

# Tourism & Climate Change Confronting the Common Challenges

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*Melting ice caps, torrential rains, category-five tropical storms, floods, droughts and fires. Evidence of climate change is inescapable and news about global warming has reached crisis proportions. Climate changes are already affecting many tourism destinations and altering the decisions of travellers. But is tourism to blame for global warming? And is the industry acting in a responsible way by joining international efforts to fight this worldwide threat? This policy paper from the World Tourism Organization looks at the connections between tourism and climate change, as well as some possible solutions and a sector-wide approach to acting responsibly.*

## Introduction

Tourists love good weather. There are few other economic activities that are so dependant on climate as tourism. The majority of tourism activities take place outdoors, so having a clean environment and favourable weather conditions are key to visitor satisfaction and fundamental to the continued success of any tourism destination.

Although the World Tourism Organization (UNWTO) and the entire UN system have been working on the issue of climate change for many years, it emerged at the forefront of the global agenda this year when the Intergovernmental Panel on Climate Change (IPCC) confirmed that global warming is “unequivocal”. The IPCC warned that warming likely caused by human activities that emit greenhouse gases will cause the earth’s temperature to rise between 1.8° and 4° C. by the end of this century.

Even if all greenhouse gas emissions were to suddenly stop tomorrow – something that cannot be expected to happen – the IPCC said inertia in the earth’s climate system is so great that global warming will continue for several decades due to the volume of emissions already released into the atmosphere.

Tourism cannot escape this phenomenon. Destinations are already being affected by climate change and the public is becoming increasingly sensitive to the environmental impact of their lifestyle decisions – including where to go on holiday.

As in all decisions, it is essential to weigh the costs against the benefits. In the case of tourism, the sector's share of greenhouse gas emissions, including air travel, are roughly equivalent to the industry's contribution to the global economy – about five percent.

But tourism offers many other important benefits. It is one of the best ways known to redistribute wealth from rich nations to poor nations, from urban areas to rural areas and from North to South. It also provides a profitable incentive for preserving the world's natural attractions and cultural heritage.

Spending by international tourists when they travel is considered foreign exchange earnings; which is why it is vital to the balance of payments of many nations, especially small islands and countries in the developing world.

UNWTO has determined that tourism is a primary source of foreign exchange earnings in 46 out of 50 of the world's Least Developed Countries (LDCs). At the same time, it has a tremendous potential to employ people in these countries and lift them out of poverty.

Recognition of tourism's role in poverty alleviation has made it a substantial component of the international development agenda. The tourism sector also embraces and makes a tangible contribution to the achievement of the United Nations' Millennium Development Goals.

Is tourism a victim or a villain when it comes to climate change? It is a complex debate.

As the lead UN agency for tourism, UNWTO has set out four goals for the industry to help it survive global warming and reduce its greenhouse gas emissions: 1) understanding the size of the problem and what is at stake; 2) anticipating changes that may occur due to global warming; 3) adapting to the new environment that is emerging; and 4) reacting by joining the efforts of the international community and developing a strategic roadmap for effective response, that begins now.

Global warming is a crisis facing the entire world and, as one of the world's leading economic sectors, tourism must take its fair share of the responsibility and must act responsibly.

## Understanding the Size of the Problem

Climate change is caused by greenhouse gases (GHG) emitted into the atmosphere, primarily through the burning of fossil fuels. Carbon dioxide CO<sub>2</sub> accounts for more than 60% of all GHG emissions. Several other gases, including methane and nitrous oxide, also contribute to warming the earth's atmosphere, but for simplicity GHGs are usually measured in terms of CO<sub>2</sub> emissions. Aside from greenhouse gas emissions, air travel generates other impacts on the skies – such as contrails and the formation of cirrus clouds – which remain difficult to measure with disagreements among scientists, but which clearly compound the problem.

According to research carried out by UNWTO in association with the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), CO<sub>2</sub> emissions from international tourism including all forms of transport accounted for just under 5% of the world total or 1,307 million tonnes in 2005.

Transport accounts for 75% of all emissions by the tourism sector, with aviation making up about 40% of all tourism emissions, road transport 32% and other forms of transport 3%. Accommodation represents about 21% of total tourism sector emissions.

