Turkish Journal of Engineering



Turkish Journal of Engineering (TUJE) Vol. 4, Issue 4, pp. 176-182, October 2020 ISSN 2587-1366, Turkey DOI: 10.31127/tuje.639314 Research Article

LATMOS GEOPARK (BEŞPARMAK MOUNTAINS) WITH HERAKLEIA-LATMOS ANTIQUE HARBOUR CITY AND BAFA LAKE NATURAL PARK IN TURKEY

Aziz Cumhur Kocalar *1

¹ Niğde Ömer Halisdemir University, Architecture Faculty, City and Regional Planning, Niğde, Turkey ORCID ID 0000 – 0003 – 0580 – 9530 azizcumhurkocalar@gmail.com

> * Corresponding Author Received: 28/10/2019 Accepted: 06/01/2020

ABSTRACT

LATMOS (mountain range), which can be a geopark, is located near Lake Bafa Nature Park on the border of Aydın and Muğla. The region has a deep history dating back to many years and valuable natural, archaeological and geological heritage sites. In this study, the geomorphological structure of the region is examined in general terms, especially research area in terms of geotourism has quite interesting features. The elevations at the end point of the Büyük Menderes Basin reach up to pretty high for sub-Aegean geological formations and have an geostrategically important position and wide viewing area. In history, these mountains, which were considered sacred especially in the Carian period, have always been in an important position in terms of human culture. The presence of traces of rock settlements dating to the Neolithic period in the mountains is also known today. Scattered rock paintings in the region were the most important findings. However, they have survived to the present day by being damaged. These and similar rock churches and monaster, as well as military castles and walls, leaving many distinctive and interesting cultural traces, these mountainous areas, which are inhabited, are expected to be constantly preserved and renewed. In history, there are also other ruins of the Carian State, which spread to a much larger background in the sub-Aegean. The port city of Herakleia (now Kapıkırı village) is located on the shores of Lake Bafa. Massive rock formations that have undergone metamorphic changes in the process are in need of investigation in many aspects of volcanic, magnetic and mineralogical aspects. These rocks also have qualities that can be salty due to their relationship with the sea. In summary, this region is composed of mountain ranges (Latmos Mountains), valleys with different features of archelogical sites and a very special lake that have an important natural park feature. In addition to its interesting natural structure, rock formations and geoheritage areas, it must be protected with the awareness of geotourism. It should not be forgotten that in order to transfer the traces of many different cultural settlements within the rocks to the next generations in a healthy way, the region is obliged to be carefully conserved together with a conservation aimmed development plan.

Keywords: Geopark of Latmos, Urban Geology, Geoheritage-Geotourism-Geosite, Urban Geography, Cultural Heritage Conservation, City and Regional Planning.

1. INTRODUCTION

The aim of this study was to explore the rural development planning approaches towards geotourism potential in Turkey. The structure of geotourism makes a discussion for the possible effects on the processes of Turkey's rural development. Also, theorical approaches are cited in the inter-disciplinary areas (tourism, public management, planning, art history, etc.) about subject.

2. TOURISM FOR RURAL DEVELOPMENT

The starting point of sustainability objectives in ecological approaches are increasing with interest in the development of interdisciplinary researches of alternative-tourism related subjects. Tourism alternatives for rural economy and/or rural development can research with different dimensions. Rural legislation is also covered here.

2.1. Alternative Tourism

One of them is eco-tourism for rural development, especially cittaslow movement is interesting with festivals. Geotourism also another alternative for rural economy and/or rural development.

2.1.1. Eco-tourism and Cittaslow

Eco-tourism trends are accelerating in the world. Turkey can be created in rural development with Ecotourism opportunities. But building pressure in rural sites with new generations also critical reason, new generations need jobs. If they are not be able to job, are migrate to big cities.

Cittaslow movement, pioneered by settlements such as Seferihisar-Izmir, draws attention to domestic products and has various potentials for eco-tourism and rural development (Bostancı, 2017).

The slow city movement started in Italy on the Mediterranean coast was accepted in our country, but the practices were left superficial. In Turkey, those ten cities are slow city at below:

Seferihisar (İzmir), Akyaka (Muğla), Gökçeada (Çanakkale), Taraklı (Sakarya), Yenipazar (Aydın), Yalvaç (Isparta), Vize (Kırklareli), Halfeti (Şanlıurfa), Perşembe (Ordu), Şavşat (Artvin).

