

Building up an ESD centre on the Island of Samothraki, Greece

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1. Introduction

The island of Samothraki is situated at the North-eastern point of the Aegean Sea. It is a mountainous island of volcanic origin with a total surface area of 178 km² and the highest peak up rising to 1.611 m.

The island has been inhabited since prehistoric times as proven by the numerous sites dating back to 6000 BC. From the 5th century BC until 400 AD, Samothraki was famed as a spiritual centre devoted to the worship of the Great Gods and Kaveiria Mysteries. The famous Nike of Samothrace that is exhibited in the museum of Louvre was found in the “Sanctuary of the Great Gods” in Palaiopoli.

Nowadays the Samothraki Island has 2.840 inhabitants (2011 census) and the population triples during the summer season due to the tourism activity. In fact the island is visited by about 27.000 mostly domestic tourists per year which contributes to an important part of the GDP of the island and engages as much as 40 % of it's workforce, whereas the other 45 % of the population works in the primary sector which is highly above the Greek average of 12,5 %. The income of the farmers is depended on EU Agricultural subsidies based on the Common Agricultural Policy (CAP) mostly in the livestock sector. This policy has led to the high increase of the livestock population which is one of the main issues of the island which contradict with the existing Natura 2000 protected area that covers more than two thirds of the island's surface and marine area.



Picture 1

The idea of transforming Samothraki to a Biosphere Reserve started as a bottom up process and initiated by a regular visitor of the island until it was gradually transmitted to the local stakeholders. A Biosphere reserve is an internationally recognized area within the framework of UNESCO's Programme on Man and the Biosphere (MAB), established in order to promote and demonstrate a balanced relationship between humans and the biosphere. Several steps were taken in order to

obtain the Biosphere Reserve status of the Samothraki Island among which the feasibility research based on interviews with locals, surveys and focus groups; preparation for the application to Unesco by the research team in collaboration with local stakeholders, the mayor and the municipal council, however the first application was submitted and refused due to the unclear management plan of the island. The second application was submitted in 2013.

As a preparation for the MAB programme, an Education for Sustainable Development Centre has to be established on the island in order to pass the new way of thinking and acting to the local community and find ways to solve or at least minimize the human related ecological issues of the island. The process is a step by step one and it requests from the local community to be ready to face the economical, environmental and social changes. New skills and new practices have to be obtained and learned by the community in order to respond to the challenges of the present and the future. Our mission is to create such an ESD centre that will be able to help supporting the growth and evolution of the island as a whole. Knowledge is the strong base upon which a new vision can be build and education can transform our reality.

Apart from the literature review which presents the theoretical base for this paper, we studied a number of case studies, e.g. examples of good practices around the world to be able to extract the findings and apply them to the case of the island of Samothraki, Greece.

2. Methodology

As a part of our work methods we conducted several team meetings and we had brainstorming sessions about the information and knowledge obtained from classes related to sustainable development, the tools and methods on setting up an ESD centre and knowledge based on our personal experience on the topic. After that we identified the key words on which we wanted to work on and split the sections based on our background and skills on which we worked individually for an agreed period of time by using the literature review.

In the second step of our research path we interviewed Dr Biologist Despoina Mertzanidou, responsible for the Awareness, Education and Publicity sector of the management body of Parnassos National Park and she gave us her insight and ideas in order to help us build our vision.



Pictures 2 & 3

As a part of our research we also conducted several case studies of good practices listed below in order to apply the knowledge and experience obtained from other similar projects to the case of Samothraki ESD centre.

From a case study on **ESD in Urdabai Biosphere Reserve at Basque Autonomous country, Spain** (Scoullus, Kouroutos, Mantazara, Alampei, Malotidi, Psallidas, 2013, 110) we learned the importance of coordination between ESD programmes and the local environment programmes, meaning the local community, social partners and other stakeholders have to be included in the implementation of the Samothraki ESD Centre activities. The ESD centre in Urdabai has the capacity and training centers for teacher and schools under their government coordination in order to coordinate the ESD programmes. Their aim is a close coordination between the ESD programmes and the local environment programmes and they cover a wide range of themes related to energy, education or cultural heritages.

