ВЛИЯНИЕТО НА КЛИМАТИЧНИТЕ ПРОМЕНИ ВЪРХУ ТУРИСТИЧЕСКИТЕ ДЕСТИНАЦИИ

Елка Узунова

Стопанска академия „Д.А.Ценов“ – Свищов, докторант,

e-mail: e-uzunova@uni-svishtov.bg

***Резюме**: Глобалният климат претърпява значителни промени в сравнение със състоянието му по време на прединдустриалната ера. Очаква се феноменът „изменение на климата“ да продължи през целия 21 век и след това с изключително сериозни последици, които включват покачване на морското равнище, поява и по-силна интензивност на неблагоприятни метеорологични явления като бури, затопляне на океана, суши и топене на ледници. Променящите се климатични и метеорологични условия в някои туристически дестинации вече са се отразили сериозно на комфорта на туристите и решенията им за пътуване. Промените в търсенето и избора на туристически дестинации ще повлияе на туристическия бизнес, местните приемни общности, както и свързаните с тях сектори като селско стопанство, занаяти и строителство.*

***Ключови думи**: климатични промени, туристическа дестинация, приемни общности, избор на дестинация*

THE EFFECTS OF CLIMATE CHANGE ON TOURIST DESTINATIONS

Elka Uzunova

D.A.Tsenov Academy of Economics – Svishtov, PhD student,

e-mail: e-uzunova@uni-svishtov.bg

Abstract: *Global climate has changed significantly compared to the pre-industrial era. The climate change phenomenon is expected to continue throughout the 21century and beyond with serious ramifications including sea-level rise, increased occurrence and intensity of adverse weather events such as storms, ocean warming, droughts, and glacier melting. Changing climate and weather conditions in some tourist destinations have already seriously affected tourists' comfort and travel decisions. Changing demand and tourist destination choices will influence tourism businesses, host communities, as well as related sectors such as agriculture, handicrafts and construction.*

Keywords*: climate change, tourist destination, host communities, destination choices*

Introduction

This paper focuses on major impacts of climate change on tourist destinations worldwide. Definition of climate change is given and the factors that determine climate are outlined. The various effects of climate changes are examined as well as the changes they cause to the tourism industry and the ways they influence decision-making in the tourism sector across the world. The paper draws attention to the key factors that affect tourist destination choice, such as natural environment, climate and personal safety.

Tourism is one of the largest and fastest-growing economic areas in the world. It is projected that travel and tourism will surpass retail and public services by contributing 2.5 to 4% of full employment by 2027. Climate is one of the main drivers of international tourism. The tourism sector is of great importance due to its global economic and social value, because of its role in sustainable development and strong relationship with climate. Compelling scientific evidence shows that global climate has changed significantly compared to the pre-industrial era. The climate change phenomenon is expected to continue throughout the 21century and beyond with serious ramifications including sea-level rise, increased occurrence and intensity of adverse weather events such as storms, ocean warming, droughts and glacier melting. Regional manifestation of climate will become highly sensitive to both tourists and tourist destinations, therefore it will require adaptation from all tourism stakeholders. The effects of climate change have already become evident at various destinations across the world. Global climate change has also begun influencing decision-making in the tourism sector.

Climate change and factors influencing climate destination choice

Climate change is a change in the pattern of weather and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer. Climate change may be due to natural processes, such as changes in the sun's radiation, volcanoes or internal variability in the climate system or due to human influences such as changes in the composition of the atmosphere or land use. Climate is determined by many factors that influence flows of energy through the climate system, including greenhouse gases. Energy from the Sun is the ultimate driver of climate on Earth. The solar energy received by Earth depends on how much the Sun emits and the distance between Earth and the Sun. Part of this sunlight is reflected directly back to space by the atmosphere, clouds, and land, ice and water surfaces. Aerosols can increase the reflection of sunlight. Eventually the solar

energy absorbed by Earth is returned to space as infrared (heat) radiation. In the process it interacts with the whole climate system - atmosphere, oceans, land surfaces and ice sheets. The flows of radiation in the atmosphere are very important in determining climate. The main gases that make up the atmosphere, nitrogen and oxygen, do not interact with infrared radiation. However, certain gases present in smaller quantities absorb infrared radiation flowing upwards from Earth's surface and re-radiate it in all directions, including back downwards. By doing this they impede the outward flow of infrared energy from Earth to space. This is called the 'greenhouse effect', and the gases that cause it by interacting with infrared radiation are called greenhouse gases. The most important are water vapour, carbon dioxide (CO2) and methane. The greenhouse effect was identified more than a century ago; Earth's surface would be about 33°C cooler without it, so it keeps Earth habitable. Global climate varies naturally over time scales from decades to thousands of years and longer. These natural variations can originate in two ways: from internal fluctuations that exchange energy, water and carbon between the atmosphere, oceans, land and ice, and from external influences on the climate system, including variations in the energy received from the sun and the effects of volcanic eruptions. Human activities can also influence climate by changing concentrations of CO2 and other greenhouse gases in the atmosphere, altering the concentrations of aerosols and altering the reflectivity of Earth's surface by changing land cover.

