THE ICARUS FOUNDATION

The Climate Change Challenge
Implications for the Tourism Industry

A Discussion Paper

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Helping Canada's tourism sector be climate friendly

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SUMMARY

This paper serves two objectives:

1. To summarize the key impacts of climate change on tourism as well as tourism's contribution to global warming; and

2. To encourage the Canadian tourism industry to develop effective and sustainable responses which might minimize the negative impacts of this phenomenon.

The first part of the paper provides a layperson's overview of the topic – those readers who feel comfortable with the science and projected impacts may skip this section.

The second part describes the direct and indirect impacts of climate change on tourism in general. We assert that failure to address the multiple risks associated with climate change – be they physical, regulatory, financial, reputational or operational – will undermine Canada's competitive position. Furthermore, failure to grasp how the indirect effects of climate change (i.e., rising energy costs, changing consumer demand, security issues, regulatory responses etc.) might also impede tourism's growth and progress and could furthermore undermine its sustainability.

The third part of the paper looks at the kinds of actions that need to be contemplated if the tourism community is to play its part in responding effectively to climate change. While actions designed to mitigate and or adapt to the risks associated with climate change are now occurring in several provinces, territories, and communities, the tourism sector, as a whole, has not yet articulated any robust and collective strategies for either reducing tourism's ecological or carbon footprint or adapting to a very different social and regulatory environment that is emerging within society at large.

Even though the term sustainable has been in widespread use for over twenty years, the evidence suggests that both tourism in particular, and human economies in general, are not living within their ecological means. The tourism sector has not been required to internalize the external costs associated with its use of natural resources i.e. the provision of clean air and water, the elimination or safe absorption of greenhouse gases, and maintenance of natural ecosystems and pristine landscapes. The rapid warming of earth's average temperature, that will undermine tourism activity in many locations, combined with growing evidence of ecological collapse, suggest that this imbalance needs to be corrected.

Climate change provides us with an opportunity to generate tangible and truly sustainable solutions to what is, in reality, an even broader environmental, social and political challenge. The immediacy, urgency and unambiguous nature of the threat is real. It can be measured. Targets can be set and progress monitored.

Effective responses will involve collaboratively developing a complex range of fiscal, regulatory, cultural and behavioral mechanisms that, if applied, would take us a long way down the road to some form of sustainability. In other words, the better and more robust are our responses to climate change, the more likely we are to see a truly sustainable tourism sector emerge.

The Icarus Foundation proposes a number of action steps that need to take place at all levels – national, provincial/territorial and community-based as well as by individual tourism suppliers. These include:

1. Measuring the ecological and carbon footprint of tourism by region, sector and for each constituent parts so that baselines and realistic reduction targets can be set and reduction strategies devised;

2. Understanding the issues and impacts with rigor and honesty;

3. Committing to credible reduction and risk mitigation programs;

4. Realizing the opportunities and benefits that come from adjusting to a low carbon economy;

5. Focusing on the net value and net benefit of tourism and doing everything possible to grow value over volume;

6. Undertaking further research into changing consumer values and behaviors; the impediments to behavioral change; alternative policy instruments, actions of competitors; as well as the business and market opportunities that a low carbon economy presents;

7. Helping the tourism industry adapt to the negative effects of a changing climate.

Finally, the Icarus Foundation lays down a challenge to the tourism community in Canada. We believe that there is an opportunity for tourism to show leadership by positioning itself as the stewards of the natural world that has been used so effectively to attract visitors. Canada could enjoy the same level of international recognition and respect it gained as peacekeepers, if it were to make a deep commitment to developing a robust, resilient low carbon economy that lived within its environmental means. Given that tourism is about helping people meet and engage with each other while experiencing personal renewal, why shouldn't tourism be the lead change agent at this critical juncture in our human history? Canada's tourism community ***– are you up for this exciting task?***

CALL TO ACTION

Rather than create a new organization with associated overhead, we envisage the Icarus Foundation more as a virtual force that informs and shapes existing agencies. So we put these ideas out into the tourism community to stimulate discussion and, most importantly, ignite actions and share solutions.

We encourage any and every reader to circulate the paper freely and encourage all readers to:

A. Send comments onto our blog – http://icarusfoundation.typepad.com/icarusblog/discussion-paper.html;

B. Lobby their sector associations, destination marketing organizations and public sector agencies to put climate change high on their action agendas;

C. Suggest creative solutions for action and community-wide engagement; and

D. See themselves as potential change agents and leaders in their own community.

INTRODUCTION

Over the past year, awareness of and concern about the dangerous effects of rises in global average temperatures have gained significant ground throughout the globe and especially in Canada. New data from the Environmental Monitor research program show that two-thirds of Canadians now rate climate change as a "very serious" problem, up from 57 per cent last year [1]. Worry is escalating because of a lack of government action and leadership.

It was out of a similar concern regarding a lack of leadership on this issue that the Icarus Foundation was formed in February 2007 by six members of the tourism industry with expertise in tourism, strategy and sustainability[2].

The foundation was formed as a not-for-profit agency with a consulting division whose mission is to be the catalyst that helps Canada become a climate friendly tourism destination. Its goals are to:

1. Educate destinations, industry associations, tourism suppliers and visitors about the overall contribution made by tourism to global warming and help reduce their individual and collective contribution to greenhouse gas emissions and use of fossil fuels;

2. Encourage the measurement, monitoring and reduction of the carbon footprint of Canada's tourism industry and, thereby, contribute to the reduction of Canada's greenhouse gas emissions;

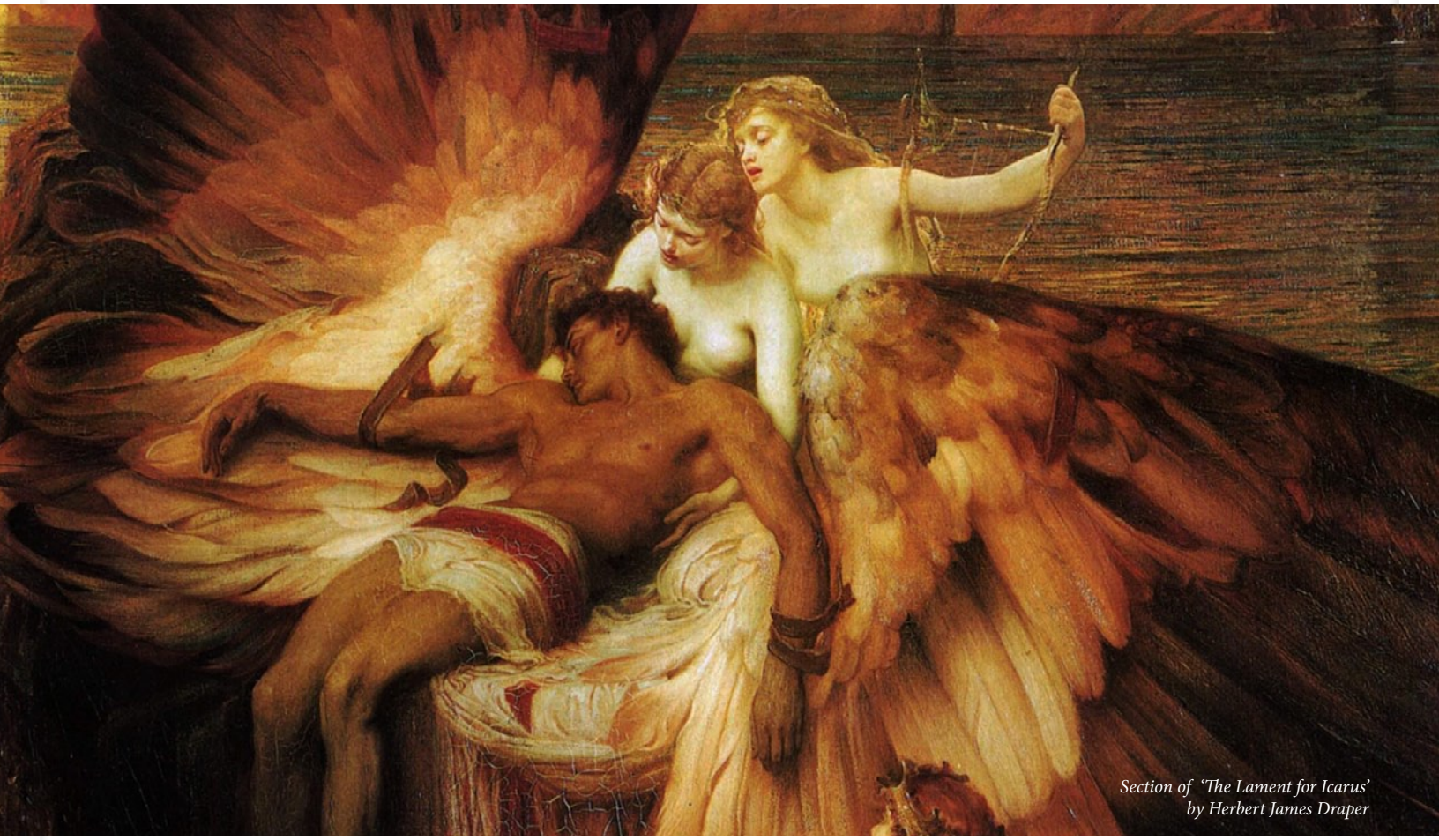
3. Advocate the vision of Canada as a genuine "carbon neutral" travel destination;

