

## Tourism Industry's Influence on Recreational Zone's Ecological Condition in the Seaside of Adjara

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### Abstract

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The Autonomous Republic of Adjara is one of the significant touristic region of Georgia, where the priority among the tourism types is given to the maritime tourism. Maritime tourism, recently and rapidly developed in the recreational zone of the Black Sea coast, needs the improvement of tourism infrastructure, which often processes towards the nature's irrational usage and thus the ecological condition worsens. The main aim of research is to study the tourism's influence to the ecological condition of Black Sea coast recreational zone in Adjara, which develops with worsening tendency and thus the region's attractive and unique natural landscapes are under the threat of anthropogenic influence; It is added with change of sea hydrological regime caused by the climate changes because of global warming background, thus these incur the activation of abrasive processes and the coast's recreational zone gradually decreases. The existed issue is one of the actual topics of the region, which needs the complex research. Coming out of the mentioned, the tourist conduction potential of particular beach from the Adjara seacoast recreation zone and touristic infrastructure loading properties had been researched. There was estimated the tendencies of seacoast ecological condition's change and the ways are set to resolve the existed issues.

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**Keywords:** Coast, beach, recreation, tourism, ecology

### 1. Introduction

The world-scale accelerated tourism growth demands the diversity of touristic and recreational resources and tourism industry development. The tourism development needs the unification of natural and anthropogenic landscapes, which often causes the ruin of equilibrium balance between the natural environment and business activity and as a result, the ecological condition worsens (Burak et al., 2004; Davenport et al., 2006; Jennings, 2004; Uyarra, 2005). Besides the anthropogenic load, the seacoasts face serious problems by an expected change of sea hydrological regime as a result of climate change on the global warming background (Cowell et al., 2006; Csate et al., 2015; Rohmstorf, 2010; Scotta et al., 2012). The changes into the sea's hydrological regime is already seen in increase the Black Sea level (1cm/year) and in activated storm activity (Elizbarashvili et. al., 2015). As a result, the abrasive processes got activated also and the recreational zones of the sea is being washed out (Khorava et. al., 2015).

The recreational zone of Adjara seacoast constitutes the significant place of business-interests, which, among the adjacent areas is attractive in touristic and urban scope. The development of the mentioned areas is processed by neglecting the main principles of nature's rational usage. Because of incorrect architectural design the recreational zone landscapes are mangled. In particular, the touristic infrastructure, high-rise residential complexes (picture 1. 2.), are constructed on the seacoast zone (on the beach, which presents the wave's action zone) also on adjacent areas, which limits the spread of sea ionized air into the city and during the summer the local areas are extremely heated.

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The issue is quite urgent by that point of view, that along the tourism development, the recreational zone is being actively and intensively adopted (developed) as well. Coming out of the topic, that the development of tourism business presents one of the prioritized trends of country's economy and the society is highly interested in it, this topic accordingly needs to share an international experience in environmental protection (Anning et al., 2009; Maguigad et al., 2015; Stanford et al., 2016; Susan, 1998) and coming out of the specificity of the issue, create the national legislation base. Thus, in order to study the problem, the complex research was conducted. The study has found out, that ecological condition is quite noticeable when related to the tourism development in the recreational zone of Adjara seacoast, but the existing condition isn't alarming yet and it approximately meets the international standards. As the results of the study, they will have the cognitive and applied (usage) meanings in identification of the existed issues and their settlement.

