

Exploring the potential of an air transport eco-label

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Received: 10/01/2017 Accepted: 05/07/2017

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Abstract

Air transport plays a vital role in tourism because it makes long-haul destinations accessible and more frequent vacations possible. Despite its benefits, air travel extensively contributes to climate change. Behavioural change is seen as a key driver in mitigating the environmental impacts of air transport. One way to encourage behavioural change is the use of eco-labels. This paper presents the idea of introducing an air transport eco-label. It explores the idea's potential and realization through the thematic analysis of 12 interviews with airline industry experts. The results indicated a need for an air transport eco-label. It could help build awareness among air travellers by providing them with environmental information during booking, thereby making flights environmentally comparable. This would also stimulate more competition between airlines, motivating them to improve their environmental performance and creating competitive advantage for those performing better. Finally, the study found that there should be only one eco-label, which should be compulsory for all commercial flights. It should be introduced by an independent authority in order to ensure credibility and trustworthiness. This study could be a first step towards the introduction of an air transport eco-label, making the industry more sustainable.

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Keywords: tourism, air transport, eco-label, energy label, behavioural change, sustainability.

Citation: Baumeister, S., T. Onkila (2018) Exploring the potential of an air transport eco-label. *European Journal of Tourism Research* 18, pp. 57-74

Introduction

Tourism is highly dependent on transportation and one mode that has consistently gained importance in recent decades is air travel. Air transportation has undergone tremendous development from a luxury product into a mode of mass transportation. Within the last 25 years the increase has been threefold and it is predicted that the rapid expansion will continue similarly in the future (Walker & Cook, 2009).

Long-distance travel and more frequent getaways have become part of many people's lifestyle as an age of hypermobility has begun (Hares, Dickinson, & Wilkes, 2010; Gössling & Peeters, 2007; Shaw & Thomas, 2006). While air travel opens up new opportunities for tourism, however, it also heavily contributes to climate change (Cowper-Smith & de Grosbois, 2011). Peeters and Schouten (2006) estimated that for a vacation including air transportation,

60% to 95% of the impacts on climate change are caused by the flight itself. Aviation currently accounts for about 3.5% of worldwide CO₂ emissions (Penner, Lister, Griggs, Dokken, & McFarland, 1999). Between 2003 and 2013, the industry grew at a rate of 6.2%, on average, and a further increase in growth is, according to the International Civil Aviation Organization (ICAO, 2016), expected. Based on the predicted growth, it is assumed that aviation's worldwide share of carbon dioxide emissions might reach levels between 15% and 40% by 2050 (Dubois & Ceron, 2006; Gössling & Peeters, 2007).

Under these circumstances, there is a potential risk that regulation will start to restrict air transportation, which would have a huge impact on the tourism industry (Gössling *et al.*, 2007). To avoid this risk, the industry needs to find ways to reduce its environmental impacts. Hares *et al.* (2010) have determined three approaches to how the environmental impacts of air travel could be reduced: through technological changes, market-based changes and behavioural changes. While technological changes focus mainly on increasing the efficiency of aircrafts (Green, 2003), market-based changes try to mitigate impacts through taxes, charges, subsidies or emission trading (Daley, 2010). Nevertheless, both Davidson, Littleford and Ryley (2014) and Gössling *et al.* (2007) have identified behavioural changes as the key to reducing the environmental impacts of air transportation associated with tourism. There are many ways to encourage behavioural change among tourists: government action and policy making (Davidson *et al.*, 2014), increasing environmental awareness among air travellers (Park & Boo, 2009) and the use of eco-labels (Anderson, Mastrangelo, Chase, Kestenbaum, & Kolodinsky, 2013). Eco-labels provide environmental information on products, making differences between the environmental performance of products visible to the consumer (Bratt, Hallstedt, Robert, Broman, & Oldmark, 2011; Buckley, 2002). Even though eco-labels can stimulate more sustainable purchases by changing consumption patterns, they might also lead to higher environmental standards on the seller's side (Gallastegui, 2002).

This paper presents and examines the idea of introducing an air transport eco-label, which has yet to receive much attention in the literature. Previous studies have outlined the importance of making flights environmentally comparable by using environmental indicators (Gössling, Haglund, Kallgren, Revahl, & Hultman, 2009; Hagmann, Semeijn, & Vellenga, 2015; Lynes & Dredge, 2006). Further, Gössling *et al.* (2009) could provide evidence for air travellers' interest in integrating environmental information into their booking decision once such information would become available. Araghi, Kroesen, Molin, and van Wee (2014) confirmed these findings demonstrating that an eco-label had strongly influenced the participants' airline choice.

Nevertheless, none of the above mentioned studies discuss the idea in more depth by asking why and how an eco-label should be introduced for air transportation. Our paper aims to develop the understanding of using eco-labels in air transportation and explores how eco-labels could help reduce the environmental impacts of aviation. The two objectives of this paper are to explore the idea's potential of introducing an air transport eco-label and to answer the question of how this could be realized.

The idea of eco-labels in air transportation has been discussed within the aviation industry for quite a while and various stakeholders have proposed preliminary examples of eco-labels for use within the industry. We start by giving an overview of these developments and present the most prominent ideas. We then present a framework of critical features, based on the existing literature, for the introduction and success of a new eco-label. These features are based on the eco-label's design, the clarity of its criteria and process, its customer-specific features and the potential benefits for the producer (Anderson *et al.*, 2013; Buckley, 2002; Gallastegui, 2002). We have decided to focus on these features due to the fact that so many eco-labels, especially those in the tourism industry, have failed (Budeanu, 2007; Fairweather *et al.*, 2005; Medina, 2005; Font, 2002). After this discussion, we present the results of the interviews we conducted with 12 experts from

the airline industry. The paper is organized as follows: section 1 contains the literature review, section 2 reports on data and methods, section 3 presents the results and discussion, and the paper finishes with our conclusions.

