

## **Analysing the relationship between tourism development and sustainability by looking at the impact on the environment. A study on the European Union countries**

Cristiana PĂVĂLUC (MELINTE)\*, Alexandru ANICHITI\*\*, Valentin NIȚĂ\*\*\*, Gina Ionela BUTNARU\*\*\*\*

### **Abstract**

*The relationship between environment and tourism is complex and based on interdependence. Tourism can have both a negative and a positive environmental impact. The aim of this paper is to analyse the relationship between tourism development and environmental sustainability. The results show that tourism development is one of the causes of the deterioration of the environmental resources on which we depend. As tourism becomes more important and a higher number of people are travelling over borders, tourism has a growing environmental impact. However, tourism also has the potential to create beneficial effects on the environment by contributing to environmental protection and conservation.*

**Keywords:** tourism development, sustainability, the environment, impact

### **Introduction**

In the last decades, we assisted to a significant tourism development, which had a global impact on several rural and urban tourist destinations, with a series of negative and positive impacts on their sustainability and on the welfare of local communities (UNWTO, 2018). The report of World Tourism Organisation (WTO) is highlighting the fact that tourism had an even higher turnover than the turnover obtained from oil export, food and automobiles (UNWTO, 2019). Tourism constitutes a strong drive of development for the society, because it offers many jobs, as well as the opportunity for countries to get economic benefits from tourist activities. Tourism development involves the creation of a sustainable environment, which is necessary for a harmonious relationship between nature and tourism (Ștefănică and Butnaru, 2015, p. 595).

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\* Cristiana PĂVĂLUC (MELINTE) is PhD Student at Al. I. Cuza University of Iași, e-mail: melinte.cristiana@yahoo.com.

\*\* Alexandru ANICHITI is PhD Student at Ștefan cel Mare University of Suceava, e-mail: alexandru.anichiti@usm.ro.

\*\*\* Valentin NIȚĂ is Professor at Al. I. Cuza University of Iași, e-mail: valnit@uaic.ro.

\*\*\*\* Gina Ionela BUTNARU is Professor at Al. I. Cuza University of Iași, e-mail: gina.butnaru@uaic.ro.

In the following years, tourism is and will continue to be a major drive for economic growth with many sustainability challenges (UNWTO, 2012). It is often considered that international tourism has a negative environmental impact (Mowforth and Munt, 1998). Even if tourism is not a highly polluting sector, it is still an activity contributing by approximately 5% to global carbon emissions (UNWTO, 2008).

Tourism is primarily conceived as an economic activity whose sustainability depends on the decrease of associated social and environmental costs. The purpose of sustainable tourism is to balance the wellbeing of host communities, the customers' satisfaction, and the industry profits, ensuring at the same time that the recreational services on which the industry depends are maintained (Liu, 2003, pp. 459-475). Consequently, the aim is to increase the attractiveness of areas with tourist potential by integrating strategies based on long-term environmental sustainability, as well as community awareness of making a destination an ecological one (Theobald, 2005). Sustainability strategies and indicators have long been a tourism research agenda, with theoretical aspects related to sustainable development (Bramwell *et al.*, 2017, pp. 1-9).

Thus, the section of literature review examines the studies on the relationship between tourism and environment, and the empirical research provides an exhaustive analysis of tourism impact on environmental sustainability. This study is an approach which can meet and support current issues by showing how different countries managed to conserve their environment.

## **1. Literature review regarding the relationship between tourism and environment**

Tourism is one of the most important and powerful sectors of the economy of a country, because it directly contributes to the growth of the global economy, it includes a wide range of services (UNWTO, 2019), and it involves the use of the natural capital of humanity (Collins, 1999, pp. 98-109).

The environment encloses the nature and its components (flora, fauna, hydrography, climate, relief and geology, etc.). For the humanity, the environment is *the place in which it exists and develops*, exerting various influences and activities. According to Holden (2007 p. 26), the environment is associated with the term *surroundings* (because it reflects the surroundings of a person living his/her life, and a society exists for a certain period of time in this space); it represents *systems of objectives of the nature*, consisting of flora, fauna, water, soil, etc., and it is associated with *the perceived surroundings*, ensuring the living environment for humans and the entire biodiversity, providing the feeling of belonging.