4. Help the Canadian tourism industry adapt to the impact of climate change on its operations;

5. Identify and promote examples of best practice within the tourism sector in Canada and communicate positive stories to visitors;

6. Become a recognized authority on all matters directly related to tourism and its contribution to climate change.

The foundation was named after a character in Greek mythology: Icarus, who, together with his father, Daedelus, crafted wings to escape an island prison. The father advised his son that escape could be achieved provided that Icarus flew neither too close the ocean where the weight of the water would drag him down or too close to the sun where the heat would melt the wax on his wings. It was a call for the balance that distinguishes adolescent boys from mature men. Sadly, in the story, hubris and over confidence got the better of Icarus; he soared high into the sky forgetting his father's injunction and thus plunged to the ocean depths. The same fate need not befall the travel and tourism industry but only if it listens to the advice of Daedelus to Icarus.



Section of 'The Lament for Icarus' by Herbert James Draper

This discussion paper has been prepared to raise awareness of, and sensitivity to, the issues associated with climate change and the tourism sector in Canada by summarizing our understanding of the salient facts and raising questions for consideration by our peers in both the public and private sectors.

The founders' goal is to ensure that developing intelligent and practical responses to climate change becomes a priority within the tourism community in Canada.

We are seeking like minds to join us in developing a rigorous, comprehensive top-down and bottom-up approach to addressing climate change in bold, new ways. We will circulate the paper throughout the entire Canadian travel industry via sector associations and destination marketing associations along with questions designed to tap into the creative intelligence of our vast sector. Based on that feedback, we will modify and enrich the document and re-circulate. The ultimate goal: a shared understanding of what must be done and a commitment to do it.

In a time of universal deceit, telling the truth becomes a revolutionary act.
- George Orwell

Each year the language of the scientific and professional community becomes more strident as it endeavors to raise political and public awareness of the need for action in the form of drastic cuts in the production of greenhouse gases. The completion of this draft of the paper coincided with the issue of the Inter-governmental Panel on Climate Change (IPCC) Synthesis report on November 17th, 2007 that summarized and revised the findings of its previous work. The opening statement is clear:

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level[3]."
- IPCC, Synthesis report

The Synthesis report was issued as a brief to policy makers planning to consider a new set of international commitments and agreements following the expiry of the Kyoto Protocol. The following reactions to the Fourth Assessment indicate the seriousness of the challenge[4].

"Soon will come a day when climate change escapes all control. We are on the verge of the irreversible. Faced with this emergency, the time is not for half measures. The time is for a revolution: a revolution of our awareness, a revolution of the economy, a revolution of political actions." - *Jacques Chirac, former French President*

"The new report gives us a stark warning that the potential impact will be more dramatic, faster and more drastic in terms of consequences than previously thought. This will change in some parts of the world the fundamental way in which we live." - *Achim Steiner, head of the UN Environmental programme (UNEP)*

"This report is a comprehensive and accurate reflection of the current state of climate change science." - *Sharon Hays, White House Office of Science and Technology Policy, US*

"If the last IPCC report was a wake-up call, this one is a screaming siren.
- Stephanie Tunmore, Greenpeace International.

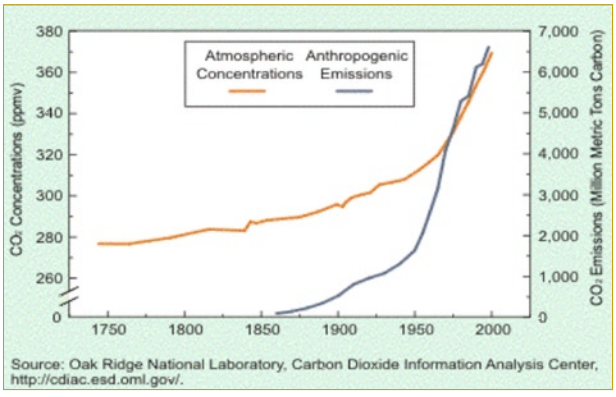
WHAT IS CLIMATE CHANGE?

The Climate Change Challenge could be re-named the Carbon Challenge as it is caused by the build-up of carbon dioxide and other particulates that prevent some of the sun's warming rays from being reflected back out of earth's atmosphere. The burning of carbon-based fuels, notably wood, coal, and oil generates "greenhouse gases" – so-called because their dispersal throughout the upper atmosphere creates a layer that traps the heat from the sun close to earth. Approximately 7 billion metric tons enters the atmosphere each year from human activity. Some of that CO_2 is absorbed by vegetation and soils that generate oxygen as a by-product; some is stored in the oceans, but not all. As a consequence, every year the concentration of CO_2 and other green house gases increases and the heat from the sun's rays is trapped within our atmosphere slowly increasing average global temperatures.

Between 1970 and 2004, global emissions of CO_2, CH_4, N_2O, HFCs, PFCs and SF6 have increased by 70% to 49 Giga tonnes of carbon dioxide equivalents such that the current concentration of greenhouse gases in the atmosphere is equivalent to 430 parts per million by volume – expressed as 430 ppm CO_2e.

The rate at which greenhouse gases are emitted is accelerating and, without mitigation, can be expected to continue to increase as such populous, rapidly developing nations as China, India, Russia and Brazil embark on their own industrialization and while many developed countries show no sign of extinguishing their appetite for fossil fuels.

Figure 1 CO2 Emissions and Concentrations



The average temperature of the earth has increased by 0.8 degrees Centigrade since the beginning of the industrial revolution (i.e. from 1860-2004). According to the National Academy of Sciences, the data suggests that the planet as a whole, is within 1 degree C of the maximum temperature experienced on the planet over the past one million years[5].

In 2005, the concentration of carbon dioxide exceeded the range that has existed over 650,000 years. Eleven of the warmest years since instrumental records have been kept occurred during the last 12 years and therefore climate change is accelerating. In the 20th century, the increase in average temperature was 0.74 degrees centigrade; sea level increased by 17 cm and a large part of the Northern hemisphere snow cover vanished[6]. Some regions are more vulnerable than others – the Arctic region, for example, is warming twice as fast as the rest of the globe.

The global warming of the past 100 or so years has already resulted in:

A. More extreme weather patterns (too hot, cold, dry or wet for some);

B. Less predictability

C. Melting of ice in polar regions and the retreat of glaciers in alpine regions;

D. Variable and unpredictable snowfall reductions in areas that have supported winter tourism activities (snowfall in the Alps has halved over past 30 years);

E. Desertification (the world's tropical forests are disappearing at the rate of 13 million hectares a year – that is an amount equivalent to the size of Greece);

F. Unusual flooding and increasing storms.

Until relatively recently (the last 3-5 years), there was no scientific consensus that the planet was warming and that this increase in average temperature was caused by human activity. Now the evidence of warming is indisputable although some still argue that its cause may be more due to natural cycles than human activity. While changes in average temperature have occurred on several occasions in the past, they took place over much longer time frames (from thousands to millions of years) giving species time to evolve and adapt. Meta changes are now occurring within decades.

