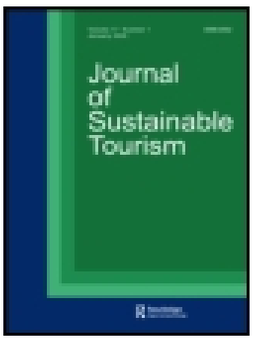

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Susanne Becken

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How Tourists and Tourism Experts Perceive Climate Change and Carbon-offsetting Schemes

Susanne Becken
Landcare Research, P.O. Box 69, Lincoln 8152, New Zealand

This study was undertaken against the background of tourism as an active contributor to climate change, to explore how tourists and 'tourism experts' perceive climate change and forest carbon sinks as a means to offset carbon dioxide emissions. Three different surveys were undertaken in Australia and New Zealand that contained the same two questions: is climate change an issue for tourism, and would tourists be willing to participate in tree-planting to offset their greenhouse gas emissions. About half of all tourists questioned a link between climate change and tourism, but the willingness to plant a tree was surprisingly high among tourists (48%), who associated much broader benefits with trees than their function as carbon sinks. The study identified five groups of tourists that require different approaches for the development of educational campaigns. The degree to which cognitive or affective factors play a role for each group will be critical for the success of such campaigns. Tourism experts saw a changing climate as a potential threat for tourism, but did not necessarily see tourism's fossil fuel consumption and the resulting carbon dioxide emissions as a contributor to climate change.

Keywords: carbon sinks, climate change, environmental attitudes, offsetting emissions, tree-planting

Introduction

Global concern about greenhouse gas emissions and climate change manifests itself in several international agreements, such as the *United Nations Framework Convention on Climate Change* in 1992 (UNFCCC), and the subsequent *Kyoto Protocol* (UNFCCC, 2004) in 1997 (the enforcement of this Protocol is currently pending on Russia's ratification). Tourism has only recently attracted attention as both an important contributor to climate change through its greenhouse gas emissions (Gössling, 2002a), and as an industry that is potentially at high risk given predicted changes in the global climate. The *First Conference on Climate Change and Tourism* convened by the World Tourism Organisation (WTO, 2003) signals rising interest in the link between the two global phenomena, although the main research focus at this stage seems to be on the threat of a changing climate on tourist destinations (König, 1998; Maddison, 2001; Viner & Agnew, 1999; Wall, 1998). Tourism's role as contributor to climate change has largely been neglected, with only few studies having investigated energy use and greenhouse gas emissions associated with tourist activities (Becken, 2002; Becken *et al.*, 2001; Gössling, 2000; Høyer, 2000). The controversy about tourists' travel and its impact on the global climate has been publicised in newspapers and popular

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journals (e.g. Bunting, 2001; Lynes & Becken, 2002) to inform the public, but also with the result of spreading a fair amount of scientific uncertainty (Zehr, 2000).

The main actors in tourism are the tourists themselves, who make their travel decisions and exert considerable market power. Little is known, however, about whether tourists are aware of how their travel impacts on global climate, and conversely what impact a changing climate may have on tourist destinations. Moreover, there has been no research on the willingness of tourists to mitigate such effects. Both tourists' knowledge and attitudes – as predispositions of behaviour (Rokeach, 1973) – are important input parameters for the development of communication campaigns to reduce tourism's net contribution to climate change. To build a base for such campaigns, this paper explores the perceptions of tourists with regard to climate change and their attitudes towards forest carbon sinks. As part of the study, the responses of a group of 'tourism experts' were also analysed to check for possible differences between the lay public and people who are professionally involved in tourism. This paper is exploratory and intends to encourage further in-depth studies of tourists and their attitudes towards climate change, with the aim of influencing tourists' decision making towards more climate-friendly travel.

