



# Master's thesis – Sustainability in aviation

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## Abstract

The environmental situation is getting worse every year. Tourism, as one of the largest industries, is a part of the problem. Aviation is perceived as one of the biggest polluters, especially contributing to air and noise pollution. This research investigates whether the airlines have developed sustainability strategies and plans for the future in regards to environment and sustainability. Specifically, it investigates four chosen airlines and analyses their strategies.

The theoretical sections offer a better understanding of tourism as a concept and connected means of transportation the tourists can use to show there are alternatives to flying and their possible pros and cons. There are also described negative impacts aviation has on the environment. After the introduction to the problematic of tourism, sustainability is described. Following is sustainable development in general and in tourism. There are sustainable strategies talked in-depth, including the stages of sustainable strategies the business can have and key principles these strategies should be developed upon. Also, two sustainable projects from international aviation organisations are introduced and described.

The qualitative method of obtaining data was chosen over quantitative for the needed results and the importance of insight into the airlines' sustainable strategies. This would not have been possible with the quantitative method; the results would be different or would not help to answer the research question. The data from airlines' websites and reports were collected, described and analysed using the thematic analysis while comparing the data to the sustainable stages and key principles. The airlines themselves were also described in short with their history and important milestones.

The analysis answered the research question and showed that the airlines do have sustainable strategies and plans for the nearest future. It showed the airlines have three main strategies with a common topic, being the CO<sub>2</sub> footprint, waste management and social project involving partnerships or helping those in need. The CO<sub>2</sub> footprint projects were focused on fuel efficiency, optimizing the flight routes, replacing old aircraft for the younger ones or, two airlines, had projects about sustainable fuel. The waste management strategies were focused on recycling, replacing single-used plastic or saving water and energy. Every airline had a different level of recycling waste and two had one-time projects like recycling old billboards or uniforms. The social projects were mentioned to show the sustainability is not only about the environment. The airlines had projects focused on helping various groups in need, like veterans or children.

Only Finnair did not have a similar project, instead, they highlight the partnership with various sustainable organisations.

It was concluded that the airlines do have sustainable strategies and plans for the nearest future regarding environment and sustainability. The research was made on four airlines using the information from the website without the possibility to ask additional questions because none of the representatives answered to author's email. The research also showed the need for further examination of the topic and how sustainable is the airlines' behaviour in certain points.

**Keywords: Aviation, airlines, tourism, sustainability, sustainable development, sustainable strategies**

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## Introduction

The diminishing of Earth's resources came to light in the past decades (Scoones, 2007). After that, many notions began focused on ensuring the planet and its ecosystem will not be permanently damaged and will be able to serve the next generations. Because of these efforts, a clear strategy of sustainability was made in the mid-1980s (Portney, 2015). Firstly, it was just about businesses and ways to fight climate change but in time the strategy gradually came into almost every aspect of life, personal or companies as well as getting more and more research attention and topics (Portney, 2015).

Because tourism also continuously became part of everyday life, sustainable strategies and pursuits too started taking root there. It may have started slowly but gradually evolved into the whole research topic of sustainable tourism and continuous strategies about how to make people's travelling less and less harmful to the environment (Harris, Griffin, & Williams, 2012). It became a challenge, as the number of tourists grew every year before the pandemic started in 2020 (INTERNATIONAL TOURISM AND COVID-19, 2020). The companies had to revisit their business strategies and methods and rework them or even made completely new business procedures that incorporate the sustainable efforts going on in society. It also became more and more apparent that tourists started expecting the businesses to behave sustainably, so more and more certification and other means of showing the company's eco-friendliness started to appear (Harris, Griffin, & Williams, 2012).

Airlines were, and still are, seen as one of the biggest polluters in the tourism industry (Harrison, Masiol, & Vardoulakis, 2015). As mentioned, the number of tourists grew every year before 2020 so according to that the traffic grew too. The number of flights was growing so the point of air traffic not being sustainable and environmentally friendly came to light. Even after the announced end of production of the biggest passenger plane A380 (Ahlgren, 2021) and the announced end of production of the second biggest one, B747 (Slotnick, 2020), for 2022 the belief of air traffic polluting the environment in the future more and more persisted. Airlines have projects and research going on the question of sustainability, but many of these, like finding more sustainable fuel, require a longer time to find and test.

However, some of the airlines changed their strategies and inside process for a more sustainable one. For example, not many airlines are giving out meals on shorter flights anymore. Of course, it can be argued it was more cost-related, but the point with less weight, therefore less fuel spend stands. The interest of this thesis lies in the sustainable strategies some of the airlines

developed. The author hopes to analyse the strategies, compare strategies of different airlines and maybe gain a bit of insight into what the airlines plan for the future. To get all of this information, an analysis of the airline data on websites will be conducted.

The thesis itself will be divided into theory and analysis. The theory itself will consist of a literature review on relevant topics such as tourism, aviation or sustainability. This part will give the theoretical framework to be referenced in the second part of the thesis, where the analysis of the airline's business strategies, its sustainability and possible future visions will be carried. The information will be gathered from public sources as are airline's websites and annual reports.

The conclusions will, hopefully, answer the research questions stated and will give more insight into the industry that is generally seen as a polluter and not sustainable enough.

## **Problem statement**

Nowadays, when sustainability is getting into every aspect of the daily life of companies and individuals (Finkbeiner, Schau, Lehmann, & Traverso, 2010), the aviation industry is seen as one of the biggest polluters in tourism (Harrison, Masiol, & Vardoulakis, 2015).

Do the researched airlines have developed a strategy of sustainability and what are their plans for the future regarding sustainability?



## Tourism

The thesis itself is about sustainability in aviation, but as aviation is one of the transportation means abundantly used in tourism, the definition and introduction to the whole tourism area are necessary. After all, without tourism, there would probably not be so many flights and the pollution from aviation would not be such a big problem. To further emphasize the problem aviation can cause, the author decided to look upon the industry it is the most involved with and show, why it can become such a big problem.

There are many different definitions of tourism, which can seem similar at first, but upon closer inspection, we can find some disparities between them. One of the reasons for that may be that tourism is not one sector field, there are many different economic, social and cultural sectors connected that the definitions may vary depending on what the author of the concrete definition is focused on. One of the first definitions of tourism from 1910 made by Hermann Von Schullard says that tourism is:

*“The sum total of operators, mainly of economic nature, which directly relates to the entry, stay and movement inside and outside a certain country, city or region”* (Leuterio, 2007).

This definition focuses a lot on the economic side of tourism, which can be understandable, as the author was an economist. Even today some of the authors, for example, Mukhia (2017) or Lew (2011) use definitions where the economic side of tourism is pronounced more than anything else.

Theobald (Theobald, 2005) or Lickorish & Jenkins (Lickorish & Jenkins, 1997) even argue that seeing tourism as an industry and therefore trying to put a definition on it may be wrong. Theobald says tourism should be seen as a *“social phenomenon, an experience or a process.”* He argues that trying to classify tourism as one industry may lower the significance of tourism and can be seen as trying to simplify the topic (Theobald, 2005). On the other hand, Lickorish & Jenkins point out that tourism can not be an industry as it does not have measurable input and output, reaches to many sectors and the components differ in every country (Lickorish & Jenkins, 1997).

Current well-known tourism researcher Erik Cohen sees tourism as:

*“A temporary reversal of everyday activities – it is a no-work, no-care, no-thrift situation; but it is in itself devoid of deeper meaning : it is a “vacation” i.e. “vacant” time.”* (Cohen, A PHENOMENOLOGY OF TOURIST EXPERIENCES, 1979).

