# THE IMPACT OF CLIMATE CHANGE ON SUSTAINABLE TOURISM DEVELOPMENT

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***Abstract:***
*This study sets forth the relationship between tourism and climate change, as tourism plays an important part in the assessment of the climate change, and the innovative capacity and resources of this economic field are put into action and focused for the achievement of this global target. Tourism is one of the industries prone to be involved in the sustainable development, as an industry based on resources, depending on the natural endowment and on the generic inheritance of each society.*

***Key words:*** *climate change, sustainable tourism, emissions of greenhouse gases*

***JEL classification:*** *O13, O14, O29, Q01, Q27, Q34, Q56*

Climate changes constitute one of the major challenges of our century – a complex field in which we have to document our knowledge and understanding, so that to be able to take prompt and accurate measures in order to have an efficient approach on the challenges in this field, meanwhile in observance of the precaution principle.

Tourism plays a significant part in the analysis of the climate change and the innovative capacity and the resources of this economical field are activated and focused on the achievement of this global target. The main issue that tourism has to face on a worldwide basis is that of adjusting a coherent political strategy allowing detachment of the massive future growth of tourism from the accelerated use of energy and growth of hothouse gas emissions, so that the development of tourism may simultaneously partake in fighting poverty and playing an important part in fulfilling the aims of development.

Tourism is suffering the impact of climate change, but is also responsible in part for it. Tourism contributes to climate change mainly by means of fossil fuels and emission of greenhouse gases.

Climate change is one of the most significant aims of mankind in the years to come. The increasing temperatures, draughts, floods, forest clearing, etc. are indications of the climate change in progress. The risks threatening the planet and the future generations are very high, therefore compelling us to take immediate actions.

Tackling climate change is likely to mean significant changes on our lifestyle, but this does not necessarily mean killing the standard of living. Each of us causing global warming, but can also contribute to solving the problem through products that decide to buy, quantity of electricity consumed, the cars they drive, how we live our lives.

Until present, the activity undertaken by Romanian in respect of the assessment of climate change impact and identification of adjusting measures was mostly restricted to forestry, agriculture and water management. At the same time, a material social and economical consequences may be felt in other areas as well, and these must be taken into account upon planning of adjustment. In view of creating a basis for the classification of future actions in relation to the adjusting to climate change, Romania's vulnerability needs to be known and assessed in respect of climate change.

Based on the latest relevant information and of the worldwide and regional scenarios currently available in Romania, the scenarios used in Romania shall be

updated and detailed. Such updated scenarios shall be based on worldwide and regional templates reduced to the particular level of Romania. They shall also reflect the regional variations of climate conditions on the territory of Romania, from the perspective of temperatures and rainfall. For this purpose, cooperation shall be initiated with the neighboring countries and with international experts. Romania will partake in the drafting of regional scenarios, based on the cooperation with various EU institutions, regarding such scenarios, by means of joint research and development programs on national and regional scenarios.

The performance of the study for determining the range of impact and vulnerability will provide an overview of the fields, eco-systems, and regions particularly subject to vulnerability in respect of climate change. Such a study is required in order to have an initial view over the current level of adjustment and adjusting ability that forms the "adjustment basis". The document will be based on the latest climate scenarios available and will include a series of issues regarding the major obstacles impairing the generation and implementation of adjustment actions and research requirements. The study will mainly focus on the consequences of the climate change until 2030, but will also envisage the provisioned effects until 2100.

Tourism plays an important role in climate change analysis and capacity for innovation and economic sector resources are mobilized and directed to achieve this overall objective. The main problem facing tourism in the world is adapting to a coherent political strategy to allow dissociation massive growth of tourism in the future by increased use of energy and increased emissions of greenhouse gases so that tourism development can contribute simultaneously poverty reduction and have an important role in achieving development goals.

Even if the world is successful dramatic reduction in emissions of greenhouse gases such already issued will remain in the atmosphere in coming decades, so that in a certain extent, climate change is already inevitable, making necessary an adjustment plan.

Europe is the first region in the world to implement change and energy targets legally binding very ambitious. Climate and energy legislative package of EU marks significant changes will occur by 2020, especially towards reducing emissions of greenhouse gases, the increasing renewable energy and energy efficiency increased.

Climate is an essential resource for tourism , and especially for the beach, nature and winter sport tourism segments . Changing climate and weather patterns at tourist destinations and tourist generating countries can significantly affect the tourists' comfort and their travel decisions. Changing demand patterns and tourist flows will have impacts on tourism businesses and on host communities, as well as knock off effects on related sectors, such as agriculture, handicrafts or construction. The identification of tourism as an important contributor to climate change has become both an important driver for efforts to develop more sustainable forms of tourism and a challenge to the concept of sustainable tourism itself.

The climate defines the duration and quality of touristic seasons and plays an important role in choosing the destinations and expenditures incurred by tourists. There is an intimate connection between environment and tourism. The climates conveys effects over a wide range of natural resources which represent important touristic interest centers, as well as the output and biodiversity of flora and fauna, the level and quality of water streams.

