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EVALUATING THE INFLUENCE OF GREEK GEOPARKS TO THE LOCAL COMMUNITIES

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Abstract

The European geoparks are new and effective instruments for the interpretation, protection and promotion of geological heritage aiming to a sustainable local development. Since 2000 the two Greek geoparks, the Lesvos Petrified Forest and the Psiloritis Natural Park have developed a great number of activities. Because of their differences, these two geoparks can be used as good examples to evaluate contribution of geoparks to local economy. In Psiloritis geopark operation is supported by the AKOMM –Psiloritis SA Development Company and significant funds have been raised for geo-protection and geo-tourism through European projects, a certain operational budget from local funds has been established and a new action plan has been developed under the forthcoming Leader+ project. In Lesvos Petrified Forest geopark operation is supported by the Natural History Museum of the Lesvos Petrified Forest which is responsible for research activities, protection and promotion of this protected natural monument. Main activities were funded by the North Aegean Regional Operational Framework as well as by INTERREG and LEADER initiatives to promote geoconservation, geotourism and local development. Furthermore, in both areas exchange of know how and best practices assisted local stakeholders and staff of local authorities to develop skills on the nature protection and promotion of geoheritage. Additionally, a great number of publications, environmental education programs and promotional activities contributed to the information and education of local communities, as well as of visitors on their geological and natural heritage. All the above mentioned activities have significant impact in local economy through the development of geotourism.

Key words: geoparks, Psiloritis Natural Park, Lesvos Petrified forest, geoconservation, local development, geoheritage.

1. Introduction

Geoparks are territories aiming to conserve and promote their significant geodiversity and natural heritage for the benefit of science and local communities. The term was first introduced in the early 90' by UNESCO presenting an initiative, called UNESCO *Geoparks* to enhance the value of the nationally important geological sites, but it was established in 2000 with the creation of the European Geoparks Network with the support of the European Union. The International Union of Geological Sciences - IUGS in collaboration with UNESCO launched in 1995 a project named *Geosites* to compile a global list of the world's most important geological sites (Murray 2004). The latter has recently resulted to a list of the most important geological sites of south-eastern Europe (Theodosiou-Drandaki et al. 2004). This project failed to gain continuous support and it was abandoned by UNESCO and IUGS in 2004.

Geodiversity on the other hand was more recently induced in the international literature in an effort to describe, in the same way that biodiversity does, the wide natural range (diversity) of geologic (rocks minerals, fossils), geomorphologic (landform, processes) and soil features (Murray 2004), including their assemblages, relationships, properties, interrelations and systems. However, geological and geomorphological conservation efforts in Europe, Australia and other places worldwide started a century ago focusing on either landforms and geological formations or structures (Sturm 1994; Murray 2004).

Till recently Lesvos Petrified forest and Psiloritis Natural Park were the only geoparks in Greece, participating in the European and Global UNESCO's Geoparks Networks. The European Geoparks Network (EGN) was established in 2000 by four territories, Lesvos Petrified Forest, Reserve Geologique de Haute Provence in France, Vulkaneifel in Germany and Maestrazgo in Spain, aiming to promote and conserve their geological heritage, educate people and support local development acvivities (Zouros & Martini 2003). The initiative was under the umbrella of UNESCO, which later in 2004 adapted and used EGN as model to create other continental networks globally, establishing the Global Network of Geoparks (GGN). After the Madonie declaration in 2004 EGN became the only mechanism for the integration of new territories from Europe in GGN (Fassoulas et al 2007). In 2009, the Helmos – Vouraikos National Park became member of the EGN and GGN which today comprise 34 and 63 territories respectively.