Consequently, tourism develops based on the natural environment, which is both the *raw material* and the essential element of tourist activities. Due to its complexity, the tourist activity is performed *in and through the environment* (Neacșu *et al.*, 2011, p. 334). According to Sunlu (2003, pp. 263-270), the environmental quality, either entirely natural or man-made, is very important for tourism development. Thus, a complex relationship is established between environment and tourism, involving many positive and/or negative influences of tourism on natural environment. The environmental quality means the quality of the natural characteristics of tourist destinations which may be affected by the human factor. These characteristics are reported as the ensemble of natural landscapes, clean water and air, various hydrological structures retaining their natural character, biodiversity, which may be under external influences. In essence, analysing from the perspective of tourist demand, the environmental quality is an integral part of the quality of tourist attractions (Mihalic, 2000, p. 66). In the relationship between tourism and environment, it is important to maintain the environmental quality at a high level, because changes in the structure of the environment lead directly to the decrease or increase of competitiveness of tourist destinations (Commission of the European Communities, 1994).

All environmental components can be included in the category of attractive tourist sources, which are able to increase the degree of interest for the people passionate about beauty and travel. Consequently, all environmental resources are directly affected by the development of various forms of tourism, such as: leisure tourism, spa tourism, seaside tourism, mountain tourism, etc. The capitalization of the environmental components becomes a real drive of tourist expansion. Therefore, there is a general agreement upon the that, if the degree of variation and complexity of resources is higher, the degree of tourist interest increases in the same proportion for these resources, and the activities determined by the environment acquire a much higher value and increase the attractiveness (Styles *et al.*, 2013).

Tourism has become a branch of the tertiary sector, and its activity depends on the environment. The relationship between tourism and environment is well established, and the environment has become *a constant indicator of tourism development*. The importance of the environment in relation to tourist activity derives from the fact that the environment is often considered *the key component of tourism*. Indeed, tourism through its activity capitalises on the natural capital of society, contributing to the environmental improvement of the areas with a high degree of tourist interest (Holden, 2007, p. 26).

In the analysis of tourism-environment relationship, Budowski (2009, p. 27) highlighted three relational aspects between the supporters of continuous tourism development and the supporters of environmental protection, as follows: **a)** environmental conservation and tourism activities can generate a *conflict situation* if tourism largely influences the environment and its derived components.

Excessive tourism can result in major damage to the environment, so that various prohibitions or restrictions can be imposed; **b)** the relationship between tourism and environment may manifest by *coexistence*. The coexistence between these elements is achieved according to the interest shown by each component towards the development of the other components. Usually, this aspect is rarely becoming static, because tourism development induces environmental changes. Considering the environmental impact of tourism, their relationship may manifest in a *positive aspect*, represented by a *symbiosis*, or having a *negative impact*, generating a *state of conflict* between the environment and the tourist activity; **c)** the *symbiotic* relationship between tourism and environmental conservation aims for both components to obtain a certain advantage. Tourism promotion and development has the purpose to obtain a financial benefit, and people's concern for environmental preservation and protection tends to contribute to the preservation of natural resources in their primary state and/or to the improvement of the environmental quality. Consequently, *the symbiosis between tourism and environment* may have a positive impact on the society as a whole, contributing to the improvement of the quality of life.

Analysing the relationship between these two components, tourism and environment, a relationship with a double influence and conditioning was revealed. This is explained by the fact that the development of tourist activities is closely connected to the environment (Styles *et al.*, 2013). According to Nistoreanu (2008, pp. 59-63), this double conditioning is primarily manifested by the fact that the environment provides all its resources for tourism, and tourism by its activities has positive or negative influences on the natural environment and its components. In this complex relationship between tourism and environment, tourists show a growing interest to ecotourism. Ecotourism has become a social phenomenon, with a growing popularity (Hawkins and Lamoureux, 2001). In tourism, the important component in choosing a destination is represented by the landscape and the natural environment, while in other branches of the economy this component is not of interest. Unlike other branches of the economy, tourism uses environmental resources as a whole, without subjecting them to preventive interventions of processing or dividing them into components. This aspect of preserving the environmental integrity is the supreme condition determining tourism development and evolution, as tourists are attracted to an unaltered environment (Sánchez del Río-Vázquez, 2019). The relationship between tourism and environment was also studied by Neacșu *et al.* (2011, p. 334), who consider that: *the more diverse and complex the environmental resources of a tourist destination, maintaining the quality of resources as close as possible to the primary ones, the greater the degree of interest in these tourist destinations*. Consequently, the environment becomes a very important element of tourist activity. However, at the same time, sometimes a transformation applied to the environment can have consequences on the evolution of tourist demand

by reducing the attractiveness of certain areas and depleting natural resources. Tourism contributes to the increase of attractiveness of geographical landscapes in order to stimulate the practice of various forms of tourism, contributing to the preservation and conservation of certain habitats which are vulnerable to exploitation.

In conclusion, many researchers found that the relationship between tourism and environment is one of double conditioning, and if one component allows a change, the consequences can be seen on the other. Tourism and environment must coexist in a harmonious relationship, complementing each other and obtaining benefits with a positive impact. Therefore, a prosperous, unaltered and improved environment will contribute to a more intensive practice of tourism globally. Consequently, we consider that tourism development must be performed in accordance with the norms and regulations of preserving an intact environment, and these two components must have a sustainable relationship.