As demonstrated in these examples, there is no clear definition of tourism, they differ depending on which research sector the author is. Some of the authors do not even see tourism as an industry and practice another approach to the subject.

Because of the thesis topic, the author is choosing to define tourism as UNWTO:

*“Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes.”* (UNWTO, 2021).

This definition works with the movement of tourists, which is connected to transportation, hence it can be used with the thesis topic. According to this definition, the transportation, or travelling part, is mandatory since it moves the tourists from the place of their usual residence to their destination. Means of transportation will be more looked into in the next chapter.

As we see the world, and correspondingly people’s lives, changed in past decades, tourism itself and how people perceive tourism, shifted too. Tourism had to adapt to many new conditions including more free time, better infrastructure, higher ecology awareness or the rise of social media. The academic and research literature reacted to new topics and mentions a plethora of social, economic or cultural-historical factors. For this thesis, the literature that monitors and evaluate the structure and intensity of traffic and the direction of transportation flow is being interesting (Vystoupil, Holešinská, Kunc, Tonev, & Šauer, 2011).

In these days the population is becoming more and more aware of the environment and the need for its protection. Some of them make changes in their lives so they can at least feel they are helping to protect the planet for future generations. The changes in their free time, and correspondingly their travelling, come with that. Multiple trends of how to approach or enjoy tourism appeared in last years, like eco-tourism, the comeback of train travelling or backpacking, accommodation share or individual travelling outside of mass-touristic attractions (Vystoupil, Holešinská, Kunc, Tonev, & Šauer, 2011).

Many authors, like Saarinen (2006), Cohen (2010), Šauer et al (2015) or Jenkins & Schröder (2013) are focusing on the damage and negative consequences tourism can have on the environment and focusing some of their research towards sustainability, sustainable strategies, policies and practices that can be implemented into tourism to balance the impacts on the environment.

## **Negative impacts of aviation**

Aviation is a core focus of this thesis, so the author decided to introduce the main impacts aviation have on the environment. This is used to further show why researching sustainable strategies and deploying them is so important.

The biggest impact aviation has are air and noise pollution. Air pollution is a result of transportation, largely air transportation. It can have impacts on the environment in terms of worsening ecosystem state leading to fauna and flora dying. It also has impacts on people's health and can end up in various respiratory diseases with long-term consequences (Andereck, 1993). The noise pollution can be emitted by transportation or the tourists themselves. This type of pollution is reportedly worse in cities than in any other touristic area. Long-term noise can, same as air pollution, have a direct impact on the environment- animals need to relocate somewhere calmer, and also on people's health. Being exposed to noise without the option to turn it off and rest can lead to many psychological or neurological diseases (Ay & Aktas, 2019).

## **Transportation in tourism**

This chapter will look more into the main types of transportation in tourism, their extension and their impacts, positive or negative as well as consequences of usage, focusing on the transportation of tourists, not goods. The thesis itself focuses on aviation but the author points out that without comparison with other often used types of transportation the picture would not be whole.

While looking back on the tourism definition the author decided to use, it is clear that transportation is an unthinkable part of tourism and one of the core conditions to consider a person a traveller – the need for travel must be met. For most of the tourists, however, the transport is not just mean to use, the journey itself can be an experience. As well, if the journey is not pleasant, it can have a negative impact on the whole vacation. So, even if the speed is one of the most important factors when travellers are choosing their mean of transport, the comfort, services and whole event are significant too (Mammadov, 2012).

When determining the attractiveness of a destination, the accessibility, meaning the possibility to easily get to the destination, is one of the first three aspects tourists are looking at. Tourists often express the need for safe, comfortable, affordable and convenient transportation and if the destination does not have one, the development and number of tourists will be lower (Varela & Navarro, 2016).

## Railway transportation

The best-known organizer of vacation using the steam engine was Thomas Cook. He organised the first trips using trains in 1841, which makes this type of transport the oldest one in tourism. In the 19<sup>th</sup> century, the railway was new, relatively fast compared to anything else and could transport a large number of tourists. For many people, it was an experience, since the steam engine itself was a relatively new invention. However, it took some time to get anywhere. After the development of air and road transport, the number of tourists using the railroad declined (Mammadov, 2012).

In current times, with the technology going forward, the new high-speed railroads are being built. These railroads and trains themselves are getting more comfortable and in some places can compete with air transportation in terms of speed. Varela & Navarro (2016) however argue that even developing and bringing the high-speed railway to destination does not have to automatically lead to a higher number of tourists or people using this railway. According to these authors, a big city has more chances to succeed than a smaller one, even if the smaller one has points of interests like natural beauty etc.

With the rise of awareness about sustainability between people, the trains may become attractive again. Various trends of rejecting environmentally harmful transportation, like flygskam, emerged in last years and people who do not want to fly but still want to travel are looking for new means of transportation. In northern Europe, there was reportedly a growth of sold train tickets in the past few years (ABEND, 2019). It does make sense, as train transportation is seen as the only environmentally friendly mass transportation there is. Also, sometimes rail transportation can be cheaper than other options (BRAMO, 2013).

## Road transportation

There is no need to introduce the automobile. It is well known that this invention revolutionized people's transportation not only in tourism. In present days the car transport is used mostly in short distance travels, as driving further can be tiring and expensive. This does not necessarily apply with caravans and other mobile houses because these have the option for the driver to rest and for passengers to travel more comfortably than in a car. Generally, travelling by car is seen as the most flexible option, not the most comfortable one (Mammadov, 2012).

Apart from cars, the commonly used means of road transport in tourism are buses. A lot of characteristic of the car transport applies to buses too, like the flexibility or uncomfortable feeling after few hours of the ride (Mammadov, 2012).

Rendeiro & Sánchez (2007) point out there is not enough research done on the impact of road transport tourism. After reading through articles and accessible literature author is inclined to agree because most of the found literature is focusing on environmental impacts and less on impacts to destination and tourism itself.

The impacts of road travel can be seen on the destination as well as on the environment as a whole. The noise or air pollution discussed above as an impact of tourism can be connected with road transport as well as other problems like congestions (Litman, 2009).

Road travel as it is now is not seen as sustainable and there is an agreement between researchers that it has to change either by policymaking or developing different type of fuel for vehicles (Mammadov, 2012; AGUILÓ, PALMER, & ROSSELLÓ, 2012).

### Air transportation

Air transportation is considered as one of the most important transportation types in tourism. After air travelling became more accessible for the general public thanks to lower fares and fast technical development, it helped with broadening travellers' options because it made travelling large distances quickly and comfortably. Because of the high demand, air transportation grew in terms of more airlines coming to the market and bigger planes as well (Mammadov, 2012).

Even with the different services between classic airlines and low-cost airlines, the number of passengers who travelled by plane grew every year before the pandemic in 2020 (INTERNATIONAL TOURISM AND COVID-19, 2020). These numbers drop a little by any major incident in aviation (for example 11<sup>th</sup> September), but it is clear the number of passengers grew consistently and had the pandemic not hit, it would have grown even more.

Many destinations are dependent on air transportation. It could be remote places or even big cities as well- air transportation is just so convenient for crossing long distances. Inside Europe, the importance may not be as significant as in places like the USA or Australia (Gössling, et al., 2007).

### Sustainability

In this chapter, the author will introduce sustainability as a concept and the theories around it. As the topic of the thesis is “sustainability in aviation”, this term is important to describe.