Carbon-offsetting in Tourism

Several initiatives have been proposed to reduce greenhouse gas emissions; for example increasing energy efficiency (e.g. Green Globe 21, 2002, an environmental programme for the tourism industry), or developing carbon-offsetting schemes. In such schemes, carbon sinks absorb and store greenhouse gases in a permanent or semi-permanent form. One form of carbon sink is the sequestration of carbon dioxide as biomass, usually trees. The usefulness of forests as sinks (as opposed to geological or deep-ocean storage) is strongly debated, mainly because it is difficult to measure carbon uptake, the carbon stored is unstable and not permanent (e.g. forest fires, pests), and the promotion of carbon sinks diverts from the pressing need to reduce the combustion of fossil fuels (Noble & Scholes, 2001). On the other hand, carbon sinks are an invaluable means to save time on the way towards energy efficient economies and alternative fuel sources. They are also associated with other benefits; for example in relation to biodiversity, hydrology, soil retention, and the potential to attract tourists to reforested areas (Hall, 2001). Several schemes exist worldwide; for example the New Zealand-specific EBEX21 that combines carbon sinks with the regeneration of indigenous forest (Carswell *et al.*, 2003), and tourism-specific ones that aim to mitigate the impacts of air travel (e.g. Future Forests, 2000). Carbon sinks have also been suggested as an intermediate solution (Curtis, 2002) to compensate for energy use in the accommodation industry in Queensland, Australia. In the context of air travel, Gössling (2000) calculated a hypothetical land area of 28,800 square kilometres that would need to be forested to offset carbon dioxide emissions resulting just from global tourism air travel in 2000. The enhancement of carbon sinks is recognised in the Kyoto Protocol (Article 3) as a mitigation measure, and it is for this reason that the potential to include tourists in such mechanisms needs to be explored further.

Method

Three different surveys gathered information on people's perceptions of climate change and a carbon-offsetting option. Two surveys involved interviewing tourists in New Zealand, and one involved participants in a major tourism conference (tourism experts) in Australia. All three surveys contained the same two questions:

Question A: Do you think global climate change is an issue for tourism?Why?
Question B: Would you participate in a 'tree-planting-scheme' where you plant a tree (at a small cost, e.g. NZ$15) to offset some of the greenhouse gas emissions produced as a result of your travel? Why?

Both questions offered a 'yes', 'no' and 'unsure' option for the first part of the question and some blank space for further explanations. Question A was purposely phrased openly to allow a wide range of answers, and because it was considered an important outcome of this question if respondents would spontaneously refer to the fact that a changing climate impacts on tourism or whether tourism contributes to climate change.

Sampling

The two tourist surveys were undertaken independently in the New Zealand summer season (November 2002 to February 2003). The first study employed an assisted questionnaire on the broader issue of 'ecolabels' to which the two questions on climate change were attached. In this study, both international and domestic tourists were chosen by convenience in the city centre of Christchurch, the main city in New Zealand's South Island. This survey followed a quota sampling system aiming at a representative mix of nationalities. The second tourist survey collected information on international tourists' travel behaviour in New Zealand. The travel behaviour survey was administered in the form of an exit survey, where tourists were interviewed about their trip in New Zealand with an assisted questionnaire. For tourists who had just arrived, a diary and a prepaid envelope were handed out that contained the same questions as in the exit survey. This survey involved convenience sampling in main tourist locations in Christchurch and Auckland, and aimed to achieve a representative mix of nationalities.

The expert survey was conducted during the registration time at the three-day Australian CAUTHE (Council for Australian University Tourism and Hospitality Education) conference in Coffs Harbour (5–7 February 2003). In addition to the two core questions above, personal and professional information was collected. This survey has a small sample size and results may not be representative of all tourism experts. It is included nevertheless, because it indicates that even among tourism experts, knowledge about climate change is limited and misconceptions are similar to those held by tourists.

Characteristics of the samples

The two tourist surveys collected data from 295 (ecolabel survey) and 201 (travel behaviour survey) tourists. Both surveys over-sampled visitors from the UK (22% and 20% as opposed to their real share of 11% of all international visitors

Table 1 Professional background and field of interest of CAUTHE 2003 respondents

	Respondents (%)	*Fields of interest*
Academia, University	54.5	Cultural tourism, 12.1%; marketing, 12.1%; sustainability, 12.1%; destination planning, 6.1%; hospitality 6.1%; tourist behaviour, 3%; special interest, 3%
Research	27.3	Special interest, 6.1%; marketing, 6.1%; destination planning, 6.1%; cultural tourism, 3%; hospitality, 3.0%; no specification, 3%
Industry	12.1	Publisher, 6.1%; hospitality, 6.1%
Education	3.0	Education, 3%
Government	3.0	Destination planning, 3%,

