CLIMATE
EVERYONE'S
BUSINESS

Climate Change:
Implications for Tourism

Key Findings from the Intergovernmental Panel on Climate Change Fifth Assessment Report

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The **Physical Science** of Climate Change

Rising temperatures:

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) concludes that climate change is unequivocal, and that human activities, particularly emissions of carbon dioxide, are very likely to be the dominant cause. Changes are observed in all geographical regions: the atmosphere and oceans are warming, the extent and volume of snow and ice are diminishing, sea levels are rising and weather patterns are changing.

Projections:

Computer models of the climate used by the IPCC indicate that changes will continue under a range of possible greenhouse gas emission scenarios over the 21st century. If emissions continue to rise at the current rate, impacts by the end of this century are projected to include a global average temperature 2.6–4.8 degrees Celsius (°C) higher than present, and sea levels 0.45–0.82 metres higher than present.

To prevent the most severe impacts of climate change, parties to the UN Framework Convention on Climate Change (UNFCCC) agreed a target of keeping the rise in average global temperature since pre-industrial times below 2°C, and to consider lowering the target to 1.5°C in the near future.

The first instalment of AR5 in 2013 (Working Group I on the physical science basis of climate change) concluded that by 2011, we had already emitted about two-thirds of the maximum cumulative amount of carbon dioxide that we can emit if we are to have a better than two-thirds chance of meeting the 2°C target.

Impact of past emissions:

Even if emissions are stopped immediately, temperatures will remain elevated for centuries due to the effect of greenhouse gases from past human emissions already present in the atmosphere. Limiting temperature rise will require substantial and sustained reductions of greenhouse gas emissions.

About this document

The Fifth Assessment Report from the Intergovernmental Panel on Climate Change is the most comprehensive and relevant analysis of our changing climate. It provides the scientific fact base that will be used around the world to formulate climate policies in the coming years.

This document is one of a series synthesizing the most pertinent findings of AR5 for specific economic and business sectors. It was born of the belief that the tourism sector could make more use of AR5, which is long and highly technical, if it were distilled into an accurate, accessible, timely, relevant and readable summary.

Although the information presented here is a 'translation' of the key content relevant to this sector from AR5, this summary report adheres to the rigorous scientific basis of the original source material.

Grateful thanks are extended to all reviewers from both the science and business communities for their time, effort and invaluable feedback on this document.

The basis for information presented in this overview report can be found in the fully-referenced and peer-reviewed IPCC technical and scientific background reports at: **www.ipcc.ch**

PUBLISHED:
May 2014

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Key Findings

1. **The sector is exposed to numerous direct and indirect impacts from climate change.** Sea-level rise and more acidic oceans will threaten coastal tourism infrastructure and natural attractions. Rising temperatures will shorten winter sport seasons and threaten the viability of some ski resorts. Climate change will lead to changes in biodiversity, affecting eco-tourism. Changing precipitation will affect water availability.

2. **Adaptation options exist, but many are likely to add costs and offer only short-term relief.** Locations at risk can invest in more resilient infrastructure. Winter sports providers can turn to artificial snow makers, move to higher elevations, or market themselves as year-round destinations. Under scenarios that see high emissions, and higher temperatures, questions exist as to whether adaptation is possible at all.

3. **The contribution of tourism to greenhouse gas (GHG) emissions is rising.** Calculations of the contribution of tourism to global carbon dioxide (CO_2) emissions range from 3.9% to 6% of human emissions, with 4.9% the best estimate. As the world becomes more affluent, the sector is expected to grow by an average of 4% annually and reach 10% of global GDP within ten years. The sector's emissions are on course to grow 130% between 2005 and 2035.

4. **There is considerable uncertainty about how tourists will respond to the effects of climate change.** Academic research provides much detail on likely impacts, and on possible changes in tourism demand. These changes are likely to create opportunities at both the destination and business level. But overarching conclusions are hard to draw.

