

The Impact of Climate Changes on Tourism

MIRELA MAZILU

Faculty of Economics and Business Administration
University of Craiova - University Centre of Drobeta Turnu Severin
Str. Calugareni 1, Drobeta Turnu Severin
ROMANIA

ROXANA CRISTINA MARINESCU

Faculty of Economics and Business Administration
University of Craiova University Centre of Drobeta Turnu Severin
Str. Calugareni 1, Drobeta Turnu Severin
ROMANIA

Motto: "Danger has different meanings for different people. When we have scientific proofs which are so clear and tell us that we have to find solutions for this issue, for me it seems a terrible spent of time the narrow way the problem was defined", **Yvo de Boer**, Director of the Secretariat for Climate Changes of the U.N.O..

Abstract: The global warming of the atmosphere undoubtedly will affect not only the other components of the Earth environment, but also human society. The tourism maintains really ambiguous relations with the weather phenomena because it relies on the deterioration of the human existence, regarded as an economic activity (e.g. the abundant snow may provoke traffic-jams and it requires expensive efforts in order to unjam them, but at the same time it guaranties the quality of tourism, which is vital in the quality of tourism, which is vital in the case of the well-known Alps resorts when it comes to winter sports). The need to control the weather changes that have a negative impact on tourism leads to, on the other hand, to making the touristic infrastructure more and more artificial and extremely expensive (climate control systems, snow making machines, exotic plants aneant to make the environment more attractive etc.). The prediction of the weather changes becomes more and more important, especially in the cases where it is expressed by different phenomena, such as risks and natural disasters (tornadoes, the terrible tsunami from December 2004, which resulted in over 500.000 dead persons, floods, frost phenomena etc.) the frequency of which cant be exactly predicted, having some negative consequences on tourism. The weather comfort in tourism differs from the one that is expressed in other activities, a problem which is presented in detail in this paper.

Key-Words: climate warming, impact, tourism, ecotourism

1 Introduction

Considered as the main "share holder" to the touristic potential exchange, privileged for many times as being the determining factor for the touristic phenomenon (Cazaes, 1991) the natural potential of the tourism is given by the entire essential features of the natural components of a territory.

Or, "everything that is spectacular in nature has automatically a touristic attraction even then when everything works episodically: the spurts of the geysers, solar or moon eclipses, lava leaks, the hugeness of desert or ocean areas, white nights of the boreal latitudinous etc."(Muntele [1]) all these things being given "free of charges" and in great number by

nature.

Having as the main support the natural environment, the tourism has depended and still does on the facilities or constrains which this environment offers.

2 Problem Formulation

From the very beginning the tourism implied a selection of the natural areas destined to the activities of this kind, according to the customers' requirements. Thus, there it is known the fact that a touristic place does not appear at random but only there where the nature "disposes" favourable climate

conditions for curable-recreative reasons or spectacular natural elements which arouse and feed the curiosity of the tourists (rare climate phenomena, uncommon fauna and vegetation elements, unique relief forms and so on). Even if nowadays the mass tourism imposes the use of some improper places (for example the northern beaches or the desserts), the natural environment by its **climate component** is responsible in great measure by the present distribution in the field of those touristic activities which use its elements, fig. 1.