A European Geopark has to manage both abiotic and living nature, including cultural heritage, in order to achieve high standards of conservation, promotion and finally true economic development (Zouros & Martini 2003). According to the European Geoparks Network convention (charta), it must present a significant geological heritage and cover a substantial area where an economic strategy, funded by EU programmes, occurs. It must comprise of geological sites of special value and sites with special ecologic, archaeologic, historic and cultural value. The geopark has to enforce local population to re-evaluate their heritage and encourage them to play an active role in economic revitalisation of their territories through certain actions that promote geotourism, education and other nature-friendly activities. The structure of the European Geoparks Network is relatively simple and comprises an Advisory Committee (11 members, including representatives of UNESCO, IUGS and IUCN) and a Coordination Committee (comprising of two representatives from each member). Decisions concerning the network are only taken by the Coordination Committee. As part of the Coordination Committee, there is an elected EGN Coordinator and Vice Coordinator to represent the whole Network. Membership in EGN has to fulfill certain quality criteria and is evaluated every 4 years through a strict and open process curried out by independent reviers selected by the EGN and UNESCO – GGN (UNESCO 2006).

Despite other international associations, EGN is a very active network of territories which collaborate together, exchange experiences and good practices in many scientific and applied topics, implement researches and studies for the conservation and promotion of nature in general and develop activities to support local economy in a sustainable manner. Networking is thus the strongest tool to transfer knowledge and experience between participating territories, from those having long tradition on nature protection and/or successful examples on sustainable ecomonic growth and strong local participation in territorial management to other less developed or weaker in protection of natural heritage.

To examine the true influence of European Geoparks in local communities and especially the benefits for the conservation of nature and sustainable local economy, we use two examples from the operating geoparks in Greece. The Lesvos Petrified Forest and the Psiloritis Natural Park are both hosting high quality geosites but two quite different territories; the first being a coastal area while the second is representing a mountainous area. Both lying far away from big domestic areas, but close to already developed tourist areas have the potential to develop sustainable tourism and associated

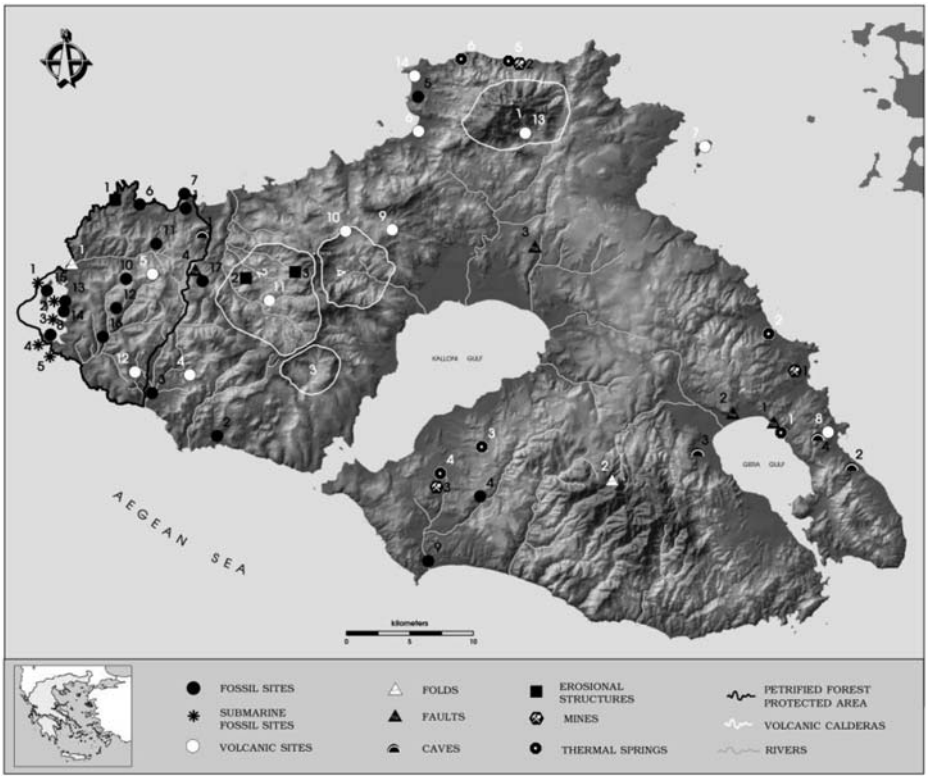

Fig. 1: Lesvos geopark and the main geosites.

economic activities. Hereby we examine the influence of certain activities and initiatives, developed so far in these geoparks, especially under the topics of scientific and educational progress, conservation of geological heritage and local, economic development.