With worsening global climate, the word sustainability became more and more discussed and focused on in past decades. Sustainability itself is not only about pollution, even if it is most

commonly connected with that. It is also about other aspects of human's lives like human rights, reusability, etc.

Scoones (2007) says the term is so widely spread and people are so used to demand sustainability from almost every producer or corporate they buy from that the term and idea became politized.

But what exactly is sustainability? The Cambridge dictionary defines the term, in connection to the environment, as *"the quality of causing little or no damage to the environment and therefore able to continue for a long time"* (Cambridge dictionary, 2021). The idea is to use the environment in a way that doesn't harm it, so to say.

To reach the ideas of sustainability and sustainable behaviour in parts of people's lives, sustainable development, which will be introduced next, is necessary. After all, the business does not become sustainable just because someone wants it to. The management has to plan and develop strategies and prepare processes for it.

## Sustainable development

To really understand how exactly the airlines can be sustainable, the author chose to look more into sustainable development in general and in tourism to introduce and explain how businesses can thrive for sustainability on their own.

As said above, sustainability became a big movement in past decades. It slowly became part of everyday lives and you can find sustainable behaviour in your everyday routine. Using a cloth bag instead of a plastic one? Sorting waste? Checking for fair trade certificates on your sweets? These are all signs of sustainable behaviour we learnt and maybe even stopped thinking about them consciously.

Sustainable development was defined as:

*"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."* (World Commission on Environment and Development, 1987)

The definition is clear and simple in its meaning but to really achieve this state requires a lot of effort. Multiple different projects and concepts target sustainable development, determine goals that need to be reached or help businesses that want to change their operations to sustainable ones. One of the well-known concepts in tourism is Agenda 21 by United Nations. It was agreed

upon in Rio de Janeiro in 1992 and in 2015 followed up by Agenda 2030. The Agenda itself has 17 Sustainable development goals which are split even more into different topics including sustainable tourism, green economy or climate change (United Nations, 2015). As seen on the goals of the Agenda, sustainable development does not include only environmental concerns, but also economic, cultural and social. Sustainable development should ensure compromise between economic growth and the environment. The thought is that if the environment is sacrificed for economic growth, in the long-term the growth will stop and start declining and there would be nothing left for the future. It underlines the fact of some resources being non-renewable and the need to use them responsibly while also looking for substitute (Portney, 2015).

Therefore, the development is made by cooperation of science, innovation and many other fields. The goals and ways to reach them can change after research is done and the results are in any time. Just think about how the plastic bags were celebrated as an environmentally friendly replacement for paper bags. And what do we know now (Weston, 2019).

### Sustainable development in tourism

The principles of sustainable development apply in tourism too. The need for sustainable planning and development in tourism is that much needed since tourism can be quite harmful to the environment directly and indirectly (Harris, Griffin, & Williams, 2012).

In tourism, it is not only about preserving nature but also about various projects and innovation brought into the various field that work with tourism. It also means a compromise between tourism and its needs and the local communities and their rights and needs (Angelevska-Najdeska & Rakicevik, 2012). As already discussed, tourism can have many impacts and with responsible planning, these impacts can be minimalized.

However, theory and practice can be very different. As Sharpley (2020) points out in his review of his own paper 20 years later, the research on tourism and sustainable development in tourism bloomed but not much had been done and there are no results or evidence of the industry being more sustainable.

This may be caused by tourism having so many other fields connected to it. Each of these fields and stakeholders in it would have started to behave sustainably to help tourism itself be more sustainable. Sharpley (2020) also argues that there may be misconceptions in the understanding of sustainable tourism. He says that when the term originated, it was seen as opposite to over-tourism and mass tourism rather than what it should be. Theobald (2005) agrees with the lack

of progress and adds that it also may be because it is hard to change people's beliefs and take them out of the comfort zone.

As well, the research may be done but it is governments and stakeholders who have to embrace it and incorporate it into their policies. There may be hotels incorporating sustainable ideas, but there are other fields in tourism that have to start cooperating. As already said, transportation is one of the main components of tourism and its impacts were already discussed. The next chapter will focus on how sustainability may be done and if it is done in aviation, which is seen as the biggest polluter of all the transportation types (Harrison, Masiol, & Vardoulakis, 2015)

### Sustainable strategies

This chapter will look more into sustainable strategies, how they are formed, how they should be developed and what should be the focus points if the business wants them to really work.

To attain any level of sustainability in a business, strategies need to be formulated and put into practice. This chapter will look into sustainable strategies, describing and introducing them and the following chapter will look into how these strategies can be implemented into aviation.

As Bass & Dalal-Clayton (2002) points out, the development in recent years progressed a lot in recent decades. This development brings a lot of challenges, as even with the intention of it being sustainable, without clear strategies it can turn into harmful very fast. These strategies need to be long-term, realistic and integrating various fields, not only one. There should be clear goals established in short and mid-terms with described journey how to achieve them. Depending on the scale of the goal needing to be reached there may be a necessity for local authorities or government to engage, which can, sometimes, bring certain problems (Bass & Dalal-Clayton, 2002).

As Bass & Dalal-Clayton (2002) sees it, the strategic approach to planning a development should consist of:

- *“move from developing and implementing a fixed plan, which gets increasingly out of date ... towards operating an adaptive system that can continuously improve*
- *move from a view that it is the state alone that is responsible for development ... towards one that sees responsibility with society as a whole*
- *move from centralized and controlled decision-making ... towards sharing results and opportunities, transparent negotiation, cooperation and concerted action*



- *move from a focus on outputs (eg projects and laws) ... towards a focus on outcomes (eg impacts) and the quality of participation and management processes*
- *move from sectoral planning ... towards 'joined-up' or integrated planning*
- *move from a focus on costly 'projects' (and a consequent dependence on external assistance) ... towards domestically driven and financed development.*” (Bass & Dalal-Clayton, 2002)

These are the points the strategies should count with. There is a need for a flexible plan for the whole society including stakeholders and individuals while sharing decisions and information. Some of the strategies may change with new information or after finding out the approach is wrong. The point should be influencing impacts on the environment or the world around us as a whole.

Hart (1997) describes three stages of environmental strategies while trying to achieve sustainable business. In each stage, the strategies are different to use, as the goal of each stage is different as well.

### **Pollution prevention**

This stage requires the business to move from pollution control, cleaning the pollution after it was created, to pollution prevention, which means trying to reduce the amount of pollution made by manufacturing. The strategies used in this state focus on continuous improvement of the business inside processes to save energy and decrease waste. There may be many reasons the business decides to take the first step to be more sustainable from the outside ones, like the new law, to inside ones as preventing the waste to happen may be cheaper than paying for cleaning the waste up.

It is also possible not only to reduce the waste but to think about how to use it elsewhere as a possible resource for production, recycling it. (Hart, 1997)

### **Product Stewardship**

The second stage goes from dealing with pollution when manufacturing to thinking about the whole life- cycle of the product. From the suppliers and their environmental impact to the possibility of recycling the packaging of the product.

While designing a product, the whole process and possible impacts on the environment are analysed and reviewed including how the customer would dispose of the product and its components. This stage and its strategies can help lower consumption, as the companies are led

to be able to recycle and reuse, if it is possible, components of the product. The innovation happening in this stage can also help reduce the cost for the business as well as for the customer (Hart, 1997)

### **Clean Technology**

The last stage which not many companies achieved yet. These days, companies mostly plan how to achieve zero-emission and using clean technology in the future. To achieve this goal there is a lot of investment and innovation needed to be done. Also, some of the industries can have more problems while trying to get to clean technology than others. With some industries (eg. Chemical,...) it can mean reworking the core of the industry itself (Hart, 1997).