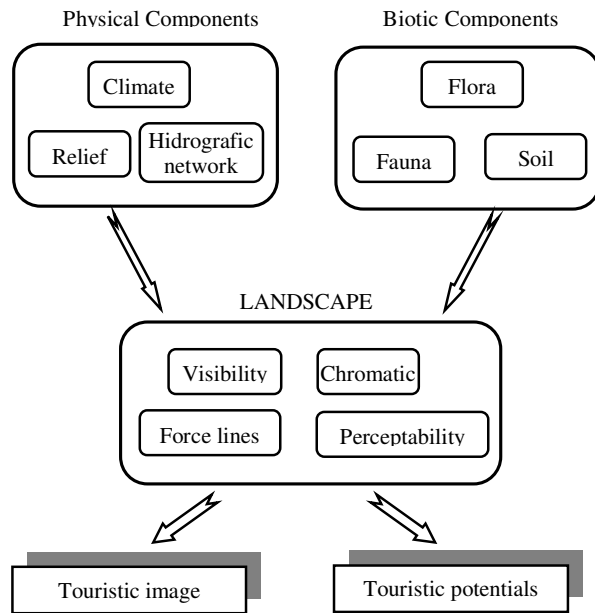


Figure 1: The natural components of the touristic localization (J.P.L. Giotart, 1993)

According to figure 1, there it is obvious the role of **main factor** of the climate which imposes or impedes some touristic activities.

Indispensable to the recovering treatments or winter sports there remain the sun and snow because “even since the XVIIIth century, the English aristocracy valued the climate comfort offered by the Azure Beach or Italy to spending the winter” due to their bright sun (over 2000 hours per year) and thermic gentleness (7^o on January) - unknown conditions for the northern-western part of Europe. In the present, the permanent summer islands (Canary Isles, Madeira, and Bermudez) attract many tourists from the regions with a cold weather” (Muntele [1]). The global climate warming considered by the most specialists as being a process in full development, will indubitably affect and impede, not only the components of the planet environment but the human society too.

Worthy being mentioned is the fact that “an exact

appreciation of the effects of the climate changes upon the human society is in fact impossible, on the one hand due to the great number of the variables involved into the process and complexity of those interactions, and on the other hand to the insufficient available knowledge with regard to these, being given the proportions of the climate change process and the short time since the process captured the attention of the specialists” (Ionac [2]). In spite of the numerous difficulties, there it really is possible the identification of the most vulnerable regions and human activities... this because the study of the effects produced by the positive deviations of the air temperature into the nowadays “climates anomalies” and also of the reactions belonging to the human society, can be extrapolated to great temporal and territorial scales concerning the global climate changes. There it is undoubtedly the fact that the global climate warming produces significant changes into important fields such as the water supplies, agricultural production, human settlements, distribution of various diseases, all of them influencing the tourism by creating real difficulties for the economies of the affected countries and diminishing their capacity to support their own population and touristic programs.

The impacts of the climate elements (especially of the climate warming) upon the tourism frequency are: temporary pluviometric differences (between the two hemispheres which have their seasons reversed); diurnal thermic variations; the level of the atmospheric humidity; climate diseases; wind; the lightness and chromatic of the atmosphere; the index of the balneary and heliotropic comfort.

Of course, the climate global warming will increase the precipitation quantity in some regions of the planet and decrease it in other places of the world. The intensification of the evaporation process caused by the rise of the temperature will increase the dryness phenomenon in many regions of the world.

The dynamics of the extension, lasting period and thickness of the snow layer and diminution of the ice calotte as well, will determine an attenuation of the leaking especially during the summer time when the water supplies are more reduced.

In the last decades, serious draughts frequently affected large areas in Australia, Brazil, China, USA and the south-east of Asia but by far Africa was the most affected continent by this phenomenon. From Mauritania to Sudan, 9 African countries which in 1998 summed up 40 million inhabitants (it is considered that in 2050 they altogether will number about 105 million inhabitants) have been damaged by a long draught which diminished the average annual quantity of precipitations with 40%.

The serious reduction of the food resources, raw

materials and energy would increase their prices and diminish the manpower in those fields of the economical activity (tourism, agriculture, industry). As a consequence of the price increasing, unemployment and reduction of the incomes which would depreciate the living standards fast (by malnutrition, limited access to the resources of water and hygienically facilities, all with negative consequences upon the quality of the touristic phenomenon and public health) the social crises will register concerning increasing.

On the other hand, the governments of the affected countries will confront themselves with appreciable reductions of the financial incomes originated in taxes, concomitantly with the total increasing of requests for social assistance and assurance of the minimum number of food resources and essential medicines.