in 2001, Statistics New Zealand, 2002) and Germany (13% and 16% instead of 3% in 2001). Japanese tourists were under-represented in the ecolabel survey (mainly because of language problems). The travel behaviour survey employed a Japanese-speaking research assistant for one day in Christchurch to partly overcome this problem (however, a large proportion of those visitors did not answer the questions under scrutiny in this study). North American visitors were also under-sampled, probably because of their usually short stay and resulting time constraints, which made it difficult to interview them. The ecolabel survey under-sampled domestic tourists, possibly because of less 'touristic' behaviour which made them less accessible compared with international tourists. Both tourist surveys over-sampled tourists with a length of stay longer than the average tourist (21 days, Statistics New Zealand, 2002) (53 and 41 days in the ecolabel and travel behaviour survey, respectively). Tourists who have more time were more willing to be interviewed compared with short-stay tourists. This caveat applies as well to those tourists who travelled independently on a loose itinerary, as opposed to tour group participants with an organised itinerary. In summary, both tourist surveys represent mostly international, independent travellers who stay longer, and who are often of European origin.

The 'tourism expert' survey covered 12.5% of all delegates (33 out of 265), most of whom are academics. This is a small sample and no official statistics on the participants are available to assess the representativeness of the sample (Table 1). About 12% of participants reported 'sustainable tourism' as their main area of interest. The respondents from the CAUTHE survey covered all age groups from 20 to over 70 years of age.

Analysis

The samples of the two tourist surveys were sufficiently similar (age, length of stay, gender) to be merged. The response rate to Questions A and B was higher in the ecolabel survey, and the number of respondents linking climate change with

tourism, as well as the number of tourists willing to pay to plant a tree was higher in the ecolabel survey. This may be explained by the overall environmental focus of the ecolabel survey, which may have biased respondents towards 'environmentally friendly' answers.

For the purpose of this study, it was considered useful to segment respondents into distinct groups for which possibly different strategies of communication would apply. The tourist sample was broken down into five groups of respondents based on their answers to Questions A and B. The groups were then analysed with regard to their knowledge or perception of climate change and their attitude towards a tree-planting scheme. Because of its small size, the sample of tourism experts was not further segmented. The explanations provided by respondents for Question A and B were analysed both quantitatively (grouped into themes by their content) and qualitatively (described in terms of context).

Results

Segmenting tourists into groups

Tourists were segmented into five groups reflecting different combinations of answers for Question A and B (Table 2). Respondents who opted for the 'unsure' or 'no' replies were merged, because the expression of doubt in this context was interpreted as a negative answer rather than a positive one. Respondents who were unsure about both questions were considered to form a group in their own right ('Undecided'). Fifteen tourists who answered none of the two questions were excluded.

Tourists who perceived climate change to be an issue and who were also willing to mitigate negative effects by planting a tree constituted the largest group ('Green tourists': 36%), followed by 'Undecided' respondents who were not sure about either question (27%). About every fifth (21%) tourist did not recognise the link between climate change and tourism and was also not interested in planting a tree ('Resisters'). Two further small groups represent mixed answers: 'Sceptics' perceived that climate change is somewhat of an issue, but

Table 2 Segmentation of tourists based on their answers to Question A and B, Total N = 429

		Question B: Willingness to plant a tree		
Question A: Climate change is an issue for tourism		Yes	No	Unsure
	Yes	Green tourists 36.1%	Sceptics 15.6%	
	No	Uninformed willing 12.1%	Resisters*	
	Unsure		21.2%	Undecided 27%†

*This group also contains 29 tourists who believed climate change is not an issue, but who did not respond to Question B

†This group contains 24 tourists who responded positively or 'unsure' to Question A but did not answer Question B

they did not want to plant a tree, while the 'Uninformed willing' would engage in tree planting, although they did not feel climate change is important for tourism.

The five tourist groups and the non-respondents differed significantly in their region of origin (collapsed into six regions: New Zealand, Australia, North America, Europe, Asia and other) ($\chi = 42.8$, df = 25, $p = 0.015$), length of stay ($F = 3.76$, df = 5, 490, $p = 0.015$), education ($\chi = 26.1$, df = 16, $p = 0.052$), and income ($\chi = 58.9$, df = 32, $p = 0.03$). The groups did not differ significantly with regard to gender, age, travel party and the holiday style as packaged or unpacked.

Analysis of groups

In the following, five tourist groups and the group of tourism experts are analysed for the explanations provided for Questions A and B to better understand knowledge and attitudes that led respondents to their 'yes', 'no' or 'unsure' answers used for the segmentation.