The sustainable strategy the company adopts is not only about the product, but it also should help with relationships with customers, suppliers or the government. The strategy not only changes the inside process of the company but should also educate their customers and demand the business partners to behave in a sustainable way. In the times of customers being aware, sustainable strategies can give the business a market advantage. Hart (1997) thinks the responsibility for a sustainable way of business does, in the end, fall on big corporations and enterprises rather than on governments. He points out these corporations should lead the way and educate their customers more.

But how to develop strategies to actually help the business? Bass & Dalal-Clayton (2002) define few key principles that should be put into consideration when developing a strategy. The list was modified to serve the purposes of the thesis, some principles were left out as they would not make sense with the topic.

- People-centred. The strategy should take people, not only employees, into consideration. It should ensure a positive long-term impact on all
- Long-term. As already mentioned, the strategy should be made with a long-term timeframe in mind. There also should be a plan on how to solve medium and short-term problems
- Comprehensive and integrated. There should be a balance between environmental, social and economical needs. Leaning only one way and benefiting only one part is not the right way, because the other two parts would suffer
- Targeted with clear monetary priorities. It should financially make sense and should be included in the business' budget. Also, the budget allocated to the strategy should be

reasonable so the finances will not run out in the middle of it. The targets should be realistic and challenging with a timeframe

- Based on analysis. The foundation the strategy is being made on should be a to-date analysis with all the factors and parts needed to be included. The analysis should also be able to, at least a bit, outline the possibilities for the future
- Monitoring, learning and improvement. The strategy is a plan that needs to be evaluated and monitored to see if the desired results are brought in. This should ensure the change in strategy if it is needed
- Building on existing mechanism and strategies. Even if the company is developing their first strategy, they should take the already existing strategies and modify them or at least use the information already there
- Effective participation. The cooperation between different stakeholders and government can lead to sharing of information and ideas which can be beneficial for all parties involved. The company then should not hide new information or new discoveries but share them. The discussion with a different organisation can also bring in new ideas
- Link national and local levels. A lot of the policies can come from the government, but the planning of strategies and development should be let on the companies with offered help from government's specialists
- Develop and build on existing capacity. The strategy planning should be realistic in a way of resources available. It also should take into consideration the current state of affairs in the country and work with these rather than establishing goals that can not be reached

As it can be seen, planning a new strategy can be a long and difficult process as there is a lot to consider, as well as the possibility of the strategy changing after implementation. As said, there are already strategies to go from, already planned by other businesses. There is also a difference between the world areas, depending on the level of development (Bass & Dalal-Clayton, 2002).

### Sustainability in aviation

As already discussed, air traffic is one of the main polluters. It makes around 3.4% of the worldwide amount of CO<sub>2</sub>. Of course, not all of that can be counted towards tourism, but a lot of it can be. Also, most of the emissions from air transport are released in the upper troposphere, meaning they have a bigger impact on clouds and the ozone layer making them more harmful than emissions from the ground (Gössling, et al., 2007). In comparison between short and long

flights, surprisingly the short flights release more emissions because of more frequent take-off and landing (Hamaguchi, 2021).

The impacts air travel has on the environment is indisputable and proven by many researchers from which the author cited just a few. However, the airlines and organisation acting in aviation know this, so there are many projects going on about how to make air travel more sustainable. The end of the biggest passengers' plane was already mentioned, but what are the other projects?

The International Air Traffic Association (IATA) has many different projects listed on its websites. These projects are not mandatory for the airlines but are highly recommended. These projects range from sustainable fuel through cabin waste to voluntarily offsetting carbon footprint. These plans were highlighted in project Waypoint 2050 of the ATAG (an association that connects some of the other aviation organisations and associations), where the industry as a whole committed to cutting the carbon emissions by half by 2050. There are many core goals including, as already said, sustainable fuel, improvements in operations or innovation (Stevens, 2021).

We can deduct the air transport industry knows about its role in environmental change and is trying to help it. The project Waypoint 2050 is not signed by airlines, therefore there is no legal agreement, but it will be one of the ATAG's focuses and it will try to steer their members towards these goals (ATAG, 2020).

Apart from these organised efforts a lot of airlines have their own strategies or plans on how to become more sustainable or how to be less harmful. In the second part of the thesis, the author will analyse few chosen airlines and their strategies as well as plans for the future.

### **Sustainability projects in aviation**

In this chapter, the author will introduce two projects of the international aviation organisations. Each of these, and many other, organisations have a lot of these projects, so the author chose two that will be tied to the analysis part.

#### **Managing cabin waste**

IATA has, among other projects, one that is focusing on managing cabin waste. The organisation recognizes cabin waste as a big problem and wants to solve it. Because of safety and weight, the packaging and tableware in airplanes are from plastic that is only single-use.

The project focuses on supporting airlines in waste regulations and promoting new technical solutions for waste (IATA, 2021).

In the project, the waste is divided into two categories: waste from cleaning and waste from the trolleys. Both of these types of waste contain a lot of plastic, which is a problem that has to be solved (IATA, 2021).

While cleaning the cabin, the two types of wastes are taken care of by two different departments, so it may be harder to analyse the amount of it. There was a study on Heathrow airport conducted in 2012 which determined the amount of waste for one passenger as 1.43 kg on average (IATA, 2021).

As it may look easy to recycle the plastic waste from airplanes, the major obstacle, so far, is legislation. The waste from cabins is, by these laws, subject to special treatment to reduce the risk of transferring diseases. IATA made a study on this topic and argues for smarter regulations while maintaining controls for diseases transferring, mainly towards animals (IATA, 2018).

### **Sustainable aviation fuels**

This project is taken from ICAO, however, a similar project is also researched in IATA. As was said in the chapter about the negative impacts of aviation, air pollution is a problem and some of it can be traced towards aviation (Gössling, et al., 2007). The fuel the airplanes use is one of the most important elements in air pollution. Before the new technologies allow planes to use solar power or some other type of fuel, improvement of the current one is needed. The change in fuel should reduce the emissions released to the atmosphere as well as increase the effectiveness of the engines (ICAO, 2021).

ICAO asked its members to try to research fuel that will be economically beneficial and socially and environmentally friendly. As current fuel is made out of oil, they also requested fuel that will not hurt the environment when being made (ICAO, 2021).

ICAO itself maintain a database for sharing information about sustainable fuel and is organising workshops and seminars. They have a goal “2050 ICAO Vision for Sustainable fuel” which was accepted in 2017. It is a reminder for the members to think about sustainable fuel and its research (ICAO, 2021).

## Methodology

In this thesis, the author evaluates airlines' sustainable strategies and approach to sustainability. The research is therefore constructivism paradigm as the research is done through qualitative methods of obtaining data. This method of collecting data was chosen based on the topic of the thesis and on the author's effort to look into the data deeper and gain an understanding of the strategies. The purpose is to understand and analyse airline's sustainable strategies and conclude if the airlines do have strategies for the future. This approach and conclusion would not be possible if choosing the quantitative data research method because deeper understanding and analyse is needed. As the author was the one who chose the airlines and the data that will be analysed, there is a subjectivism represented. The ontology is relativism as in the research the reality was found through qualitative methodology with the thought that multiple realities can exist in different objects as well as the constructivism is represented, as the whole concept of sustainability, the thesis is focusing on, can be viewed as a social construct.