2. Study Areas

2.1 Lesvos Petrified Forest

Lesvos Island, located in the NE of the Aegean Sea, is dominated by Neogene volcanic rocks, forming characteristic landforms and landscapes. Related to the volcanic activity is the formation of the well-known "Petrified Forest of Lesvos" which has been declared as a protected natural monument (Fig. 1). The protected area lies within the Municipality of Eresos – Antissa which comprises by seven small towns and 13 settlements has an area of 291 km^2 and a population of 5.530 inhabitants. In the Municipality there are about 2500 beds in the hotels and in the rooms to let. Aiming at protecting and efficiently managing the Petrified Forest, the Natural History Museum of the Lesvos Petrified Forest was founded in 1994. It is a non-profit, public (?) organisation and defines the management structure of the Lesvos Petrified Forest Geopark. Its seven-member board encompasses representatives of the central government, the local authorities, universities and the local community. Its scientific, technical and administrative staff includes 8 permanent and 25 temporary employees. The Lesvos Petrified Forest Geopark comprises a core zone (15,000 hectares of the Petrified Forest protected area) and a broad buffer zone (more than 20,000 hectares of the central volcanic terrains). The Petrified Forest

Fig. 2: Guided tour at the Lesvos Petrified Forest Geopark. More than 90.000 visitors every year visit the Museum and the open air parks.

protected area is included in the Natura 2000 network, basically due to the presence of the Petrified Forest, the high endemism of flora and fauna and the variety of natural habitats.

A strategic plan for the sustainable development of the area has been carried out by the Lesvos Geopark in order to link the protection and promotion of geosites with the development of geotourism. This plan takes into consideration the results of the research and excavations in the Petrified Forest area, the presence of important geosites (i.e. volcanic structures, domes, craters, and thermal springs) and biological reserves, the existence of spot interventions and infrastructures as well as the local economic activities.

A broad range of activities combine the main components for the operation of Lesvos Geopark, including scientific research, the creation of the geosite inventory and map, the protection, interpretation and promotion of geosites, the conservation of fossils, the creation of visiting parks, the establishment of a network of walking trails linking geosites to ecotourism infrastructures, the development of environmental education programmes on geosites, the organisation of scientific and cultural events, and the promotion of monumental geosites.

2.2 Psiloritis Natural Park

Psiloritis Natural Park is located in the island of Crete (Fig. 3) and since 2001 is member of the European and Global Geopark Networks. It has an area of 1159 Km^2, with 157 settlements and towns and a population of about 42234 inhabitants (population density 36.4 inh/Km^2). The Park comprises the Psiloritis mountains and its northern coastal zone, and combines the unique natural environment, the long history, the individual customs and the outstanding civilization with the fascinating geology (Fassoulas 2004). Psiloritis Mountain is not only the highest mountain in the island (2456 m) but also a place of high environmental variety and diversity. Intense geological processes have sculptured for millions of years a unique and complicated bedrock over which life migrated and developed, adapting its features and behaviours to the changes of surface and landscape. Life had to adapt to the geological changes and a high endemism was developed due to isolation of certain species or adaptation of others to the new environmental conditions. Most of the mountainous area is thus included in the Natura 2000 network, basically due to the high endemism of flora and fauna and the variety of natural habitats that have to be conserved.