"Developing a 'One Village-One Product (OVOP)' in Model for the Rural Economy Diversification and Intensification Program in the Final Report of the Eastern Black Sea Regional Development Plan (DOKAP) prepared by the Japanese International Cooperation Agency (JICA) in 2000 was proposed in order to have various fruits and increase the production in general by the Harşit Stream" (JICA, 2000; Yücer, 2016).

Turkey also partially initiated at the local OVOP Project as Table 1 at below . The Governorship Special Administrative Directorates and the Provincial Directorate of Agriculture were supporting with the institutions of these OVOP projects.

Table	1.	Some	sample	villages	and	products	for
Citysle	w (OVOP p	ractice in	Turkey.	(Yüce	r, 2016).	

Year	City	Place	Products
2002	Giresun	Espiye/ İbrahimşeyh	mandarin and fruit growing.
2003	Tokat	Villages	sour cherry, walnut, peach, vegetables.
2007	Hakkari	Villages	walnut, vegetables, rugs.
2007	Kütahya	Simav Villages	fruit and vegetables

Eel can become a gastronomically important product for Bafa Lake region. It is a fish that has adapted to the salinity of the lake containing salty rocks so it is very clever and much more researched. Region is very interesting in different aspects. Bafa Lake Natural Park and Latmos Mountains has very potential area (Fig. 1).



Fig. 1. Bafa Lake Natural Park from Latmos Mountains.

There can be also different projects, for ex. a project news about ecology (Ertuğrul, 2015). Sub-Aegean region in where Büyük Menderes River is dominant, is very powerful area in history. The view of the mountains of Herakleia Latmos was presented in 1765 with Lake Bafa in front of it (Fig. 7). Special rural areas like Latmos Geopark and Bafa Lake that characterized with geotourism (geosite, geomorphocyte, geopark, geotope), are conserved with current conditions (Fig. 1, 2, 3, 4, 8, 9, 10, 11, 12).

2.1.2. Geo-parks and Geo-tourism

A UNESCO definition of global geopark is a unified area with a geological heritage of international significance (UNESCO, 2015). Geoparks use that heritage to promote awareness of key issues facing society in the context of our dynamic planet. There are many geoparks in all over the world (Fig. 2).



Fig. 2. UNESCO Geoparks.

They promote awareness of geological hazards, including volcanoes, earthquakes and tsunamis and

many help prepare disaster mitigation strategies with local communities.

Geoparks embody records of past climate changes and are indicators of current climate changes. They are demonstrating a "best practise" approach to using renewable energy and employing the best standards of "green tourism".

Tourism industry promotion in geoparks, as a geographically sustainable and applicable tourism model. They aims to sustain, and even enhance, the geographical character of a place.

Geoparks also inform about the sustainable use and need for natural resources, while at the same time they are promoting respect for the environment and the integrity of the landscape.

The Global Geoparks Network (GGN) is a UNESCO activity established in 1998. According to UNESCO, for a geopark to apply to be included in the GGN, it needs to:

- have a management plan designed to foster socio-economic development that is sustainable based on geotourism
- demonstrate methods for conserving and enhancing geological heritage and provide means for teaching geoscientific disciplines and broader environmental issues
- have joint proposals submitted by public authorities, local communities and private interests acting together, which demonstrate the best practices with respect to Earth heritage conservation and its integration into sustainable development strategies.

Geotourism adds to ecotourism's principal focus on plants (flora) and animals (fauna) by adding a third dimension of the abiotic environment. Thus it is growing around the world through the growth of geoparks as well as independently in many natural and urban areas where tourism's focus in on the geological environment.

The initiatives of the local and/or central authorities have just stayed for tourism and the adoption of sustainability of stakeholders that owners of alternatives tourism ideas not yet been achieved in geotourism.

Most of the world defines geotourism as purely the study of geological and geomorphological features. So geotourism can also be supported by international funding but need to coordination with national authorities again (Fig. 3).

Photographers, climbers, mountain hiking and art groups, nature travelers are interested in the region. Tours, workshops and festivals can be organized in this area. Especially, Spring and Autumn periods are suitable for these kind of activities.