Types of eco-labels

According to Prieto-Sandoval, Alfaro, Mejia-Villa, and Ormazabal (2016), eco-labels can be divided into three different categories, each clearly defined by an ISO standard. Type I eco-labels are, according to ISO 14024, voluntary, third party verified, multi-criteria-based eco-labels that are based on life cycle considerations (ISO, 2007a). Type II labels, so-called environmental claims, are eco-labels that are, according to ISO 14021, self-declarations made by manufacturers, importers or distributors regarding environmental attributes of products (ISO, 2007b). Environmental claims are usually not third party verified. Type III, known as environmental declarations, use, according to ISO 14025, third-party-verified life cycle assessments based on pre-set indices to provide quantified environmental product information (ISO, 2007c). In addition to these three types of eco-labels, there exists a fourth type of eco-label, which is often referred to as a 'type I-like' eco-label, or, as it is more commonly known, an 'energy label'. Although type I-like eco-labels undergo the same third party verification process as type I eco-labels, they differ in the sense that they focus more on single issues such as energy consumption or sustainable forestry (United Nations, 2009). An energy label indicates the environmental performance or efficiency of a given product on a scale ranging from the most efficient to the least efficient product.

Eco-labels in the Tourism Industry

Eco-labels in tourism have become commonplace in recent decades. There currently exists a wide variety of eco-labels targeted at tourism. The first eco-labels in tourism were introduced already in the 1990s (Kozak & Nield, 2004). Since then, the number of existing eco-labels for tourism has grown rapidly. In 2002, there were more than 100 eco-labels for tourism (Font, 2002) and the worldwide Ecolabel Index (2017) currently includes 465 eco-labels, 128 of which apply to tourism (Gössling & Buckley, 2016). The field of tourism eco-labels is

fragmented, consisting of a large number of labels with different criteria. This fragmentation is partly explained by the fact that eco-labels have been established by different societal actors: companies, voluntary organizations and government agencies (Buckley, 2002).

So far, the focus of tourism eco-labels has mainly been on destinations, or parts of destinations such as hotels, restaurants, leisure parks and travel agents (Kozak & Nield, 2004). Various studies have focused on tourist responses to eco-labels (Fairweather, Maslin, & Simmons, 2005; Reiser & Simmons, 2008), experiences of tourism service companies, especially hotels (Ayuso, 2007; Ayuso, 2006; Mensah, 2006) and the potential benefits of eco-labelling in tourism (Kozak & Nield, 2004). The studies have also shown how a variety of eco-labels has led to confusion in the market and to high start-up costs (Font, Sanabria, & Skinner, 2003). However, while previous literature has mainly focused on tourism eco-labels related to destinations, little research has been done on eco-labels related to transportation.

Eco-labels in Air Transportation

Since the introduction of the first aircraft eco-labelling scheme by British low-cost carrier Flybe in June 2007, several industry players have picked up the idea and developed similar schemes (Gössling & Buckley, 2016). These are presented in Table 1. Even though these schemes measure the environmental performance of aircrafts or flights using different input data and produce various outcomes for the consumer, they all share the approach of presenting results in the form of an energy label.

Nevertheless, the schemes presented in Table 1 only cover selected aircraft types or flights operated or sold by the scheme providers and do not allow consumers to compare all commercial flights operated across the industry. To date, only one attempt has been made to create an industry standard. This attempt, however, failed. Inspired by the Flybe eco-labelling scheme and the findings of the Stern Review, the UK House of Commons Treasury Committee (2008) held hearings in 2007 with representatives from the

Table 1. Overview of existing airline eco-labelling schemes

Company	Service	Description of the eco-label	Type of eco-label
Flybe	Airline	<ul style="list-style-type: none"> • Provides simple information on the environmental performance of all aircrafts in the fleet • Rates local environmental impacts (noise, take-off and landing emissions, and air quality), the environmental impacts of the journey (fuel consumption and CO₂ emissions per seat) and passenger environment (minimum leg room and number of seats per aircraft) • Scheme integrated into online booking system and placed on aircrafts 	Energy label (Scale: A–F)
Cheap Tickets.nl	Travel agent	<ul style="list-style-type: none"> • Rates the environmental impacts of all offered flights based on flight distance and amount of stopovers • Customer has the chance to compare all flights sold based on price, departure/arrival times and airline as well as by environmental performance 	Energy label (Scale: A–E)
Thomas Cook	Airline	<ul style="list-style-type: none"> • Scheme adopted from Flybe, same information as that provided by Flybe 	Energy label (Scale: A–F)
Atmosfair	Carbon offset	<ul style="list-style-type: none"> • Ranks and compares annually almost 200 airlines according to their environmental efficiency • Passenger load factors and the aircraft type have the strongest impact on the calculations, but seat and cargo capacity as well as the engines installed on the aircraft are also taken into account 	Energy label (Scale: A–G)
Direct Flights	Travel agent	<ul style="list-style-type: none"> • Rates the environmental impacts of all offered flights based on aircraft fuel consumption data, fuel-to-emissions conversion values, the actual fleet data of individual airlines and the amount of seats commonly provided by the aircraft type • The customer has the chance to compare all flights sold based on price, departure/arrival times and airline as well as by environmental performance 	Energy label (Scale: 1–10)

Sources: Flybe (2015), Thomas Cook (2015), PR Newswire (2008), Atmosfair (2015), PR Newswire (2011)

International Air Transport Association (IATA), British Airways, Virgin Atlantic, and EasyJet. Following the hearings, the committee issued a clear recommendation to the airline industry to join forces and collectively develop an eco-label scheme. According to the recommendation, the eco-label should rate the environmental impacts of each flight independently and provide passengers with this information at the point of purchase. While such a scheme would support passengers in making more environmentally conscious choices, the committee argued, it would also motivate airlines to improve their environmental performance, which in turn could result in more environmental competition. Although the

industry representatives committed themselves to the committee's recommendation, no further steps have since been taken by the airlines. At this time, air travellers are still unable to compare different flight options based on their environmental impacts and to make environmentally conscious decisions based on this aspect.