Within the territory of the Geopark, the whole nappe pile of Crete and the majority of the rock types of the island are presented in excellent outcrops and sections (Fassoulas 2004). In the geopark, all kind of geological structures are visible from small to regional scale. Big faults with excellent and imposing fault

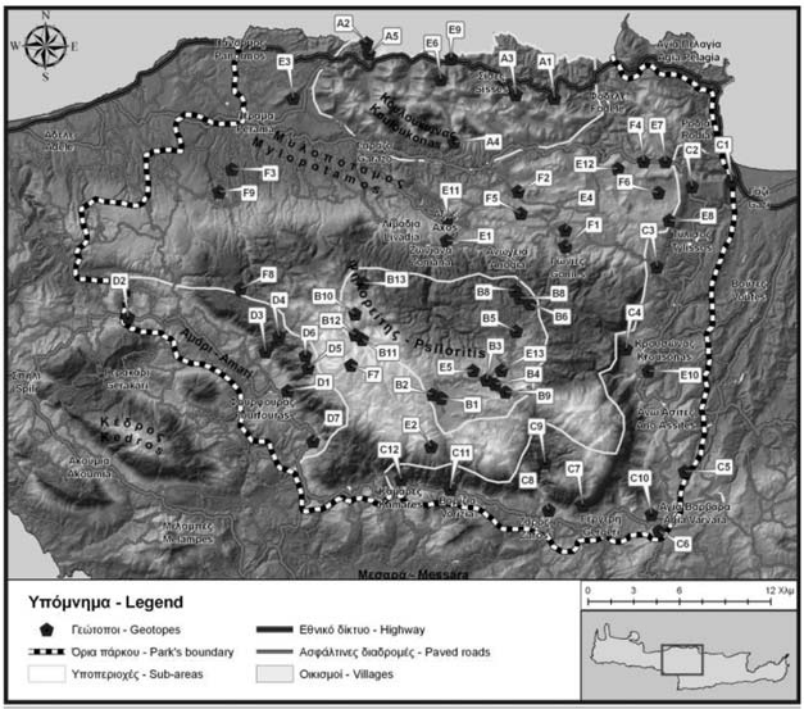

Fig. 3: The area of Psiloritis Natural Park and the most important geosites.

surfaces, fossil sites, caves, impressive gorges and mountainous plateaus that host many endemic species of the island, unique fold associations and geomorphologic structures are feeding for thousands of years the culture, tradition and customs of the inhabitants (Fassoulas 2004). Of the most outstanding attractions are the two open to public caves, Sfentoni and Melidoni, with facilities to host visitors.

The Psiloritis Natural Park has no official designation and is only supported by local authorities and community. It is managed by the Geopark's Management Committee which has been given special authorities by the council of AKOMM Psiloritis Local Development S.A., the company responsible for the local development of the area. Representatives from regional and local authorities, the scientific institutions and NGOs constitute the Management committee, whereas the Natural History Museum of Crete is the scientific coordinator of the Park. A Strategic plan for the development of geotourism and other sustainable development activities has been developed and has been included in the local LEADER Action Plan, implemented hereupon through different, European and National, finance instruments. With the creation of the Management committee and the new authorities that were privileged by the Local Authorities, a new 5-years Management Plan is under preparation now.

The performance of Psiloritis Geopark in geoconservation is weak and is mainly caused by the lack of official recognition and the restricted authorities of the Management committee in these topics. However, the inventory, mapping and evaluation of the geosites of the park was the first step for the conservation of the geological heritage (Fassoulas et al. 2007). All municipalities of the park are obliged to protect and conserve the geological monuments of their territories, whereas recently, in collaboration with the Regional authorities the geosites of the park are included in all Special Zoning Plans of the Municipalities implemented under the new Layout Planning Law of the country. Fur-

thermore, instructions and announcements for the maintenance and conservation of geodiversity appear in many publications and panels all over the area.

3. Countable Results

Participation of the two geoparks in the EGN offers many opportunities for international collaboration, promotion and funding through European and national funds and thus EGN had a significant contribution to geopark's operation and activities. Both geoparks developed many initiatives, projects and actions in order to achieve the geopark's goals. The results of these activities over a decade are now quite recognisable and can be evaluated for their influence to local development. The main fields of activities can be distinguished in scientific and educational activities which help in raising public awareness for geoconcervation and geotourism and promotional activities that contribute to the territorial sustainable development.