## 2. Areas and methods of the study

Adjara is one of the Georgian regions, where the tourism field increases, where the amount of tourists exceeds the amount of the population of autonomous republic (339 000). Tourism development much depends on natural and anthropogenic landscapes, its perspectives are defined by the potential of recreational resources and touristic infrastructure. Adjara constitutes the region, rich with touristic and recreational resources, where an amazing natural landscapes of sea and the mountains are adjoined. Often, during the tourism business development, there are occurred the contradictory relations and the ecological condition worsens. The issue bears an international nature and it's approximately typical to most of world's countries and regions. The aim of the foregoing work is to study the tourism influence on the seacoast zone's ecological condition in Adjara, which is quite urgent issue. The urgency of the problem is far more high if we foresee, that the maritime tourism is rapidly developing in our region, which regarding the touristic infrastructure development, needs the transformation of natural condition (environment), thus the ecological condition worsens. Coming out of this, the study of the problem requires the complex approach and the settlement of the following tasks:

- Define the tourism dynamics in Adjara, its types, geographical originalities and development tendencies;
- Define the maritime tourism quantitative indications and their distribution by the beaches;
- Assess the tourists' and tourism industry's influence on the ecological condition of seacoast recreational zone.
- Find out the geographical originalities of seacoast recreational zone's ecological condition and set their improvement ways.

The study of aims and tasks set was based the field research, historical, comparative, statistical, spatial and time analysis, tourist conduction potential and other methods. The study object are the beaches of Adjara seacoasts recreational zone and adjacent recreational areas, which present the area of tourists' activity and where the touristic infrastructure is located. In order study to have the complex nature, the tourists' quantitative indicators should be found out, touristic zones (beaches) should be separated and found out the tourism's ecological condition (the tourists' influence on nature, environment, water resources, soil, organic world. Also, noise, atmospheric pollution, influence of touristic objects on the landscape and other).

## 3. Results and Discussions

During the period of Soviet Union, from city of Batumi till town of Kobuleti, there were numerous resorts having the union importance by that time. On these resorts a different types of tourism was operating during the whole year round. During the initial year of independent Georgia, the amount of tourists were decreased to its minimum and the tourism industry was actually destructed. In Adjara, tourism recovery was started from 1995 year, and rapid development – from recent years (see the table 1). Under the statistical indicators, there is found out, that the amount of tourists in Adjara during of 2005-2015 years was almost tripled (increased from 147 000 to 443 700). If we discuss the tourists' dynamics from the internal and regional standpoint, the tourists flow in 2015 year was as follows: 79.5% in city of Batumi, 15% - in Kobuleti, 5.5% - Khelvachauri and 0.1% per municipalities of the mountainous Adjara. The tourism's accelerated development on the basis of various touristic and recreational resources of the region, became the prioritized field of the business, after which the amount of touristic objects was increased and the touristic activity in the region turned into one of the factors worsening the region's ecological condition.

We've studied the particular properties of issues existed in Adjara with ecological tourism's trend (Putkaradze et al., 2015; Putkaradze et al., 2016). In order to eradicate the issue, it's necessary to define the amount of the tourists and ecological topics related to it.

**Table 1. Tourists' dynamics of 2005-2015 years in Adjara**

	2005	2012	2013	2014	2015
City of Batumi	99965	268376	263799	282940	352481
Kobuleti Municipality	33955	64782	95275	100897	66394
Khelvachauri Municipality	13080	24386	33878	47361	24312
Mountainous Adjara	-	1339	665	480	480
Total	147000	358883	393617	431678	443667

There is no official statistical data about amount of maritime tourists in Adjara. In order to define their amounts, the most convenient is to divide the tourists by months. According to the data of recent four years 65% of tourists come in Summer and Autumn (May – September) periods, most of them (90% - 255780 tourist) are maritime tourists. Under our calculation, 66.7% from maritime tourists come on Batumi city administrative beaches, which are distributed according to the particular beaches as follows: Gonio-Kvariati – 37500, Batumi new boulevard – 14650, Batumi Old Boulevard – 92180, Bartskhana – 8850, Makhinjauri – 12850 and Mtsvane Kontskhi – 3330 man. 90% of tourists in Kobuleti municipality constitute the maritime tourists and their average amount equals to 78770 tourist, which are distributed by the beaches as follows: Chakvi – 2350, Tsikhisdziri – 5250, Bobokvati – 2650 and Kobuleti-Phitchvnari – 67550. The maritime tourists in Khelvachauri municipality are only in Sarpi and their amount is 6550 tourists (see the table 2).