Critical Issues for the Introduction and Success of Eco-labels

Prior research has made important contributions to showing the importance of eco-labels for more sustainable consumption decisions. Without compromising consumers' freedom of choice, an eco-label can promote

more sustainable consumption. Because it also lowers search costs, the chance that it will be taken into account by consumers increases. It transforms credence attributes into search attributes and also acts as a reminder to take environmental issues into account (Bratt *et al.*, 2011; Thøgersen, Haugaard, & Olesen, 2010). We reviewed this research from the point of view of what was shown to be critical for the introduction and success of a new eco-label. Table 2 indicates that the success of a new eco-label depends on the design of the label, the clarity of its criteria and process, customer group specific features and the benefits it potentially creates for companies.

First, the design of an eco-label should be based on the identification of need. Before introducing an eco-label into a new industry or market, it is essential to determine whether there is demand for such a label (Anderson *et al.*, 2013; Pietro-Sandoval *et al.*, 2016). The eco-label should then be designed so that it supports consumers in their decision making when they compare different products regarding their environmental impacts. Currently, eco-labels lead to informed consumption decisions in only a few cases (Buckley, 2012). The eco-label needs to define, compile, test, and summarize the environmental performance of each product and present it to the consumer in the easiest way possible (Buckley, 2002; Gallastegui, 2002). Eco-labels may also need to be enforced by policymakers and environmental regulation (Atkinson & Rosenthal, 2014; Grankvist, Dahlstrand, & Biel, 2004).

Second, the clarity of criteria and process for product eco-labelling was shown to influence the introduction of the eco-label. For the criteria, the particular environmental parameter or issue to which the eco-label refers needs to be clearly stated (Buckley, 2002) and communicated (Thøgersen *et al.*, 2010), and there should be no language barrier hindering the understanding (Houe & Grabot, 2009) to create trust in the eco-label (Daugberg, Smed, Andersen, & Schwartzman, 2014). Trust in the eco-label is positively related to actual purchase behaviour (Rahbar & Wahid, 2011). The degree of consensus regarding the meaning and significance of terms used in the

eco-label means that the terminology used to communicate about it is clearly defined and that the practices undertaken or outcomes of the eco-label are transparent and understandable to all parties involved (Buckley, 2002). Furthermore, Bratt *et al.* (2011) and Gallastegui (2002) added that the criteria for an eco-label need to be strategically developed, meaning that objectives are clearly defined and the strategies to reach these objectives are clearly laid out. Consumers must be informed of the eco-label's meaning, its characteristics, requirements, and guarantees in order to avoid unclear and confusing messages (Testa, Iraldo, Vaccari, & Ferrari, 2013), such as failure to assure the buyer about the product's ecological impact, the insufficient information about the producer's compliance, and the presence of recommendations (van Amstel, Driessen, & Glasbergen, 2008).

Research has further shown that, to be convincing, an eco-label needs to be verified by a third party. Claims made by manufacturers or service providers do not really build trust on the consumer's side and such a label might fail (Anderson *et al.*, 2013; D'Souza, Taghian, Lamb, & Peretiatko, 2007; Gallastegui, 2002). This lack may explain why Testa *et al.* (2013) found that consumers had the most trust in the so-called official eco-labels (i.e., the EU eco-label and FCS label).

Third, the success of an eco-label depends on customer group specific features. These features include the level of concern, understanding, and awareness a consumer has about the eco-label itself in regard to the product being certified (Anderson *et al.*, 2013; Buckley, 2002; Sörqvist, Haga, Holmgren, & Hansla, 2015). The research has also revealed individual and group- or country-based variation in the willingness to adopt new eco-labels. Factors that influence the consumer's adoption of a new eco-label scheme are environmental factors (social norms, media, campaigns), personal factors (personality, demographics, relevant knowledge) and product-related factors (certifying body, information on the product). The adoption process consists of six steps: exposure – perception – understanding – liking – adoption – continued adoption (Dekhili & Achabou,

2015; Thogersen *et al.*, 2010). When it comes to demographics, older consumers (50–60+ years) are more likely to respond to eco-labels, but they also appear to be the most critical regarding the content and claims of such labels (D'Souza, 2007). From a geographical point of view, the consumers most responsive to eco-labels are found in the Nordic countries, Germany, and Japan, but there is growing interest in the other European countries as well as in the USA, with the reason being seen as the higher income levels in these countries (Houe & Grabot, 2009). Adoption further depends on individual characteristics such as values and motivation (Thogersen *et al.*, 2010) as well as the customer's social status (Steinhart, Ofira & Puternam, 2013). Consumers with no or weak interest in environmental issues do not respond to any eco-label; consumers with an intermediate interest avoid products with negative (red) labels; and consumers with a strong interest in environmental issues are affected by negative and positive labels equally (Araghi *et al.*, 2014; Grankvist *et al.*, 2004). These findings suggest that the new eco-label should be based on identifying the needs and goals of consumers, which is important in order to start the process of adopting a new eco-label (Thogersen *et al.*, 2010). This may lead to a situation in which a consumer has adopted an eco-label when he or she is actively, repeatedly, and consistently considering the label whenever a purchase decision is due (Thogersen *et al.*, 2010). Finally, research has suggested that the

introduction of a new eco-label may be supported by the potential benefits it can create for companies. Eco-labels should motivate companies to improve their performance by creating competitive advantage for those producers who use the label while driving out the remaining producers from the market (Anderson *et al.*, 2013; Berghoef & Dodds, 2013; Grankvist *et al.*, 2004; Buckley, 2002; Thogersen *et al.*, 2002). Berghoef and Dodds (2013) noticed that the introduction of an eco-label could be supported by motivating industry members to make environmental improvements, increased visibility, and improved public perception. At the same time, it may motivate competitors to adapt in order to stay in the market (Anderson *et al.*, 2013).