Some of these results are countable and tangible and refer to infrastructure development, promotional activities, educational activities, improvement of financial parameters, raised funds, job creation etc. Other activities however, have resulted in improvement of knowledge, adaptation of policies for the management and conservation of nature, support of local production and activities that are less recognisable and can be regarded as intangible.

3.1 Lesvos Petrified Forest

The creation of Lesvos Geopark is based legally on the establishment of the Lesvos Petrified Forest as a protected natural monument by the Presidential Decree 433/1985. An early recognition and identification of the geological heritage and the specific geotopes of the park (Zouros 2005). Further scientific study resulted in the mapping and identification of 80 individual geosites that were further analysed and evaluated using modern methodologies and practices (Zouros 2005, 2007, Zouros and Valiakos2007). More than 60 scientific articles in journals and scientific meetings have been published for the geological heritage of the area, together with several books, field guides and popular publications. A series of national and international scientific congresses have been organised by the geopark in Lesvos between 2000 and 2009 for the promotion and management of geological heritage, and proceedings and abstract volumes were also published. The geopark is supporting in many ways four Phd thesis (Thomaidou, Valiakos, Gumus and Mourouzidou) and five master thesis on the geological structure and geoheritage management in Lesvos (Lambaki 2007, Gribilakos 2007, Alevra 2009, Mantzouka 2009).

Educational activities lie at the core of the Lesvos Geopark's operation. Environmental education programmes organized for elementary and high school students cover a broad range of activities aiming at raising the awareness of the local inhabitants diffusing of geoscientific knowledge at large on various issues such us: understanding of natural processes, geoforms and landscapes, the importance of the environmental protection and management, the conservation of the Earth's heritage and natural hazards. Thematic exhibitions accompanied by educational programmes introduce young students to the "secrets" of geo-scientific research and geoconservation through a variety of activities accompanied by educational tools and publications. Further educational projects were recently developed in collaboration with the Evergetoulas Environmental Education Center. Several field trips were organised almost every spring for the students of University of the Aegean as well as for graduate and post graduate University courses from Greece and abroad. Many lectures and presentations are given to University classes or tourist groups.

In 2000 the Vocational Training Centre of the Natural History Museum of the Lesvos Petrified Forest was founded with the aim of training young unemployed people in the techniques of conservation, excavation and preservation of fossils, as well as in methods of dealing with visitors and promoting Geoparks. Till now five courses were delivered and 108 young people living in the area of the Lesvos Petrified Forest Geopark, were trained. Thirty four of these trainees are, or were employed in the Lesvos Petrified Forest Geopark.

The International Intensive Course on Geoparks is co organized annually since 2007 having a different subject each year. The organization is curried out by the Lesvos geopark and the University of the Aegean in close cooperation with the Global Geoparks Network, the European Geoparks Network. The course is open to 30 participants, geopark staff members with a degree in Geosciences, to PhD and Master Students working on geopark, geotourism, geosite, geomorphosite and landscape topics, as well as to Geoscientists having a special interest on the topic.

Furthermore, a series of scientific and cultural events is organized and hosted every year in the Petrified Forest to attract the attention of the broader public to this unique natural monument. The range of events includes scientific lectures, slide projections, documentary films, natural science oriented temporary exhibitions, book presentations, painting – sculpture - photo and video-art exhibitions, music and dance events, theatrical plays and happenings. Through these events the Geopark draws large audiences of people who may have low or no interest in natural heritage, thus creating new opportunities for sensitisation.

An important component of the Lesvos geopark management plan is the support of the local economy. The geopark has created links with local tourist enterprises, restaurants and small hotels in order to provide the necessary infrastructure to meet the needs of the increasing number of park visitors. The majority of visits to the geopark occur during the summer period (July – September), but the aim is to extend the visiting period to the spring and autumn seasons. In the village of Sigri, the number of "Bed and Breakfast" accommodations has doubled over the last few years in order to meet the increasing demand. More importantly, visitors have increased the duration of their visit to the geopark area. As a result the majority of the new enterprises established in western Lesvos are connected with the activities of the Lesvos geopark. The geopark also supports the making of local handicrafts such as the production of fossil casts and souvenirs by local enterprises. These items are on sale in the Museum shop along with a variety of other locally made products. Lesvos has a long tradition in pottery and wood carving and the geopark promotes these products to its visitors.