Yes – Yes Group – or 'Green tourists'

Tourists in the Yes – Yes Group showed a reasonable understanding of the relationship, some referring to the emission side (28%) and some to the impact side (27%) (Table 3). The explanations revealed some degree of technical understanding, which manifests in the usage of words such as 'greenhouse gas emissions', '[fuel] consumption', 'global travel', 'stable climate', 'ecosystem', as well in sometimes detailed listing of effects, such as 'sea level rise', 'glaciers retreating', 'more rain', or 'vegetation changes'. On the other hand, a smaller group (16%) within this segment provided very generalised statements, such as 'The world is one' or 'It will ruin it', that show some concern for the environment, but no particular understanding of climate change. Respondents had negative associations with tourism, for example using the phrase 'mass tourism' and verbs like 'damage', 'harm', 'destroy' or 'being detrimental'. Understanding and concern were also apparent in question B, where a large number of respondents (Theme 1 and 3, Table 3) felt the need to engage in environmental action. Tourists rarely linked trees with carbon sinks, but expressed a general wish to 'make a contribution' and to 'put ideas into action'. A few commented on emissions from travelling and felt responsible ('Make you feel less guilty about travelling'). A smaller group (9%) provided emotional statements, such as 'because I love trees', and some respondents referred to the suggested NZ$15 as a very cheap option, or even made concrete suggestions for alternative schemes, such as eco taxes (7%). A small number (3%) felt a need to educate tourists ('Tourists need to understand how their trips affects the earth negatively and what they can do to help'). The 'Green tourists' were most likely to provide a detailed answer to Questions A and B, which indicates their strong opinions about the issues.

Yes – No Group – or 'Sceptics'

'Sceptics' (Table 3) perceived that climate change is an issue for tourism, but as opposed to 'Green tourists', they were evasive and concerned about financial commitments. The most common theme was that changing weather patterns affect tourism (27%), although the explanations were somewhat less technical or dramatic compared with the 'Green tourists', and only few (13%) referred to the problem of greenhouse gas emissions. There was some vague concern for the environment ('issue for everyone') (18%), and also some confusion with weather

phenomena and the ozone layer (6%). Respondents believed they should not pay for a tree ('already paid extra to accommodation'- reflecting perceived higher costs associated with 'green accommodation') (15%), generally being sceptical of the idea without further information (13%). Tourists in this segment deferred responsibility by saying 'it would make no difference', 'it's a local responsibility', or by referring to other issues, such as 'Before the New Zealand people have to learn recycling bottles, tins, plastic. New Zealand people need too many plastic bags!'.

No – No Group – or 'Resisters'

Most 'Resisters' (Table 3) did not explain why climate change was no issue for tourism (56%), and why they would not support a carbon sink scheme (61.5%), which may be an indication of disinterest, lack of knowledge or annoyance. The explanations given revealed a high degree of ignorance and confusion (13%), as well as the conveyance of responsibility (8%) to other industries or intangible factions ('It's a world problem'). Some tourists (6%) reacted slightly annoyed ('The issue has been over hyped' or 'Vacation = Relaxing'). Because most respondents did not understand the issue, they also did not see any use in paying money for trees (10%). The fact that a group within the 'Resisters' would be prepared to consider tree-planting at home (9%) shows again the lack of understanding of a global problem. Again, some replies revealed some degree of anger ('Any such programme is a show!') or the priority of personal concerns, such as 'too dirty' or 'no money or spare time' (7%).

No – Yes group – or the 'Uninformed willing'

While the 'Uninformed willing' (Table 3) have a poor understanding of the problem (either expressed explicitly by confusing climate change with the weather and other problems, or more indirectly by deviating from the question, e.g. 'Too big an area to specify') (28%), they are willing to participate in tree planting, often explained by a rather naïve and emotional understanding of nature and ('Without air no life, without life no travel') (14%), and the willingness to 'Give something back for future generations' (25%). Within this segment there were also respondents who saw tree-planting as a form of entertainment or tourist attraction ('For the kids' entertainment', 'Would be fun and like to meet new people') (10%).

Unsure – Unsure Group – 'Undecided'

The 'Undecided' segment showed the highest non-response rate (Table 3), which signals their disinterest or lack of ability to provide an explanation. Tourists were ignorant about climate change, either admitting it openly (4%) or referring to some other phenomena such as 'rain', 'cold weather', and 'pollution' (21%), or the 'ozone layer (3%). Similarly, the replies to Question B were vague, sceptical and evasive ('Don't want to commit to anything').

