

Going Green: Motivations for environmental commitment in the airline industry. A case study of Scandinavian Airlines

Author

K. Lynes, Jennifer, Dredge, Dianne

Published

2006

Journal Title

Journal of Sustainable Tourism

DOI

[10.1080/09669580608669048](https://doi.org/10.1080/09669580608669048)

Rights statement

© 2006 Multilingual Matters & Channel View Publications. Reproduced in accordance with the copyright policy of the publisher. Please refer to the journal website for access to the definitive, published version.

Downloaded from

<http://hdl.handle.net/10072/13361>

Link to published version

<http://www.informaworld.com/smpp/title~db=all~content=t794297833>

Griffith Research Online

<https://research-repository.griffith.edu.au>

Going Green: Motivations for Environmental Commitment in the Airline Industry. A Case Study of Scandinavian Airlines

Jennifer K. Lynes

Faculty of Environmental Studies, University of Waterloo, Ontario, Canada

Dianne Dredge

School of Environmental Planning, Griffith University, Nathan, Queensland, Australia

Many commentators have examined the airline industry's *impacts* on the environment but not the internal management *processes* used to develop company environmental policies. This paper argues that environmental management tools need to take into consideration the complex, value-laden setting in which corporate environmental policy-making occurs if such tools are to be socially and politically legitimated. A case study of Scandinavian Airlines (SAS) examines an airline's decision-motivations for environmental commitment. An in-depth analysis of the drivers identified by both Scandinavian Airlines and related industry officials shows that attitudes, values and beliefs generated both internally and externally have a critical impact on the airline's environmental policy-making. Although there are numerous influences that drive SAS's level of environmental commitment, three 'motivators' are found particularly noteworthy. Firstly, this research demonstrates that eco-efficiencies, in various forms, are a strong motive at SAS. Secondly, Scandinavian culture also plays an influential role in the value SAS puts on the environment at a strategic level. Thirdly, it was found that internal leadership, in the form of environmental champions in senior management positions, played a key role in the positive outcomes of the airline's environmental performance. Given the current growth in benchmarking and eco-labelling activity across tourism, this research enhances understandings about what motivates airlines to develop environmental policy in this increasingly competitive and volatile sector.

Keywords: environment, airlines, motivations, Scandinavian Airlines, corporate greening, green tourism

Introduction

One of the enduring legacies of the sustainable development debate of the 1980s [and beyond] has been a quest for greater integration of the economy and the environment. A significant by-product of this quest has been growing interest in the potential of market-based instruments of environmental policy as a supplement, or in some cases, an alternative, to the traditional approach of setting environmental standards by direct legal regulation. (Eckersley, 1995a: 1)

Air travel is one of the fastest growing, most dynamic and volatile sectors in tourism. It is also associated with some of the most significant environmental impacts of tourism including high levels of fuel consumption, noise, air pollution and waste production (Air Transport Action Group, 2002; Becken, 2002; Clancy, 2001; Middleton & Hawkins, 1999; Penner *et al.*, 1999). Tourists are using air travel more frequently to get to and from their destination. Moreover, the average length of journey on a plane has almost doubled over two decades (Air Transport Action Group, 2002). Clancy (2001) identifies that the cost of air travel comprises up to half of a tourist's total travel expenses. The trends in tourism and aviation travel are putting increased demands on the environment with respect to air travel. Although transport brings with it broader impacts on the environment that are often considered as being 'beyond the scope' of sustainable tourism discussions (Buckley, 2001: 379), the environmental effects of a traveller's mode of transportation are increasingly being considered when looking at the overall environmental impact of tourism (Middleton & Hawkins, 1999, 1994).

Management of these impacts through regulatory mechanisms is difficult given the complex international setting in which airlines operate and the long lead times associated with the development of new regulations. The airline industry has been characterised by technocratic policy-making derived from interactions principally between political and scientific systems, with some industry participation. Although the airline industry has a history of being highly regulated, market-based mechanisms are increasingly appearing on the agenda of both government and industry bodies such as the International Civil Aviation Organization (ICAO) (see Middleton & Hawkins, 1999; International Air Transportation Association [IATA], 2000, 2003; UK Department for Transport, 2003). It remains unclear, however, whether voluntary mechanisms are sufficient to encourage green management practices in the airline industry. Further sector specific research is required to understand the motivations for, and commitment to, environmental management so that the potential for further action in this area can be better understood.

This paper examines Scandinavian Airlines' (SAS), interest in, and commitment to, improving its environmental management practices with a view to understanding the potential advantages and pitfalls for reducing environmental impact in this sector. Massive growth in air travel witnessed over the last 30 years and projected increases (IATA, 2002) make environmental management a particularly pressing issue for the airline sector. The paper investigates the driving forces to which airlines are subject in this area, in order to develop more in-depth understanding of the decision-making processes and the relative importance of different issues, overriding values and concerns embedded in an airline's environmental commitment. These insights are important for the identification and development of environmental management approaches (Cannibal & Winnard, 2001; Kirk, 1998; Stone, 2000).

Within this context, the paper identifies and investigates the factors that shape an airline's commitment to environmental management through a case study of SAS. For the purposes of this paper, evidence of a company's environmental commitment can be seen through the:

- pledges it makes to improve environmental performance;
- action taken in relation to its pledges;
- responsibility taken for its environmental impacts;
- introduction of processes and the use of environmental management tools; and the
- level of involvement in discourses about environmental issues (both externally and internally).

The first part of the paper discusses the growing but disparate literature on the influences driving corporate greening with particular reference to the airline industry. Much of this literature tends to look at external drivers, or issues that are largely outside a company's control and to which corporations respond. There is limited research exploring internal influences, or those issues, values and motivations that emerge within a company, and the influence of these on corporate environmental management. The second part of the paper discusses the case study and identifies the internal drivers that influence environmental management in SAS. A discourse approach is adopted that acknowledges the way in which internal and external influences are balanced in a reflective and dynamic process.

Social Sciences and Environmental Policy-making

Over the last 20 years, transcendental shifts have been occurring in the theory and practice of environmental policy-making. The dominant paradigm has traditionally been one of regulation and government control. However, the failure of traditional top-down positivist approaches to environmental policymaking and management has been attributed to the belief that government had exclusive knowledge about just what the problem was and how it could be fixed (Aplin, 2000; Fischer, 1998). This belief is gradually being dismantled by post-modern and post-structuralist scholars who argue that environmental policy-making and implementation is a complex, multi-layered, iterative process (Gare, 1995; Renn, 2001; Smith, 1995). In this emerging view, neither governments nor private sectors have a decisive role in the development of environmental policy development and implementation. No single agency or actor has complete knowledge of the issues and alternative solutions, or can predict with certainty what the implications of certain policies might be. Actors and agencies bring values, beliefs, understandings and knowledge to environmental policy-making and management over time, and no single agency has absolute sovereignty over environmental policy-making and implementation.