It has been suggested that eco-labels may help traditional manufacturers or service providers (i.e. full-service carriers) to position themselves better in the battle with low-cost producers or service providers (i.e. low-cost carriers) by gaining competitive advantage through environmental product differentiation (Anderson *et al.*, 2013; Houe & Grabot, 2009). However, these views have been questioned by Delmas and Grant (2014), D'Souza *et al.* (2007) and Grankvist *et al.* (2004), who highlight the possible negative impact on product prices. In addition, because most consumers are rather price-sensitive, they might make a trade-off in their purchase decision by not choosing the most expensive product (D'Souza *et al.*, 2007), in which case consumers might pass up the

Table 2. *Criteria and features critical for introduction a new eco-label*

Criteria	Features critical for introduction of new eco-label
Design of eco-label	<ul style="list-style-type: none"> • Identification of need • Support consumer in decision making • Enforced by law / policy makers
Clarity of criteria and process	<ul style="list-style-type: none"> • Clear definition of objectives • Transparent communication of objectives • Strategic development of objectives • Third party verification
Customer specific features	<ul style="list-style-type: none"> • Concern, understanding and awareness of consumer • Focus on right consumer group • Consumer adoption of an eco-label
Benefits for companies	<ul style="list-style-type: none"> • Competitive advantage for certified companies • Market pressure on non-certified companies • Support traditional producers in market positioning

green-labelled product as too expensive. However, they would certainly avoid a product which carries a negative (red) label (Grankvist *et al.*, 2004).

Specific Air Transport Features for an Eco-label

Air Transportation has specific features that influence the potential of an eco-label. It is a rapidly growing industry, characterized by being the most environmentally damaging form of transport per passenger-kilometre. It is thus rational for airlines to cater to the existing market in ways that generate maximum profit (Graham & Shaw, 2008). As discussed in the previous section, prior research has shown that the success of an eco-label is influenced primarily by how it is designed, the clarity of its criteria and process, customer-specific features and potential benefits for firms. As outlined in Table 3, features specific for air transportation can be related to each of these factors.

Concerning the design of eco-labels, it has been suggested that in order to use, like with energy labels, positive as well as negative eco-labels, the scheme cannot be voluntarily, but needs to be enforced by a policymaker (Grankvist *et al.*, 2004). An energy-type label could make flights comparable. However, as the label would differentiate between high-performing flights and low-performing ones, it would not automatically lead to competitive advantage through environmental product differentiation (cf. Anderson *et al.*, 2013). Only the ability to produce a higher amount of green flights could possibly lead to such differentiation. In addition to being comparable,

the eco-label should not be overloaded with information. Thogersen *et al.* (2010) have shown that the risks of eco-labels include the consumer experiencing information overload or suspecting greenwashing behind the environmentally friendly claims (Thogersen *et al.*, 2010).

The meaning of the term sustainability, and its significance for aviation, is much debated by different groups (Walker & Cook, 2009). This debate sets requirements for the clarity of the eco-label criteria and process. Researchers have suggested that first of all, there should be a single label for the market, because a proliferation of labels creates confusion among customers. If there is more than one eco-label in a specific market, this can lead to confusion and ignorance in the consumer (Bratt *et al.*, 2011; Buckley, 2002; Gallastegui, 2002). In addition, an internationally competitive industry – such as the airline industry – needs a globally recognized eco-label (Buckley, 2002).

Nevertheless, the research findings on air travellers’ environmental attitudes and behaviour are contradictory. Many air travellers differentiate between airlines based on their environmental friendliness and green image (Mayer, Ryley, & Gillingwater, 2012). Although air travellers’ positive attitudes towards environmental protection have been identified (Davidson *et al.*, 2014; Mayer *et al.*, 2012; Gössling *et al.*, 2009; Lu, 2009), research has shown a prevailing attitude–action gap that is similar to the one in other types of environmental behaviour (Davidson *et al.*, 2014; Gössling *et al.*, 2009; Lu, 2009).

Table 3. Criteria and features found critical for an air transport eco-label

Criteria	Air transport specific features of an eco-label
Design of eco-label	<ul style="list-style-type: none"> • Eco-label should be an energy label • Eco-label should not be voluntary
Clarity of criteria and process	<ul style="list-style-type: none"> • Easy to read, no information overload • Only one air transport eco-label • Globally recognized eco-label
Customer specific features	<ul style="list-style-type: none"> • Attitude-action-gap • Environmental pressure on airlines still low
Benefits for companies	<ul style="list-style-type: none"> • More green demand • Better company image • Increased firm value

However, carbon labels can contribute to behavioural change (Gössling & Buckley, 2016). It can therefore be concluded that the pressure experienced by airlines still seems to be rather low: airline representatives did not identify pressure from the customers as a driving force for environmental protection directly (Lynes & Dredge, 2006).

Finally, the introduction of an eco-label may be supported by perceived benefits for airlines. It has been shown that, in general, eco-labels may increase demand for green products in this particular market even further (Anderson *et al.*, 2013). As specific aviation-related benefits, Lynes and Dredge (2006) identified financial gains (meaning both the money saved and money earned) and maintaining good relationships within the aviation community as well as airline image building as motivations for airline environmental commitment. Lee and Park (2010) suggested that being more socially and environmentally responsible has a positive relationship with value performance in the airline industry, especially in the financial markets, which may consider firm value to increase when such practices are implemented.