Another good example is an environmental education center in Czech Republic, Kladno. **The Kladno Environmental Education Centre** is a low-energy building, equipped by a solar water heating system and wood pellet boilers. Environmentally responsible and natural construction materials were incorporated into the project and the building provides a healthy indoor environment for occupants. The centre also has a rain water harvesting system, green roofing and a wastewater treatment that serves neighbouring buildings. During construction, they used the building to raise awareness of low-energy buildings and environmentally responsible construction materials. Nevertheless the centre takes charitable donations from their partners, the Láznovský nature reserve and a Rescue centre for injured animals (Source: <http://www.skanska-sustainability-case-studies.com/Case-Studies/Kladno-Environmental-Education-Center-Czech-Republic.html>. Data accessed: 11/07/2014.)

The Regional Environmental Centre for Central and Eastern Europe (REC) is an international organization implementing sustainable development projects, including education and capacity-building programs. The Green Pack, REC's flagship program on education for sustainable development, is a multimedia environmental educational kit for schoolchildren between the ages of 11 and 15 years in Central and Eastern Europe. Since 2001, the Green Pack has been introduced in 18 countries in the Western Balkans, Europe, and Asia, and approximately 30,000 teachers and more than 3 million students have been educated, changing the way in which the teaching of sustainability is approached (Source: <http://www.rec.org/topicarea.php?id=6>. Data Accessed: 11/07/2014).

ESD Case Study for HEA ICS Subject Centre proves an established practice involving sustainability considerations embedded into the information systems curriculum by the School of Information Systems, at the University of the West of England, Bristol. Students work in small teams on practical IS consultancy projects hosted by external organisations, usually in the local community and voluntary sector. In general, students are taught a responsible approach to long-term holistic thinking in IS practice, which puts human endeavour at the centre of attention, and takes a critical view of the solutions-focused techno-centric approach that dominates the industry, and that (arguably) leads to the large-scale failures in systems projects that continue.

(Source: http://webcache.googleusercontent.com/search?q=cache:HN7-1ThfmqgJ:www.ics.heacademy.ac.uk/resources/supp_learning/esd/Case_Studies/Nick%2520Plant.doc+&cd=1&hl=en&ct=clnk. Data Accessed: 11/07/2014)

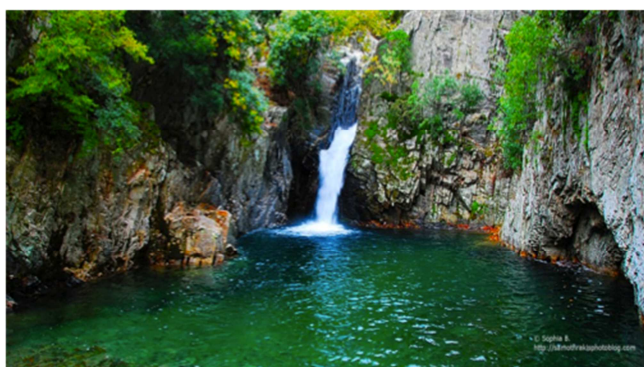
The Toohey Forest Environmental Education Centre (TFEEC) is a Department of Education, Training and Employment facility located in the sustainably designed [Griffith University EcoCentre](#). The facility is surrounded by the natural backdrop of Toohey Forest. And the centre provides a range of day visit programs to students about themes including Australian flora and fauna / Biodiversity / Ecology, Health / Water Quality Monitoring Sustainability / Energy / Waste and Human Impact Studies.

(Source: <http://www.toohforeec.eq.edu.au/about-us/>. Data Accessed: 14/07/2014)

3. Research

Tha Samothraki Island as an ecosystem

The mountain range of Samothraki Island has a north orientation where a wet microclimate exists. Numerous streams are coming down from the mountain forming hundreds of waterfalls and freshwater pools whereas the oriental plane trees reach down to the beaches. The southern and western sides are typically Mediterranean in terms of climate, vegetation and agricultural use. A large part of the south side does not have a road access therefore the only way to get there is either by the sea or by foot. There is a rich biodiversity due to the specific climatic and geographic characteristics of the ecosystem as well as they are various terrestrial and marine habitats which accommodate different plant and animal species. There are eight endemic species on the region and the last remaining old growth forests among the Aegean islands (Martini Forest). Except of the numerous springs, streams and rivers there are also thermal water springs due to the tectonic trenches.



Picture 4

In 2001 about two thirds of the Samothraki's surface was proclaimed a *Natura 2000* conservation area by the Greek government and was recently extended by a large marine area.

