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The Role of Tour Operators in Climate Change Mitigation

This publication is based on the diploma thesis

"The Role of Tour Operators in Climate Change Mitigation: An Analysis of the European Tour Operating Industry and its Climate Implications from Origin-Destination Transport"

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The findings in this publication are drawn from qualitative research carried out between August 2007 and April 2008, consisting of 11 semi-structured interviews with representatives from tour operators (5), travel agencies (1), research institutions (3), non-governmental organizations (1), and intergovernmental bodies (1). The mitigation response of tour operators was identified through a descriptive and systematic evaluation of publicly accessible material and online distribution channels as per March 2008. The results from this assessment are not necessarily indicative of the current state of mitigation action.

The Role of Tour Operators in Climate Change Mitigation

The World Tourism Organization (UNWTO) has identified climate change as one of the key challenges to the tourism sector in the 21st century. As the travel industry is a significant contributor to climate change, businesses are called upon in the "Davos Declaration" to take the leadership in implementing concrete measures designed to mitigate climate change throughout the value chain.

Tour operators are an integral part of the international tourism industry and nowadays their role extends far beyond their original wholesaling function. As a result of consistent horizontal and vertical integration, a few potent tourism corporations currently wield significant market power and are capable of influencing supply and demand. Those market leaders need to play a proactive key role within a sector-wide response to climate change.

By approaching tourism as a contributor to climate change, this publication takes a closer look at the role of mainstream tour operators in the requisite mitigation processes. It describes the way in which the European market leaders are currently responding to the climate challenge and what an ideal response could look like. Voluntary mitigation measures that could be enhanced by tour operators by committing themselves to their "Corporate Social Responsibility" are identified and related challenges are discussed.

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EXECUTIVE SUMMARY

Tour operators currently find themselves in a dilemma with regard to climate change: On one hand, they recognize that reducing emissions of greenhouse gases is essential for protecting their product, and hence their economic success, in the long term. On the other hand, effective mitigation strategies would be counterproductive to their core business in the short term, as this requires a fundamental reorganisation of their contemporary business models. Among the big players in the European tour operating industry, the overall commitment to climate change mitigation varies considerably. Whereas some tour operators have begun integrating voluntary offset schemes, setting up internal carbon reporting systems or formulating (albeit hardly ambitious) reduction targets, others are as yet not even providing a contact person for environmental matters.

Improvement of operating efficiency is not enough

The tourism sector in most countries – inbound and outbound – is dominated today by a few but strong players, which have enormous market power to influence, on the one hand, the service providers and, on the other hand, the consumers. The strategic decisions of some big tour operators will therefore have a tremendous influence on the future performance of the entire tourism sector in climate change mitigation. When analyzing public reporting and communication of the biggest tour operators in Europe – TUI Travel, Thomas Cook, Rewe Touristik, Kuoni Travel, Hotelplan and Alltours – it can be observed that only those mitigation measures are enhanced which are compliant with their strategy of consistent growth and expansion of long-haul segments. Such measures largely aim at improving operating efficiency, e. g. energy savings in accommodation facilities or reduction of aircraft fuel consumption. Research shows, however, that a merely technology-oriented approach will not reduce the tourism sector's emissions, nor stabilize them at current levels *(cf. UNWTO, 2008b).* For tour operators to effectively reduce their product-related emissions, measures in technological innovation have to be combined with other approaches, like fostering a change in travel behaviour (shift to closer located destinations, decrease of average number of trips per person and simultaneous increase of length-of-stay), shifting passenger transport from airplane and car to rail and coach, as well as optimizing passenger transport chains through mobility management.

So far little demand for climate friendly travel products

The European market leaders have so far become hardly active in the latter areas. The industry argues that its action potential is constrained by the current market situation: Even though tourism consumers are well aware of the problem of climate change and declare their willingness to act, they do not demand climate compliant travel products nor do they accept them when offered actively (as evidence by low uptake rates of carbon offset schemes). The market demand is still dominated by long-haul destinations, short breaks, air travel and individual car use. Additionally, low cost carriers intensify competition for the short and mid haul markets. It needs to be questioned, however, how strong current marketing activities of tour operators reinforce such demand patterns.

Tour operators could assume responsibility more effectively

Despite of these obstacles, there are some measures for tour operators to effectively reduce their product-related emissions in the long term. For instance, climate protection needs to be incorporated as a guiding principle into their

business strategies, whereas managers are to be judged amongst others according to their mitigation performance. Moreover, climate criteria should also form part of the operator's supplier selection process. Consumers need to be educated about the climate impact of the product right at the moment of purchase, best achieved through disclosure of a personally contextualized carbon footprint (on online booking portals, in catalogues or by sales staff). The latter also requires relevant training programmes for own staff and for sales personnel of affiliated travel agencies. Tour operators can further design climate-compliant travel packages through intelligent itinerary planning and use of energy efficient transport modes, which in turn can be promoted through (climate-relevant) ecolabelling schemes. In addition, tour operators can create a "green" company image through transparent disclosure of their emission inventories, through cooperation with credible partners (e.g. from the governmental and not-for-profit sector) as well as through constructive lobbying towards regulatory frameworks.

So far willingness for structural changes has been limited

In the short term it is likely that big operators will further enhance voluntary offset schemes, as it allows them to communicate action against climate change without undertaking immediate structural changes. There remains the risk that voluntary carbon offsetting – even though an important intermediate instrument – could become the principal means for tour operators to "reduce" emissions. Even though climate change seems to have become a major topic for the industry, willingness to initiate related structural changes among business leaders still seems to be limited.

1   INTRODUCTION

Since the release of the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) at the beginning of 2007, climate change has ultimately captured broad public interest and re-entered the political agenda of the international community. IPCC observes an "unequivocal warming of the global climate system" *(IPCC, 2007a, p. 1)* which is "very likely due to the observed increase in anthropogenic greenhouse gas concentrations" *(id., p. 5)* from emissions in energy supply, industry, forestry, agriculture, transport, buildings and waste treatment *(id., p. 4)*. In order to avoid irrevocable consequences for human development, global warming has to be limited to 2°C above the temperature in pre-industrial times *(cf. UNDP, 2007, pp. 3–7)*. As a first step, the European Union proposes that the group of developed countries should cut GHG emissions to an average of 30 % below 1990 levels by the year 2020 *(EU, 2007)*. However, with current climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades *(IPCC, 2007a, p. 6)*.

International tourism has experienced a sustained growth rate of 3.6 % during recent years, resulting in a new record of around 900 million tourist arrivals for the year 2007 *(UNWTO, 2007e, p. 3; 2008b, p. 1)*. The international tourism industry generates revenues of 733 billion US dollars, which represents around 6 % of total global goods and services *(www.unwto.org/facts/menu.html)*. Together with domestic tourism flows, the sector is believed to contribute some 5 % to climate change. The major part of this climate impact can be attributed to passenger transport from generating to receiving areas. Taking into consideration projected tourism growth rates, its CO_2 emissions alone are expected to rise by 152 % until the year 2030 *(UNWTO, 2007a, pp. 14–18)*. As these forecasts are in stark contrast with IPCC recommendations and endeavours of the international community, the tourism industry is called upon to "take leadership in implementing concrete measures in order to mitigate climate change throughout the tourism value chain" *(UNWTO, 2007b, p. 3)*.

Tour operators are an integrated part of the international tourism industry, whose role goes nowadays far beyond their original wholesaling function. As a result of consistent horizontal integration, the tour operating sector in many countries is dominated today by a few but strong actors that have significant market power to influence the purchase behaviour of tourists. Through a second process of vertical integration, where tour operators diversify into their supplier's activities, they are also in a strong position to influence businesses throughout the entire tourism value chain *(cf. Steinecke, 2006, pp. 85–90)*. Due to this twofold influencing power on supply and demand, tour operators will need to play a key role within a sector-wide response to climate change – a responsibility that has been clearly affirmed by various top managers of big European Tour Operators.

By approaching tourism from the perspective as a contributor to climate change, this publication takes a closer look at the role of mainstream tour operators in required mitigation processes. It elaborates how the European mainstream tour operating industry is currently responding to the need for climate change mitigation, and what an ideal response could look like. Subsequently, voluntary mitigation measures that could be enhanced by mainstream operators through commitment to their "Corporate Social Responsibility" are identified, and related challenges are discussed.

In line with these objectives, the following three research questions will be consecutively discussed:

1. What are the theoretical approaches and potentials for climate change mitigation in tourism? (chapter 2)

2. How is the mainstream tour operating industry currently responding to the need for climate change mitigation, and which shortcomings can be identified? (chapter 3)

3. Which areas of action bear the biggest potentials for mainstream tour operators to advance mitigation on a voluntary basis, and which related obstacles need to be overcome? (chapter 4)

2 CLIMATE CHANGE MITIGATION IN TOURISM

Research question:
What are the theoretical approaches and potentials for climate change mitigation in tourism?

This chapter discusses in a first step the links between climate change and tourism. It goes on to elaborate the aspect of tourism as a contributor to climate change, and outlines important backgrounds for possible mitigation strategies. In order to provide a holistic understanding, the related political process and public debate on climate change and tourism is summarized. Findings from this chapter provide the theoretical basis for discussing the role of tour operators in mitigation (questions 2 and 3).

2.1 Relationship between Tourism and Climate Change: Victim and Perpetrator

Also in the tourism sector, the topic of climate change has doubtlessly gained importance since the release of the Fourth Assessment Report of IPPC in the year 2007. It is believed that global warming will increasingly affect tourism development in the upcoming century *(Frangialli, 2007)*. The relationship between climate change and tourism can be described as being ambivalent – on the one hand, the sector is expected to become a major victim of consequences caused by climate change, on the other hand, it is a non-negligible and growing contributor to it *(UNWTO, 2007a, p. 4)*. According to Patterson, Bastianoni & Simpson *(2006, p. 342)*, research and public discussions around tourism and climate change often focus on either the victim role of tourism, where adaptation is viewed as the appropriate response, or on its role as a perpetrator, where discussions centre on mitigation measures.

From the first point of view, tourism is believed to be a highly climate-sensitive economic sector similar to agriculture, insurance, energy and transportation. *(IPCC, 2007a, p. 4)*. UNWTO defines four main categories where climate change can impact on tourism *(UNWTO, 2007a, pp. 6–7)*:

- **Direct climatic impacts** relate to changes in the length and quality of climate dependent tourism seasons, especially at sun-and-sea and winter sports destinations. This includes a shift of tourists between destinations due to long-term changes in season stability.

- **Indirect environmental change impacts** relate to climate-induced changes in the environment of a destination that can affect tourism resources as well as infrastructure or supply-chains. Examples include biodiversity loss, reduced landscape aesthetics, erosion and inundation or altered agricultural production.

- **Impacts of mitigation policies on tourist mobility** relate to international or national mitigation policies that could impact tourist flows. Examples include a rise in transport costs or changing consumption patterns of tourists due to growing environmental consciousness. Climate mitigation measures discussed in this publication might constitute such impacts.

- **Indirect societal change impacts** relate to long-term societal changes induced by climate change, such as slow-down of economic growth, international migration or political instability.

The second perspective sees tourism as a contributor to climate change and concentrates on the question on how its carbon impact can be mitigated. Within climate and tourism research, this aspect is a rather young one compared to adaptation. Peeters *(2007a, p. 12)* states that, with hindsight, the number of publications on either issue has been out of balance. Whereas in the 1990s, an increasing number of scientific publications were already discussing impacts of climate change on tourism as well as possibilities of adaptation, only in the last four or five years a larger number of papers have emerged that deal with the impacts of tourism on climate change. The majority of these papers are concerned with assessing the extent of impact, whereas the approach of asking for concrete mitigation strategies is still scarcely used *(ibid.)*. However, an empirical study on current issues in the interdisciplinary research field of climate change and tourism concluded that there was a remarkable shift of interest in the research community from adaptation towards mitigation since the year 2007. It was further found that there is still a missing balance between the analysis of destinations in developed and developing economies, and a lack of detailed studies which could support governments and other tourism stakeholders in taking the "right" decisions *(cf. Fischer, 2007)*. Since the year 2003, the tourism sector has officially recognized its role as a contributor to climate change, next to its role as a victim *(cf. UNWTO, 2003a)*. The UNWTO acknowledges today a "two-way interaction between tourism and climate change, constituted by a complex web of relationships" *(Frangialli, 2007)*.

A strict application of the hitherto described "two-way street model" which polarizes between tourism's victim and committer role or between need for adaptation and mitigation, can imply the shortcoming of ignoring the interactive and causal relationship between tourism and climate change. Patterson, Bastianoni & Simpson *(id., p. 341)* state that studies embracing either position rarely address adaptation and mitigation strategies simultaneously; to Peeters *(2007a, p. 12)* such scientific references even seem to be unavailable.

> "Adaptation and mitigation appear almost as mutually exclusive options. Concerns for economy and environment appear to be diametrically opposed. Under this conceptual model, win-win solutions are precluded; to advance in one direction means that less progress is made in another." *Patterson, Bastianoni & Simpson (id., p. 342)*

Patterson, Bastianoni & Simpson *(ibid.)* propose an alternative tourism-climate system model that aims to join rather than divide the two perspectives of victim and committer. As ***Figure 2.1*** illustrates, the system is dynamic, with multiple scales and feedback to be considered and including important drivers that are not discussed in current research. The suggested model considers multiple spatial scales of investigation, which are reflected by the concentric circles. The time scale in the model is formed by boxes A to E (representing "states" that change relatively slowly over time) and the arrows 1 to 7 (representing "changes" that adjust relatively rapidly and determine relationships between states, *id., p. 344)*. It is argued that such a dynamic model could incorporate adaptation and mitigation strategies in ways which are not mutually exclusive, but rather addressing the following paradox: that the cross-section of the global population driving the demand for tourism resources threatened by climate change, are also disproportionately responsible for increased radiative forcing *(id., p. 339)*.

Figure 2.1: The tourism-climate interaction as a hierarchical feedback system
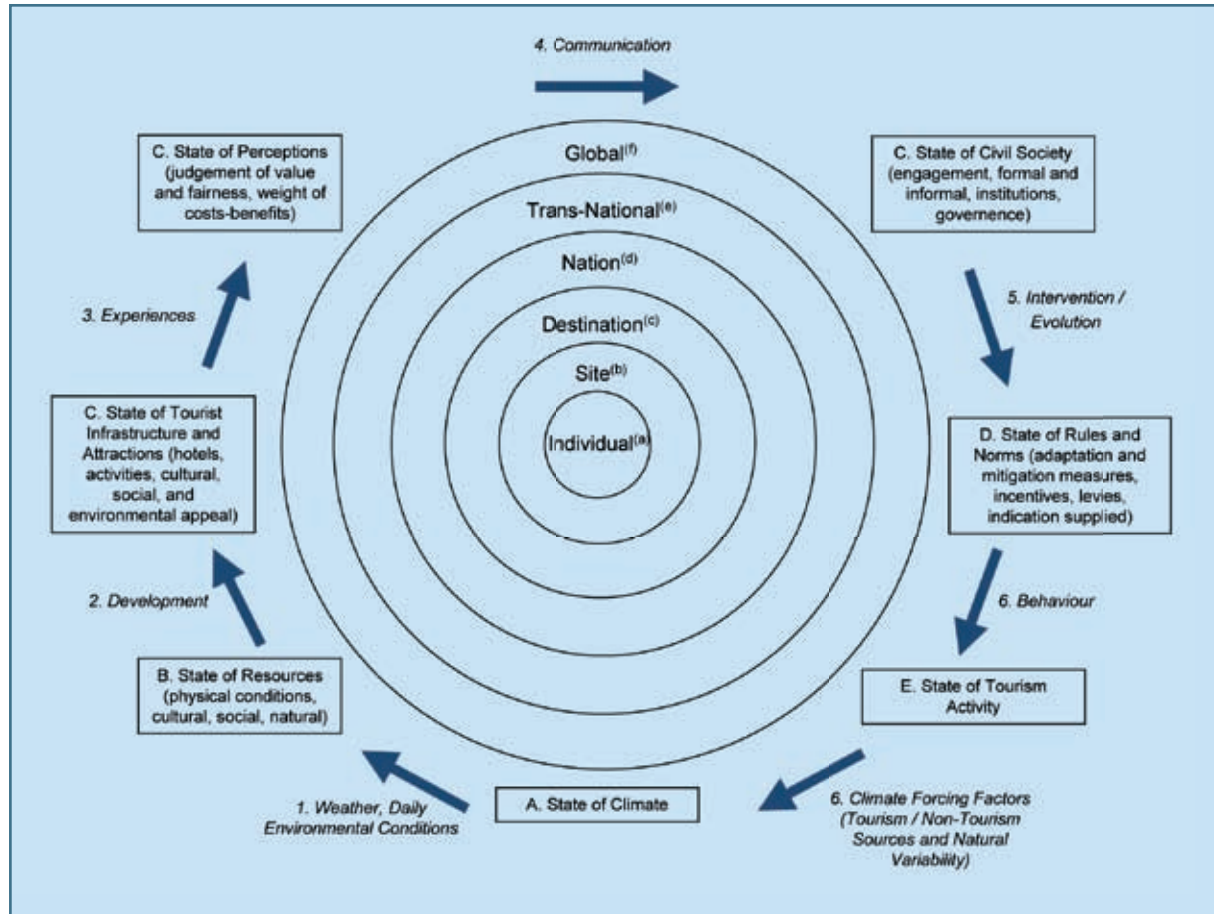
(a) *Autonomous concerns, perceptions, behaviour and decisions*

(b) *Location such as beach, park, hospitality facility, hotel etc.*

(c) *A particular region or group of sites with homogenous marketing characteristics*

(d) *National policy or actions*

(e) *Policies which influence two or more attractions*

(f) *Global commons as a whole*

Source: Patterson, Bastianoni, Simpson, 2006, p. 345

2.2 Tourism's Contribution to Climate Change

2.2.1 Background to Assessment

As the research community on tourism's contribution to climate change is still young, exact figures have never been comprehensively assessed. A first attempt to calculate the sector's carbon contributions on a global scale was undertaken by an expert team on climate change and tourism, in cooperation with UNWTO, WMO and UNEP, for the "Second International Conference on Climate Change and Tourism" in the year 2007. Overall tourism's climate impact was assessed by using a sector-specific approach, by differentiating GHG emissions from transport, accommodation and other tourism-related activities. Within these calculations, tourism is defined according to UNWTO recommendations, thus including domestic as well as international tourism for purposes of leisure, business or VFR *(UNWTO, 2007a, pp. 13–15)*.

A crucial issue within the assessment of tourism's climate impact is the selection of yardsticks to be applied. The "CO_2-equivalent" (CO_2-eq) is a widely used metric for assessing climate-relevant emissions that takes into account other greenhouse gases next to carbon dioxide. For calculating the CO_2-eq value for a given greenhouse gas, its implication needs to be measured over a period of 100 years and lifetime must be more than ten years. In aviation, which constitutes the most relevant source of climate impact within tourism, many greenhouse gases are short-lived and not well mixed in the atmosphere and thus can not be compared by using the CO_2-eq measure. Therefore, in aviation the alternative parameter of "Radiative Forcing" (RF) is applied, which expresses the extent to which emissions of greenhouse gases raise global average temperatures. CO_2 emissions from aviation are multiplied with the so-called radiative forcing index (RFI), a factor for converting and taking into consideration all related non-CO_2 greenhouse gases. As there is still considerable scientific uncertainty regarding the climate impact of contrail-induced cirrus clouds, the spectrum of RFI factors that are applied in calculations of aviation emissions varies between 1.9 and 5.1. This also leads to a broad range of results regarding tourism's overall contribution to climate change *(cf. Peeters, 2008. n.p.a.; cf. Sausen et al., 2005, pp. 555–561)*.

In view of these considerations, attention should be drawn to three different metrics that are used in the figures in the following chapters: CO_2 emissions only, RF excluding cirrus clouds impacts and RF including maximum cirrus clouds impact. The figures refer to technical contributions from the expert team on climate change on tourism, which was set up for the conference in Davos in the year 2007.

2.2.2 Tourism's Contribution to Climate Change in 2005

Figure 2.2 shows the climate-relevant contribution of all tourism-related activities within the three sub-sectors of transport, accommodation and activities. Estimates for CO_2 and RF excluding cirrus are rather good, with an error margin of up to 25 %. According to this, tourism's share of global CO_2 emissions ranges between 3.9 % and 6.0 %, while the respective range for RF is 3.7 % to 5.4 %. Considering the maximum contribution of cirrus cloud would result in a share of between 4.4 % and 9.0 %. The tourism sector officially acknowledges contributing "some 5 % of global CO_2 emissions" *(UNWTO, 2007b, p. 2)*, which reflects the current state of consensus among the actors involved.

Figure 2.2:   *Estimated contribution and uncertainty ranges of tourism (including same day visitors) to global CO_2 emissions and radiative forcing, 2005*

Share of tourism to emissions or radiative forcing (%)
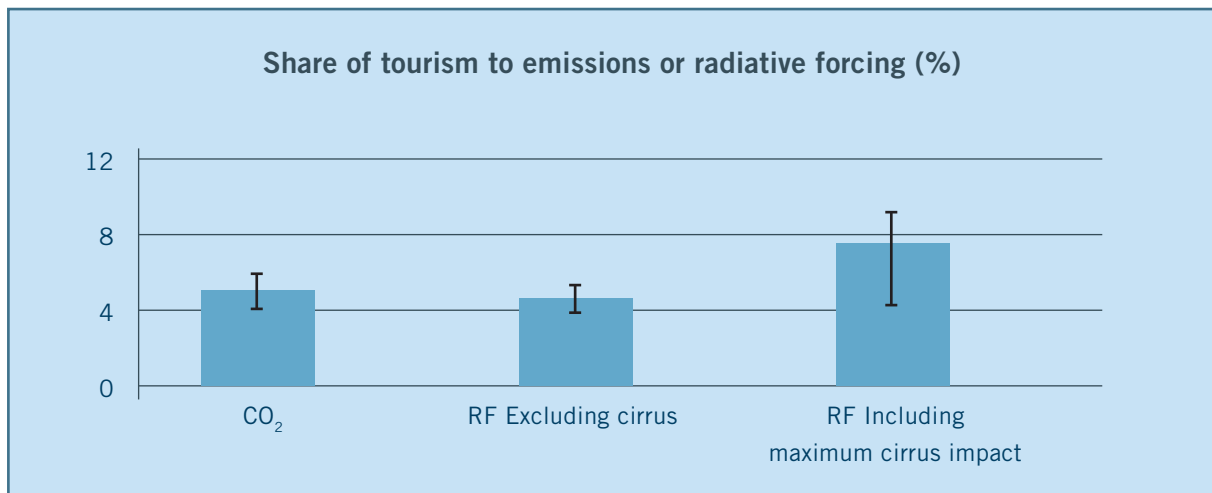
Source: UNWTO, 2008b, p. 133

A breakdown of the sub-sectors' emissions, concerning their proportions of contribution to climate change, is illustrated in Figure 2.3. It shows that origin-destination transport constitutes the lion's share of tourism's overall impact on climate change, amounting to 75 % of CO_2 emissions, or even 81 % (excluding cirrus) to 89 % (including maximum cirrus impact) if measured by means of RF.