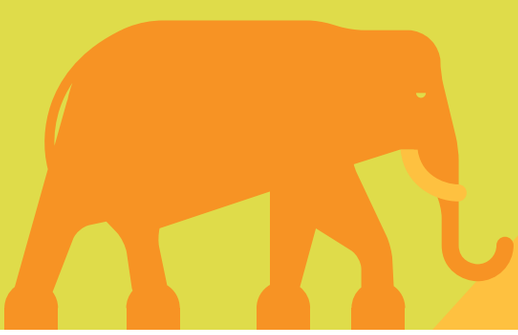
Executive Summary

The tourism industry is one of the world's largest, accounting for some 9% of global GDP and generating more than US Dollar (USD) 6 trillion in revenue each year. It provides livelihoods to more than 255 million people worldwide. The sector is particularly important for some of the world's poorest countries, especially some Small Island States.

The industry faces profound impacts from climate change – impacts that are already being felt. As temperatures rise, the attractiveness of many destinations will fade. Winter sports will become less viable in some locations. Coastal tourism is highly vulnerable to rising sea levels. The natural phenomena that millions of tourists travel to see – coral reefs, forests, fauna-rich savannah – will be degraded or destroyed. The sector also faces impacts of a more general nature: more expensive insurance (from more extreme weather), reduced water availability, reduced food security and greater conflict affecting some communities in which it operates.

There are limited positive effects from climate change. Changing temperatures will make new regions more attractive to some tourists, and there will be some opportunities for new types of tourism. And options exist to adapt to the effects of climate change. However, these new opportunities are likely to be short-lived, and adaptation options limited. Furthermore, many adaptation responses are likely to be overwhelmed by climate change later this century, especially under high GHG emission scenarios.

Tourism will be affected by policy changes and efforts to reduce GHG emissions causing global warming, especially in the context of the steep growth in its emissions. Emissions from transport and the built environment account for 95% of tourism's emissions, meaning that reductions from those two sectors will dictate much of its mitigation potential.



Impacts of Climate Change

As a sector, tourism is highly exposed to the direct physical effects of climate change, such as sea-level rise and rising temperatures. It is also threatened by indirect impacts, such as changing availability of water and the spread of some diseases. Some positive impacts are likely, such as the attractiveness to tourists of new geographical areas and opportunities for so-called 'last chance' tourism.

Coastal tourism is the largest component of the global tourism industry, with more than 60% of Europeans opting for beach holidays, and the segment accounting for more than 80% of US tourism revenues. It is particularly at risk from the effects of climate change on the world's oceans.

Rising sea levels will have profound and multiple impacts on coastal tourism. Sea-level rise will erode and submerge some tourism infrastructure and attractions, such as beaches. For example, nearly a third of Caribbean resorts are less than 1 m above the high water mark. Sea-level rise of 1 m would damage 49–60% of the region's tourist resort properties, lead to the loss or damage of 21 airports, and inundate land around 35 ports. The cost of rebuilding tourist resorts in the region by 2050 is estimated at USD 10 billion to 23.3 billion. Higher sea levels and greater storm surges will also quicken the erosion of beaches, sand dunes and cliffs. Degraded beaches reduce the desirability of destinations, as studies of Martinique, Barbados and Bonaire have shown. Beach erosion could reduce the prices that operators can charge for accommodation.

Impacts and risks

Climate change will impact the tourism sector at the **destination** level, and at the **operational** level.

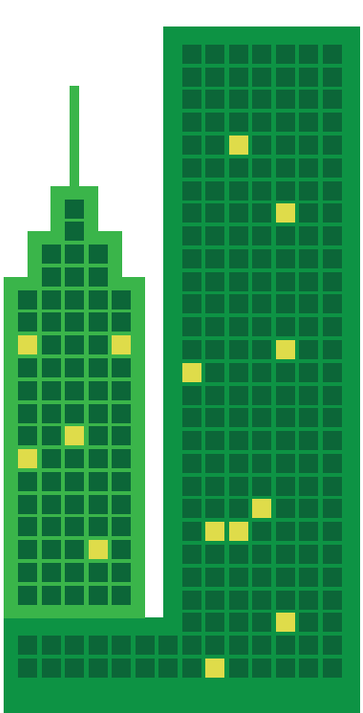
Destination impacts:

- **Rising sea levels** and **extreme weather** will threaten coastal tourist infrastructure and erode and submerge beaches.
- **Ocean acidification and rising sea temperatures** will degrade and destroy coral reefs.
- **Rising temperatures** will reduce the viability of some winter sports destinations, affect biodiversity and lead to more forest fires.