In order to establish the tourists' influence on the seacoast recreational zone's ecological condition, it's necessary to define the ecological condition of tourists conduction potential and negative ecological results (caused by touristic industry) on the adjacent areas.

Ecological potential of tourists' conduction implies the loading of areas designed for them at its maximum, which could be handled by particular touristic object without the serious damage towards the natural resources, performing the negative influence and arising the social and economic issues in the population (Birjakov, 1994; Metreveli, 2008). In order to find out the tourists conduction issues of Adjara beaches, it's necessary to define the beaches potential to acquire the tourists and in case of their excess to assess their ecological condition. In order to look at the issue in details, we've tried to find out the properties of particular beach (the properties of tourists acquisition and loading), which allows us to perform a complex discussion of seaside's ecological condition's geographical originalities. The length of total seacoast in Adjara equals to 53km. Only 36.1km of it is used for recreational purposes, which total area (average width of the beach is 35m) constitutes 126.4 ha. It should be noted, that existed beaches are partially used for tourists convenience. Tourists have occupied mainly 20m width areas from the sea edge line (this indicator might be changed in the future with the tourist flow's increase), which total area equals to 72.2 ha. If we foresee the condition, that under the average standards, one tourist needs 3 sq. m beach, coming out of this, the beaches of Adjara is able to host (acquire) 240680 tourists at a time (see the table 2).

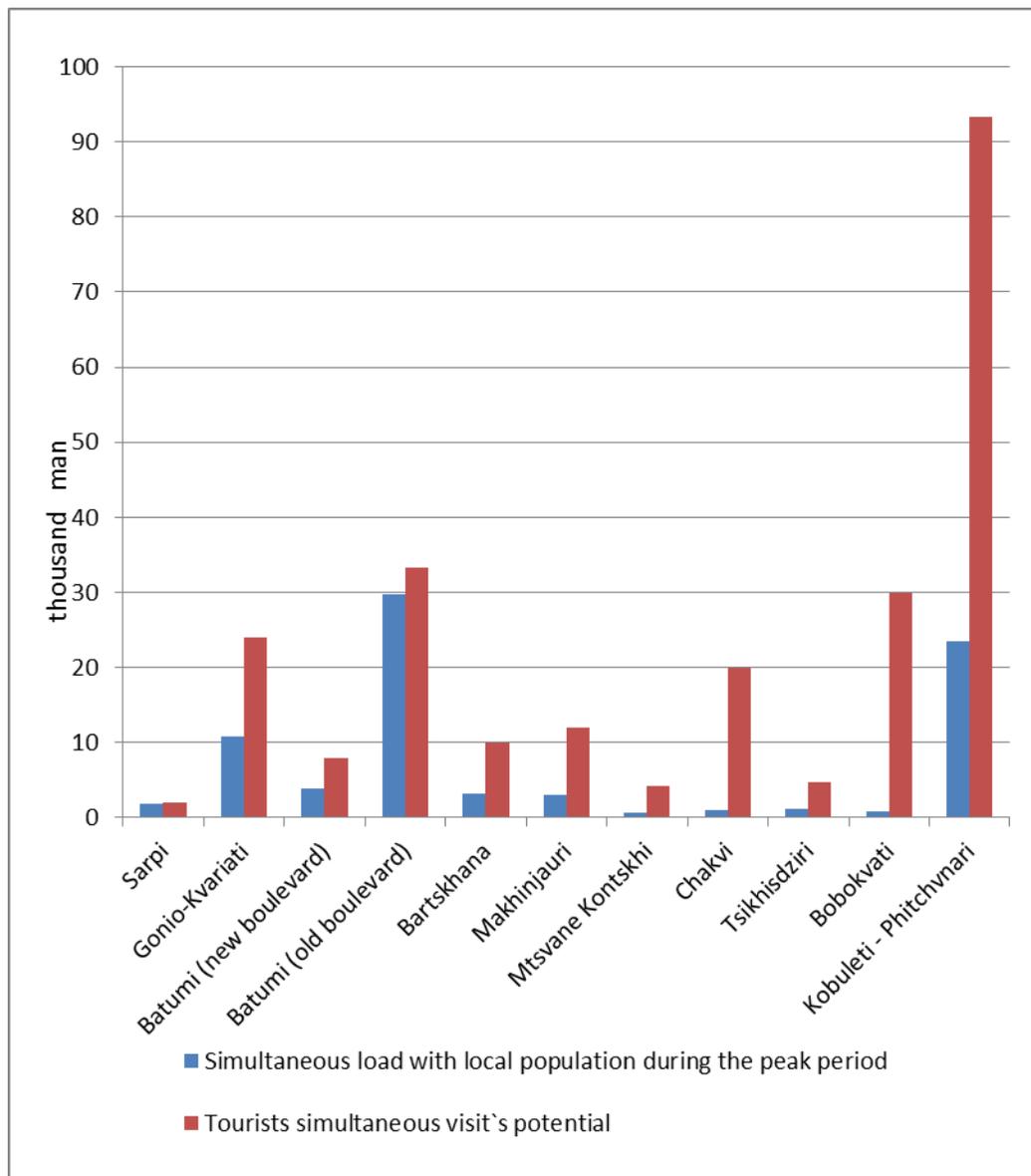
The maritime tourism peak during the season in Adjara is from 20-th of July till 20-th of August. During the mentioned time, the average guests (visitors) amount in 65% (50% on Batumi beaches, 80% on the rest of beaches) or 166260 tourist. It can be foreseen, that one tourist in average visits for 10 days, thus the maximum loading of beaches during the peak period equals to  $(166260:3)=55420$  tourist. If we add the tourist amount to the local population, we will have 25000 man in average, the simultaneous loading of the beaches – 80420 tourists, that is 33.4% of total potential (see the table 2; drawing 1)