Figure 2.3:   *Estimated contribution of various tourism sectors to global CO_2 emissions (including same-day visitors)*

Shares per tourism element
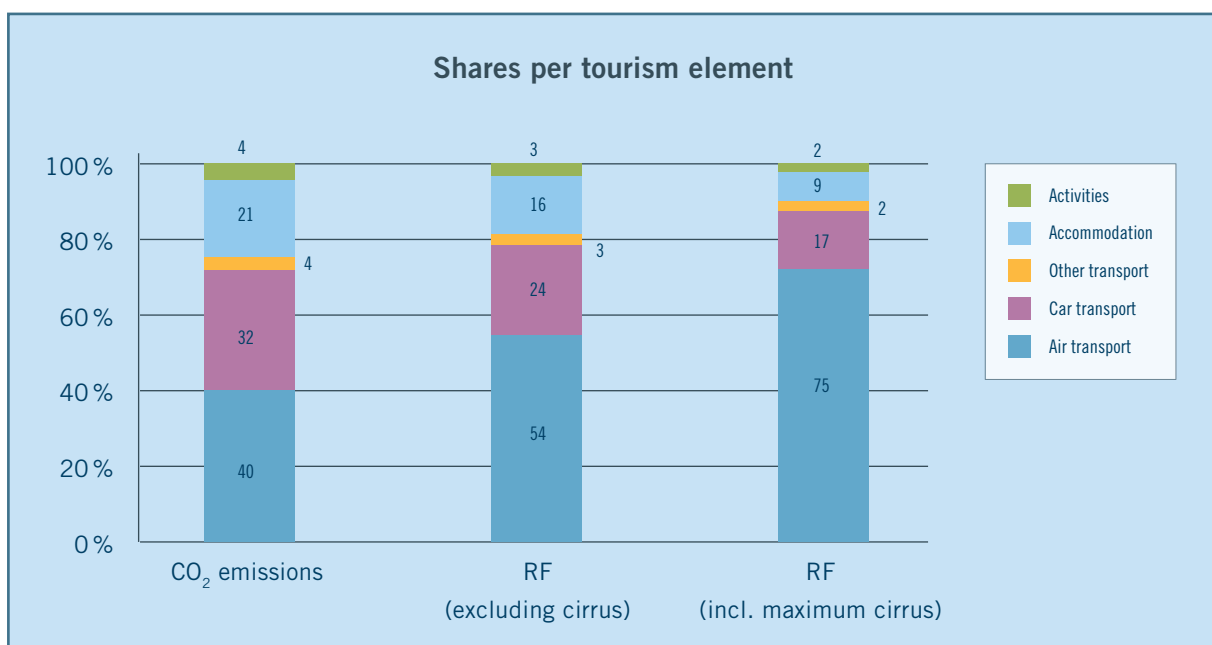
Source: UNWTO, 2008b, p. 133

As transport is the most significant sub-sector contributing to climate change within tourism, further breakdowns are needed to understand its implications. As no comprehensive analysis of global emissions from tourism transport exists, the EU study "MusTT" *(cf. Peeters, van Egmond, Visser, 2004)* was used as a reference to provide insights in emission differences among transport carriers. Table 2.1 shows emission factors of different transport carriers in a European context. Figures are shown in CO_2 and in CO_2-eq, the latter taking into account all climate-relevant greenhouse gases. The table illustrates substantial differences of emissions per passenger kilometre (pkm) among modes of transport. Air, car and ship (cruises or ferries) can be classified as carbon-intensive transport modes, while rail and coach can be classified as carbon-efficient. The study concludes that 55 % of tourism transport emissions by Europeans are caused by 20 % of trips based on air transport. Alternatively, guest nights spent by passengers arriving by air account for only 11 % of all tourist nights, but for 46 % of all tourist transport emissions. These ratios are reflected in Figure 2.4, which illustrates a breakdown of EU outbound tourism modal split in the year 2000.

Table 2.1:   Emission factors for tourism transport modes in the EU context

Mode[a]	CO_2 factor (kg/pkm)	equiv. factor	CO_2-eq (kg/pkm)
Air < 500 km	0.206	2.0	0.412
500–1000 km	0.154	2.3	0.354
1000–1500 km	0.130	2.7	0.351
1500–2000 km	0.121	2.7	0.326
> 2000 km	0.111	2.7	0.299
Rail	0.027	1.05	0.0284
Car	0.133	1.05	0.1397
Coach	0.022	1.05	0.0231

(a)   For transport modes, the following average load factors are assumed:

　　　75 % for aviation

　　　60 % for rail

　　　50 % for car and

　　　90 % for coach

Source: Peeters, P., van Egmond, T., Visser, N., (2004)

Figure 2.4:   *Modal split of trips, mobility and CO_2 emissions of all tourism trips by EU25 citizens (including domestic, intra-EU25 plus Switzerland and Norway and intercontinental) in 2000*

EU25 outbound tourism 2000 modal split

Legend: Car, Coach, Ferry, Rail, Air

Categories: Journeys, Mobility (pkm), CO_2 emissions
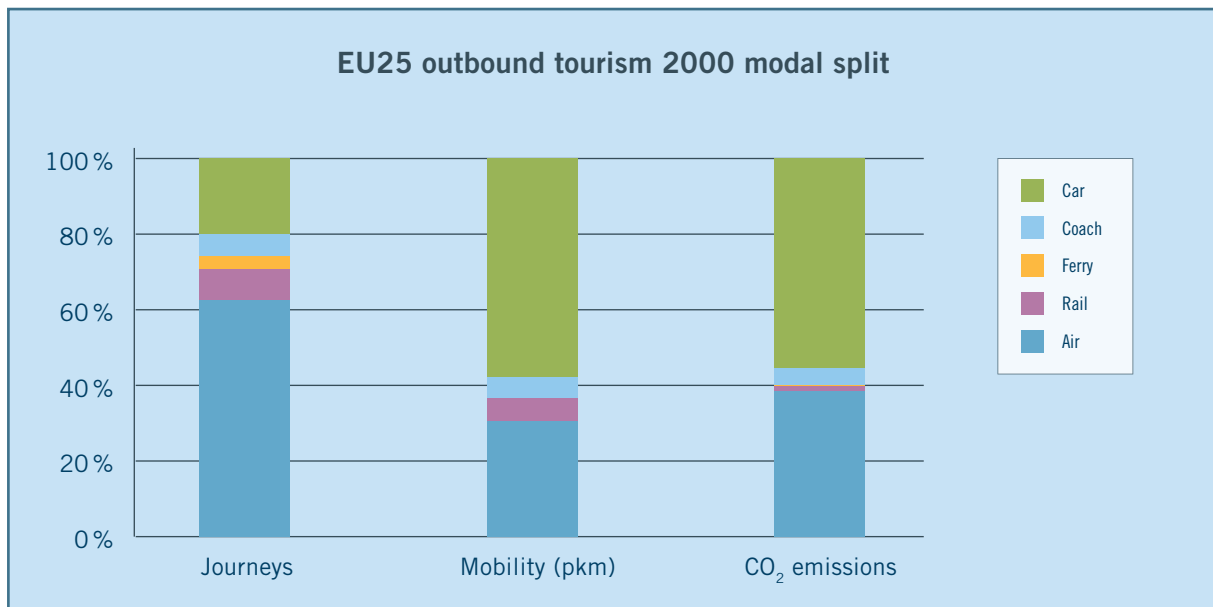
Source: Peeters, P., van Egmond, T., Visser, N., (2004)

2.2.3   Carbon Footprints of Selected Tourism Activities

Results from the previous chapter show that emissions are highly unevenly distributed according to the geographical scale of tourism and the mode of transport used. It appears helpful, therefore, to take a look at carbon footprints to identify those elements of tourism that are especially harmful to the climate. Figure 2.5 shows the carbon footprints of some selected journeys, which include emissions from transport, accommodation and other activities. As the figures reveal, there can be some forms of journeys that even exceed the current annual emissions of an EU citizen, like the illustrated example of a 15-day fly-cruise to Antarctica. On the other hand, there are many holidays that are causing relatively low emissions which only marginally contribute to the yearly bearable climate budget of a person. Thus, the carbon footprint of any journey largely depends on choice of transport mode as well as distance between origin and destination *(UNWTO, 2008b, pp. 139–140)*.

Figure 2.5: Annual per capita CO_2 emissions and emissions caused by various journeys
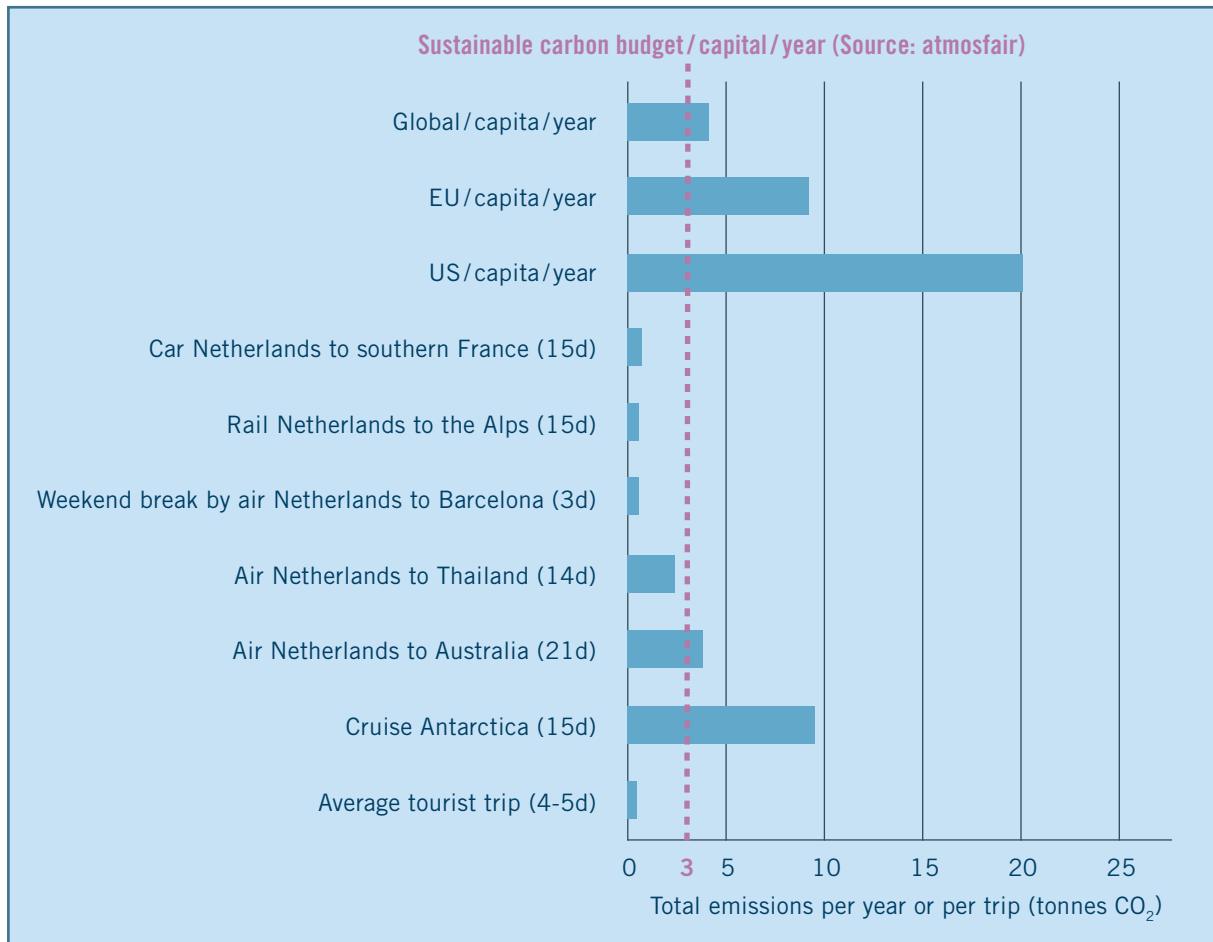
Source: slightly adapted from UNWTO, 2008b, p. 139

2.2.4 Forecast of Tourism's Carbon Emissions

CO_2 emissions from tourism have grown steadily over the past five decades. If the current amount of emissions is put in relation to tourism growth forecasts, a further substantial increase in the sector's total contribution to climate change can be expected. As outlined in 2.2.1, the number of international tourism arrivals is expected to double by 2020, and domestic tourism in emerging economies (China, India, Brazil etc.) is growing by more than 10 % per year. Moreover, tourism trends move towards more and shorter holidays per year as well as to increasing long-haul journeys. Based on these considerations, the expert team on climate change and tourism developed a "business-as-usual" emission forecast scenario for the year 2035, assuming that no extensive mitigation strategies will be implemented in future. The scenario excludes same-day visitors and refers to CO_2 emissions only (thus not considering other greenhouse gases or cirrus and contrail clouds). Results show that CO_2 emissions in tourism are projected to rise by 152 % *(UNWTO, 2007a, p. 18)*. This development is in stark contrast with EU targets to reduce GHG emissions by 30 % until the year 2020 *(EU, 2007)* and thus very likely to interfere with post-Kyoto agreements.

2.3   Mitigating Tourism's Impact on Climate Change

2.3.1   General Mitigation Strategies in Tourism

In the above-described context, UNWTO's Davos Declaration on Tourism and Climate Change recognizes the urgent need "[…] to mitigate its GHG emissions, derived especially from transport and accommodation activities" *(UNWTO, 2007b, p. 2)*. There are four strategic areas for reducing carbon emissions in the tourism sector *(Becken, Hay, 2007; UNWTO, 2007a, p. 15)*:

- **Reducing energy use** aims at avoidance of energy consumption and is seen as the most essential mitigation strategy. In tourism, this relates to changing destination development and marketing, altering destination choice of the consumer or shifting passenger transport volumes from energy consuming carriers like air and car to energy efficient carriers like rail and coach. The aspect of behavioural change plays an important role in this area.

- **Improving energy efficiency** aims at improving energy efficiency through technical innovations, in other words, performing the same operation with a lower energy input. In tourism this is particularly relevant to endeavours to improve fuel consumption of aircrafts and cars as well as energy consumption of accommodation facilities.

- **Switching to renewable or carbon neutral energy sources** is a strategy designed to substitute fossil energy with sources that are not finite and cause lower or no emissions. The use of renewable energy sources is considered economically and technically feasible in tourism, including biomass, water, wind, photovoltaic, solar thermal, geothermal or energy regeneration from waste.

- **Carbon sequestration** refers to the option of storing CO_2 in forests, oceans or in geological sinks and includes activities like afforestation or avoidance of deforestation. This area is considered to be applicable to tourism activities whose revenues contribute to the preservation of such natural CO_2 stores and especially rainforests. Carbon offset schemes that partially invest in sequestration activities can be considered another relevant application in tourism.

Within these four strategic areas, mitigation can be achieved through various mechanisms that basically include **technological, managerial, economic** and **behavioural** instruments *(UNWTO, 2007a, p. 16)*. In the context of this publication, it is necessary to make a clear distinction between a regulative and a voluntary implementation of these instruments; the latter serve as a starting point for identifying measures that are relevant to the tour operating industry.

2.3.2   Tourism's Mitigation Potential

The expert team on climate change and tourism developed over 70 different mitigation scenarios to demonstrate how the "Business-As-Usual Emissions Scenario" (BAS) for 2035 could be altered by implementing different mitigation measures. Two illustrative scenarios, called "Technical Efficiency Scenario" and "Modal Shift and Increased Length-of-Stay Scenario", were selected for giving insight into the mitigation potential in the tourism sector. The underlying assumptions are outlined in **Table 2.2** and the resulting CO_2 emissions are compared with the BAS in **Figure 2.6** *(UNWTO, 2007a, pp. 18–19)*.

Table 2.2:   Assumptions underlying emission scenarios in Figure 2.6

Technical Efficiency Scenario:
• reduction in aviation energy consumption per pkm of 50 % versus 32 % in BAS;
• additional 2 % per year reduction in car transport emissions per pkm over BAS;
• additional 2 % per year reduction in other transport emissions per pkm over BAS;
• additional 2 % per year reduction in accommodation emissions per guest night over BAS;
• additional 2 % per year reduction in activities emissions per trip over BAS.
Modal Shift-Increased Length-of-Stay (LOS) Scenario:
• no further growth in number of aviation trips and pkm;
• growth in rail/coach of 2.4 % to 5 % per year to keep growth in the number of trips constant with BAS;
• 0.5 % per year increase in average LOS instead of a 0.5 % reduction per year in BAS.

Source: UNWTO, 2008b, p. 171

Figure 2.6: Scenarios of CO_2 mitigation potential from global tourism in 2035
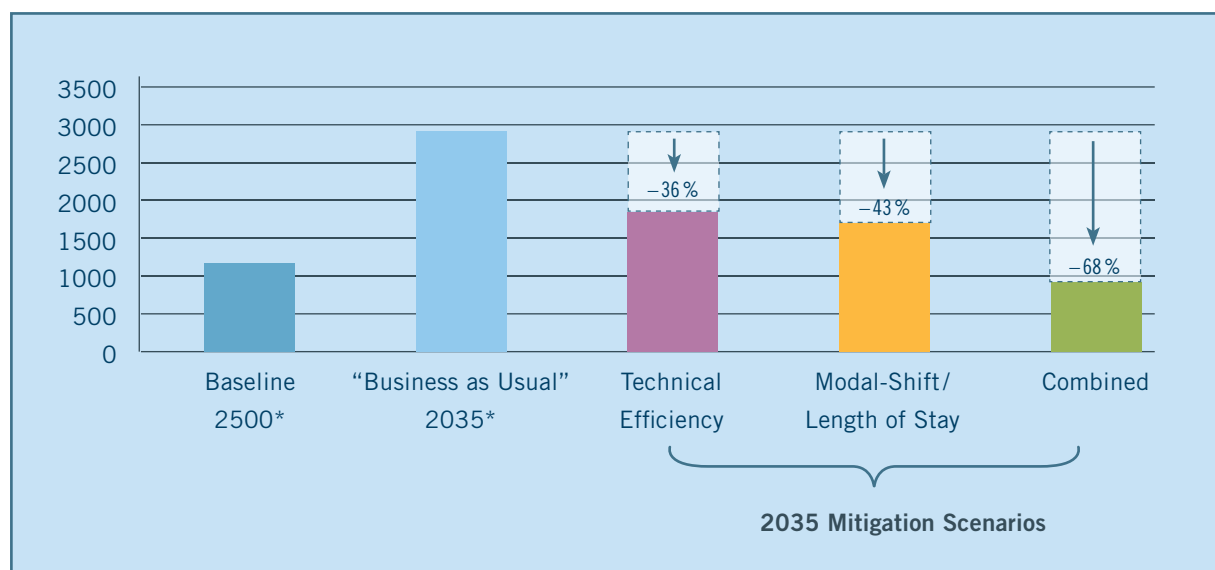
Source: cf. UNWTO, 2008b, p. 172

Results show that neither of the two scenarios achieved absolute reductions in CO_2 emissions versus the 2005 baseline, largely because of the large growth in the number of trips over this timeframe. It should be noted that, when the two scenarios are combined, CO_2 emissions can be reduced by 16% compared to 2005 baseline. Several important points emerge from this analysis *(UNWTO, 2008b, pp. 171–172)*:

• Increasing length of stay seems an efficient way to save a significant amount of emissions, while retaining the total number of guest nights.

• Reducing energy use by combinations of modal shift, shift to shorter haul destinations and increased length of stay appears more effective in reducing CO_2 emissions (−43 %) than additional technological energy efficiency improvements alone (−36 %).

- Only the combination of several mitigation strategies delivered absolute reductions in CO_2 emissions. In all other scenarios evaluated, other economic sectors will have to take a larger share of the mitigation burden, as emissions from tourism continued to increase above 2005 baseline levels.

2.3.3 Mitigation Approaches in Tourism Transport

For a better understanding of the above described total mitigation potential in tourism, it is helpful to look at backgrounds related to the high impact sub-sector of transport and to consider implications for the four strategic mitigation areas. Below, the most relevant approaches to achieving mitigation within tourism transport are described with regard to opportunities and constraints for practical implementation. The outlined approaches are closely interlinked with each other and thus require simultaneous implementation.

2.3.3.1 Technological Innovation

In tourism transport, technological innovation can refer to improving fuel efficiency, making combustion systems compatible for alternative fuels, advancing renewable energy or to developing completely new forms of transport carriers. In recent years, the aspect of energy efficiency has been promoted especially by the aviation industry and tour operators as a key solution to mitigation, though the figures communicated are not always in line with state-of-the-art scientific knowledge *(Gössling, Peeters, 2007a, pp. 410)*. The analysis in 2.3.2 shows that the mitigation potential through technology alone is limited, though it constitutes an important element in a combined effort.

Fuel Efficiency

- IPCC identifies a potential for achieving 30 to 50 percent more fuel efficiency in aircraft technology for the period 1999 to 2050 *(cf. Penner et al., 1999)*. According to Peeters, fuel efficiency in aviation is already on a high level, and technological improvement seems to hit the bottom-line *(Peeters, 2007b)*. He predicts that, in future, fuel efficiency gains will be regressively decreasing per year *(Bows, Anderson, Peeters, 2007, pp. 7–8)* References are also made to the problem of long time lags between the introduction of new energy-efficient aircraft and their adoption by airlines, due to long operating lifetimes *(ibid.; Minninger, 2007)*.

- Even though the car industry has achieved efficiency gains in recent decades, total average car fuel consumption has stagnated since the 1990s as technical improvements have been counteracted by a trend towards bigger and more powerful vehicles *(cf. Van den Brink, R.M., Van Wee, 2001, pp. 75–93)*.

Alternative Fuels

- A widely promoted alternative to conventional fuels are **agrofuels**, which can be made from different plants or organic waste. It is believed that "[…] they might play an important role in addressing GHG emissions in the transport sector, depending on their production pathway" *(IPCC, 2007d, p. 19)*. The supplement in this statement refers to risks and uncertainties, such as associated emissions during production of fuels, land-use implications or negative effects on food prices *(cf. Carbontradewatch et al., 2007)*. Especially against the background of the global food crisis in the year 2008, "first-generation" agrofuels need to be viewed with caution. Another alternative are **gas-**powered vehicles, which cause less carbon impact than conventional combustion engines *(Bows, Anderson, Peeters; 2007, p. 2)*.

Renewable Energies

- A shift to renewable energy sources within tourism transport is especially applicable to **electricity-based rail systems** that bear the potential to run completely carbon neutral *(Peeters, 2007)*. Some countries have almost achieved carbon-neutral national railway operations; examples are Sweden *(cf. www.sj.se)* and Switzerland *(cf. www.mct.sbb.ch)*.

Innovative Transport Technologies

- For long-haul distances, there are as yet no serious alternatives to conventional aircraft technology *(Dubois, 2007; Minninger, 2007; Peeters, 2007b; Sonderegger, 2007)*. **Fuel cell technology** would be carbon-clean, though much energy input is needed for producing the required hydrogen, which would in turn cause emissions, if not made from renewable sources. Fuel cell systems are brought into context with complex technical demand, high costs as well as required changes in infrastructure *(cf. Masson et al., 2007)*. Another brainchild is the use of modern and energy-efficient **airship technology,** though commercial use is restricted by the low cruising speed of at most 150 km/h, high cost and operational challenges. At the moment, this technology is mainly used in tourism for panorama flights with small passenger capacities *(cf. www.aerosml.com)*, alhtough there exist design studies that foresee bigger load capacities suitable for airship cruise lines *(cf. http://www.aerosml.com/ml866/model.html)*. It is believed that the basic principle of aircraft technology will not disappear. As aviation nowadays is an integrated part of our society, progress is rather likely to be made in efficiency gains and in driving technologies *(Sonderegger, 2007)*.

- As to mid and short-haul individual transport, **hybrid motor technology** that combines combustion engines and electric motors seems currently the most promising. For public transport, **magnetic levitation** is thought to be a technology that might be pathbreaking for fast European intercity transport *(Sonderegger, 2007)*. The innovative design study "Swissmetro" combines magnetic levitation with **vacuum technology** in order to provide subterranean high-speed inter city connections at zero emissions *(cf. http://www.swissmetro.ch)*.

- For on-site transport, **electric vehicles** have significant application potential. First practical experience in the Austrian tourism destination of Werfenweng has been throughout positive *(cf. www.werfenweng-austria.com)*. Potential for integrated on-site transport is also seen in innovative systems that combine the characteristics of individual and public transport, as currently pursued by the Austrian "Coaster" project *(Sonderegger, 2007; cf. http://www.coaster.at)*.