The Lesvos geopark also collaborates closely with women's agrotouristic cooperatives and local organic food producers to offer its visitors the opportunity to taste and buy local food products (pasta, organic olive oil, wine, ouzo, liquors, traditional sweets and marmalades etc). The catering for all geopark events (conferences, meetings etc.) is supplied by the women's cooperatives using the local traditional recipes. Their products are also sold in the Museum snack-bar. Every summer the geopark organizes an Agrotouristic festival (attended by 28.000 visitors in 2007), which promotes quality local products, food and drinks prepared by the women's cooperatives. The Agrotouristic festival includes a variety of presentations, events and happenings as well as an exhibition fair of local products.

Lesvos geopark through his activities have become an important factor of the economic, educational and cultural development of the protected area. The geopark contributes significantly to territorial development by directly and indirectly creating new jobs. Since 1995 people have been finding employment within its activities, such as the 25 seasonal positions (8 months per year) and 8 permanent positions. This has to be added to the 5 existing positions in the Petrified Forest Park. But what is even more important for the employment in the area is the number of other employment oppor-

Fig. 4: Some of the activities of Psiloritis geopark. a) Educational field trips on biodiversityy, b) Participation in the First International Geopark's fair in Germany, c) Various publications and promotional material, and d) Information panels.

tunities which have been created in tourist enterprises, small hotels, guest houses, restaurants and other activities connected with the increase of tourist flow in the geopark area. Several other local artisans, such as makers of handicrafts and ceramic fossil casts, carpenters, and blacksmiths, are permanent collaborators with the geopark.

3.2 Psiloritis Natural Park

The establishment of Psiloritis geopark was based on an early inventory and identification of the geological heritage and the specific geosites (geotopes) of the Park (Fassoulas 2004). Further scientific study resulted in the mapping and identification of 64 individual geosites that were further analysed and evaluated using modern methodologies and practices (Fassoulas & Skoula 2006, Mouriki & Fassoulas 2009). More than 15 scientific articles and announcements in scientific meetings have been published for the geological heritage of the area, together with several popular publications. An international scientific congress was held by the geopark in Anogia in 2004 for the promotion and management of geological heritage, and an abstract volume was also published. The park has supported in many ways one Phd thesis on the bats of Psiloritis (Georgiakakis 2009) and two master theses on Geopark's Risk Analysis (Staridas 2006) and Sirenian fossils (Svana 2007, Illiopoulos et al. 2009).

Educational activities (Fig. 4) were mainly undertaken by the Natural History Museum of the University of Crete in collaboration with local schools. Two educational projects have been developed at the early stages focused on the karstic features of the mountains and the endemism of flora and fauna, where later, two other projects resulted in the preparation of two Educational Suitcases that were given to all schools of the geopark. The projects were dealing with water cycle and landscape development and also with the biodiversity of Psiloritis (Fassoulas et al. 2006). Further projects were more recently developed in collaboration with the Anogia Environmental Education Center (AEEC). Several field trips are organised almost every summer for children and families in specific areas of the park under

the guidance of the Natural History Museum or the AEEC. Finally, many popular or scientific talks were given to University classes, target groups, or tourist groups (Skoula & Fassoulas 2006).

Very often foreign Universities visit the area to study the bio- and geodiversity of Psiloritis implementing in collaboration with the geopark field trips, mapping courses and sampling. Also, Psiloritis is an important area for local Universities and schools and many scientific articles have been published on several geological, geographical and biological disciplines. An ongoing demand for information on the sustainable development and eco-touristic activities in the broad Psiloritis area is observed recently. Only last year one University and one college classes were introduced and guided to the geotouristic activities of the park and two more summer schools on sustainable development and agrotourism were also hosted in the territory.