The beaches of Adjara aren't equally loaded with tourists and visitors. If during the peak period average simultaneous loading equals to 33.4%, then this indicator is the highest for Sarpi – 96.2%, also high is for Batumi old boulevard – 89.3%, Gonio – Kvariati – 45.2% and for rest of locations – below 40% (see the table 2; drawing 1).

There might be also noted, that the loading of Batumi old boulevard central part during the peak period is 92-95%, the extreme south part of Gonio and Kvartiati's beach – 80-85% (Putkaradze, 2015) and in Kobuleti's central part – 75-80%. In order to assess, the ecological condition of the beaches to be researched, we should use the index of ecological conduction of the beaches, or the area's visiting level and on their basis we should bring in the conditional indicators. In particular, the beaches, where the visitors' load exceeds 80% but doesn't exceeds the simultaneous acquisition potential, could be assessed as "slightly worsened", the beaches, where the visitors' load is under the 40-80% ranges – as "normal", and the beaches, where the visitors' load is less, than 40% - as "good" (see the table 3). If we discuss the tourists' ecological conduction on the areas adjacent to the beaches, which include the boulevards, parks, green lines, etc. these areas during the whole year is approximately loaded with tourists and local population. In order to define the stage of visitors' ecological influence, we have to discuss one of the forms of tourists' conduction – utmost density or "maximum loading", which implies that stage of density, which exceed causes the permanent damage towards the landscape components (Metreveli, 2008).

