Travelling large in 2009
The carbon footprint of Dutch holidaymakers in 2009 and the development since 2002

A project of NHTV Centre for Sustainable Tourism and Transport in collaboration with NRIT Research and NBTC-NIPO Research
Preface

The travel industry has gone through a very turbulent period since the start of this century. This turbulence was mainly caused by not reacting adequately to changing consumer behaviour. Consumers started booking their holidays and trips online. Internet made the sector very competitive and lowered entry barriers. Online travel agencies and direct sellers took the opportunity to enter this market. This left us with a market with more sellers and a relatively stable consumer demand.

Other very important developments for the travel industry are the sociological and demographic trends. The change in the composition of our population is already of influence in the consumer needs for travel. Identifying unique product-market combinations that meet consumer needs is a necessity for travel companies. Yet most large travel companies are still offering the same products to all consumers. In these times where social media channels make it so easy to stay in contact with consumers, I would advise travel companies to connect. Social Media keeps you aware and it helps to improve your business model by listening to your consumers. Since the last quarter of 2008 we were facing a credit crisis. All travel companies noticed this and turnovers dropped. Though the economic crisis is acute, there is also a long term crisis: climate change.

The necessity of sustainability in the travel industry is beginning to become a recurring item on the agenda’s of the management of travel companies. Awareness is there but little action has been seen. In an ING travel sustainability research, 25% of the consumers indicated that they find sustainability important. Price and comfort score higher on their ranking for matters of importance for their holiday, but these points of interest do not exclude one another. I challenge those travel companies who dare to think outside the box to come up with sustainable solutions for their organisation and their consumers.

Also think about cooperation with other companies outside your distribution channel and the leisure business. Searching for links with other companies can be the chance for travel companies to improve their earnings and respond to ongoing trends and developments in the tourism industry. As expressed in this report, monitoring Dutch tourism emissions is the way to make us all aware and understand that doing nothing is not an option anymore. Precise information about emissions will help those companies that really try to strongly reduce their impact on the climate. It will make them more creative in finding new low carbon products, while being more competitive at the same time.

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1 Introduction

After two Dutch reports on the carbon footprint (CF, the emissions of the greenhouse gas CO₂) of Dutch holidaymakers (De Bruijn et al. 2008, De Bruijn et al. 2009), and a translation of the second volume (De Bruijn et al. 2010), this third volume in the series is now directly conceived in English. All reports were written by the Centre for Sustainable Tourism and Transport of NHTV Breda University of Applied Sciences and NRIT Research, in collaboration with NBTC-NIPO. The current volume presents figures for 2009, and updates for 2002, 2005 and 2008. These updates were (again) necessary to correct for small errors in the previous volumes, and to incorporate new insights that are constantly being developed in the field of tourism and transport emissions. With 2009, the range of figures over several years now not only allows for a presentation of trends, but also for insight on a possible impact of the economic recession on tourism emissions.

Despite a shift of media attention from issues like climate change towards the recession and the global economy, the impact of industrial sectors – including tourism – on the environment is still discussed by these respective industries, for example as part of evolving Corporate Social Responsibility (CSR) strategies and/or newly introduced climate policies. For tourism, the 2008 World Tourism Organisation (UNWTO) report on the effects of climate change on tourism as well as the effects of tourism on greenhouse gas emissions (UNWTO-UNEP-WMO 2008) is still a work of reference. Other industry associations have also started to handle the theme more seriously (e.g. WTTC 2009). The UNWTO report estimates the contribution of tourism to carbon dioxide emissions at approximately 5% in 2005 (UNWTO-UNEP-WMO 2008). Moreover, UNWTO expects these emissions to increase by a factor 2.6 (or 160%) between 2005 and 2035. Information on the share of tourism of all environmental impacts and eco-efficiency (Euro spent by tourists per kg CO₂) of the Netherlands is important for the sector’s continued implementation of CSR.

The aim of this research consists of two parts. Firstly, it provides a complete overview of the effects of Dutch holidaymakers on climate and eco-efficiency in 2009. Secondly, it shows some of the changes that have occurred throughout the period 2002-2005-2008-2009. This understanding requires answers to the following questions:

• What is the total carbon footprint of Dutch holidaymakers and what are the developments of this carbon footprint?
• How does the holiday carbon footprint relate to the total carbon footprint of the Netherlands?
• What factors determine the development of the carbon footprint?
• What type of holidays and which parts of tourism are the least/most damaging to the environment?
• What is the eco-efficiency of different types of holidays?

1) A short text and a selection of the tables and figures shown in this volume is published in Dutch in the annual Tourism and Recreation in Figures report of Statistics Netherlands (CBS), see Peeters et al. (2010).
3.3.3 Transport mode domestic holidays

As in the previous section, values presented in table 3.6 are for the complete holiday, and not just the transport mode used. The car is the most popular transport mode which shows also in the total carbon footprint of domestic trips by car. These holidays also have the highest carbon footprint per holiday and per day, and therefore largely determine the average figures. Holidays by bus have the lowest footprint, followed by those by bicycle. However, the differences are small due to the short distances in the Netherlands.