The economic contribution of the Psiloritis geopark is visible in several occasions. Certain activities were undertaken and a basic infrastructure has been established for visitors. One of the activities of AKOMM to promote local gastronomy based on traditional recipes and local products is the project "Land of Psiloritis". It is curried out in cooperation with local stakeholders (taverns, accommodation places, agrotouristic enterprises etc.) who formed a non-profit organisation that uses the logo of geopark as the brand name for a network of cooperating enterprises. Members have to fulfil certain quality standards that have been set in collaboration with the geopark and are evaluated every year by a common group of specialists.

During the last years the geopark has participated in two international tourism fairs promoting the area and the local products, it has developed local workshops and events to promote culture and local production. The geopark has organised many public events for the promotion of local products and artists, for the exchange of knowhow and improve the level of information for the geopark. The most important is the big public exhibition organised in Heraklion and Rethimnon in 2008 to promote local artistic craft making by earth materials which met great success, as more than 20000 people attended the exhibition. In the exhibition participated also artists from other geoparks.

The contribution of the geopark in to the tourist product of the area can not be easily evaluated as there is lack in central accomodation places. The two open caves of the park that are managed by other stakeholders, ie. the Sfentoni Cave in Zoniana and the Melidoni cave accept around 30.000 visitors per year each with an increasing trend the last four years. The caves are in close collaboration with the Geopark for the improvement of their equipment and operation, while 4 employees of the caves have participated in exchange projects with other geoparks on cave management. Generally, an increased demand for information from many countries globally, placed as requests at the Park's webpage, is recorded.

The Park has participated in two LEADER and one INTERREG II projects, whereas a special regional plan for geotourism development was implemented during the LEADER II initiative securing funds for many individual activities. The last three years about 500.000 € were used for the geopark activities, like the three local geotouristic investments, two local information centers, four geological and natural trails, and more than one hundred information panels that were placed in all important geosites and many other natural or cultural features of the park. For the implementation of these projects five new staff, out of the existing of AKOMM and Natural History Museum of Crete were hired.

4. Conclusions-Results

It is apparent that geoparks, although not yet officially recognised as in other European countries, are the only local structures in Greece to promote and conserve geological heritage, having set their

geodiversity as an important economic and scientific value. Combining all aspects of natural and cultural environment geoparks have created a strong economic product which can assist local communities to improve their economic level and have thus the ability to protect and conserve their earth heritage. Many of their activities can be easily assessed in economic terms, presenting the influence the geoparks have in the establishment of sustainable development activities, creation of a geotouristic product, support of local products, raising funds, and creation of new jobs and opportunities. The most important however, is the increase of knowledge and sensitization both for inhabitants and visitors, on their geological and natural heritage.

More specific, geoparks address the strong need for effective management of important geosites and sustainable development of rural areas through the development of geotourism which enhances the value of the Earth heritage, its landscapes and geological formations, key witnesses to the history of life. A broad range of activities combine the main components for the operation of the Lesvos and Psiloritis geoparks, including scientific research, the creation of the geosite inventory, the protection, interpretation and promotion of geosites, the geoconservation, the establishment of a network of walking trails linking geosites to ecotourism infrastructures, the development of environmental education programmes on geosites, the organisation of scientific and cultural events, and the support of local products through the collaboration with local stakeholders.

Geoparks especially act for the benefit of local communities through geotourism development and educational activities in rural areas. The results of their operation prove the potential of all geoparks across Europe to be powerful, new tools for holistic nature conservation and sustainable rural development through geotourism.

5. References

Fassoulas, C., 2004. Psiloritis Geopark: Protection of geological heritage through development. In Parkes M.A. (ed): *Natural and Cultural Landscape - The geological foundation*. Royal Irish Academy, Dublin, 291-294.

Fassoulas, C. and Skoula, Z,. 2006. Assessing the economic value of the Psiloritis area through the European Geoparks Network initiative. In: VIII Inter. Conf for the *Protection and Restoration of Environment*. Chania, Crete, Proc. Vol., T.11, p. 259.