The current issues of the island

The most precious features of the island mentioned above are threatened due to the sharp increase in the number of goats and sheep (the overgrazing effect) due to the EU's financial stimulations for agriculture, resulting in severe erosion. Additionally

also overfishing, inadequate water and waste management and uncontrolled deforestation to meet the rising demands on firewood and inadequate infrastructures represent a problem (Fischer-Kowalski, Xenidis, Jit Singh and Pallua, 2011, 181). The extensive overgrazing due to a huge number of goats and sheep as well as the other issues of the island are dividing the local community and disturb the social, environmental and economic balance of the island. There are also some conflicts between the livestock owners and other stakeholders which result in the perceived lack of cooperation and trust between the stakeholders that needs to be bridged. There is an increased need of strategic management of the natural resources and infrastructures as it is of greatest significance the cultivation of synergy. In order to organize a new management and be scientifically supported in times of crisis the municipality and local stakeholders choose to explore the possibility to adopt the Man and Biosphere programme.

The population of the Samothraki Island

The current population of Samothraki is measured at 2.840 inhabitants (2011 census) and triples during the summer season. The average number of people working in the primary sector is reaching 45% and is very high in comparison with the Greek average of around 12.5%. The income of the farmers is depended on EU Agricultural subsidies based on the Common Agricultural Policy (CAP) mostly in the livestock sector. This policy has led to the high increase of the livestock population. The Secondary Sector is employing 12% and consists mainly of a creamery, a winery, a wheat mill, some construction activity that has became very limited due the the economical crisis. The 40% of the workforce on the tertiary sector is engaged in tourism. The population consists of two polarised groups. On one side there is group of less educated middle-aged males mostly working in the primary sector. On the other side a group of younger more educated residents working mostly in the service sector.



Picture 5

The increase of population of the Samothraki Island in the summer triples due to the tourism. Many island's natural features, natural sites and geological and physiographical formations, are interesting from touristic point of you. Those features are: Thermal spring at Therma; A number of waterfalls suitable for the development of canyoning and other water sports and a number of endemic species and a Martini forrest mentioned in the previous chapter. In fact the island is visited by about 27.000 tourists a year which are for the most part domestic tourists. Due to the remote

geographical position of the island and lack of island's own airport, the tourism on the island has escaped mass tourism yet the attached tourist population is an important asset for the island. Some of the efforts to limit the number of tourists in the peak season and increase the funds for the preservation of the island include the idea of introducing a conservation fee in the amount of 2 € to charge the visitors of the island. The results of a recent survey showed the 90% of the visitors are willing to pay the suggested fee in order to help funding the preservation of the island and reported an interest in repeated visit of the island.

The shared local community vision of sustainability

According to Fischer-Kowalski et al. (2011, 181) several focus groups and semi structured interviews were conducted with local stakeholders (fishermen, farmers, local professionals, school- and kindergarten teachers, elderly and others) and the analysis of the results showed that "the local non-governmental organizations (NGOs) criticized the authorities' policies and demand effective strategies to conserve the island's ecosystems". According to that, the authors suggest a bottom-up solution, which would help develop the island of Samothraki in a sustainable way, according to the community's shared vision and as a valuable heritage and asset. Such solution can only be implemented if supported by the local population who needs to anticipate benefits in order to minimize the negative trade-offs. A biophysical and socio-economic assessment of the Island Samothraki show that establishing a biosphere reserve (the term biosphere reserve originates from UNESCO's *Man and the Biosphere Programme*) on the island would represent a pathway of both nature conservation and socio-economic benefits and be welcomed by the majority of stakeholders so the community council recently endorsed an application to UNESCO.

ESD centres vs. EE centres

Apart from existing Natura 2000 area and recent efforts to proclaim the island a biosphere reserve we suggest to the stakeholders and local NGO's to build an ESD centre which would help establishing the better conditions for a sustainable development of the island. According to Scoulos et al. (2013, 107) the ESD centres represent an upgrade of EE which "narrowly focuses on environmental protection, natural resource management and conservation of nature" as they bring the socio-economic, political and cultural dimensions into the whole picture considering the environment as a "component of development (ibid., 108)". By doing so the ESD centres try to contribute to the long-term prosperity of local community in a holistic, systemic way yet not only improve awareness of the protection of the environment.