2.3.3.2 Cultural Change towards Low-Carbon Travelling

As technology alone cannot sufficiently respond to the need for mitigation, there exists an approach that calls for a radical cultural change with regard to holiday behaviour and related mobility consumption. As human behaviour is most likely responsible for the present climate difficulties, Burns & Bibbings *(2007, p. 1)* state that mitigation actions have to be socio-cultural in nature. They claim that

> "[…] social norms, habits, practices and assumptions about travel and especially leisure mobility in its contemporary, ubiquitous form have to be challenged and changed if catastrophic consequences are to be avoided. […] Given the amount of emission reduction required to reach climate stabilisation, the key to reducing tourism-induced emissions is the emergence of a new culture of travel and new ways of achieving the peak experiences that are central to much of tourism." *(id., pp. 1–2)*

Consumer behaviour predicated on responsible business practice, brokered by a regulative framework, therefore constitutes a key mitigation opportunity in the tourism sector with its fragmented, long and complex supply chains *(ibid.).*

In practical terms, this can be achieved by designing less mobility intensive tourism and leisure experiences while maintaining, or even increasing, related psychological benefits (customer value). This could be achieved by advancing a development towards a reduced average number of holiday trips per person combined with increased average length of stay. In such a scenario, the total amount of person-nights at a destination could be maintained while reducing transport consumption. In other words, a decreased number of guest arrivals is compensated by more time and money spent at the destination. A "Sustainable Tourism Mobility Scenario" for France for the year 2050, developed by Dubois *(2004, p. 34),* includes such considerations together with shifts from carbon- intensive to carbon-efficient transport carriers and to closer destinations. In this context, Dubois sees the need for a "slow-mobility movement" in tourism, where hyper-mobile travelling, such as a shopping weekend by air, is no longer regarded as prestigious in society. In such a cultural scenario, the desire to travel persists, but it is admitted that trips must be exceptional events where the time spent in transport gains meaning and becomes part of the tourism experience, thus allowing a shift to slower but more energy-efficient carriers like coach and rail. Long-haul journeys to exotic destinations need to have the status of lifetime experiences that put the main emphasis on cultural encounter rather than on recreation, or on activities that can be pursued exclusively at a certain destination and cannot be substituted by less remote destinations *(ibid; Dubois, 2007; Burns, Bibbings, 2007, p. 4).*

Criticism of mitigation through cultural change includes doubts on whether the inherent elitism of time and money in society can be overcome. Supporters argue, however, that in recent years "ethical" or "green" consumer products have experienced strong growth in popularity in various business sectors. This might foreshadow the beginning of a serious social trend where scenarios as outlined above could gain relevance *(Burns, Bibbings, 2007, pp. 8–10; Weaver, 2006, pp. 62–68).*

2.3.3.3 Modal Shift

As shown in point 2.3.2, a modal shift of passenger volumes from carbon-intensive to carbon-efficient transport modes is regarded as having high mitigation potential in tourism. More precisely, this refers to endeavours at encouraging passengers to prefer rail and bus over air and car in their mobility choices. Backgrounds, chances for and obstacles to realising modal shift are as follows:

- Train and coach are regarded to be competitive alternatives to air transport for distances of up to 1500 km, whereas train currently captures equal market shares as air up to 700 km *(Van Goeverden, 2007, pp. 109–110).*

- For distances of more than 100 km, the train's competitiveness over air or car is strongly influenced by factors like travel time, cost (in relation to car) and the number of direct connections provided. On the other hand, train frequency and the attributes of the competing airplane have no significant impact on train demand *(id., pp. 109–110).*

- Within Europe, developments of the rail network during the past 20 years have moved towards an increasing number of high-speed services operated domestically over medium distances of 300 to 600 kilometres. Long distance train supply was becoming more fragmented with heterogeneous fare systems, whereas direct long-haul services between countries were increasingly disappearing *(id., p. 114).*

- Train companies have very distinct operating characteristics that derive from former state-ownership involving non-profit-orientation and dependency on public subsidies. This also includes deficiencies in the interoperability of different national rail infrastructures and a lack of internationally operating standards *(Peeters, 2007b; Sonderegger, 2007)*.

- There is general criticism to the effect that train travel needs to be cheaper and easier to manage in order to achieve modal shift. A possible application of the low-cost concept to train is considered difficult as railway companies do not operate in a fully competitive framework and have to serve basic public interests like adherence to time schedules and maintenance of a connection network *(Balatka, 2007; Dubois, 2007; Hess, 2007; Minninger, 2007; Peeters, 2007b; Sonderegger, 2007)*. Sonderegger refers to the UK where such obstacles do not apply as its national train transport has been fully liberalized. However, low-cost trains did not emerge in the UK due to high fixed infrastructure cost *(Sonderegger, 2007)*.

- There is also concern about the idea of achieving substantial emission reductions by reinforcing growth of the train segment through state-subsidised price incentives. It is argued that low train fares could create new transport markets rather than substantially dislocating passengers from air travel. This effect was observed during the emergence of low cost airlines, where 60 % of passengers only travel because of dumping prices, and would not have travelled otherwise. This leads to the hypothesis that distinct mobility segments, once activated, cannot be shifted easily between transport modes *(Sonderegger, 2007)*.

- There is a broad consensus among stakeholders that modal shift can best be achieved through a regulatory framework that reflects environmental costs in air transport prices. The options discussed include direct charges on flight tickets, fuel taxes, emission taxes or incorporation of aviation into international emission trading schemes under the Kyoto protocol *(Bows, Anderson, Peeters, 2007, p. 1)*.

- Coach operators are independent of infrastructure restrictions in contrast to railways, which gives them the capability do adapt their assets relatively easily to changes in transport volumes.

- Bus and coach travelling remains a neglected area in tourism research, even though it represents a higher proportion than rail travel *(Guiver, Lumsdon, Morris, 2007, p. 120)*.

- Water transport in tourism often constitutes transport mode and tourist attraction in one, especially in the case of cruises that represent 1.6 % of global international tourist trips *(Becken, 2007, p. 194)*. Ferries can be regarded as serving primarily a transport purpose.

2.3.3.4 Mobility Management

The Austrian Traffic Club (VCÖ) defines mobility management as an

> "[…] optimisation of traffic demand through consultancy and interconnection of different means of transport. The aim is to achieve a more efficient traffic offer that is environmentally and socially compliant." *(VCÖ, 2004, p. 11)*

This can be achieved by applying hard (infrastructure and policy) or soft measures, the latter including information, communication, organisation and coordination *(ibid.).* The following points provide insights into the mitigation potential through soft mobility management:

- Air traffic management offers opportunities for the optimisation of routes with a view to minimising environmental impact, e.g. by improving precision of navigation, reducing reliance on conventional routes, integrating weather and emission data into the decision making process or minimising delays and diversions associated with airspace congestion *(Williams et al., 2007, pp. 95–99)*. The relevant emission saving potential is estimated at up to 10% *(cf. Penner et al., 1999)*.

- The load factor and seat density of aircraft can significantly alter fuel consumption per seat kilometre *(Bows, Anderson, Peeters; 2007, p. 2)*. Big airplanes with high carrying capacity, like the Airbus 380, could also have pertinent potential *(Sonderegger, 2007)*.

- The use of inter-European train connections in tourism transport is often brought into context with problems relating to high fares, differences and incompatibility of national booking systems, shortage of convenient direct connections and the absence of a Europe-wide customer service platform *(Balatka, 2007; Dubois, 2007; Peeters, 2007)*.

- Train load factors can be increased up to 40% without considerable additional energy input by using double-decker railway carriages *(Alstom, 2005, p. 6)*.

- Inter-European scheduled coach transport is highly decentralized. There is no Europe-wide and integrated coach booking system. Even the biggest European coach network "Eurolines", a cooperation of big private national coach companies, has a rather heterogeneous organization and inconsistent booking procedures which do not support changes between associated bus lines when no direct connections are offered *(cf. http://www.eurolines.com)*.

- Rental vehicle fleets tend to be newer, smaller and more energy efficient than privately owned cars. Car rental companies have the potential to introduce new technologies on a big scale *(Baas, Latto, Ludvigson, 2005, pp. i–iii)*. Given these characteristics, car rental can offer individual mobility at destinations to customers that use coach or rail for origin-destination transport.

- The implementation of car-sharing can become a key element of more car-independent sustainable mobility patterns. This concept relates to collective car ownership of people through a car sharing scheme that makes cars available for short-term use where individual mobility is needed. The energy saving potential is comparable to capital-intensive high-technology measures in other fields *(cf. EU, 2001)*.

- Mobility centres for initiating, organizing and providing multi-modal transport solutions for individuals have potential for achieving soft mobility use in tourism. One such example is "Mobilito" in Salzburg/Austria, which is a regional platform for connecting different modes of environmentally friendly transport *(cf. http://www.mobilito.at)*.

2.3.3.5 Carbon Offsetting

Carbon offsetting, also referred to as carbon compensation, relates to the neutralization of already emitted green-house gases through investment in projects that reduce emissions. In tourism, carbon offsetting schemes mainly relate to air transport and are based on the voluntary payment of a fee that derives from the proportionate cost of their projects. Gössling et al. *(2007b, p. 223)* find that there are substantial differences between the approaches chosen by offset providers in terms of compensation measures, emission calculations, price levels, company structures, and evaluation processes. As for compensation measures, activities can basically be divided into two categories *(cf. id., pp. 226–230)*:

- Saving emissions through energy efficiency gains or substitution with renewable energy sources: As foreseen in the context of the "Clean Development Mechanism" (CDM) or "Joint Implementation" (JI) under the Kyoto Protocol, carbon reduction projects are more cost-effective if implemented in developing or newly industrializing countries. Thus, a big number of carbon offset providers invest in projects that aim at big-scale energy reduction through technology transfer to less developed countries. An example of such a project is the replacement of diesel engines with solar technology in canteen kitchens in India that prepare food for thousands of people by the German offset provider atmosfair *(http://www.atmosfair.de/index.php?id=159)*. In this context, carbon compensation projects also constitute a tool for development assistance and employment creation.

- Carbon sequestration in biomass through afforestation or reforestation: Even though tree planting is popular among customers and has a number of advantages, there is criticism that relates to spatial needs and secondary energy inputs if big amounts of carbon are to be saved that way. Achieving a real reduction through this approach presumes that planted trees need to store carbon for the rest of their lifetimes. The risk remains that due to future forest clearings, droughts or fires the sequestered carbon would again be released. For this reason, this approach is subjected to ongoing controversy.

When it comes to the effectiveness of carbon reduction projects, the principle of "additionality" plays an important role. This refers to the idea that in order to be considered a true offset the carbon saving effect should not have been achieved without the additional incentive provided by the project. As CDM standards do not always guarantee additionality, offset providers committed to the Verified Emission Reduction Standard (VER) or to the even more demanding "Gold Standard" can be regarded as more credible. Another controversial issue on the voluntary offset market are the underlying emission calculations. As there is still considerable scientific uncertainty on the additional warming effects of non-CO_2 emissions in aviation, the RFI (see chapter 2.2.1) applied by different offset providers range from 1 to 3. Further challenges in calculating exact individual trip emissions arise from aspects like aircraft load factors, aircraft type or the exact flight routing. Due to all these considerations, the current prices charged for carbon offset per ton CO_2-eq by providers are very heterogeneous. A comparison between the amounts charged by 41 different providers for compensating a round trip flight from Amsterdam to Barcelona reveals price differences for carbon offsets ranging from EUR 1.92 up to EUR 20.33 *(id., pp. 227–233)*.

In public discussions, criticism of the concept of carbon offsetting is sometimes brought forward by comparing it to "the sale of indulgences" in the Middle Ages. It is argued that through the option of offsetting emissions from flights, people could feel released from responsibility for restricting flight consumption, which in turn could even contribute to increased demand for air travel. In this case, offsetting might lose its legitimacy as an instrument for climate protection. In contrast to that, it is argued that people who voluntarily purchase climate offsets are already environmentally conscious and also seek to avoid flights when there are other transport alternatives available *(Min-*

ninger, 2007). In this context, Boon, Schroten & Kampman *(2007, pp. 85–86)* consider it important to distinguish three options: flying without compensation, flying with compensation and not flying at all. From an environmental point of view, the last is the preferable option which is also actively communicated by some offset providers. It is argued that the option of offsetting should only be considered if air transport cannot be avoided, as flying with compensation is undoubtedly the second-best solution *(Minninger, 2007).* Boon, Schroten & Kampman *(ibid.)* also refer to some secondary effects that should be taken into consideration. The opportunity to compensate for flight emissions might result in an increased overall awareness of climate change among customers, even if they do not decide to buy offsets *(ibid.; Hess, 2007; Vereczi, 2008).* Another effect could be that a success of voluntary offsets may be used as an argument against taking regulatory measures *(Boon, Schroten, Kampman, 2007, pp. 87–88).* However, as still only a marginal share of all flight trips is compensated *(Ashton, 2008; Borsani, 2007; Vereczi, 2008)*, the latter consideration appears to to be of minor relevance.

When looking at carbon offsetting from an economic perspective, there is some risk that it could become the principal means of the travel industry to "reduce" emissions. This would turn producer responsibility into consumer responsibility and would divert from the core of the problem, as it bypasses the structural and technological changes that need to be made to achieve long-term carbon reductions in the tourism sector *(UNWTO, 2007a, p. 18).* Nevertheless, carbon offsetting does have an important role to play in mitigation efforts in tourism, especially as an "intermediate instrument" *(Vereczi, 2008)* until regulatory steps, like the integration of aviation into the European Emission Trading Scheme (ETS), are implemented.

2.4 Political Process concerning Mitigation in Tourism

The question of how to react to global climate change is a highly political one – also in the tourism sector. When describing the recent development towards a political framework for climate change and tourism, the World Tourism Organization (UNWTO) plays a significant role. UNWTO is a specialized agency of the United Nations and constitutes the leading intergovernmental body on tourism policy issues *(http://www.unwto.org/aboutwto/index.php).*

In 2003, UNWTO in cooperation with other UN bodies, organized the "First International Conference on Climate Change and Tourism" in Djerba (Tunisia) for broaching the issue in public. The aim of this conference was to build awareness among public and private actors of the relationship between climate change and tourism, considering "[…] particularly the impacts that the latter are producing upon different types of tourism destinations, while not ignoring that some transport used for tourist movements and other components of the tourism industry, contribute in return to climate change", as outlined in the resulting "Djerba Declaration" *(cf. UNWTO, 2003a).* Even though the wording of this preamble implies a higher priority of adaptation (as regards climate change's impact on tourism) than mitigation, the resulting recommendations eventually emphasised the latter aspect (both aspects: 4, adaptation exclusively: 1, mitigation exclusively: 5, *cf. ibid.).* It needs to be noted that at the time the tourism research community tended to underline tourism's victim role *(cf. 2.1).* UNWTO affirms that the Djerba Declaration established a comprehensive framework for future research and policy making *(cf. UNWTO, 2003b).* It was the basis for subsequent events in Milan (2003), Warsaw (2003), Genoa (2004) and Paris (2007) during which, inter alia, an international network of experts on climate change and tourism (éCLAT) was established for coordinating collaborative research.

The result of this effort, together with the consensus reached in Djerba, constituted the basis for the "Second International Conference on Climate Change and Tourism" in the year 2007 in Davos (Switzerland). The aim was to take the policy debate further, by focusing on concrete responses the different stakeholder groups can take. Some fair approximations concerning tourism's impact on climate change on a global scale, as well as related potential mitigation scenarios, were presented for the first time (cf. chapters 2.2 and 2.3). The resulting Davos Declaration reflects the sector's consensus on climate change and tourism as per 2007 *(cf. UNWTO, 2007b)*. Several speakers during the conference emphasised the remarkable progress that had been made since Djerba, in terms of knowledge and awareness among stakeholders. However, such statements have to be seen in the light of common political rhetoric. One plenary discussion with representatives from regional tourism authorities and the private sector had been conducted on a rather low technical level, where arguments during discussion did not suggest profound knowledge of backgrounds *(personal observation by the author).* This supports the assumption that the topic of climate change, until 2007, did not receive adequate attention in the tourism sector.

In the follow-up of Davos, the declaration was submitted to the UNWTO Ministers' Summit on Tourism and Climate Change during the World Travel Market (London) in November 2007 which was supported with some marginal amendments *(cf. UNWTO, 2007c)*. The document was subsequently adopted with strong support at the UNWTO General Assembly and presented at the United Nations Climate Change Conference in Bali (Indonesia) in December 2007, an act supposed to integrate UNWTO's considerations into the UN system response to climate change *(cf. UNWTO, 2007d)*.

2.5   Mitigation and Sustainable Tourism Development

The following statement is intended to throw light on the current debate on mitigation in tourism:

> "It is now important, that the discussion within the tourism industry broadens the focus on the volume of markets, where real need and potential for mitigation action is given. Long haul markets constitute a relatively small share of all global tourism flows, while they cause the major part of GHG emissions from tourism. It is important to think about how tourism could be organized in a low carbon world rather than hoping for a technological fix, which still has to be addressed, but which cannot sufficiently resolve the whole problem of still fast growing GHG emissions of tourism." *(Peeters, 2007b)*

As a consequence, the debate also needs to focus on the relations between transport volumes and related income generated for local people at destinations *(ibid.)*. These considerations broaden the sustainability perspective of the debate on mitigation, with the discourse centring on the relationship between tourism's economic importance and its climate impact. In this context, the UNWTO Secretary-General states:

> "It would be an error to take an overly simplistic approach […] by saying 'Do not travel far from home and avoid taking planes in order to save several tonnes of carbon emissions!' […] Most of these long-haul trips are to countries that are home to the planet's poorest populations. We already know that these […] will be the first victims of warming. [They] would be doubly affected if we also deprive them of the economic contribution of tourism." *(Frangialli, 2007)*

While there is consensus among stakeholders that mitigation policies must not cannibalize efforts to reach the Millennium Development Goals, it needs to be noted that the major part of global aviation takes place within or between industrialized countries *(UNWTO, 2003, p. 6)*. Gössling & Peeters argue that the debate on aviation's climate impact should be seen in the light that currently around 2 % of the world population is taking part in aviation which is the sole producer of 3.4 – 6.8 % of global greenhouse gases *(2007, p. 408)*. In this regard, it should be considered that the same population segment also produces overproportional emissions in everyday life. It is further referred to the fact that not all tourism flows to developing countries are effectively contributing to poverty alleviation, as large proportions of generated tourism revenues "leak out" to foreign-owned airlines, hotel chains or tour operators.

The future challenge is to put mitigation in practice while not hitting developing countries' economic development, especially because these countries have so far only marginally contributed to climate change. The possibility of differentiated regulatory flight restrictions (e. g. through emission trading schemes) that favour air transport to developing countries over air transport to industrialized countries were discussed at the Davos Conference *(author's personal observation)*. If long-haul tourism is to be justified in future with its capacity for eliminating poverty, general willingness may rise to put economic and social sustainability principles into practice at destinations. Together with positive economic and structural effects from carbon offset projects that mainly invest in developing countries, climate change mitigation can hold interesting opportunities for advancing the Millennium Development Goals.

The above described complexities are addressed in the Davos Declaration as follows:

> "Tourism – business and leisure – will continue to be a vital component of the global economy, an important contributor to the Millennium Development Goals and an integral, positive element in our society. Given tourism's importance in the global challenges of climate change and poverty reduction, there is a need to urgently adopt a range of policies which encourages truly sustainable tourism that reflects a quadruple bottom line of environmental, social, economic and climate responsiveness." *(UNWTO, 2007b, p. 2)*

2.6   Summary

Considering the current range of scientific knowledge, tourism is estimated to contribute between 4 % and 9 % to the global anthropogenic climate impact. It is believed that 75 % of all tourism-induced emissions can be attributed to transport, 21 % to accommodation and 4 % to various touristic activities at destinations. As such, passenger transport between home and destination constitutes the most significant area for climate change mitigation in tourism. Within this area, the vast majority of emissions are produced from air and car transport, which are considered to be carbon-inefficient transport carriers on a passenger-kilometre basis. Rail and coach transport are identified as carbon-efficient, but for the time being they play a minor role in total transport volumes generated by tourism. Due to massive growth forecasts, CO_2 emissions from the global tourism sector are expected to rise by 152 % by the year 2030, unless extensive and concerted mitigation measures are undertaken. The most significant mitigation approaches include:

- **Technological innovation**, which relates to improvement of energy/fuel efficiency, shift to alternative or renewable sources of energy as well as to the invention of entirely new transport technologies.

- **Cultural change** relates to an alteration of mainstream travel patterns, such as an average shift from long-haul to short-haul destinations, decrease in total amounts of journeys undertaken per capita combined with and increase in length of stay, as well as public acceptance of longer travel times due to increased earthbound transport.

- **Modal shift** refers to a large-scale shift of passenger volumes from air and car to rail and coach, whenever the latter constitute a realistic alternative (especially for short and mid-haul travel).

- **Mobility management** refers to an optimization of passenger transport chains through information, communication, organisation and coordination.

- **Carbon offsetting** is a concept that allows compensating unavoidable emissions, e.g. caused by long-haul air transport, through investment in specific mitigation projects in other sectors and countries.

In an optimistic scenario, it is believed that through a combination of all these measures (excluding effects of carbon offsetting), tourism's total CO_2 emissions could be reduced by 16 % within the period 2005–2035. In scenarios where measures are not combined, tourism's overall CO_2 emissions will increase due to the strong growth of the sector. In any scenario, other economic sectors have to take a larger share of the mitigation burden in order to achieve global reduction targets. This makes the tourism industry vulnerable to political criticism and underscores the necessity to incorporate carbon compensation mechanisms.

3 MITIGATION RESPONSE BY TOUR OPERATORS

Research question: How is the mainstream tour operating industry currently responding to the need for climate change mitigation and which shortcomings can be identified?

Section 3.1. takes a generic view on the commitment of tour operators to their "Corporate Social Responsibility", providing insight into the sector's internal framework for voluntary mitigation and thus addressing the theoretic role of tour operators within the mitigation response of the entire tourism industry. The digression in chapter 3.2. elaborates backgrounds on tourists' general preparedness to respond to voluntary mitigation initiatives enhanced by tour operators.

The subsequent sections 3.3. and 3.4. attempt to assess the current mitigation action of some selected European mainstream operators. Firstly, their communicated mitigation activities are evaluated, and secondly, the mitigation implications of their online communication channels are analyzed.

Section 3.5 compares the theoretic mitigation requirements and potentials (as elaborated in chapter 2) with the current actions of tour operators (as elaborated in 3.2 and 3.3), and thus identifies the most essential shortcomings that need to be overcome. Finally, some good practice examples from niche tour operators are provided in chapter 3.6.

3.1 Mitigation in the Context of Corporate Social Responsibility

The role of tour operators in climate change mitigation can be contemplated in the broader context of "Corporate Social Responsibility" (CSR). The concept of CSR refers to the integration, on a voluntary basis, of social and environmental concerns into operations of companies and into the interaction with their stakeholders. The concept gained popularity in the past 20 years owing to the perception that steadily growing economic clout of big companies creates special social responsibilities for them. Under this concept, the traditional function of an enterprise to create value for society by producing goods, providing services and creating jobs is extended to include the responsibility to manage its operations in such a way that it does not strain environmental and social resources. The role of CSR has been increasingly considered on the political level, e.g. by the European Union *(cf. European Commission, 2002, pp. 5–6)*. The growing importance of CSR is also reflected in Kotler's "Societal Marketing Concept" that enhances long-term consumer welfare by balancing aspects of profitability, customer satisfaction and public interests *(Kotler, 2000, p. 25)*. International networks like the "Global Reporting Initiative" (GRI) or "AccountAbility" seek to establish measurement frameworks that allow integrating CSR aspects into the strategic planning of businesses *(cf. http://www.globalreporting.org; http://www.accountability21.net)*.

Weaver *(2006, p. 61)* finds that even though there is evidence that ethical decision-making as enhanced by the concept of CSR gains popularity in business practices, the prevalence of this behaviour is debatable. As the concept of CSR strongly builds upon ethical precepts that are often difficult to define unambiguously, there remains latitude for individual interpretation. For instance transnational entities may find that societal perceptions of proper behaviour vary from one country to another, or may apply different criteria and priorities when it comes to balancing economic, societal and environmental aspects against one another ("weak" or "strong" interpretation of sustainability).

Weaver *(ibid.)* argues that the tourism industry is similarly conflicted by such mixed ethical imperatives. He summarizes research literature that deals with CSR implications of the mainstream tour operating industry, relating to the 1990's, as follows:

> "[The] literature, in general, is highly critical of tour operators. The sector is described as an oligarchy dominated by a small number of large transnational corporations that use their clout to negotiate the lowest possible prices from […] suppliers. Revenues for destination-based businesses as a result are reduced, forcing cost cuts that may translate into inadequate wages for local employees, neglect of the environment and other sustainability-related problems. Even if they are inclined to identify or rectify these problems, outbound tour operators cannot easily act on these inclinations because of the spatial and functional disconnect between their own operations and the destination […]. The inclination to act responsibly, however, is constrained by exceedingly low profit margins […] which encourages a high volume of customer turnover and relegates sustainability to a luxury that they cannot afford to pursue in the short term. […] The fact, moreover, that they are distinguished mainly by price differentials induces even more cost cutting." *(id., pp. 76–77)*

Weaver adds, however, that despite this bleak estimation by research literature there are some segments of the mainstream tour operating industry that have started to take CSR serious. Since the late 1990s, some big operators have incorporated CSR criteria into their operative and strategic planning, considering sustainability as a core component of product quality and a basis for long-term survival. Further, Weaver finds that, due to a rapid diffusion of sustainable tourism developments in recent years, sentiments from the 1990s may no longer be entirely indicative of the sector. In this context he relates to examples like the VISIT scheme, aiming at establishing standards for eco-labelling, or the "Tour Operators Initiative for Sustainable Tourism Development" (TOI, *id., 77–78)*. The latter is a joint collaboration of four big and some medium-sized tour operators, supported by UNWTO, UNESCO and UNEP, for advancing coordinated CSR activities in the sector. Together with the Global Reporting Initiative (GRI), TOI has developed a sector supplement to the "Sustainability Reporting Guidelines 2002", containing measurable CSR performance indicators for tour operators *(cf. http://www.toinitiative.org)*.