Fassoulas, C., Voreadou, K,. and Illiopoulos, G., 2006. Bringing together Bio- and Geo-diversity: An example from the Psiloritis Natural Park, Crete, Greece. In: 2nd UNESCO *International Conference on Geoparks*. Belfast 2006, Abst. Vol., 78p.

Fassoulas, C., Paragamian, K., and Iliopoulos, G., 2007. Identification and assesement of Cretan geotopes. *Bulletin of the Geological Society of Greece*, vol. XXXVII, 1780 – 1795 pp.

Fassoulas, C., Patzak, M., Zouros, N. and McKeever, P., 2007. European and Global-UNESCO networks of Geoparks: management of geological heritage and local development. *6th International Symposium on Eastern Mediterranean Geology*. Amman 2-5 April 2007. Abstract volume., p. 4.

Georgiakakis, P., 2009. Geographical and altitudinal distribution, audio identification and ecology of Chiropteran in Crete *(PhD thesis)*. Univesity of Crete, Heraklion, 225 pp.

Iliopoulos, G., Svana, K. and Fassoulas, C., 2009. Sirenian findings from the Psiloritis geopark, Crete, Greece. *8th European Geoparks Congress*, Idanha, Portugal, Abst. Vol., 143p.

Mouriki, D. and Fassoulas, C., 2009. Quantitative Assessment of Psiloritis' Geotopes With Emphasis on Protection and Geotourism (Crete, Greece). *8th European Geoparks Congress*, Idanha, Portugal, Abst. Vol., 199-200p.

Murray, G., 2004. Geodiversity: valuing and conserving abiotic nature. *J. Wiley &Sons,* Ltd, New York, 434pp

Skoula, Z., and Fasoulas, C., 2006. Building participative processes and increasing the economic value of goods in Psiloritis Natural Park. In: *2nd UNESCO International Conference on Geoparks,* Belfast 2006, Abst. Vol., 111p.

Staridas, S., 2006. Project and Risk Management if a Geopark: Application of Risk Management techniques in the Geopark of Psiloritis, *(Master Thesis)*.Univ. Leeds, Leeds 125pp.

Sturm, B,. 1994. The geotope concept: geological nature conservation by town and country planning. In: O'Halloran D., Green C., Harley M., Sanley M. & Knill J. (eds) *Geological and Landscape Conservation*. Geological Society, London, 27-31.

Svana, K., 2007. Study of the Upper Miocene Sirenian of Crete *(Master Thesis)*. University of Crete, Heraklion, 71 pp.

Theodosiou-Drandaki, I., Nakov R.,… et al., 2004. IUGS Geosites Project Progress: A first attempt at common framework list for south-eastern European countries. In: Parkes M.A. (ed): *Natural and Cultural Landscape - The geological foundation*. Royal Irish Academy, Dublin, 81-89.

UNESCO, 2006. Guidelines and Criteria for National Geoparks seeking UNESCO's assistance to join the Global Geoparks Network, Paris, January 2006. *Internal document*, 10 p.

Velitzelos, E., Mountrakis, D., Zouros, N., and Soulakellis, N., 2003. Atlas of the geological monuments of the Aegean. Ministry of the Aegean, *Adam editions*, Athens p.352.

Zouros, N., 2005. Assessment, protection and promotion of geomorphological and geological sites in the Aegean area, Greece. *Géomorphologie: relief, processus, environnement,* no 3, 227-234.

Zouros, N., 2007. Geomorphosite assessment and management in protected areas of Greece. Case study of the Lesvos island coastal geomorphosites. *Geographica Helvetica,* Jg.62, Heft 3/2007, 169-180.

Zouros, N., and Martini G., 2003. Introduction to the European Geoparks Network. In: Zouros N., Martini G. & Frey M.L. (eds) Proc *2nd European Geoparks Network Meeting*. Mytilene, Greece, 17-21.