Natural environment, climate, and personal safety are among the key factors that influence destination choice. Experts believe that global climate change is expected to have a significant impact on all three elements at the regional level. Tourists have a more exceptional ability to adapt to the effects of climate change as they can avoid destinations suffering from the adverse impacts of climate change or change the timing of travel to avoid unfavorable climate conditions. The response of tourists to climate change impact on destinations and other attractions will

therefore reshape demand patterns and the tourism industry as a whole. Understanding and anticipating the potential seasonal and geographic shifts in tourism demand will be critical for major stakeholders in the sector. Tourists from temperate countries, that currently dominate international travel are expected to adapt their travel plans to take advantage of new climatic conditions closer to home. The shift in travel patterns will have huge implications, including more spending in resident and neighboring nations and less spending in warmer countries currently frequented by tourists from temperate regions.

Tourist destinations under threat from climate change

Although significant investments in sea defences have been made, many of the current coves are still threatened to be washed over or wiped out, submerged by water as a result of the melting polar ice sheets. A tough and immediate reduction in greenhouse gases would only limit frothing sea levels to 50 cm. While carbon dioxide emissions took a fall of 17% in April 2020 due to COVID-19, there is no assurance this will be made permanent due to policy change and the Climate Action Tracker report from June 2019 shows that prior to the pandemic, more carbon dioxide emissions were produced than ever before. Climate scientists believe that rising temperatures will make extreme weather events more frequent. Prolonged droughts and ferocious storms could lead to widespread flooding and regular wildfires (like those in Australia), plus the destruction of natural habitats. Some of the major destinations at risk from climate change are:

- Island and coastal destinations

Coastal and beach ecosystems are among the most diverse and productive habitats on the planet. The coastal areas are comprised of barrier islands, mangroves, estuaries, beaches, and salt marshes. Beach tourism is one of the most dominant market segments that constitute a crucial part of small island nations and developing countries. For example, in the Caribbean, tourism is ranked first in the

relative contribution of tourism to GDP out of 12 regions, making it one of the most tourism-dependent areas of the world. Coastal and island destinations are vulnerable to direct and indirect impacts of climate change such as coastal erosion, coastal boundary change, storms, and extreme climatic events, sea-level rise and physical damage to infrastructure. The impact of climate change on coastal tourism has already been felt in some parts of the world. For example, the rising sea level is causing changes in coastal areas in Vietnam, in one of the significant estuary regions that attract tourists. The vulnerability and risks to such areas are often related to a low adaptive capacity, particularly in coastal destinations of developing nations and small island nations. Seasonality of beach tourism can also be affected by climate change. Although the impact of climate change on different coastal regions will vary significantly in the future, it might appear beneficial at the same time. For example, the shoulder season in traditional beach destinations such as the Mediterranean might lengthen and the winter season can become more appealing to tourists leading to an expansion in tourism in such areas. Northern coastal areas might also benefit from warmer summers, thus attracting more tourists and lengthening the summer season.

Spanning approximately 229,000 miles, just off the coast of Southeast Africa, the island of Madagascar is dense with diverse wildlife. In fact, roughly 90 % of the country's native flora and fauna are endemic, including lemurs, the fossa, and the world's smallest known chameleon. This zoological wonderland is at risk, though, as the warming planet continues to place intense pressure on the island's ecology. Extended dry seasons have put fresh bamboo shoots in short supply, which feed Madagascar's population of lemurs, and more frequent flooding and rising sea levels are destroying delicate habitats such as mangrove forests. Coral bleaching in coastal reefs threatens the survival of many marine species.

The Maldives is made up of a series of atolls and is the lowest-lying country in the world (only 1.3 metres above sea level). It is at risk of vanishing entirely as climbing tides are already displacing locals. The Maldives has long been the dream destination for deep-pocketed honeymooners, holiday - makers and golfers with its highest natural point being the eighth tee of a golf course on Villingili Island. The rise of sea levels due to a temperature rise of 2°C or above might lead to the submerging of this atoll-based country along with other low-lying archipelagos, such as the Fijian islets and the Marshall Islands.