Operational impacts:

- **Reduced water availability** could lead to disputes with local industry and communities.
- **Extreme weather events** will increase operational uncertainty, particularly in poorer countries.
- **Insurability will decline** in areas exposed to extreme weather or sea-level rise.
- **Efforts to cut emissions** may add costs to the industry, particularly from transport emissions.

Extreme weather events are likely to become more common, disrupting travel and damaging infrastructure, and insurance is likely to become more expensive or even unavailable.



Rising temperatures and ocean acidification are affecting marine habitats and organisms. Coral reefs in particular are under threat. Reefs and the marine life they shelter are important tourist attractions: they contribute USD 11.5 billion annually to global tourism revenues. More than 100 countries benefit from the recreational value of their coral reefs. Ocean acidification decreases the availability of calcium carbonate for reef-building corals, leading to the degradation of coral reefs. Reefs are also sensitive to high temperatures, leading to 'bleaching' episodes in which high proportions of the coral die. Dive tourists, particularly more experienced divers, can be sensitive to these coral bleachings. Awareness of bleaching among dive tourists is mixed, however, and the economic impacts uncertain: while fewer than half of diving-related tourists surveyed in 1998 were concerned about the widespread coral bleachings that took place that year, other studies have recorded reduced tourist satisfaction as a result of dead coral. A scenario of at least 2°C of global warming by 2050–2100 would see reef structures degrade "with serious consequences" for tourism in Australia, the Caribbean and other Small Island States. By mid-century, coral-dominated reef systems (those with more than 30% coral cover) are very likely to disappear in some regions.

Rising temperatures could have a variety of effects on the sector:

- Variable snowfall, retreating glaciers and milder winters have reduced visitor numbers in winter sports areas in Europe and North America. Warming would reduce the number of resorts that are 'snow reliable', especially those at low altitude, as well as shortening the skiing season.
- Rising temperatures are seeing species shift towards the poles and to higher elevations where possible. This could have serious impacts on eco-tourism, such as safari operators, with nature reserves increasingly isolated geographically. In sub-Saharan Africa, up to 40% of species in national parks are likely to become endangered by 2080, assuming that they are unable to migrate. Most wine-producing regions would become less suitable for vine growing, with implications for wine tourism.
- Higher temperatures could lead to more, and more intense, forest fires in parts of the world. In southern Europe, for example, fire seasons may lengthen, and there may be an increase in the number of high fire danger days. However, increased humidity in northern Europe is projected to make forest fires less frequent. In North America, severe droughts have themselves contributed to forest die-back, and wildfires have increased in frequency and duration. Pest infestation has also led to wide-scale forest die-back.
- Tourists have a clear preference for the type of climate currently found in southern France, northern Italy and northern Spain – rising temperatures could drive tourists away from southern Mediterranean resorts. However, studies have shown that beach tourists are deterred not by high temperatures, but by rain.
- Climate change could lead to a reduction in the redistribution of wealth from rich to poor countries that tourism currently provides. The flow of tourists from cold, rich countries to warm, poorer ones could slow, as more tourists holiday nearer to home.
- There is a risk that climate impacts could make some resorts, hotels or facilities unusable, rendering them 'stranded assets' and bringing financial losses to investors and operators.

Tourism businesses – especially those in poorer parts of the world – will be vulnerable to reduced security and social unrest caused by climate change.

Climate change is projected to reduce precipitation in some already dry regions of the world. The **availability of freshwater** is already under pressure in many tourist destinations, with supplies often particularly limited on small islands. Drops in availability or quality can have adverse effects on tourism operators. Climate change could affect water availability in three ways: melting of mountain glaciers; changing patterns of precipitation and evaporation; and sea-level rise, leading to the salinization of groundwater supplies. Increased demand for water for agricultural irrigation or other industrial uses would add to pressures on water availability, and could see tourism operators competing with more established users.