Tourism experts

The results presented here provide a snapshot of what a limited number of tourism experts think about climate change and carbon sinks, and further research would be required to fully assess experts' level of understanding and attitudes in a representative way. Almost all tourism experts believed that

Table 3 Most common three themes for Questions A and B and typical statements by tourists for the five segments

Segment	*Most common themes: Question A*	*Most common themes: Question B*	*Typical comments*
Green tourists: No expl. provided. A: 17%; B: 20%	Theme 1: Tourism affects the climate/environment, 28%. Theme 2: Changing weather patterns affect tourism, 27%. Theme 3: General, vague environmental concern, 16%.	Theme 1: To give something back to nature, general, 25%. Theme 2: Good idea, 14%. Theme 3: To take responsibility, concrete, 11%.	Respondent I: A: 'It probably is, after travelling about 20,000 km from our home country to New Zealand, it kind of has an impact on the environment'. B: 'The impact of such a planting a tree wouldn't be huge . . . it might be an initiative to start people think about the environment, nice idea'.
Sceptics: No expl. provided. A: 22%; B: 24%	Theme 1: Changing weather patterns affect tourism, 27%. Theme 2: General, vague environmental concern, 18%. Theme 3: Tourism affects the climate/environment, 13%.	Theme 1: Cost of the scheme, 14.9%. Theme 2: Doubt about the scheme, 13.4%. Theme 3: Clear resistance, 11.9%.	Respondent I: A: 'We were told the climate in NZ changes very quickly, so we were told to bring warm clothes'. B: No response. Respondent II: A: 'Ozone hole over NZ stops some people wanting to visit'. B: 'Need more info'.
Resisters: No expl. provided. A: 56%; B: 62%	Theme 1: Confusion/ignorance, 13%. Theme 2: Tourism is not responsible, 8%. Theme 3: Not on holiday, 6%.	Theme 1: Cost and time, 10%. Theme 2: Would do it at home, 9%. Theme 3: Clear resistance, 7%.	Respondent I: A: 'It's the manufacturers and industries that cause it, they should clean it up'. B: 'Christchurch has enough trees'. Respondent II: A: 'Tourists are on holiday to relax and not to think about anything'. B: 'I'm on holiday – don't want to pay to work for no reason'.
Uniformed willing: No expl. provided. A: 29%; B: 25%	Theme 1: Evasive statement about the complexity of the issue, 28%. Theme 2: Tourism is not responsible, 8%. Theme 3: Very little understanding, 8%.	Theme 1: Give something back to nature, 25%. Theme 2: Trees are important, 14%. Theme 3: Planting trees as a tourist attraction, 10%.	Respondent I: A: 'It's a complicated issue'. B: 'Could be fun'.Respondent II: A: 'Not now but it could be'. B: 'I love trees, that's why I am here'.
Undecided No expl. provided. A: 65%; B: 84%	Theme 1: Confusion with weather phenomena, 21%. Theme 2: No understanding, 4%. Theme 3: General, vague environmental concern, 4%.	Theme 1: Cost or time, 4.3%. Theme 2: Would do it at home, 2.6%. Theme 3: Confused role of trees, 2.6%.	Respondent I: A: 'We didn't like the weather here. We're spoiled with Australia. But we're not sure if it changes plans!' B: Maybe in Holland! NZ is still very clean but I think it's gonna be the same here over 10 to 20 years as in Europe! That's because everybody wants to make money out of tourism and nature has to suffer!'

climate change is an issue for tourism (97%). Generally, tourism experts focused on the impact of a changing climate on tourism (36%), rather than tourism's contribution to greenhouse gas emissions. A number of statements (24%) made indicated some misconceptions held about climate change similar to those described for tourists. Only 9% directly referred to tourism's contribution to climate change, for example by saying that it is an issue because of 'impacts from resorts, air travel, emissions from boats, motor buses, cars'. Two respondents noted the need to educate tourists about this issue. In terms of question B, 30% believed that tourists would participate in a tree-planting scheme. Most tourism experts, however, were unsure about Question B (46%), did not fully understand it or were simply sceptical about carbon sinks (24%). Experts were pessimistic that tourists would be interested, for example referring to lack of interest or financial commitments. A group of experts (24%) believed that some segments, for example eco tourists might participate in such a scheme because 'it makes tourists feel good'.