The commitment of leading European tour operators to CSR varies considerably in terms of organizational incorporation and activities pursued. Even though it is difficult to externally assess the full scope of CSR measures taken by the big European operators, some basic information is provided as part of the assessment of mitigation activities in section 3.3. The number of full-time staff working in individual CSR departments of these operators, as indicated on their websites, ranges from one to four persons. Considering the total number of employees, affiliated companies and yearly turnover produced (cf. 2.3) the resources allocated to CSR appear rather low. Some operators are still in an early stage when it comes to tackling their sustainability responsibilities *(Minninger, 2007)*. Generally, more progress has been made with regard to environmental rather than social issues *(ibid.)*. This could be due to the fact, inter alia, that environmental considerations have been a topic in tourism for much longer than social aspects, as reflected in a shift of general terminology from "soft tourism" to "sustainable tourism" *(Dietsch, 2007)*.

Nowadays, tour operators understand that protecting the environment in the long run protects their product which is dependent on natural resources.

Climate change mitigation belongs categorically to the environmental aspect of CSR. However, due to its global character and expected far-ranging consequences, mitigation also forms part of social considerations. It is difficult to separate mitigation from some other CSR activities of tour operators *(Vereczi, 2008; Müseler, 2008)*. Endeavours to reduce energy consumption of hotels or to improve fuel efficiency of affiliated airlines have been under way for many years, though they tended to be motivated by cost saving, conservation of local resources or reduction of pollution. These activities also constituted climate change mitigation, even if they were not always formulated explicitly as such. Even though there did not really emerge a new need for action, new tasks for tour operators come with the increased public attention to climate change *(Müseler, 2008)*. As a result, CSR measures might in future be expressed more explicitly with respect to this aspect.

In the tourism sector the question arises to what extent the different players along the tourism value chain bear responsibility for becoming active in mitigation. The strong influencing power of tour operators on both suppliers and customers suggests that they need to play a key role here. Generally, tourism stakeholders do affirm major responsibility of the operating industry for advancing climate change mitigation. It would, thus, be the task of tour operators to identify those areas where travelling can be organized in a more environmentally friendly way and to actively initiate related incentives *(Dietsch, 2007)*. However, the responsibility to mitigate lies with every player along the tourism value chain *(Ashton, 2008)*. Some representatives of big European tour operators also refer to the fact that their product quality, including environmental quality, depends on what their suppliers deliver to them *(Müseler, 2008)*. Hence, they perceive themselves in a certain sense as "facilitators" *(ibid.)* and "multipliers" *(Hess, 2007)* in a sector-wide climate response process. They see their role as signalling to their partners that it is in their interest and in the interest of their customers, to make available a product of high quality which is at the same time as environmentally friendly as possible. Some representatives of tour operators find that such endeavours should happen in the background and should not be visible to the end consumers, so that they can enjoy untroubled holidays *(Müseler, 2008)*.

The role of tour operators in mitigation is limited by the preparedness of the customer to support relevant measures. Given a fierce competition among operators – due to the fact that today tourists are well-informed and less loyal to brands, rather tending to compare and select the most convenient product in terms of price and quality – there are limits to their capability of individually putting forward mitigation measures *(Peeters, 2007; Sonderegger, 2007)*. Related to this is a significant responsibility of tour operators to raise the issue with the customer through different education measures *(Ashton, 2008)*.

3.2   Digression: Consumer Implications of Mitigation

The potential of tour operators for becoming active in mitigation is strongly interconnected with the preparedness of consumers to support respective measures. This digression looks at related implications, while identifying a considerable gap between consumers' expressed willingness to support mitigation initiatives and the real action they eventually undertake.

3.2.1   Consumers' Perception of Climate Change

A quantitative survey conducted by AccountAbility *(2007, p. 9)* found that climate change has become a mainstream consumer issue:

> "Consumers in the US and UK are strongly concerned about global warming […] 66 % of consumers in the US and UK agreed that everyone needs to take responsibility for their personal contribution to global warming." *(ibid.)*

It is estimated that also tourism consumers today have become fairly aware of the fact that travelling is a contributor to climate change. This is believed to be due to the broad international public discussion on aviation's climate impacts during the year 2007, as well as claims of several European politicians for limiting long-haul journeys as an immediate GHG reduction measure *(Balatka, 2007)*. According to Minninger *(2007)*, the tourism consumer today broadly understands that something has to be done in order to minimize the sector's climate impact.

When it comes to knowledge about climate impacts of different transport modes, Sonderegger *(2007)* finds that the train is generally perceived as an environmentally friendly carrier by the Swiss. In contrast, cars and airplanes have the image of environmentally harmful means of transport. However, exact relations between climate-relevant impacts are widely unknown to the public. Sonderegger *(ibid.)* believes that such a rough estimate can be applied to most other countries, whereas it would be difficult to put dimensions into exact figures. Increased public awareness of climate impacts from transport is reflected in a number of recent public opinion polls that were carried out in different countries *(UNWTO, 2007a, p. 13)*. For example, a survey by the UK Department for Transport finds that respondents increasingly focus on air travel when asked about the most harmful transport modes for climate. 40 % stated aeroplanes and 51 % stated road transport in the year 2007, as opposed to 35 % and 60 % in 2006 *(DFT, 2007, p. 1)*.

The German Institute for Socio-Ecological Research (ISOE) provides some empirical insights into tourists' general preparedness to support environmentally friendly travel behaviour. Based on a representative survey, it distinguishes seven types of tourism consumers that bear different characteristics with regard to their receptiveness to environmental issues: "Traditionalists", "Family Holidaymakers", "Sun & Sea Vacationists", "Fun & Action Vacationists", "Explorers", "Culture Enthusiasts" as well as "Nature & Outdoor Travellers". The study found that the latter two groups express a significantly higher willingness to spend money for environmentally friendly travelling, whereas Traditionalists and Fun & Action Vacationists are least prepared to do so *(Schmied, Götz, 2004, p. 63)*. Full results are outlined in ***Figure 3.1.*** Mainstream tour operators predominantly serve tourism topologists that are less receptive to environmental arguments or incentives. In this regard, Balatka *(id.)* discerns a general perception among consumers that environmentally friendly modes of transport involve some kind of abandonment that would decrease overall holiday quality. Moreover, Peeters *(id.)* refers to research showing that people who increasingly use the train are not primarily driven by environmental motivations.

Figure 3.1: *"I am prepared to spend more money for environment-friendly travel" –*
Agreement rates in % by tourist groups in the German tourism transport market
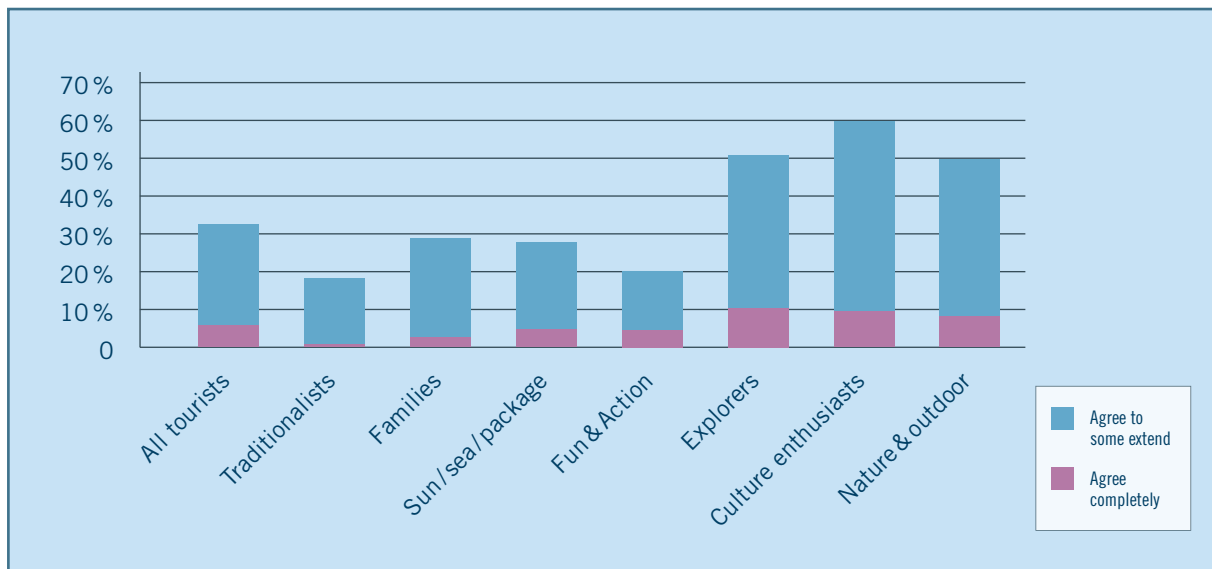
Source: Schmied, Götz, 2004, p. 63

At the moment, experts find it difficult to estimate the future development of customer perception of climate change. It is believed, however, that the overall climate consciousness is likely to increase over the next couple of years *(Ashton, 2008; Dubois 2007; Minninger, 2007; Peeters, 2007)*. Attention is drawn to the possibility that climate change could in future be replaced in the media by some other global issue, just as it replaced terrorism in 2007 *(Peeters, 2007)*. On the other hand, it is likely that climate change remains persistently in the media, due to increasing extreme weather events and its long-term effects, which ultimately will lead to increased public perception *(Minninger, 2007)*. It is further believed that public consciousness of climate change will be largely determined by the way in which people get personally affected by it in future. In cases where negative impacts are visible and affect individual persons in a major way, the willingness and flexibility to change things might be very high *(Balatka, 2007)*.

3.2.2   The Consumers' Mitigation Response

There is a remarkable consensus among experts that the aforementioned consumer awareness of climate change does not translate into any significant demand for low-carbon products or into adequate uptake of such products when offered without explicit request. Reference is made to several empirical studies that provide evidence of a considerable gap between the number of customers expressing their preparedness to pay more money for environmentally friendly products and those putting this claim into practice *(Ashton, 2008; Dietsch, 2007; Peeters, 2007)*. This is supported by a key finding from the AccountAbility survey:

> "When looking at actual consumer behaviour, it is clear that actions have yet to catch up with the level of concern." *(AccountAbility, 2007, p. 9)*

Thus there is as yet little active customer demand for either designated lowcarbon products or sustainable products in general.

> "I think Switzerland is one of the most progressive and conscious countries [in regard of environmental issues]. Nevertheless, demand for low carbon products is very small. […] Considering how strong climate change has become a public topic, I find it quite astonishing that demand is still that low." *(Borsani, 2007)*

There also seems to be small preparedness among consumers to accept low-carbon products when they are offered without being explicitly requested. First practical experience with offset schemes of mainstream operators shows that customer uptake is as yet marginal *(Ashton, 2008; Borsani, 2007; Hess, 2007):*

> "Actually the main reason why we introduced a flat 1 pound climate contribution instead of a full offset scheme was […] that we knew that a full scheme would get only a very tiny percentage of uptakes. We had this experience in one of our more specialised companies that offered a full offset scheme. […] We did a survey among our customers recently, and 90% said that they would pay between 10 and 100 pounds to help the environment. But reality is different. […] Prior to the offset scheme we were asking all our customers to contribute with 40 pence per person to a charity for sustainable tourism, and 65% of customers were opting to pay it. Now we are asking our customers to pay 1.50 pounds, where one pound goes to Climate Care and 50 pence to our charity. The number of people who opt to pay is only half than before. So the difference of one pound makes half the people decide not to contribute any more. If we were to offer a full offset scheme we know that the uptake would be fairly minimal, and so we can have the most impact doing it this way." *(Ashton, 2008)*

Minninger *(2007)* affirms that despite considerable increase in sales of atmosfair certificates, they are largely purchased by a very distinct clientele of niche operators. She is also convinced that mainstream tourism consumers are still unwilling to seek information on how climate impact on tourism could be reduced. Therefore, the ways in which offsets are offered to the mainstream consumer and how they are embedded in the booking process are of major importance.

Balatka *(2007)* assumes that the majority of consumers attribute responsibility to politicians and businesses for finding an effective response to climate change. She finds that the basic attitude among consumers is not feeling obliged to make an effort towards mitigation. Consumers rather expect that products are pre-designed in such a way that they will not harm the society. For this reason, most mainstream tourism consumers do not look critically at environmental effects of the products they purchase. She puts this into the larger context of behavioural psychology:

> "I think the core of the problem is the human being itself with its bias towards convenience. As long as I don't look at a problem, it is also not there." *(Balatka, 2007)*

This is supported by AccountAbility (*2007, p. 9),* which identifies a large proportion of people that do not feel motivated or empowered to take action with regard to climate change. It finds further that consumers want more information from businesses about how they are addressing the climate impacts of their products, but eventually they tend not to trust such information. They rather trust scientists, environmental groups, family and friends *(ibid.).*

Moreover, there is a difference in environment-relevant behaviour between people's every-day life and their holidays *(Balatka, 2007; Dubois, 2007; Sonderegger, 2007),* in that people are less willing to make an effort during the latter *(Dubois, 2007; Schmied, Götz, 2004, p. 56).* Thus, a change of holiday patterns is one of the last items on a list of consumer products people are prepared to forego in favour of the environment *(Dubois, 2007).*

The rather complex customer attitude towards the research problem can be simplified by drawing on the following statement:

> "The number of people acknowledging that tourism might have an impact on climate change is much larger than the number of people understanding how the problem sticks together and how something can be done about it. Here consciousness is rather low. So there are actually two gaps: one between knowing about the issue and understanding it, the other between understanding the issue and acting on it." *(Peeters, 2007)*

3.2.3   A Gap between Cognition and Action on Climate Change

The identified gap between cognition and action with regard to climate change can be explained by drawing on environmental psychology. As various investigations show, this gap can be observed for environmental issues in general *(Müller, 2003, p. 48).* It is believed that environmental consciousness only plays a subordinate role in triggering action. On the contrary, empirical research found has that four other factors have direct effects on environmental action, though with different magnitudes of importance in individual cases *(id., p. 52)*:

- the personal attitude towards the required environmental action;

- pressure from the close social environment of the person (parents, partner, friends etc.);

- perception of feasibility or difficulty of the required environmental action;

- past personal experiences with the required environmental action.

The findings above support the "low-cost hypothesis", which assumes that the positive effect of environmental consciousness on action decreases with increasing cost for becoming active. Such costs can be money, prestige, time or personal comfort *(id., p. 54).* Conservation psychology further draws on the "public goods problem", assuming that the environment is seen as a public good that does not dome under property law. Individual decisions that are mostly based on economic rationality lead to an overexploitation of such public resources *(id., p. 55).* Despite its limited influence on action, environmental consciousness remains an important factor. On the one hand, it increases public acceptance of regulatory measures, and on the other hand, it is a prerequisite for "low-cost" decision making *(ibid.).*

In contrast to the above discussed coherences between cognition, consciousness and action, the thesis of "cognitive dissonance" gives insights into how environmental consciousness and action develop over time. The theory refers to a perception gap between actual state and ideal state. This leads to inner tensions in individuals, which can be reduced through three different mechanisms *(id, p. 56)*:

- **Distortion of perception:** the actual state is perceived distorted in order to align it with the ideal state.

- **Adjustment of attitude:** the person changes its attitudes for conforming the ideal state to the actual state.

- **Adjustment of action:** the person changes its behaviour for conforming the actual state to the ideal state.

In terms of environmental protection, only the adjustment of action leads to real problem solution *(ibid.)*.

3.3 Comparison of Publicly Communicated Mitigation Activities

In this chapter, mitigation activities undertaken by the biggest European tour operators, as ranked by the European Commission *(2004, pp. 35–36)*, are compared. Such activities include measures that are either communicated actively by them or that are evident from their business and CSR strategies. It needs to be noted that information available for conducting the assessment varies significantly for individual operators. Despite the recent merger of TUI and First Choice, these operators are evaluated independently as they have not yet synchronized their organizational structures.

The following criteria were used for the evaluation:

- Membership of Tour Operator's Initiative (TOI);

- General CSR commitment (institutionalization and CSR reporting);

- Explicit action measures on climate change;

- GHG reporting (e.g. under Carbon Disclosure Project);

- Integration of carbon offset services.

3.3.1 TUI AG

TUI is a member of TOI (under TUI Travel Plc), maintains a centralised department for corporate sustainable development and publishes performance reports on a regular basis. Since 2002, the group has developed an extensive reporting system that seeks to incorporate environmental and social aspects into the strategic business planning by means of key performance indicators (KPI's). TUI AG claims to be the single tourism company worldwide included in the Dow Jones Sustainability Index and is also represented in FTSE4Good, ASPI Eurozone, Ethibel Pioneer Index as well as ECPI Ethical Index *(cf. TUI 2007, pp. 6–10)*. TUI as the European market leader seems to attract special public attention when it comes to sustainability issues.

The group has specified around 200 environmental targets for the period 2007–2010 that are divided into the following categories: communications, natural resource savings, climate change, certification and environmental management, biodiversity protection, supply chain management, waste avoidance and process improvement. The category of climate change constitutes 13 % of the total number of environmental targets, whereas some activities in other areas also contribute to mitigation *(id., p. 46)*. The group is capable of providing quantitative data on their GHG emissions. TUI's key mitigation approach is to increase specific energy efficiency by "[…] continuously modernising the aircraft fleets of each TUI airline with state-of-the-art technology" *(id., p. 54)*. The group's long term mitigation objective is to "[…] break the link between CO_2 emissions and the company's economic growth, and to endeavour to stabilise absolute greenhouse gas emissions at today's level." (*id., p. 56)* To achieve that, it sets out the following key measures *(ibid.)*:

- increasing airline fuel efficiency through a fleet renewal programme and use of wide-body jets;

- optimisation of aviation processes and procedures by harmonising and simplifying air traffic management, cooperating with fuel suppliers and introducing new technologies;

- expanding use of renewable energy sources in hotels, resorts and office buildings, and using biofuels in bus fleets at destinations.

TUI affirms that still "[…] too little attention is given to the all-important aspect of sustainable consumption behaviour." However, it would be impossible to predict the willingness of the consumer to limit its environmental impact through ethical buying behaviour. TUI claims to win over its consumers in this direction through sustainable product development *(id., p. 7)*. Although the group maintains a considerable number of related initiatives and projects, there is none that addresses explicitly the problem field of climate change and tourism transport *(cf. id., pp. 128–136)*. The group has responded to the fifth Carbon Disclosure Project (CDP) iteration request but declines permission to publicly access these data *(cf. http://www.cdproject.net)*. TUI's airline Thomsonfly takes part in the UK-based initiative "Sustainable Aviation", where aviation-related businesses collaborate for achieving significant GHG reductions in their sector within the next 15 years *(cf. http://www.sustainableaviation.co.uk)*. TUI has not yet integrated offset schemes into its distribution channels. However, it states that its UK subsidiary "Crystal" maintains a relevant pilot project *(cf. http://www.tui-roup.com/en/nachhaltigkeit/environment)*.

3.3.2   First Choice Holidays Plc

First Choice is member of TOI (under TUI Travel Plc), maintains a separate CSR department and has regularly published sustainability reports since 2005. It has established a reporting system in line with GRI and ISO standards, but has not applied for certification by the latter. The group's overall CSR strategy embraces four categories: customers, employees, destinations and local environment as well as responsible operations *(First Choice, 2006)*.

The latter category includes the aspect of climate change *(ibid.)*. First Choice has responded to the fifth CDP iteration request and permits access to these data. In the disclosure document, the group defines the following key measures to be undertaken in climate protection *(First Choice, 2007)*:

- operating at peak efficiency (e.g. introduction of Boeing 787 Dreamliner);

- investing in new technologies (e.g. biofuels);

- using renewable energy sources where possible;

- educating customers, staff and suppliers;

- offsetting through projects in renewable energy and carbon sequestration;

- measuring and publishing emissions across the group.

First choice provides quantitative data on emissions of its operations and has started creating baselines, targets and programmes of work that address climate change. The group has not integrated a full offset scheme in its distribution channels. However, it offers every customer the possibility to donate £ 1 on each flight to the offset provider "Climate Care". The group is planning to invest in a large scale carbon sequestration project of its own in the Amazon rain forest in Brazil. Further, First Choice Airways is a member of "Sustainable Aviation" *(ibid.)*.

3.3.3   Thomas Cook Group Plc

The Thomas Cook Group is not a member of TOI. With the merger between Thomas Cook AG and My Travel in the year 2007, the group has established its own CSR department and published its first sustainability report in the year 2008. The group has not yet set up a sustainable tourism policy or an environmental management system, but has set the target to achieve this by the end of 2008 *(cf. http://csr.thomascookgroup.co.uk).* Before the merger, CSR issues of Thomas Cook AG were handled by its PR department.

The group has not responded to the fifth CDP iteration request and does not indicate that it is going to maintain an emission reporting system. However, it has set the target to develop a carbon strategy for its airlines and to report on related CO_2 emissions in future reports for its UK subsidiaries. For its Northern Europe markets it set some environmental targets for 2008 that are also relevant to climate protection, even though not formulated explicitly as such *(cf. ibid.)*:

- reduce fuel consumption and emissions per passenger kilometre by 1%;

- certify its Sunwing resorts within EU with EU Flower and fully implement those criteria also in those outside the EU;

- increase environmental knowledge among staff and reduce energy consumption (of administration facilities) by 10%.

The group is engaged in the "Sustainable Aviation" initiative. Even though Thomas Cook's environmental commitments appear rather low in comparison to most of its competitors, they announce to be the first big operator to introduce a full carbon compensation scheme in the German outbound market, starting on 10 March 2008. This implies that Thomas Cook Germany plans to entirely incorporate the offset scheme of "atmosfair" into its distribution

channels, e. g. travel agencies or online booking portals *(http://www5.thomascook.info/tck/8028.htm)*. However, on 30 March 2008, no link to atmosfair and any integrated compensation service was yet to be found on the group's internet booking portal *(cf. http://www.thomascook.de)*.

3.3.4   Rewe Touristik GmbH

Rewe Touristik is a member of TOI. The group established a department for environmental and social aspects in 2001 and released a one-time activity report in 2005. The group has incorporated sustainability guidelines into the operations of its sub-brands. Related activities seem to be implemented on a project basis with the focus on destinations *(cf. Rewe Touristik, 2005). T*he environmental aspect of the guidelines is not differentiated into key categories, but rather addressed by generic definitions that should lead to a holistic concept *(Müseler, 2008)*.

Rewe Touristik has set up environmental protection measures that contribute, among others, to climate change mitigation. However, the group has not taken a range of particular actions that explicitly aim at this aspect *(ibid.)*. The following mitigation activities can be identified *(Rewe Touristik, 2007; Müseler, 2008)*:

- issuing a special information brochure on climate change and tourism, providing customers with a theoretical background to that issue;

- collaborating with the German Travel Association (DRV) in checking partner airlines as to their environmental performance;

- issuing information brochures to assist hotel managers in implementing environmental protection measures:

- conducting environmental checks in its own hospitality facilities.

Rewe was not requested by CDP to take part in its fifth iteration. The group has not set up measurable targets for climate change mitigation *(Müseler, 2008)*, nor is there any evidence of an existing GHG reporting system *(cf. Rewe Touristik, 2005)*. Rewe does not communicate being involved in any carbon offset activity or related initiative.

3.3.5   Kuoni Travel Holding Ltd

Kuoni Travel Holding is a member of TOI. The group has set up a unit for Corporate Responsibility in 2006 and released its first CSR report in 2007. Kuoni has established a group-wide strategy that aims at the four main objectives of fighting child sex tourism, granting fair working conditions, ensuring clean water at destinations and tackling climate change. Further it has elaborated the Kuoni Codex, which constitutes a set of conduct guidelines for its employees and business partners *(cf. Kuoni, 2007a)*. Targets within the different categories of the CSR strategy have not yet been formulated in quantifiable terms *(Borsani, 2007)*.

Kuoni Travel Holding has responded to the fifth iteration request of Carbon Disclosure Project and permits access to these data. The following activities with regard to climate change are discernible *(Kuoni, 2007b; Borsani, 2007)*:

- several Kuoni country subsidiaries have initiated cooperation with offset schemes: Kuoni UK with "Climate Care", Kuoni Netherlands and Kuoni Scandinavia with "Green Seat", Kuoni Switzerland and Kuoni Austria with "myclimate" and Kuoni US with "Terrapass". The degree of integration of these offset providers into distribution channels and booking systems is not further specified:

- some Kuoni units offset their own operations emissions;

- Kuoni's US-based subsidy "AlliedTPro" has initiated a compensation project of its own in Indonesia that supports organic recycling facilities;

- planned projects in biotope protection seek to support destinations in climate change adaptation.