Tourism is, like many industries, vulnerable to the effects of **extreme weather events** linked to climate change. Coastal tourism is particularly at risk. Severe storms, with associated winds, waves, rain and storm surges can disrupt the transport, power and water supplies that the industry relies on. More frequent and more extreme weather events could lead to increases in insurance premiums, as insurers respond to larger claims. Where risk levels exceed certain thresholds, insurers will no longer offer coverage, or will set premiums so high as to be unaffordable to those at risk. This could have serious implications for tourism operators, especially in coastal areas. Poorer countries tend to be less resilient to the effects of extreme weather, and less able to adapt to more extreme weather. By extension, and to the extent that they rely on local infrastructure, the tourism industries in those countries will be more vulnerable than those in richer countries. Extreme weather can influence visitors' perception of the desirability of a particular destination, as studies of persistent rainfall in Martinique or hurricanes in Anguilla have shown.

Climate change will have impacts on **human health and security**, felt most by populations that are already vulnerable to climate-related health impacts, such as from under-nutrition or food- or water-borne diseases. In some parts of the world, food and water resources are already threatened by climate change, and this trend is projected to increase. Climate impacts have the potential to overwhelm the ability of societies in more fragile or less developed countries to respond. Tourism businesses – especially those in poorer parts of the world – will be vulnerable to reduced security and social unrest caused by climate impacts on food and water security, and on the state of public health.

There may be some **positive impacts** of climate change for the sector – in the short- to medium-term at least. New geographical regions may become more attractive to tourism. Northern Europe and Scandinavia and Alaska are likely to become more popular with visitors as temperatures rise. There is also some evidence that tourists are travelling to see regions and natural phenomena that are at risk in a warming world – such as glaciers, Antarctica, or low-lying islands. Certainly, the reduction in sea ice is expected to add to an already rapid increase in Arctic cruises. However, the opportunities presented by such 'last-chance' tourism will, by definition, be short-lived.

Resilience

Given the tourism sector's short investment horizons, high proportion of human capital to built assets, and ability to substitute destinations, the overall adaptability of the sector at a business level is high. Destinations that rely on vulnerable natural assets, where diversification is not possible, will be more challenged.

A number of options are available to help the tourism industry adapt to the effects of climate change.

Moving in response to changing conditions

To the extent that rising temperatures make some regions, such as the southern Mediterranean, less attractive to tourists, providers can relocate polewards. Northern Europe is likely to become a more attractive tourism destination, for instance. Equally, in a limited number of cases, ski operators can respond to global warming by relocating to higher elevations.

Adapting in situ, using technology or seasonality

Resorts can market their 'shoulder' months, rather than high summer, as the best time to visit, while mountain resorts can market themselves as year-round destinations. Shoreline stability can be enhanced by preserving ecosystems such as mangroves, salt marshes and coral reefs. Beaches can be artificially rebuilt. Small islands facing water constraints can invest in desalination plants. Water use can be reduced. Ski resorts can turn to, or increase their use of, snow machines to supplement natural snowfall. However, these options may only bring short-term relief and may have harmful effects – including increasing fossil fuel use and so accelerating climate change.

These kinds of responses have their limitations. Desalination is expensive and energy-intensive. Finding sufficient sand will become increasingly difficult, as local supplies are depleted. Skiers prefer real snow, and snow machines are also costly, water intensive, and unsuitable for small resorts. And, as temperatures continue to rise, their effectiveness declines. One study found that while the future availability of artificial snow meant that only four out of 14 North American ski areas would be at risk before 2029, that figure would rise to 10 by 2070–99.

Moreover, tourists are averse to 'artificial coastlines'. So-called 'hard' protection measures against sea-level rise, such as seawalls, reduce an area's attractiveness to tourists.

Anticipating challenges

The sector could make better use of forecasting and early warning systems, to better anticipate threats to tourism and natural ecosystems. This would reduce the risk of 'stranding' assets and incurring financial losses.

Shifts to higher altitudes, operational and technical measures, and year-round tourist activities may not fully compensate for adverse impacts. Moreover, with the more extreme impacts that higher emission scenarios bring, adaptation becomes progressively less possible.

Nonetheless, there is some evidence that, with planned adaptation, tourism can flourish despite the impacts of climate change. For example, the Costa Brava region of Spain is responding to the threat of increased temperatures and reduced water availability in the current high season by shifting to the 'shoulder' months of April, May, September and October.

Tourism on the Move in a Changing Climate

Rising temperatures, higher sea levels and degraded habitats will have serious impacts on almost every sub-sector of the tourism industry. But options exist to help the industry adapt to climate change.