Data and Method

The data collection took place in two steps. The first step included informal interviews among participants at a professional conference and the second step consisted of standardized interviews with 12 airline industry experts. This approach was chosen in order to first gather an understanding of a topic which has not, to date, received much attention in the literature. The

second reason was to build contacts with the industry in order to find suitable experts for in-depth interviews.

The idea for an air transport eco-label was first discussed among the participants at the Air Transport World 5th Annual Eco-Aviation Conference in Washington D.C. in June 2012. The participants represented major airlines from the United States, Europe and Asia, all major airframe makers and engine producers, international airports, airline trade associations as well as aviation industry service providers. The discussions took place during breaks and when there was time for socializing. The discussions, with three to five participants each, were informal and unstructured and took place in a focus-group setting. The participants looked at samples of Flybe's and CheapTickets.nl's eco-labels and commented on the idea and whether they think something similar could be introduced industry wide.

Interview questions were then developed based on the discussions at the conference. Standardized open-ended interviews with 12 airline industry experts with relevant field knowledge (see Table 4) were conducted between June 2012 and April 2013. The interviewees represented major international and regional airlines, air traffic and airport authorities, global transaction processors, IT solutions providers, airline management consultant companies, international business travel agencies, aviation fuel suppliers as well as facility maintenance and waste treatment service providers. The interviewees were selected according to the recommendation and

Table 4. *Industry experts who participated in the interviews*

Position	Industry sector
Senior sales manager	Aviation fuels
Environmental manager	Air traffic and airport authority
Senior manager	Maintenance and waste treatment
Senior manager	Aviation fuels / biofuels
Client director	Airline management consultancy
Environmental manager	Major network carrier
VP environmental issues	Major network carrier
CEO	Regional airline
Communication manager	International business travel agency
VP sustainable development	Major network carrier
Managing director	Global transaction processor
Group environmental officer	Global transaction processor

contacts given by the conference participants based on their expertise on this topic. At the beginning of the interview all the interviewees were presented with the eco-labelling scheme presented by Flybe and the *eco value* scheme used by CheapTickets.nl. Based on the example provided to the interviewees, the following issues were discussed: Do the participants consider the environment when booking a flight? How could flights be distinguished according to their environmental performance? Could an air transport eco-label have any impact on the booking decision of air travellers? How could an industry-wide airline eco-label be realized?

Most of the interviews were conducted face-to-face at the expert's workplaces in three countries: Germany, Finland and Spain. Two interviews, however, were conducted over the phone. The length of each interview varied between 40 and 120 minutes. All 12 interviews were transcribed and then thematically analysed. The analysis consisted of two rounds of summarizing, coding, and synthesizing. In the first phase the content of the interviews were separately summarized based on the following three questions:

1. Do respondents see a clear need for an air transport eco-label?
2. Could an eco-label build more awareness among air travellers?
3. How could such an air transport eco-label be realized?

These questions for analysis were created based partly on the prior knowledge of the researcher and partly in interaction with the content of the data. The second phase was inductively implemented, which means that no theories or hypotheses were applied in the analysis. Instead, we proceeded from specific observations to broader themes. The main themes related to the introduction of a new eco-label were identified in the interviews. This happened by identifying similarities and differences in the summaries written in the first phase. Certain similarities and differences were found and thus sections of summaries were classified which emerged as crucial themes for eco-label introduction in the interviews. The main themes identified were listed and the list provided the basis for reporting the results.

Results

Need for an Air Transport Eco-label

In the opinion of the industry experts, air travellers in general seem not to care that much about environmental issues related to flying and a lack of awareness was clearly identified regarding this issue. Ticket price remains the most important criteria. Nevertheless, the interviewees also saw that there are some air travellers who consider the environmental impacts of flying and that their numbers are growing.

"[Some] customers, they do ask and maybe the most environmentally conscious people, they make choices based on that. But [for] most of the people [...] it is the price that matters the most." Vice-president sustainable development, major network carrier (personal communication, January 30, 2013)

"I think [...] people start to understand that they make the difference and they have all the opportunity to choose the carrier which is consuming less." Managing director, global transaction processor (personal communication, February 27, 2013)

Environmental responsibility was considered by many industry experts as a unique selling point and there was a clear need seen for airlines to more commercialize this issue. However, with levels of awareness still low this was seen as a difficult task. One of the reasons for the low environmental awareness was definitely seen in the lack of credible information available for air passengers to compare different flight options in order to make this part of their decision-making process.

"People really don't know much about environmental impacts of flying. They might have some views or images or thoughts and it is very difficult to then getting the facts through ..." Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

"...the consumer is leading the market [...] so whatever is demanded, airlines will adapt to it [in] one way or another. [...] I think [it] is very important but again it is [also very] difficult to raise awareness [...] when there are so many different views." Group environmental office,

global transaction processor (personal communication, April 24, 2013)

Clear demand for an easy-to-understand environmental indicator (e.g. an eco-label) was seen by many interviewees. Such an indicator would make flights environmentally comparable and, if they want so, give air travellers the opportunity to actively choose the environmentally more preferable flights.

“I think it will be a matter of combining efforts [...] to raise awareness and also eventually to promote rather than penalize environmentally friendly [flight] options. [...] It will be, of course, something very valuable for individuals [...] to have this information. Whether they use it [in] one way or the other, I don't know, but at least it would be good to have that information.” Group environmental office, global transaction processor (personal communication, April 24, 2013)

According to the interviewees, environmental indicators are already used in corporate purchasing and reporting and many travel agents have been providing their corporate customers with carbon footprints or CO₂ figures of their flights for years.