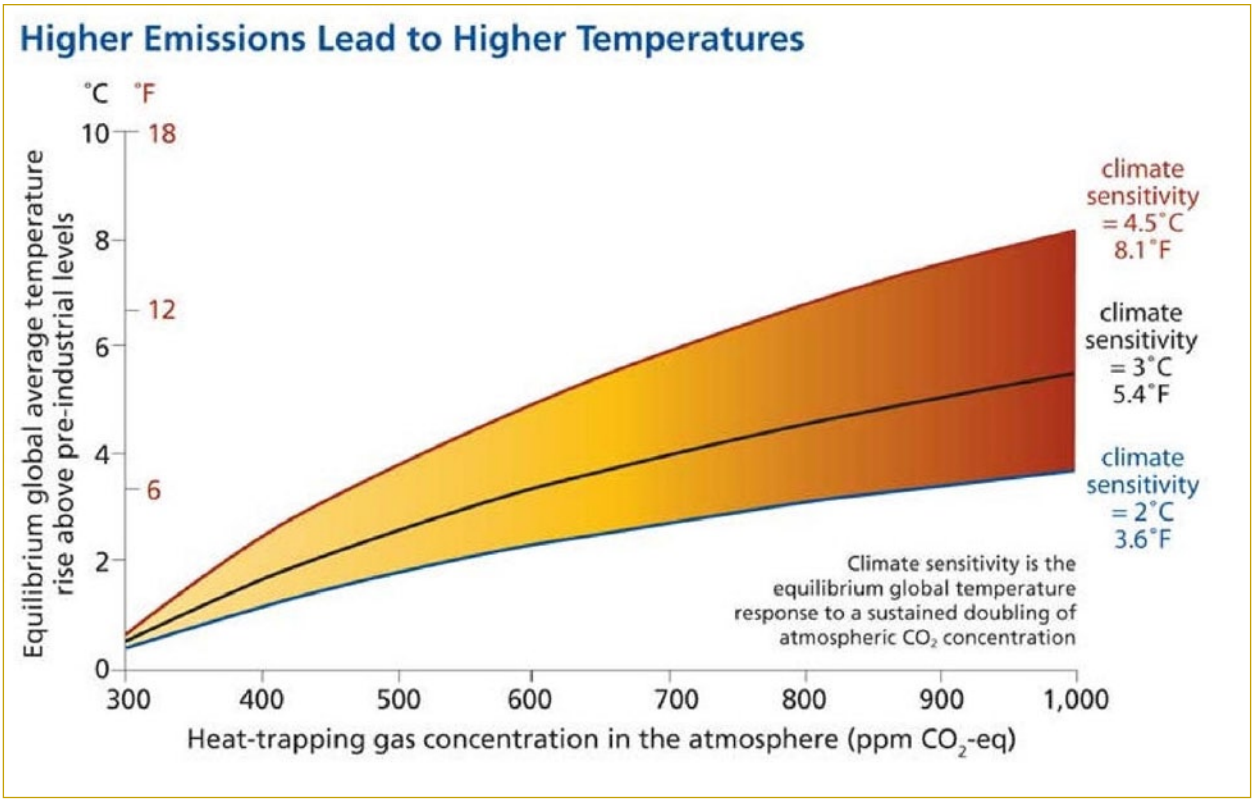
The scientific community is unable to predict with absolute certainty the precise level of future increases in average temperature. But the Intergovernmental Panel on Climate Change (IPCC) has suggests that continued emissions will lead to a further warming of between 1.8 and 4.0 Centigrade.

The relatively wide range of the forecasts reflects the unknown relationship between various causative factors: continued human use of fossil fuels, the climate's own sensitivity to changes in CO_2 concentration; the synergistic impact of CO2 combined with other gases; the effect of sea level rises, de-forestation and changing levels of freshwater absorbed in the ocean; and the extent to which the global community reduces its emissions. While the ranges are wide, warming at some level is inevitable. Even if greenhouse gas emissions were to cease today, the inertia of the system is such that warming will continue for several decades based on the gases already released and accumulating in the atmosphere and will increase average temperatures by 1.4 degrees C.

Climate change may not always be gradual. Systematic average temperature rises can increase the probability of crossing a critical threshold and triggering an abrupt change in climate.

Major events such as the collapse of the western Antarctic Ice Sheet; the melting of the Greenland ice sheet; the shut-down of warm water currents such as the Gulf Stream; the destabilization of methane hydrates that

Figure 2 IPCC Projections of Average Temperature Increases



"Evidence shows that the Earth's climate system has sensitive thresholds, and if these are exceeded, the climate system can jump rapidly from one stable operating mode to a totally different one, just as the slowly increasing pressure of a finger eventually flips a switch and turns on a light"

- US Academy of Sciences.

exist below the continental shelf; and the declining ability of the biosphere to continue to absorb significant amounts of CO_2 could individually, let alone in combination, trigger abrupt and meta changes that could persist for centuries or millennia. For example, many scientists are concerned that the IPCC forecasts have not recognized the speed with which the Greenland ice sheet is melting.

Furthermore, current levels of scientific knowledge are insufficient to predict the precise ways in which such increases in average temperature will be expressed in changing climates and weather patterns. The earth is now recognized as a highly complex, adaptive, organic system with every system being connected to and affected by every other. Scientists do not know the precise nature of those inter-dependent relationships – their scale, or direction and speed with which changes can occur. We are entering an Age of Massive Uncertainty and Volatility whereby seemingly small events can have huge and unpredictable consequences for the systems in which they occur.

WHAT MIGHT HAPPEN IF THE EARTH CONTINUES TO WARM?

The National Academy of Sciences concludes that global warming of a further 1 degree centigrade relative to 2000, will constitute "dangerous" climate change as a result of rising sea levels and extermination of species. The Stern Review (a comprehensive examination of the economic costs of climate change conducted for the UK Government) states that at present rates of greenhouse gas accumulation "there is at least a 77% chance – and perhaps up to a 99% chance, depending on the climate model used – of a global average temperature rise exceeding 2 degrees C.

The Intergovernmental Panel on Climate Change (IPCC) that has been researching this phenomenon since the mid 1980s and that has become the primary source of climate change data also considers the 2 degree figure a major threshold with the consequences for human life on this planet, which, if it is exceeded, is considered "dangerous"[7]. While the effects of such an increase would not be experienced in equal measure across the planet, the overall impacts of such an increase would clearly be devastating for the global tourism sector:

- Rising sea levels will flood large areas of land rendering them uninhabitable for humans. Given that the 30% of the world's 6 billion people live within 100 km of an ocean and many more live on floodplains, the dislocation in humanitarian, social and economic terms will be enormous.

- Rising sea levels will introduce salt into the natural water supply reducing the productive capacity of agricultural land long before it is flooded. Many small island states will experience partial if not total, catastrophic flooding due to rising sea levels and the increasing frequency of storms.

- The glaciers that occur in mountain ranges (e.g., the Andes, Himalayas, Rockies) act as huge sponges soaking up and storing moisture that is released slowly to the plains below where much of humanity resides. Their melting and drying will result in a combination of flash flooding and extreme droughts. On September 24th, the Chairman of the IPCC told invitees to a UN Conference that the melting of glaciers could negatively impact some 500 million people in South Asia, 250 million people in China and between 75-250 million affected in Africa

- Changing climatic patterns, combined with increased human activity, are destroying the habitats that support other forms of life. In many ecosystems, we do not even know what species we are losing, as mankind has yet to discover all known forms of life and their contributions to other species. 20-30% of all plant and animal species risk extinction if global average temperature exceeds 1.5-2.5 degrees centigrade. Many charismatic species at the top of their food chain and of greatest interest to international travelers such as lions, tigers, elephants, giraffes, bear, whales, primates, are already at risk from expanding cities, agriculture, mining, poaching etc. Climate change exacerbates the problem and speeds their extinction.

- 95% of all coral reefs will die and Mediterranean, Baltic and US wetlands would suffer. The Amazon rainforest would suffer irreversible decline; China's boreal forests, Canada's low arctic tundra and the Russian Coastal tundra would face 70-80% losses. Even at today's average temperature, half the coral in the Caribbean has disappeared and the great barrier Reef that supports a tourism industry generating some 4 billion dollars (Cdn $ equivalent) in value is under threat.

- The number of people at risk of hunger would triple and 1.5-2.4 billion additional people would be at risk from water shortages, while an additional 275 million people would be exposed to health threats and 30 million additional people would be at risk from coastal flooding. For every 1 degree rise in the Tropics, crop yields there could decline by as much as 10%

- The British economist, Sir Nicolas Stern has estimated that without drastic mitigation, i.e. if humanity proceeds on a "business as usual" basis, climate change will reduce welfare by an amount equivalent to a reduction in consumption per head of between 5 and 20%[8]. It is for this reason that Stern observes: "climate change is the greatest and widest-ranging market failure ever seen…Our actions over the coming few decades could create risks of major disruption to economic and social activity, later in this century and the next, on a scale similar to those associated with the great wars and economic depression of the first half of the 20th Century".