Kuoni does not consider other measures apart from the above stated activities in the fields of carbon compensation and adaptation. So far, the group has not set up a carbon reporting system and is not capable of providing quantitative data on its climate impact *(Kuoni, 2007b)*. Measurable targets for climate change mitigation are planned to be established as soon as first results from emission assessments are available *(Borsani, 2007)*.

3.3.6   Hotelplan AG

Hotelplan is a member of TOI and sees itself as a pioneer in environmental commitment of mainstream tour operators. It claims to have elaborated already in the early 1990s an environmental strategy as well as a reporting system, to which the last report was released in the year 2003 *(cf. http://www.hotelplan.ch)*. Today the group's sustainability strategy embraces the three main aspects of product ecology, sustainability information (internally and externally) as well as sustainable development of its own operations *(Hess, 2007)*.

Hotelplan has not set out a separate strategy on climate change. However, mitigation is addressed together with some key activities in environmental management. The most important are *(cf. http://www.hotelplan.ch)*:

- evaluating and labelling environmental performance of hotels through checklists;

- eco-balancing of products and travel packages;

- customer education as regards climate change through brochures.

Hotelplan has integrated the offset scheme of "myclimate" into its distribution channels *(cf. https://hotelplan. myclimate.org)*. The group was not requested by CDP to take part in its fifth iteration. It has not yet established concrete indicators for measuring carbon footprints of its product portfolio, but necessary data is currently collected and the already integrated climate calculator is being further upgraded. In future, this should allow staff and customers to consider emissions in the production process *(Hess, 2007)*.

3.3.7   Alltours Flugreisen GmbH

Alltours is not a member of TOI. The group does not maintain its own department for CSR, relevant issues are dealt with by the press department *(Minninger, 2007).* The aspect of sustainability is not addressed on the website, nor can any information on related activities be found *(cf. http://www.alltours.de).* No activities in response to climate change are communicated. In contrast to this, Alltour's CEO Willi Verhuven calls on the tourism industry to become active in climate protection and publicly demands price floors on aviation tickets not lower than € 100 *(http://www. spiegel.de/reise/aktuell/0,1518,470412,00.html).*

3.4   Assessing Mitigation in Online Communication Channels

The assessment of communicated activities and strategies of tour operators in the preceding chapter provides limited comparability of their overall mitigation response. Moreover, it does not allow for conclusions on how tour operators communicate the issue of climate change directly to the consumer, and neither on how they design their products with regard to the need for mitigation.

It was found that a systematic analysis of the operators' direct online communication and distribution channels can provide some relevant insights. ***Table 3.1*** outlines the results of an assessment of booking portals of the previously mentioned mainstream operators. The findings of this analysis are intended to provide a rough and generic picture of overall performance, and therefore the scale for assessment was kept simple (yes / partly / no). Even though online booking portals only generate a minor share of total bookings, it is presumed that the product portfolio displayed and the communication patterns on climate change observed, allow for generalized, though limited, inferences. For instance, it can be assumed that an operator actively addressing the topic of climate change or offering carbon offsetting on his booking portal, is also likely to do so in its own sales outlets.

Criteria for the assessment were based upon the findings presented in chapter 2. The assessment focuses on the categories "awareness building / education", "carbon offset" and "product design". The latter category is subdivided into short-haul products (considering modal shift as an appropriate response) and mid- to long-haul products (considering the ratio between length-of-stay and distance). Ratios were taken from the set of criteria used by the German association "Forum Anders Reisen". Travel packages used for assessment in the category "product design" had been examined using the main entry mask which appears on the start page and relates to conventional travel packages. Other product categories, such as hotel only, hotel and flight, dynamic packaging, city breaks or family weekends are not considered. However, some of these categories were used as reference, when no short-haul packages could be found via the main entry mask.

Table 3.1:   Systematic evaluation of mainstream tour operators' direct online communication and distribution channels

Tour Operator (Group)	TUI AG	First Choice	Thomas Cook	REWE	Alltours	Kuoni	Hotelplan
Country	Germany	UK	Germany	Germany	Germany	Switzerland	Switzerland
Access Date	2/10/2008	3/14/2008	3/30/2008	3/19/2008	3/22/2008	3/22/2008	2/13/2008
Booking Portal	www.tui.com/de	www.firstchoice.co.uk	www.thomascook.de	www.its.de d1	www.alltours.de	www.kuoni.ch	www.hotelplan.ch
Awareness Building / Education							
Topic of climate change adressed generally on the group's environmental website (or section)	YES[a1]	YES[b1]	YES[c1]	YES[d2]	N/A[e1]	YES[f1]	YES[g1]
Tourism's contribution to climate change explained accurately on environmental website	YES[a2]	NO	NO	PARTLY[d3]	N/A	NO	PARTLY[g2]
Environmental/climate impacts of different transport modes explained accurately on environmental website	YES	NO	NO	PARTLY[d4]	N/A	NO	YES
Topic of climate change adressed generally on booking portal	NO	NO	NO	NO	NO	PARTLY[f1]	YES[g3]
General education/guidelines on carbon efficient holiday behaviour provided on booking portal	NO	NO	NO	NO	NO	NO	PARTLY[g4]
Carbon footprint of individual travel packages disclosed during booking procedure	NO	NO	NO	NO	NO	PARTLY[f2]	NO
Carbon Offset (via booking portal)							
Possibility of carbon offsetting adressed and/or suggested in general	NO	NO	NO[c2]	NO	NO	YES	YES
Backrounds on offsetting (e. g. calculation of emissions, quality criteria etc.) explained	NO	NO	NO	NO	NO	PARTLY[f3]	YES
Reference made to any offset provider(s)	NO	NO	NO	NO	NO	YES	YES
Offset prices for tourism services (entire travel package, air transport etc.) provided	NO	NO	NO	NO	NO	YES	YES[g5]
Carbon offsets can be purchased in the booking process on an opt-in/out basis	NO	PARTLY[b2]	NO	NO	NO	YES[f2]	PARTLY[g6]
Offset included as an integrated component of travel package (not possible to drop)	NO	NO	NO	NO	NO	NO	NO
Company maintains own project or initiative related to offsetting or sequestration	NO	YES[b3]	NO	NO	NO	NO	NO

Source: own investigation

Tour Operator (Group)	TUI AG	First Choice	Thomas Cook	REWE	Alltours	Kuoni	Hotelplan
Country	Germany	UK	Germany	Germany	Germany	Switzerland	Switzerland
Access Date	2/10/2008	3/14/2008	3/30/2008	3/19/2008	3/22/2008	3/22/2008	2/13/2008
Booking Portal	www.tui.com/de	www.firstchoice.co.uk	www.thomascook.de	www.its.de d1	www.alltours.de	www.kuoni.ch	www.hotelplan.ch
Product Design – Short Haul (Modal Shift)							
Selected Travel Package (<700 km)	Köln to Memmingen[a3]	N/A[b4]	Köln to Munich[c3]	[Germany] to Paris[d5]	N/A[e2]	[Switzer-land] to Salzburg[f4]	Zürich to Munich[g7]
Transport elements detached from travel package	NO	N/A	NO	YES	N/A	YES[f5]	NO
Air transport not included by default (with or without opt-out)	NO	N/A	NO	YES	N/A	YES	NO
Different alternatives on transport modes provided	NO	N/A	NO	NO	N/A	NO[f6]	NO
Incentives on coach or rail transport provided	PARTLY[a4]	N/A	NO	NO	PARTLY[e3]	NO	NO
Option of air transport explicitly excluded	NO	N/A	NO	YES	N/A	NO	NO
Product Design – Mid and Long Haul (Ratio between Lenght-of-Stay and Distance)							
Selected Travel Package (700 – 2000 km)	Köln to Valencia[a3]	London to Grenoble[b5]	Köln to Barcelona[c3]	Munich to Split[d6]	Munich to Ibiza[e4]	Zürich to Olbia[f7]	Zürich to Barcelona[g7]
Offered lenght-of-stay at least 7 days	NO	YES[b6]	NO	YES[d7]	NO	NO	NO
Selected Travel Package (2000 > km)	Düsseldorf to Dominican R.	London to Dominican R.	Frankfurt to Dominican R.	Düsseldorf to Dominican R.	Düsseldorf to Dominican R.	Zürich to Dominican R.	Zürich to Dominican R.
Offered lenght-of-stay at least 14 days	NO	NO	NO	NO	NO	NO	NO
Creation of Special Product Categories							
Any designated low carbon tourism products / services offered	NO	NO	NO	NO	NO	PARTLY[f8]	NO
Product Promotion							
Avoids advertisment that suggests / supports carbon intensive travel behaviour	NO	NO	NO	PARTLY	NO	NO	NO
Types of transport services that can be booked on portal							
Possibility to book flight only	•	•	•	•	•	•	•
Possibility to book rental car only	•	•	•	-	-	•	•
Possibility to book train only	-	-	-	-	-	-	-
Coach travel products (packages or transport only)	-	-	-	-	-	-	-

Source: own investigation

a1) http://www.tui-group.com/de/nachhaltigkeit/umwelt

a2) Link to Davos Declaration, discussion long-haul journeys

a3) Entry mask „Suchen, Buchen, Starten"

a4) Rail&Fly

b1) http://www.fcenvironmentandpeople.com/fcenviro

b2) 1 Pound voluntary contribution included in World Care Fund donated to MyClimate on an opt-out basis

b3) Rainforest protection project

b4) No destinations below 700 km from UK offered

b5) Taken from product category ‚Ski Holidays'

b6) Default packages of 7 days (or multiple thereof)

c1) http://csr.thomascookgroup.co.uk

c2) announced cooperation with atmosfair from 10 March 2008, but no reference can be found on portal and during booking process

c3) Entry mask „Pauschalreise"

d1) Three different booking portals: www.its.de; www.jahnreisen.de; www.tjaereborg.de; results
     (carbon offset, modal split, ration length of stay) are congruent on all three portals

d2) http://www.rewe-touristik.com/offen/umwelt-soziales/index.php

d3) adressed, but no exact figures on tourism's climate impact provided

d4) Explained, but not accurately. Only aviation treated in downloadable pdf. communicates that aviation contributes to 1,6 % to global
     GHG emissions (no source provided)

d5) No short-haul destinations available in main entry mask (‚Pauschalreisen') Selected Specials-City Breaks-Paris, no transport services included

d6) Entry mask „Pauschalreisen"

d7) Default packages of 7 days (or multiple thereof)

e1) Does not maintain environmental website

e2) No destinations below 700 km from Germany offered

e3) Rail&Fly

e4) Entry mask „Pauschalreisen"

f1) http://www.kuoni-group.com/Corporate+Responsibility
     >>> Climate change adressed on separate site in partnership with myclimate https://kuoni.myclimate.org

f2) Pop-up redirects (upon klick) to https://kuoni.myclimate.org where carbon footprint of flight components are provided

f3) Not explained accurately

f4) No short haul destinations available in main entry mask; Short haul city trips displayed, but can not be booked online

f5) Concluded from default fields in online request form (City Trips-Austria-Salzburg)

f6) Only flight or car can be selected in query form

f7) Entry mask „Ferien-Angebote"

f8) Product Category for Environmentally Friendly Holidays („Umweltbewusste Ferien") – only refers to hotels,
     climate change aspect not explicitly adressed, but presumably more energy efficient buildings

g1) http://www.hotelplan.ch/Reisen/Reiseinfos/Services/Nachhaltigkeit

g2) Adressed, but no exact figures provided

g3) Integrated link to https://hotelplan.myclimate.org/DE

g4) Recommendation given to fly less

g5) Intergrated emission calculator from MyClimate on https://hotelplan.myclimate.org/DE

g6) Link to emission calculator is detached from booking process

g7) Entry mask „Ferien aus dem Katalog"

The following key findings can be derived from the assessment (in total seven tour operators were assessed):

- All operators provide the service to individually book flights on their booking portals, but none provides the service to book rail or coach individually. If train is offered, it is offered only in combination with flight tickets for accessing airports ("Rail & Fly").

- All operators address the topic of climate change generically on their environmental websites (one does not maintain a separate section). However, only few provide accurate information on tourism's overall climate impacts and/or on the climate impacts of different transport modes.

- Only one operator addresses the topic of climate change on the online booking portal, another one does so partly by providing a link to an offset provider without further explanation. Thus, no tour operator provides guidelines on climate-friendly travel behaviour on the online booking platform.

- Merely two operators integrated full offset schemes into the online booking process, another one provides the option of donating a flat amount of one pound to a carbon compensation scheme.

- Only one operator discloses the carbon footprints of product components (flight only) during the online booking process.

- For short-haul travel packages (< 700 km), merely two operators detach the transport component from their travel packages and thus do not include flight as a default service. Two other operators do have any short-haul travel packages in their product offer.

- For travel distances between 700 and 2000 km, two operators offer a minimum stay of 7 days, which seems to be due to the standardized package length of one week (or a multiple thereof). For travel distances over 2000 km, no tour operator demands a minimum stay of 14 days.

- No operator offers any designated product category for climate friendly travelling.

3.5   Shortcomings of Operators in Mitigation

This section outlines the major mitigation shortcomings in the mainstream tour operating industry, which can be identified by summarizing the preceding chapters. Theoretic mitigation requirements, as elaborated in chapter 2, are put into context with the operators' current mitigation actions, which were previously discussed in this chapter.

When looking generically at the mainstream operators' communicated mitigation activities, it can be concluded that they have, so far, become active in the following areas:

- increasing energy efficiency of affiliated accommodation facilities;

- improving fuel efficiency of affiliated airline fleets;

- enhancing air routing management to reduce fuel consumption;

- collaborating with carbon offset schemes (partly).

When putting these measures in relation to sector growth forecasts and magnitudes of mitigation potential as described in chapter 2.3.2, they appear insufficient. More precisely, the following main shortcomings of mainstream tour operators in advancing climate change mitigation can be drawn from the comparison:

- The operators' communicated mitigation activities hardly relate to product design, alternative transport technologies, modal shift, mobility management or change of travel patterns through incentives or stakeholder education.

- Most operators have not established a designated strategy on climate change mitigation. Those claiming to have done so (TUI and First Choice), lack targets that result in considerable emission reductions. Considering current scientific knowledge of tourism's impact on climate change, overall quantitative objectives for emission reductions do not appear ambitious.

- Full and transparent data on corporate carbon emissions by operators are only scarcely provided. Only one operator (First Choice) publicly discloses GHG emissions in accordance with the Kyoto reporting terminology via Carbon Disclosure Project.

- In many cases, corporate business strategies aim at long-term growth and at enhancing long-haul segments *(cf. First Choice, 2007, p. 9).* Such policies are in stark contrast to mitigation endeavours and are likely to outweigh emission reductions from energy and fuel efficiency. Strategies that aim to stabilize absolute GHG emissions at today's levels *(cf. TUI, 2007, pp. 55–56)* will eventually not lead to required reductions (cf. 2.1.2) and are therefore insufficient. Against this background it also seems unrealistic that long-term "sustainable growth", as aspired to by TUI, will be achieved *(cf. Iwand, 2007).*

- Customer education in climate change is largely undertaken on the operators' environmental websites and/or through special brochures. Only a few tour operators provide relevant information on e-booking portals (or in their travel catalogues; personal observation by the author). It can be assumed that only a small fraction of customers, those who are actively searching for information, can be reached.

- Only a limited number of operators are cooperating with carbon offset schemes, and most of these collaborations have not yet resulted in the full integration of compensation services into the booking processes. Offsets are not yet offered to the same extent as other ancillary services, such as travel insurances or rental cars; they must rather be purchased via pop-up windows or links that are detached from the booking procedure.

- When transport elements are included in travel packages, there is an unambiguous bias towards air. All operators have fully integrated the retail of air transport services in their booking portals, which is included by default in many conventional travel packages. It seems to be the standard mode of transport also for short and mid-haul distance packages. This is supported by the observation that the entry "Starting Airport" field is a key component of almost every online travel search function. Whereas every operator provides the online service for booking flights only, none offers this kind of service for train or coach. Moreover, travel packages with integrated train or coach elements are scarcely offered by mainstream operators.

3.6   Cases of Good Practice

In contrast to mainstream operators, some niche operators have a more favourable framework for designing environmentally and socially compliant products. These niche operators, targeting consumers that are prepared to pay more money for such products, can be referred to as best-practice examples in climate change mitigation:

- The German Association **Forum Anders Reisen** is a collaboration platform for small and medium sized tour operators specializing in socially and environmentally responsible tourism products. Member companies have to meet a set of stringent sustainability standards that are regularly audited by external bodies. With regard to climate impacts from origin-destination transport, the members have to comply with criteria that specify concrete measures to be undertaken in customer education, modal split, advertising, price incentives, emission data disclosure, carbon compensation as well as ratios between length-of-stay and travel distance. As for the latter, member companies must not offer flights for distances of less than 700 km, and trips that include flights up to 2000 km need to have a minimum length of stay of 8 days and / or 14 days for all trips undertaken above this threshold. An excerpt from all relevant origin-destination transport criteria is provided in **Table 3.2** *(cf. http:// forumandersreisen.de).*

- In 2004, the medium-sized German study travel specialist **Studiosus** has been awarded the fist prize in a business contest of the "European Expert Conference on Environmentally Friendly Travelling" in Vienna. The company was found to be a trendsetter in creating many incentives for sustainable tourism, pursuing comprehensive environmental management, promoting public transport and raising awareness *(BMLFUW, 2004, p. 76).* Studiosus was the first European tour operator to be certified under the European Union's Eco-Management and Audit Scheme (EMAS) and ISO 14001 in 1998. Since then, it has further advanced its environmental management system that was, moreover, awarded the seals of approval of ISO 9001 and EMAS II in 2004. To tackle the aspect of climate change, Studiosus requires its transport providers to disclose emission data and to set baselines, informs customers on carbon costs of packages in catalogues, collaborates with the offset provider "myclimate", incorporates public transport to airports in its retail prices ("Rail & Fly" and "Drive & Fly") and endeavours to save emissions through product design *(Dietsch, 2007; Studiosus, 2007, pp. 35–38).* As for the latter, there exist appropriate ratios between travel distance and length of stay *(cf. http://www.studiosus.com).* Further, the Vienna Expert Conference referred to its model project "CinqueTerre", where tourists arrive by train and use public transport on site to reach starting points for hiking round trips *(BMLFUW, 2004, p. 76).*

- **Treinreiswinkel** is a specialized tour operator in the Netherlands offering environmentally friendly train holidays. The company has increased its guests travelling by train in the first business year by 50 %. The company's vision is to convince non-train-travellers of the benefits of train travelling. As such, it offers its clients round trips that can be planned and booked according to individual needs *(Broschüre Environmentally Friendly Travelling, p. 77)*.

- The Austrian initiative **Die Reise mit dem Plus** is a network of travel agencies that are committed in promoting sustainable travel packages. As a core element of their mission statement, they are committed to devoting a considerable part of their product range to short-haul destinations, to enhancing a slow-tourism experience through train and coach and to assuring a balance between long-haul products and length-of-stay *(http://www. reisemitdemplus.at/2-0-ihr-plus.html)*.

Table 3.2:   ForumAndersReisen criteria for origin-destination transport (cxcerpt from total set of criteria)

1.1	Arrival and departure
1.1.1	**Ecological dimension**
1.1.1.1	Environmentally friendly means of transport to the destination (e. g. Bus, Train) will be used as much as possible and justified (travel time, quality of the connection, distance); in any case, preferably offered and described.
1.1.1.2	Alternative departure possibilities and diverse energy consumption of the respective means of transport will be indicated in the catalogue and on the homepage and / or the voucher (e. g. with key energy data). These criteria can also be met by a presentation of all present mobility means with their ecological effects, on an explicitly chosen place in the catalogue and on the homepage, on at least a quarter of the catalogue page or in the voucher on a separate reference sheet.
1.1.1.3	In the case of packages and trips with individual arrival (in those cases, the customer can determine the travel duration due to the program characteristic), the tour operator have to point out to the customer the ecological problems link to the choice of each means of transport for the departure and arrival trips (the problematic of flying, the climate problematic etc). This can also be ensured as the tour operator presents the ecological effects of the different means of transport; this presentation can be done on an explicitly chosen place in the catalogue and on the homepage, on at least a quarter of the catalogue page or in the voucher on a separate reference sheet.
1.1.1.4	If case the customer has the possibility to organise his own travel means (also during the arrival trip to the airport), this one should be clearly informed of the possible use of ÖPNV-offers and / or the most environmentally friendly travel possibility. This information can be presented on the catalogue and on the homepage or even on a separate reference sheet or appropriate space in the voucher. E. g. "Fairkehr" (Fair Traffic) Special booklet "Quick throughout Europe".
1.1.1.5	Special discounts in case of use of ÖPNV's as stimulating and rewarding tool (e. g. train ticket incl., supplementary cost for class 1)
1.1.1.6	The members of forum anders reisen are aware that flight trips contribute to a large extent to the pressure on the environment. That's the reason why holiday's duration, travel time and distances have to stand in a reasonable proportion.
	Following flight trips will not be offered:
1.1.1.7	Go and return flights within Germany without any appropriate oral explanation and advises given to the client regarding the ecological effects, without also any clear reference about it on the catalogue, on the homepage or on a separate information sheet, that are generally attached in case of customer inquiries.
1.1.1.8	Flights to a destination at less than 700 km far away
1.1.1.9	Flights over 700 km to 2000 km with a stay duration less than 8 days
1.1.1.10	Flights over 2000 km with a stay duration less than 14 days

1.1.2	Economical dimension
1.1.2.1	In the case of flight trips, a reference should be particularly made on the external environmental costs.
1.1.2.2	The member support the initiative ‚atmosfair' as much as possible and offer preferably during the travel advise consultation, flight booking with atmosfair service; explicit information on atmosfair are as well clearly marked on the voucher.

Source: http://forumandersreisen.de/downloads/Kriterienkatalog_en.pdf

Next to the above described niche tour operators, the German multi-stakeholder research project "INVENT" (Innovative Marketing Concepts for Sustainable Tourism Products), deserves mentioning as a case of best practice in the mainstream tourism sector. The project, which was coordinated by the German Institute for Social-Ecological Research (ISOE), developed target-group specific marketing strategies for designing environmentally friendly tourism products. The project addressed largely the problem field of origin-destination transport. The operators Ameropa and Rewe Touristik collaborated on two pilot projects that aimed to adapt their existing products in accordance with the distinct receptiveness of their customers to environmental arguments. The study concluded that tourism products can be rendered more sustainable by optimizing existing travel packages or by influencing destination choice, even for customer segments that attach little importance to environmental considerations *(cf. INVENT, 2005, pp. 31–33).*

3.7   Summary

The mainstream tour operators addressed in this assessment were TUI, First Choice, Thomas Cook, Rewe Touristik, Kuoni Travel, Hotelplan, and Alltours, which were evaluated as to their communicated mitigation activities and / or those mitigation activities that were recognizable from their business and CSR strategies. A systematic analysis of their direct online communication and distribution channels (environmental websites and booking portals) gave insight into how these operators communicate climate change directly to the consumer and how they adapt products to mitigation requirements.

Taking a generic view of the mitigation response, it can be concluded that mainstream operators were active in the following key areas:

• increasing energy efficiency of affiliated accommodation facilities;

• improving fuel efficiency of affiliated airline fleets;

• enhancing air routing management to reduce fuel consumption.

Moreover, the following mitigation activities can be identified for some of the assessed mainstream operators (in total 7 tour operators):

- educating customers generically in climate change via own retail offices, environmental sections of websites, special brochures, in-flight magazines or information sheets in hotels (6 tour operators);

- maintaining group specific environmental management systems that measure, to different extents, energy consumption of affiliated hotels and airlines (5 tour operators);

- publishing regular sustainability/CSR reports that include the aspect of climate change, however with considerable differences of scope (4 tour operators);

- supporting the "Sustainable Aviation" initiative, under which aviation-related businesses collaborate on achieving significant GHG reductions in the air transport industry for the next 15 years (3 tour operators, UK only);

- collaborating with carbon offset providers, either by offering a full compensation of flight emissions during the booking process (2 tour operators), or by donating a flat amount per customer on an opt-out basis (1 tour operator);

- disclosing general information on corporate carbon policies under the Carbon Disclosure Project (3 tour operators), and providing basic emission inventories in a comparable format within these reports (1 tour operator).