“[We] have introduced those CO₂ emissions numbers in our online booking tools [...] several years ago. [...] Companies at this moment, they are mostly concerned [about] measuring their carbon footprint. They order quite a lot of emission reports from us, mostly flight emissions reports.” Communication manager, international business travel agency (personal communication, December 4, 2012)

To date, however, no industry standard exists and travel agents use various methodologies to calculate emissions. Even though the environmental indicators have mainly been used for reporting purposes, corporate customers have begun asking for environmental information about flights already at the booking stage.

“...more and more [of our corporate] customers would like to know the emissions of their flights beforehand...” Communication manager,

international business travel agency (personal communication, December 4, 2012)

Making flights environmentally comparable could also lead to more competition between airlines. The industry experts do not currently see that much competition exists between airlines on environmental issues. It is more the case that airlines are cooperating in this field, for example through collective lobbying or by sharing best practices. Most airlines just follow the minimum environmental legislation, and only a few go beyond compliance. However, these differences are hardly noticed by the average air traveller. It is therefore still difficult for airlines going beyond compliance to differentiate themselves from their competitors. The only competitive advantage an airline might gain by going beyond compliance is increased efficiency, which might help to cut costs.

“Environmental responsibility has more than one dimension [for us]. We want to reduce fuel as well as CO₂ emissions in order to reduce costs. However, at the moment it is more about saving fuel” Vice-president environmental issues, major network carrier (personal communication, November 21, 2012)

Nevertheless, once the environmental performance of each and every airline would become visible to the air traveller the situation might change. This change would reward airlines which have been going beyond compliance and could create competitive advantage for them as their extra efforts would become more visible.

“...in five years' time I think it is more common [...] that you look not only [at the] price [...] and the total flying time [...] you also [will] have the third parameter which is how eco is it to travel. [...] one day [it] will be as common as you go to the store and you look for those apples and you take the best apples there although it is a bit more expensive.” Managing director, global transaction processor (personal communication, February 27, 2013)

At the same time, a label would also push those airlines that have only followed the minimum legislation to become more active

because they might otherwise be driven out of business.

Design of an Air Transport Eco-label

All participants agreed that there is a difference between the environmental performance of airlines and that choosing a flight according to environmental aspects can make a real difference.

“When I have given some examples based on our emissions reports most of the people just [couldn’t] believe that there can be so big differences even these days and even with so-called modern airlines. [...] I have noticed it can be almost doubled, those emissions, on some routes.” Communication manager, international business travel agency (personal communication, December 4, 2012)

Nevertheless, the industry experts saw also that these environmental aspects are nowadays still difficult to communicate for airlines. Several airlines had, in fact, been harshly criticized for their environmental communication. It was also found that the general public has a negative environmental image of airlines and that environmental communication might easily be perceived as greenwashing.

“Finnair [for example] was very heavily criticized in the UK because it advertised that via Helsinki it is more fuel efficient with less emissions to fly to Asia [...] so [people think] there is a lot of greenwashing in the aviation business” Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

“In people’s heads flying is still seen as the climate killer number one” Environmental manager, major network carrier (personal communication, November 8, 2012)

Therefore industry experts saw a clear need to communicate the environmental responsibility of airlines with concrete figures. The message should therefore be simple and easy-to-understand for everyone. It was seen as important that the message is integrated into the booking process so that the right

information is available at the right time when the booking decision is made.

“Now the indicators [...] are price, route, how many times you need to change and what time you are [at the] destination [...] but if there would be one more issue [like a] green factor [...] then it would start to become [part] of our decision making.” Senior manager, aviation fuels/biofuels (personal communication, July 4, 2012)

“It might be that you favour only the fastest flight [...] it might be that you favour the cheapest flight, but it can also be that you want to compare [...] how strongly it is polluting [...]. So again therefore I think it is so relevant that there is this standard.” Managing director, global transaction processor (personal communication, February 27, 2013)

Nevertheless, the industry experts agreed that an industry standard is inevitable. If every airline were to create their own measurements, the whole discussion would lose credibility and air travellers would not be able to compare ‘apples with apples’.

“...if we don’t have [a] common approach, we lose a lot of credibility and it takes ages to regain that credibility.” Group environmental office, global transaction processor (personal communication, April 24, 2013)

Regarding the design of an air transport eco-label, most interviewees agreed that the information provided by using a simple energy label would be sufficient. Some participants however, demanded more detailed information for those users who want to learn more about the methodology in order to ensure transparency and trustworthiness. Nevertheless, several participants warned that making the information provided too complex might result in disinterest.

“I see, this is a splendid idea, very interesting if you go to a shop and try to buy a refrigerator [...] you have the [same kind of] labelling for energy efficiency.” Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

“...it already feels familiar because we have [...] used these kinds [...] of symbols in those household machines and it is very illustrative and [...] easy to understand.” Communication manager, international business travel agency (personal communication, December 4, 2012)

All experts agreed that an airline eco-label should not be granted to a particular airline but should be flight specific. Which airline is the best choice depends on many factors and might vary from route to route.

“You would not be able to give an eco-value for the airlines. But you would be able to give the value for a certain flight. [...] It is not so much [a question] about which airline is better but rather which offered routing [...] is the most optimal from an environmental point of view” Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

The air traveller should be provided with easy-to-read information on which airline and flight is the best on the particular route and day she wants to travel.