It is not as if humanity cannot afford the costs of mitigation and avoidance. The IPCC currently estimates that the cost to stabilize emissions and avoid the 2 degree increase in global average temperature will cost the world less than 3% of the GDP in the year 2030. This means that the prosperity that we would normally achieve by 2030 may be postponed by a few months at the most. It is not a question of affordability but a question of priorities, vision and political will. The cost of stabilizing climate must be seen as an investment, the price of which compares favorably to other investment decisions. Three percent of global GDP in 2007 equals $1.8 trillion – an amount only slightly higher than the $1.6 trillion spent by one country (the US) on the war with Afghanistan and Iraq[9] and considerably lower than the $22 trillion that the International Energy Authority believes is required to build the infrastructure necessary to cope with rises in global energy demand[10].

HOW LIKELY IS IT THAT SUCH WARMING WILL OCCUR?

The plain and short answer is sadly: very likely. The IEA World Energy Outlook 2007[11] states that on current energy trends, CO_2 emissions will increase 55% between 2004 and 2030. This means that, without strenuous and urgent mitigation actions over the next 20 years, we will be committing the planet to an average increase of between 0.5 and 2.0 degrees centigrade relative to today by 2050 and possibly earlier. Given that the mid-point of that range creates "dangerous" conditions, it is not surprising that climate change has been described as the greatest threat to humanity in our history as a species.

WHAT STEPS HAS THE GLOBAL COMMUNITY TAKEN TO ADDRESS THE ISSUE?

While parts of the global community have been talking about climate change since the late 1980s, the first major international response to climate change was launched in 1992, at the Earth Summit in Rio de Janeiro, with the signing of the U.N. Framework Convention on Climate Change (UNFCCC). The Convention established a long-term objective of stabilizing greenhouse concentrations in the atmosphere "at a level that would prevent dangerous anthropogenic interference with the climate system." It also set a voluntary goal of reducing emissions from developed counties to 1990 levels by 2000 – a goal that most countries did not meet.

Because stronger action was clearly needed, the UNFCC developed the Kyoto Protocol in 1997. Recognizing that a distinction should be made between developed nations, that were contributing the lion's share of emissions, and developing nations which were just starting to develop their economies[12], the UNFCC identified some 38 countries as party to the agreement. (They became known as Annex 1 parties). These 38 countries agreed to reduce their overall emissions by an average of 5.2% below 1992 levels between 2008 and 2012 with specific targets varying from country to country. As of June 1972, 172 parties including Canada had signed and ratified the Kyoto Protocol thereby recognizing it as an international treaty. Two countries - Australia and USA - have signed but declared that they will not ratify the Protocol.

Despite the good intentions and achievements of many, total concentrations of CO_2 continued to rise globally. Between 1997 and 2005, the amount of CO_2 in the atmosphere increased from 363 ppm to 384 ppm even though 17 of 38 industrialized countries have already met or are close to meeting their Kyoto targets. The countries demonstrating the greatest reductions include many Eastern European countries that have modernized their power plants and industrial processes. By contrast, a number of major contributors to the problem have not made any progress. As of 2003, Canada had increased its contribution by 32% over the target; Australia was up 20%, the USA by 21%, New Zealand by 22%, and Japan 20%[13].

Since the Kyoto Protocol, not only has the evidence for climate change strengthened, but public awareness of the challenge has also increased, thanks to the publicity generated by such people as Al Gore; and as a result of such climatic irregularities as Hurricane Katrina; the collapse of a part of Western Antarctica; and the rapidly melting Arctic Ice Cap.

Since 1997, the UNFCC has held 12 major Conferences of Parties (COPs) and numerous ad hoc working groups around the world. Work is now focussing on a new

framework for the post 2012 period when the Kyoto Protocol's First Commitment period ends. A consensus has emerged that the world needs to focus less on percentage reduction targets on a constantly shifting base to a focus on preventing average temperatures rising above a dangerous level (i.e. 2 degrees centigrade above pre-industrial levels).

WHAT ACTIONS NEED BE TAKEN NOW?

The IPCC Synthesis report identifies a wide range of both adaptation and mitigation strategies that could be applied to stabilize climate change. The report states: *"There is high agreement and much evidence that all stabilization levels can be achieved by deployment of a portfolio of technologies that are either currently available or expected to be commercialized in coming decades, assuming appropriate and effective incentives are in place for their development, acquisition, deployment and diffusion[14]."*

Table SPM 6 on page 21 of the IPCC Synthesis Report provides a number of stabilization scenarios. It shows that in order to maintian global average temperature increases below a 2.4 degree ceiling, greenhouse gas concentrations need to be kept between 445-490 ppmv. This would require a peaking of CO_2 emissions between 2000 and 2015 and then a reduction in further emissions by between 50-80% over 2000 levels.

That begs the question: what measures will be necessary to stabilize CO_2 at those levels? The latest working group held in Vienna in August 2007, has concluded that Annex parties would have to cut emissions by anything from 25-40% over 2000 levels for there to be any impact on global concentrations of CO_2. Furthermore countries like USA, CANADA, Australia, Switzerland, Japan and Russia would have to make similar cuts for these planetary goals to be achieved.

CLIMATE CHANGE AND TOURISM – THE GLOBAL PICTURE

As one of the world's largest, most rapidly growing and labor intensive industries capable of re-distributing wealth and helping to reduce poverty, tourism has much at stake. There are few activities other than agriculture that are as dependent on meteorology and climatology. The growth of mass tourism in the northern hemisphere was largely a migration towards locations with sunnier skies and warmer temperatures or where winter snowfall enabled winter sport activities that couldn't be undertaken "back home".

Tourism's future is inextricably interwoven and dependent on the global response to climate change because, as the Secretary General of the UNWTO has stated, "tourism is both a vector and a victim of the climate change phenomenon[15]. "

Tourism has enjoyed mammoth growth since the emergence of such mass modes of transportation as the jumbo jet and cruise ship after the Second World War. Since 1950, the number of international tourist trips has increased from 25 million to 800 million in 2007 and this figure is expected to double by 2020. As the contribution made by tourism to the economies of both developed and developing countries is now universally recognized, it is important that the tourism sector play its share in addressing the challenge posed by global climate change.

Tourism as Victim

The scale and timing of these direct effects on tourism destinations have yet to be described and measured around the world in detail. In October 2007, the UNWTO released the summary of a 200-page report titled Climate Change and Tourism - responding to Global Challenges, compiled by a panel of experts chaired by Dr. Daniel Scott from the University of Waterloo. That report endeavors to benchmark the current and potential impacts and place a measure on tourism's contribution to the emission of greenhouse gases.

The UNWTO report identifies three broad categories of direct impact affecting the competitiveness and sustainability of tourism destinations:

1. **Direct climatic impacts:** Climate is a principal resource for tourism, determining both the suitability and appeal of locations for specific tourist activities and defining the season in which those activities can occur. Climate also has an important influence on operating costs such as heating or cooling, snowmaking, irrigation, food and water supply and insurance costs. As studies indicate that a shift of attractive climatic conditions for tourism towards higher latitudes and altitudes is very likely, some of Canada's tourism sector might benefit from longer seasons, while others (notably winter destinations) might suffer from reduced and unpredictable snowfalls and wintry conditions.

   The IPCC has forecast that weather patterns are likely to become both more extreme and less predictable with more storm intensity, hotter days, more intense precipitation and more severe droughts in mid-latitude continental interiors. As a consequence, the tourism industry will face increased costs associated with the repair of infrastructure damage, emergency preparedness, insurance costs, backup water and power systems and business interruptions.

2. **Indirect Environmental Change Impacts:** As climate is a major determinant of the characteristics of ecosystems, its rapid change will result in habitat change and loss. Changes in water availability, biodiversity loss, reduced landscape aesthetic, altered agricultural production, increased natural hazards, coastal erosion and flooding, damage to infrastructure and the increased incidence of vector-borne diseases will all impact tourism to varying diseases. Mountain, island, and coastal destinations are considered particularly sensitive to climate-induced environmental change, as are nature-based tourism market segments. Many of the species that Canada features in its tourism marketing (whales, otters, caribou, polar bears) are already endangered – rapid changes in their habitat increase the risk of their extinction. Habitat changes such as the warming of Canada's boreal forest is encouraging the spread of new pests such as the pine beetle which, in addition to reducing valuable timber inventories, blights the landscape and aesthetics sought by visitors.