In this context, there has been growing importance placed on the role of social science in environmental policy-making (Aplin, 2000; Renn, 2001). The natural sciences alone are no longer sufficient in guiding the development of environmental policy. Increasing dispersal of roles and responsibilities for policy implementation in modern pluralistic societies requires that policy be socially and politically legitimised (Eckersley, 1995a). Policy needs to be collaboratively developed and agreed upon in order for it to become accepted and have a chance of being implemented. Policy developed outside this process of social and political legitimisation runs the risk of being irrelevant to the needs and operations of business and can lead to a crisis of acceptance and 'political disaffection' (Renn, 2001:

427). From this platform, Aplin (2000), Eckersley (1995a), Gare (1995) and Renn (2001) are among those who call for increased attention to the dialectics of environmental policy-making. In their view, examination of the discourses that surround policy-making reveal different ways that environmental problems are constructed and valued and can provide important insights into how policy-making can move forward through an 'irreducibly complex world' (Gare, 1995: 124).

This realisation, that governments and regulatory bodies alone cannot implement sustainable environmental development and management practices, has stimulated considerable exploration of the potential and actual role of market-based and mixed environmental management instruments over the last decade (Conroy, 2002; Eckersley, 1995a). One stream of considerable activity emerging from this impetus is the development of indicators of sustainability and the benchmarking of many business and industry sectors. In tourism, this is evidenced in the development of sustainable tourism indicators and growth in interest in eco-labelling practices and benchmarking (Diamantis, 1999; Wight, 2001). For the airline industry, ISO 14000 and Green Globe 21 are two examples of ways in which airlines are trying to get recognition for their environmental efforts. Green Globe 21 has established guidelines specifically tailored to airports and airlines. So far, there has been minimal uptake of this accreditation system in the commercial aviation sector. As of May 2005, only one international air carrier (Singapore Airlines) and two airport groups (Gold Coast Airport Limited and Malaysia Airport Operations) were partaking in the certification process (see Green Globe 21, 2005).

However, caution is necessary. While ecological sciences have an important role in the development of these indicators, a fundamental tenet of this paper is that such indicators must acknowledge the internal drivers, motivations and values of business if they are to be deemed relevant by industry. Support for this argument comes from critics who argue that sustainable environmental management is a cultural construct that requires solid understanding of the complex interactions between the natural and social sciences (Eckersley, 1998). Indicators that are based on science alone, and do not take into account the range of circumstances that influence corporate environmental policy-making run the risk of non-acceptance and irrelevance.

Drivers of Corporate Environmental Commitment

Identifying and recognising the role of issue drivers is a critical component of policy-making (Hall, 1994; Hall & Jenkins, 1995; Parsons, 1995). In dynamic and reflexive policy-making processes, issues are constantly being identified, framed and evaluated by different actors and agencies. This dynamic process means that issues move in and out of focus, and are continuously impacting upon stakeholder interests, the identification of possible solutions and decision-making. In this way, issues can be conceptualised as being mediated through ever-changing power structures and the dynamic knowledge that characterises a community of stakeholders.

Drivers of environmental policy can be located along a continuum ranging from internal drivers to external drivers. At one end of this spectrum internal drivers are those issues that are highly specific to the company and may not be

shared across the gamut of similar businesses. In the case of the airline industry, for example, specific corporate structures and financing arrangements may give rise to specific concerns that are not shared by other carriers. External drivers are those over which the airline has little or no control. An example of this type of issue driver is the stress that the events of 11 September 2001 had on air transport worldwide. As a result of 11 September, a range of other events were set in train, including receivership in some instances, the filing of bankruptcy protection, disintegration of alliances, internal restructurings and realignment of routes and schedules (Price Waterhouse Coopers Consulting, 2002; SAS, 2002).

It is important to note, however, that while airlines had little control over the terrorist attacks, they did have considerable control in how they responded to the crisis. Herein lies the danger of blanket classification of 'internal' and 'external' drivers. The complex and overlapping relationship between external and internal drivers make a clear distinction between the two impossible. It is important to recognise that corporations not only respond to external conditions, but they can also shape those conditions through interactive engagement with the wider context including other airlines and international agencies such as the International Air Transport Association (IATA).

Over the last 10 years a vast body of literature has emerged that examines influences on corporate greening and corporate environmental commitment and responsibility (Bansal & Roth, 2000; Gibson, 1999; Gilley *et al.*, 2000; Khanna & Anton, 2002). Much of this literature has concentrated on manufacturing industries. There has been significantly less research on the service sector, which is an issue requiring attention given the increasing relative importance of the service sector in most Western economies (Céspedes-Lorente *et al.*, 2003; Miller, 2001). This literature is invaluable in identifying broad ranging drivers and in building up understandings of what sorts of policy instruments, ranging from compulsory regulatory instruments through to coercive voluntary initiatives, can be effectively used in different industries to further sustainable management practices (Eckersley, 1995b; Khanna & Anton, 2002). Khanna and Anton (2002) find that total quality environmental management and environmental reporting are principally motivated by perceived competitive advantages in the marketplace, and internal environmental policy, corporate environmental standards and environmental auditing are predominantly influenced by the degree of regulatory standards in place.

This literature suggests a number of reasons why businesses participate in voluntary environmental initiatives:

- to reduce costs and increase efficiency, especially by cutting resource use and waste generation (Cairncross, 1995; Gilley *et al.*, 2000; Howes *et al.*, 1997; Lynes & Gibson, 1998);
- to avoid or delay regulatory action (Fineman, 1997; Howes *et al.*, 1997; Khanna & Anton, 2002);
- to gain a competitive advantage (Cairncross, 1995; Howes *et al.*, 1997; Stead & Stead, 1992);
- to enhance or reinforce a positive image in the marketplace as a 'good corporate citizen' (Fineman, 1997; Font, 2001; Howes *et al.*, 1997; Khanna & Anton, 2002);

- to comply to pressures imposed by banks, insurers, clients and suppliers who do not wish to inherit environmental liabilities (Cairncross, 1995; Khanna & Anton, 2002; Lynes & Gibson, 1998);
- to conform to pressures from community groups, environmental organisations and industry members (Bansal & Roth, 2000; Céspedes-Lorente *et al.*, 2003; Howes *et al.*, 1997); and
- to encourage employee productivity through improved corporate culture and employee 'pride' (Cairncross, 1995; Gilley *et al.*, 2000; Moffet & Bregha, 1999).

In a similar vein, Miller (2001) examines factors driving environmental responsibility among tour operators and identifies five major drivers to this effect:

- industry structure and the level of competition that exists;
- legal requirements;
- market advantage and public relations benefits of 'being green';
- perceived importance of cost savings over the long term balanced against short-term nature of tourism business operations; and
- moral obligation.

These factors provide an overview of the drivers for environmental activity within a company. However, recent research suggests that there are different drivers for different sectors and drivers can also be dependent on the nature of the decision that needs to be made (Céspedes-Lorente *et al.*, 2003; Gilley *et al.*, 2000; Khanna & Anton, 2002). As a result generic lists of drivers are open to criticisms of reductionism, consolidating the argument that further research is required on specific sectors (Céspedes-Lorente *et al.*, 2003; Gilley *et al.*, 2000; Howes *et al.*, 1997).

While acknowledging the contribution of the generic drivers identified in the literature, there is a need to develop a clearer understanding of drivers in the airline industry. In the context of a broad discussion about the role of social science in policy development, Renn (2001: 428–9) identifies four broad social subsystems that influence environmental policy-making:

- (1) The market system – where environmental policy development is based on a cost-benefit analysis of the advantages to the company within the marketplace.
- (2) Political-institutional system – where environmental policy development is based on the political culture and system of government within which the business operates.
- (3) Scientific system – where environmental policy development is made based on scientific knowledge of cause and consequence.
- (4) Social system – where environmental policy development is made as a result of the sharing of knowledge about market, political and scientific systems.