“I think it is good [...] this format of having those green A's and red E's [...] it is easy to understand and easy to see which options are good [and] which options are not so good...” Communication manager, international business travel agency (personal communication, December 4, 2012)

“I think this would be the easiest way for passengers to quickly check.” Vice-president sustainable development, major network carrier (personal communication, January 30, 2013)

For the environmental aspects to be considered, the industry experts had many suggestions. However, all agreed that at least the aircraft type and its configuration (engines, seat layout, cargo capacity, winglets/sharklets), the average load factor and the route (amount of stopovers, capacity of airports, local noise issues) should be considered. There was also strong agreement to calculate not only CO2 emissions but to take all greenhouse gases into account.

Common Agreement on Air Transport Eco-label

As much as the participants appreciated the idea of an industry-wide environmental label, the major concern they all shared was if and how there will ever be an agreement on the methodology. Certainly everybody agreed that there should be only one eco-label that covers all flights, but such a label would also require an agreement by all parties involved.

“So, I indeed don't see this [environmental] rating possible as an initiative that could be agreed inside the industry. It would need to come [from] outside the industry and need to be [...] built up without full [industry] consensus.” Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

Several participants mentioned the problems with the emissions calculator IATA tried to develop. Because airlines were not able to agree on one common methodology, the IATA emissions calculator failed and in the end every airline developed their own calculator. The only independent emissions calculator currently existing was developed by the International Civil Aviation Organization (ICAO).

“There is the ICAO calculator [...] it's well documented, it's open and it's not as awkward as individual calculators by airlines. [...] There is no calculator created by IATA, it failed because the airlines kept competing so much between each other [that] no common approach could be agreed on” Environmental manager, air traffic and airport authority (personal communication, June 29, 2012)

Because it might be difficult to find common agreement between airlines and because it might not look trustworthy when airlines release their own eco-label, several participants discussed the idea of using travel agents to introduce an industry-wide eco-label. As mentioned earlier, many travel agents have developed and are using their own environmental indicators. The figures used there could easily be translated into symbols rating flights on a scale from A to E.

“But of course I don’t see why can’t there be one row saying emissions in numbers there. [...] considering consumers, it is a very good idea to use these symbols because they are so much easier to understand.” Communication manager, international business travel agency (personal communication, December 4, 2012)

Another advantage is also that travel agents have easy access to the information needed to evaluate flights individually, such as aircraft type, cabin layout or load factors. Although travel agents currently use various methodologies to calculate environmental impacts, the industry experts did not see a major problem in finding common agreement among them. Nevertheless, all industry experts agreed that the best solution for an industry-wide eco-label would be to go through an independent authority. Different possible authorities were discussed, but all participants ultimately agreed that ICAO represents the most suitable option.

“...out of the many possibilities I believe ICAO is the best option.” Group environmental office, global transaction processor (personal communication, April 24, 2013)

“...basically ICAO is the only organization who can [bring this up] internationally...” CEO, regional airline (personal communication, November 23, 2012)

The advantage of this approach is that problems with finding agreement or trustworthiness could be overcome. The experts shared the opinion that this approach is the only one that could lead to an industry standard all players would comply with.

Discussion

Design of Eco-label

The success of an eco-label depends, first of all, on the question of whether there is need for an eco-label in a particular industry (Anderson *et al.*, 2013; Gallastegui, 2002). The results certainly identified such a need for the airline industry. An air transport eco-label would not only make flights environmentally comparable but would also support airlines in their environmental communication. It was clearly identified that some airlines demonstrate better

environmental performance than others do. The eco-label would give those airlines the chance to communicate this advantage with clear evidence. However, as previous studies have confirmed (Hares *et al.*, 2010; Gössling & Peeters, 2007; Becken, 2004), the environmental awareness of air travellers is in general low so communicating about this issue is difficult. An eco-label could help build more awareness by making the environmental performance of flights visible. Without compromising freedom of choice, the label would support air travellers in their decision making because they could consciously choose flights with fewer environmental impacts if they want to. An eco-label would lower search costs and transform the environment, currently a credence attribute, into a real search attribute. This shift is important because it is basically impossible for an air traveller to obtain all the relevant information in order to make informed choices. This difficulty was also confirmed by Gössling *et al.* (2009), who found that obtaining such information would actually require expert knowledge. The eco-label instead would compile and present all information at the time of booking (Buckley, 2002; Gallastegui, 2002). To ensure effectiveness, the eco-label should be easy to understand. Using widely known energy labels with their self-explanatory colour scheme also has the advantage that consumers who already use them for other purchases might adapt more quickly (Thøgersen *et al.*, 2009). However, because of the use of negative labels this scheme cannot be voluntarily. Otherwise, airlines with poorer environmental performance would refuse to participate. In order to ensure comparability, all flights need to be displayed equally so that air travellers can consider all parameters: airline, price, amount of stopovers, journey duration as well as environmental performance.

Clarity of Criteria and Process

Although an eco-label integrated in the booking process provides sufficient information for decision making, there would still be a need to integrate additional information into the label in order to ensure trustworthiness and avoid suspicion of greenwashing. To make the label fully transparent, the methodology behind it, with all parameters taken into account and their sources, should be made accessible. Due to

the differences in aircraft types, load factors, and the routing on each flight connection, the environmental performance of airlines differs. Therefore an eco-label should not be granted to individual airlines but should instead be flight specific. This approach to the label also has the advantage that changes to a flight connection, such as the use of a more fuel-efficient aircraft, can be immediately taken into account. In addition, in order to make flights comparable the air transport eco-label needs to cover all commercial passenger flights worldwide. However, it is also important that there is only one air transport eco-label otherwise air travellers cannot compare 'apples with apples'.

The use of multiple eco-labels, as is seen in the tourism industry, only creates confusion and ignorance, as previous literature has indicated (Fairweather *et al.*, 2005; Buckley, 2002). With multiple labels, the idea of making the airline industry more sustainable through eco-labels would fail. Trying to develop the standards for an eco-label within the industry is also seen as controversial. Due to the tough competition between airlines, it would be impossible to find industry agreement, just as the example of the failure to come up with a common approach for an emissions calculator demonstrated. The label needs to come from an independent party in order to ensure trustworthiness and to avoid the suspicion of greenwashing. ICAO, as a United Nations specialized agency, was seen as the best solution due to its independent position.