Climate is also a highly influential factor when drawing up holiday calendars. It is related to leisure activities, it influences the sensation of safety due to effects on health, and is an essential variable in a tourist's sense of well-being and satisfaction. For all these reasons, climate is often put forward as a tourist attraction of a given destination or as the essential variable of the destination.

Four primary categories may be detached as regards consequences of climate change influencing tourism destination, competitiveness and sustainability:

- *Direct climate impact*. The climate represents one of the primary resources of tourism, to the extent that it concurs in determining the sustainability of the sites where a wide range of touristic activities are carried out, where the climate has a fundamental role in the seasonal feature of the worldwide touristic demand, and where it exercises a significant influence over the operational expenditures, such as air-conditioning, manufacturing of artificial snow, irrigation, food availability, water supply and insurance costs.
- *Indirect environmental change impact*. The changes occurred in water supply, loss of biodiversity, destruction of natural landscape, the jeopardizing of agricultural production, increased natural risks, corrosion of coast floods, infrastructure danger: all these phenomena will have a gradual impact over tourism. As opposed to the direct impact of climate change over tourism, it is highly probable that the indirect effects of climatic change will be negative.
- *Impact of mitigation policies on tourist mobility*. There is the risk that national and international policies which envisage reduction of hothouse gas emissions have a major impact on tourism flows. They will lead to an increase of the transportation costs and may cause the development of environmental behaviors, by causing the tourists to be obliged to modify the structure of their trip (for instance, by changing the means of transport).
- *Indirect societal change impact*. Climate change is considered a national and international security risk that will steadily intensify, particularly under grater warming scenarios.

Tourism actors (investors, insurance companies, tourism enterprises, governments and tourists) must make decisions on climate change. It requires effective communication between the scientific community to examine the issue of climate change and tourism stakeholders at regional and local levels.

The impact of climate change on tourism is the central theme of a conference organized by the United Nations in collaboration with organizations in the field. The sequence of conferences on this topic and their objectives is presented in the following table:

Table no. 1.

| Year | Place | Objectives |
|---|---|---|
| 2003 | Djerba, Tunisia | • *To encourage* the tourism industry, including transport companies, hoteliers, touroperators, travel agents and tourist guides, to adjust their activities, using more energy efficient and cleaner technologies and logistics, in order to minimize as much as possible their contribution to climate change;<br>• *To call upon* governments, bilateral and multilateral institutions to conceive and implement sustainable management policies for water resources, and for the conservation of wetlands and other freshwater ecosystems;<br>• *To encourage* consumer associations, tourism companies and the media to raise consumers' awareness at destinations and in generating markets, in order to change consumption behaviour and make more climate friendly tourism choices;<br>• *To request* international organizations, governments, and academic institutions to support local governments and destination management organizations in implementing adaptation and mitigation measures that respond to the specific climate change impacts at local destinations; |

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|---|---|---|
| 2007 | Davos, Sweden | • Implement concrete, simultaneous actions for mitigation, adaptation, technology and financing, consistent with the Millennium Development Goals.<br>• Promote, at all levels, interdisciplinary partnerships, networks and information exchange systems essential to sustainable development of the sector.<br>• Implement climate-focused product diversification, to reposition destinations and support systems, as well as to foster all-season supply and demand.<br>• In their choices for travel and destination, tourists should be encouraged to consider the climate, economic, societal and environmental impacts of their options before making a decision and, where possible to reduce their carbon footprint, or offset emissions that cannot be reduced directly. |
| 2009 | Copenhaga, Denmark | • The tourism sector needs to press to see its economic role in the global agenda recognized.<br>• Tourism is much developed at coastal destinations, and so it is especially vulnerable to climate change. Special responses must be designed, including innovative products and marketing.<br>• The air industry has taken significant steps to move forward and decrease its impact on the environment. It is not by decreasing long-haul<br>travel that climate change will be dealt with. This should be done through other means namely through technology and improved route management |

*International Conference with climate change and tourism theme*
Source: Made by author

The increasingly important travel and tourism sector is both a contributor to greenhouse gas (GHG) emissions, and at the same time highly vulnerable to the effects of climate change, according to a forthcoming study *Climate Change and Tourism: Responding to Global Challenges* by UNWTO, the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). Among the key conclusions of this study are:

✓ Carbon dioxide emissions from the sector's transport, accommodation and other tourism activities are estimated to account for some 5% of total emissions.

✓ If no mitigation measures are taken, tourism contribution to CO2 emissions could grow dramatically because of the growth prospects of the industry.

✓ Transport generally and air transport specifically will be an increasingly important component and will have to find solutions in line with the rest of the sector.

✓ Impacts of climate change on the tourism sector will steadily intensify, particularly under higher global GHG emission scenarios.

✓ Changing climate patterns might alter major tourism flows where climate is of paramount importance, such as Northern Europe, the Mediterranean and the Caribbean.

✓ Coastal, mountain and nature-based destinations in least developed countries and small island developing states might be particularly affected.