## **2. Analysis of the environmental impact of tourism development**

### *2.1. Impact on the environment*

The study of the environmental impact of tourism development implies the existence of a two-way process according to which there is an identification and assessment of actual impacts. Thus, environmental degradation is a consequence of dangerous factors acting on the environmental resources, with a negative impact. Programme régional océanien de l'environnement (2019) shows that reducing negative impacts can anticipate certain times when risk factors act on the environment.

Tourism development is directly related to environment. Compared to other branches of industry, tourism depends on a territory and on its local, regional and national resources. It can be an economically profitable source for certain regions, but it can also generate a certain impact on tourist destinations (Ecological Tourism in Europe - ETE, 2005). In this regard, according to the research conducted by Hunter and Green (1995), it is quite difficult to objectively analyse the environmental impact of tourism development due to the very large number of factors involved, such as: **a)** the studies on environmental impact of tourism were not carried out so often as to allow a multidisciplinary analysis; **b)** the study of the consequences of tourism development on environment is in a continuous dynamic, which makes it hard to highlight the changes that take place; **c)** it is complicated to strictly determine the environmental impact of tourism, compared to other existing industries or to naturally-occurring changes; **d)** residents' or tourists' difficulty to identify the impact. Tourism is certainly part of the service sector, whose profit is obtained from the marketing of tourist

products. Consequently, the elaboration of a tourist product implies the pursuit of a diversity of interests, and this multidimensional side of tourism generates difficulties in the analysis of the impact by both public and private sectors (Carter *et al.*, 2004, pp. 48).

People's tendency to growingly invest in experiences and in the discovery of cultures distinct from their own led to an increase in the number of travels, and consequently to an increase in the importance of tourism. For tourism development, an important role is played by the quality of the environment and of its resources, on which a positive, negative, partial or total impact can be manifested. Thus, according to Matei (2015, p. 25), the causes of the environmental impact of tourism development can differ by plenty of factors such as: **a)** the form of tourism practised; **b)** the level of education of the person involved in tourism; **c)** the specifics of the tourist destination; **d)** the typology of the public programs elaborated in the tourism area; **e)** the relationship created between tourists and residents; **f)** the capacity of the environment to cope with the tourist activity.

Tourism impact can be related to two other main categories (Castellani and Sala, 2008, p. 197), namely: **a)** the impact due to the construction of accommodation structures and tourist facilities; **b)** the impact due to the presence of tourists and, in general, to the capitalisation of the tourist area. The first category describes the environmental impact of tourism development by building many accommodation units, restaurants, special recreational places and telecommunication development. This type of impact is considered to be permanent, because regardless of the tourist flow, these constructions can remain intact. The second category describes the impact due to the tourist flow according to destination. This means that the large tourist flow can become the cause of two contradictory situations: environmental pollution with various liquid or solid pollutants, requiring additional maintenance costs, and the discrepancy between residents and tourists in terms of use of resources available for consumption.

Tourism development and implicitly the impact due to tourists' presence can be measured by analysing the tourist flow considering the accommodation occupancy rate. Table 1 shows the occupancy rate in tourist accommodation structures between 2016 and 2018 for 23 EU28 member countries and 2 non-EU28 member countries (for which Eurostat data are available) compared to the EU28 average. Cyprus is the tourist destination that has the highest percentage of occupancy rate in hotels and similar accommodation units, increasing from 71.30% in 2016 to 76.40% in 2017, and recording in 2018 a slight decrease by only two percent (74.40%). This is followed by Malta, which recorded an increase from 64.60% in 2016 to 68.2% in 2018. Spain takes third place, its accommodation occupancy rate recorded a maximum in 2017 (62.62%).