Customer Specific Features

A further success factor is the level of concern, understanding and awareness consumers have of the eco-label itself in regard to the product (Anderson *et al.*, 2013; Buckley, 2002). The results found that air travellers show a lack of understanding and awareness. They currently focus more on ticket price. However, it was also found that the percentage of air travellers who are concerned with environmental issues is growing. This confirms previous research findings which identified positive environmental attitudes among air travellers (Davidson *et al.*, 2014; Gössling *et al.*, 2009) and the increasing importance of this issue for the future (Gössling, Peeters, & Scott, 2008). Nevertheless, previous literature also found an

attitude–action gap, with only one third of air travellers seeing themselves as responsible for the environmental impacts caused by their flying (Gössling *et al.*, 2009). The industry experts saw the reason for low awareness in the lack of credible information. One could certainly ask how an air traveller could make a conscious decision without knowing which flight has a better environmental performance. An eco-label could serve as a reminder that the air traveller can act responsibly by choosing a particular flight. However, this effect depends on the air traveller's interest in environmental issues. Certainly not everybody will pay attention to an eco-label and integrate it into their decision-making process. For those without any interest it would not be relevant, the ones with weak interest would avoid flights with negative labels and for the ones with a strong environmental interest red and green labels would have an equal effect (Grankvist *et al.*, 2004; Araghi *et al.*, 2014). Once awareness is built through an eco-label, air travellers will start to avoid negatively labelled flights, putting pressure on airlines with poorer environmental performance to act. However, the adoption of an eco-label is a process which takes time. How quickly consumers adopt it depends on motivation, past experience, and trust in the verifying organization (Thøgersen *et al.*, 2009). Using an energy label, which many consumers are already familiar with, would speed up the process and again the question of who would introduce the label plays an important role.

Benefits for Airlines

Consistent with previous findings, the results suggest that some airlines may benefit from the introduction of an eco-label. Prior research has shown an eco-label can produce benefits such as more demand for greener products (Anderson *et al.*, 2013), better company image (Lynes & Dredge, 2006), and increased firm value (Lee & Park, 2010). However, and more importantly, an eco-label could stimulate environmental competition in the airline industry and create competitive advantage for those airlines which demonstrate better environmental performance, an effect that has already been discussed in previous studies by Grankvist *et al.* (2004), Buckley (2002), and Thøgersen *et al.* (2002). So far there is not much environmental competition going on,

airlines rather cooperate in this field. It must be difficult for an airline to differentiate itself if the environmental performance of all airlines is perceived as being more or less the same. Standing out from the grey mass could easily be considered to be greenwashing. These challenges mean that there is basically no point in competing as long as there is no parameter indicating the differences between environmental performances. It is easy for an airline to compete on price because everyone can compare it, but comparing the environmental performance of airlines is a different, more complex challenge for which the average consumer lacks the resources. Once an eco-label has filled this gap, airlines with better environmental performance will gain competitive advantage. At the same time, and as confirmed by previous research (Anderson *et al.*, 2013), the use of a label might also motivate airlines with poorer environmental performance to adapt because otherwise they may be forced out of the market.

Conclusion

This study set out to develop a deeper understanding of the idea to introduce an eco-label for air transportation. It explored how eco-labels could help to reduce the environmental impacts of aviation. To gain a deeper understanding, 12 interviews with airline industry experts were conducted and the results were thematically analysed. The objectives of this paper were to explore the idea's potential of introducing an air transport eco-label and to answer the question of how this could be realized.

The findings revealed a clear need for an air transport eco-label due to the fact that air travellers are currently unable to compare flights environmentally. Making the environmental performances visible could help build more awareness and lead to a change of behaviour. Behavioural change was seen as one of the keys in bringing aviation onto a more sustainable growth path. Making environmental performance visible would also stimulate more competition in this area between airlines. It would motivate airlines to improve their environmental performance in order to stay in the market while creating competitive advantage to those airlines showing the best perfor-

mance. This approach could make the entire airline industry more sustainable and reduce the risk of regulatory restrictions, which would harm the industry and tourism in general.

The results also indicated that there should be only one eco-label covering all commercial passenger flights worldwide. To make flights easily comparable the eco-label should come in the form of an energy label. However, because of the use of negative labels the scheme cannot be voluntary. In order to ensure credibility and trustworthiness, the eco-label should be released by an independent authority. The interviewees in our study considered ICAO to be the most suitable.

This study could be a first step towards the introduction of an industry-wide air transport eco-label which could help reduce the environmental impacts of aviation through behavioural change. An eco-label might not necessarily make air travellers avoid flying but it may encourage them to choose cleaner flights, thereby helping the entire industry become a cleaner one. The study also contributes by giving advice on how the eco-label should be designed, which design features are crucial for the success of the label, and how it should be implemented in the industry. Finally, it also shows new avenues towards environmental communication for airlines and ways that environmentally proactive airlines could turn their efforts into competitive advantage.

Because this study reached out to discuss a completely new idea, it has naturally raised many questions in need of further investigation. The most important limitation of the study is in its lack of empirical evidence regarding whether eco-labels would be able to raise awareness and affect the booking decision of air travellers. For this purpose, further studies among air travellers are needed. In addition, there needs to be further examination of the claim that an eco-label could help those airlines with better environmental performance gain competitive advantage. Finally, the study shows certain limitations in the representativeness of the industry experts that were interviewed due to the selection process used, their limited number and geographic locations.

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