On its own, aviation is estimated to be 2-3% of global GHG emissions. Transport as a whole represents about 14% of all global emissions – but this obviously includes many journeys unrelated to tourism, such as the transport of cargo and commuters travelling back and forth to work.

**Emissions from International Tourism in 2005**  
*including same-day visitors*

	<b>CO<sub>2</sub> (MT)</b>
Air transport	517
Other transport	468
Accommodation	274
Activities	45
<b>TOTAL</b>	<b>1,307</b>
World total	26,400
Share (%)	4.95

*Source: UNWTO and IPCC for world total*

The UNWTO study – to be released before the end of the year – also found that non-air based holidays barely increase GHG emissions per person/per day compared to staying at home.

As for accommodations, large hotels were found to have more emissions than guesthouses, self-catering apartments or campgrounds because they use more energy to operate extra facilities such as restaurants, bars, swimming pools and spas. Emissions by tourist activities were directly related to how much fossil fuel energy was consumed. For example, water skiing results in more emissions than hiking; and amusement parks have more emissions than river rafting.

However, tourism is expanding rapidly and emissions of GHG will keep pace unless urgent measures are taken.

In 2006, the number of international tourist arrivals reached 846 million. Spending on those international trips, not including air travel receipts, amounted to more than USD 500 billion. About 45% of those international tourists, or 378 million, travelled to their destination by air.

The purpose of the trips varied: some 16% or 131 million were business trips; leisure travel represented 51% of the total; and trips to visit friends and relatives to seek health treatments, or make religious pilgrimages accounted for 27% of total travel.

According to the world average, there are five times more domestic tourists than international ones. So combining international and domestic trips, there were roughly more than 5 billion tourists and travellers last year – a figure that should only be considered an approximation.

<b>Travel by Mode of Transport 2005</b>		
	<b>INTL. ARRIVALS (MILLIONS)</b>	<b>%</b>
Air	363.8	45.3
Land	377.8	47.1
Water	58.1	7.2
Unknown	2.7	0.3
<b>TOTAL</b>	<b>802.4</b>	

*Source: UNWTO*

Tourism is forecast to increase steadily over the next decades at a rate of 4-5% a year. International tourist arrivals are expected to double over the next fifteen years to 1.6 billion by 2020. Emissions from tourism are also predicted to grow rapidly, with an increase of 152% predicted between the years 2005 and 2035 without concrete action to reduce them.

Apart from transport emissions, it is important to keep in mind that tourism is a relatively clean activity – one that governments around the world encourage as an alternative to heavy industry.

Tourism is an activity that cuts across many different sectors so it is often not included in breakdowns of emissions by sector. But with its estimated 5% share of total world emissions, tourism ranks far below agriculture (15% of global emissions) and on a par with the chemical manufacturing industry.

Since tourism is such an international and diversified industry, reduction of greenhouse gas emissions will be more complicated than other sectors. It will require a greater variety of measures implemented by large companies and small family-owned enterprises alike. But unless action is taken, the combination of global warming and tourism growth could have serious consequences.

## Anticipating The Effect of Global Warming on Tourism

Ironically, climate change may have some positive effects on tourism, by extending the summer season in northern countries like the United Kingdom, Canada or Russia and perhaps even opening up new sights in previously inaccessible polar regions. But on balance the effects are overwhelmingly negative and should not be underestimated.

The immediate impacts of global warming identified by the IPCC include: higher maximum temperatures and more hot days worldwide; more severe tropical storms with higher speed winds; more intense rains; and more severe droughts. These effects have already been observed around the world, demonstrating that climate change is not a remote future event for tourism.

Two of the most popular types of holidays are already being affected: beach tourism and winter sports. Beach resorts have experienced erosion from intense storms, as well as algae blooms and infestations by jellyfish due to warmer than normal sea temperatures. Ski resorts have had to cope with lack of snow and a shorter season. Additionally, devastating hurricanes, cyclones, floods, and drought – sometimes accompanied by violent wildfires – have all been taking place more frequently over the past few years.