Fig. 3. Latmos Geopark and Bafa Lake views.

2.2. Legislation

Legislation changed in last years for village management subjects. There are some critical points for the future in rural lands. This legislation is also covered below:

"Current discussion in rural development: in 2012, arrangements made with the Law No. 6360, expanding the municipal boundaries of cities in 30 provinces (these are metropolitan municipalities), changes the statue of villages to neighborhoods" (Albayrak; Eryılmaz, 2018).

The characteristics of rural settlements in the metropolitan areas are affected with these changed. These rural areas must be protected in the future.

3. HISTORICAL-NATURAL-CULTURAL STRUCTURE AND ALSO GEOLOGICAL AREAS-"LATMOS GEOPARK"

Recommended as "Latmos Geopark", the region on the shores of Bafa Lake Nature Park on the border of Aydın and Muğla is interesting with its geological history dating back 500 million years.

The geomorphological structure of the region, which has been studied in the mountainous areas and valleys, has quite different features especially in terms of geotourism like figures (Fig. 3, 4, 5).



Fig. 4. Latmos Geopark and Bafa Lake connections.

Massive masses undergoing metamorphic changes in the process are expected to be investigated from a mineralogical and petrographical point of view.

Located in the Büyük Menderes Basin, Latmos Mountain (wheel shaped at the top of it) is dominated by a wide range of elevations with elevations reaching 1375 meters. It is understood from the historical structures of the Karia king, which is unearthed as well as the fortress and city walls where the mountains are geostrategically important in history.

3.1. The fortress city of Herakleia-Latmos Antique Harbour City (Kapıkırı Village) and Urban Geology

The fortress city of Herakleia (Kapıkırı village), which is the dominant city and the coast and sea as an end port city on the borders of the Aegean Sea, has been on the shore of the lake today.

This region, which is located on the Aegean Sea borders of Caria State, which has been spread to a wide background in the lower Aegean, is an end port city. In the ancient period, the port city of Herakleia (Kapıkırı village) is a fortress-type city which is dominated by the shore and the sea (Fig. 4, 5, 7, 8, 9). Today, the city is on the shore of the lake.

The region has many different values in terms of educational tourism. These values are at below:

Historical, cultural, artistic, art history, sociology, psychology, coastline changing, global warming, climate changing, natural history, flora-fauna and biodiversity (birds, fishes) etc.



Fig. 5. Herakleia findings (Kapıkırı village).

The cultivated areas like as Kapıkırı, transforming year by year for residences and/or summer houses (Fig. 7, 10), etc. against the rural development with conservation. (Kocalar, 2018a).

3.2. Traces of Rock Settlements and Rock Paintings (Art History)

In addition, traces of rock settlements dating to the Neolithic period were also found at different points of the area and the pictures scattered in the region were the most important findings. However, they have been damaged by external influences and vandalism.

It should not be forgotten that the skirts of the mountainous area where the ancient city and the scattered rock paintings are located, must be carefully protected together with the conservation aimed development plan.

It is of great importance that the lake is prevented from pollution. On the large scale it is necessary to complete the Büyük Menderes Basin Plan, and that it provides a unity with the conservation aimed development plan. Lastly, a holistic protection consciousness should be created in the area.

The rock paintings discovered in the Latmos Mountains in recent years are one of the most important discoveries concerning the prehistoric archeology of Anatolia. These paintings shed light on the thought world of prehistoric societies which have been settled by virtue of their unique depiction language and their repertoire.

Unlike the glacial cave paintings of Western Europe, which consist of magnificent animal depictions, human beings are in the foreground in Latmos rock paintings (Fig. 6) and they are depicted as a part of a community. The transition to the settled order and the change in its forms appear in rock painting art with these examples for the first time (Peschlow-Bindokat, 2006). (Archeology Art History, 2011).





Fig 6. Rock Paintings

In a thesis, "Determination of Mineralogical and Petrographical Properties of Tafonization Processes in Latmos-Beşparmak Mountains (Muğla)". They tried to elaborate the tafoni processes and formation mechanisms in rocks (Söyler, 2020). This work is related paintings, because one of the aims of the thesis is to study rock groups in which pictures are made.