A full assessment of mitigation activities and policies was found to be difficult, as the information provided varied substantially from operator to operator. It was assumed, however, that tour operators which undertake certain measures will communicate them, as it is in their own interest. During the assessments it was also found that no clear distinction can be made between mitigation and other activities in environmental protection. For instance, measures that aim at conserving local resources at destinations will in turn contribute to climate change mitigation, even though not formulated and measured explicitly as such.

The above identified mitigation activities of mainstream operators were subsequently compared with the theoretical mitigation requirements and potentials listed in chapter 1, and findings were complemented by good practice examples from some selected niche tour operators. Considering the underlying substantial mitigation requirements, it was found that the response by mainstream operators is still insufficient and that the carbon reduction targets communicated are not ambitious. More precisely, the following key shortcomings can be formulated:

- Mainstream operators communicate hardly any mitigation activities that relate to product design, alternative transport technologies, modal shift, mobility management or change of travel patterns through incentives or extensive stakeholder education.

- Mainstream operators have not yet established any integrated corporate carbon strategy that foresees an absolute reduction of group-wide emissions and/or becoming "carbon neutral". Some operators communicate a set of quantified emission reduction targets, however, these relate largely to relative energy efficiency gains of some specific product components (e.g. improving aircraft emissions per pkm). Such operative efficiency gains are very likely to be outweighed by long-term growth strategies and business policies that aim at enhancing long-haul segments.

- Publicly accessible and transparent data on corporate GHG inventories and accomplishment of specific mitigation targets (such as requested by CDP) are provided to a very limited extend. Generally it is found that there are considerable differences in carbon accounting procedures among mainstream operators.

- With some few exceptions, customer education on climate change takes place through channels where customers have to actively search for information, such as special brochures or company websites. Direct distribution channels, like travel catalogues or online booking platforms, hardly address the issue, nor do they provide carbon footprints related to individual products. If information on climate change is provided, it is mostly kept very generic and does not contain accurate explanations on climate impacts from tourism transport or other components.

- When looking at transport components which can be purchased through mainstream operators, there is an unequivocal bias towards aviation. In most cases, air transport seems to be standard also for short and mid-haul distances. All operators have fully integrated the sales of air transport services into their booking systems, either as an integrated product component or to be additionally booked as part of the same process. In contrast, train or coach travel packages by are hardly to be found (in some cases, "rail & fly" incorporates train services for accessing hub airports), nor do operators offer such services to be booked individually.

- A minor share of mainstream operators maintains collaboration with carbon offset providers. In cases where compensation services are offered, they are not yet fully integrated in the online booking process (the physical booking process could not be evaluated). Unlike other ancillary services, such as rental cars or travel insurances, offsets have to be purchased via pop-up windows or links that are detached from the booking procedure.

In the assessment of overall environmental policies of mainstream operators it was found that their focus is usually on activities and projects at destination level. Thus, a multitude of existing eco labels or other initiatives operators become engaged in, are related to local accommodation or other destination-based facilities. The evaluation results provide no evidence of environmental strategies providing a global and holistic concept, incorporated and aligned with strategic business planning. Moreover, the number of full time staff employed in CSR departments by mainstream operators appears low, compared with the total number of employees or the yearly turnover. Thus, any mitigation activity will be considerably constrained by little available resources.

# 4 OPPORTUNITIES AND CHALLENGES FOR MITIGATION THROUGH TOUR OPERATORS

Research question: Which areas of action bear the biggest potentials for mainstream tour operators to advance mitigation on a voluntary basis, and which related obstacles need to be overcome?

Based on the shortcomings identified in chapter 3, this section seeks to detect mitigation opportunities for mainstream tour operators. The generic mitigation approaches for the tourism sector, as elaborated in chapter 2.3, are therefore associated with characteristics and functions of mainstream tour operators. Next to an identification of mitigation potentials through operators, this section also discusses challenges they face in implementing related measures in a free market environment.

Figure 4.1 provides a theoretical framework for climate change mitigation, which identifies close interaction between the four driving forces: consumer, business, government and civil society. The model considers the consumer as a decisive where interactions of the three other forces come together. This chapter places tour operators into the business sphere of this generic model, whereas the consumer sphere is contemplated from findings in section 3.2. When applying this generic model specifically to the tourism sector, the Davos Declaration can be drawn on as a basis, as it reflects the common denominator of the stakeholders involved (the four driving forces). With regard to the business sphere, the declaration calls for the following actions *(excerpt of key points; cf. UNWTO, 2007b, p. 3):*

- Take leadership in implementing concrete measures, such as incentives, in order to mitigate climate change throughout the tourism value chain. Establish targets and indicators to monitor progress.

- Promote and undertake investments in energy-efficiency tourism programmes and use of renewable energy resources, with the aim of reducing the carbon footprint of the entire tourism sector.

- Seek to achieve increasingly carbon free environments by diminishing pollution through design, operations and market responsive mechanisms.

- Implement climate-focused product diversification and foster all-season supply and demand.

- Raise awareness among customers and staff on climate change impacts and engage them in response processes.

Figure 4.1:   A framework for stakeholders in climate change mitigation
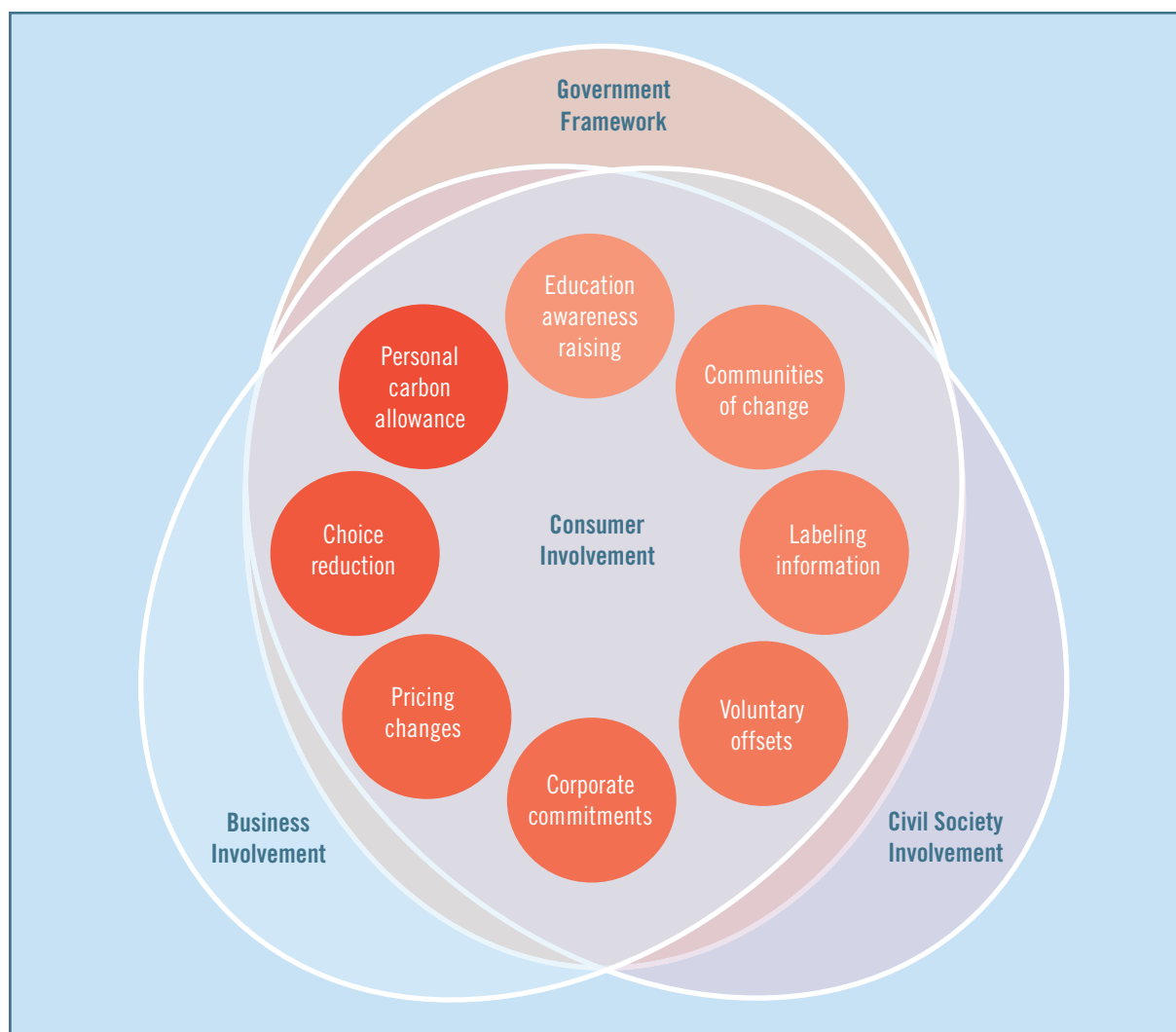
Source: AccountAbility, 2007, p. 37

The subsequent sections discuss mitigation measures for mainstream tour operators for different key categories: corporate carbon management, product design, certification and ecolabelling, education and awareness building, communication as well as sector-wide collaboration and policy involvement. As discussed, measures often overlap and these categories merely constitute a slack framework.

4.1 Corporate Carbon Management

In recent years, there have emerged various concepts of corporate carbon management that largely aim to make businesses "climate neutral". The fundamentals of carbon management foresee measures for avoiding or reducing carbon emissions from business operations and products. Even if successfully implementing such measures, some components of business operations will continue to produce emissions. For this reason, the concept of climate neutrality allows for compensation of residual emissions through verified offset projects, preferably within the framework of an international emission trading scheme (ETS). It is found that companies at the forefront of green guidelines set the implementation of measures relating to carbon avoidance and reduction as their priority *(ACTE, Dunton Tinnus, 3C, 2007, p. 11)*. As discussed in 2.3.3.5, this is considered a pivotal prerequisite for achieving "real" reductions, and not to bypass required structural changes through compensation mechanisms. The key success factor for achieving carbon neutrality is the company's ability to create, sustain and channel a common, corporate-wide environmental strategy based on a long-term view *(id., p. 9)*. Applying a holistic approach and assuring a strong role of top leaders is therefore of crucial importance *(id., p. 4)*. 2500 executive managers in over 50 countries, consulted in a survey conducted by the Association of Corporate Travel Executives (ACTE), unanimously agree that "[…] success is entirely dependent on the commitment and role model of a corporation's management" *(ibid.)*. The required strong role of top leaders is especially important for tackling inevitable change management processes, as they are the ones wielding the necessary reach and influence. A holistic approach to carbon management requires climate neutrality to be adopted as a guiding principle for the company's core business activities and processes *(id., p. 10)*. It follows that carbon neutrality not only needs to become a core component of CSR, but also of the entire strategic business planning.

For integrating CSR measures into overall business planning, it is considered important to make them tangible in quantitative terms. The approach of "value-based sustainability management" (VBSM) seeks to implement this through formulation of "key performance indicators" (KPIs). These add measurable environmental and social factors to conventional finance-oriented business management. Whereas it is often found difficult to translate social considerations into quantitative terms *(Borsani, 2007)*, "green" KPIs have widely led to satisfactory results in environmental management. Many environmental management systems maintained by big tour operators incorporate green KPIs such as energy consumption data or fuel usages, which also provide information on climate impacts. However, section 3.3 shows that KPIs for climate change mitigation have so far been used to a very limited extent, and do not consider other measures besides operating efficiency (e. g. share of transport systems used, ratio between distance and length-of-stay, etc.).

An important prerequisite for formulating explicit KPIs on climate change is knowing how corporate emissions are composed. Calculating the so-called "carbon inventory" is the first step leading up to all subsequent actions towards emission avoidance, reduction and compensation. Hence, the carbon inventory is considered an important tool for controlling emissions over time, which prepares for legal requirements within the EU Emission Trading System *(ACTE, Dunton Tinnus, 3C, id., p. 11)*. According to international regulations, the carbon inventory of any company is constituted by two main categories of emissions *(id, p. 12)*:

- **Direct emissions** relate to sources owned or activities controlled by the reporting company within its operational boundaries.

- **Indirect emissions** are based on the reporting company's activities drawing on sources owned or controlled by another entity.

Given the business model of tour operators who act as intermediaries between individual tourism suppliers and consumers, their carbon inventories will largely be made up by indirect emissions from "third party production" (unless service providers are a fully integrated part of touristic corporations). As tour operators perceive their role in mitigation largely as a facilitator and multiplier (cf. 3.1), the question of how they motivate their business partners to measure and reduce climate impacts appears of major importance. Tour operators might see a need for a framework that allows them to select those suppliers that meet their mitigation responsibilities. As environmental management systems of most operators already include supplier evaluation processes, it appears relevant to incorporate more climate-focused assessment tools. Such tools should be designed in a way to embrace the full climate implications of their suppliers, such as: formulation of targets and measures, reduction performance, policy involvement, lobbying, reporting and public disclosure of GHG inventories. Specifically designed "External Balanced Scorecards" (EBS) can provide an effective tool for supplier evaluation *(id., p. 24)*. An example of such a scorecard used by Climate Counts, is illustrated in *Table 4.1*. The ACTE survey found that merely 17 % of the managers interviewed in several economic sectors were able to refer to a process in their company that evaluates the performance of their suppliers in terms of sustainability criteria *(id., p. 22)*. However, 84 % believed that the ability to offer low carbon services will become a supplier selection criterion of increasing importance.

Table 4.1: External balanced scorecard by "Climate Counts"

Climate Counts Scorecard   **[Company Name]**
Evaluation Date: [scoring date]

ClimateCounts

www.climatecounts.org
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Summary:

	Score	Highest Possible Score
Review	0	22
Reduce	0	56
Policy Stance	0	10
Report	0	12
TOTAL	**0**	**100**

Full Scorecard:

	Questions/Criteria	Scoring Guideposts (possible points)	Score	Highest Possible Score	
Review			**0**	**22**	
1	GHG emissions inventory completed?	No (0); Yes, partial inventory only reviewing some of the company's emission sources (1-3, dependent on percentage of emitting sectors covered); Yes, almost comprehensive inventory (4); Yes, comprehensive inventory (5)		5	Identify and quantify emissions (22)
2	Rough calculations or standard protocol/calculator?	Rough, partial calculations (1); Generalized, but complete calculations (estimates, perhaps using a general calculator) (2); Full calculations using a standard protocol/methodology (e.g., WRI) (3)		3	
3	Are Kyoto gases besides CO2 included?	Just inventorying CO2 emissions (0); Measuring CO2, CH4, and N2O (1); All relevant, material Kyoto gases included (2) If other Kyoto gases are not emitted, full points can be awarded		2	
4	Are indirect emissions accounted for? (e.g., supply chain, travel, commuting, use/disposal of products/services, investment	Only accounting for direct and facility energy use emissions (0); Including emissions from one indirect source (1); Including emissions from multiple indirect sources (2-4)		4	
5	Is there external, qualified third party verification of emissions data, reductions, and reporting (where applicable)?	No (0); Yes, verification by a trade association (1); Yes, verification by a qualified, external consultant working on company's inventory (2); Yes, verification by a qualified, third-party, not involved in developing the inventory (3) Extra point for verification beyond basic inventory (e.g., verification of physical reductions or reporting)		4	
6	Is the inventory an ongoing, regular process accounting for multiple years?	One time project (0); Plans for future, annual inventory work (1); At least two inventories completed (2); Multiple inventories completed (3); Multiple inventories completed and a time-series of emissions presented (i.e., emissions covering beyond the baseline and current year) (4)		4	
Reduce			**0**	**56**	
7	Has a clear goal been set?	No target (0); Loose, undefined goal (1); Defined goal specifying baseline, reduction amount/percentage, or timeframe but not all three (2-3); Goal with defined baseline, reduction amount/percentage, and timeframe (4)		4	Set goals and establish internal management (19)
8	Strength of baseline year used for the reduction goal (keeping in mind changes in company's size/composition)	No baseline (0); Using year of inventory or 1-4 years back as baseline (1); Using a baseline 5-10 years back (2); Baseline over 10 years back (3); When scoring, consider if company has significantly changed in size or divested during the time period or if the company has picked a year with atypically high emissions, as this will affect the appropriateness of the baseline; also adjust scoring if company is new and older baselines are not possible		3	
9	Magnitude of reduction goal (considering size of reduction and target year)	No reduction goal (0); Keep emissions constant (1); Up to 5% reduction (2); 6-10% reduction (3); >10% reduction (4); Discretionary point based on timeliness of target year (i.e., large goal set for near term scores better than small reduction goal set far in the future)		5	
10	Have a management plan and organizational structure been established for climate?	No plan established (0); General carbon/climate plan established (1); Designation of committee or responsible parties for company climate strategy (2); Designation of key responsible people and a specific plan for climate action (3); Climate strategy incorporated into overall business strategy (4); Extra point for publicly available detailed plan		5	
11	Is there top-level support for climate change action?	No (0); Senior level executive or Board members designated as responsible for climate issues (1); Clear, public articulation of company's views on climate by CEO and/or top management (2)		2	
12	Has the company taken steps towards achieving reduction target? (Interim progress on reduction)	No (0); Points awarded for actions such as the following: Programs to improve energy efficiency; Use of emissions-reducing technology; Projects to reduce corporate travel; Investments in technology for future reductions; Incentive programs; Purchase of additional, verifiable offsets; etc.; Up to 2 points per action, based on level and depth of actions and company size, for a maximum of 8 points		8	Achieve reductions (take steps, achieve, verify) (27)
13	Has the company achieved emissions reductions?	No (0); Partial reduction (below target or in limited sub-sectors) (1-4); Achieved goal reductions or reductions on a timeline to meet significant target in a later year (5-6); Exceeded goal reductions (7-10) Points awarded here for absolute or intensity-based achievements		10	
14	Absolute or intensity-based reductions?	Only intensity-based (relative) reductions (0); Absolute reductions for a sub-unit of the company (1-2); All absolute reductions (3-4) When scoring, consider if company has significantly changed in size or divested during the time period, as this will affect ease of achieving absolute reductions; Note that absolute reductions can be achieved even if a relative target was set		4	
15	Has the company achieved verified reductions to date (prior to current goal-setting)?	No (0); Yes, reductions achieved prior to current goal setting (1-5) (based on magnitude, frequency, etc.)		5	
16	Has the company made successful efforts to reduce GHG impacts associated with the use of its products/services?	No (0); Conducting partial analyses (e.g., partial LCA, eco-assessment, etc.) of GHG impacts from use of products/services (1); Conducting full analyses of GHG impacts associated with use of products/services (2); Producing low/no carbon product line that realizes a reduction in carbon-intensity of the traditional line of products/services (3-4)		4	Encourage reductions by others (10)
17	Does the company work to educate its employees, trade association, and/or customers on how they can reduce individual GHG emissions (through direct education programs, incentives, or philanthropic projects)?	No educational efforts (0); Up to 2 points for each of the following categories: Internal employee education, Incentives that will increase employee awareness (e.g., tax breaks for using mass transit), Education of peer companies within trade association, and customer/general public education, for a maximum of 4 points		4	
18	Does the company require suppliers to take climate change action or give preference to those that do?	No (0); Yes, gives preference to suppliers who take action (1); Yes, requires suppliers to take action (2)		2	
Policy Stance			**0**	**10**	
19	Does the company support public policy that could require mandatory climate	No (0); Yes, on a local level or in a generalized manner (1-3); Yes, on a state or regional scale or in multiple		10	Support public policy to require reductions (-10, +10)
20	Does the company oppose public policy on climate change that could require mandatory action by business, or has it made efforts to undermine climate change action?	No (0); Yes, opposes local initiative (1-3); Yes, opposes a state or regional scale initiative (4-6); Yes, publicly opposes non-voluntary federal-level initiatives (7-10); Range of negative points awarded for depth of opposition as displayed in company materials (website, publications), via a public forum (press, speeches, advertising), and active lobbying; Note: negative points will also be awarded if company belongs to trade association seeking to undermine climate change action		(up to -10)	
Report			**0**	**12**	
21	Is the company publicly reporting on emissions, risks, and actions? How is information disclosed? Company-based (e.g., on their website or annual report) or through a credible third-party program (e.g., CDP, GRI, etc.)?	No information on company climate change actions is available (0); Minimal, general info available through company report or website (1-2); Minimal/basic info available through third party (e.g., CDP) (3-4); Detailed info (emissions, reductions, goals) on company website/reports (5-6); Detailed disclosure through third-party (7-8); an extra 1-2 points awarded for time series of emissions and other climate action or risk data (e.g., in SEC filings or 10Ks)		10	emissions (inventory), reductions, and related actions (12)
22	Are emissions broken out by facility, business unit, country of operations, or other meaningful subsegments?	Only total emissions or one lumped number are presented (0); Some sub-unit emissions broken out (1); Emissions clearly tallied by company-appropriate sub-units (2)		2	
Total			**0**	**100**	

Source: http://www.climatecounts.org/pdf/Climate_Counts_Scorecard.pdf

When it comes to setting up the above discussed KPIs for establishing baselines and targets for mitigation, there are still challenges regarding the underlying calculations (cf. 2.2.1). For computing GHG emissions from the entire value chain in a travel package, many components need to be based on estimates *(Ashton, 2008; Borsani, 2007; Müseler, 2008; Vereczi, 2008)*. Tour operators usually focus product-related GHG inventories on airlines and hospitality properties, as these components are best measurable *(Ashton, 2008)*. Müseler *(2008)* finds, however, that a serious statement on the carbon footprint of any travel package can not be easily made. In evidence he cites the considerable differences between current carbon calculators, mainly due to variations in RFI-factors as well as the heterogeneity of reference frameworks. In his eyes, an appropriate tool for assessment does not yet exist.

Multinational touristic corporations sometimes refer to challenges when collecting environmental indicators from external suppliers. Due to a heterogeneous structure of reporting processes among their small and medium-sized partners, operators find it difficult to keep pace with the dynamism of international sustainability reporting standards *(TUI, 2007, p. 9)*. A quantitative comparison of the sustainability performance of leading touristic corporations is strongly restricted by the individual peculiarities of their operations, such as differences in load factors and itineraries of affiliated airlines. This poses a particular problem to sector-wide collaborations, where disputes over certain coefficients or indicators could take up years *(Borsani, 2007)*. External Balanced Scorecards, as suggested in **Table 4.1**, could also provide solutions in creating sector-wide references for mitigation activities.

When it comes to standardizing corporate carbon management on an international level, the two most relevant instruments are the "Greenhouse Gas Protocol" and ISO14064. The former is an accounting framework for nearly every GHG standard and program in the world and was developed by the World Business Council for Sustainable Development (WBCSD) and the World Resources Institute (WRI, *http://www.ghgprotocol.org/about-ghgp*). The ISO 14064 standard for greenhouse gas accounting and verification, on the other hand, is one of the latest additions to the ISO 14000 family of international standards on environmental management. It provides governments and businesses with an integrated set of unambiguous and verifiable requirements or specifications for GHG emission reduction projects, thus aiming to achieve clarity and consistency between stakeholders and those reporting GHG emissions *(cf. http://www.iso.org)*.

4.2   Product Design

This section discusses the climate change mitigation potential of several measures in product design: enhancement of modal shift, reduction of origin-destination distance, increase of length of stay, integration of carbon offsets as a fixed product component as well as development of designated "low-carbon" product categories.

4.2.1   Enhancement of Modal Shift

The assessment of tour operators' potential to enhance modal shift among their short and mid-haul products is based on findings in 2.3.3.3. In a first step, it appears important to address underlying reasons for the sector's current bias towards air transport, as well as obstacles to overcoming it:

- The preference of air transport is mainly due to the unequal distribution of taxes among transport carriers, where aviation is strongly favoured over other carriers. Further, business interests of airline companies and tour operators are interrelated as they work closely together and hold shares of each other. This is reflected in tourism management studies where much research can be found in connection with aviation, but little about rail *(Peeters, 2007)*.

- Tour operators select their destinations based on strategic market planning, opting for those modes of transports that best serve customer expectations. Travel packages to some popular destinations, like Mallorca, could not be competitive if offered by train and ship *(Hess, 2007; Müseler, 2008; Sonderegger, 2007)*.

- Short-distance holidays do not constitute the typical core business of tour operators and train would consequently not be an alternative for large parts of their product portfolio *(Müseler, 2008)*.

- An important consideration for the integration of any transport mode into a travel package, and hence for achieving modal shift, is that pre-booked capacities can be met at large scale *(Hess, 2007)*.

- Individual tour operators are very unlikely to set themselves the target of selling fewer flights as such measures, unless implemented within a regulated framework, would throw them out of business *(Hess, 2007; Borsani, 2007)*.

- On a voluntary basis, tour operators would only be able to foster modal shift, if they succeded in offering an attractive product at a price that the customer is prepared to pay. If operators could gain a competitive advantage through low carbon transport products, they would be likely to adopt them right away *(Minninger, 2007; Peeters, 2007; Sonderegger, 2007)*.