**Table 1 Occupancy rate in hotels and similar accommodation units (%)**

| Country         | 2016  | 2017  | 2018  |
|-----------------|-------|-------|-------|
| <b>UE-28</b>    | 47.67 | 48.33 | 49.01 |
| Bulgaria        | 41.50 | 42.00 | 42.30 |
| Czech Republic  | 46.50 | 49.90 | 50.00 |
| Denmark         | 48.00 | 48.00 | 48.00 |
| Germany         | 43.86 | 44.80 | 45.33 |
| Estonia         | 47.00 | 48.00 | 47.00 |
| Greece          | 50.10 | 52.80 | 53.60 |
| Spain           | 61.34 | 62.62 | 61.69 |
| Croatia         | 56.50 | 59.50 | 59.50 |
| Italy           | 43.70 | 46.10 | 48.30 |
| Cyprus          | 71.30 | 76.40 | 74.40 |
| Latvia          | 39.00 | 40.80 | 42.70 |
| Lithuania       | 39.00 | 40.80 | 42.70 |
| Luxemburg       | 33.19 | 31.28 | 31.46 |
| Hungary         | 38.30 | 40.60 | 41.50 |
| Malta           | 64.60 | 66.40 | 68.20 |
| Netherlands     | 47.60 | 50.40 | 50.90 |
| Austria         | 41.00 | 47.00 | 48.00 |
| Poland          | 38.60 | 39.80 | 40.80 |
| Portugal        | 48.52 | 51.36 | 51.36 |
| Romania         | 36.03 | 36.50 | 38.02 |
| Slovak Republic | 32.91 | 34.18 | 34.21 |
| Finland         | 40.25 | 41.50 | 41.14 |
| Sweden          | 45.68 | 45.96 | 46.00 |
| Liechtenstein   | 23.70 | 26.10 | 28.70 |
| Macedonia       | 22.00 | 24.30 | 26.40 |

Source: Eurostat (2020)

### 2.1. Positive environmental impact of tourism development

Environmental quality is a concern for tourist destinations which can influence travels, determining the degree of competitiveness among destinations. Consequently, *the increase of environmental awareness and of tourist demand* led to a fierce competitive spirit for a better environmental quality in areas with natural tourism potential (Mihalic, 2000, p. 66). The positive environmental impact of tourism is achieved through a process of sustainable planning, management and promotion in order to obtain beneficial results on social and economic environment. For example, ecotourism, which is intensively spreading on a global scale, can have a positive impact (Wall, 1997, p. 20). This type of tourism is based on sustainability values regarding the environmental protection.

The 2019 Europe Sustainable Development Report (ESDR) ranked countries according to the achievement of sustainability goals. The ESDR 2019 was prepared by teams of independent experts from the Sustainable Development Solutions Network (SDSN) and the Institute for European Environmental Policy (IEEP). The report aims at 17 Sustainable Development Goals (SDGs) and

qualitative concepts, such as sustainability (clean water and sewerage, accessible green energy, sustainable cities and communities, etc). The report scores each country's performance on a particular indicator on a scale from 0 to 100, with 100 the best possible score. Table 2 shows the ranking of European countries according to the score of the Sustainable Development Goals (SDG) index.

**Table 2. Sustainable Development Goals (Index 2018)**

| Number | Country        | Score | Number | Country         | Score |
|--------|----------------|-------|--------|-----------------|-------|
| 1      | Denmark        | 79.80 | 15     | Portugal        | 66.20 |
| 2      | Sweden         | 79.40 | 16     | Poland          | 66.10 |
| 3      | Finland        | 79.10 | 17     | Luxembourg      | 66.00 |
| 4      | Austria        | 76.70 | 18     | Italy           | 65.30 |
| 5      | Germany        | 75.30 | 19     | Slovak Republic | 65.20 |
| 6      | France         | 74.70 | 20     | Latvia          | 65.20 |
| 7      | Netherlands    | 71.80 | 21     | Hungary         | 65.10 |
| 8      | Czech Republic | 71.80 | 22     | Croatia         | 63.20 |
| 9      | Slovenia       | 71.70 | 23     | Lithuania       | 62.60 |
| 10     | Estonia        | 70.40 | 24     | Malta           | 62.30 |
| 11     | Belgium        | 70.30 | 25     | Greece          | 58.90 |
| 12     | United Kingdom | 70.20 | 26     | Bulgaria        | 57.10 |
| 13     | Ireland        | 68.20 | 27     | Romania         | 55.90 |
| 14     | Spain          | 66.80 | 28     | Cyprus          | 55.00 |

Note: Scores range from 0 to 100, where 0 = worst and 100 = best, population-weighted average

Source: SDSN and IEEP (2019)