3.3. Natural Park Features

The Natural Park is suitable for use with its status and area management, while preserving its natural thresholds (Kocalar, 2018b). Fishing is important for village people. Flora and fauna are very rich for biodiversity around the lake. In order to be able to convey the traces of many different cultural settlements within the rocks to the next generations in a healthy way, the priority should be given to the evaluation of the region for purposes of natural history education and through alternative tourism functions.

Area; Because of its natural structure, rock formations and geo-heritage areas, it must be protected within the framework of geo-tourism awareness. Bafa Lake is a historical lake (Fig. 7).



Fig. 7. The view of the mountains of Herakleia-Latmos (1765) with Lake Bafa (Peschlow-Bindokat, 2005, pp. 41). (Distelrath, 2008, pp. 2).

3.4. Conservation Aimmed Plan

In 1989, the whole city structure of Herakleia was protected by official authorities. However, a current assessment of the monuments (Fig. D) could not be made. However, only a usage and conservation plan can be prepared on the basis of this evaluation (Distelrath, 2008, pp.105-112). Coastline of ancient period was very different and village was a coastline city in past (Fig. 8).



Fig. 8. Coastline of ancient period and relationship of the lake with the sea (Abb.9) (Distelrath, 2008, pp. 13).

The relationship of the lake with the sea is still strong. The traces of the past connection with the Aegean Sea over the Gulf of Latmos are better understood when looking from the mountains towards the sea (Fig. 9).



Fig. 9. Coastline of ancient period and relationship of the lake with the sea.

The village development plan should be explored in detail as in the source (Fig. 10) (Distelrath, 2008, pp.112-119) after Conservation Aimmed Plan.



Fig. 10. Herakleia (Kapıkırı Village) (Abb.70) (Distelrath, 2008, 115).

Regulatory proposals for old and new buildings should be brought (Peschlow-Bindokat, 2006, pp.119-125). New development trends of the village should be thoroughly evaluated (Peschlow-Bindokat, 2006, pp.125-132).

The development phases of the village in the previous years (2005) should be taken into consideration as in the source (Distelrath, 2008, pp.153-165). Rural life in village with Latmos and Bafa Lake should be

conserved in future. The land use plan of the village and the protected

areas were documented (Fig. 11) (Distelrath, 2008, pp.165-166).

With the silhouette of Herakleia city (Fig. 7, 10, 12), visual inventory of the works in today's village areas should be completed and intermittent monitoring should be made.

3D models should be made using terrestrial laser scanners as done in the mausoleum (Alptekin, Çelik, Yakar, 2019).



Fig. 11. General Plan - Land use plan of the village and documentation of the protected areas (Abb.A25) (Distelrath, 2008, pp.165).

This site workings after Distelrath, published a book, named "Latmos, Miras 1, Heritage in Context", the project supported by Deutsches Archäologisches Institut Istanbul, (Bachmann, Maner, Tezer, and Göçmen, 2011).

3.5. Geotourism Potential in Geoheritage Areas in Latmos Mountains

These mountainous geological-archaeological sites, which have witnessed permanent settlements with their rock churches and monasteries as well as their military and commercial structures and with many distinct and interesting cultural traces, should be carefully preserved and renewed in tourism. Latmos Mountains are very near Lake at below (Fig. 12).



Fig. 12. Latmos Mountains and Bafa Lake.

The Latmos Mountains and Bafa Lake are a whole. The surrounding quarries are an important danger for this geopark. Also lake pollution of the lake is another important danger every summer. Fish farm and olive oil processing factories should be taken under control.

Geosite: The rock-mineral-fossil assemblage which shows an event, sequence, geological structure, texture type, formation or evolution during the formation or evolution of the earth's crust, is a scientific document a natural entity with the visual beauty in some cases. (Wimbledon, 1996) (ProGEO Group, 1998; www.progeo.se).

Geological heritage: It is a rare geosite under threat of extinction that will destroy the information and geological document of the region in case it is destroyed (Wimbledon, 1996; Kazancı, 2010).

4. CONCLUSION

Geo-tourism is important for this site research in the rural development of Turkey. Geological values discussed with other values in the selected site where is Latmos Mountains in the near of Bafa Lake.

Latmos Mountains and walleys are also very special natural area as geological and other cumulative characteristics in historical, archelogical, cultural, architectural, natural, sport, and educational. So geotourism will bring awareness for village people in the region with opportunities values to support for rural life.