The thesis itself is divided into theoretical part and analysis. The first part consists of literature review and research and the second part consists of the analysis of the acquired information as well as discussion and conclusion. The theoretical part of the thesis focuses on giving a theoretical framework and obtaining the knowledge from secondary sources like literature, research articles or websites of various organisations. The literary research was done on topics like tourism, sustainability, sustainability in aviation or sustainable strategies. Impacts of aviation on the environment are also listed to further explain why there is a need to research this topic. The topic of sustainability was important to understand what sustainability is and how it can be seen in the strategies that will be researched. Sustainability in aviation and project examples were mentioned to show the aviation organisation focus and will be often mentioned in the analysis as the author will try to see if the airlines do have projects that align with the ones from international aviation organisations. The impacts of aviation were in the theory to reflect on the damage aviation can make as well as to understand the steps airlines are taking in reducing the impacts.

The analysis consists of data acquired from websites of the airlines. The data from websites are secondary, from the annual reports as well. By connecting these two types of data together the sustainable strategies and sustainable approach of those airlines can be analysed.

The analysis itself is Thematic analysis with a deductive approach. The author is looking for themes of sustainability or environmentalism in the data from the airlines' websites. Other

topics than those are unimportant and will not be included in the analysis. The deductive approach is because the author is coming to the data with the knowledge already gained from the literature review and is expecting to find the themes of sustainability in the data. The focus is latent, as the author is trying to capture meanings, ideas and concepts behind the strategies (Willig & Rogers, 2017). Braun & Clarke (2008) mentions six steps in doing the thematic analysis, which are “*familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.*” (Braun & Clarke, 2008). These six steps will be used while analysing the data.

The analysis will consist of describing projects the airlines have on their websites and then analysing them according to the stages and key principles of sustainable strategies described in the theoretical part. At the end of the analysis of every airline, there will be a summary as well as analysing the projects together concerning how they work together and what they show for the future. After the last airline, there will be a comparison of these airlines.

The selected airlines are Emirates, Finnair, Delta Air Lines and Korean Air. These four airlines were chosen to represent various parts of the world, sustainability approach in the country of origin as well as for having the sustainable strategies developed and freely accessible on their websites. The sustainability approach in each country is different and the author wanted to see if it reflects on the strategies as well. For example, the Nordic countries are viewed as having a long tradition with sustainability as well as having plans for the future (The Nordic Prime Ministers, 2019) whereas the United Arab Emirates are new to it (UAE, 2021). The four airlines were also chosen as two that are relatively new and two with a long tradition, while Emirates and Finnair have fleets made mostly of Airbus planes, and Delta and Korean have mostly Boeings.

Emirates is an airline from the United Arab Emirates. The airline itself was founded in the year 1984 on impulse from the Minister of Defence. The first flights from Dubai were in the next year. On the break of millennia, 11mil. passengers arrived at the Dubai airport, while Emirates itself transported 4,7 million. In the same year, Emirates is the first airline to order the newest plane Airbus A-380 with two full decks. In 2016 the airline was awarded as the best in the world. By 2021 the Emirates fly to 157 destinations and has 270 planes of various types, mostly from Airbus (Emirates, 2021).

Finnair is an airline from Finland founded in the year 1923 which makes them one of the oldest still operating airlines in the world. The first flight was in 1924 from Helsinki operated by

seaplane under the airline name Aero. The name Finnair is officially in use since 1968. After continuous growth and becoming “The official carrier of Santa Claus” and “Official airline of the Moomins” the airline was first to fly Airbus A-350XWB in Europe in 2015. In 2017 the airline transported almost 12 million passengers. In 2019 the airline started programmes that let passengers offset their carbon footprint or buy biofuel which was then accumulated and used on a flight from San Francisco to Helsinki. In the same year it joined the Nordic Initiative for Electric Aviation. In 2020 Finnair launched a new sustainable strategy and wants to be a carbon-neutral airline by 2045 (Finnair, 2021)

Delta Air Lines’ predecessor was founded in 1925. Huff Daland Dusters became Delta Air in 1928 and Delta Air Lines in 1945. The next year marked the millionth passengers. In 1970 Delta had the first Boeing 747 in service. In 2000 Delta becomes part of a new alliance named SkyTeam. In 2012 Delta bought a refinery, being the first airline to do so (Gay, 2019). By 2020 Delta operated in almost 300 destinations (Delta, 2020).

Korean Air started in 1969 in Korea. In 1972 it had its first flight to America, specifically Los Angeles. In 1975 it launched the first European route to Paris. In 1995 the airline had a fleet of 100 planes. In 2000 the airline, with Delta, Air France and Aeromexico, launched the alliance SkyTeam. In 2018 the airline launched a joint venture with Delta. It is a form of partnership that provides the customers of both airlines with many benefits (Korean Air, 2021).

For better data acquisition the method of analysing the airline’s information about sustainability in accessible sources was chosen. The data collected were then compared with the theory described in the theoretical part, especially the chapters about sustainable development and strategies.



## Analysis

As already mentioned, the analysis is thematic analysis with a deductive approach and latent focus. The six steps of this analysis will be used while analysing the data.

Each of the airlines was already introduced in the methodology, so now the focus is on sustainability. In the beginning, there is a short introduction to sustainability and how to access the information on the airline's website. Then each of the projects is introduced, described and analysed separately. The analysis will consist of comparing the acquired data to the Three stages of environmental strategies (Hart, 1997) and the Key principles of sustainable strategies (Bass & Dalal-Clayton, 2002). The author will also connect the projects with the introduced international aviation organisation projects and make conclusions from the data. After the last project, the airline strategies are rated together as a whole.

Following analysing all four airlines, a summary of the strategies and a comparison to the problem statement will be made.

The projects were chosen on the websites as the airlines have them separated so the author chose to adhere to the format as well as describing only those related to the thesis topic.

## Emirates

The Emirates website is full of sustainable and environmental projects. There are also two projects tied to ecotourism, one in Dubai and one in Australia. Some of the projects can be recognized as similar to the ones the big aviation organisations have.

Link for the website the author was gaining data from:  
<https://www.emirates.com/cz/czech/about-us/our-planet/>

## Lowering emission

The airlines have one of the youngest fleets, with the approximate age of a plane around 6,5 year. They claim this is one of the points, which helps to lower the emissions as the younger the plane, the more modern which should mean it is made to be more sustainable.

Other than that, there is a complex process of how to save fuel and as a result, lower emissions.

- Flexible routes – from 2003 the airline's planners work tightly together with navigators and meteorologist to ensure most of their routes have the tailwind and minimum of front wind. This should ensure the lowest aerodynamic drag possible leading to lower fuel

usage. The airline also works with IATA to try to get this process into other airline's planning

- Cooperation with Air Traffic Control – creating protocols and processes to increase effectivity and lowering fuel usage, for example, fewer waiting planes in the lane before landing or better accessibility to free air routes
- Fuel monitoring – a system of monitoring the fuel that allows data analyses to restrict refuelling at crew discretion
- Fuel-save processes when the plane is grounded – for example not using APU (additional power unit) but GPU (ground power unit) or, with four engine planes turning off one or two engines while taxiing
- Loading planes – loading so the centre of gravity is closer to the rear which leads to less fuel usage.
- Managing plane's weight – Emirates regularly analyse the weight of the planes and changes the cabin products and equipment for a lighter version without lowering comfort for the customer. Lower weight leads to lower fuel usage
- Changing the pilot's documents from paper to electronic leads to lower weight as well as lower paper usage
- Correctly maintained planes – planes in good mechanical and technical shape as well as innovative ways of cleaning which helps to keep the engines and planes clean for longer as well as lower the water usage
- Solar energy systems in Engine Maintenance centre and Emirates Flight catering which should lead to cleaner energy (Emirates, 2021)

### **Analysis**

This project is trying to lower the number of emissions generated by each flight. Going by Hart (1997) specifics of strategy stages, the airline is a stage of Pollution prevention. From cleaning the pollution, they create the airline moved, with the projects, to the stage of trying to prevent as much pollution as possible from being created. Most of the projects focus on lowering the weight of a plane and its components as well as the technical status of the planes.