Table 2. Tourists' conduction characteristics of Adjara seacoast zone (beach)  
(According to an average indicators of 2013-2015 years)

Beaches	Beach length km	Total area of the beach ha	Area of the beach occupied by the tourists ha	Tourists simultaneous visit's potential	Average annual amount of tourists visits /amount of local population	Simultaneous load with local population during the peak period	Simultaneous load with local population during the peak period (in percentage)
Sarpi	0,3	1,15	0,6	2000	6650/150	1920	96,2
Gonio - Kvartiati	3,6	12,6	7,2	24000	37500/850	10850	45,2
Batumi (new boulevard)	1,2	4,2	2,4	8000	14650/1400	3840	48,0
Batumi (old boulevard)	5,0	17,5	10,0	33340	92180/14400	29760	89,3
Bartskhana	1,5	5,2	3,0	10000	9850/1550	3190	31,9
Makhinjauri	1,8	6,3	3,6	12000	12850/850	2990	24,9
Mtsvane Kontskhi	0,5	1,8	1,0	4150	3330/50	610	14,6
Chakvi	3,0	10,5	6,0	20000	3350/100	990	4,9
Tsikhisdziri	0,7	2,5	1,4	4670	5250/100	1150	32,1
Bobkvati	4,5	15,7	9,0	30000	2650/100	810	2,7
Kobuleti - Phitchvnari	14,0	49,0	28,0	93340	67520/5450	23460	25,1
<b>Total</b>	<b>36,1</b>	<b>126,4</b>	<b>72,2</b>	<b>240680</b>	<b>255780/25000</b>	<b>80420</b>	<b>33,4</b>



Drawing 1. Tourists' conduction characteristics of Adjara seacoast zone (beach)  
(According to 2013-2015 years' average indicators)

The results of the studies have showed, that visitor's load quite differs according to the visiting zones during the day. During the night-hours – most load comes on Batumi central boulevard, area adjacent to Sarpi beach, area adjacent to Gonio bewach, and Kobuleti central boulevard places, but nowhere exceeds the utmost density. As a result of tourists' and population's high load in the mentioned places, there exist noise, atmospheric pollution, damage of floral surface, soil's strengthening processes, littering. Notwithstanding the above mentioned, the ecological condition in problematic places is slightly worsened, thus it doesn't issue the significant negative influence towards the guests, visitors, tourists and environment. The tourists' and guests' utmost density in the rest of recreational zones under the ecological standpoint, could be assessed as "slightly worsened", "good" or "the best". Accordingly, the best conditions are on the following beaches: Mtsvane Kotskhi, Tsikhisdziri and Phitchvnari (see the table 3).

Firstly there should be noted, that tourism increase in Adjara is connected with infrastructural development. Accordingly systemically increases an anthropogenic load of seacoast zone. Almost on every recreational beach and adjacent area to be researched is noted by its anthropogenic load. Tourism's influence on environment by ecological standpoint is mostly seasonal, which is at its peak in summer and in particular cases hinders its development. It's worrying, that incorrect design of buildings constructed in touristic zones mangles the coast recreational landscape, resists the distribution of ionized sea air, restricts the tourists conduction, causes the area's pollution, etc. Coming out of this, under the ecological standpoint, "the best" conditions is on the following beaches: Mtsvane Kontskhi, Tsikhisdziri and Phitchvnari, the rest of the zones can be assessed as "Good" or "Slightly worsened" (see the table #3). From the table we can see, that seacoast zone beaches and its adjacent areas of Adjara is approximately loaded with touristic infrastructure objects, which create specific ecological threats. Under this scope, the significant ecological problems are faced in Gonio – Kvariati zone, where near the beach's central embankment there are located the hotels, bungalows and other buildings, which are constructed with poor efficiency and ecologically unjustified design. A serious ecological problems exist in Adlia abrasive area of Batumi new boulevard, where the boulevard's track is constructed and a high-rise residential complex is under the construction. On some places of Batumi old boulevard beach, there exist different types of infrastructure, which take damage during the strong storm, thus they create the ecological threats. As of the rest of recreational zones, almost everywhere we are met with anthropogenic load, but the ecological condition of natural environment is only slightly changed. Under the ecological point of view good condition is on the following beaches: Mtsvane Kontskhi, Tsikhisdziri, Bobokvati and Phitchvnari (see table 3 and picture 1. 2.).