Despite the above described boundaries, there remain some opportunities for action by tour operators to advance modal shift.

4.2.1.1 Improvement of train and coach booking facilities

As found in 2.3.3.4, integration of train services into the overall mobility system is still unsatisfactory.

> "The connection train-airplane is everything else than perfect, and as soon one starts travelling by train between [European] countries it becomes tremendously complicated. I have to say frankly, it is not easy for us [Rewe Touristik] to offer travel packages that include train transport. That begins with huge problems during ticketing, problems that we don't have with the airline sector. […] These are simply technical problems, for instance if we want to provide printed train vouchers together with the travel documents, as we do with all other included services. It is completely unimaginable to manage that with train operators." *(Müseler, 2008)*

Action potential for improving train integration into travel packages is perceived in charter trains – a concept that has been applied in aviation for a long time *(Balatka, 2007)*. It is further found that the consumer would not be reluctant to pay a higher price for train services, if expectations in comfort are met, like enabling an easy transport of luggage or providing direct connections *(ibid.)*. The scheduled services of international coach operators are likely to encounter similar problems and solution approaches.

4.2.1.2   Decoupling of transport elements from travel packages

The major part of tourists making use of airplanes do so because it is included by default in many travel packages *(Schmied, Götz, 2004, p. 55)*. This is supported by the observation that there seems to be an unconscious bias towards flying among tourism consumers, as it is broadly considered a standard element in travel packages *(Balatka, 2007)*. In order to advance mitigation, it appears reasonable not to predetermine transport services up to mid-haul distances. However, due to the trend towards dynamic packaging, decisions on transport services are increasingly left to the customer *(Balatka, 2007; Hess; 2007)*. As observations show, tourists still opt largely for the most time-convenient transport mode *(Sonderegger, 2007)*.

4.2.1.3   Adaptation of itineraries and mobility management

As key findings of the research project INVENT show, there is considerable mitigation potential in the adaptation of existing itineraries and in mobility management. For long-haul travel products that contain round trips to several sites or countries, itineraries might be designed less mobility-oriented and increasingly with earth-bound transport, as already applied by various specialist operators *(cf. INVENT, 2005)*. A further example is the so-called "rail & fly" service that substitutes spoke flights to major airports with trains *(Dietsch, 2007)*. Especially the product category for self-arranged car holidays bears potential for mitigation measures through mobility management *(Hess, 2007)*. At destinations in less developed countries it is often difficult to implement mobility management measures due to organisational challenges, limited availability of transport facilities, as well as safety and cost considerations *(Borsani, 2007; Hess, 2007)*. Within destination management activities of tour operators, climate change considerations do not yet play a big role *(Borsani, 2007)*.

4.2.2   Reducing Origin-Destination Distance and Increasing Length-of-Stay

As shown in 2.3.2, a reduction of average origin-destination distance in tourism flows, along with a simultaneous increase in length of stay, is considered to have high mitigation potential. As for the first aspect, tour operators would need to put more weight on short and mid-haul destinations in the strategic planning of their product portfolio. However, this approach seems to be the one that interferes most with current business strategies. Tour operators generally aim at expanding their long-haul segments due to strong customer demand. As short and mid-haul segments are increasingly taken up by price aggressive low-cost carriers, long haul becomes a key area for expansion and differentiation of operators *(Ashton, 2008)*. Further, long-haul segments seem to be more attractive to operators from a cost perspective, where lower price levels at destinations allow offering cheaper products in their price-sensitive market environment *(Peeters, 2007)*.

As for the aspect of length of stay, there is potential in creating market mechanisms that reflect the proportion between distance travelled and duration of stay. One proposal would be to decrease the total price of the transport component with increasing length of stay in travel packages *(Peeters, 2007)*. Tour operators argue, however, that prices of long-haul travel packages are already strongly decreasing on a per-day basis with increased length of stay, as the flight constitutes the biggest fixed-cost component of the journey *(Ashton, 2008; Hess, 2007)*. In contrast to shifting to short-haul destinations, it is found that increasing length of stay is in concordance with business interests of operators *(Müseler, 2008)*, and thus they are likely to grab existing opportunities. The most significant influencing factor is the available holiday time of customers, which is considered to be out of the operators' scope

(ibid.). This implies a challenge for governments to create holiday regulations that make long stays during journeys attractive *(Peeters, 2007)*.

Applying the price instrument in a converse manner – i. e. making long-haul / short-stay products more unattractive to the customer – is viewed with scepticism *(Borsani, 2007; Hess, 2007; Müseler, 2008)*. Steering things through such mechanisms is rather theoretical, because prices are formed by the market and tour operators have the purpose to meet this demand *(Müseler, 2008)*. Hence, it seems improbable that individual operators would make some products more expensive for ideological reasons, considering a competitive market environment where every player strives to become the cheapest *(Borsani, 2007)*. Nevertheless, in some distinct cases there might be potential for influencing things this way, if considering the above-mentioned boundaries *(Hess, 2007; Müseler, 2008)*.

4.2.3   Integrating Offsets as a Fixed Component of Total Packages

It is believed that mainstream tourism consumers would be more likely to accept carbon offsets, if they were already integrated by default in travel packages, thus not giving the consumer the possibility to decide actively during the booking procedure *(Minninger, 2007)*. Some tour operators consider implementation of such steps *(Hess, 2007)*. Again, the price sensitivity of the mainstream tourism market seems to set limits, as increased total package costs are likely to be less attractive to the price conscious spectrum of mainstream customers. Moreover, there are challenges as regards the technical integration of offset schemes into booking systems, e.g. problems in coping with all the different fluctuation rates in terms of itineraries and load factors *(Ashton, 2008)*. Default integration of carbon offsets seems therefore rather applicable in the context of achieving a competitive advantage in connection with a designated label or certification (cf. 4.3).

4.2.4   Developing Low-Carbon Travel Packages

Different stakeholders estimate the mitigation potential inherent in innovative product development to be high. However, mainstream tour operators have so far been hardly innovative when it comes to developing entire new products in order to meet mitigation requirements *(Dubois, 2007)*. This is supported by the fact that none of the investigated mainstream operators actively communicate any pilot projects related to climate change and product development (cf. 3.3). Operators might risk future competitiveness if they failed to respond to the signs of consumers' growing climate consciousness with research in product development *(Dubois, 2007)*. The following statement supports this consideration:

> "We believe that in three to five years time those markets [of environmentally conscious tourists] are going to be bigger, and customers more demanding. And so we are starting now to differentiate ourselves as the tour operator who is taking these issues seriously and […] reduces the [environmental] impacts. Even if it is not translating into bookings now, we do believe it will be more a consumer issue in a few years time." *(Ashton, 2008)*

The option of further investigating low-carbon product development is even now being considered by mainstream operators:

> "We [First Choice] will be doing increasingly more sort of blue sky thinking on how to operate holidays in a low carbon economy, […] we are already planning workshops. There is a new innovation department to be established soon […] and there is a new appointment of a sustainable product manager. A part of this role will be to initiate this sort of internal brainstorming sessions and to come up with new product innovation ideas […] for holidays that we could be offering in a low carbon economy. I think […] we are probably the first tour operator to appoint a sustainable product manager." *Ashton (2008)*

4.3 Certification and Ecolabelling

Certifications and labels have become a widely used instrument in the tourism sector. Certification is defined as a "formal process under which a nominally independent body certifies to other interested parties […] that a tourism provider complies with a specified standard" *(Weaver, 2006, p. 115)*. Ecolabels, on the other hand, build upon certifications and are an instrument to promote them. As such, ecolabels seek to "standardize the promotion of environmental claims […] by providing concise and accurate information indicating that the management and operation of the labelled product is compatible with the principles of environmentally sustainable tourism" *(ibid.)*. Hence, certifications and ecolabels are interlinked and usually build upon indicators. These instruments are especially relevant to environmentally conscious tourism consumers who do not have the possibility to inspect products in advance *(ibid.)*.

The main motivation of tour operators to obtain ecolabels is to get public recognition of their sustainability accomplishments that should translate into a competitive advantage. Moreover, the certification framework in many cases entitles applicants to technical support, which is especially relevant for small and medium-sized operators that lack own capacities. Big operators, however, prefer setting up their own certification and labelling systems due to the peculiarities and scale of their operations. Like environmental management systems of big operators, certification schemes have for a long time addressed climate change considerations through specifications relating to energy sources and efficiency. However, in most cases the aspect of climate change mitigation is not formulated explicitly *(Vereczi, 2008)*.

Ecolabels are a widely acknowledged instrument for climate change mitigation *(Ashton, 2008; Borsani, 2007; Hess, 2007; Peeters, 2007; Sonderegger, 2007; Vereczi, 2008)*. Concerning the potential for advancing mitigation through the creation of new labels and/or the adaptation of existing labels, the following statement is insightful:

> "If all the various existing labels would be abandoned and one standardized, superior and at least EU wide certification system would be established, then I am in favour of that. Otherwise I would say the potential is equal to zero. There has to be cleaned up among the certification and labelling landscape, as this is only leading to confusion at the moment." *(Hess, 2007)*

It is further believed that certifications have to be promoted within an intergovernmental framework *(Hess, 2007)*. In 2000, between 70 and 100 ecolabelling schemes existed worldwide, most of them applying merely to distinct regions, sub-sectors or activities *(Weaver, 2006, p. 115)*. Only a few labels operate on a large geographical and sector-wide scale:

- **Green Globe** is considered to be the single ecolabel that embraces all types of tourism products in all parts of the world. It attempts to gain credibility and recognition as the premier global body for tourism certification through strict standards and independent audits *(id., p. 118)*. Next to other aspects, it requires companies to make appropriate year-on-year improvements in the key performance areas of "greenhouse gas emissions" and "energy efficiency" *(cf. Green Globe 21, 2006, p. 4)*. However, there is no indication that standards include more concrete mitigation considerations, such as product design, modal split, offsetting or customer education.

- The **European Ecolabel** (EU Flower) is an initiative of the European Union for establishing a trans-sectoral and Europe-wide ecolabel. Among others, it contains a category for tourism accommodation where it specifies measures in energy efficiency. Transport service providers and tour operators are not included *(cf. http://ec.europa.eu/ environment/ecolabel/index_en.htm)*.

- **TraveLife** is an initiative with the purpose to support an efficient and cost-effective introduction of sustainability principles into the tour operating sector. Unlike TOI, it is mainly focused on capacity building among the whole spectrum of operators, working through trade associations in Belgium, Germany, the Netherlands and UK. The initiative provides basic guidelines to operators on how to implement Sustainable Supply Chain Management. Within that working area, TraveLife maintains its own labelling scheme, which is based on various external certification systems but also on its own checklists *(cf. http://www.travelife.eu)*.

Next to the above mentioned labelling systems, there are some initiatives that aim at standardizing relevant certification processes and at creating basic sector-wide reference frameworks. The following appear relevant in the context of this work:

- **Voluntary Initiative for Sustainable Tourism** (VISIT) is an EU funded collaboration of some existing national ecolabels in European countries, which aims at aligning criteria for certification processes. Member labels, however, mainly relate to the sub-sector of accommodation *(cf. http://www.visit21.net)*.

- The **Sustainable Tourism Criteria Initiative** (STC) is a project of UNEP, IUCN and different NGOs designed to come up with the fist globally relevant set of sustainability criteria for the hotel and tour operator sectors. With regard to climate change, criteria foresee basic measures for GHG reduction and offsetting *(cf. http://www. sustainabletourismcriteria.org; Vereczi, 2008)*.

- The **Sustainable Tourism Stewardship Council** (STSC) is a global accreditation body proposed for sustainable tourism and ecotourism certification programs. As such, it is intended to provide a credible controlling organ for critically evaluating existing certification systems *(cf. http://www.rainforest-alliance.org/tourism.cfm?id=council; Vereczi, 2008)*.

Certification systems largely appear to be focused on accommodation facilities, often leaving the aspect of origin-destination transport or the principle of "carbon neutrality" unconsidered. Therefore, any certification or labelling system might need to incorporate wider criteria on corporate carbon strategies in order to become relevant to

climate change (see examples suggested in **Table 3.2** and **Table 4.1**). Considering the prevailing heterogeneity and complexity of the tourism certification landscape, labels for climate change mitigation might be more successful if incorporated into already existing initiatives. As already certified companies or destinations might have difficulties to adapt to more stringent mitigation criteria in the short term, it appears more promising to create a "carbon neutrality" label supplement under an existing brand. For instance, the already existing tiered label of Green Globe (consisting of performance categories "Affiliate", "Benchmarked" and "Certified") could be extended by the additional category "Carbon Neutral".

4.4 Education and Awareness Raising

As outlined at the beginning of this chapter, the UNWTO Davos Declaration calls on the private sector to educate consumers and staff about tourism's climate change implications. It is recommended that tourists should be encouraged to consider climate impacts before making a choice of travel and destinations, as well as to reduce their carbon footprint or to compensate for emissions that cannot be reduced directly *(UNWTO, 2007b, p. 3)*. According to a quantitative study among nature outbound operators, 95 % of them agree that consumers need education in order to take responsibility for their choices *(Driscoll, Mansfield, Strasdas, 2007, p. 11)*. On account of the operators' influencing power on both suppliers and customers, they are considered to have high potential for fostering awareness rising measures. As discussed in 3.2, increased customer awareness of climate change is not likely to translate into immediate environmental action. However, it can enhance low-carbon consumption patterns and acceptance of relevant regulatory frameworks in the long term. Measures in customer education are strongly interlinked with some other categories discussed in this chapter, such as product design, ecolabelling and corporate communication. Moreover, also offset schemes form part of customer education (cf. 2.3.3.5).

Foremost, it appears relevant to look at constraints for mainstream operators in the field of awareness building. They are likely to be reluctant to individually put forward extensive customer education measures, which will be less due to concerns about financial losses through drops in booking numbers than to considerations of product image. Holiday products are based on the creation of positive emotions, and tour operators do not want to charge these positive emotions with something serious and complicated like climate change *(Dietsch, 2007)*. In this regard, tour operators often are faced with the challenge of addressing negative aspects in tourism without destroying their own product. So from an operator's perspective it is important to be open on issues like climate change up to a reasonable point, while avoiding a kind of "public self-prosecution" *(Borsani, 2007)*.

> "The willingness [expected of tour operators to inform on climate change] is lacking. The reason is that tour operators are still scared of the whole thing [climate change] instead of considering a sustainable business policy and understanding that if the problem is frankly communicated, the consumers are going to buy the relevant products they wish to buy. And we [tour operators] will in turn offer these products. So it should not be us to think about what is good for the customers, it should be the customers telling us what they want. And if we frankly communicate the problem, then products like shopping weekends to New York will be bought less, and in turn we will offer fewer of these products." *(Hess, 2007)*

Mainstream operators currently educate customers in climate change through websites, special brochures, travel documents, in-flight magazines or print material at destinations *(Ashton, 2008; Borsani, 2007; Hess, 2007; Müseler, 2008)*. Tour operators that adopted carbon offset schemes claim that they would be actively offered and accurately explained by sales staff in their own retail offices *(Borsani, 2007; Hess, 2007)*. It seems, however, that relatively little education in climate change is provided in operators' travel catalogues (personal observation of author, no reference available), which is reflected by the low level of pertinent information provided directly on online booking portals (cf. 3.4). Against this background and considering the shortcomings identified in 3.5, there seems to be mitigation potential in staff training, carbon footprinting and offset schemes.

4.4.1   Staff Training

There is a particular need for tour operators to inform consumers on the different climate impacts of transport modes and to provide guidance for applying this knowledge to concrete purchase decisions. It is therefore important that sales staff at operators' sales offices are well informed about relevant backgrounds and practical implications, which is to be achieved through training programmes. Suggestions by sales staff at the right moment can trigger environmentally friendly purchase decisions:

> "I had a customer who was searching for a flight [from Vienna] to Milan. I suggested him taking alternatively the train, as connections were convenient. He was very happy to accept this offer, as he actually likes very much travelling by train. […] People simply often forget that there is still the train as an alternative, because air travelling simply has become standard." *(Balatka, 2007)*

It needs to be noted that the effectiveness of this measure will be limited, as only 12 % of bookings are generated through operators' own retail offices.

4.4.2   Carbon Footprinting

The carbon footprint is defined as a "measure of the impact that [human activities] have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide" *(http://www.carbonfoot-print.com)*. It is a useful instrument for both individuals and organizations to conceptualize their impact on climate change. A carbon footprint can be considered as a subset of earlier uses of the concept of ecological footprints, which usually refer to consumption of resources and land. It is an attractive instrument for informing consumers on mitigation issues:

> "There could be public workstations in sales branches that allow every customer computing the personal carbon footprint, or sales staff could refer to it on relevant websites. I see quite big potential in that." *(Hess, 2007)*

An example of the application of carbon footprinting in customer education is provided by Studiosus, the German niche operator, with its product category "Young Line". The carbon footprints of all transport options in the packages were gathered by means of internal checklists and finally made known to the customer in catalogues *(Dietsch, 2007)*.

It is broadly agreed upon that tour operators would have responsibility to disclose the carbon footprint of their products to the customer at the moment of sale *(Ashton, 2008; Balatka, 2007; Borsani, 2007; Dietsch, 2007; Hess, 2007; Minninger, 2007).*

> "We [atmosfair] do see a responsibility of tour operators to indicate the carbon footprint for their products. [...] Also food manufacturers have to indicate what their products consist of. [...] The consumer perceives this as a sign for product quality." *Minninger (2007)*

Customer information on product-related carbon footprints could possibly be developed in the next couple of years *(Ashton, 2008)*. It is considered important, however, that the underlying calculations are based on agreed standards:

> "It would lead to a fatal competition if everybody [tour operator] calculates the carbon footprint based on different assumptions and methods and communicates these further to the customers. These will choose the provider that can offer the lowest carbon footprint through application of less stringent calculation methods." *(Müseler, 2008)*

As discussed in section 3.2, customers currently are hardly aware of the exact dimensions of emissions related to specific tourism activities. A UK survey on public attitudes to personal emission information found that "recent growth in public awareness about climate change has not equated to greater understanding of the issues involved, nor how these issues relate to personal behaviour" *(Clegg, Coulter, 2007, p. 3)*. When it comes to public perception of numbers communicated by various carbon calculators, the study found:

> "Awareness of how carbon emissions are quantified and measured was limited, and once explained, felt to be meaningless unless contextualised. [...] Key features of a successful carbon calculator, as identified through practical sessions with non-users, include [...] clear layout, everyday language, simple yet personalised information requirements, meaningful and understandable results [and] personal and realistic follow-on action." *(Clegg, Coulter, 2007, p. 3)*

From these findings it can be concluded that carbon footprints computed by these calculators need to be presented in a way that consumers can contextualise it with their personal behaviour, even with a limited understanding of underlying numbers. It can be assumed that magnitudes of carbon impacts from tourism transport are more likely to be understood if put into context with other emissions on an individual level. An example of such an approach is provided by atmosfair, as shown in Figure 4.2, which illustrates results of its online carbon calculator in comparison to other emissions from people's every-day life as well as to a "climate-compatible budget of one person in one year". The assumption behind this approach is that a person flying from Germany to the Dominican Republic, and vice versa, will more likely understand the related climate impact when informed that "this flight produces twice the amount of emissions that you would be allowed to emit in a whole year" rather than being told "you produce six tons of greenhouse gases".

Such a strategy might bear chances to overcome the "public goods problem" as discussed in 3.2.3.

> "Industry level cap-and-trade schemes need to be complemented by mechanisms for securing carbon budgets at a household level. Crucially, this will require an understanding and agreement as to what an equitable and sustainable personal carbon budget looks like, clearly translated and communicated to consumers everywhere so they can understand their rights and responsibilities and how their actions and choices contribute to this one planet goal." *AccountAbility (2007, p. 54)*

Figure 4.2:   Design of atmosfair online carbon footprint calculator (results for a flight from Munich to Santo Domingo)

Source: https://www.atmosfair.de/index.php?id=5&L=3
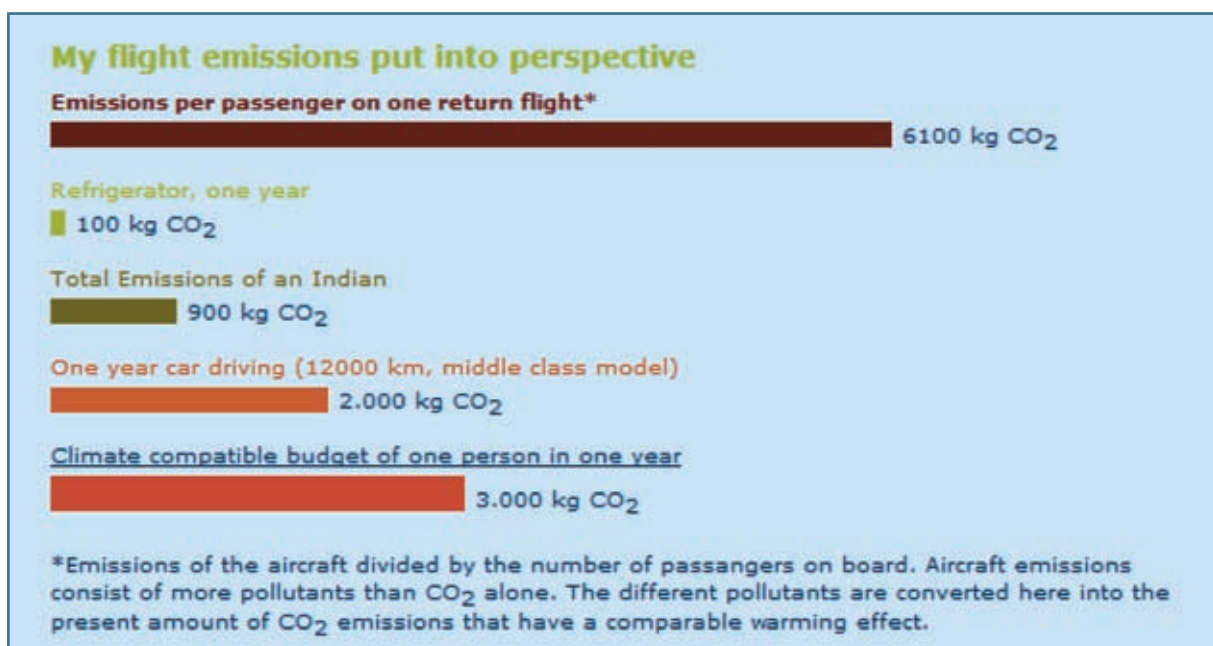
4.3.3   Integration of Offset Schemes

Carbon footprinting will probably go hand in hand with the integration of offset schemes into the tour operators' distribution channels. It is considered important to offer the consumers a concrete opportunity to take action when revealing negative impacts of the purchased product. Until tour operators will be able to compute the exact carbon footprint of their individual products, integrated carbon calculators from offset providers allow them to disclose generic carbon footprints on key components of their products, such as air transport. The process of integration of such schemes can take place in three consecutive steps. Initially, tour operators can offer general information on carbon offsetting on their websites or in their retail offices. As a next step, they provide a link to online carbon calculators of offset schemes. As a final and ideal step, the purchase of carbon offsets is fully integrated in all online and internal booking processes. This approach seems especially attractive for big operators who might set up a pilot phase in product categories where customers are more receptive to this topic *(Minninger, 2007)*. The risk that mainstream tour operators could consider offsets as a mere marketing instrument for a few distinct niche segments is assessed as follows:

"I think if they do it [integrating offset schemes into booking systems] then they will do it for all products, as this is easier for synchronizing their internal processes. This will then be a question of public credibility. […] they will do it properly with a credible partner that meets international standards and does not invest into reforestation projects." *(Minninger, 2007)*

4.5   Communication

Whereas 6.4 dealt with the question of how to inform customers on tourism's climate impacts and possible steps of action, this section will look at mitigation potential generated by adapting existing communication policies. Therefore the promotion dimension, as defined by Kotler *(cf. 2000, pp. 549–614)*, within marketing strategies of tour operators will be investigated. Here, a differentiation between product advertisement and public relations appears reasonable.