3. **Impacts of Mitigation Policies on Tourist Demand and Mobility:** National and international mitigation policies such as carbon taxes and or mechanisms designed to internalize the external costs associated with the use of fossil fuels will result in increased costs to the consumer. This may lower demand overall and or shift travel patters (e.g., from one transport mode to another; or the origin mix may shift away from long-haul international sources to a greater reliance on domestic sources).

Tourism has enjoyed mammoth growth since the emergence of such mass modes of transportation as the jumbo jet and cruise ship after the Second World War. Since 1950, the number of international tourist trips has increased from 25 million to 800 million in 2007 and this figure is expected to double by 2020. As the contribution made by tourism to the economies of both developed and developing countries is now universally recognized, it is important that the tourism sector play its share in addressing the challenge posed by global climate change.

Energy Costs

Now that the direct effects are beginning to become evident for all to see, we can anticipate an acceleration of research into their nature and scope. But as many of the direct impacts are not likely to cause major upheaval for many years to come, there is a tendency to minimize the problem and delay response. The tourism sector has rarely been able to invest significant time and energy into long-term, strategic planning. Its perishable product necessitates a shorter-term perspective. By focusing on the direct effects of climate change and ignoring the indirect effects, the tourism sector could fail to respond the biggest challenge to its future existence – a challenge that has been hastened and exacerbated by tourism's global success; a challenge that lies embedded – like a silent time bomb – in a host of indirect effects that could undermine, jeopardize or, possibly, evaporate demand for international travel.

The indirect effects of climate change are likely to be of greater danger in Canada than the direct effects. Six major factors are working synergistically and interdependently to impact the volume and nature of future tourism demand:

- energy prices,
- disposable income and economic vitality,
- security,
- disease,
- consumer/voter response to climatic events and effects, and
- government response to all of the above.

Each of these factors is affected by climate change to varying degrees. The problem is that all these factors are inextricably inter-woven in a myriad of ways that few appreciate. They form a complex system that is in a constant state of flux adapting to internal events and external stimuli and no one fully understands the nature of the inter-dependencies. Despite its apparent resiliency, tourism is built on a foundation that could possibly be as unsinkable as the Titanic and as impregnable as the World Trade Centre. These six forces can either stimulate or slow down and reduce tourism demand. Virtually every destination in Canada has some form of growth strategy based on forecasts of demand growth that may be totally overestimated if these six forces combine synergistically. It is in the best interests of all tourism leaders to better understand how these factors can affect both the volume and characteristics of tourism demand.

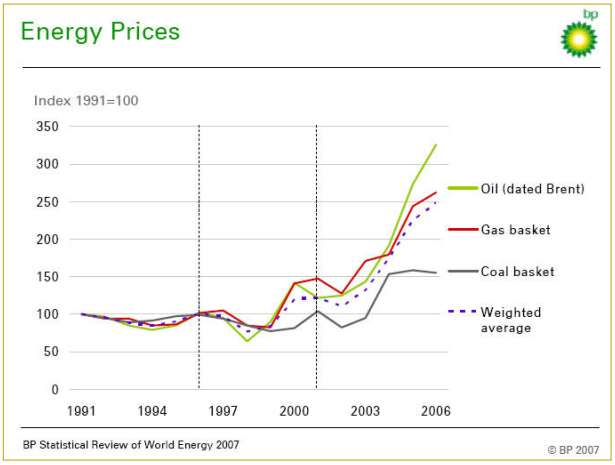
Tourism is one of the few industries that must move its consumer to the point of consumption. Whether visitors arrive by car, train, bus or plane, the act of "getting there" uses large quantities of fossil fuel and, until recently, most transport modes relied on oil or kerosene-based combustion engines. Tourism, like most industries in western economies has enjoyed nearly 60 years of year-on-year growth thanks to the availability of relatively cheap energy

and, notably the availability of cheap oil. But there is now strong evidence that the era of cheap energy is coming to a close. While the topic of "peak oil" is still as contentious and subject to fierce debate and while there is no proof as to exactly when production of existing reserves will peak, oil prices are continuing to rise. The US Government Accountability Office has advised the government to prepare for this reality and a growing number of oil executives are now willing to discuss the subject[16]. In September of this year, the President of Statoil declared, *"Production of conventional oil in OECD countries will peak as soon as in 2010, increasing the world's dependence on the OPEC cartel and Russia, and continuing the rush to non-conventional deposits such as Alberta's oil sands[17]. "*

The BP Statistical Review of World Energy stated, *"It's no secret anymore that for every nine barrels of oil we consume, we are only discovering one."*

In the World Energy Outlook 2007 report published by the normally confident International Energy Authority, the authors state: "*World oil resources are judged to be sufficient to meet the projected growth in demand to 2030 on the assumption that the necessary investment is forthcoming…Although new oil-production capacity additions from Greenfield projects are expected to increase over the next five years, it is very uncertain whether they will be sufficient to compensate for the decline in output at existing fields and keep pace with the projected increase in demand. A supply side crunch in the period to 2015, involving an abrupt escalation in oil prices, cannot be ruled out[18]."*

Figure 3 Rise in Energy Prices



In November 2007, crude oil prices exceeded $99.00 per barrel – a figure over three times that experienced in the 1990's. The unknown as far as tourism is concerned relates to whether the upward price trend of the past few quarters will continue and combine with the imposition of climate change mitigation measures to generate a real increase in the cost of travel. If it does, it will represent a complete reversal of a dominant trend since the Second World War – while once seen as a luxury enjoyed by the few, international travel is now considered a right and treated as a commodity by the majority.

Global tourism and aviation demand is directly related to GDP. The Boston Consulting Group report that growth rates for airline demand are generally between 1.5 and 2.0 times GDP growth[19]. A steady increase in average global temperatures is guaranteed to increase mitigation and adaptation costs that, in combination with higher energy/fuel prices, may, sooner or later, slow down economic growth and, in turn, put a break on annual increases in demand for leisure tourism.

Thus far global demand for travel has shown considerable elasticity when it comes to oil prices but there is no guarantee that such apparent elasticity might not find its breaking point when combined with increased costs of borrowing, and consumer price increases. While the trajectory of price increases may slow or flatten, the market is also highly vulnerable to unpredictable "exogenous" events such as damage to supply lines (breaks in pipelines), reduced refinery capacity (as occurred after Hurricane Katrina hit the Gulf Coast east of New Orleans) or war and terrorism.

Disposable Income

The second driver of tourism growth has been increases in disposable income enabled by real gains in productivity and earning power, reductions in the real cost of many household items (including travel – see above) and the growing availability of credit. Global income (GDP per capita) has virtually trebled since 1970. But in many western economies, an aging population may also diminish average disposable income – Japan's currently poor economic performance is largely attributed to it aging population.

Of the western economies going forward, the US and UK are most vulnerable with respect to future credit restrictions. Household debt as a percentage of household income is rising in the UK, Japan and the US – all major sources of outbound travel. In the US, consumer debt exceeds $2.46 trillion. The outstanding debt of the UK household sector moved above £1,354 billion in 2004, equivalent to around 145% - 163% of household income[20]. Should deflation occur in the form of higher interest rates and or a drop in home equity or both, travel could suffer while households adjust to increased debt possibly combined with reduced real incomes. While none of the above will be "caused" by climate change, it is the effect of climate change on a global economy that could have both knock on and triggering effects that reduce travel demand.

In the developing economies of such countries as Brazil, Russia, India, China, Eastern Europe and other expanding economies in Latin America and Asia, international, outbound travel demand is at a much earlier, embryonic stage of development and growth. But with youth comes a degree of vulnerability to climate-related hazards, drought, and widespread adaptation and mitigation expenditure. In both developed and developing economies, increases in energy costs combined with rising adaptation costs may generate a "knock-on effect" on GDP and lower demand for travel. What we simply do not know is, how much and when?

Security

Travel depends on the "free movement of people" across international borders. Tourists, particularly international tourists, are averse to political instability and social unrest. Global or regional political conflicts, terrorism and war can dry up tourism demand in affected regions overnight. Security risks increase where job and income prospects are poor and are exacerbated in the absence of sufficient food and water. Climate change will result in increasing incidences of drought, flooding, destruction of homes and livelihoods as well as food price increases and food shortages all of which can fuel non-peaceful responses in politically charged, economically distressed areas. A report issued in 2007 by the Virginia-based, national security think-tank **The CNA Corporation**[21] was written by six retired US admirals and five retired generals. It warned that in the next 30 to 40 years there will be wars over water, increased hunger, instability from worsening disease and rising sea levels and global warming-induced refugees. It further predicted that "The chaos that results can be an incubator of civil strife, genocide and the growth of terrorism".