Discussion

While it is rarely denied that humans cause greenhouse gases to be emitted that lead to a warming of the atmosphere, it has been pointed out that the causes of climate change are diverse, and that the consequences are complex, long-term and not directly observable (Lenzen, 1999/2000; McDaniels *et al.*, 1996). These attributes lead to uncertainty and confusion among the general public. As in previous research involving the public (McDaniels *et al.*, 1996; Stoll-Kleemann *et al.*, 2001), tourists only rarely made the connection between causes (e.g. emissions from air travel) and effects (climate change) (Kasemir *et al.*, 2000). Overall, tourism experts were better informed than tourists, although the general opinion was clearly biased towards the perception of tourism being threatened by a changing climate and not the other way round. Recent initiatives by the World Tourism Organisation may spark more research in this area, although again the focus here seems to be on the impacts a changing climate has on destinations (WTO, 2003).

Earlier research (Löfstedt, 1991; McDaniels *et al.*, 1996) investigated people's perception of different global environmental impacts (climate change, ozone depletion and biodiversity) and revealed that people assess risk in terms of 'net benefit', rather than potential environmental impacts. In the case of private vehicles, for example, people perceive the pollution from vehicle emissions as less severe, because they associate considerable personal benefits with using a vehicle. Holidays are undertaken to achieve personal benefits and it could therefore be concluded that the environmental risks associated with holidays are underestimated, and accordingly changes in travel behaviour (e.g. trip suppression or shift to low-emission transport modes) are less likely to happen compared with situations in everyday life. This attitude surfaced in a few responses that referred to the specific situation of being on a holiday (free of responsibility), mainly from tourists in the 'Resisters' segment, but also – more indirectly – from those who recognised tourism's contribution to climate change and who nevertheless undertook a long-distance trip to New Zealand ('Green tourists' and 'Sceptics'). The phenomenon of people acting for their personal benefit but against the good of society is commonly referred to as the

'tragedy-of-the-commons', and has been discussed in the context of climate change by Stoll-Kleemann *et al.* (2001).

A preferred way of avoiding the dissonance resulting from actual behaviour and pro-environmental attitudes is to contribute financially (and therefore internalise externalities), while keeping the privilege of continuing current practices (Davis & Tisdell, 1998; Müller *et al*., 2001). Indeed, a large number of tourists in this study (48.3%) were willing to participate in, or pay for (e.g. by an eco tax), a tree-planting scheme. Tree-planting initiatives were controversial with tourism experts, although several pointed out that such schemes would be popular with tourists who want to make a difference and contribute to nature conservation. Indeed, tourists in the 'Green' segment noted that they felt 'guilty' about their travel and that planting a tree was a 'cheap' way to feel better.

The results of this study generally showed a general lack of knowledge, especially in relation to the confusion with the ozone layer and the natural weather cycles (see also UMR Research, 2001). The segmentation into different groups proved useful, because it revealed very different levels of understanding (Question A) and attitudes towards mitigating negative effects (Question B). The analysis identified some potential to communicate a carbon-offsetting scheme to 'Green tourists' and to the 'Uninformed willing', to communicate to the 'Sceptics', and much less potential to connect to 'Undecided' tourists and 'Resisters'. Each segment will require a different communication strategy (Table 4).

While information and environmental education are important to induce behavioural change, they are not sufficient (Lenzen, 1999/2000), because both environmental attitudes and behaviour are heavily influenced by affect and not only by cognition (Pooley & O'Connor, 2000). Terminology also plays an important role, with, for example, people in New Zealand having a greater understanding of the term 'global warming' compared with 'climate change' (UMR Research, 2001). The different segments presented in this study are likely to respond differently to information using technical terms to improve their knowledge and also to campaigns that build on emotional components to influence attitudes (Table 4). The 'Sceptics' showed that knowledge alone does not necessarily lead to environmental action, whereas the environmental concern of the 'Uninformed willing' seemed to explain their willingness to engage in tree-planting. This confirms previous findings that attitudes are better predictors for behaviour than knowledge (Nilsson & Küller, 2000), although it has to be noted that Question B investigated an intention for action rather than behaviour change itself.