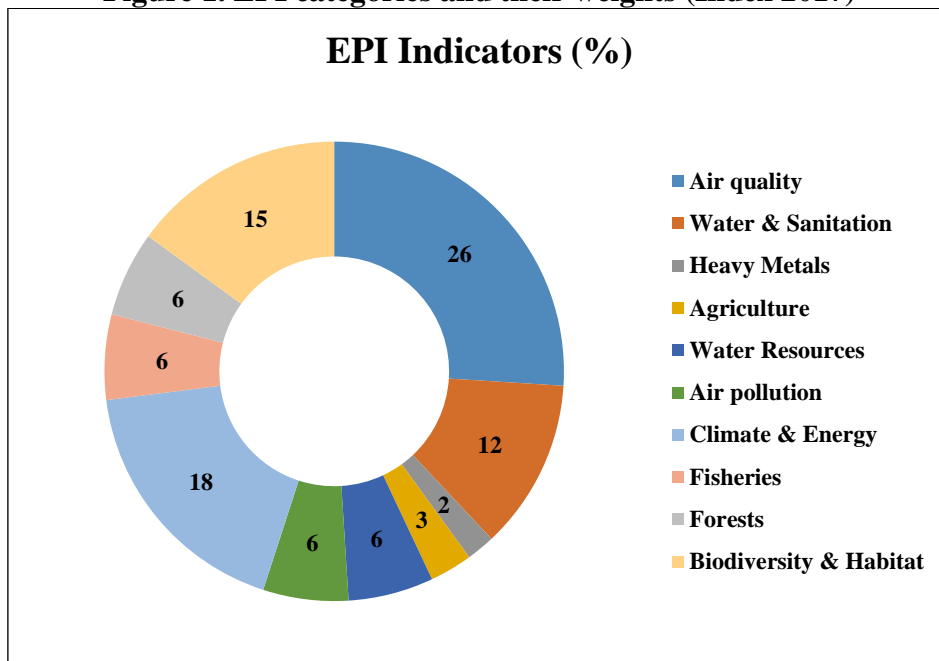
As we can see, Northern European countries such as Denmark, Sweden and Finland are in the top of the ranking for the EU28, being the countries with the most efficient sustainable development. In addition, we can see that, in general, countries with a high-income economy and with more tourists per capita tend to rank first in terms of sustainability and sustainable environment, while developing countries tend to be at the bottom of the rankings.

This could be explained by Environmental Kuznets Curve (1955) (EKC curve), showing that in the early stages of economic development, a country experiences environmental degradation, especially by the deterioration of natural resources, also soil erosion and CO<sub>2</sub> emissions as a result of economic development stages. Therefore, in a developing country using its natural resources to grow as fast as possible, where environmental sustainability policies are not very strict, a large number of tourists can have a negative impact on environmental sustainability. However, after a certain level of economic growth, as its income increases, the country begins to improve its environmental protection strategies and, consequently, the level of environmental degradation decreases (Mikayilov *et al.*, 2019). This is also evident when we study other indicators. Another indicator measuring environmental sustainability is the Environmental Performance Index (EPI). The Environmental Performance Index Report (2018) presents the ranking of 180 countries according to the values



calculated for 24 performance indicators in ten categories of problems covering environmental health and ecosystem vitality. The overall EPI ranking indicates the countries with the best results of sustainable environment. The EPI (2018) represents a composite index. This index collects data on 24 individual values of environmental performance in the ten categories, such as: Air Quality, Water & Sanitation, Heavy Metals, Biodiversity & Habitat, Forests, Fisheries, Climate & Energy, Air Pollution, Water Resources, and Agriculture. Figure 1 shows the values recorded for EPI in 2018.

**Figure 1. EPI categories and their weights (Index 2017)**



Source: Wendling *et al.* (2018)

The scores are on a scale where 0 indicates the worst performance and 100 indicates best performance. How far a country is from reaching international sustainability targets determines its placement on this scale. The data for EPI (2018) come from international organisations, research institutions, academia, and government agencies. As we can see, in the top of the ranking for the EU28, highly developed countries are the first, while less developed countries are generally at the bottom of the ranking (table 3).

**Table 3 EU Countries Ranking EPI (Index 2018)**

| Number | Country        | Score | Number | Country        | Score |
|--------|----------------|-------|--------|----------------|-------|
| 1      | France         | 83.95 | 15     | Netherlands    | 75.46 |
| 2      | Denmark        | 81.60 | 16     | Greece         | 73.60 |
| 3      | Malta          | 80.90 | 17     | Cyprus         | 72.60 |
| 4      | Sweden         | 80.51 | 18     | Portugal       | 71.91 |
| 5      | United Kingdom | 79.89 | 19     | Slovakia       | 70.60 |
| 6      | Luxembourg     | 79.12 | 20     | Lithuania      | 69.33 |
| 7      | Austria        | 78.97 | 21     | Bulgaria       | 67.85 |
| 8      | Ireland        | 78.77 | 22     | Czech Republic | 67.68 |
| 9      | Finland        | 78.64 | 23     | Slovenia       | 67.57 |
| 10     | Iceland        | 78.57 | 24     | Latvia         | 66.12 |
| 11     | Spain          | 78,39 | 25     | Croatia        | 65.45 |
| 12     | Germany        | 78.37 | 26     | Hungary        | 65.01 |
| 13     | Belgium        | 77.38 | 27     | Romania        | 64.78 |
| 14     | Italy          | 76.96 | 28     | Estonia        | 64.31 |

Source: Wendling *et al.* (2018)

Another argument to continue improving the environmental conditions regarding tourism development is the increase in the global number of tourists going to natural tourist destinations (Hawkins and Lamoureux, 2001, pp. 63-73). In this context, most tourist destinations with a rich natural potential tend to develop these areas of interest through ecotourism. The intense tourism development determined the states around the world to pay more attention to the preservation and improvement of environmental quality in order to continue the evolution of the tourist activity.

