS coverage, map layers
   b) Mapping of sites
4. Identify a representative from their team at the 2025 4GEON team annual meeting
5. Supply photos and videos

Rio Coco Geopark

1. Clarify their approach to joining the next annual 4GEON team meetings
2. Geobus, geo-colectivo
3. GeoEduGame - report authorized persons for access to edits
4. Toursman system
   a) Question of GPS coverage, map layers
   b) Map locations
5. Geo-schools: progress in creating a network of local geo-schools, results of engaging experts Helga Chulepin and Benjamin van Wyk de Vries?

Barrandien National Geopark

1. The Toursman system
   a) Question of GPS coverage, inventory of map layers
   b) Mapping of sites
   c) Train volunteers from the Kulturweit program of the German Commission for UNESCO
2. GeoEduGame - continue to develop the portal, its functionalities

3. Create logos for GeoBus, GeoContest, GeoPortal and possibly GeoSchools
4. GeoSchools
   a) Prepare a micro exchange program with Tumaini Junior School in Karatu?
   b) prepare the possibility of their presentation at the plenary session of the Czech Commission for UNESCO

NEXT ANNUAL MEETING OF THE 4GEON TEAM

- Location: Colca and Andagua Volcano Valley UNESCO Global Geopark, Peru (already agreed by the Geopark President)

- Date 12 Sep - 21 Sep 2025, approx. 8 - 10 days (to follow the International Conference of UNESCO Global Geoparks in Chile 6 Sep - 12 Sep 2025)