



Earth Common Journal Regular Issue

The Voice of Change

MacEwan University

Volume 3, Number 1, September 2013

Soaring to green heights: The current sustainable initiatives in the commercial airline industry

Bretton Weir*

MacEwan University, Canada

ABSTRACT

The air travel industry is changing. The needs of the environment are being considered and research into ways of improving the industry is being explored. This paper explores the current climate in the commercial airline industry, paying special attention to the ways in which Boeing and Airbus are ensuring the developments of greener technologies. Included is an examination of a diverse range of the research and literature available on the aviation industry and the impacts it poses on the environment in its current state. With that, the question of corporate social responsibility is acknowledged along with a deeper look into the sustainable practices in the industry. Additionally, the paper compares the Boeing 787 Dreamliner to the Airbus A380, two of the most eco-friendly commercial wide-body aircrafts on the market. Ways in which the industry utilizes the PRME principles are also mentioned.

Introduction

As time progresses, our desire to remain connected is ever increasing. Because of this, technology must evolve in order to continue fulfilling our travel need but the increasing demand to remain connected. Communication and transportation

technologies have seen drastic changes in recent years and these advancements can be attributed largely to globalization. Globalization has revolutionized the ways in which contemporary society interacts (Chen, 2012, p. 65). Our ability to travel around the world has reached new heights and the commercial airline industry has made it possible for people to connect and interact face to face in a matter of hours. Travel, both domestic and international, is extremely efficient and accessible in contemporary society; however, the impact that the commercial airline industry poses on the environment is significant (Cowper-Smith & de Grosbois, 2011, p. 59).

While the industry has acknowledged the dire environmental repercussions that could be felt if aviation technology remains stagnant, there are many initiatives that are being taken by aircraft manufacturers, airlines, and government bodies to ensure the evolution of a more sustainable industry with room for future growth and prosperity. Greenhouse gas emissions are the topic of concern in relation to air travel; however, the air industry is only responsible for three to five percent of emissions (Cowper-Smith & de Grosbois, 2011, p. 61), compared to the transportation sector, as a whole, being responsible for 20% of emissions (Greener Planes, 2008, para. 6).

It should be noted that the air industry is responsible for eight percent of global economic activity (Greener Planes, 2008, para. 6) and, therefore, plays an integral role in the world economy. While this is significant, one must not negate the industry's imposition on the environment – it is important to further investigate the industry as a whole and examine what methods are being used to combat the issues that surround its environmental footprint. The steps that go into the engineering and development of contemporary aircrafts must exude sustainability and conscious environmental awareness. The question of corporate social responsibility (CSR) is asked. The nature of the airline industry possesses massive influence and this topic will be explored further.

The industry is not blind to the threat that it poses on the environment; however, as consumers, it is necessary to acknowledge and understand the degree to which the industry is evolving and changing for the better.

Two of the biggest commercial aircraft manufacturers, Boeing and Airbus, have implemented a number of environmental initiatives and are developing greener technologies with which to fly their airplanes. Because of this, it is necessary to examine these developments further and analyze their environmental initiatives.

Air travel is unavoidable. To completely do away with the industry is unfathomable and unrealistic in the 21st century. It provides many conveniences with which

contemporary society could not function; instead, one must acknowledge the initiatives that are being implemented by aircraft manufacturers and, subsequently, by airlines.

Review of the Literature

Literature on the greening of the commercial airline industry is not sparse. There are a variety of sources that touch on the methods being used to create a more sustainable industry. These sources largely examine the industry with scrutiny but are favorable in their recognition of the changes that manufacturers and airlines are implementing. Periodical articles, academic articles, environmental reports, and sustainability and environmental plans are consulted for a thorough understanding of the topic at large. With an ever-evolving industry, it is necessary to stay current on the technological changes.

To understand the current climate relating to the airline industry from an academic perspective, the scholarly article “The adoption of corporate social responsibility practices in the airline industry” (2011) examines the degree to which the industry is adapting sustainable practices. What was once a “one-page declaration of commitment to the environment and society [is being] replaced by more comprehensive reports providing detailed information on specific initiatives and their results” (Cowper-Smith & de Grosboi, 2011, p. 60). This article, focusing on CSR in the airline industry, discusses the exploration into the industry’s current state of environmental affairs. This source is very focused on the CSR of airlines and how, and if, it is being carried out. There are some useful insights into the current state of the industry and its attitudes toward environmentalism.

In another respect, the article “Greener planes — but lots more of them: Aviation industry flies in face of environment concerns” (2008), focuses on the advancements that the airline industry has seen. The author compares the stance of both the environmentalists and the airline industry, outlining that the environmentalists are not aware of the extraordinary advancements that the manufacturers are making while the manufacturers are disregarding what the environmentalists are saying as quackery and a lack of knowledge (para. 5). Additionally, the environmentalists “demand a reduction in the people’s use of air transport as key to solving the climate change threats;” however, the industry would not be willing to see a conscious decline in ridership (para. 9). The author heavily acknowledges the advancements made by Boeing and Airbus, which will be consulted later on.