The Galápagos Islands, the extraordinary volcanic islands, 1000km west of Ecuador, are home to one of the most fascinating and delicate ecosystems on the planet. As well as growing concerns regarding overfishing and trying to control invasive species, climate change is expected to take a toll on the ecosystem. The acidification of warming oceans, changes in rainfall patterns and extreme weather are all likely to affect the balance on the islands. According to UNEP, the biggest disruptor will be the El Niño weather pattern, a natural climatic occurrence that periodically warms sea surface temperatures. With climate change, the number of severe El Niño years are likely to double in the next two centuries. The results could be disastrous for the depleted Galápagos penguins and marine iguana populations that have already lost 75% and 90% of their numbers respectively since the 1980s.

- Winter and mountain destinations

Mountainous regions are critical tourism destinations in several countries. Mountain tourism is most popular among the urban and busy city population as it offers peaceful locations, low-temperature conditions, and natural landscape. Climate change has severe impacts in mountain regions. For example, a rise in temperature could result in the melting of glaciers, changes in precipitation, increased pests and a shift in seasons. Pristine mountain landscapes covered in snow, the main attractions in such areas, are the most vulnerable to climate change.

In some areas, however, climate change might bring more opportunities. For example, shortening in the winter period and a lengthening of the summer period might provide opportunities for other outdoor activities such as hiking, trekking, and mountain biking. The effects of climate change in mountainous areas can be dealt with if stakeholders stimulate product and seasonal diversification. Diversification can involve creating spas, implementing snowmaking, grooming ski slopes to reduce snow depth requirements, or improve insurance covering natural disasters like avalanches.

The Alps, the European mountain range that stretches across eight countries, provides some of the most sought-after slopes in the world. With increasing temperatures, however, significant snowmelt continues to shorten the season for winter sports - in 2017, it was 38 days shorter than it was back in 1960, Time reports. Scientists predict that by the end of the century, people will have to climb up to the 10,000-foot mark to see snow on the mountains. Many resorts have already begun to compensate by offering spa treatments and outdoor activities like horseback riding or tennis to lure more off-season visitors, as the off-season extends every year.

- Biodiversity and forest destinations

National parks are among the most popular destinations in the forest and biodiversity tourism sector. Visits to forests as places for recreational activities, such as hiking, have gained popularity over the past years. Tourists visiting such areas select these destinations thanks to their unusual nature. Some of the most popular recreational activities include bird watching and hiking. It is believed that regions such as the Amazon, a biodiversity hotspot, might be adversely affected by climate change. It is suggested that climate change will result in a 12% increase in forest fires by 2050 in the Amazon basin. Climate change might also result in a shift in species range in various habitats. Climate change is the cause for the more

frequent and intense forest fires that are displacing and killing animals in different parts of the world, leading to declining tourism activity.

Glacier National Park, spreading over a million acres in Montana on the U.S. - Canada border, attracts around 3 million visitors every year. As global temperatures rise, this pristine ecosystem, home to hundreds of species of animals and thousands of plants, is rapidly losing one of its main attractions - glaciers that give its name. According to the data by the U.S. Geological Survey and Portland State University in 2017, a warming climate has significantly reduced the size of 39 different glaciers in the park since 1966 - the worst of which have seen reductions up to 85 %. The shrinkage has not shown any sign of slowing down. It is predicted there will be little ice left after a few more decades - and none at all by the end of the century.

The vast Alaskan wilderness has much to offer the adventurous outdoor traveller. Whether you choose to kayak the Kenai River or hike Denali National Park, natural wonders are abundant. However, its proximity to the fast-thawing Arctic, Alaska is already experiencing major changes in the form of coastal erosion, sea ice retreat, and permafrost melt. The state’s many ice caps are receding at extraordinary rates, triggering landslides so intense they have registered on the Richter scale. Another devastating effect of higher temperatures is wildfires, which have destroyed more of Alaska's forest in the past decade than any previous. The number of wildfires is expected to double by 2050.

The Amazon, the largest rainforest on earth, covers roughly 40 percent of South America. Travellers can find here scarlet macaws and blue poison dart frogs living side-by-side with jaguars and brown-throated sloths in the wet broadleaf rainforest. Yet despite the Amazon's size and vibrant flora and fauna, climate change has made it a fragile habitat. Extreme droughts have left tree species throughout the tropical jungle parched. As a result, they are vulnerable to large-

scale dieback and more susceptible to forest fires. In fact, devastating wildfires are becoming increasingly prevalent: Brazil's National Institute for Space Research identified more than 74,000 Amazon wildfires in 2019, a jump of nearly 85 % over the previous year.

- Safari destinations

Many safari destinations have already felt the effects of climate change. In 2012, flooding led to a three-day closure of the main road to the Maasai Mara National Reserve, one of the most popular tourist destinations in Kenya. That severely affected tourism activities in the area.