When interpreting the results presented in this study it has to be pointed out that the tourism experts interviewed were mainly from an academic background, and it would be useful to further study knowledge and attitudes of people involved in the industry from a business, marketing or planning perspective. Similarly, the tourists analysed in this sample constitute a sub-group of the general lay public defined by their ability and desire to engage in overseas, often long-haul travel (apart from the New Zealand respondents), and their common interest to visit the mainly nature destination, New Zealand. A large proportion of the respondents are likely to be part of higher socio-economic groups, and as a result of a sample bias, the tourists discussed here are narrowed down even more

Table 4 Key factors to be addressed for promoting a carbon-offsetting scheme, segments in order of likely success

Group	*Campaign builds on . . .*
Green tourists	Understanding, facts, cognition, taking of responsibility, attachment to nature
Uninformed willing	Appeal to nature conservation in general, emotions, affection, fun and entertainment, a 'good' thing to do
Sceptics	Simple explanations of relationships between tourism and climate change, and the concept of a carbon sink, increase sense for personal responsibility
Undecided	Provide very simple information on the issue, increase general awareness of the environment
Resisters	Difficult: Build trust and appeal to personal responsibilities of tourism

to mainly independently travelling Europeans who engage in extended stays in New Zealand. It is therefore acknowledged that this exploratory study only provides a first insight into the perceptions of a limited sample of tourists in New Zealand. Further studies in other geographical areas or with a different study design would be useful to gain a broader cross-section of tourists and in-depth information, for example by means of focus groups. This would overcome the weakness that is generally associated with open-ended questions in questionnaire-based survey instruments that do not allow sufficient time and space to the respondent to fully reveal their viewpoint.

Future research could also further investigate the gap between knowledge about environmental impacts and the reluctance to be environmentally active. In the case of international tourists, Gössling (2002b) raised the dilemma that cosmopolitan travellers (tourists who frequently undertake long-haul holidays) are likely to have a high awareness of environmental problems, but are less likely to engage in action because – as a result of their frequent travel – they are decoupled from a local context and therefore from tangible responsibilities within their home environment. This loss of responsibility is particularly true for global problems, such as climate change, that do not form part of the sphere of influence of individual travellers. In contrast, the planting of a tree is a very visible and concrete undertaking, which may appeal to cosmopolitan travellers because of its local nature. Unfortunately, it is not very practical to engage tourists in personally planting trees in the long term, but it is rather desirable to collect money from tourists for larger-scale and more long-term reforestation projects, as for example suggested in the EBEX21 scheme (Carswell *et al.*, in press). It would be worth establishing, however, whether tourists could be engaged in local environmental activities, such as tree-planting, as a starting point that generates some connectivity with the environment and that may lead to more disconnected support (i.e. financial contributions) in the future.

Concluding Remarks

This research identified the need for more information on the causes and effects of climate change in the context of tourism. Travelling is a fossil fuel-dependent activity and tourism is a major contributor to climate change. This role of tourism has not received much attention either by tourists themselves or by tourism experts. The results show that more research is needed to fully assess the current understanding and misconceptions about climate change that are prevalent among people involved in tourism, especially given that the sample analysed here is likely to represent a sub-set of the global population of tourists and tourism experts. Five different segments of tourists were identified for the development of information campaigns or promotional activities for carbon offsetting schemes. This research showed that only one segment ('Green tourists') might be susceptible to initiatives involving cognitive effort, whereas other groups are either characterised by complete lack of knowledge (which requires a low level of information) or by the emphasis on affective and emotional components. This became particularly evident in the emotions people attach to planting trees. Planting a tree appeared as a symbolic act that mitigates any behaviour (not only greenhouse gas emissions) that is destructive to the environment. This is an important finding for campaigns that seek to promote carbon sinks for tourism, because to be effective, campaigns need to be differentiated and emphasise to different degrees the wide range of functions of trees (sequestration of carbon dioxide, erosion prevention, biodiversity, aesthetic landscapes, healthy microclimate, etc.).

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Correspondence

Any correspondence should be directed to Susanne Becken, Landcare Research, P.O. Box 69, Lincoln 8152, New Zealand (beckens@landcareresearch.co.nz).

Notes

1. This question was rephrased for tourism experts: Do you think tourists would . . . ?
2. The education and income variable was collected only in the ecolabel survey.
3. It has to be noted, however, that among those tourists (about 10%) who realised that tourism contributes to greenhouse gas emissions, air travel and other transport were most commonly correctly identified as the main causes.

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