The main feature of this kind of study is to develop a marked area from the original values of special geological and natural also rural areas. Also, to determine the deterioration of the characteristics of these areas.

The most critical issue for Turkey is the villages which turned into neighborhoods by the new metropolitan law. These kinds of special lands must be protected and also can't be converted into second homes.

The cultivated areas like as Herakleia-Latmos (Kapıkırı village), transforming year by year for residences and/or summer houses, etc. against the rural development with conservation.

Latmos surrounding quarries can't acceptable for this geopark, they can't work near this area. They are affecting ground and upper ground structure. Also rock paintings and rock churches can be damaged.

Lake pollution, fish farm and olive oil processing factories are other important dangers, they should be taken under control and no new licenses should be issued.

Additional researches should increase the database and methodological approaches to develop the theoretical and practical bases at the national level in geological sites. Local efforts should be given priority in the design and implementation of initiatives in the world for these types of sites.

After Kula (Manisa), Latmos mountains will be an important geopark area, reflecting the character of the Lower Aegean Region. Latmos mountains are proposed to join to the European Geoparks Network in this paper.

ACKNOWLEDGEMENTS

Thanks for project partners that's named "Lake Bafa Nature Park, Caria City State - Harbour City (Herakleia-Latmos) (Kapıkırı Village) and the Geopark Character of the Latmos Mountains, the Great Menderes River Basin Protection Project" (2010-2018).

This paper was presented with first draft of it with Geopark concept in the CISET 2019. Also thanks for this organization.

Kocalar, A. C. (2019). Herakleia Karia Ancient Port City with Geoheritage Areas and Urban Geology-Latmos Geopark (Beşparmak Mountains), CISET - 2nd Cilicia International Symposium on Engineering and Technology, Proceedings Book, 10-12 October, 2019, (CISET 2019), Mersin Üniversitesi. Mersin / TURKEY. https://azizcumhurkocalar.blogspot.com/2019/10/bildiri4 0-herakleia-karia-ancient-port.html

This paper was also related with 2018 draft of it with historical conservation concept:

Kocalar, A. C. (2018). Conservation Issues: Karia State Antique Harbor City "Herakleia-Latmos" and "Bafa Lake Natural Park", II. International Urban, Environment and Health Congress, Abstract Book and Proceedings Book, 18-20.04.2018 Cappadoccia, Ürgüp, Nevşehir, Türkiye. p. 539, pp. 117-132.

https://azizcumhurkocalar.blogspot.com.tr/2018/04/koru ma-sorunlar-karia-devleti-antik.html

This paper was related and presented with 2014 draft of it with regional conservation concept, too:

Kocalar, A. C. (2014). Büyük Menderes Havzası, Bafa Gölü ve Çevresine Yönelik Çevresel Risklerin Analizi ve Mekansal Etkilerinin Değerlendirilmesi", ISEM 2014 2nd International Symposium on Environment and Morality, Proceedings Book, 24-26 Oct 2014, pp: 1173-1187, Adıyaman University, Adıyaman – Turkey.

https://azizcumhurkocalar.blogspot.com/2014/07/cevre-koruma-kuramlarna-aykr-gerceklik.html

REFERENCES

2012 dated and Law No. 6360, Legal Arrangements.

Albayrak, A. N., Eryılmaz, Y. (2018). "From Rural to Urban: Transformation of Villages at the Border of Metropolitan Cities", *CAUMME 2018: Conference of Architecture and Urbanism in the Mediterranean and the Middle East Proceedings*. Ed., Girginkaya Akdağ, S.; Soygeniş, S.; Vatan, M., Bahçeşehir University, İstanbul.

Alptekin, A., Çelik, M., Yakar, M. (2019). Anıtmezarın Yersel Lazer Tarayıcı Kullanarak 3B Modellenmesi. *Türkiye Lidar Dergisi*, 1 (1), 1-4. Retrieved from https://dergipark.org.tr/tr/pub/melid/issue/50713/641560

Archeology Art History, (2011). Retrieved from https://www.arkeolojisanat.com/shop/kategori/kitap/sana t-tarihi_16_71.html [Accessed 27 Nov 2019].

Bostancı, S. H. (2017). Sustainable Urban Model Approaches of Local Governments in Turkey. Management & Education/Upravlenie i Obrazovanie, 13.