Figure 1 shows these subsystems contributing to corporate environmental commitment. Renn's (2001) discussion applies to public policy development. However, the position taken in this paper is that these four subsystems are also likely to be relevant in corporate commitment and decision-making. According to Renn (2001: 429), environmental policy development that balances social,

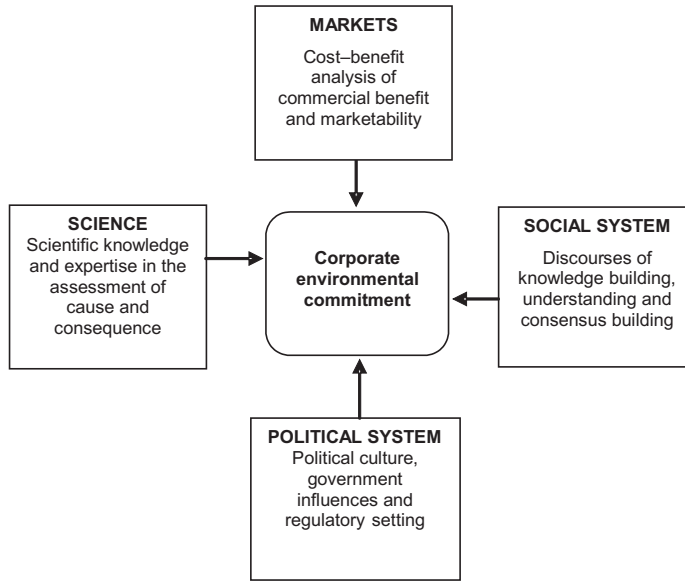


Figure 1 Influences on environmental commitment

Adapted from Renn (2001)

political and market considerations and scientific knowledge is likely to be cost efficient, based on accepted scientific knowledge, acknowledging the values of stakeholders and, as a result, be socially and politically legitimised. This model is used as the basis for the following discussion of drivers operating on the development of airline environmental decisions and management. Its relevance to corporate environmental commitment in the airline sector, and specifically to SAS environmental management, will be discussed following the case study.

Environmental Management Issues in the Airline Industry

The market system

The airline industry is characterised by significant and sustained growth and volatility. Figure 2 shows growth in passenger numbers and annual growth rates over the period 1983–2001. Over the past three decades, passenger demand for air transportation has grown an average of 9% per annum since 1960 despite peaks and troughs caused by economic conditions (e.g. exchange rates, fuel prices), union disputes, social and political policy (e.g. wars, immigration policy) and other events. As shown in Figure 2, a reduction in passenger movements occurred in 1991 due to the Gulf War and again in 2001 with the terrorist events of 11 September. Nevertheless, passenger growth is recovering and growth is expected to be in the order of 5% per annum to 2015 (Air Transport Action Group, 2002; European Commission, 1999; Penner *et al.*, 1999). Growing tourism demand and changing leisure patterns are expected to contribute significantly to passenger growth (European Commission, 1999).

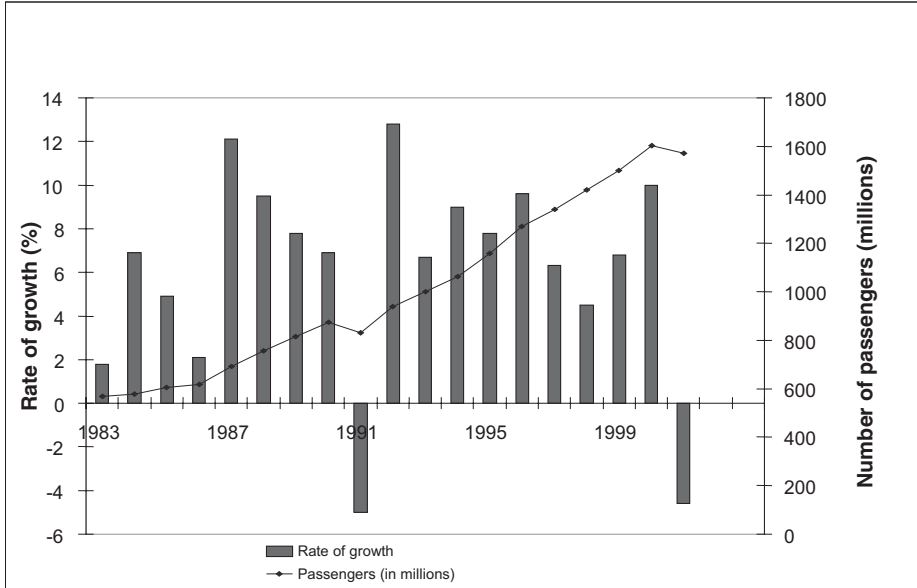


Figure 2 Rate of passenger growth and number of passengers 1983–2001

Deregulation and the restructuring of the airline industry and the subsequent growth of low cost airlines, which has accentuated the price sensitivities of the market, have important implications for the implementation of improved environmental management practices. Many large international air carriers have met the emergence of low cost airlines, such as Virgin Blue and Ryanair, with the development of their own low cost service such as Air Canada’s ‘Tango’, and Qantas’s newly launched ‘Jetstar’. These services are aimed at the leisure traveller or the price sensitive businessperson and illustrate that the industry is moving into a new, highly competitive phase in terms of passenger service. As a result, airlines are feeling market pressure to lower prices, remove some of the more costly services and to develop a more efficient and competitive product (personal communication, Environment and Health Coordinator, SAS, 10 June 2002).

The political-institutional system

In 2000, the International Air Transportation Association observed that the largest environmental challenge facing the industry is its rate of growth (IATA, 2000). With passenger growth comes an overall increase in environmental impacts since environmental improvements afforded by technological and operational advances are not enough to compensate for such growth. Over the past few decades, international regulatory bodies, governments and air carriers have increasingly addressed environmental issues as a result of growing public concern over the environment generally, and the impacts of air transport on residential communities surrounding airports in particular (Hupe, 1998). Some standards have been developed through a consensus-based process of the acting members of the International Civil Aviation Organisation (ICAO), such as for

noise and air emissions; however, roles and responsibilities for development and implementation of environmental management standards are complex and overlapping.

The majority of controls have traditionally been at national and international levels; however, many local governments have been granted increased powers in recent years. For example, in Sweden, the Stockholm-Arlanda airport has set its own emission limits for air traffic, and the Vienna International Airport has implemented strict sorting of inflight waste for incoming flights (personal communication: Head of Environmental Affairs, Luftfartsverket, 18 June 2002; Malle-Bader & Tunstall-Pedoe, 1997). Also, many airports have now been privatised, further adding to the complicated web of responsibilities for environmental management (Lynes, 1999). Some airports, especially in Europe, are starting to impose taxes, levies and penalties to encourage airlines to meet standards with a view to reducing waste, noise and air emissions. However, these have tended to create a very uneven playing field as airlines are often subject to differing regulations. The different regulations and jurisdictional authority to which airlines, airports and aviation manufacturers are subject further complicates the regulation of waste, noise and air emissions and result in different, and at times, contradictory, legislation and standards (Hupe, 1998; Lynes, 1999).