The article “The Eco-Friendly Skies” (2008) dives into the potentially disastrous results that could plague the environment if changes are not made; however, a detailed explanation of the current steps being taken to sustainability are discussed. The article discusses the industry’s shift into the research of biofuels and how this would be beneficial in the long run (Gaffney, 2008, p. 43). As well, changing the ways in which the planes are actually flown to result in less fuel consumption and greater efficiency is explored (Gaffney, 2008, pp. 44-45). A shift in research from making faster planes to developing fuel-efficient aircrafts is a product of the twenty-first century, largely associated with an increase in fuel costs (Gaffney, 2008, p. 45).

One cannot forget the global influence the airline industry has. In this same vein, Chen’s (2012) research focuses on Southeast Asia. Chen discusses the opinions held by those involved in the Taiwanese air industry in relation to environmental conservation. It is discovered that Taiwanese “airline managers mostly have a positive and supportive attitude towards environmental management” (Chen, 2012, p. 68). The question of CSR is, again, acknowledged and placed at the forefront in order to maintain a proactive and progressive public image. This study provides further insight into the largely accepted belief that environmentalism in the airline industry is necessary and must be further promoted and researched.

As the airline industry is associated with travel, the *National Geographic* article, “Green Class,” written by Christ, explains the current climate of environmentalism in the airline industry in a leisure-focused manner. The article applauds air travel as a favorable industry; however, the skies are becoming more populous with planes, seeing an 11% spike in population from 2005 to 2010 (Christ, 2012, para. 4). It is fact that research into sustainable technologies is being performed, with Christ discussing the recent additions of the Boeing 787 Dreamliner and Airbus A380 aircrafts to airlines’ fleets. These planes, Christ describes, are a response to old and outdated aviation technologies and it is necessary for them to be replaced with these eco-friendly alternatives (2012, para. 4).

The International Air Transport Association (IATA), is the body that represents a number of the world’s airlines and plays a key role in the creation and implementation of aviation policies (IATA, 2013a). The IATA is devoted to developing policies relating to environmental sustainability in the industry, promoting proper CSR, and necessary technological development (IATA, 2013b; IATA, 2013c).

The airline industry is ever-evolving and changing. Because of this, it is necessary to be aware of the advances that the manufacturers are spearheading. While the industry received the brunt of negative press and allegations relating to the environment, one cannot discredit the industry leaders for their awareness of the industry's impact. Research into prolonging the longevity of the industry and reducing its environmental impact is evident.

Methodology

In order to understand the current environmental initiatives integrated by Boeing and Airbus, an examination of their respective environmental reports is in order. An analysis of the environmental plans of two of the world's biggest commercial aircraft manufacturers, Boeing and Airbus, compares where their focuses lie.

A content analysis of these environmental plans will be performed. The data that is gathered is qualified and created into wordles in order to gauge the different opinions, stances, and initiatives of the two manufacturers. Additionally, two of the most recent commercial wide-body aircrafts that can be purchased, the Boeing 787 Dreamliner and the Airbus A380, have been highly anticipated for the past number of years. Each aircraft allegedly is designed with environmentalism at the forefront. Notably, noise pollution is reduced through the development of quieter engines. Specifically, General Electric GENx-2B engines, prominently used on the Boeing 747-8 as well as the Boeing 787 Dreamliner, use technology of noise-reducing chevrons resulting in the airplanes being up to 30% quieter (Boeing, 2013b, p. 12). On this note, the specifications of the two aircrafts will be collected and compared.

In respect to the Principles for Responsible Management Education (PRME principles) (UN PRME, 2013), Boeing and Airbus, will be examined for their effectiveness in relation to principles four and five, Research and Partnership, respectively. These two principles are very applicable to the industry, both in regards to the evolution of greener planes and to the continued support and conscious decision making that airlines must embody when purchasing planes for their fleets.

Consultation of the websites of Boeing and Airbus, too, are further consulted, as there is a plethora of information relating to specifications of the sample aircrafts and explanations as to the reasons behind creating a sustainable industry.

Procedures

Data collection was limited exclusively to the Boeing and Airbus websites. Boeing’s “Environmental Report” (2012) and Airbus’s “Sustainable Aviation: Aviation Environmental Roadmap” (2013) are two documents that show where each manufacturer places their focus in regards to a sustainable industry. The wordless, graphics generated from inputting text documents into an app via www.wordles.com, can be found in Figure 1 and Figure 2, respectively.