The Generals, used to thinking strategically, highlight the interdependencies that multiply impacts of the increase in global temperatures.

"Unlike most conventional security threats that involved a single entity acting in specific ways and points in time, climate change has the potential to result in multiple chronic conditions, occurring globally within the same time frame. Economic and environmental conditions in already fragile areas will further erode as food production declines, diseases increase, clean water becomes increasingly scarce, and large populations move in search of resources. Weakened and failing governments, with an already thin margin for survival, foster the conditions for internal conflicts, extremism and movement toward increased authoritarianism and radical ideologies[22]".

Between 2000 and 2005, the number of overseas visitors to the US dipped from 26 million annually to 21 million, according to the Travel Industry Association of America which cited visitor concerns about border crossings and visa delays. Federal concerns about terrorism, that may increase as a result of either food or job shortages caused by climate change, are encouraging legislation that will inflict further travel restrictions. A revamped border-security program that screens all people who enter and leave the United States, creates a terrorism risk profile of each individual and retains that information for up to 40 years, is being considered by Homeland Security[23].

Consumer / Voter / Investor response to Climate Change and Awareness of Environmental Vulnerabilities

Concern about climate change has led some consumers and their influencers to single out long haul travel as an activity with too high a carbon cost to be justified. Princes, journalists, archbishops and think tanks[24] have described travel as an indulgence, as a sin and as requiring a health warning. At the recent international conference on tourism and climate change held by the UNWTO, significant concern was expressed by tourism industry leaders regarding the "demonization of travel" in the western media. While it is too early to tell whether such views are likely to be held and acted upon by a majority, the potential for voluntary changes in behavior, independent of any imposed additional costs, does exist and needs to be monitored closely.

In April 2007, the online travel community, **TripAdvisor**, surveyed 1000 travelers worldwide. 38% said that environmentally friendly tourism is a consideration when travelling. 38% had stayed at an environmentally-friendly hotel and 9% specifically seek out such hotels. 34% are willing to pay more to stay in environmentally friendly hotels. Perhaps of greater long-term concern to the travel industry was the finding that 24% believe air travel should be avoided. Research conducted by members of the Icarus Foundation (Dodds & Leung, 2007)[25] suggests that 25% expect travel agents to provide information on climate change and carbon offsetting options. According to the latest **travelhorizons** survey undertaken by the Travel Industry Association of America (TIA) also released in April of 2007[26], more than half of all US adults say they would be more likely to select an airline, rental car or hotel that uses more environmentally friendly products and processes. But while 50% of US adults may be advocates for environmental responsibility, only 14% said their actual selection of a supplier would be influenced by the supplier's efforts to preserve the environment. Just 13% would be willing to pay more to use green products – although fully 56% said they might. The amount or rate of the fare premium seems to be the source of their hesitation: 76% would pay less than a 10% more per usage with the majority indicating they would pay less than 5% more.

Government Response to the Above

As indicated at the outset of this discussion paper, the public mood for action to mitigate the threats associated with global warming is on the rise and politicians in all countries are now recognizing that new policies and fiscal instruments are required to incentivize adaptation and mitigation.

The core response will likely revolve around the need to internalize the cost associated with emitting greenhouse gases and to place a market value on carbon either through a cap and trade system such as Europe's Emission Trading Scheme (ETS) or through the applications of a carbon tax imposed upstream in the energy supply chain to cover the social cost of emitting C02. In either case, these government imposed attempts at internalizing the external cost of pollution will inevitably be passed onto consumers in the form of higher prices. Whether such prices increases are sufficient to dampen demand for travel remains to be seen.

In summary, these six indirect factors combined with the challenge of a rapidly changing climate have the potential to negatively affect the long-term demand for tourism to Canada. Most forecasts for the growth in demand to Canada's destinations that underpin current marketing strategies are based on demand forecasts such as those generated by the UNWTO that do not acknowledged their vulnerability to such forces.

Tourism as Contributor to the Problem

As a global phenomenon involving the movement of over 800 million people across international boundaries every year, tourism cannot deny its contribution to the problem of greenhouse gas production. At the ***Second International Conference on Climate Change and Tourism*** held in Davos in October, 2007, the UNWTO provided the first overall estimate of tourism's carbon foot print. In 2004, the report authors estimated that the global tourism industry (including domestic travel) generated some 1,300 mega tons of CO_2e, an amount that represents 5% of the emissions generated globally.

As illustrated here, the lion's share of tourism emissions (75%) is associated with the act of transporting the visitor from origin to destination. Aviation alone accounted for 40% of the total tourism footprint in 2005 and this share will increase in both absolute and relative terms to reflect the projected growth in travel by air.

According to the UNWTO report, emissions can vary greatly per tourist trip – between a few kilograms of CO_2 for a local journey by rail up to 9 tons of CO_2 for long-distance, cruise-based journeys. While long-haul travel by air represents only 2.7% of all tourist trips, it contributes 17% of global tourism-related CO_2 emissions. In contrast, trips by coach and rail account for 34% of all trips, but contribute only 13% of all carbon dioxide emissions.

Figure 4 Global Tourism Emissions - UNWTO

	CO_2 (Mt)
Air transport	517
Other transport	468
Accommodation	274
Activities	45
TOTAL	1,307
Total world [1]	26,400
Share (%)	4.95

Source: Climate Change and Tourism, UNWTO, 2007

Tourism's contribution to climate change has received considerable attention from the press and environmentalists for several reasons:

1. Leisure travel (especially long-haul vacation travel that generates a disproportionate share of emissions) is perceived as a discretionary activity that could easily be reduced by decreasing the number of trips made. Forgoing one annual vacation, when many affluent consumers in developed countries take more, is perceived as a more impactful act than simply changing light bulbs. International air travel is an activity undertaken by a relatively wealthy minority – less than 3% of the world's population currently undertakes long-haul trips by air.

2. There is concern that the true impact of aviation has been understated in the past as the impact of other noxious gases such as Nitrous Oxide (N_2O) and other halocarbons generated by aircraft have not been included in the aviation figure. Such gases are far more potent contributors to global warming than carbon dioxide and it has been suggested that a multiplier of as much as 2.7 should be applied to the figure of 517 million metric tons. If this multiplier were applied, then the tourism contribution to global warming would approximate 8.2% of total CO_2 emitted globally in 2005. Given that tourism is expected to double between 2005 and 2020 then tourism's contribution could be as high as 16% and possibly more if other sectors achieve their reduction targets. Scientists are also currently studying whether the fact that aircraft emissions occur at high altitude could necessitate increasing that multiplier. The extent of the greenhouse effect caused by vapor trails that create cirrus clouds at high altitude is also being investigated.

3. The proportion of greenhouse gases caused by air travel will continue to rise significantly and relative to other sectors within tourism and the economy as a whole. This is for two reasons: firstly, globalization, economic growth and consumer demand are causing air travel to grow between 1.5 and 2.0 times global GDP growth. These are global averages – in the rapidly developing countries such as India, China, Brazil, etc. air traffic is growing at much faster rates; and secondly, the opportunities to replace fossil fuels remain limited. While gains in fuel-burn efficiency are occurring and more fuel efficient aircraft are being introduced, they do not compensate for the growth in demand. Aircraft enjoy a long operating life and when companies and countries acquire more efficient models, the older aircraft are not extracted from the supply chain, but are cascaded to airlines in developing countries where they continue to contribute to the global warming problem as their industries expand.

WHAT IS THE CANADIAN TOURISM INDUSTRY DOING WITH RESPECT TO CLIMATE CHANGE?

The Icarus Foundation was formed in February of 2007 to raise awareness of the impacts of climate change on tourism and to encourage the Canadian tourism industry to take responsibility for reducing its contribution to this problem.

Its founders, experienced practitioners and active participants in the tourism sector, believed that while many individuals were both concerned and active, the Canadian tourism industry as a whole was slow a.) to recognize the importance of climate change on its future and b.) to consider the role that tourism needed to play in addressing the problem.

While the term "sustainable tourism" is used frequently, the term had not been assigned any form of quantifiable measure so that progress towards sustainability could be monitored. Furthermore, the contradictory and practical implications of growing tourism at a compound annual

rate of between 3-6% while relying on fossil fuel, notably oil, to transport visitors to and within Canada have not been overtly and widely recognized.

In the summer of 2007, the Icarus Foundation undertook an informal survey of over 30 industry leaders (deputy ministers of provincial ministries with a tourism portfolio, presidents of provincial and city-based marketing agencies and leaders of several tourism-related associations).