In this context, there is increasing interest in the development of voluntary instruments for environmental management. Major international commercial airlines, such as British Airways and Scandinavian Airlines, call for standards to benchmark and monitor environmental performance and to drive the industry towards the application of 'best practice' environmental management (British Airways, 2001; SAS, 2000).

The scientific system

Against this background of increasing passenger numbers and growing awareness of the environmental impact of air transport, in 1996 ICAO requested that the Intergovernmental Panel on Climate Change (IPCC) conduct a study on the environmental impacts of aviation on climate change. This is the first report conducted by the IPCC on a specific industrial sub-sector (Penner *et al.*, 1999) and aimed to provide a balanced overview of the scientific issues related to emissions/climate change. The IPCC report is currently the most comprehensive study that has been completed on the environmental impacts of aviation, but there remain many scientific uncertainties and further work is required in this area to better inform policy development and decision-making (UK Department of Transport, 2003). The transport industry has been the focus of political attention in terms of environmental impacts, especially with respect to carbon dioxide emissions (CO₂), but also with respect to accidents, noise, air pollution and climatic effects (COWI, 2001). Table 1 contains a summary of the environmental impacts of the airline industry derived from this report and other literature.

The social system

Hugh Somerville (1999: 7), formerly of British Airways, observed that although voluntary initiatives (such as signing agreements for efficiency targets) are the most obvious immediate preference for the aviation industry, it is unlikely that they will deliver results on their own. His argument is that the

Table 1 Summary of environmental impacts generated by the airlines

<i>Environmental issue</i>	<i>Summary of impact</i>	<i>Factors affecting management</i>
<p>Air emissions</p> <p>Air Transport accounts for 3% of global CO₂ emissions and 12% of transportation CO₂ emissions</p>	<ul style="list-style-type: none"> • Carbon dioxide CO₂ • Carbon monoxide • Hydrocarbons (HC) • Oxides of nitrogen (NO_x) • Oxides of sulphur (SO_x) • Condensation trails (contrails) 	<ul style="list-style-type: none"> • Airline's choice of aircraft • International standards developed by ICAO • Individual countries can impose emissions-related charges and taxes • Emissions of international flights do not fall under the present Kyoto Protocol
<p>Noise emissions</p> <p>Exacerbated by increasing residential development near airports and under flight paths</p>	<ul style="list-style-type: none"> • Most prominent during landing/take off cycle (LTO) • Affects local residents and wildlife 	<ul style="list-style-type: none"> • Airline's choice of aircraft • Standards developed by ICAO (starting in the 1960s) • Landing charges for noise emissions at some airports
<p>Congestion</p> <p>Up to 10% of aircraft fuel use could be reduced through more efficient air traffic management</p>	<ul style="list-style-type: none"> • Increased fuel use (and thus emissions) caused by circling busy airports and longer taxiing on the ground 	<ul style="list-style-type: none"> • Regional/National governments and their NGOs develop more effective air traffic management systems • Partly caused by national air space rules that sometimes prevent aircraft from flying the most direct route
<p>Waste</p> <p>Solid and hazardous wastes</p>	<ul style="list-style-type: none"> • Solid waste from inflight service and aircraft grooming • Waste generated from airline administration offices • Hazardous waste from aircraft maintenance (e.g. petroleum products, etc.) and de-icing of aircraft (glycol) 	<ul style="list-style-type: none"> • Local rules developed by each municipality or airport authority for waste disposal/treatment of tarmac run-off

Source: Air Transport Action Group (2002); British Airways (2001); European Commission (1999); IATA (2000); Penner *et al.* (1999); SAS (1999, 2000); Somerville (1999)

airline industry is highly competitive and where standards are applied unevenly, there will be ways that airlines can avoid the additional costs associated with improving environmental management. Accordingly, airlines appear open to more stringent environmental standards as long as they demonstrate:

- scientific need;
- environmental benefit;
- economic feasibility;
- fair competition;
- equity between regions and amongst stakeholders (such as airports, airlines and air traffic management providers);
- staggered realisation times;
- no negative impact on safety and security.

(Air Transport Action Group, 2002: 23; Penner *et al.*, 1999; Somerville, 1999: 7)

As a result of increasing regulation (or the threat thereof) and growing public awareness of environmental management issues, some airlines have begun to address environmental issues. Airport authorities are also under increasing pressure from local residents, neighbourhood and environmental groups to take action (Mortimer, 1998). This interest in environmental management has resulted in some airlines going beyond minimum standards by purchasing more efficient and less polluting aircraft, incorporating environmental management targets into company performance goals and even using environmental reporting as a marketing tool. The factors that have driven these airlines to develop waste reduction systems appear to differ from one continent to another and range from threats of regulations in Europe to pressure from employees in North America. One factor that most airlines have in common is the realisation of financial savings, or eco-efficiencies, when the use of resources is improved (Lynes, 1999).

Research Approach

Against this background, a case study of SAS environmental management policy and practice was undertaken. Data collection focused on identifying drivers and exploring the values, beliefs and attitudes of SAS representatives about environmental management. A secondary objective was to confirm that each of the four subsystems contribute to SAS's environmental policy and ascertain the relative importance of these systems. The research was carried out using a mixed method approach to data collection, which included in-depth interviews and a review of published and unpublished literature including company, government and international reports.

SAS was selected as a case study for the following reasons:

- Size: SAS is an international commercial airline and part of a major alliance.
- Service: SAS provides similar passenger services to other international commercial airlines.
- Management direction: SAS's leadership in the area of environmental management.
- Reporting: The detailed information SAS includes in its environmental reports.

- Openness: The airline's open policy to sharing information about its environmental policies and performance.
- Commitment to participate: The airline's willingness to continue participating in the study post-11 September 2001.

SAS's open policy to report about both its weaknesses as well as its achievements was an important asset to this research. Because of the volume of information that was available before the interviews, this 'pre-understanding' of the case study and relevant theory (Gummesson, 1991) allowed the research to focus on investigating in-depth issues.

To determine the drivers influencing the SAS environmental management approach, 27 semi-structured interviews with key personnel from across the company's management and operational divisions were undertaken. Interviewees included SAS employees from varying levels within the company, and from departments including finance, environment, purchasing, marketing, engineering and inflight services, as well as airline industry officials involved with, but external to SAS. The interviews were conducted in Sweden and Denmark over a period of six weeks in 2002. In these interviews, attitudes and levels of awareness of environmental issues were investigated, and published and unpublished ideas and values of the airline in environmental policy and decision-making process were explored. An interactive discussion tool was used in these interviews to elicit information (see Lynes, 2003).