The negative effects of the climate warming affecting the agriculture will also sway the food supply of the planet (that influences directly the touristic phenomenon). The more so as, quite in nowadays, to a 20% overpass of the demands, the regional variations of the agricultural production leave 1 billion of people without the proper supplies (18% of the world population and of course ... the tourists).

So, the climate and soils of a ¼ of the land are unable to sustain the agricultural productions able to assure the food of the inhabitants and tourists from the respective regions (Indian regions, African region, S-E Asia), that sums up 11% of the population of Terra (the restrictive factor in the touristic frequency being the insufficiency of the atmospheric precipitations).

However, the climate warming will affect the main food producing countries such as the USA, Canada and France which altogether sum up 80% of the wheat yearly trade of the world. Any reduction in the production of the exporting countries will generate the diminution of the alimentary goods offer in the world with negative effects upon touristic phenomenon and social life, too.

We must neglect neither the daily thermal variations in some regions such as Egypt (where in summer time could be registered more than 40⁰ C at the shadow) or Patagonia (where the winters are marked by strong storms due to its closeness to the Ocean). On such cases, the tourism organizers as well as the ones who sell the tourism products have the duty to inform upon the evolution of some climate phenomena, especially the negative ones that can produce disorders and unpleasant "memories".

Thus, "there matter a lot the combinations among the daily thermic variations and the level of the atmospheric humidity that can influence the touristic comfort. A dry climate but with big variations will be

ever preferred to one with constant temperature but with an excessive humidity, unbearable for the unaccustomed people (for example, the monsoon climate)" (Muntele [3]).

The thermic gradient (1⁰ C at 150 m height) permits a touristic action of quality even in high tropical regions in winter time in countries such as Mexico and Peru with unique touristic attractions: the Pre-Columbian vestiges.

As regarding the climate diseases (cholera, yellow fever etc.) catching with water or polluted foods (in Africa, South Asia, The Sumatra Island - as a consequence of the devastating tsunami of this year when more than 300 thousands people died) impose the vaccination of the tourist before travel. The case of Napoli of 1979: a traditional touristic centre which image has been affected by the cholera forcing the entire Neapolitan people to got vaccinated.

The wind through its two effects produces thermic changes or precipitations - some prolonged, other permanent or regular - as those generated by the western winds that determine the tourists to travel to faraway places on the Atlantic coasts. The situation is different regarding the effects of the wind in the tourism resorts known for their winter sports or the "necessity" of wind in some sports (such as surfing, delta planning, yachting) or the undesirability of wind in the case of the trips or sunbathing. Florida, for example, an exceptional touristic attraction is seriously affected by strong winds (hurricanes, tornados, cyclones) many "unpleasant" to tourists (it is unforgettable the year of 1992, when the hurricane Andrew divested the northern suburbs of Miami, on August - Lamarre [4]).

Of a great importance in creating and offering a pleasant tourism environment is the lightness and colour of the atmosphere, as attributes of a real touristic "vocation" in regions such as the Azure Coast, Bretagne or Toscana. Like these, could be mentioned the "boreal Aurora", the sunshine or sunset, polar nights from the north of Canada or Scandinavia or Russia considered as "real touristic attractions".

In the specific literature, there it is well known the fact that the geographical localization and climate are determining factors for the allocation of the world tourism. J.P.Besoncanot calculated a so-called xerothermical index (the number of consecutive dry days which combined with the water and air temperature give the comfort balneotropic index, getting important differences concerning the Mediteranean area).

So, the balneary-heliotropic comfort index which is often used in classifying the coast resorts represents the difference between the air temperature on the beach and the water temperature (Besancenot [5]).

The best conditions of the balneary-heliotropic comfort from Europe are offered by the south/west of Mediterana (Coast del Sol) and some islands from its East (Crete, Cyprus, Cyclodes).

The climate comfort in tourism is different from that one designated to other activities.