Utilizing the Boeing and Airbus websites further, specifications on the Boeing 787 Dreamliner and the Airbus A380 aircrafts were gathered and the data is presented in Table 1. At this time, it should be mentioned that Boeing currently manufactures two models of the 787 Dreamliner: 787-8 and 787-9. The differences between the two are subtle; therefore, for intents and purposes, the 787-8 model is arbitrarily chosen and compared to the Airbus A380.

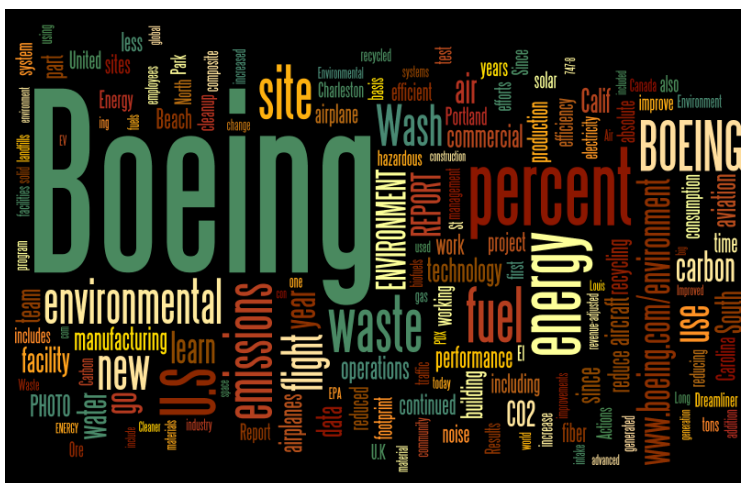


Figure 1: Wordle for Boeing “Environmental Report” (2012)



Figure 2: Wordle for Airbus “Sustainable Aviation: Aviation Environmental Roadmap” (2013)

Table 1: Specifications — Boeing 787-8 Dreamliner vs. Airbus A380

	Range	Fuel Capacity	Passenger Capacity	Passenger Kilometers (pkm)
Boeing 787-8 Dreamliner	~8,200 nm/~15,200 km	126,917 L	210-250	~64.21 pkm
Airbus A380	8,500 nm/15,700 km	320,000 L	525	29.90 pkm

*** Airbus information taken from http://www.airbus.com/fileadmin/media_gallery/files/brochures_publications/aircraft_families/Airbus-Family-Figures-Apr13.pdf

*** Boeing information taken from <http://www.boeing.com/boeing/commercial/787family/index.page?> and <http://www.boeing.com/commercial/airports/acaps/787brochure.pdf>

Summary

The collection of this data compares the environmental efforts being put forth by the two major aircraft manufacturers. Boeing and Airbus are heeding the environmental warnings and are advancing aircraft technology to become more sustainable. Whether looking at the wordles and seeing the frequency of the words used, or comparing the statistics between each manufacturer's most recent wide-body aircraft, it is undeniable that the industry is making strides towards a greener a future.

Results

Environmentalism is at the forefront of the industry. The environmental reports of both Boeing and Airbus make persuasive arguments in relation to the development of greener technologies. The focus of these reports can be seen in practice in the specifications of the Boeing 787 Dreamliner and the Airbus A380. Both Boeing and Airbus are making strides to promote a more sustainable industry and develop greener technologies. The wordles characterize the changes that are being made in the manufacturers' environmental publications, while the Boeing 787 Dreamliner and the Airbus A380 are proving that sustainable flight is possible. As described by Christ (2012), the Airbus A380 "has the potential to burn up to 20 percent less fuel than most

aircraft” while the Boeing 787 Dreamliner is “billed as the world’s first ‘eco-friendly’ airplane for its lighter composite construction, fuel-efficient engines, and improved aerodynamics” (para. 4).

In regards to the respective environmental reports, Boeing states, “the most significant environmental improvements occur when they are designed into a product from the beginning. This forward-thinking approach, which we call the Design for Environment, includes analyzing a products environmental footprint over its operational life cycle” (2012, p. 5). In the same vein, Airbus describes that “[today], more than ever, innovation provides the key to meeting the environmental responsibilities of the aviation sector and Airbus has not hesitated to take on the challenge” (2013a, p. 8). Both manufacturers possess a zest for further development and strive to be the leaders in aviation evolution and the creation of a sustainable industry.

Now, at this point it should be mentioned that green technology has a large learning curve, especially in relation to the Boeing 787 Dreamliner. Boeing has been facing many challenges in relation to this aircraft and, because of it, has had to reassess specifications. Most recently, the 787 Dreamliner faced issues associated with some aircrafts’ batteries, resulting in all of the aircrafts being recalled (Associated Press, 2013, para. 1). With that being said, Boeing has been working toward rectifying this issue.