We discovered that, while most interviewees did consider climate change to be an important issue (scoring an average rating of 7.5 on a scale of 1-10), there was less clarity and consensus about where to start addressing the issue and what to do. Relatively few were doing very much specifically about climate change although most provincial and national sector associations were talking up "sustainability." Ten of the 18 sector associations considered themselves to be inadequately informed to develop an internal policy; and the most frequent responses to the open-ended question "what other factors currently limit or prevent your organization from taking action in response to climate change?" focused on lack of information; the need for education, the lack of leadership and coordination. None of the interviewees had developed an internal carbon neutral procurement policy nor had begun to develop a mitigation strategy. In short, while it appears that the topic of climate change has moved from cool to hot, many of the persons interviewed for this study remained unclear as to what to do.

WHAT SHOULD THE CANADIAN TOURISM INDUSTRY DO?

The travel and tourism sectors are vital contributors to the global economy and play a significant role in Canada's economy employing 634,700 people, contributing $15.3 billion in taxes and generating $66.9 billion in revenues from international visitors and domestic travelers[27]. Yet this economic value is at risk due to the, as yet, unknown short and long term effects of a changing climate.

The success of Canada's tourism sector at both the macro and micro level has been due to virtually free access to natural resources such as pristine landscapes, a diversity of wildlife, clean water, and relatively cheap energy. While tourism may enjoy a greener image than heavy industry and mineral extraction, its environmental impacts are not insignificant. The development of tourism-related infrastructure, such as airports, access roads, resorts, and accommodation, results in modifications to the natural environment and generates external costs that are not reflected on corporate balance sheets or national accounts. International visitors place extra demands on finite energy and water resources and generate polluting waste products that are absorbed into the atmosphere, our water systems and landfills. While the positive economic impact of tourism has been measured and communicated, little effort has been applied to both measuring and internalizing the costs associated with this sector.

We believe that tourism can make a positive contribution to the economic and social well-being of Canadians provided that a more rigorous cost-benefit analysis be undertaken and every effort made to reduce the carbon footprint generated by the tourism sector as a whole.
The threat of climate change on the future sustainability of a healthy tourism sector should be sufficient to encourage the entire tourism industry to work together to reduce its carbon footprint and live in harmony with the environment that supports it. Furthermore, any effort made to reduce a dependency on the limited fossil fuels that contribute to global warming will result in significant cost savings that can only increase over time as energy prices escalate.

The focus now must be on "net" benefit and our attention drawn to the true environmental impact of tourism as it is currently practiced throughout the tourism supply chain. Canadians have led the world in the development of economic impact models – it is now time to refine those models to reflect the use of Canada's natural resources (climate, air, water, wildlife and landscape).

Climate change provides us with an opportunity to generate tangible and truly sustainable solutions to what is, in reality, an even broader environmental, social and political challenge. The immediacy, urgency and unambiguous nature of the threat is real. It can be measured. Targets can be set and progress monitored. Effective responses will involve collaboratively developing a complex range of fiscal, regulatory, cultural and behavioral mechanisms that, if applied, would take us a long way down the road to some form of sustainability. In other words, the better and more robust are our responses to climate change, the more likely we are to see a truly sustainable tourism sector emerge.

The strategic action options open to Canada's tourism industry with respect to climate change are as follows:

1. **Measure:** we need to measure and monitor the ecological footprint of Canada's tourism industry in terms of the environmental services/resources consumed as well as the waste products generated in the act of developing and delivering Canada's tourism product, services and experiences. Such an assessment should be rigorous, honest and comprehensive. It should take into account the total cost of construction as well as operating costs. Note: the production of concrete, cement and asphalt for buildings and roads also generates significant emissions. The urbanization of natural lands for resort, leisure and recreation purposes also diminishes the capacity of the earth to absorb carbon and, thereby, accelerates the warming effect.

2. **Develop Awareness and Understanding of the Issue and its Impacts:** while recognition of the scale of the challenge is improving, it has not yet proved sufficient to cause tourism leadership to act decisively and boldly. The federal government refuses to sign up to Kyoto, preferring a "made in" Canada solution which appears to mirror the US Government's search for a technological silver bullet," and Industry Canada has remained silent on the climate change and tourism issue. In recent weeks, several provincial ministries with responsibility for tourism, notably Ontario and British Columbia have held symposia on the subject. TIAC has also commissioned a *Sustainability Tool Kit* for tourism operators although this was not identified specifically as a mechanism for reducing carbon emissions. The Icarus Foundation urges the federal and provincial agencies responsible for tourism and the environment to work together to generate and distribute compelling communications that inform all members of the tourism supply chain of the threat posed by climate change and recommend specific and practical action steps towards mitigation.

3. **Commit to Carbon Reduction and Risk Mitigation**: the most recent IPCC report, along with the Stern Report and others, all stress that the sooner action is taken, the less the likelihood that the 2 degree threshold will be exceeded and the less the cost of mitigation. Global emissions will need to stabilize no later than 2015 and be reduced well below half of 2000 levels if we are to prevent average temperatures rises beyond the 2 degree threshold.

   The Icarus Foundation believes that, if tourism wishes to be perceived as a mature, responsible sector, it must play its part in reducing its footprint as much as is technically possible. The authors of the UNWTO report Climate Change and Tourism developed several mitigation scenarios based on a "business as usual" scenario of continued growth at 4% per annum as forecast by the WTO. The most effective mitigation projection was based on a possible (but not probable) 36% efficiency gain due to improved technologies combined with a 43% reduction generated

by a shift of transport usage from aviation to ground modes and from long-haul to short-haul trips. But when growth was factored in, these bold measures only achieved a 16% reduction overall of emissions from the tourism sector – far short of the 50-80% target called for by the IPCC and the United Nations.

It is important to note that these potential savings represent idealistic computer modeling not likely reality. In many cases, the switch from air to ground is neither feasible nor acceptable in today's economy (consumers value their time too much) and having become accustomed to enjoying the right to explore the world, there is no evidence that the majority of consumers will stay at home by choice.

We recognize that global tourism flows have a wealth redistribution effect, alleviating poverty in developing parts of the world and contributing to the achievement of the United Nations Millennium Development Goals. We do not, therefore, urge Canadians to stay at home and withdraw the benefits from foreign exchange and economic development that occur in receiving countries. In keeping with the principles of "contraction and convergence", however, we argue that the way we look at the growth of inbound tourism needs to be fundamentally re-examined.

We believe that a "business as usual" scenario is unacceptable and harmful to the image of the sector within Canada as well as our international image and brand.

Reducing our dependency on fossil fuels will result in cost savings, the significance and value of which are expected to rise over time as energy prices rise.

A focus on quality and environmental stewardship will also develop further income generating opportunities for many of Canada's tourism suppliers located in rural/wilderness locations.

The Icarus Foundation recommends that each province establish a Climate Change Action group comprising representatives from the provincial Ministry with a tourism mandate, the agency responsible for tourism marketing, the tourism industry advocacy group and the provincial ministry with an environment mandate to develop a province wide mitigation strategy for tourism in each province. Ideally such groups would form an inter-provincial council to share information, case studies and best practice and would be mirrored by a national working group with a similar composition.

4. **Exercise Rigor, Courage and Creativity:** we believe that it is vital that destinations re-visit growth targets in light of the potential for a down turn in demand caused by internalizing the cost of carbon and other externalities; rising energy prices; skilled labor shortages; possible taxation; shifts in consumer behavior and decreases in disposable income. We believe the time has come to re-frame our concept of tourism growth in qualitative, revenue terms by focusing on increased ***net*** *value to guests, existing host suppliers and the host community.* A failure to pay the true costs of environmental services, together with mass transportation methods and the transparency of the Internet have combined to systematically commoditize tourism and diminish prices and margins. Despite growth in total visitor numbers, many tourism operators watch their slim margins diminishing further. For some, the only way to generate a return to shareholders is to grow through expansion and acquisition.

Excessive discounting as a response to past crises combined with a fixation on price, as opposed to value, has also created little room for maneuver. The real cost of both leisure and business travel (in terms of a percentage of

disposable income) has actually decreased over time. In fact much of the growth in demand has been generated by making travel financially accessible to a larger share of the population – people travel because they can afford to do so. But if the cost of that travel does not take into account the "externalities" associated with using the environment as a form of free garbage dump and if excessive discounting and price-based competition undermines the viability of many tourism enterprises, the end result is instability and short-termism.