IMPACTS Changes already affecting the tourism sector

RISKS Likely impacts on tourism in the future

ADAPTATION How the industry can respond

MITIGATION What tourism can do to reduce its emissions

Mountain and Snow Tourism

RISKS
Rising temperatures will mean that fewer resorts will be able to rely upon sufficient snowfall.

ADAPTATION
Snow-making machines can help operators respond to less reliable snowfall, although they will face technological and economic limits as temperatures rise.

ADAPTATION
Winter sport resorts can adapt by marketing themselves as year round-destinations, with longer 'green seasons' helping to offset shorter skiing seasons.

Forest and Lake Tourism

MITIGATION
Behavioural changes, such as holidaying locally in favour of long-haul destinations, would reduce the impacts of tourism.

IMPACTS
Severe droughts and pest infestation have led to widescale forest die-back in North America.

RISKS
In Southern Europe, North America and Australia, fire seasons will lengthen, and there will be an increase in the number of high fire danger days.

Biodiversity and Agricultural Tourism

RISKS
Rising temperatures are seeing species shift towards the poles and to higher elevations where possible. Extinctions are increasingly likely as climate change progresses.

RISKS
In sub-Saharan Africa, up to 40% of species in national parks are likely to become endangered by 2080, assuming they are unable to migrate.

RISKS
The suitability of most existing wine regions for vine-growing is expected to decline, affecting wine tourism.

Mountain and Snow Tourism

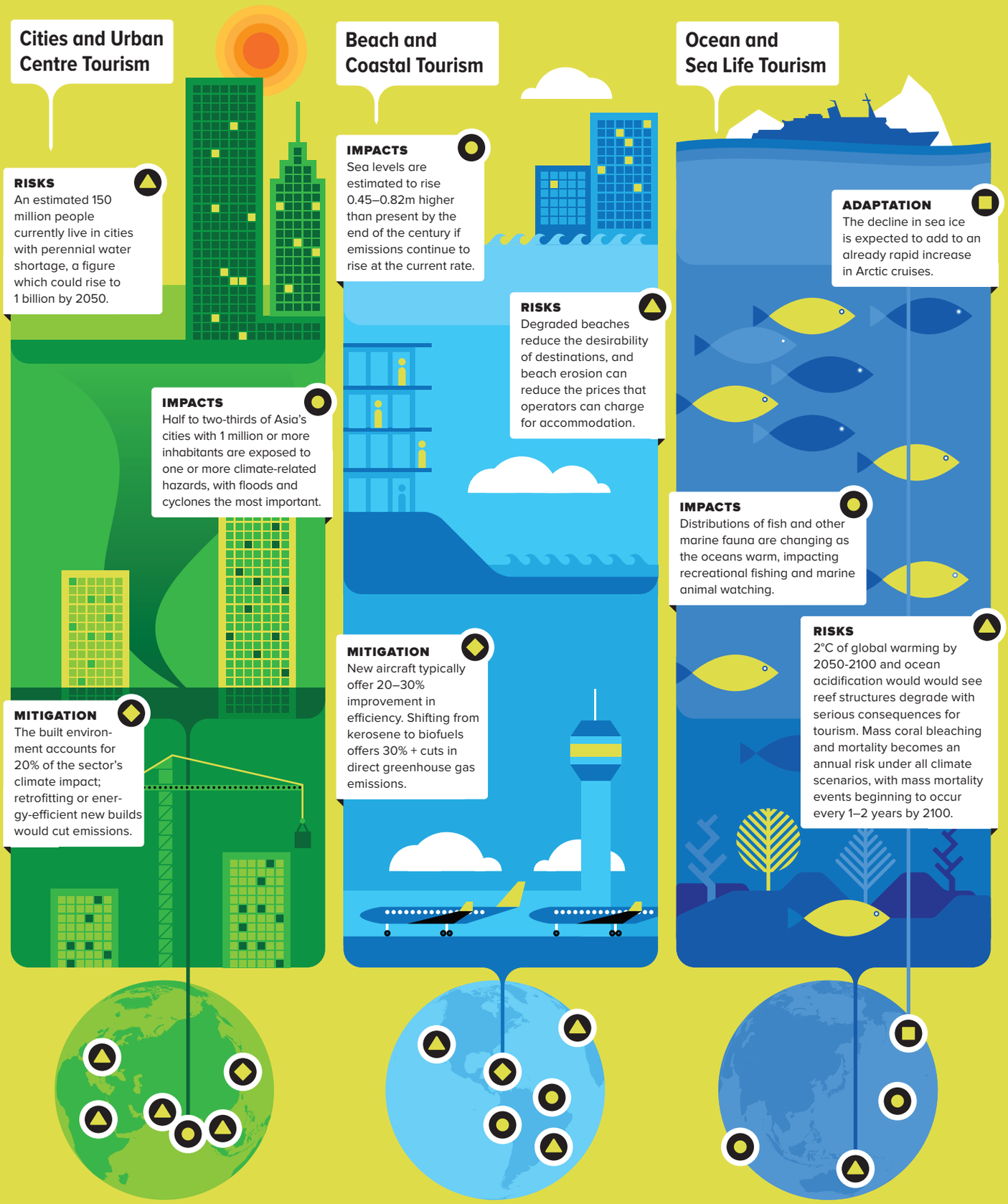
Snow sports are at obvious risk from rising temperatures, with lower-elevation resorts facing progressively less reliable snowfalls and shorter seasons. But other types of mountain tourism are also vulnerable, as infrastructure is put at risk from melting glaciers and thawing permafrost.