The tourism maintains together with climate phenomena and climate changes "impermissible" ambiguous relations. What is desirable for a good heliotropes voyage (persistent warm) in the case of the mountain tourism can become an obstacle.

The desire to control the climate determines an artificial touristic infrastructure (climate installations, snow producing installations which appeared in the landscapes of the sky slopes, planting of some exotic trees) which is very expensive (especially in the countries with tradition in the tourism industry).

Even more, the climate becomes important there where it manifests itself by phenomena belonging to the risk category (hurricanes, floods) whose periodicity can not be known exactly in advance... from here comes the negative impact of these ones in the tourism sphere.

On such a way, there is necessary the lasting protection and assurance of the tourism infrastructure against these "climate changes", uncontrolled "breakouts" from the nature, or "in order not to transform the tourism from the chance given to the economy into a risk for the entire community, it is better that everything to be made with precaution" (Mazilu [6]).

The major present effects of the climate changes mentioned by Tamara Simon [7] are:

- 4777 natural disasters took place at the beginning of the 21st century causing 880000 victims, a number of 1880 million of persons lost their houses in the disasters and the losses were evaluated at approximately 700 billions of USD / World Bank 2006;
- it is expected that till 2030 70% of the present nature to be in great part degraded by the human actions;
- the present CO₂ concentration will tend to double itself, in 2004 great emissions taking place in the USA – 5.9 billion of tones of carbon dioxide a year, in the PR of China – 4.7 billion of tones, Russia – 1.7 billion of tones, Japan – 1.3 billion of tones, India – 1.1 billion of tones, Germany – 862 million of tones, 588 million of tones in Canada, followed by the Great Britain, Korean Republic, Italy, Republic of South Africa, France, Iran, Australia, Mexico, Ukraine, Spain, Brazil;

- approximately 1183 bird species will disappear – 12% of the world total and 1130 small mammal species – 25% of the world fund.
- in the next 10 years the number of the persons affected by the natural disasters will reach 211 millions;
- another 30% of the land is expected to be deforested and 27% of the agricultural soil to be flooded;
- the droughts frequency will reduce with 50% the water volume of the streams and large rivers, will cause the melt of the icebergs and Antarctic ice cap in Europe and Arctic;
- the share of the poor population will grow (population with a daily income less than 2 dollars a day);
- the most affected regions will be: Asia - Pacific, the Near and Middle Orient, Southern and Central Europe, South America, South Saharian Africa.

On the Globe, are being organised actions aiming to study the tourism-climate relationship. Some such international events are to be mentioned:

- the first international conference on climate changes and tourism was held in Djerba, Tunisia, since the 9th till the 10th of April 2003;
- the second international conference on climate changes and tourism was held in Davos, Switzerland, since the 1st till the 3rd of October 2007;
- international conferences on the same topic were scheduled in 2007 in London (Great Britain) between the 12th – 14th of November, in the 22nd – 29th of November in Cartagena de Indias in Columbia, in Bali (Indonesia) between 13th -14th of December;
- the adoption of the Good Practices Guide and Standards of the Ecotourism extension by the WTO and UNO in 2002 and by the Green Globe International Organization and The Cooperation Research Centre for Sustainable Tourism from Australia;

As regarding the influences upon the Romanian tourism potential, Tamara Simon [7] pointed:

- the increase in the number of the extreme phenomena during the entire year causing the degradation of some valuable geographical regions;
- great and sudden variations of temperature and wind powerful intensifications affecting the tourists' comfort;
- increases in the number of storms and wind powerful intensifications in the mountain and coastline regions;
- the intensification of the floods and unforeseeable freshets during the summer and winter seasons;
- the prolongation of the drought periods together with the degradation of the natural vegetation and

transformation into desert regions of some areas from the south of our country;

- the decrease of the climate differences among the seasons and of the solid precipitations;
- changes in the areas of natural habitat specific to some species of birds and small mammals causing their migration to the north of the country (bats, striped mouse, hamster, hedgehog, blackbirds, etc).