There is a growing market of environmentally conscious and concerned consumers who are willing to pay premium rates for authentically, "green", organic and environmentally responsible goods and services[28]. By focusing on growing the profit of existing suppliers as opposed to increasing capacity and competition, we will develop a resilient sector better able to withstand external shocks.

5. **Undertake Further Consumer Research:** the Canadian Tourist Commission (CTC) has invested heavily in re-branding Canada and undertaken innovative values-based research to identify the profile of travelers most likely to be attracted to Canada based on their *Explorer Quotient*. Visitors to Canada.travel are invited to take a survey that determines their EQ profile so that packages and experiences tailored to their known preferences and behavior can be offered. As this research represents a breakthrough in customer profiling, it also represents an opportunity to identify which profiles are likely to respond most positively to green/responsibility messages. The Icarus Foundation will explore with the CTC the potential to add questions related to environmental attitudes and purchasing sensitivities in order to assist Canada in capturing a greater share of the environmentally conscious traveler.

6. **Help the Industry Adapt:** there is evidence that many parts of Canada's tourism industry may benefit in the short run from the warming trend as southerly latitudes experience unbearably high summer temperatures and water shortages, they may be attracted to a cooler, greener northern destination such as Canada. Canada also has a vast area within the Arctic Circle and many tourists are keen to experience it before it is irreversibly changed. Other parts of the industry will need to adapt to less favorable patterns: wine tourism may suffer from water shortages; many destinations reliant on skiing and other winter activities may see their seasons shortened or collapse; operators reliant on wildlife viewing may find it necessary to cut back operations in order to protect vulnerable species.

   The Icarus Foundation recommends that the Climate Change Action Groups identified in point 4 above be mandated to identify those aspects of the tourism industry most likely to be negatively affected by climate change and coordinate adaption programs necessary to minimize economic, social and environmental impacts.

7. **Encourage Responsible Procurement:** Domestic and internal business travel is a direct contributor to the economic viability of many tourism businesses as the business traveler has been able and willing to pay premium prices. Growing numbers of public and private companies are developing corporate responsibility initiatives in response to investor and shareholder pressure and are examining their travel procurement practices in this context. In the United Kingdom, Project ICARUS[29] was initially established to promote carbon reduction in travel management programs throughout the UK business travel industry. The project is led by, and targeted primarily at, travel buyers/managers and provides specific guidelines on responsible travel procurement as well as broader sustainability and duty of care issues.

The intention of ICARUS in the first instance is to drive the UK travel industry to reduce carbon emissions in line with government targets. The initial goals of the project are to create: a toolkit for buyers to use to implement a Carbon Reduction System; a system of accreditation to recognize buyers who implement the toolkit and have success in reducing carbon emissions; and a system of awards to recognize suppliers who demonstrate leadership and innovation in making their products more environmentally friendly. The Icarus Foundation has commenced discussions with representatives of the UK Icarus Project with a view to adapting their toolkit to the needs of the business community in Canada.

COULD THE TOURISM INDUSTRY ACT AS A LEAD CHANGE AGENT?

Despite a late start, the opportunity for Canada to take a leadership position in the minds of green consumers is not entirely lost. It is vital, however, that Canada protects its brand and does not miss the opportunity to attract high yielding, environmentally conscious travelers. Canada's dependence on resource extraction combined with its high per capita energy consumption and urbanization clashes with images of a pristine wilderness. Over the coming years, we can expect increased media attention on our environmental track record in the oil patch and the Arctic. Furthermore, the notion of addressing climate change merely to achieve competitive advantage in the tourism market is not advisable given the magnitude of the global challenge and the increasing scrutiny to which each country is subject.

Despite these limitations, the Canadian tourism sector could step forward and show leadership within Canada by positioning itself as stewards of the natural world that it has used so effectively to attract visitors. Canada could enjoy the same levels of international recognition and respect it gained as peacekeepers, if it were it to make a deep commitment to developing a robust, resilient low carbon economy based upon living in harmony with the environment.

"Far sighted action by the $800 billion international tourism industry will send important signals to governments, industries and the public that mitigation and adaptation to the climate change challenge make economic and environmental sense. It is the kind of leadership that can encourage others to look not only to their explore and to the risks posed by climate change, but also the abundant opportunities and benefits of a cost effective action." - Achim Steiner, UN Under-Secretary General and UNEP Executive Director.

If there was ever a problem that required collective, collaborative action within committed communities, it is climate change. Given that tourism is about helping people meet and engage with each other and experiencing renewal, why shouldn't tourism be the lead change agent?

In this context, the Icarus Foundation challenges the Canadian tourism industry to step forward and assume the leadership role that the country needs and deserves. The first step is to express your concern and provide Icarus with your input to this paper and creative ideas for moving towards a solution.

Finally, we will let the Chairman of the IPCC, Dr. Rajendra Pachauri have the last word. In his presentation to the United nations in September 2007, he quoted Mahatma Gandhi who once said, *"A technological society has two choices: first it can wait until catastrophic failures expose any system deficiencies, distortions and self deceptions. Secondly, a culture can provide social checks and balances to correct for systemic distortion prior to catastrophic failures".*

In Mr. Pachauri's estimation, the time had come for humanity to move away from self-deception and opt for the second choice. We at the Icarus Foundation agree and invite you to help grow a community committed to moving beyond denial to action. ■

ENDNOTES

1. Globescan survey described in Canada.com, Sept 05, 2007

2. See: www.theicarusfoundation.com and our blog www.icarusfoundation.typepad.com

3. Summary for Policymakers of the Synthesis Report of the IPCC Fourth Assessment Report. 16 November 2007

4. Source: http://news.bbc.co.uk. Article dated 2 February, 2007

5. Proceedings of the National Academy of Sciences, September, 2006

6. Speech made by Mr. Rajendra Pachauri, Chairman of the Intergovernmental Panel on Climate Change to the UN, September 24, 2007.

7. See: www.ipcc.ch for copies of their reports

8. Stern review: the Economics of Climate Change.

9. According to a report published Democrats on Congress'Joint Economic Committee, the economic costs of the wars in Iraq and Afghanistan are estimated to total $1.6 trillion for the period between 2002 and 2008 and could rise to $3.5 trillion between 2003 and 2017. Source: Associated press, November 13th, 2007.

10. Executive Summary, World Energy Outlook, 2007, International Energy Authority. See www.iae.com

11. ibid

12. For a complete list of countries and their participation, see: http://en.wikipedia.org/wiki/List_of_Kyoto_Protocol_signatories

13. ibid

14. IPCC Synthesis report

15. "Climate Change – Reality Check and Opportunity for Tourism " , and Tourism Development and Climate Change: Understanding, Anticipating, Adapting, Participating in the Common Effort, two policy papers published by Francesco Frangialli, UNWTO Secretary-General, 2007 – see www.unwto.org

16. US Government Accountability Office, *Uncertainty about Future Oil Supply Makes It Important to Develop a Strategy for Addressing a Peak*, February 2007

17. http://www.canada.com/nationalpost/financialpost/story.html?id=9f2eb7c3-6665-4053-a65b f49d8f2c15d5&k=25597

18. Note earlier in this report, the necessary infrastructure was stated as requiring and investment of over $22 trillion in global demand for oil was to be met.

19. Understanding the Demand For Air Travel, Focus, June 2006, Boston Consulting Group: The Intergovernmental Panel on Climate Change (IPCC) that has been researching this phenomenon since the mid 1980s and has become the primary source of climate change data also assesses a 2 degree increase as "dangerous"

20. http://www.ft.com/cms/s/0/4e9bc5c2-6dfb-11dc-b8ab-0000779fd2ac.html

21. http://www.cna.org/

22. ibid

23. Hearings are currently taking place in Washington on the Homeland Security's Secure Flight Program - http://www.tsa.gov/assets/pdf/secureflight_nprm.pdf

24. Quotes here…

25. Dodds, R, & Leung, M (2007) "Climate Change And Carbon Offsetting In The Travel And Tourism Industry" 5th Bi-Annual Symposium of Consumer Psychology of Tourism, Hospitality and Leisure, June, 2007, Charleston, SC.

26. http:www.tia.org/pressmedia/pressrec.asp?Item=794

27. Source: Tourism Industry Association of Canada: http://www.tiac-aitc.ca/english/welcome.asp

28. See www.lohas.com which describes the growing market of consumers interested in Lifestyles of Health and Sustainability.

29. See: http://www.itm.org.uk/icarus/