### Table 3.6 Carbon footprint per day, per holiday and in total, by transport mode for domestic holidays in 2009

<table>
<thead>
<tr>
<th>Carbon footprint in kg CO₂</th>
<th>Per day</th>
<th>Per holiday</th>
<th>Total (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>22</td>
<td>138</td>
<td>2.265</td>
</tr>
<tr>
<td>Train</td>
<td>20</td>
<td>103</td>
<td>0.079</td>
</tr>
<tr>
<td>Touring car/shuttle bus</td>
<td>18</td>
<td>81</td>
<td>0.008</td>
</tr>
<tr>
<td>Bicycle</td>
<td>13</td>
<td>88</td>
<td>0.025</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>106</td>
<td>0.018</td>
</tr>
<tr>
<td>Average / total</td>
<td>22</td>
<td>135</td>
<td>2.395</td>
</tr>
</tbody>
</table>

3.3.4 Organisation type domestic holidays

Regarding the organisation type, the carbon footprint per day for domestic holidays is lowest for a non-organised holiday (see the list of terms for an explanation of organisation types). Specified by length of stay, non-organised holidays longer than nine days have the lowest per day footprint. A short, organised holiday by car shows the highest carbon footprint per day, even slightly surpassing the per day emissions value for staying at home.

### Table 3.7 Carbon footprint per day, per holiday and in total, by organisation type and length of stay in the Netherlands, 2009

<table>
<thead>
<tr>
<th>Organisation Type</th>
<th>2-4 days</th>
<th>5-8 days</th>
<th>9 days or more</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon footprint in kg CO₂</td>
<td>Per day</td>
<td>Per holiday</td>
<td>Total (Mt)</td>
<td>Per day</td>
</tr>
<tr>
<td>Organised car</td>
<td>30</td>
<td>99</td>
<td>0.313</td>
<td>24</td>
</tr>
<tr>
<td>Organised other</td>
<td>24</td>
<td>71</td>
<td>0.023</td>
<td>19</td>
</tr>
<tr>
<td>Non-organised</td>
<td>25</td>
<td>78</td>
<td>0.443</td>
<td>21</td>
</tr>
<tr>
<td>Average / total</td>
<td>27</td>
<td>85</td>
<td>0.779</td>
<td>22</td>
</tr>
</tbody>
</table>

3.4 Carbon footprint of outbound holidays

3.4.1 Length of outbound holidays

Section 3.3.1 showed that for domestic holidays, the carbon footprint per day decreases as the length of stay increases. For outbound holidays, medium-length holidays (5-8 days) have the largest carbon footprint per day. An important factor here is the often considerably longer distance travelled on long(er) holidays, and the subsequent higher use of the airplane as transport mode, which increases the share of the transport component in the total carbon footprint. The far longer average length of holidays of over eight days decreases the influence of this distance and transport mode factor.

### Table 3.8 Carbon footprint per day, per holiday and in total, by length of stay for outbound holidays in 2009

<table>
<thead>
<tr>
<th>Length of Stay</th>
<th>Per day</th>
<th>Per holiday</th>
<th>Total (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-4 days</td>
<td>53</td>
<td>173</td>
<td>0.658</td>
</tr>
<tr>
<td>5-8 days</td>
<td>59</td>
<td>405</td>
<td>2.242</td>
</tr>
<tr>
<td>9 days or more</td>
<td>54</td>
<td>902</td>
<td>8.099</td>
</tr>
<tr>
<td>Average / total</td>
<td>55</td>
<td>600</td>
<td>10.999</td>
</tr>
</tbody>
</table>
3.4.5 Organisation type outbound holidays (longer than 4 days)

The strong influence of the transport mode used is also apparent in the carbon footprint of outbound holidays per organisation type: an organised holiday by plane has the largest carbon footprint per day and per holiday (see table 3.13; see the list of terms for an explanation of organisation types). This footprint is even a fraction larger than that of the average holiday by plane, i.e. based on the transport mode used (see table 3.12). Organised holidays by plane produce by far the highest share of the total carbon footprint of outbound holidays by organisation type. Organised holidays by car (e.g. including accommodation booked with a travel agency) have a slightly lower carbon footprint per holiday than non-organised outbound holidays.

<table>
<thead>
<tr>
<th>Carbon footprint in kg CO₂</th>
<th>Per day</th>
<th>Per holiday</th>
<th>Total (Mt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organised car</td>
<td>34</td>
<td>403</td>
<td>1.293</td>
</tr>
<tr>
<td>Organised touring car</td>
<td>28</td>
<td>272</td>
<td>0.190</td>
</tr>
<tr>
<td>Organised airplane</td>
<td>94</td>
<td>1242</td>
<td>6.606</td>
</tr>
<tr>
<td>Organised other</td>
<td>33</td>
<td>356</td>
<td>0.184</td>
</tr>
<tr>
<td>Non-organised</td>
<td>31</td>
<td>433</td>
<td>2.069</td>
</tr>
<tr>
<td>Average / total</td>
<td>55</td>
<td>712</td>
<td>10.342</td>
</tr>
</tbody>
</table>

Source: CVO, 2009 (calculation CSTT/NRIT Research)

3.5 Carbon footprint per holiday component

The environmental impact of a holiday can be divided over the components transport, accommodation, and other aspects. These ‘other aspects’ are also called ‘entertainment’, and concern local activities (that also include local transport used for excursions etcetera). Figure 3.2 shows the division over these three categories. For all holidays, the transport used to and from the destination has the largest impact on the holiday carbon footprint (50%). Accommodation is responsible for over a third of all holiday emissions (35%).