Of course, there must be found out ways to reduce the negative effects. The actions which are possible and suggested to be taken in order to improve the situation are:

- intensification of the training regarding the environment protection taking into consideration all the education and professional training stages;
- reduction of the polluting factors and of the pollution intensity in all human settlements, especially in the ones with tourism functions;
- a more strict application of the legal environment standards and regulations, being known the fact that coercion may bring faster results;
- make the most of the less known local tourism resources, in order to reduce the pressure upon the well-known ones, the decrease of the mass tourism;
- clear statement of some environment objectives in all resorts and tourism localities (pollution reduction, alternative energies, protection of green areas, selective collection of wastes etc.).

Worthy being mentioned is the Francesco Frangialli's intervention, general secretary of the United Nations World Tourism Organization, at the second International Conference on Climate Changes and Tourism from Davos (November 2007). The meeting was organized by the UNWTO, United Nations Environment Programme, World Meteorological Organization and financed by the World Economic Forum and Swiss government. Here, Francesco Frangialli declared: "The climatic changes are real, their effects are proved and the tourism sector must play its role in finding a solution. By supporting the Millenium Development Goals as main tourism organization of the UNO, we want to assure the coherence between the action to reduce the poverty and the climate changes. They are both influenced by the tourism because it represents the main economic force in certain developing states."

Or, "the tourism industry is put in difficulty by the climate changes but in the same time it contributes to the gases emission with green house effect, according to the last report of the UNWTO. ... at the UNO's headquarters in New York, the world leaders expressed on the highest levels their political will to reach a post 2012 agreement regarding the reduction of the emissions. In the same time, many corporations

engaged themselves to reduce the emissions by 50% till 2020 and others even have plans to neutralize the carbon. This is the kind of action that all sectors need, including the touristic ones. The ones who support in the present the preservation of the tourism destinations will be able to enjoy them even tomorrow" (Achim Steiner).

So, in the "Climate Change and Tourism: Responding to Global Changes" report, the tourism and climate changes are put in relation. The main conclusions of this study are:

- the carbon emissions generated by the transportation, accommodation and other tourism activities are considered to be of 4-6% out of the total amount of the carbon dioxide emissions;
- the CO₂ emissions from this sector may grow with 150% in the next 30 years;
- the impact of the climate changes on tourism will increase once with the gas emissions with green house effect;
- the climate changes may affect important tourism regions where the climate plays a vital importance, regions such as the north of Europe, Mediterranean;
- the coast, mountain and wild regions from the less developed countries and small isles will be the most affected ones;
- the tourism sector must face the changes especially in the endangered zones by seriously reducing the emissions by the use of new financial technologies and mechanisms.

3 Problem Solution

3.1 Perspectives and hopes

In the terms of such fundamental division of the concepts and strategies specific to this field, there raises the question regarding the future of the world action in this matter.

The evolution of the reality during this summer (such as the severe drought in the west of Europe, floods in the central-eastern part of the continent, multiplication of the hurricanes) clearly shows the direction towards major climate changes. And this, according to the specialists, is only the beginning! Even to the reticent USA the lesson given by the Katrina hurricane is significant and hopefully edifying. This lesson represents a moment to reflect upon the true realities and to abandon the comfortable myth which says that the end of the oil era and global warming will not ask for their share of the price until much later.

3.2 Impact, vulnerability and adaptation to

the climate changes

The change of the regional and local climate conditions will affect the ecosystems, human settlements and infrastructure. The forecasted temperature and precipitation changes may lead to changes of the vegetation periods and movement of the dividing line between forests and lawns. The extreme meteorology phenomena (storms, floods, droughts) may appear more frequently and the risks and losses may become more significant. The areas affected by the drought have extended during the last decades in Romania. The regions most exposed to the droughts are the ones from the south-east of the country but almost the entire country have suffered from the lasting droughts. Along the floods, the prolonged periods of droughts cause significant economical losses for agriculture, transportations, water management, health and households. The predictions based on global climate models show that we should expect to a more often frequency in the appearance of the extreme weather phenomena. The six waves of catastrophic floods that affected this year our country proved that Romania also is more and more affected by the manifestations of the global phenomena of climate changes.