The principles mentioned in Bass & Dalal-Clayton (2002) book are fulfilled in these projects with the effort of being long-term, try to cooperate with more institutions and organisations such as IATA and are based on constant analysing of acquired data from various sources. Some of the projects need cooperation with state organisations, as, for example, the Air Traffic Control is an organisation of a state.

However, in this project, there is no mentioning of sustainable fuel which could lead to a question about not so good long-term planning, as sustainable fuel is a focus of several aviation organisation. The projects operating with fuel are only about fuel-saving, not about changing the fuel for a more sustainable substitute or trying to develop one.

## Responsible consumption

These projects are not only about the waste that is created in the cabin but also about lowering the consumption of water or energy.

- Working on implementing environmental protection into supplier codex
- Preferring local suppliers over the global ones to lower the carbon footprint
- Limiting the single-use plastic in the cabin and replacing them with a sustainable substitute – e.g., paper straws, wooden chopsticks or paper bag for tax-free shopping
- Usage of blankets from recyclable plastic bottles
- Recycling the waste from the cabin – e.g., big plastic bottles are separated in the cabin and then recycled in Dubai
- Teaching the employees to save water and electricity and sorting waste
- Emirates sometimes cooperates with various organisation to find a use of items they do not need anymore – e.g., making school bags from old billboards (Emirates, 2021)

## Analysis

These strategies mostly go to Pollution prevention, however, some of them, especially the recycling ones are still in the Pollution control (Hart, 1997). For example, using the old billboards to make school bags. The idea to use the billboards this way is a formidable one, but the management should really think if such a big airline as Emirates even needs billboards for advertisement. Also, as already said in the theoretical part, there is a law in effect in most countries that rules that the cabin waste has to be taken care of in a special way. So the big bottles separated in the cabin have to go all the way back to Dubai to be recycled. This may create some space problems in the cabin, however until it is possible to do this in more countries, it can be debated as the best possible decision.

These strategies are people-centred and benefit other people than employees, however, again, the long-term principle can be questioned (Bass & Dalal-Clayton, 2002). Recycling is a good step, but there is no possibility to recycle everything.

The same could be said about limiting the use of plastic. They are replaced by something else, but even that replacement, for example, wooden chopsticks, have to be made out of something.

The point about limiting the use of plastic mentions three substitutes which all of them are made out of wood. This may solve the problem of plastic but will probably bring another problem with using wood too much. This project is the one, where the author sees a problem with the real “sustainability” of it. Is it really sustainable if we replace one overused material, which can be created chemically, with another one, which we can not create and we have to take out of nature? Of course, plastic is harder to destroy than wood after it serves its purpose, but this thinking goes into pollution control. Right now, when a lot of businesses are at least in a stage of pollution prevention, there should be some kind of material that can be used without the need of destroying forests.

## Environmental protection

This project is divided into two bigger ones, which is the protection of habitats and the fight against illegal animal trade.

- Protection of habitats – in 1999 Emirates started Al Maha Desert Resort and Spa with a natural reserve that aims to protect desert flora and fauna as well as ensures the return of endangered species into their natural environment. In 2003 the Dubai desert natural reserve was created on the place of a resort and enlarged the previous reserve. In 2009, after the success of the previous resort, One&Only Wolgan Valley in Greater Blue Mountains, Australia. This resort was built with sustainable materials to minimize the usage of water and electricity. At the time of opening, this resort was the only carbon-neutral hotel in the world
- Fight against illegal animal trade – Emirates does not allow transport of endangered species or hunting trophies in their planes. The employees are trained to recognize suspicious transport. The airline also makes campaigns for its employees as well as passengers and the general public. Six of the planes have livery of endangered animals to raise awareness (Emirates, 2021)

## Analysis

The protection of habitats projects and the resort could be included in the Product stewardship stage (Hart, 1997). Even if the hotel is claimed to be carbon neutral, which could go into the clean technology stage, there is not enough information about products used inside to surely say that. The fight against animal trade can not be classified by the environmental stages.

These projects are long-term, environmentally beneficial and are about educating the customers (Bass & Dalal-Clayton, 2002). There is not much information about how the airline fights with illegal trade which could be understood, as it could be confidential information.

These strategies seem more oriented toward protecting wildlife than sustainability or the airline's main products. It could be tied to the efforts of offsetting the carbon footprints, but these are mostly speculations.

Other accessible data on the website are the Environmental reports. From the year 2019 onwards, these reports were added into Annual reports. In the report for 2019-2020, the airline claims to save 224 000 tons of CO<sub>2</sub> by using the fuel efficiency processes mentioned above (The Emirates group, 2020).

The report about responsible consumption mentions changing the employees' bottles for eco-friendly ones as well as reducing waste from catering services Emirates owns or work with (The Emirates group, 2020).

Even after going through the document, there were no mentions of sustainable fuel and plans on helping it develop or using it. The United Arab Emirates are part of ICAO, therefore the project about sustainable fuel should reach them and they should participate or at least mention how are they going to help developing.

The information about the possible airline future and what they plan for the future were not clear. The information describes the processes that are right now working but not much about what they are planning for the future. As one of the principles of sustainable strategies is long-term as well as flexible plan, the author thinks the planning is lacking in these points. The other principles of sustainable strategy making were met, as the company mentions multiple time helping local suppliers, other communities and educating employees. They also work on collecting data and react based on these as well as work with various organisation to implement their ideas into other airline processes. The lack of future view on the website can be also caused by not wanting to let the competitors know but as this thesis focuses on analysing the accessible data, the author must say there is a lack of future planning.

## **Finnair**

Finnair's information about sustainability are harder to find from the airline's main webpage but when found, the information is a good source for the analysis. On the first look, there can be seen a similarity with projects of aviation organisations.

The link for the website is: <https://company.finnair.com/en/sustainability>

## CO<sub>2</sub> reduction

The airline claims the CO<sub>2</sub> emissions are the most pressing issue for airlines and highlights the need for action. The airline wants to be carbon neutral by 2045. In 2025 they want to have 50% fewer carbon emissions than in 2019. The strategies in this project are divided into parts about what the airline wants to do in the future and what the airline already did and is doing.

### **Future**

- Renew the fleet during 2020-2025. It is expected to reduce the emissions by 10-15%
- Gradually decreasing the weight of the planes thanks to the cabin, service design, cargo and technical service teams
- Using sustainable fuels. By the end of 2025, the airline expects to spend around 10 million euros every year on sustainable fuels. This fuel is from Finland – based supplier and is made from waste
- Increasing fuel efficiency by route planning, reducing weight and using fuel-efficient processes
- Investing in innovation projects as electric flying and synthetic fuels

### **Done**

- New types of Airbus A350 were added to the fleet. They should be 20-25% more fuel-efficient than the previous type
- Total of three biofuel flights from passengers buying biofuel
- The airline's diesel vehicles in Helsinki are using biofuel
- Reducing weight, fuel and noise of flights
- A calculator on the website for passengers to check how much carbon their flight will make with recommendations on how to lower these emissions (Finnair, 2021)

### **Analysis**

These projects are in the stage of Pollution prevention (Hart, 1997) with clear strategies made to get into the next stages. The point of investing in innovation to develop synthetic fuels or electric flying is aiming to the Clean energy stage. By this point, it is hard to say, when this stage can be achieved but the airline is thinking in the long-term into the future. The project of lowering carbon emissions is in tune with the projects from ICAO and IATA, especially the sustainable fuels one.