Among the positive effects of tourism development, we can specify the following (Neacșu *et al.*, 2011, p. 334): **a)** growth of environmental quality; **b)** amplification of architectural and landscape units; **c)** creation of protected areas; **d)** promotion of ecotourism and sustainable tourism; **e)** progressive social and economic development. Consequently, we can see that it is very important for the states with tourism potential to contribute to the preservation and improvement of the quality of natural resources, because the environmental degradation has direct consequences on the decrease of tourist demand.

In the analysis of the environmental impact of tourism development, it is important to minimize the diversity of issues affecting the environment and to introduce investment systems for the conservation and improvement of the degraded environment (Mihalic, 2000, p. 66). In tourism, environmental degradation was found to lead to a decrease in its tourist value, having a negative impact on the commercialisation of tourism products. Therefore, all the countries in the world pay more attention to increase tourism potential, encourage sustainable tourism, and favour the creation of protected areas to reduce the destruction of natural and semi-natural resources with limited potential. Tourism contributes to the increase of the environmental attractiveness (Wall, 1997, p. 20)

and therefore it is very important to develop and elaborate various protection strategies for the sustainable preservation of natural landscapes, because the environment is an indisputable *source* for tourism (Bouthillier, 2013). If tourism development is well planned and managed, its activity can be an essential element for the conservation and preservation of the environment, and thus induces positive effects (Rabbany *et al.*, 2013).

In conclusion, we consider that tourism development also has a positive environmental impact, due to the existing concerns for preserving it unaltered, and due to reducing activities leading to its degradation. Consequently, tourism can contribute to environmental amelioration by developing more projects to improve natural resources. These tendencies are determined by tourists' motivations to visit destinations which have not yet been deteriorated and thus stimulating tourism demand and generating financial benefits for economic agents in this field of activity.

## 2.2. *Negative environmental impact of tourism development*

The environmental impact of tourism development can also have a negative aspect in the case of deviations of tourists' behaviour or if the tourist demand is increased in places which already have a limited resource potential. Environmental degradation has increased lately in relation to daily activities, but also to tourism development. Such a progressive tourism evolution is affecting the environment by diminishing or destroying its resources (Ștefănică and Butnaru, 2015, p. 595). The growing tourism development was found to endanger the natural potential of humanity, because it is an industry consuming natural resources in carrying out various tourist activities.

According to Holden (2007, p. 26) the environmental impact of tourism development can be analysed from the perspective of three types of fundamental activities: **a)** use of environmental resources; **b)** human behaviour; and **c)** environmental pollution. In addition, the environmental impact of tourism also derives from the increasingly intense development of many tourism businesses through the construction of large hotel chains, restaurants, recreational areas, the expansion of telecommunication networks, and increased tourist flows in areas with limited resources. Tourism development can cause damages to the environment and gradually destroy the resources on which it actually depends, and tourist awareness of its contribution to the environmental evolution is essential for developing preventive measures to reduce environmental degradation (UNWTO, 2019).

Imbalances in the relationship between tourism development and environment lead to an irremediable constraint on natural resources by water and soil pollution, deforestation of green areas, resource depletion, flora and fauna destruction, forest fires, alteration of terrestrial ecosystems, intensive urbanisation of areas affecting the abnormal evolution of flora and fauna.