Case Study of SAS

Scandinavian Airlines (SAS) is the largest airline in Scandinavia and has bases in Stockholm, Denmark and Oslo, serving 23 million passengers per annum on domestic, inter-Scandinavian, European and intercontinental routes (SAS, 2001). The airline is part of the larger SAS Group, which includes hotels, other airlines as well as airline support services. In 1995, SAS became one of the first airlines to publish an Environmental Report. Under the leadership of the then CEO, Jan Stenberg, environmental management moved up to a strategic level in the airline with the establishment of environmental visions and goals and a commitment to publish environmental reports on an annual basis (SAS, 1996). It has won numerous awards for its annual environmental reports (SAS, 1996, 2001, 2002) and is emerging as a leader in environmental management (Diamantis, 1999; personal communication, Environmental Manager, LSG SkyChef, 30 June 2002). SAS expresses its commitment in the following excerpt from a publication about the environmental management of SAS's inflight service:

SAS is in the process of positioning itself at the forefront of the environmental movement and the airline industry. This isn't solely for idealistic reasons. We believe that companies which have an impact on the environment and ignore their responsibility will disappear from the market within a decade . . . A sound environmental profile is profitable. But it is more than that. It is our contribution to a sustainable society and to future generations. (SAS, 1998: 2)

A cynical reader might view these words as an attempt to gain leverage in a green market; however, this research suggests that SAS appears to be taking

important and innovative steps in environmental management. They have a very open approach to environmental issues and believe that the information on this subject should be shared amongst industry members (personal communication, Environmental Director, SAS, 10 June 2002). SAS does not pretend that their motives for environmental improvement are simply altruistic in nature. They consistently state in their environmental reports (1995–1998) what is driving them to strive for enhanced environmental performance is a combination of ethical principles, economic efficiencies, passenger interest, better company image, liability concerns of banks and insurance companies as well as the potential of gaining a competitive edge. The airline has implemented a comprehensive environmental management system and, in evidence, has introduced a number of tools and mechanisms to report environmental performance. These include:

- annual public environmental reporting since 1995;
- an environmental index that measures economic efficiencies derived from implementing environmental measures, i.e. eco-efficiencies;
- corporate environment policy obligating all managers to conduct an environmental assessment as part of their decision-making documentation (SAS, 1998). SAS also supports product stewardship programmes and will only deal with suppliers who have environmental policies and management systems (personal communication, Vice-President Corporate Purchasing, SAS, 11 June 2002);
- an emissions calculator that provides a destination specific calculation of CO₂ generated.

Despite the economic downturn in the industry in 2001, CEO Jorgen Lindegaard announced in the *2001 Environmental Report* that SAS's commitment to the environment would remain firm (SAS, 2001). Since then, however, the Environmental Department of SAS has faced cutbacks in economy and staff – albeit no more than other departments within the airline (personal communication, Environmental Director, SAS, 10 June 2002). This has resulted in a reduction of staff from four to two people working directly on environmental issues and a considerably smaller environmental report from 2002 onwards. Paradoxically, however, in 2001 SAS had its best-ever improvement in its environmental index due to the cost-saving measures that were implemented by the airline as a result of the 'new market scenario that has emerged' (SAS, 2002: 106) as well as increased efficiency in passenger loads through reduced flights.

Results

The key focus of the interviews, as previously discussed, was to ascertain the influences on SAS environmental policy and decision-making. Information was sought about the relevance and relative influence of the four subsystems identified by Renn (2001). It was found that these subsystems overlap and interact and do not exert independent influences on SAS's environmental management. Five primary drivers emerged from the interviews that can best be understood as an interaction between markets, science, the social system and the political/institutional system. These primary drivers are:

- the financial cost-benefit of environmental management;

- the regulatory setting;
- the desire to be a ‘good corporate citizen’;
- airline image; and
- relationships with the aviation community.

These primary drivers, shown in Table 2, are supported by a number of secondary drivers that are now outlined.

Financial cost-benefit

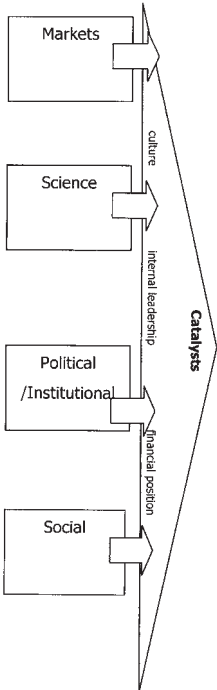
The introduction of new technologies, that involve cleaner production and lower production costs with subsequent benefits for the airline’s image, underpin the financial cost-benefits of environmental management. In other words, the financial gains of SAS’s environmental management are two-fold: money saved and money earned. SAS management indicated interest in reducing its costs by employing energy and water saving techniques such as improving fuel efficiency and decreasing the amount of waste going to landfill. Senior executives cited both the short-term and long-term paybacks of investing in environmental management and best available technology:

I don’t think it’s one motivating factor. It depends who you speak to, I think. Efficiency and costs – I would say that’s, to me, an important factor. The environmental work should hold a payback either in direct cost cuts or return in investment in the image or things like that. There should be a real value – it’s not just for the sake of the environment but also for the sake of the company. In the end I believe that if you have a good environmental policy and play by those rules you’ll end up saving money. (Personal communication, Environment Coordinator, Cabin Operations, SAS, 11 June 2002)

Top management indicated that environmental savings over the long term is important (personal communication, Manager, Operations Standards and Development, SAS, 12 June 2002). In addition to saving money, management at SAS believe that it can boost earnings by gaining and maintaining corporate customers that demand a certain level of environmental management.

Airports, especially in Europe (e.g. Stockholm-Arlanda and Geneva) are increasingly using charges and taxes as a mechanism to reduce noise and fuel emissions. Significant savings can be made by avoiding these levies. Regulatory bodies such as the Swedish Civil Aviation Authority (personal communication, Head of Environmental Affairs, Luftfartsverket, 18 June 2002) indicate that charges and taxes are an effective way of getting airlines to use best available technology. However, SAS is not so convinced that it leads to overall improvement in environmental performance since airlines use their ‘cleanest’ aircraft at airports with the charge and send the older aircraft elsewhere (personal communication, Director, Aircraft & Engine Analysis, SAS, 11 June 2002). Nevertheless, it was one of the determining factors in the choice of aircraft for SAS’s fleet renewal. In fact, in 1995 the CEO of SAS decided to spend an extra US\$31 million (250 million Swedish Kronor) on engines with low NO_x emissions because of long-term savings in charges and taxes despite that these are likely to have a lower resale value (personal communication, Director Aircraft and Engine Analysis, SAS, 11 June 2002; personal communication, Deputy CEO, SAS, 23 June 2002).

Table 2 Summary of SAS environmental management drivers

Systems of influence on environmental commitment	<i>Primary drivers</i>	<i>Subsets of primary drivers</i>
	<p>Financial cost–benefit</p> <ul style="list-style-type: none"> • Immediate or medium-term 	<ul style="list-style-type: none"> • Eco-efficiencies such as energy and water savings • Boosted earnings from avoiding charges and taxes
	<ul style="list-style-type: none"> • Long-term 	<ul style="list-style-type: none"> • Competitive advantage (e.g. payback from investment in green engines) • Better investor relations – environment can be a ‘selling point’ for the company
	<p>Regulatory setting</p>	<ul style="list-style-type: none"> • Standards and regulations are unquestioningly accepted • Anticipating future legislation to gain a competitive advantage • Good image lends credibility when dealing with regulatory bodies
	<p>Being a ‘good corporate citizen’</p>	<ul style="list-style-type: none"> • Improving image of airline with respect to other forms of transport • Wanting to have the image ‘we care’ • Responding to the increased focus society has on the environment • Embodying the ‘Scandinavian Spirit’
	<p>Airline image</p>	<ul style="list-style-type: none"> • Positive image in the marketplace • Positive image with suppliers • Positive image strengthens credibility with regulatory bodies
	<p>Pressures from industry stakeholders</p>	<ul style="list-style-type: none"> • Corporate customers are requiring more environmental information be provided to them • Coercive pressure from government (threat of more charges and taxes; especially EU and within Scandinavia) • Relationships with unions instrumental in implementing environmental management changes

Regulatory setting

Clearly the regulatory setting has a direct and authoritative influence on SAS's environmental management. Informants at SAS identified that regulations and standards are an essential part of environmental management (personal communication, Environmental Advisor, SAS, 10 June 2002; personal communication, Director, Aircraft & Engine Analysis, SAS, 11 June 2002). Regulations are respected, somewhat unquestioningly accepted in Scandinavian culture, and become embedded values in corporate culture.