The key principles for planning the strategies are present, the long-term factor of the strategies clearly visible (Bass & Dalal-Clayton, 2002). However, from the information, it is not clear how much the employees of the company can participate or are participating in these strategies, as the points are mostly about technical processes. The airline seems to care about its surroundings, trying to reduce not only the emissions but noise also. It also makes a point about using sustainable fuel from a local supplier, which also cut emissions from the need to transport it far.

## **Material management**

The airline wants to reduce the use of single-use plastic by 50% by 2022 as well as reduce these plastics in their catering by the same percentage. As already mentioned, the biggest obstacle in the waste managements are the laws that see cabin waste as an object for special treatment, but the airline recycles all the waste from the flights that end in Helsinki into different outcomes. This project follows the same pattern of information accessibility- it is divided into the “future” and “already done” parts.

### **Future**

- Replacing plastic cutlery with a more sustainable choice
- Offering more pre-order food to reduce food waste in the cabin
- Extra amenity kits and meals are given to charities

### **Done**

- The volume of the waste decreased
- Reduced plastics in the cabin – reducing the use of single packaged milk, replacing the meal packaging with cardboard ones, redesigning the packaging of tax-free shopping in the cabin as well as redesigning the amenity kit to contain less plastic
- Increased recycling of plastic in catering
- Slippers and salad containers in business class are made from recycled PET bottles (Finnair, 2021)

### **Analysis**

These projects show signs of Pollution prevention with the future ones stepping into Pollution stewardship. Especially the one about giving the extra meals to charities – in Product stewardship the whole product life cycle is thought of (Hart, 1997). If the meal is produced in a facility that recycles the plastic, in packaging from cardboard or other recyclable and

environmentally friendly material and when not sold it is not thrown away but gifted somewhere where it can be used while the left packaging is recycled, this whole cycle can be marked as Product stewardship.

The information is sparse, for example, the point about replacing cutlery with sustainable substitute does not mention which material would be used. However, even with this point, the airline fulfils the principles of sustainable strategy planning; there is a clear future planning, it is community-oriented by helping the charities and it connects multiple organisations within the airline itself (Bass & Dalal-Clayton, 2002). The catering the Finnair does is not only for their own flights but lately in supermarkets too, meaning the general public can engage in their strategies (Street, 2020). However, as mentioned, there is not much information said about the inside process that will lead or led to the results represented on the website.

### **Innovation and partnership with others**

The airline believes it is important to work together with other organisations in order to share information, ideas and innovate. There were three organisations, and connected projects, introduced on the company website, so the author decided to include them too.

### **Feasibility study about carbon-neutral synthetic fuels**

Few companies, including Finnair, are working together with the Lappeenranta University of Technology on a study if it is possible to make carbon-neutral synthetic fuel. The pilot project, if confirmed it is possible, would be based in Eastern Finland and would use CO<sub>2</sub> from the cement facility and hydrogen from Kemira's production. This process would give synthetic methanol which is a key ingredient in fuels (Finnair, 2021).

Finnair joined this project in 2019. The university was able to simulate the process in laboratory settings in 2017 (LUT University, 2019).

### **Nordic network for electric aviation**

Finnair joined this initiative in 2019. It is focused on advancing into the era of electric flying. The initiative is not only trying to develop, or help to develop, electric flying but also the needed infrastructure, business models, etc. (Finnair, 2021).

### **Nordic CEOs for sustainable future**

An alliance of leaders of Nordic companies. They are focusing on making their businesses sustainable and inclusive, share information and ideas (Finnair, 2021).



## **Analysis**

These partnerships aim to the stages of Clean technology (Hart, 1997). Even if it is not possible to achieve this stage yet, the airline is actively trying to get there.

If looking at these partnerships as a strategy, it can be seen they meet all of the sustainable strategy principles – it is a long-term plan with a clear goal, is based on learning and improvement and connects multiple different stakeholders and organisations together (Bass & Dalal-Clayton, 2002).

Finnair's projects and strategies show the airlines' focus on the future and efforts to be sustainable and use clean technology as soon as possible. Even if the description of the projects on the website is very brief and sometimes lack certain information e.g. with what exactly does the airline plan to replace the plastic cutlery the future plan is clear to be seen.

Finnair is a member of IATA and the projects reflect that. There was only one IATA project introduced in the theory, Managing cabin waste. The airline itself does have a project like that, as well as the sustainable fuel project as ICAO has. Overall, the strategies are focused a lot on sustainability and cover various topics. Sustainable fuel can be seen as a steppingstone for getting the airline sustainable until the goal year and then the aim may be electric flying.

Also, the airline does not only talk about sustainability but also act on a larger scale – the three flights with biofuel made can help promote the biofuel and the safety of using it as a fuel for more flights and airlines. There is also an effort to educate the customers – on the company website there is a part called “What can I do as a customer?” which gives advice to potential travellers about how to behave before, during and after the flight.

The airline, like Emirates, has its own Sustainability reports. The report for the year 2019 is a detailed review of what the airline has done to be more responsible and sustainable. The report is divided into parts and covers the economy of the airline, people (staff and customers) and processes and changes within the airline. The report also touches on the topics of bribery and corruption, stakeholders or economic impacts. The report can be found on: <https://company.finnair.com/resource/blob/1994132/c493686a5af678b81ed6dbcd48eed150/finnair-sustainability-report-2019-data.pdf>

The airline has well-described strategies that should help them to reach the goals. The only projects the author was not able to find were some social projects that benefit the general public.

## Delta airlines

The airline decided to decrease all emission and eventually, in 10 years, become carbon-free on 1<sup>st</sup> March 2020. It is a long-term sustainable strategy including innovation, collaboration with different stakeholders and transparency (Delta, 2020).

The information is easy to find on the airline's website. The information is divided into multiple categories and projects, so the author will choose the most relevant ones. This information are on the website: <https://www.delta.com/us/en/about-delta/sustainability>

### Path forward – lowering emissions

The strategies are divided differently than with the previous two airlines, so the author will try to summarize them into similar formatting. The first sub-chapter will be the strategies and projects for the future.