Samothraki ESD centre's vision

The vision of an ESD centre in Samothraki would be an interactive multidimensional educational centre with an aim to apply the sustainability theories to all of its processes in order to act, think and teach in the holistic way.

The centre would use many of already existing infrastructure that the municipality of Samothraki owns yet aren't in use or misused. The ESD centre would be therefore set with the smallest possible investment on structure and rather big investment on employing the human resources (educators, guides, organizing personnel) instead.

The new school that already exists in Kamariotissa, for example, has enough space for hosting an ESD centre and can be remodeled in order to add a scientific laboratory, PC room, conference hall, theater, rooms for artistic work-shops and outdoor space for gardening to the existing infrastructure.

ESD's main activities

Main activities of the Samothraki ESD centre would be: sustainability related education for local farmers, children and students, whereas the ESD would also add education for the visitors of the Island of Samothraki to its curriculum after the system is well established, e.g. after 2 years from establishment of the centre.



Picture 6

The education for local farmers would include themed work-shops on sustainable livestock management, eco-farming, eco-tourism in relation with farming, sustainable methods for harvesting of crops and others. The sustainability education for children would include artistic work-shops inspired by natural cycles, ethics, landscape, traditions and customs as well as the "Mini eco drama club".

Apart from sustainability related work-shops and lab-analysis for domestic students the ESD Samothraki would propose programmes for students from the abroad universities, partners of local university. Fischer-Kowalski (2013) proposes an excellent example of such educational programme for a group of students from various universities on an excursion to Samothraki, with the aim to learn and apply social ecology approaches in a local setting while building synergy with an on-going UNESCO Man and Biosphere process.

Promotion of student's participation and new sustainable career opportunities

As a part of the teaching curricula for the students, the ESD centre would also promote the students' participation at competitions about sustainability and responsibility and the sustainable Job and Career Opportunities. RecycleMania is an example of a friendly competition among college and university recycling programs in the United States that provides the campus community with a fun, proactive activity in waste reduction. Over a 10-week period, campuses compete in different contests to see which institution can collect the largest amount of recyclables per capita, the largest amount of total recyclables, the least amount of trash per capita, or have the highest recycling rate. The promotion of the sustainable job and career

opportunities would include the presentation of future, jobs that are getting more requested each day: sustainability director, manager or coordinator of protected areas.

The team of experts

The Samothraki ESD center would employ a group of experts consisting of the various professions: a biologist, ecologist, sociologist, economist, holistic trainer and anthropologist. We would also invite volunteers to join us and help at our activities as well as researchers from various universities.

Books and materials used

The Samothraki ESD centre would use books and other material which involve implementing, exercises, quizzes and games about ESD for its activities. There is a very informative example of this subject (Let's Learn a Sustainable Lifestyle with the Earth Charter: Decade of Education for Sustainable Development: 2005-2014) about ESD. Apart from books the ESD Samothraki centre would set up an open laboratory-observatory meeting point for scientists and conferences where the students would be able to conduct analysis and scientific research. During the activities also the awareness paths with informative signing will be used.

Process evaluation

The Samothraki ESD centre would also introduce the life cycle management system, ISO 9001:2011 management system as well as the waste management system in order to operate in the most optimal/sustainable way. The ISO 9001:2011 management system is a quality management system that is used by various organisations in order to function more effectively. It has a strong customer focus and includes top management, process approach and improvement methods in order to obtain various benefits from the business.



Picture 7

Supporting institutions and existing projects

The ESD of Samothraki is going to partner with and learn from the following existing institutions and projects:

- The association for the advancement of sustainability in higher education (**AASHE**).

It is a "membership-based association of colleges and universities working to advance sustainability in higher education in the US and Canada." Their website includes a campus sustainability professional page, classroom resources, publications, interest groups, and a sustainability policy link. They also offer a free, weekly e-newsletter covering campus sustainability news, events, and opportunities. Its goal is to promote sustainability in every area of higher education from governance and operations to curriculum and student-life. And their knowledge teaching method is Learn it - Live it! It is an interactive learning quiz and helps disseminate knowledge in a fun and engaging way.

(Source: <http://www.sustainablecampus.cornell.edu/initiatives/association-for-the-advancement-of-sustainability-in-higher-education>. Data Accessed: 11/07/2014)

- Campaigns in the context of Sustainability system.