The outlook for the future is far bleaker. The tourism sector will need to prepare for the inter-related threats of: rising sea levels; receding ice caps, snow and glaciers; and increasing desertification. Tourism destinations would be most affected in the following areas:

### Small islands and low lying coastal areas

Small islands and low lying coastal areas are at the greatest risk from any rises in sea level, caused by melting polar ice caps. Scientists disagree on how much the seas will rise, but warn it could be up to 1 mt. by the end of this century. Places like the Maldives, which prospers due to tourism, risk losing entire islands with even a small increase in sea level. The historic centre of Venice and lower Manhattan would also likely be submerged, along with most beaches that exist today.

A very modest increase in sea temperature also contributes to the tragedy of coral bleaching, a trend that began several years ago. Half the coral in the Caribbean reefs, for example, has disappeared since 2005 due to coral bleaching and this can only get worse. Most of the world's coral reefs would die off with only a 3° C. increase in sea temperatures and the myriad of colourful fish and sea creatures that live in the reefs would also disappear. Once-vibrant reefs surrounding the island of Bali, for example, are becoming washed out, due in part to rising sea temperatures and coral bleaching. Sadly, the reefs of Bali Barat National Park, visited by more than 20,000 tourists a year in 2000, received only 3,100 visitors last year.

### Mountains and glaciers

The world's glaciers are retreating everywhere. In the Alps, for example, the Mer de Glace of Chamonix has receded 120 metres in the past 100 years. Glacier International Peace Park on the US-Canada border may soon lose its starring attraction and even in the towering Himalayas, scientists predict the glaciers of Tibet could be gone by 2100.

The stakes are high for snow and winter sports tourism. In Europe, there are more than 600 alpine resorts that generate more than € 50 billion a year. In Austria, for example, mountain tourism accounts for 4.5% of its GDP. Resorts are already experiencing a decrease in snowfall and turning increasingly to snowmaking machinery – itself detrimental to the environment. Studies show that a temperature rise of less than 2° C. would cause the northern Alps to lose 40 days of snow cover out of the five months they now enjoy. With a shorter season and higher elevations needed for winter sports, Germany would lose 60% of its winter sports potential in the Bavarian Alps.

### Sub-Saharan Africa

Advancing desertification especially in sub-Saharan Africa, but also in Central Asia, is taking place where water is scarce or supply is irregular. Kenya's Lake Nakuru – which attracts tourists to see its immense bird populations – is already suffering from insufficient water inflow. In neighbouring Tanzania, it is projected that by 2020 the famous snows of Mt. Kilimanjaro will have totally disappeared. Where the desert advances and where forests retreat, so does the habitat for wildlife. There has already been a spectacular decrease in the number of lions, elephants and rhinoceroses in Africa – which makes safari tourism more difficult. The IPCC report estimates that 20-30% of animal and plant species risk extinction with a 1.5°-2.5° C. rise in temperature.

At the same time forest cover is disappearing rapidly in tropical Africa, as well as in South America and Southeast Asia. The world has lost 3% of its tropical forest cover in the past three years and it is estimated that an additional 13 million hectares – equivalent to the size of Greece – is burned each year. This further reduces animal habitats and releases more carbon emissions, while at the same time reducing the earth's ability to take CO<sub>2</sub> out of the atmosphere naturally through the photosynthesis that takes place in the world's forests.

While these environmental changes may be gradual and barely noticeable at first, changes in tourist behaviour will probably be quicker and must also be anticipated. There will likely be shifts in tourism flows towards higher latitudes and away from the tropical regions now favoured. Likewise, winter sports tourists will shift to higher mountain elevations.

As consumers become more aware about the problem of climate change, they will increasingly take GHG emissions into account when making lifestyle decisions, such as where to go on holiday. This is expected to result in more holidays being taken close to home or trips to destinations that can be reached by the least polluting means of transport, such as trains.

While long-haul destinations will be especially vulnerable to this new consumer sensitivity – especially islands that are only accessible by air – it will open up countless opportunities for new tourism products that include elements that help protect the environment, such as: visiting China's panda research centre in Chengdu; helping survey fish populations on Australia's Great Barrier Reef; or re-planting forests in Latin America.