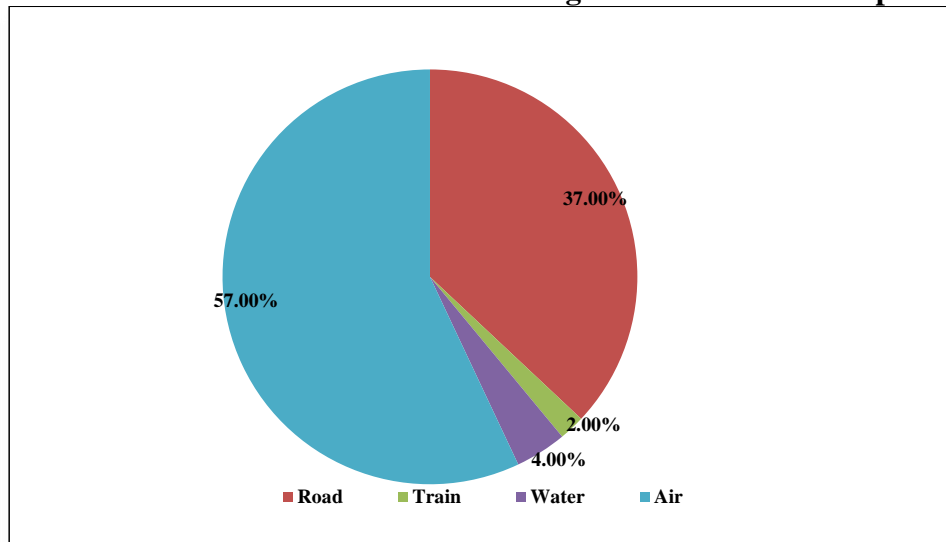
A vital element for the society as a whole and for tourism in particular is water. The intensive development of tourism has negative effects on the waters, especially on the fresh ones. Tourism uses large water resources for hotel activities (swimming pools, cooking, hygiene and maintenance), as well as for other needs. Excessive use of water can lead to water depletion, and as a result of tourist activities, to pollution. Consequently, Sunlu (2003, pp. 263-270) showed that the development of golf tourism in the vicinity of protected areas or of destinations with limited environmental resources resulted in the use of a large amount of water, and *saline intrusion* might occur under certain circumstances.

The development of cruise tourism also has a negative impact on water. Bouthillier (2013) shows that cruise ships eliminate oil and wastewater from their activities, the large ships being the main pollutants unlike smaller ones. The cruise tourism and tourist infrastructure contribute to increasing the pressure on treatment plants and lead to increased wastewater disposal flows during the peak season. However, these polluting activities may have serious consequences for both human health and biodiversity when destroying it. Wastewater can become a key issue for marine biodiversity, as well as the cause of many changes in salinity or water transparency. According to UNWTO (2019), the extensive tourism development has led to the occurrence of environmental pollution with huge amounts of plastic. To remedy this problem, global collaborations among all tourist chains are needed. Studies conducted within the organisation showed that about 8 million tons of plastic are accumulated annually in the seas and oceans, leading to the death of one hundred thousand marine mammals, fish, frogs, and other aquatic animals. One problem in this regard is that large amounts of plastic used in tourism are thrown away, without the possibility to recycle them. About 80% of all activities in the form of coastal tourism lead to plastic pollution of recreational areas, seas and oceans. According to UNWTO (2019), in the Mediterranean area, during the high season, plastic pollution affected the environment by 40%. The Mediterranean Sea is one of the regions confronted with massive water pollution, because it is one of tourists' most preferred destinations. The major problem is tourists' water consumption, which is much higher than that of the residents. For example, a person accommodated in a tourist accommodation facility (such as an international hotel) records a consumption of approximately 300 litres of water per day (Sustainable Business Associates, 2008). In turn, Gössling *et al.* (2012, pp. 1-15) studied water consumption in international tourism, showing that it was 1.3 thousand m<sup>3</sup> in one year.

The environmental impact of tourism development can also be analysed according to airborne pathogens. The studies conducted by the International Civil Aviation Organization of Canada in 2001 showed that a transatlantic return flight eliminated in the air an amount of CO<sub>2</sub> which was about half of the total emissions per person in a year (Sunlu, 2003, pp. 263-270).

Air pollution affects and produces climate changes in the whole world, with an impact on tourism and on social activities for certain areas. The diagram in figure 1 shows tourists' most utilised means of transportation to various tourist destinations in 2018.

**Figure 2. International tourist arrivals in 2018 according to the means of transportation (%)**



Source: UNWTO (2019)

According to the same report, about 22% of greenhouse gas emissions come from tourism. This has led to the prevention of mass pollution by a productive cooperation among economic operators in the transport industry. This massive air pollution as a result of tourism development led to the spread of the concept of *car tourism* (UNWTO, 2019).

Due to the fact that tourism is a strong economic branch, at present hotels around the world have become a profitable business in the field of tourism. The hotels are consumers of natural resources, and they influence the environment by their activity with emissions of various pollutants, especially fluids used in hygiene and maintenance, laundry, household waste, burning fuels, which are disposed of in the environment, affecting the natural areas (Sánchez del Río-Vázquez *et al.*, 2019). According to UNWTO (2019), the hotels pollute the atmosphere with CO<sub>2</sub> by about 2% of the 5% globally as a result of maintenance activities. Another view of air pollution is presented by Huter and Green (1995), according to whom the impact of the means of transportation involved in tourism activities on air pollution can result in acid rain, with destructive effects on vegetation and forests. Uncontrolled tourist circulation caused by the large tourist flow affects the environment by degrading the soil and destroying green areas. Some tourists contemplate certain areas, going on unmarked tracks due to the lack of areas specially prepared for hiking. This factor may become a rather serious problem for the flora and fauna of a tourist destination (mostly by destroying endangered species), also for tourist attractions including authentic landscapes. If the tourist activity is not or cannot be

supervised, it may have consequences due to tourists' non-compliance with the provisions regarding practicing various forms of tourism. The high number of tourists' frequent deviation from the marked tracks to tourist objectives causes soil and vegetation degradation (Sunlu, 2003, pp. 263-270). Table 4 compares the two forms of impact when the territory is very crowded due to the high number of tourists.