Picture 1 and 2: hotels and residential houses built on the beach

Table 3. Ecological condition of Adjara seacoast (recreational) zone

Recreational zones		Ecological condition of tourists conduction potential		Anthropogenic loading (tourism infrastructure objects)
		Potential of ecological conduction	Utmost loading	
Sarpi	beach	slightly worsened		Seasonally (during the summer) loaded with bungalows
	Adjacent territory (area)		slightly worsened	Along the beach the viaduct and highway connecting Georgia and Turkey is arranged
Gonio - Kvartiati	beach	Gonio - good Kvartiati - slightly worsened		In Kvartiati and partially in Gonio as well, along the beach's central embankment, there are constructed the different types of hotels and buildings, also major bungalows, which after the winter storm are turned into reinforced concrete waste - polluting the adjacent area.
	Adjacent territory (area)		slightly worsened	The area adjacent the beach is loaded with private houses having their own land plots, buildings, hotels, markets, etc. At the end of Gonio's beach there is the surfaced track of boulevard, which after each and every storm is covered with beach's road metal.
Batumi (new boulevard)	beach	Normal		We have the coast spoiled with erosion with narrow beach and new boulevard's damaged track.
	Adjacent territory (area)		Good	In most abrasive area of the village of Adlia, at the seaside edge of a new boulevard, there is being constructed high-rise residential complex, which is absolutely impermissible
Batumi (old boulevard)	beach	slightly worsened		Capital (major) buildings (bars, markets, bungalows, pools, etc.), which are damaged by strong storm and form an ecological threat in coastal zone
	Adjacent territory (area)		slightly worsened	On the area adjacent to the beach, there is situated an old boulevard with its infrastructure.
Bartskhana	beach	Good		The coast is polluted with stream and sewerage waters.
	Adjacent territory (area)		slightly worsened	There are located the hotels, cafes, bars, the high-rise residential complex is also under the construction.
Makhinjauri	beach	Good		On some places (here and there) is constructed major bungalows.
	Adjacent territory (area)		slightly worsened	The beach is followed by railway line, highway and then the populated are of Makhinjauri.
Mtsvane Kontskhi	beach	Good		On the beach, to the north from the cape, the berm of rocky boulders is located.
	Adjacent territory (area)		Best	The cape from both sides is followed by railroad line.
Chakvi (Oasis), Buknari	beach	Good		Some of the buildings and facilities of Hotel "Oasis" are located on the beach.
	Adjacent territory (area)		Good	The beach is followed by railroad and highway. There are also the houses with land plots, hotels and café-bars.
Tsikhisdziri	beach	Good		Is known by fragment beaches laid on the rocky slope.
	Adjacent territory (area)		Best	The beach is followed by railroad line.
Bobokvati	beach	Good		From Tsikhisdziri till the of Kintrishi mouth, we have wide and free beaches.
	Adjacent territory (area)		Good	To the south on the area adjacent to the beach, the governmental residence is arranged, hotels with lesser dimensions, residential houses.
Kobuleti - Phitchvnari	beach	Good		From the mouth of Riv. Kintrishi till Phitchvnari, in summertime the area is loaded with bungalows and different types of services designed for tourists. The Phitchvnari coast is characterized with quite wide and free beaches.
	Adjacent territory (area)		Kobuleti - slightly worsened; Phitchvnari - Best	The beach is followed by Kobuleti Boulevard walking track, behind of which is located the hotels, houses, café-bars, parks and different types of entertainment services.

#### 4. Conclusion

The results of the study had found out, that tourism influence is quite noticeable to the recreational zone of Adjara seaside and the ecological condition changes, which leads to worsening tendency. Generally, the ecological condition of seacoast recreational zone of Adjara meets the growing requirements necessary in order to develop the modern tourism, and as of its further improvement, it's highly depended on efficient urban design of spatial arrangement by foreseeing the environmental conditions, which together with proper tourism management should promote the development of maritime tourism.

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