SAS also seeks to establish a leadership role in dialogues about the regulatory setting. Developing international environmental standards is increasingly on the industry agenda of the ICAO due to pressure from governments, from the EU and from scientific evidence of the environmental impacts of air travel from the IPCC Report (1999). Thus far, ICAO has focused all of its regulatory efforts into the two largest areas of environmental concern in aviation – noise and air emissions from aircraft (IATA, 2000). At a national level, SAS seeks to work closely with the Swedish Aviation Authority, Luftfartsverket, in the development of environmental management and sees their credibility in environmental performance as being important to this relationship. Both the green environmental image of the airline and SAS's development of tools and mechanisms (e.g. environmental index, environmental reports, emissions calculator for passengers and a 'green' purchasing policy) have been important in establishing this credibility, and thus, a place at the negotiating table in the development of new regulatory directions (personal communication, Environmental Advisor and Environmental Director, SAS, July 7, 2002).

Being a good corporate citizen

Being a good corporate citizen includes several different sub-drivers such as embodying the 'Scandinavian spirit' and improving the image of the airline (see Table 2). There is mixed opinion, however, of what lies behind the altruistic gesture of being a good corporate citizen. Many interviewed felt that the environment has become an inherent part of the Scandinavian culture. One likened the environmental attitudes of Scandinavians to that of most developed countries towards wearing seatbelts in cars (personal communication, Inflight Catering Product Manager, SAS, 22 June 2002). Scandinavians want to keep their land clean and green and are to be well-educated with respect to environmental issues (personal communication, Director, Corporate Purchasing, SAS, 11 June 2002). Frontline employees and senior executives alike strongly expressed the importance of culture as a driver of environmental stewardship:

I honestly think that it's a wish of many people that we should be good. We should not pollute the world more than we must – but at least, if you talk to myself, that's my driver. If I could contribute to reduce pollution of Sweden or Denmark or Norway, that would be really good. That's *my driver*. . . . in general in Scandinavia I think people are very aware of environmental issues . . . People really care. (Personal communication, Materials Process Engineer, SAS, 18 June 2002)

. . . Top management is pointing the direction 'we shall be good citizens in the environmental area'. The Scandinavian culture, the spirit if you

like, appreciates having a company doing that. I think we would be hated [by the Scandinavian people], they wouldn't fancy having a company like SAS behaving badly, not in the environmental sector, not in other sectors. And the airline is always a very public type of business, everybody has a view on it, everybody has tried it and everybody is a customer as well. So [the environment] is, probably from that perspective, even more important compared to other types of business. But that is on the rational side of it, regardless of that it is a matter of doing what you believe is good for . . . the society. (Personal communication, Deputy CEO, SAS, 23 June 2002)

Moreover, SAS informants indicated a desire to go beyond having an 'image of a good corporate citizen', to manipulate market demand and consumer awareness:

. . . I think we could give [better] examples [of] our environmental behaviour and actually create true shareholder value. Sometimes it's obvious because you can save costs by acting [in an] environmentally friendly [manner]. But then you have the more indirect [impacts] that you don't [realize] can actually have an impact on your bottom line – [such as being] a good environmental citizen. But I think we may be one of the best airlines on managing environmental issues. But we don't sell that hard enough to the equity market. We don't sell because they don't demand. But we may be able to create a demand. (Personal communication, Vice-President Corporate Finance, SAS, 22 June 2002)

Airline image

SAS representatives acknowledge that being a good corporate citizen also involves establishing a good image. One vehicle for this is the environmental report, which has become an important part of SAS's environmental platform since its inception in 1995. SAS has used the report to send out strong messages about mechanisms that should be used by government and other stakeholders in the airline industry to combat environmental issues.

We have striven to find industry-wide performance indicators to facilitate comparison between airlines. And in the hope that others would follow our lead, we have openly disclosed our calculation methods. So far, no competitor has followed our example. In spite of this, we are relentless in our efforts to encourage followers, especially amongst our partners in the Star Alliance, because we are firmly convinced that many stakeholders in the markets want the chance to compare airlines' environmental performance. We also believe the use of benchmarking to measure our performance against other leading airlines would be an effective stimulus. (SAS, 2001: 47)

Airline reports strongly suggest that the industry is not being treated fairly with respect to other forms of transport (such as rail), which do not have to bear the full cost of their environmental impact (COWI, 2001). This is one of the reasons the focus of SAS's concern for sustainability has been to improve their environmental image – and that of the airline industry in general.

As an airline we're polluting a lot, I mean we can't really help it in order to get our business going! We have a big responsibility in reducing that. I think that's definitely how it's being communicated. But it somehow of course is very much related to our image as well. (Personal communication, Manager, Product Management, Inflight, SAS, 19 June 2002)

Each year SAS measures both the overall and environmental image of the airline. When the environment moved up to a strategic level in 1995 the environmental image was not as strong as the overall image. But gradually over the years, SAS's environmental image has helped to boost the overall image of the airline (personal communication, Environmental Advisor, SAS, 10 June 2002). Interestingly however, SAS also indicated that a positive environmental image will strengthen its voice with industry and regulators:

A better environmental image creates a better scope for SAS to take action in issues related to the development of the airline industry's regulatory framework. (SAS, 1999: 10)

A positive environmental image, therefore, is thought to bring both market benefits as well as stronger position in negotiating the regulatory frameworks of the airline industry.

Relationships within the aviation community

SAS has not yet experienced first-hand pressure from others in the supply chain to implement environmental management measures:

No, we have not lost any clients but we have evidence that one of our Star [Alliance] partners lost one of their major contracts with a major Swedish international firm because of lack of environmental data . . . [but] I don't think it's fair to say that our shareholders and owners are pressuring us. (Personal communication, Environmental Director, SAS, 10 June 2002)

However, relationships between the airline, its suppliers and clients were acknowledged as potentially important in SAS's interest in pursuing more stringent environmental management. SAS informants indicated that they were starting to see demand from corporate clients who are trying to maintain or achieve some form of environmental certification such as ISO 14001 or the European EMAS (Eco Management Audit Scheme). It is anticipated that corporate customer demands will get more detailed in the future and that it may come to the point that big customers will not choose certain airlines because of their environmental performance (or lack thereof) (personal communication, Vice-President, Inflight Services, SAS, 9 June 2002). The Director, Aircraft Fleet Development, concurred that corporate customers have become more environmentally conscious in the past five years and he expects this concern to increase.

Whilst SAS management are clearly speculating about the potential future importance of environmental management pressures from the supply chain, the development of an environmental emissions calculator is one way in which SAS

has responded to this anticipated pressure (personal communication, Environmental Director, SAS, 10 June 2002).