Figure 3.2 also shows large differences between domestic and outbound holidays. For the carbon footprint of domestic holidays, accommodation is particularly relevant (64%), whereas transport is similarly important for outbound holidays (58%). All three components have a much larger absolute environmental impact with outbound holidays than with domestic holidays.

In table 3.14 the carbon footprint of the three components is shown for various destinations. One figure that stands out is the large share of transport in the holiday carbon footprint of more distant destinations. This is particularly valid for countries and regions that are mainly accessed by plane, where the transport share is typically at least around 50%, starting with Ireland, Finland and Spain, and reaching up to 83% for overseas destinations. Intercontinental holidays also have a relatively large carbon footprint for the category ‘other’, mainly caused by the longer duration of these holidays, but also because of round trips made at the destination (involving long distances and often local flights). In the right (percentage) column this share is not very large, because the transport component still weighs much heavier.
4.3 Developments in CO₂ emissions

The developments shown in the previous section can also be seen in the development of CO₂ emissions. Figure 4.1 displays the development of emissions for domestic and outbound holidays, in total, per holiday and per day. Until 2008, total emissions increased with an average of 2.6% per year; the increase being slightly larger between 2005 and 2008 than between 2002 and 2005. That increase in emissions can be completely attributed to the growth of outbound holidays (4% per year). Between 2008 and 2009, a decrease of outbound holidays (by 3.9%) was also solely responsible for a 2.9% reduction in total emissions. The emissions of domestic holidays have actually decreased by 2.4% per year until 2008, but are recovering slowly. After the strongest decrease took place between 2002 and 2005, the decline slowed down between 2005 and 2008, and 2008-2009 even saw a small increase by 2.4% (see also figures in table 4.5).

Figure 4.1 Emission trends of domestic, outbound and total holidays, in total, per holiday, and per day

Figure 4.2 shows emission trends for holidays with different transport modes (only outbound) and organisation types (domestic and outbound)\(^1\). The very strong growth of emissions of holidays by plane, with 10.4% per year in the 2002-2005 period and 5.8% in the 2005-2008 period, is followed by a 6.7% decrease in 2008-2009. The emissions of outbound holidays by car, bus and train all decreased during the 2002-2005 period and increased between 2005 and 2008. Between 2008 and 2009, emissions of outbound holidays by train (-6.7%) and particularly bus (-22%) decreased again. During this last period, only outbound emissions by car show an increase. Of particular interest is the very similar development in emissions of holidays by plane and organised holidays, and of holidays by car and non-organised holidays. The share of holidays by plane of all organised holidays is rather large, and a large number of holidays by plane is offered by tour operators. Holidays by car are mainly taken non-organised.

When taking a closer look at the growth of emissions, it becomes evident that most of the total growth of 1.9 Mt between 2002 and 2009, namely 1.7 Mt, is caused by holidays taken outside of Europe (intercontinental). The emissions of intercontinental holidays have grown by 82% between 2002 and 2008, and decreased by 5% in 2009 (see table 4.5). The share of emissions of intercontinental holidays has grown from 20% (in 2002) to 30% (in 2008 and 2009) of all holiday emissions. This development is also visible in the total distance that people travelled to their destinations (+3.4% per year). Consequently, the emissions of transport have grown faster (+3.1% per year) than average, whereas those from accommodations (+1.4% per year) and other holiday activities (+2.1% per year) grew slower. The total number of holidays showed only a small increase between 2002 and 2009 (+2.5%), following a decrease of 3% between 2002 and 2005, and an increase of 6% between 2005 and 2009. It can therefore be concluded that the growth of the carbon footprint is due to changes in the way of holidaymaking (mainly a change in destinations), and not due to a growth in the number of holidays.

\(^1\) Please note that in this figure, organised holidays are package and combined holidays only, and non-organised holidays also include those where accommodation or transport have been booked.
The impact of tourism on the environment, in general and specifically on the climate, is receiving plenty of attention. In 2008, the Centre for Sustainable Tourism and Transport of NHTV Breda University of Applied Sciences and NRIT Research, in collaboration with NBTC-NIPO Research, published the (Dutch) pilot-report ‘Travelling large in 2005’. In this report the environmental impact of Dutch holiday behaviour was calculated. The carbon footprint was one tool used for this: the emissions of carbon dioxide are responsible for climate change. We now present the third volume in this series, presenting the carbon footprint of holidays by the Dutch in 2002, 2005, 2008 and 2009. This report not only contains a complete overview of the impacts of Dutch tourists on the climate in 2009, but also presents the development of the holiday carbon footprint through the years 2002-2005-2008-2009.