Forest and Lake Tourism

Outdoor activities will be affected by large-scale forest dieback and more widespread wildfires, triggered by sustained drought and higher temperatures. Longer fire seasons will reduce access to national parks. Rising temperatures will change lake habitats, affecting fishing tourism.

Biodiversity and Agricultural Tourism

As temperatures rise, the geographical dispersal of flora and fauna will change, as species shift to conditions to which they are better adapted. Given that many nature reserves are geographically isolated, this may prove difficult or impossible for many iconic species.



Cities and Urban Centre Tourism

City visits account for a large percentage of the global tourism industry. Across the world, city infrastructure is exposed to a range of climate impacts, including extreme heat events, water shortages and flooding. Coastal cities, meanwhile, are at risk from sea-level rise.

Beach and Coastal Tourism

Rising sea levels and more extreme weather events threaten beaches and coastal infrastructure enjoyed by hundreds of millions of tourists each year. While adaptation can protect at-risk infrastructure, beaches are difficult to protect without reducing their attractiveness.

Ocean and Sea Life Tourism

The combination of rising water temperatures and increasing ocean acidification, caused by the absorption of carbon dioxide, spell particular peril for reef ecosystems and the dive tourism they support. Warming sea temperatures will also change the distributions of fish and marine mammals.

Mitigation Potential

While it accounts for a lower percentage of global emissions than its percentage contribution to global GDP, tourism is, in parts, an energy-intensive industry. Its customers often travel long distances, using highly polluting forms of transport. In developing countries, tourists tend to have a larger carbon footprint on average than the local population.

Given the significance of its climate impact, tourism will come under significant pressure to reduce its GHG emissions if governments enact policies to curb climate change in line with the 2°C target. These pressures will become all the more acute given the sector's projected growth.

Under a business-as-usual scenario, the sector's emissions are forecast to grow by 130% between 2005 and 2035; the emissions from air travel and accommodation are projected to triple. Studies show that for some countries, such as the UK, unrestricted growth of tourism would, by 2050, see the sector consume the entire 'carbon budget' available under a 2°C scenario.