The reaction of the authorities, expressed by adopting a national strategy regarding the climate changes on a term of 20 years, having an estimated cost of approximately 200 milliards Euros, shows that there are necessary conjugated efforts in order to evaluate the phenomena and elaborate, on this base, some measures on short, middle and long term connected to the regional and world measures in this field.

On the ground of the natural-social history, if the 19th and 20th centuries were the ones of the birth and conceptualisation of the ecological idea, the 21st century will be dominated by the preoccupation to solve the global natural-existing problems with the climate changes in top of them. Generated by the amplification of some objective elements by the "human touch", these have reached in their evolution the sore point of breaking the equilibrium and transiting towards a new state, devastating for the human civilisation. The alarm point has been reached and this is proved by the high frequency and injuriousness of the extreme weather phenomena with disastrous character; if between 1950 and 1959 there took place 13 climate catastrophes, during the period 1990-1999 there were registered 74, and we expect that their number to be of hundreds during this century. On the global level, these realities have first generated the alarm of the responsible scientific groups, fact which led to the constitution of the Intergovernmental Group of Experts by UNO in 1988

regarding the climate evolution (IPCC), which became the main administration centre of the problem from the informational-predictive point of view, followed by a significant political-diplomatic action with important effects in the international cooperation.

4 Conclusion

The climate changes and their serious impact on the tourism phenomenon represent one of the major challenges of our century – a complex field where we must improve our knowledge and understanding in order to be able to take immediate and correct actions to deal efficiently from the costs point of view the challenges raised by the climate changes.

References:

- [1] Muntele, I., Iatu, C., *Geografia turismului*, Ed. Sedcom Libris, Iasi, pp.69, 2003.
- [2] Ionac, N., Ciulache, S., Consecintele schimbarilor climatice asupra resurselor de apa, agricole, silvice, *Analele Universitatii din Oradea*, Seria Geografie, TOM XIII, pp.57, 2003.
- [3] Muntele, I., Iatu, C., *Geografia turismului*, Ed. Sedcom Libris, Iasi, pp. 81, 2003
- [4] Lamarre, D., Pigney, P., *Climats et sociétés*, A. Collin, Coll. U. Géographie, Paris, pp. 203, 1999.
- [5] Besancenot, J.P., *Climat et tourisme*, Masson, Paris, pp. 127, 1998.
- [6] Mazilu, M., *Ecoturism și amenajări turistice*, Ed. Scrisul Românesc, Craiova, pp. 208, 2004.
- [7] Tamara, S, *Efecte directe ale schimbărilor climatice asupra turismului românesc*, Bucharest, 2007.
- [8] Cocean, P., *Geografia turismului*, Ed. Carro, București, 1996.
- [9] Lozato-Giotart, J.P., *Géographie du tourisme*, Masson, Paris, 1992.
- [10] Mazilu, M., *Geografie Turistică*, Ed.Didactică și Pedagogică, Bucuresti, 2007.
- [11] Mazilu, M., *Le tourisme roumain dans le contexte du tourisme europeen*, Ed.Universitaria, Craiova, 2007.
- [12] Muntele, S. I., *Tourism Geography*, Ed. Sedcom Libris, Iași, 2003.
- [13] Stăncioiu, F.A., *Dictionary of Touristic Terms*, Ed. Economică, București, 1999.
- [14] Ungureanu, I. și colab, *The Environment geography, Man and Nature at the Begining of the Millenium*, Editura Institutul European, Iași, 2003.
- [15] 1970-2004 Images économiques du monde, SEDES, Paris.
- [16] 2000-2005 Economical Tribune, București