Mitigation through **product advertisement** in this area could theoretically be implemented by favouring low-carbon products over high-carbon products in advertising activities. Some tour operators' representatives were asked about the practical feasibility for their companies to stop promoting some extreme manifestations of high-carbon travelling, using the example of a two-day shopping trip from Europe to New York. Responses were unanimously critical of this approach

"I do not think that we could work here via advertisement instruments. […] If I offer such a New York trip, I want to sell it. And if do not promote it adequately, I will not be selling it. […] There would then be much effort for producing the product but at the end there will not be the quantity of sales needed to be profitable […] From an ecological point of view these kinds of trips are of course bad, but from an economic point of view this approach is bad. […] So then the better approach would be to abandon the product." *Hess (2007)*

"We [Kuoni] try to promote the brand and not necessarily the single product. And our catalogues are designed in a way that they are simply describing each individual product. But we do not make any poster campaigns with single products." *Borsani (2007)*

"I have to say, we even do not have such things in our offer. Without doubt, there is the question if a two-day trip to New York should be promoted. […] But we cannot interdict anyone to do that, as for this kind of trip you do not even need a tour operator, you simply go into the internet and book flight and hotel. [Moreover] we are speaking here about such small fractions of overall travel flows, so a real volume of climate protection through avoidance [of these product categories] can not be generated." *Müseler (2008)*

Mitigation through **public relations** in this area includes the consideration that tour operators address the topic of climate change through their PR activities, and actively communicate the actions they have undertaken. The current situation is assessed as follows:

> "It is important to understand that tour operators are of course reluctant to touch the topic [climate change] in public and to become active in that. Because if somebody leans out the window and publicly announces steps of action, then the next day there will be loads of journalists in front of the office checking how seriously this action is taken. As long as they [tour operators] do not announce any action, they are not disturbed. So in this context it is understandable that tour operators cannot be pushed that much, but rather positively encouraged and supported [by NGO's]." *(Minninger, 2007)*

> "The reason [why tour operators are reluctant to make climate change a topic] is because tourism lives from selling holidays, thus the perfect world. Climate change is certainly not a perfect world, it's the opposite. So how can you bring such two controversial things together? And there tour operators say 'Oh, we don't want to bother our customers with these things'. [But rather it could be communicated to the customer:] 'You fly with us, you are reading the daily newspaper and you know what is happening in the real world. So please cooperate in addressing these issues.' It's so simple." (*Dietsch, 2007*)

There are possible benefits of addressing climate change through PR. Due to the current public interest in climate change, operators can significantly increase their public image by addressing the issue actively, in contrast to those remaining silent and leaving behind the impression of disregard *(Minninger, 2007)*. This argument is supported by the observation of some tour operator representatives that ethical consumerism is increasingly entering into the mainstream tourism sector *(Ashton, 2008; Borsani, 2007)*.

> "Probably it is worth speculating that the customer will be more investing in future in responsible companies. It can be observed […] that companies that are doing completely nothing [in terms of CSR] are less credible than those who do something." *(Borsani, 2007)*

4.6 Sector-wide Collaboration and Policy Involvement

As previous sections have mainly discussed measures to be taken by operators individually, this chapter will look at the mitigation potential generated by a collective approach. Even though certifications and ecolabels, as discussed in 4.3, also include some kind of common agreement among participating parties, they are designed to be applied by individual businesses for achieving external transparency and competitive advantage. By contrast, the measures discussed here are defined by the simple approach of a common commitment to some unexceptional "don'ts" by the entire sector, or by significant fragments thereof.

> "Tour operators could collectively decide to stop short stays on long-haul destinations and not to sell the most carbon intensive product." *(Dubois, 2007)*

It is believed that a common approach could either take place on an international level via initiatives such as the "Tour Operator's Initiative" (TOI), or on a national level via trade associations such as the German Association of Tour Operators DRV *(Dietsch, 2007; Müseler, 2008; Vereczi, 2008)*. Chances of success are generally seen to be limited, however, attitudes among stakeholders are heterogeneous. Some acknowledge that there would be a certain potential *(ibid.),* whereas others believe that this approach is fairly unlikely to be successful *(Ashton, 2008; Borsani, 2007)*. The following main considerations were brought up:

> "We won't solve the problem [climate change] with individual measures. This must be indeed inter-nationally coordinated. […] This can be done via TOI, or other channels like UNWTO. […] If we [tour operators] speak with a common voice and intensify our contacts to responsible partners […] then something can be moved." *(Müseler, 2008)*

> "[Within DRV] positions are very different and steadily discussed. Actions then are always based on the smallest common denominator which is not leading to beneficial results. […] Even within TOI the companies are dealing with this topic [climate change] completely differently, where the smaller ones are much quicker in joining efforts. […] And as we even don't have a common position within TOI, it is not likely that there will be one among the whole sector." *(Dietsch, 2007)*

Very little chances for success are given to the concrete possibility that all operators could comply with the common rule of not selling flights for distances below a certain threshold, as applied by "Forum Anders Reisen":

> "It could be that individual tour operators take that decision and communicate that. But all tour operators to make a decision when low cost airlines certainly would not take part, I think that is a bit unrealistic." *(Ashton, 2008)*

> "So that would the same than for supermarkets to agree for not offering strawberries from far away in winter. […] I think the chances for agreeing on such rules are very small, as […] companies operate in a highly competitive market and everyone would actually wish to be the single one who offers straw-berries." *(Borsani, 2007)*

> "I don't see the set of criteria of Forum Anders Reisen a model to be transferred to the big operators. We have to consider that they are structured completely different, there are many individual businesses who are all specialized [on distinct products] where it is more tangible to install ecological rules. But we [Rewe Touristik] offer holidays for everybody, and here we will not make much progress with rules." *(Müseler, 2008)*

> "The word 'compliance' is an emotional issue [among decision makers in companies]. They don't like the feeling of committing to something, even though all support the content, as we see with the code [against sexual exploitation in tourism]. So making a signature seems to be regarded as problematic." *(Dietsch, 2007)*

By the beginning of 2008, neither TOI nor UNWTO had launched specific activities for developing a collective mitigation response of the tour operating sector. However, relevant initiatives are planned to be initiated *(Vereczi, 2008)*.

With regard to the above considerations, the question arises how national or international policy could support tour operators in advancing mitigation. The following main action opportunities could be identified:

- Even though stringent voluntary standards for implementing carbon compensation projects are already in place (cf. Gold Standard, 2.3.3.5), more transparency and clarity is needed on underlying price calculations as well as related administrative organisation. It is found that UNWTO or ISO could potentially play a role in such endeavours, whereas it needs to be considered that the respective processes are time consuming *(Vereczi, 2008)*. If relevant regulations are not put in place, preferably on the European level, there is a risk that carbon offsetting might develop into an industry in its own right *(Müseler, 2008)*. It is further believed that consumers' confidence as regards becoming active in compensation is likely to increase with such common standards *(Minninger, 2007)*.

- It would be a task for UN bodies to develop economic and financial incentives for encouraging the private sector to become active in mitigation *(Vereczi, 2008)*.

- It is found that there would be room for improvement for UNWTO in working more closely with TOI on joint projects and initiatives. This especially relates to making tangible socio-economic benefits of tourism in order to compare it to its environmental costs. Large tour operators would welcome such endeavours and consider them in TOI's working programme. *(Ashton, 2008)*.

- TOI has additional potential for collaborating with trade associations in initiating brainstorming sessions in various countries *(ibid.)*.

The considerations formulated so far coincide to a high degress with regulatory measures to be implemented on a political level, as discussed in chapter 2. Active involvement in policy debates and engagement in constructive lobbying activities can be regarded as an important voluntary measure to be undertaken by operators. Broadly speaking, there is a consensus that the biggest potential for achieving emission reduction in tourism transport will lie in a regulatory framework that incorporates external costs of transport carriers (cf. 2.3.3.3 and 2.5). With regard to this aspect, mainstream operator representatives find:

> "In aviation all external costs should be finally included in prices in order to reflect reality […] We are flying far too cheap today, even though we are causing external costs that we would be able to calculate and incorporate [into the price]. And I imagine that all would be profiting from that. So the nature and climate, as people will be flying considerably less, and tourism businesses could profit from possible increases of margins for their flight sales. So I imagine that a smart tour operator here could gain benefits, but I am aware that only the minority [of operators] would be willing to accept that." *(Hess, 2007)*

> "[…] Now I am coming to a point that also my people [Kuoni] certainly would not be happy to hear. Some tax system, in whatsoever form, should ensure that the whole sector is treated in the same manner. And taxes should be in line with other taxes for instance in car traffic. So I think here there is a lot of potential […] for creating another framework." *(Borsani, 2007)*

> "[…] It is our responsibility […] to engage with governments and other stakeholders constructively in debates and particularly in the debate on the inclusion of aviation into the EU emission trading scheme." *(Ashton, 2008)*

The statements above suggest that there are voices among tour operators for lobbying towards some kind of legally binding regulations, whereas magnitude of willingness among executive managers might be low. When it comes to potential public-private collaboration in tourism and climate change, it is found that climate change is such a high profile subject where it is unlikely that serious businesses will remain inactive or remain out of an emission trading scheme." *(Vereczi, 2008)*

4.7   Summary

The objective of this publication is to identify mitigation measures that mainstream operators can put forward individually and voluntarily. It must be acknowledged, however, that almost every mitigation measure involves a multitude of actors outside the sphere of tour operators, thus limiting their scope of action. The most important external driving force is consumers' willingness to become actively involved in mitigation and/or to respond to related incentives and products. The following areas are attributed the biggest potential for advancing voluntary mitigation through mainstream operators:

• **Corporate carbon management** seems to be a crucial foundation for any subsequent mitigation measure. As such, the concept of "carbon neutrality" needs to be adopted as a long-term guiding principle for all business activities and processes. Carbon neutrality refers to the effective avoidance and reduction of emissions in a first stage, and to offsetting all unavoidable residual emissions in a second step. Top management commitment and alignment with overall business strategies are found to be crucial success factors. Value-based sustainability management through climate-focused key performance indicators (KPI's) and evaluating suppliers through External Balanced Scorecards can be recommended. An important first step in any corporate carbon strategy is the exact analysis of how corporate emissions are composed.

• **Intelligent product design** refers to the development of new forms of organized travelling that are compatible with low-carbon economies as well as with customer demands. This approach strongly involves product managers in mitigation processes and includes aspects like itinerary planning, modal shift, mobility management, and innovative technologies.

• **Certification systems and ecolabels** are an attractive tool for committed operators to receive public recognition for their mitigation activities. It appears relevant to incorporate the climate aspect of origin-destination transport more explicitly into existing ecolabelling schemes.

• **Customer education** is considered important and seems to be most effective if undertaken via sales staff, carbon footprinting and voluntary offset schemes. Carbon footprinting foresees the disclosure of understandable and contextualized information on product-related emissions during the sales process, which is likely to go hand in hand with the option to voluntarily offset carbon emissions. Staff qualifications and sector-wide coherence in the calculation of carbon footprints are considered to be the most crucial success factors.

- Actively **communicating actions undertaken against climate change** to the public is found beneficial for creating a "carbon-clean" brand image. Despite low preparedness to take personal action on climate change, consumers are interested in what companies are doing and tend to select brands that foster good environmental practices.

- Active **involvement in policy debates** is considered a key voluntary measure to be undertaken by tour operators. Various tour operator's representatives believe that constructive lobbying for a regulatory solution, especially for externalisation of environmental costs in the transport sector through carbon taxes or emission trading schemes, could serve industry interests in the long term.

In contrast to the above-mentioned areas of action, it was found unrealistic to achieve mitigation through individual measures in strategic planning of the product portfolio (e.g. eliminating high-carbon destinations and transport modes), price policy (e.g. making carbon intensive products less attractive through higher prices) or product advertisement (e.g. favouring low-carbon products over high carbon products in advertising), as these factors are rather influenced by free market mechanisms. Moreover, it is found that there is little chance of success for agreeing sector-wide minimum standards, such as not to sell flights below a certain distance (as practised by some niche operators).

Next to the above identified areas of action, there are also some significant impediments for tour operators to become active in mitigation. The most important challenges are the following:

- There is a strong price competition among mainstream operators, which is characterized by low profit margins as well as price-sensitive and disloyal customers. What consumers demand in particular are high carbon products, such as long-haul holidays, short stays and fast transport.

- There is additional pressure from low-cost carriers, which are increasingly entering into short and mid-haul markets of mainstream operators. As a consequence, long-haul segments constitute a core area for their strategic product development. It is further found that long-haul holidays traditionally constitute the core business of mainstream operators.

- In general, holiday consumers seem to be little prepared for taking action on climate change, even though public awareness of the problem is estimated to be high. First practical experience of operators with carbon offsets shows marginal uptake rates by customers. It is also found that customers have a limited knowledge of exact impacts of different transport modes and of other related backgrounds.

- Mainstream operators traditionally serve customer typologies that are less receptive to environmental considerations, such as "Sun & Sea Holidaymakers" or "Fun & Action Vacationists".

- There is a difference in environmental behaviour between consumers' everyday life and their holidays to the effect that they are less prepared to make sacrifices for the latter. A change of holiday patterns is one of the last sacrifices that consumers would be willing to accept for the sake of the environment.

- Tour operators are often faced with the challenge of maintaining a positive product image while simultaneously communicating its negative consequences to the customer. As the tour operating industry depends on selling positive emotions, it is considered difficult to associate them with serious issues like climate change without harming their product image.

- The bias towards aviation is found to be due to current inequalities in the taxation of transport carriers, with air transport achieving the most attractive prices. As a result most tour operators maintain their own aircraft fleets or work closely with airline companies, with the objective to meet scheduled capacities.

- Considerable organizational and technical problems can be identified when it comes to integrating train services into tour operators' reservation systems. This applies especially to train connections between European countries, which are currently found to be unmanageable.

- Due to long and fragmented supply chains, consisting of a multitude of external suppliers with different business structures, tour operators find difficulties in setting up common reporting systems. Moreover, there is also a heterogeneity in reporting standards among mainstream operators, which makes it difficult to compare their environmental performance.

- Calculations of carbon footprints of product components need to be based on many estimates as binding international or sector-wide standards are lacking.

5   CONCLUSIONS

Drawing a generic picture, it can be observed that mainstream operators currently only undertake mitigation measures which are compliant with their strategy of consistent growth and expansion of long-haul segments. Related action largely aims at improving operating efficiency, e.g. saving energy in accommodation facilities or reducing fuel consumption of aircraft. Even though relative operative emissions have been considerably reduced in recent decades, research strongly indicates that a purely technology-oriented approach will not reduce the sector's overall emissions, nor stabilize them at current levels. Thus, there is a need for a holistic approach that combines several mitigation strategies. Next to technological innovation, actions proposed to be undertaken in the tourism sector include: cultural change in travelling (shift to closer located destinations, decrease of average number of trips per person along with increase in length-of-stay), modal shift (shift in transport volumes from airplane and car to rail and coach) as well as climate-oriented mobility management (optimization of entire passenger transport chains through information, communication, organisation, and coordination).

It is found that mainstream operators have as yet became hardly active in the latter areas, as they are constrained by the current market situation. Even though tourism consumers are well aware of the problem of climate change and declare their willingness to act, they do not demand climate-compliant travel products nor do they accept them when they are actively offered (as observed with low uptake rates of carbon offsets). The opposite is found: market demand is dominated by long-haul destinations, short breaks, air travel or individual car use. Today's price-sensitive and disloyal tourism consumer intensifies the competitive pressure among mainstream operators, with short- and mid-haul markets being increasingly taken up by low-cost carriers. It is questionable, however, to what extent current marketing activities of mainstream operators reinforce such demand patterns.

Effective mitigation eventually needs to take place via regulatory measures on an international level, assuring that all actors along the tourism value chain are treated the same way. However, fighting climate change is also to be considered a vital component of tour operators' "Corporate Social Responsibility". In this regard, operators need to act as facilitators and multipliers between their customers and suppliers. Against this background, this publication took a closer look at the mitigation potential within CSR and identified the most promising measures on the part of mainstream operators with a view to voluntarily enhancing climate protection. Provided that some underlying obstacles can be overcome, the most significant areas for action are carbon management, customer education, product design, ecolabelling, and PR & lobbying.

Corporate carbon management is regarded as a vital foundation for any further mitigation activity, incorporating climate protection as a guiding principle into existing business strategies and assuring top-level commitment. The first task of any tour operator is to come up with a detailed carbon inventory by setting up or expanding reporting systems, and transparently communicating it to public. Performance in carbon reporting varies considerably among mainstream operators, as they face challenges in setting up common procedures in their heterogeneously structured supplier chains. Supplier selection is found to be a crucial factor in tour operators' carbon strategies: working with climate-focused key performance indicators, based on external balanced scorecards can be suggested as a viable solution.

The responsibility of tour operators for accurately informing customers about the environmental impacts of their products is largely recognized among stakeholders. Whereas tour operators confirm this responsibility, they find challenges in presenting accurate information on climate impacts without cannibalizing their product image. It is found that customer education through tour operators is most likely to be effective if provided by qualified sales staff, personalized carbon footprinting and carbon offsetting. These instruments need to go hand in hand.

Further potential is discerned in intelligent product design that seeks to reduce carbon footprints through itinerary planning, modal shift, mobility management, innovative technologies and integrated carbon offsets, while complying with customer demands. Strong involvement of product managers in the relevant processes is considered decisive.

There is potential for promoting climate-compliant products through ecolabels, though attention is drawn to the fact that they must not reinforce the confusion already caused by the complex ecolabelling landscape. Here, incorporation climate aspects from origin-destination transport into existing ecolabelling systems is seen as a promising approach.

Additional opportunities were identified in creating "carbon clean" company images through PR activities. Even though consumers do not show high preparedness to become active in mitigation themselves, they appreciate companies that are committed to good environmental practices. Some tour operators believe that in future "green consumerism" will become an important issue and businesses that go in for relevant differentiation now, can gain competitive advantages in the long term. Key components of mitigation through PR are active involvement in public debates as well as constructive lobbying towards regulatory measures on an international level.

Carbon offsetting is increasingly considered by tour operators as an attractive option for becoming active in mitigation. It is likely that mainstream operators will further enhance integration of voluntary offset schemes into their operations, as it allows them to communicate that they take action against climate change without undertaking immediate structural changes. Even though it is considered an important intermediate instrument in a holistic mitigation response, the risk remains that voluntary carbon offsetting could become the principal means used by the industry to "reduce" emissions. It will be the task of governments and civil society to ensure that the necessary structural changes are not bypassed by way of such compensation mechanisms.

Tour operators do play a key role in the mitigation response of the entire tourism sector. Firstly they have tremendous reach all along the tourism value chain, and secondly they traditionally focus on market segments with the highest climate impacts. This is where they find themselves in a dilemma: On the one hand, they recognize that mitigation is essential for protecting their product and economic success in the long term. On the other hand, a net reduction of their corporate emissions would be counterproductive to their core business in the short term, as it requires a fundamental reorganisation of their current business models. Even though climate change seems to have become a major topic for the industry, willingness to initiate the related structural changes still seems to be limited among business leaders.

6 RECOMMENDATIONS

Various recommendations can be derived from the discussion of the three research questions. They can be sub-divided according to the main stakeholders that are relevant to the topic of interest: tour operators, civil society and government authorities.

6.1 Recommendations to Tour Operators

Carbon Management and Reporting (cf. 4.1)

- Establish holistic and long-term corporate carbon policies that are aligned with strategic business planning and strongly involve executive leaders from all business units. A net reduction of corporate carbon emissions should be a formulated long-term aim.

- Establish or expand internal carbon reporting systems by applying international standards such as the Greenhouse Gas Protocol or ISO14064. Attribute carbon footprints to product components.

- Make data on corporate mitigation performance publicly accessible and transparent. Collaborate with "Carbon Disclosure Project", "Global Reporting Initiative" or similar organizations. Disseminate performance reports internally and externally on a regular basis.

- Establish climate-focused key performance indicators that go beyond the mere aspect of energy efficiency, such as distance/length-of-stay ratio, modal split (share train/coach in total trips undertaken), average carbon footprint/customer, average carbon footprint/pkm, offset tons CO_2-eq/customer etc.

- Make climate performance a key criterion for supplier selection. Evaluation should consider full scope of mitigation implications, implemented for instance through external balanced scorecards.

Product Design

- Set up pilot projects for designing low carbon products where origin-destination transport becomes part of the holiday experience; enhance "slow tourism" by shifting from single-destination to multi-destination trips, where stopovers are connected with appealing earthbound transport services. Adapt round trips at long-haul destinations. Strongly involve product managers in respective processes (cf. 4.2.1, 4.2.4).

- Create "carbon neutral" product categories where offsets are an integrated part of travel packages. Consider ecolabels for promoting such products (cf. 4.2.3, 4.2.4, 4.3).

- Consider integrated mobility management as a future business activity for tour operators. Set up mobility centres, online platforms or hotlines that provide relevant services 24/7 to customers along the entire travel chain (e.g. organisation of luggage transfer from home to train station and hotel, short-term car sharing at destinations, uncomplicated booking of train and coach via online platform etc.), (cf. 4.2.4).

Education and Awareness Building

- Decouple transport mode from short and mid-haul travel packages and let consumer actively decide on this component (cf. 4.2.1).

- Disclose product-related carbon footprints to consumers during the sales process. Make this information understandable and put it into context with other emissions from people's every-day-life or a "personal yearly carbon budget" (cf. 4.4.2).

- Confront customers with the option to voluntarily offset their holiday carbon footprint. Work with credible offset providers that meet high standards (e.g. CDM Gold Standard) and create trust among customers by accurately explaining backgrounds and how money is used. Consider step-by-step integration of carbon offset services into booking procedures, introducing it first in a few distinct product categories with the target of subsequently extending it to the entire product portfolio (cf. 4.4.2, 4.4.3).

- Set up training programmes for sales staff in order to accurately advise customers in affiliated retail offices. Create relevant programmes for affiliated partners such as transport providers, hotels or travel agencies. Consider working through incentives e.g. pay commission to staff for carbon offsets sold (cf. 4.4.1).

- Organize workshops for executive managers in order to raise the issue and get necessary top-level commitment(cf. 4.1).

- Create education material, guidelines and reference databases for facilitating the internal (staff) and external (partner companies, stakeholders) implementation of mitigation measures and raising company-wide acceptance (cf. 4.4.1).

Public Relations and Policy Involvement

- Seek to create a "carbon clean" brand image by actively communicating action steps undertaken to the public; consider initiatives like Climate Counts for communication to the customer (cf. 4.5.2).

- Strengthen public-private partnerships with intergovernmental institutions or civil society; take part in public policy debates and promote best-practice examples; consider platforms like Climate Action Programme (cf. 4.6).

- Engage in constructive lobbying towards externalization of environmental costs of transport carriers and/or towards inclusion of aviation into the EU Emission Trading Scheme (cf. 4.6).

- Push on political level for better interoperability of rail systems between European countries as well as for improved international train and coach booking systems (cf. 4.6).

Sector-wide Collaboration

- Initiate concerted mitigation activities of several committed players in the sector; consider the Tour Operator's Initiative for Sustainable Development of Tourism, TraveLife and national trade associations as most relevant platforms (cf. 4.6).

6.2   Recommendations to Civil Society

- Inform consumers about tourism's impact on climate change and strengthen their holistic understanding of the problem; provide guidelines for climate-conscious travel behaviour and communicate best-practice examples (cf. 4.4.2).

- Encourage consumers to actively demand low-carbon travel products from tour operators (cf. 3.2).

- Engage in development and promotion of ecolabelling schemes that integrate climate implications of origin-destination transport. Consider adding an additional tier for climate performance to already existing multi-tiered international ecolabelling systems (e.g. Green Globe, European Ecolabel, TraveLife Sustainability Logo). Consider creating ecolabels also for travel packages rather than for entire companies (cf. 4.3).

- Monitor and externally assess tour operators' mitigation performance and communicate results to public; consider integration of the tourism sector in initiatives like Climate Counts (cf. 4.1).

- Call on low-cost airlines to become active in climate-focused product diversification, such as enhancing the low-cost concept for carbon efficient transport modes (cf. 2.3.3.3).

6.3 Recommendations to Regulatory Authorities and Intergovernmental Bodies

- Provide tour operators with technical assistance and capacity building through public-private partnerships; consider Tour Operators' Initiative for Sustainable Development of Tourism as a relevant platform (cf. 4.6).

- Create financial incentives for low-carbon tourism products; consider UNEP Finance Initiative as a relevant platform (cf. 4.6).

- Establish regulatory standards for customer education to be applied by tourism businesses, such as compulsory disclosure of product carbon footprints; consider ISO as relevant platform (cf. 4.1).

- Establish a regulatory framework for voluntary carbon offsetting, in terms of applied estimates in carbon calculators and administration cost for project implementation; consider UNWTO and ISO as relevant platforms (cf. 4.1, 4.6).

- Create standards for climate-focused ecolabelling schemes and set up international accreditation bodies; consider UNWTO, Sustainable Tourism Criteria Initiative and Sustainable Tourism Stewardship Council as relevant platforms (cf. 4.3).

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