**Table 4. Comparative analysis of the impact on the soil and vegetation of a territory**

| <b>Impact on soil</b>         | <b>Impact on vegetation</b>                   |
|-------------------------------|-----------------------------------------------|
| Destruction of organic matter | Destruction or deterioration of plant stems   |
| Destruction of soil porosity  | Decrease of plant vitality                    |
| Decrease of permeability      | Decrease of regeneration capacity             |
| Appearance of erosions        | Modification of the properties of the species |

Source: Sunlu, 2003, pp. 263-270

Another long-term environmental problem is the negative tourism impact on biodiversity. This is a consequence of the increasing level of demands for experiences such as direct interaction with wild flora and fauna. This is why it is very important to conserve and preserve natural ecosystems attracting the tourists (United Nations Environment Program, 2011). Ecosystems are also affected by tourism constructions, by the increasing interest in cruise tourism which can destroy marine vegetation due to the destructions performed by ships (Rabbany *et al.*, 2013). Tourism development impact on biodiversity is primarily caused by the lower capacity of the natural environment to cope with environmental changes (floods, landslides, droughts, etc.), and by the reduction of food supplies, minimisation of wood reserves and medicines based on natural substances. For example, in the EU, the food industry is responsible for 14% of food waste (Aschemann-Witzel *et al.*, 2015, pp. 6457-6477). At a breakfast buffet of a four-star seaside hotel in Slovenia, the average amount of food left on a plate per person was 15.2 g (Juvan *et al.*, 2018, pp. 232-242). Moreover, the destruction of biodiversity in areas with natural tourism potential means *a loss of potential tourism* (Sunlu, 2003).

Taking into account the various issues analysed, we consider that tourism development influences the spread of waste, which affects both the aesthetic image of a tourist destination and the environmental quality. The hotels are among the main pollutants in the tourism industry, because their activities produce quite large amounts of waste, which are disposed of in the environment. However, some hotels avoid such pollutions, as they may affect their image for potential customers (Styles *et al.*, 2013).

## Conclusions

The economic development is based on the environment, using its energy, information, material and natural resources. In most cases, the environment is considered a free good, which anyone can use for any type of activity. Since it has the property of being *free*, its irrational use becomes a problem, which leads to the need to prevent it. Consequently, the concept of sustainable development appeared, which, according to UNWTO, *meets the needs of current tourists and host regions, while protecting and enhancing opportunities for the future* (Cernat and Gourdon, 2007, p. 1). The application of the concept of sustainable development will lead to a resource management so that economic, social and aesthetic needs could be met while maintaining cultural identity, essential ecological processes, biological diversity, and life support systems.

Tourism on the one hand ensures the balance between economic and social progress, and, on the other hand, it is concerned with the environment and with natural resource management. In addition, tourism focuses on the full capitalisation of natural and cultural resources, on life improvement in local communities, and on meeting tourists' requirements in accordance with environmental protection and conservation for the future generations. Tourism is an economic sector consuming resources and adding pressure on the ecosystems. Tourism development often involves a strong intervention on the environment in a short time, generating an entire chain of negative effects. The analysis of the relationship between tourism and the other components of the economic system is a good premise for identifying potential imbalances in the natural environment.

Summarizing the aspects analysed above, we consider that the optimal use of environmental resources is the key element in tourism development, maintaining essential ecological processes, and contributing to the conservation of natural heritage and biodiversity. Conserving natural and cultural resources is a challenge that the tourism industry must overcome. Encouragingly, in recent years, environmental sustainability assessments have also improved due to the ratification of environmental treaties and to the improved opinions according to which tourism has a sustainable development (WEF, 2019). In some regions, such as Africa, Southeast Asia, or parts of South America, the balance between tourism and environmental sustainability must be taken into account. Moreover, in the last decades, international tourism has become a global force with economic, social and environmental significance. Therefore, in the coming decades tourism is anticipated to continue to grow constantly, and its economic contribution will become much higher.

It is very likely that a complete paradigm shift will be needed if global tourism develops in a non-sustainable way. This paradigm shift involves *the replacement of the growth ethic or of the industrial mentality* on which tourism development is based, with a *sustainability mentality* requiring

both hosts and guests to identify what is truly appreciated or desired, and to include the elements from tourism development which help preserving the intactness and authentic beauty of the places and communities they belong to.

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