Tourism is not just affected by climate change – it also partly responsible for causing it. Individual travel in particular makes a major contribution to the emission of gases that affect the climate. Most of the emissions of greenhouse gases come from transport and accommodation activities. In most cases international tourism will entail a trip many times greater than a person's regular daily travel patterns. Compared with

the journey to a different country, regular daily travel (such as the journey to and from work) is relatively insignificant, and for many people will be comparable to the distance travelled to the airport or international rail terminal, or the daily travel while abroad doing recreational activities.

However, with tourism accommodation things are less straightforward. A person will generally sleep in a bed, shower, eat, and use a range of domestic appliances (either directly or indirectly) whether they stay at home or in a hotel so it is really the marginal change in carbon dioxide emissions that are important when considering the net impact of the trip. Gossling et al. estimate the carbon dioxide emissions per night per bed resulting from several accommodation options, ranging from 20.6 kg of carbon dioxide per person per night for a hotel stay to 4.0 kg of carbon dioxide for a campsite.

The largest environmental impact resulting from accommodation probably results from the need to build and maintain facilities for tourists that are in addition to everyday residential accommodation, which will heated (or cooled) and generally maintained whether or not they are fully occupied. As with transport, per capita carbon dioxide emissions will be minimized when occupancy rates are high. Other environmental impacts will result from the location in which accommodation facilities are built. Ski resorts, for example, are built in ecologically fragile mountain regions. They are costly to provide with services such as water or sewerage, due to their high altitude and extreme weather conditions.

The carbon dioxide emissions resulting from tourist transport have a large total CO2 emissions from the tourism sector. Therefore, it must act by implementing measures to reduce CO2 emissions, such as promoting transpotului jointly applying the polluter pays principle, better traffic management. They talk about reducing air traffic, but must take account of poor countries, for which air transport is the only way to bring tourists. The carbom dioxide emissions per passenger km vary substantially depending on the means of transport used to reach the destination (table no. 2.).

Table no. 2.

***Emission factors for tourism transport modes in the EU context***

| ***Mode of transport*** | **CO2 factor (kg/pkm)** | **Occupancy rate/load factor (%)** |
|---|---|---|
| Air <500 km | 0,206 | - |
| Air 500-1000 km | 0,154 | - |
| Air 1000-1500 km | 0,130 | - |
| Air 500-2000 km | 0,121 | - |
| Air > 2000 km | 0,111 | - |
| Air world average | 0,129 | 75 |
| Rail | 0,027 | 60 |
| Car | 0,133 | 50 |
| Coach | 0,022 | 90 |

Sursa: Climate Change and Tourism – Responding to Global Challenges, World Tourism Organization and United Nations Environment Programme, 2008, p. 124.

While there are some positive effects of global warming, such as longer beach seasons and the development of rural and seaside tourism, the negative effects outweigh these benefits:

- Rise of sea levels - will eventually submerge small islands and coastal regions. Regions depending on tourism are under threat.

➢ Desertification and the scarcity of water - making regions less hospitable for both local communities and tourists.

➢ Deforestation and the harm to biodiversity – affecting both the ecosystem and directly reducing the global carbon sink, while also discouraging demand for such destinations.

➢ Melting of snow and glaciers – one of the causes behind rising sea levels, and also affecting mountains and ski resorts, resulting in the shift of destination demands, depending on the most attractive climate conditions.

In conclusions, management and ensuring sustainability in relation to tourism implies mastering of the ecological and social-economical effects, generation and usage of environment ratios and maintenance of the tourism quality and of tourism markets. In order to provide sustainability of tourism, both its impact on the environment, as well as its economical and social-economical effects in relation to the local community shall be supervised.

## REFERENCES


1. Gossling Stefan, *Global environmental consequences of t*ourism, Global Environmental Change, vol 12, no. 4, 2002, p. 283-302.
2. Gossling, S., Peeters, P., Ceron, J., Dubois, G., Patterson, T. and Richardson, R., *The eco-efficiency of tourism*, Ecological Economics, Vol. 54, 2005, p. 417-434.
3. Hansruedi Muller, Fabian Weber, *Climate change and tourism – scenario analysis for the Bernese Oberland in 2030*, Tourism Review, vol. 63, no. 3, 2008, p. 57-71.
4. Rojanschi Vladimir, Bran Florina, Grigore Florian, Ioan Ildiko, *Quantification of Sustainable Development*, Economică Publishing House, Bucharest, 2006.
5. *** *Changement climatique et tourisme. Faire face aux dedis mondiaux, octombre* 2007, p. 6-8.
6. *** Barometre OMT du tourisme mondial, vol 5, no. 3, octobre, 2007, p. 7.
7. *** *The National Action Plan on Climate Change*– 2005-2007, p. 23,
8. http://www.mmediu.ro/departament_mediu/schimbari_climatice/1_Documentatie/PNASC_ro.pdf.
9. www.unwto.org/climate/suport/en/pdf/summary_davos_f.pdf
10. www.europa.eu