Bachmann, M., Maner, Ç., Tezer S., and Göçmen, D., (2011). "Latmos, Miras 1, Heritage in Context – Konservierung und Site Management im natürlichen, urbanen und sozialen Raum", Istanbul. Distelrath, A. (2008). Miras 1, Siedeln und Wohnen in einer Ruinenstatte. Ein denkmalpflegerisches Konzept für Herakleia am Latmos. / Yerleşim ve Yaşam Alanı Olarak Ören Yeri. Herakleia (Latmos) için bir Koruma Konsepti, Ein denkmalpflegerisches Projekt für Herakleia am Latmos, Miras 1 (Istanbul 2011), Deutschen Archäologischen Instituts, Technische Universitat, Dissertation, Berlin, Ege Yayıncılık, İstanbul.

Deutsches Archäologisches Institut Istanbul, Retrieved from https://tuerkei.diplo.de/tr-tr/themen/kultur/-/1797670 [Accessed 27 Nov 2019].

Ertuğrul, E. (2015). Bafa Gölü ve Çevresi İçin Ekoturizm Projesi, Arkeofili, Retrieved from https://arkeofili.com/bafa-golu-ve-cevresi-icinekoturizm-projesi/

JICA, Japonya Uluslararası İşbirliği Ajansı, (2000). Doğu Karadeniz Bölgesel Gelişme Planı Nihai Raporu, TC Başbakanlık Devlet Planlama Teşkilatı Yayını, Ankara.

Kazancı, N., Şaroğlu, F., Suludere, Y. (2015). Jeolojik Miras ve Türkiye Jeositleri Çatı Listesi. Maden Tetkik ve Arama Dergisi, s.264.

Kocalar, A. C. (2018a). Historical Environment Conservation Issues: (Karia Period) "Herakleia-Latmos", *International Journal of Social Humanities Sciences Research (JSHSR)*, (JSHSR.com), 2018 Vol: 5 / Issue: 19 pp.654-662. Retrieved from http://dx.doi.org/10.26450/jshsr.402

Kocalar, A. C. (2018b). Archaeological-Natural-Geological-Historical-Cultural Environment (Rivers-Basins-Lakes) Conservation Issues and Solution Proposals: "Bafa Lake Natural Park", *Mimarlık, Planlama ve Tasarım Alanında Yenilikçi Yaklaşımlar.*

L.G. Kaya, Ş.A. Dönmez, N. Abbasov Ed. Gece Kitaplığı Yayınevi, ISBN 978-605-288-796-7, 15. Chapter, pp: 215-248. Retrieved from http://dx.doi.org/10.26449/sssj.549

Peschlow-Bindokat, A. (2005). *Herakleia am Latmos – Stadt und Umgebung*, İstanbul.

Peschlow-Bindokat, A. (2006). Tarihöncesi İnsan Resimleri. Latmos Dağları'ndaki Prehistorik Kaya Resimleri, (Çev. Işıl Işıklıkaya), Sadberk Hanım Müzesi Yayınları, ISBN: 9799756959168, 2006, İstanbul.

ProGeo Group. (1998). A first attempt at a geosites framework for European IUGS initiative to support recognition of World heritage and European geodiversity. *Geologica Balcanica* 28, 5-32.

Söyler, M. (2020). "Determination of Mineralogical and Petrographical Properties of Tafonization Processes in Latmos-Besparmak Mountains (Muğla)" Ongoing Master Thesis, Department of Geological Engineering / Department of Mineralogy and Petrography, Institute of Natural and Applied Sciences, Hacettepe University, Ankara. UNESCO, (2015). "What is a Global Geopark?", United Nations Educational, Scientific and Cultural Organization. [Retrieved 16 Aug 2015].

Wimbledon, W.A.P. (1996). National site election, a stop on the road to a European Geosite List, *Geologica Balcanica* 26, 15-27.

Wikipedia,

https://en.wikipedia.org/wiki/Geopark#cite_note-globalgeopark-2

Yücer, A. A. (2016). "Kırsal Kalkınma için Bir Köy Bir Ürün Projeleri ve Başarı Koşulları", XII. Ulusal Tarım Ekonomisi Kongresi, https://www.nationmaster.com/countryinfo/stats/Agriculture [Accessed 26 Sept 2019].