Whatever the environmental outcome, tourism cannot be seen in isolation. Changes in the pattern of demand will impact economic and social policies, especially with regard to employment. Knock-on effects will influence other sectors indirectly related to tourism, such as agriculture and construction, as well as small businesses like restaurants and handicraft producers that depend on tourists for their survival.

## Adapting To the Emerging Environment

Although climate change is already underway and it would take up to 100 years for carbon emissions currently in the atmosphere to dissipate, it is not too late to act. Reduction of greenhouse gases will determine the severity of global warming in the decades ahead and failure to reduce emissions now would be disastrous for the planet. Scientists believe full stabilization of the atmosphere will require a 70% reduction in GHG emissions worldwide.

Equally disastrous for the tourism sector would be a failure to adapt to the emerging environment. The tourism sector has not always been so quick to act when faced with change. Numerous travel agencies have disappeared rather than adapt to the reality of online sales and National Tourism Administrations have often been slow to take full advantage of the opportunities offered by their websites.

But potential tourists change their preferences much more rapidly and are already demanding more climate-friendly and climate proof holiday alternatives. Operators need to begin developing low-carbon tourism products. Destinations need to further diversify their tourism offer with a variety of indoor and outdoor activities that avoid the vagaries of weather.

UNWTO believes there is a great deal that can be done through efficiency and technology to reduce the carbon emissions of the industry without severely impacting current travel habits. Solutions generally fall into the categories of reducing energy use and improving efficiency, using alternative fuels, and offsetting carbon emissions.

#### Reducing energy use and improving efficiency

Topping the list is the need for more fuel-efficient planes and motor vehicles. Incentives and legislation are required to stimulate the transport industry into building planes and cars that burn less fossil fuel. UNWTO supports inclusion of air transport in the European Union Emission Trading Scheme to encourage quicker introduction of new fuel-saving technology.

Other measures can be more easily implemented by the airline industry to save fuel, such as: keeping aircraft on the ground for less time; operating at higher load factors; and reducing frequencies on less popular routes.

It is important to note, however, that the vast majority of GHG emissions by aviation take place on three main air corridors: Europe to North America, Europe to Japan, and North America to Japan. Reductions of North-South flights servicing poorer countries could have a negative impact on economic growth in the developing world.

While introduction of new technology in the aviation industry can take decades due to the long operational life of an aircraft, the auto industry adapts more rapidly. UNWTO research has found that the introduction of new fuel-saving technology in the auto industry alone has the potential to reduce tourism industry emissions by 7%.

In hotels and other types of accommodations, emissions can be reduced by constructing more energy efficient buildings and by using energy efficient appliances. Existing businesses can take actions such as limiting the use of air conditioning, improving insulation and using energy saving light bulbs.

Tourists themselves can improve their average GHG emissions per day or “carbon footprint” while on holiday by staying longer in the destination, rather than making quick trips, effectively spreading out the emissions used in getting there over a greater number of days.

### Using alternative fuels

Virtually all sources of renewable energy are relevant for tourism, including wind, solar, geothermal, tidal, biofuel and nuclear. A switch to solar power in sunny, tropical destinations, can pay for itself in as little as two years and would help reduce tourism emissions of GHG. The Accor hotel group, for example, has plans to equip 200 of its properties worldwide with solar panels over the next three years.

Use of biofuels – made from renewable agricultural products such as sugar cane, corn, beets and sunflower oil – were pioneered in Brazil and the United States. They are now spreading to other parts of the world and the European Union has decided that 10% of automobile fuel should come from biofuel by 2020.

But use of this energy source is a double-edged sword and cannot be considered a panacea. In addition to GHG emissions generated from farming, processing and transporting biofuels, they require large spaces for cultivation. Fields for biofuel cultivation are being created to the detriment of virgin forests – especially in the tropics – reducing biodiversity and perhaps increasing the greenhouse effect that they were intended to reverse.

### Offsetting carbon emissions

Trading “carbon credits” to offset emissions that cannot be controlled is an interesting solution that deserves to be considered by the tourism sector. Carbon offsetting does not reduce GHG emissions through fuel efficiency or use of alternative energy, but it allows a person or a business to contribute to the environment by purchasing credits that compensate for emissions caused by a voyage or an activity. The aim is to move towards carbon neutrality.