- Sea and ocean destinations

Oceans occupy 70% of the Earth's surface and are home to a wide range of biodiversity, which makes them suitable for various leisure activities such as marine wildlife watching. Seas and oceans in hard-to-reach areas are getting more and more attention from researchers and holidaymakers. Due to the ease of travel, increased interest in marine wildlife including whales, sharks, dolphins, sea lions and turtles has been observed. The numerous ways of exploring these regions include sailing, cruising and diving. It is estimated that diving tourism has increased at a rate of 20% a year, four times faster than global tourism. Climate change is adversely affecting some of the ocean and sea-life tourism destinations such as the Great Barrier Reef along the coast of Australia through processes such as ocean acidification (OA). OA results in acidic conditions within the marine environment, which makes such places inhabitable for various calcium-producing organisms. Coral bleaching has been observed in the Indian Ocean near Kenya, Tanzania, India, and Sri Lanka. Coral bleaching is not only threatening the coral reefs but also fish depending on them for habitat.

Every five years, the Great Barrier Reef Marine Park Authority reports on the current health of the Great Barrier Reef, the largest coral reef system on the

planet. The latest prognosis, released in 2019, does not look positive. Climate change is the reef's most significant threat and extreme changes in sea temperatures were responsible for mass bleaching of the coral in 2016 and 2017. Forests are nicknamed the "lungs of the earth", and coral reefs are seen as the oceanic equivalent. According to the UN Environment authority (UNEP), more than half of the world's reefs that include systems in Belize and the Bahamas are in danger of deterioration. Limiting global warming to 1.5ºC or less will save more than 10% of the world's coral. In order to protect 50% of the world's coral, temperatures must not creep past 1.2º C.

The Dead Sea is shrinking at a rate of around three feet a year.This body of water has already lost one-third of its surface area since development in the region started earlier this century and sinkholes are appearing in spots where the water has receded. A few forces continue to drive such changes. Construction of dams, storage reservoirs, and pipelines have reduced inflow water levels to just 5% of their original volume. In addition, the Middle East's increasingly hot climate makes it difficult for the lake to replenish itself. It is estimated that if it continues to disappear at its present rate, the Dead Sea could be completely dry by 2050.

Venice is often associated with climate change because rising sea levels lead to greater flooding of the city. About 36 million visitors come to marvel at the splendour of this historic lagoon-built city every year. The dredging of deep-water canals in order to allow cruise ships into certain channels has aggravated regular flooding. According to the Venice Resilience Lab, the number of tides above 110cm has doubled each decade since the major flood of 1966. In an effort to protect the piazzas and architecture from sustained water damage, the city has built three retractable floodgates across the main lagoon inlets since 2003. A UNESCO report suggests that the gates will need to be used frequently to combat rising sea levels, before the barriers are eventually overwhelmed.

Climate change could leave major parts of Mumbai, India, underwater in future decades if global temperatures continue to rise. A two-inch rise in water by 2050 would leave Mumbai prone to frequent flooding. According to the National Oceanic and Atmospheric Administration (NOAA), global sea level is currently rising at a rate of roughly one-eighth of an inch per year.

It is predicted by climate experts that Rio de Janeiro will be the South American city most hurt by climate change. If temperatures continue to increase, the sea level around Rio will rise up to 32 inches by the year 2100, enough to cover the city's famous beaches, airport, and even some inland neighborhoods. Aside from flooding concerns, rising waters would also lead to landslides, water shortages, and spreading of diseases.

Conclusion

As ice caps melt and wildfires rage, global warming is occurring faster than we can imagine. In countries affected by climate change, many of the world's prime travel destinations are at risk of suffering serious consequences - rising sea levels and dramatic weather events are endangering major cities with flooding. Increased temperatures are depleting resources that tourism industries depend on, with reduced snowfall and scant harvests in vineyards. Some natural wonders are facing the prospect of vanishing entirely. Developing an awareness of the destinations that are most at risk is the first step in becoming an advocate for their protection. Undoubtedly, the world is experiencing weather disturbances due to climate changes. Experts believe that environmental damage is one of the reasons why this is happening. Tourism is found to be a contributing factor to climate changes because the movement of people and their activities while on vacation increase the level of carbon emissions. The different effects of climate changes include snowcaps melting, coral bleaching, flooding, and rising sea levels, which are all

causing changes to the tourism industry. Effects that are more obvious include the lowering of the number of tourists in popular destinations where the natural resources, like coral reefs and beaches, have been destroyed due to climate changes. It is predicted that there is going to be a shift in the movement of people away from overly warm climates to temperate ones, which creates new jobs in new places while making the old destinations suffer economically due to job losses. The impact of climate changes on tourism calls for reforms in the existing policies that relate to the environment. There is a need for local and international cooperation so that the businesses and individuals in the sector will be able to adapt to these changes. The tourism industry has to adopt measures so that natural resources are protected. These measures should also contribute to the protection of the global environment.

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