Foundation for Environmental Education Latvia has started a new Eco-Schools public campaign "Responsible Lifestyle". The campaign consists of a variety of initiatives to provide information and education through long-term oriented activities, as well as ensure direct involvement of the public in activities that are aimed to inspire by action and examples. The campaign will help to make the connection between our everyday life and our impact on the environment.

(Source: <http://www.eco-schools.org/service-menu/news/activities--the-best-way-to-benefit-the-environment>. Data accessed: 11/07/2014)

- Universities and institutions

The Universities and institutions such as Brown University, California State Polytechnic University, Georgia Institute of Technology and The New Jersey Sustainable Schools Network and Biodiversity Education are implementing the ESD system in their education life and we can learn from their findings.

(Source: http://www.brown.edu/Departments/Brown_Is_Green/, <http://www.csupomona.edu/~crs/>, <http://www.pomona.edu/administration/outdoor-education>, <http://www.istd.gatech.edu/>, <http://www.globallearningnj.org/>, [World Resources Institute \(WRI\) Education Center http://www.wri.org/wri/enved/](http://www.wri.org/wri/enved/). Data accessed: 11/07/2014)

- National Wildlife Federation (NWF) program - "The Campus Ecology"

It is a conservation initiative in higher education that aims to transform the nation's college campuses into living models of a sustainable society. "Greening the Campus" looks beyond the creation of new academic departments and programs for campus

greening to include information on efforts aimed at ensuring that every student - regardless of major - graduates with a greater awareness of environmental issues and their importance. These initiatives often include "environmental audits" that examine the use of resources and the environmental impacts of university operations in solid waste, water, energy, and transportation.

- Medical students and university research projects

Medical students in universities (Bristol University, Imperial College London, University of Cambridge and School of Medicine Health Policy & Practice, UEA, Norwich) have gained important knowledge by learning about climate change and health, Global Environment and Human Health through ESD programmes. Students choosing Global Health have modules on climate change as part of the course. Teaching is given as with occasional videos or guest presentations.

- Eco-villages, gardens and conservatories

The Beauty Narrative Phipps Conservatory and Botanical Gardens is an eco-village that is used as an educational centre. It has a mission to inspire and educate all students with the beauty and importance of plants, advance sustainability as well as the human and environmental wellbeing through action and research.

Further implications

Once the ESD centre is well established it would provide the domestic and non-domestic visitors with the following sustainable tourism activities: guided tours to protected area with the instruction on how to walk through protected area; traditions, customs and critical themes related work-shops, photography work-shops, social evenings, concerts of local bands and exhibitions of local artists. The ESD would also help with establishment of the educational and awareness paths suggested by ETHIAGE N°37, 2009 (in Scoullos et al., 92) with informative signing that would connect the points of interest and setting up a tourist information point in the area of the biggest tourist activity in order to increase sustainability awareness of the visitors of the island.

As far as the tourist information centre is concerned, there is an existing old school in the village (traditional architecture) with a huge space outside which could become an informational and educational point for tourists. It is positioned on a strategic point at the beginning of the proposed educational paths where we can inform about the rules and the behaviour on the trails. Within the tourist information point we can also set up an exhibition (present minerals, rocks from the island or the endemic species, photography) and cultural centre in order to increase the participation and feeling of connection between the visitors of the island and the locals.

Funding

The Samothraki ESD centre is planning to fund itself from several sources. Some of the funding are planned to be implemented already at the beginning of the functioning of ESD centre, while the others are planned to be implemented once the centre is well established and incorporated to the local community.

The most important funding sources that will represent a major income to the ESD centre from the establishment onwards are the following: commissions from a small shop run by ESD centre selling local produce and authentic souvenirs; income from leasing out the laboratory and other research facilities, library, tv-room, exhibition space and meeting rooms; a voluntary donations from associations, local companies and individuals (it would be possible to donate on our web-site directly); selling of ESD's promo-material such as T-shirts, magnets, cups, postcards and fundraising activities, such as selling the Christmas cards on eco-theme made by children from the local community as a part of the education work-shops organized by the ESD itself.