Carbon credits are normally used to plant trees, invest in research on renewable energy or support emission reduction projects. Tourists can also practice carbon offsetting on their own in the same way they might set up a savings plan for a holiday. Someone could, for example, switch over to public transport instead of commuting to work by car and then go on holiday with a guilt-free conscience.

Member States of the International Civil Aviation Organization (ICAO) are currently working on development of a global emissions trading scheme and ICAO is also starting to develop standardized system for measuring carbon emissions according to type of aircraft, route, and class of travel – which would help determine precisely how much offsetting is needed for each flight.

Carbon offsetting remains a controversial solution because it shifts responsibility from the supplier to the consumer and lessens pressure on industry to find lasting solutions to the real causes of global warming.

But there is no one-size-fits-all solution for the tourism sector. To be effective all possible energy saving measures must be taken seriously and applied to the fullest extent possible throughout the industry.

## Reacting Together with the International Community

Creating a meaningful, effective response to climate change is a challenge that requires the participation of the entire tourism sector. The World Tourism Organization's role is not to be a lobbyist on behalf of tourism, but instead to act as a convener and a catalyst – linking with the international community and bringing the industry together to find the right solutions.

Climate change is not a new issue for UNWTO. It began with participation in the 1992 Rio Earth Summit, which led to the Climate Change Convention and the Kyoto Protocol.

More recently, UNWTO convened the *1<sup>st</sup> International Conference on Climate Change and Tourism* in Djerba, Tunisia in 2003. The resulting Djerba Declaration calls on governments and the entire tourism sector to take effective measures to reduce the impact of global warming.

In the years since Djerba, UNWTO has become a full-fledged member of the UN system. The UN, in turn, has been given primary responsibility to direct the global response to climate change.

UNWTO has been asked to supply the tourism industry's response to global warming at the *UN Climate Change Conference* to be held from 3-14 December, 2007 in Bali, Indonesia. To prepare for this responsibility, a number of initiatives have been undertaken:

- 1) The *2<sup>nd</sup> International Conference on Climate Change and Tourism* has been convened on 1-3 October in Davos, Switzerland. Its aim is to bring the Djerba Declaration up-to-date by analyzing the effects of global warming on tourism and discussing potential mitigation measures in each sub-sector of tourism activity.

2) A *Tourism Ministerial Summit* will be held on 13 November at the World Travel Market in London to reach a political consensus and a commitment on a plan of action to take forward to the United Nations.

3) Climate change will be discussed at the 17<sup>th</sup> *UNWTO General Assembly* on 22-29 November in Cartagena, Colombia.

4) A new UNWTO study *Climate Change and Tourism: Impacts, Adaptation and Mitigation* is being carried out by an international team of experts in cooperation with UNEP and WMO.

5) The web-based *Climate and Tourism Information Exchange Service* has been set up ([www.unwto.org](http://www.unwto.org)) to allow experts, tourism officials and the general public to share their latest findings.

As a result of all these initiatives, UNWTO hopes to produce a series of recommendations for all the different stakeholders in the tourism sector, including: governments; destination management organizations; transport companies, including airlines and auto manufacturers; private tourism businesses, such as tour operators and hotels; and tourists themselves.

Special consideration is being given to how to make the recommendations as fair as possible and not jeopardize fledgling tourism industries in the developing world.

Given tourism's tremendous potential to contribute to poverty alleviation and because global warming has been caused mainly by industrialized nations, it is possible that measures to reduce greenhouse gas emissions could be applied with different emphasis in different parts of the world. The goal is to create a *holistic approach* that tackles the problem of climate change, but at the same time permits tourism to continue to make a positive contribution to poverty alleviation and the UN Millennium Development Goals.

UNWTO is convinced that the potential to reduce greenhouse gas emissions in the tourism industry is especially high, because efforts to lower energy consumption are still in their infancy and have been undertaken so far without a global vision. Since tourism is growing so rapidly, the need to put together a global vision and implement it is especially urgent.