In regards to the PRME principles four and five (UN PRME, 2013), it is fact that there is substantial research that is going in to developing these greener technologies. The manufacturers and the airlines can work together in dialogue to ensure that the needs of the environment are being met and carried out appropriately. The results here can give one insight into the strides that the commercial airline industry is making in order to prolong the longevity of air travel and lessening the impact it has on the environment.

Conclusion and Recommendations

The commercial airline industry has seen drastic changes as of late. The further greening of the industry is not something that is being taken lightly. There is a certain corporate social responsibility that the industry must confirm and, furthermore, develop ways in which to become more sustainable and decrease their environmental footprint. Because air travel is not something that can be disregarded, it is important, now more than ever, for these manufacturers to develop more sustainable technologies. As the demand for air travel is ever increasing, more planes will be taking to the sky, which means greener, less impactful technology is needed.

Further research can be conducted in respect to the airplanes that specific airlines purchase. Additionally, a more focused look at the pollution levels that are caused by the commercial airline industry would be beneficial to further understanding the threat that planes pose to the environment. Contrasting and comparing the industry's stance and government bodies' opinions would also be an interesting facet for further research.

While it would be ludicrous to suggest living in the twenty-first century without air travel, one must acknowledge the technological advancements that are being made in order to create a greener industry. The aircraft manufacturers will continue developing convenient and sustainable modes of transportation for years to come.

**Author: Bretton Weir is currently enrolled in the Bachelor of Communication Studies with a major in Professional Communications at MacEwan University. Since he was a child, Bretton has enjoyed aviation and today more than ever, is very keen on seeing the ways the industry is changing and adapting to become more eco-friendly. He dreams one day to fly on both the Airbus A380 and Boeing 787 Dreamliner.*

References

- Airbus. (2013a). *Sustainable aviation: Aviation environmental roadmap*. Retrieved from <http://www.airbus.com/company/environment/documentation/>
- Airbus. (2013b). *Airbus family figures*. Retrieved from http://www.airbus.com/fileadmin/media_gallery/files/brochures_publications/aircraft_families/Airbus-Family-Figures-Apr13.pdf
- Associated Press. (2013, March 28). Boeing 787 'very close' to flying, CEO says. *Canadian Broadcasting Corporation*. Retrieved from <http://www.cbc.ca/news/business/story/2013/03/28/dreamliner-mcnerney.html>
- Boeing Company. (2011). *Airport compatibility brochure — 787*. Retrieved from <http://www.boeing.com/commercial/airports/acaps/787brochure.pdf>
- Boeing Company. (2012). *Environment report*. Retrieved from http://www.boeing.com/aboutus/environment/environment_report_12/2012_environment_report.pdf
- Boeing Company. (2013a). *787 Dreamliner*. Retrieved from <http://www.boeing.com/boeing/commercial/787family/index.page?>

- Boeing Company. (2013b). *In plane view: A pictorial tour of the Boeing Everett Factory*. Everett, WA: Boeing.
- Chen, F. (2012). Managers' views on environmental management: An examination of the Taiwanese airline industry. *Journal of Sustainable Development*, 6(1), 65-75. DOI:10.5539/jsd.v6n1p65
- Christ, C. (2012). Green class. *National Geographic Traveller*. Retrieved from <http://travel.nationalgeographic.com/travel/traveler-magazine/tales-from-the-frontier/flying-green/>
- Cowper-Smith, A. & de Grosbois, D. (2011). The adoption of corporate social responsibility practices in the airline industry. *Journal of Sustainable Tourism*, 19(1), 59-77. DOI: 10.1080/09669582.2010.498918
- Gaffney, D. (2008). Fly the eco-friendly skies. *Popular Science*. 272(2). 40-46. Retrieved from <http://ehis.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=b0a6c0ef-6b8f-46cc-9ebe-5c9029d63ce5%40sessionmgr112&vid=3&hid=101>
- Greener Planes — but lots more of them: Aviation industry flies in face of environment concerns. (2008). *Strategic Direction*, 24(6), 16-18. Retrieved from <http://first.emeraldinsight.com/journal.htm?PHPSESSID=5436vkg4d0q8k8jg2g4q9pm1d2&issn=0258-0543&volume=24&issue=6&ft=1&article=0560240605>
- IATA. (2013a). *About us*. Retrieved from <http://www.iata.org/about/Pages/index.aspx>
- IATA. (2013b). *LATA and the environment*. Retrieved from <http://www.iata.org/whatwedo/environment/Pages/index.aspx>
- IATA. (2013c). *Environmental policy*. Retrieved from <http://www.iata.org/policy/environment/Pages/default.aspx>
- UN PRME. (2013). The principles of responsible management education. Retrieved from <http://www.unprme.org/the-6-principles/index.php>