Once the ESD centre is incorporated to the local community, it could serve as a direct link between local community and the visitors of the island and help with the promotion of tourism in the area of Samothraki. The local farmers would be encouraged to transform their core activities into eco-farms in order to provide a sustainable, authentic accommodation to visitors of the island of Samothraki and giving them an opportunity to get an insight of the traditions and customs of local community and feel part of it.

Leaning on the existing tourism infrastructure - a port, hotel (built according to sustainable standards), camping site, shops, medical care facilities, spiritual centre and supporting infrastructure - the ESD plans to help with the establishment of the following sustainable infrastructure: eco-hostel for accommodation of the partner universities students and researchers as a part of the educational excursions to Samothraki and glamping site to cater for the needs of high-end niche green tourists close to the existing camping site. The eco-hostel could be set up the 6 empty buildings owned by the municipality which are situated in the Therma area. For the needs of setting up a glamping site the huge property owned by the municipality can be used as it is close to already existing camping site infrastructure as well as an unique forest ecosystem with the predominant habitat of oriental plane trees. The eco-camp would introduce the new ways of waste-water management in order to contribute to the sustainable development of the island.



Picture 8

One of the future trends in tourism are green, tailor-made vacations and travellers that are looking for a close contact with nature yet do not want to sacrifice the comfort they are used to. Glamping is a new kind of tourism offer, some kind of glamorous camping, which can be recognized by forms of accommodation built in symbiosis with the nature, using the local and recycled materials, renewable energy and the work of local craftsmen yet are equipped with appliances in order to meet the expectations of high-end travellers. The example of good practice which can be used

as a role-model for building up a sustainable glamping site is a glamping site at Gozdne vile, Bled, Slovenia.

(Source:<http://www.sava-hotels-resorts.com/en/accomodations/sava-hoteli-bled/gozdne-vile-glamping/the-gozdne-vile-glamping-huts/>,

Data accessed: 12/07/2014)

All of the above activities and features would add value to the existing tourist offer, create additional income and new jobs.

Finally the ESD centre plans to partner with a number of private tourism related businesses operating on the island in order to benefit from the synergic effects of such cooperation.

5. Conclusions

The paper is focusing on the establishment of an ESD centre on the Island of Samothraki, Greece in order to improve the awareness of local people – local farmers, children and students – and managing the future development of the island towards a more sustainable development of the island itself and its community.

As the Island of Samothraki is facing several ecology related issues among which we identified the sharp increase in the number of goats and sheep (the overgrazing effect) due to the EU's financial stimulations for agriculture, resulting in severe erosion; overfishing; inadequate water and waste management; uncontrolled deforestation to meet the rising demands on firewood and inadequate infrastructures, an ESD centre on the island would be highly recommended as the existing Natura 2000 area is threatened.

The basis of our research were internationally recognized theoretical principles, theories and models such as Unesco's MAB programme for Biosphere Reserves, Natura 2000 protected areas and tips for planning the ESD centres, educational or awareness paths (in Scoullos et al., 92, ETHIAGE N°37, 2009) as well as internal materials for the presentations to focus groups already conducted with the stakeholders at the island of Samothraki.

After a large case-study of examples of good practice in other countries, we suggested the approaches and materials that could be used by Samothraki ESD centre as the education for sustainable development curriculum for the local community.

The base of sustainable development could only be as solid and stable as the depth of the educational root system. Therefore, our first step can only have as a starting point the commence of a new era for education in the area. By dividing and strategically identifying the small scale changes that we want to apply we can integrate and consequently synthesize gradually a whole new vision. We have founded the funding of the ESD center on producing the wealth needed so as to be able to manoeuvre as independently as possible in those crucial times of economical crisis. Additionally it is in our aims to create a cooperation and a link with the formal education and the Ministry of Education.

The approach that we adopt in order to connect with the local community has its foundations on the local valuable knowledge of the specific regional conditions and ancient practices that survived through time. Our objective is to enrich their skills with an updated and organized scientific input that is transmitted in a way they can grasp with the least resistance and most sustainability.

Finally our vision includes the evolutionary possibility to host in the future and ESD summer school as the one that initiated our visioning and invite the professors and new educators to enrich our continuous process.

Finally we suggested some further implications and funding from the tourism in connection to ESD centre which include setting up a network of a tourist information and exhibition centre, eco-farms, a glamping site and an eco-hostel as well as we identified the possible future partnerships with existing private tourism related businesses and other stakeholders.

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