Discussion

While the above factors clearly emerged as drivers for environmental commitment in SAS, there were two issues that informants indicated were not important. First, SAS did not perceive that pressure from passengers was a factor influencing environmental management. Senior Vice-President, Marketing and Product Development (19 June 2002) stated that he believed several years ago that passengers would begin to make demands on airlines with respect to the environment. However, despite the heightened awareness of environmental issues in Scandinavia, research shows that this is not one of their criteria in choosing an airline. One possible explanation for this is that there is a certain level of implied trust amongst Scandinavians that companies are 'working on it'.

Second, the ability to 'green' market is not viewed as a viable and competitive reason for environmental management within the airline industry. SAS informants stated that it would not be appropriate to market themselves as a 'green' airline, because it would be dishonest.

Because of the amount of fossil fuels consumed by aircraft, airlines will never be really considered 'green' and so, for the moment, they can only be considered *greener*. Furthermore, aside from large corporate customers (that require the environment to be considered as part of supply chain management) there is presently no demand for 'green airlines'. The Vice-President of Corporate Finance perceives, however, that it may be possible to *create* that demand amongst shareholders in the future.

A critical aspect of ensuring the success of environmental policy-making is the role of leadership that is projected both internally within the company and externally within the sector. In the case of SAS, it became clear during the interviews that several positive environmental decisions had been the result of a few 'environmental visionaries' who put internal pressure on top management. In one particular case, it was the CEO of the airline who vetoed the financial pragmatism of his fellow executives to purchase a new fleet of aircraft that were more expensive, but had superior environmental performance. Younger employees at SAS are also putting more emphasis on environmental issues in their day-to-day decisions such that environmental considerations are becoming part of the airline's corporate culture (personal communication, Environmental Director, SAS, 10 June 2002). Environmental champions are important not only within the airline but also amongst the industry in general. Airlines that lead the way in environmental management can act as role models for other members of the industry. For example, SAS has recently purchased one Spanish and two Nordic airlines with whom they plan to employ the same environmental management systems as the rest of the SAS Group.

Conclusions

This paper sought to identify and investigate the factors that shape airline environmental commitment. Using the literature, it was identified that there are four main subsystems of interests that contribute to a company's position on

environmental management. These are the markets, scientific knowledge, the political/institutional system from which regulatory frameworks are derived, and the social system at play within and outside the airline. The SAS case study sought to investigate whether all or some of these systems are relevant to the development of environmental commitment and to what extent. The research revealed that all these systems of interests contribute to SAS's commitment to environmental management and that no single system was more important than the others. The main drivers for SAS are a confluence of relationships between the systems of drivers that have been identified. Clearly the drivers are not related to just one of these systems alone. In the case of SAS, scientific understandings of the environmental impacts of airline operations, and which are embodied in the regulatory environment, are unquestioningly accepted by airline management. This is intrinsic to their culture. Table 2 illustrates these drivers within the broader context of the four systems of influence of corporate environmental commitment that have been used as a common thread throughout this paper.

Findings suggest that environmental management practices should be aimed at reducing costs, delaying or avoiding regulatory action, reinforcing a positive image (being a good corporate citizen) and should respond to pressure from corporate customers and client stakeholders. However, coercing airlines into the adoption of environmental management by arguing that a 'green' image is useful in a competitive marketplace is not likely to be viewed credibly. In the case of SAS, pressures from passengers have little effect on influencing the company or industry to change or improve their environmental management.

SAS is an airline in which there is a strong internal culture willing to embrace industry benchmarking and improve environmental performance, and one or more environmental champions have played a key role in the success of a company's environmental management. However, other airlines may not have a strong internal environmental culture. SAS has identified in its environmental reports the needs for industry benchmarks so that performance among airlines can be compared. The playing field is not level, however. The social sciences must play a role in the development of scientific-based indicators in order to have benchmarks that are socially and politically legitimate to those that have to implement them. Further research is needed to identify the needs, not only of successful airlines (with respect to environmental management), but also airlines that have not chosen to follow their 'greener' counterparts.

Correspondence

Any correspondence should be directed to Dr Jennifer Lynes, Faculty of Environmental Studies, University of Waterloo, Ontario, Canada N2L 3G1 (jklynes@fes.uwaterloo.ca).

Acknowledgements

The authors would like to thank the Sustainable Tourism Cooperative Research Centre and the School of Environmental Planning, Griffith University, for providing funding for this research. Thanks also to Professor Lex Brown, Griffith University, for his insightful comments on this paper.

References

- Air Transport Action Group (2002) *Industry as a Partner for Sustainable Development*. London: Beacon.
- Aplin, G. (2000) Environment rationalism and beyond: Toward a more just sharing of power and influence. *Australian Geographer* 31 (3), 273–87.
- Bansal, P. and Roth, K. (2000) Why companies go green: A model of ecological responsiveness. *Academy of Management Journal* 43 (4), 717–47.
- Becken, S. (2002) Analysing international tourist flows to estimate energy use associated with air travel. *Journal of Sustainable Tourism* 10 (2), 114–31.
- British Airways (2001) *British Airways Social and Environmental Report 2000*. London: British Airways.
- Buckley, R. (2001) Environmental impacts. In D.B. Weaver (ed.) *The Encyclopaedia of Ecotourism* (pp. 379–94). Wallingford: CABI.
- Cairncross, F. (1995) *Green Inc.: A Guide to Business and the Environment*. London: Earthscan.
- Cannibal, G.L. and Winnard, G.M. (2001) Managing the tragedy: An inter-disciplinary model for managing the environment as inter-acting chaotic hierarchy. *Futures* 33 (2), 147–60.
- Céspedes-Lorente, J., Burgos-Jiménez, J. and de Álvarez-Gil, M.J. (2003) Stakeholders' environmental influence: An empirical analysis in the Spanish hotel industry. *Scandinavian Journal of Management* 19 (3), 333–58.
- Clancy, M. (2001) Patterns of airline development. *Exporting Paradise: Tourism and Development in Mexico*. Amsterdam: Pergamon.
- Conroy, M.E. (2002) Certification systems for sustainable tourism and ecotourism: Can they transform social and environmental practices? In M. Honey (ed.) *Ecotourism Certification: Setting Standards in Practice* (pp. 103–29). Washington: Island.
- COWI (2001) Civil aviation in Scandinavia: An environmental and economic comparison with other modes of transport. In *European Transport Conference*, Kongens Lyngby, Denmark.
- Diamantis, D. (1999) Green strategies for tourism worldwide. *Travel and Tourism Analyst* 4, 89–112.
- Eckersley, R. (1995a) Introduction. In R. Eckersley (ed.) *Markets, the State and the Environment: Towards Integration* (pp. 1–4). Melbourne: Macmillan Education Australia.
- Eckersley, R. (1995b) Markets, the state and the environment: An overview. In R. Eckersley (ed.) *Markets, the State and the Environment: Towards Integration* (pp. 7–45). Melbourne: Macmillan Education Australia.
- Eckersley, R. (1998) *Measuring Progress: Is Life Getting Better?* Melbourne: CSIRO.
- European Commission (1999) *Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions: Air Transport and the Environment Towards meeting the Challenges of Sustainable Development*. COM/99/0640 final. Brussels: European Commission.
- Fineman, S. (1997) Constructing the green manager. *British Academy of Management* 8, 31–8.
- Fischer, F. (1998) Beyond empiricism: Policy inquiry in post-positivist perspective. *Policy Studies Journal* 26 (1), 129–46.
- Font, X. (2001) Regulating the green message: The players in eco-labelling. In X. Font and R. Buckley (eds) *Tourism Eco-labelling* (pp. 1–17). Wallingford: CABI.
- Gare, A. (1995) *Postmodernism and the Environmental Crisis*. London: Routledge.
- Gibson, R. (ed.) (1999) *Voluntary Initiatives and the New Politics of Corporate Greening*. Toronto: Broadview.
- Gilley, K.M., Worrell, D.L. and El-Jelly, A. (2000) Corporate environmental initiatives and anticipated firm performance: The differential effects of process-driven versus product-driven greening initiatives. *Journal of Management* 26 (6), 199–216.
- Green Globe 21 (2005) Green Globe 21 essentials. On WWW at <http://www.greenglobe21.com/Participants.aspx>. Accessed 07.05.05.
- Gummesson, E. (1991) *Qualitative Methods in Management Research*. Newbury Park, CA: Sage.