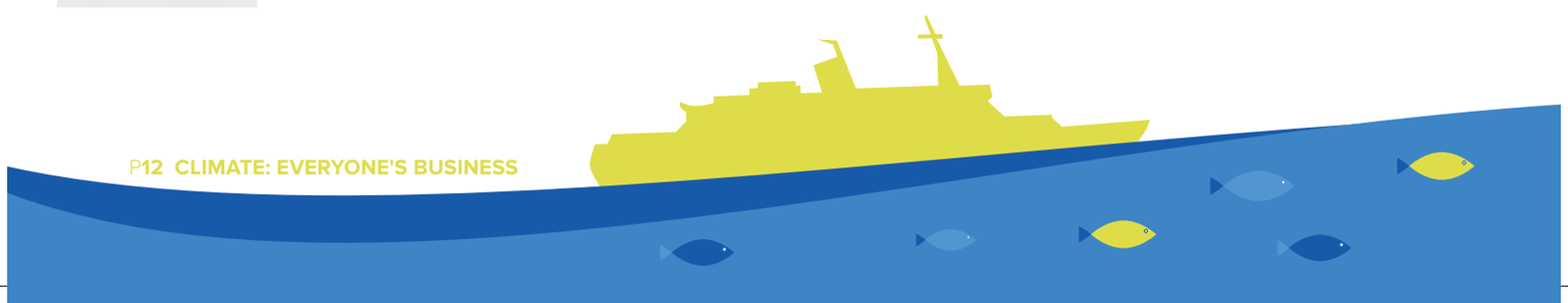
Pressures on the sector to reduce emissions are likely to trigger more efficient behaviour, and therefore some cost savings. However, by and large, reducing emissions will impose additional costs. While the built environment accounts for around 20% of the sector's climate impact, transport makes up 75%. Transport has some of the highest costs associated with emission reductions.

Lifestyle changes necessary

Emissions reductions from improvements in fuel efficiency and technological fixes are expected to be offset by growth in tourism. Strong policy measures are likely to be necessary, especially to change passenger transport behaviour, where a "large price signal is needed".

Changes in lifestyle are therefore likely to be an important component of any effort to drive emissions reductions from tourism. Such changes might include, for example, a reduction in the demand for long-haul tourism in favour of holidaying more locally.

The tourism sector's emissions are somewhat concentrated: for example, air transport accounted for 43% of the sector's emissions in 2005, but just 17% of the trips taken. Cruises tend also to have high associated emissions. This means that reducing demand in a few, small sub-sectors of tourism could have a significant effect on emissions.



Built environment

There is large potential for energy savings in both new and existing buildings. The technologies needed are well understood, allowing for the construction or retrofitting of buildings to very low- or even zero-energy standards. These investments typically pay back well within the building lifetime. 'Deep' retrofits of existing buildings can deliver energy savings of 50–90%.

Mitigation options for buildings comprise four strategies: building-integrated renewable energy systems, such as solar power; energy efficient lighting, heating, cooling and other appliances; system efficiency, such as through building codes and standards, urban planning etc; and behavioural and lifestyle changes. None of the strategies are unique to the tourism sector, but all can be applied to help reduce its emissions.

Transport

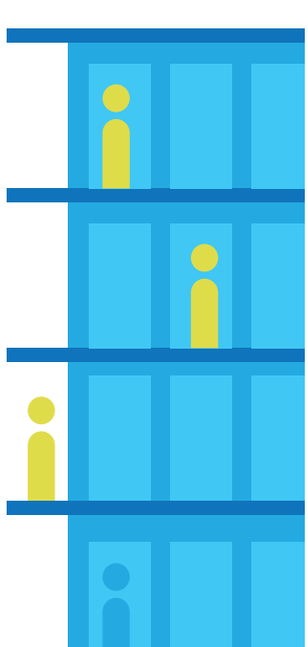
Reduction in emissions from the tourism sector will depend to a large degree on improvements in efficiency made within the transport sector. Here, progress is being made across a number of fronts.

More efficient vehicles Internal combustion engines and jet turbines are becoming increasingly efficient. Expectations are for 40–70% improvements in the fuel efficiency of light-duty vehicles by 2035 compared with today. New aircraft typically offer a 20–30% improvement in fuel efficiency over existing models, driven by improved engine performance, weight reductions, and design. Further gains of 40–50% between 2030 and 2050 are possible, compared with 2005 levels.

Alternative fuels Airlines are experimenting with replacing kerosene with biofuels, which offer direct GHG emission reductions of 30–90% compared to fossil fuels. Shifting to electric or hydrogen-fuelled vehicles promises to dramatically reduce emissions from road vehicles used by tourists while at, or travelling to, their destinations.

Operational improvements Aviation CO_2 emissions can be reduced through more direct routes, flying at optimum altitudes and speeds, and reducing time spent waiting to land.

Modal shifts Further reductions can be delivered by shifting from road and aviation to high-speed rail, especially where electricity grids have been decarbonised.