- Hall, C.M. (1994) *Tourism and Politics: Policy, Power and Place*. West Sussex: Wiley.
- Hall, C.M. and Jenkins, J. (1995) *Tourism and Public Policy*. London: Routledge.
- Howes, R., Skea, J. and Whelan, B. (1997) *Clean and Competitive*. London: Earthscan.
- Hupe, J. (1998) CAEP/4 may be a turning point in ICAO's work in environmental protection. *ICAO Journal* (July/August), 7–9.
- IATA (International Air Transportation Association) (2000) *Environmental Review*. Montreal: IATA.
- IATA (International Air Transport Association) (2002) May 2002 industry briefing: Airline trends since September 11. On WWW at <http://www.iata.org.au/pressroom/index>. Accessed 10.08.02.
- IATA (International Air Transport Association) (2003) *Policy Options for Addressing Aircraft Emissions*. Montreal: IATA Aviation Information and Research Department.
- Khanna, M. and Anton, W.R. (2002) What is driving corporate environmentalism: Opportunity or threat? *Corporate Environmentalism* 9 (4), 409–17.
- Kirk, D. (1998) Attitudes to environmental management held by a group of hotel managers in Edinburgh. *Hospitality Management* 19, 33–47.
- Lynes, J.K. (1999) Minimising inflight waste in the airline industry. Unpublished MES Thesis, University of Waterloo.
- Lynes, J.K. (2003) Getting the goods out of industry: Using interactive discussion tools as a form of strategic questioning when conducting in-depth interviews. *Proceedings of the Council of Australian University Tourism and Hospitality Education (CAUTHE) Conference*. Coffs Harbour.
- Lynes, J. and Gibson, R. (1998) Voluntary corporate initiatives for environmental improvement. *Alternatives* 24 (2), 18–19.
- Malle-Bader, B. and Tunstall-Pedoe, N. (1997) Waste management in the air and on the ground: An ecology model of Vienna International Airport. In *Proceedings from International Airports Conference*, 191–201.
- Middleton, V. and Hawkins, R. (1994) Practical environmental policies in travel and tourism part II: Airlines, tour operators and destinations. *Travel and Tourism Analyst* 1, 83–97.
- Middleton, V. and Hawkins, R. (1999) *Sustainable Tourism: A Marketing Perspective*. Oxford: Butterworth Heinemann.
- Miller, G. (2001) Corporate responsibility in the UK tourism industry. *Tourism Management* 22, 589–98.
- Moffet, J. and Bregha, F. (1999) Responsible care. In R.B. Gibson (ed.) *Voluntary Initiatives: The New Politics of Corporate Greening* (pp. 69–92). Toronto: Broadview.
- Mortimer, L. (1998) Committee reaches consensus on need for action to further protect the environment. *ICAO Journal* (July/August), 5–6.
- Parsons, W. (1995) *Public Policy: An Introduction to the Theory and Practice of Policy Analysis*. Aldershot: Edward Elgar.
- Penner, J., Lister, D., Griggs, D., Dokken, D. and McFarland, M. (eds) (1999) *Aviation and the Global Atmosphere*. A Special Report of IPCC Working Groups I and III. Published for the Intergovernmental Panel on Climate Change. Cambridge: University Press.
- Price Waterhouse Coopers Consulting (2002) *Destination 2007: The One-off Opportunity for Change in the Airline Industry*.
- Renn, O. (2001) The role of social science in environmental policy-making. *Science and Public Policy* 28 (6), 427–37.
- SAS (Scandinavian Airlines) (1996) *Environmental Report 1995*. Stockholm: SAS.
- SAS (Scandinavian Airlines) (1998) *Welcome Onboard to a Healthy Inflight Environment*. SAS Products and Services. Stockholm: SAS Group.
- SAS (Scandinavian Airlines) (1999) *Environmental Report 1998*. Stockholm: SAS.
- SAS (Scandinavian Airlines) (2000) *Environmental Report 1999*. Stockholm: SAS.
- SAS (Scandinavian Airlines) (2001) *Environmental Report 2000*. Stockholm: SAS.
- SAS (Scandinavian Airlines) (2002) *The SAS Group Annual Report 2001 and Summary of Environmental Report*. Stockholm: SAS Group.
- Somerville, H. (1999) *Sustainable Development: The Airline View*. Royal Aeronautical Society Symposium, London, 17.1–17.15.

- Smith, Z. (1995) *The Environmental Policy Paradox*. Englewood Cliffs: Prentice-Hall.
- Stead, W.E. and Stead, J.G. (1992) *Management for a Small Planet: Strategic Decision Making for the Environment*. Newbury Park, CA: Sage.
- Stone, L. (2000) When case studies are not enough: The influence of corporate culture and employee attitudes on the success of cleaner production initiatives. *Journal of Cleaner Production* 8 (5), 353–9.
- UK Department of Transport (2003) Aviation and the environment: Using economic instruments – Key points made by stakeholders at discussion workshops. On WWW at http://www.dft.gov.uk/stellent/groups/dft_aviation/documents/downloadable/dft_aviation_507934.pdf. Accessed 28.04.04.
- Wight, P. (2001) Environmental management tools in Canada: Eco-labelling and best practice benchmarking In X. Font and R.C. Buckley (eds) *Tourism Eco-labelling* (pp. 141–63). Wallingford: CABI.

Personal communications

- Environment and Health Coordinator, SAS, 10 June 2002.
- National Environmental Coordinator, SAS, 8 September 1999.
- Environmental Director, SAS, 9 July 2001.
- Environmental Director, SAS, 10 June 2002.
- Environment Coordinator, Cabin Operations, SAS, 11 June 2002.
- Vice-President Corporate Purchasing, SAS, 11 June 2002.
- Director, Aircraft & Engine Analysis, SAS, 11 June 2002.
- Manager, Operations Standards and Development, SAS, 12 June 2002.
- Head of Environmental Affairs, Luftfartsverket (Swedish Civil Aviation Authority), 18 June 2002.
- Manager, Product Management, Inflight, SAS, 19 June 2002.
- Senior Vice-President, Marketing and Product Development, SAS, 19 June 2002.
- Vice-President, Corporate Finance, SAS, 22 June 2002.
- Inflight Catering Product Manager, SAS, 22 June 2002.
- Deputy CEO, SAS, 23 June 2002.
- LSG SkyChef, 30 June 2002.