The transition to low-carbon strategies for tourism will need to be initiated by the sector itself.

Conclusion

Opportunities arising from climate change, and the opening up of new regions and types of tourism, may be short-lived and dwarfed by the negative impacts the sector is beginning to feel.

The tourism sector is operating in an environment of considerable uncertainty. While there is a large volume of academic literature, particularly in terms of climate impacts, the studies of tourist behaviour reviewed as part of the AR5 process lack consistency and are often conflicting, making it hard to draw overarching conclusions.

Studies also tend to model projections of how tourists are likely to behave, rather than look at how tourists are actually responding: projected changes in the attractiveness of certain areas have rarely been tested against observed tourist behaviour, for example. There has been little research into the effects on urban tourism, and there have been relatively few studies into likely changes to the economic value of tourism due to climate change.

The academic research also finds relatively limited concern among tourism operators – with operators either not believing climate change is real, or that they will easily be able to adapt, or that the uncertainty around climate change is too great for early investment in adaptation to make sense.

No country has yet developed a low-carbon tourism strategy, leaving the sector to find its own way to address climate change in the face of considerable uncertainties.

The sector will not be uniformly affected. Urban tourism is less vulnerable than coastal tourism. Pilgrimage, family visits or gambling will be less affected than beach tourism, angling, or nature watching. The relative attraction of destinations to tourists will change as temperatures rise, while climate change is already encouraging 'last chance' tourism to threatened environments.

Some parts of the world will be more sensitive to climate change than others. Climate change will also provide opportunities, with new regions and types of tourism becoming attractive to tourists. However, these opportunities may well be short-lived, and dwarfed by the negative impacts that the sector is already beginning to feel from climate change.

As AR5 shows, it is certain that the sector will face significant climate impacts, and is likely to be required to make a significant contribution to measures addressing global GHG emissions.

Glossary

ADAPTATION

The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.

BIOFUEL

A fuel generally in liquid form, produced from organic matter or combustible oils produced by living or recently living plants.

CLIMATE CHANGE

Any significant change in climate that persists for an extended period, typically decades or longer.

CLIMATE IMPACT

The effects of climate change on natural and human systems.

CORAL BLEACHING

The paling in colour of coral which occurs when stress factors such as high temperature, cause the algae living in the coral tissues to be expelled.

GREENHOUSE GAS

A gas in the atmosphere, of natural and human origin, that absorbs and emits thermal infrared radiation. Water vapour, carbon dioxide, nitrous oxide, methane and ozone are the main greenhouse gases in the Earth's atmosphere. Their net impact is to trap heat within the climate system.

LIVELIHOOD

A way of making a living, encompassing people's capabilities, assets, income and activities required to secure the necessities of life.

MITIGATION

A human intervention to reduce the sources or enhance the sinks of greenhouse gases.

OCEAN ACIDIFICATION

A reduction in the pH of the ocean over an extended period, typically decades or longer, which is caused primarily by uptake of carbon dioxide from the atmosphere.

PROJECTION

A potential future evolution of a quantity or set of quantities, often computed by a model. Projections involve assumptions that may or may not be realized, and are therefore subject to substantial uncertainty; they are not predictions.

RENEWABLE ENERGY

Any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use.

RESILIENCE

The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure.

STRANDED ASSET

An asset that has become obsolete, or non-performant, but must be recorded on the balance sheet as a loss of profit.

"Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions."

IPCC, 2013

Disclaimer:

This publication has been developed and released by the European Climate Foundation (ECF) and the University of Cambridge's Judge Business School (CJBS) and Institute for Sustainability Leadership (CISL).

This project was initiated and financed by ECF and endorsed by CJBS and CISL.

The family of summaries, of which this report is part, is not meant to represent the entirety of the IPCC's Fifth Assessment Report (AR5) and they are not official IPCC documents. The summaries have been peer-reviewed by experts both from the business and science communities. The English version constitutes the official version.

About us:

The University of Cambridge Institute for Sustainability Leadership (CISL) brings together business, government and academia to find solutions to critical sustainability challenges.

Cambridge Judge Business School (CJBS) is in the business of transformation. Many of our academics are leaders in their field, creating new insight and applying the latest thinking to real-world issues.

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