- More sustainable fleet – the airline is retiring the old and not sustainable planes and is getting new ones that are made with newer technology and more sustainable. The new airplanes are 25% more fuel-efficient
- Carbon offsets – the airline is using verified offset methods to balance the amount of CO<sub>2</sub> it is releasing. This is divided into Carbon avoidance and Carbon reduction. The Carbon reduction includes projects about renewable energy or electric planes. Carbon avoidance are projects that help with re-forestation or protecting the existing forests
- Fuel-saving initiatives – processes within the airline focused on saving the fuel, for example, turbulence tracking for pilots
- Sustainable aviation fuel – the airline aims to replace 10% of its fuel with some form of sustainable fuel by 2030. The first flight with sustainable fuel happened in 2019 with four airplanes on the way from Toulouse to Atlanta (Delta, 2021)

### Analysis

The airline is in the stage of Pollution prevention with a clear path to get to product stewardship and clean technology (Hart, 1997). Even the stage names can be seen reflected in the carbon offset project. However, the information is sparse on the website, for more information, it is needed to go into the “Delta 2020 ESG Report”, link: <https://www.delta.com/content/dam/delta-www/about-delta/corporate-responsibility/2020-esg-report.pdf>

The strategies, as far as information could be found, aim for long-term goals, incorporate multiple stakeholders and organisations within the industry and have a clear budget, which can be seen in the report. The airline is precise in quantifying how much money they gave into projects or how much they are expecting to put into another one (Bass & Dalal-Clayton, 2002). However, the information is missing in some strategies, for example, in the fuel-saving initiatives, it should show a bit more how exactly is the airline planning to save or already saving, which processes were implemented etc. The only key, linking the national and local, was not clear as the airlines did not mention any talks or negotiations with the government.

## Waste management

The airline, in their report, splits the waste into the hazardous and non-hazardous category. Delta decided to reduce the amount of both categories of waste and have multiple ways how to monitor generating the waste. These projects are also written both from the website and the report mentioned above.

- Reducing single-use plastic – the airline started using compostable stirring sticks and removed wrappings from amenity kits and cutlery. Changing more will probably happen after the lifecycle analysis the airline is doing. In the report, there is a comparison for the last three years
- Recycling – the airline recycles cans, plastic bottles and caps, as well as newspaper and magazines from board. The can recycling seems to be in selling them to the authorities and the funding houses from charity Habitat for Humanity. The amenity kits and blankets are also being donated to various charities or reaction programs (e.g. after the Beirut explosion)
- Temporarily suspending the meal and beverage serving on domestic flights as a result of pandemic resulted in less waste generated or for recycling
- Repurposing the old uniforms – last year the company send the old uniforms to powerplants to be used as fuel rather than throwing them away. In 2018 the old uniforms were donated to those in need as well as old seats and other cloth material were used to serve
- Sky clubs – all the lounges on the airports use eco-friendly packaging for food to go. The clubs also have to recycle or compost most of the waste to avoid throwing it into landfill (Delta, 2021)

## **Analysis**

The waste management projects align with the IATA projects that were mentioned earlier. The company is now in the stage of pollution prevention, with some projects being on the way into product stewardship (Hart, 1997). For example, the amenity kit – the wrapping was removed and the unused are being donated to the charity. If the airline starts making these amenity kits from sustainable materials, meaning the supplier would go sustainable as well, the project could go into the product stewardship stage. There is an effort to go into the clean technology stage but that is in the future.

The strategies are all long-term, benefits the general public through charities and connect different stakeholders together to work on a common goal (Bass & Dalal-Clayton, 2002). The report is written with an analysis of how many tons of which category of waste was saved and has set goals and deadlines until when the airline wants to reduce the waste even more. The strategies are based on multiple analysis as seen in reducing single-use plastic. The airline could have gone with the path other airlines chose and adapt that but instead, they are doing their own analysis. Overall, the strategies are focused, it seems, more on recycling than changing the processes and trying to generate less and less waste.

## **Community engagement**

The airline is active in various charities, as seen above. They also have few community programs that will be briefly introduced here, as even with the other airlines the author was trying to find information about if they are giving back to society. Even during the pandemic, the employees were volunteering virtually.

- Education – the airline has few educational programs not only targeted at training their future employees but also to provide books and finances and supplies for multiple public schools (Delta, 2021)
- Global health and wellness – partnering with multiple projects fighting cancer, American Red Cross or with children’s hospitals to promote and better the lives of those in need (Delta, 2021)
- Veterans and service members – the airline support foundations which help the veterans or service members and their families thanks to donated miles to ensure tickets for those in need. The airline also has a 15-year long tradition of donating toys to “Marine toys for tots” (Delta, 2021)

## **Analysis**

These projects are benefiting the local communities which can help with Delta's image. Part of sustainability is also the social segment, which can be seen represented here. If looked upon from the key principles of sustainable strategies (Bass & Dalal-Clayton, 2002) perspective, these projects are long-term, people-oriented, based on analysis and have a clear budget mentioned in the report.

Overall, the airline's information about sustainability is sparse and not going into detail even in the report. That can be because of possible competitors or simply because the airline does not want to share too much internal information. However, from what can be found it can be seen that the airline does follow with the aviation organisations projects such as waste management and sustainable fuels. They also try to include the customer in their behaviour not only as a passive participant but an active one – the option to donate miles in the “veterans and service members” project or by offsetting the carbon footprint their flight generates.

The company recycles a lot, even old uniforms or seats which is something not done often. The report regularly put on their website has a lot of numerical data about the footprint, money donated or used, or waste generated showing the airline has a lot of internal monitoring processes and that it makes the strategies on data they collect within.

However, the strategies do not look to have a goal in mind after they reached the current one. For example, the company does not mention what they are planning to do if they get to the 10% goal of using sustainable fuel. Even if that can be far in the future, some mention of which way the company will go is important. Also, no mention of possible electric flying was found. Therefore, the company strategies are well-made for now and the time they cover but any vision for the further future is missing.

## **Korean Air**

The airline has the information accessible on their website, as well as sustainability report in two languages – Korean and English. Apart from Environment, they also have the Social responsibility and Ethics/ Compliance tab. The information on the website is very brief, so the author will fill them with the information from the report. The link to the website: <https://www.koreanair.com/us/en/footer/about-us/sustainable-management/green>

The airline adopted a Carbon- neutral growth from 2020. The goal is to lower the emissions in the future to hold them on the 2020 level.

## Lowering emissions

- Eco-friendly aircraft – renewing the fleet and using the most sustainable planes, as Boeing 787-9 Dreamliner, should help to lower the greenhouse gases and hold the emissions low
- Improving fuel efficiency – the airline has a system of internal processes that improve fuel efficiency. They claim it to be their top priority and want to lower the fuel consumption and increase its efficiency
- Weight management – the airline started loading only the necessary amount of portable water, replacing paper documents with a tablet or reducing payload variance
- Flight operation – the airline asks pilots to reduce the use of reverse on the engines during take-offs and landings, use the GPU rather than APU and they simplified the procedures before landing, which leads to plane landing sooner rather than later because of the procedures
- Operations management – Filling only the amount of fuel really needed for the flight plus the security deposit, develop ahead of time possible alternate airports, using the shortest routes and creating new routes as dual airways
- Improving performance – washing the inside of the engines with water, repainting the plane when the air drag reaches a certain limit or trying to improve the engine performance in their own Engine test centre
- Carbon compliance – the accepts all the new regulations, taxes and possible offset that are introduced to aviation by government or aviation organisations (Korean Air, 2020)

## Analysis

The airline is in the stage of pollution prevention, trying to offset the pollution that already happened and prevent any more from happening by choosing processes and making changes inside the company (Hart, 1997). There are no projects that could be taken as a stage of product stewardship or being on the way there.

The strategies are people-centred, based on analysis, as can be seen in the report, where the company presents data and results of the new processes (Bass & Dalal-Clayton, 2002). However, there is the long-term key principle missing. There was no mention of sustainable fuel being used or being planned to use, only the commitment to go carbon neutral. However, the processes and strategies focus only on making the currently used fuel-efficient, not a mention about changing for a more sustainable alternative. Maybe the airline does not have a

clear plan about sustainable fuel and that is why they did not mention it, however, when looking at the data as it is, there is certainly a lack of long-term vision.

The existing strategies do connect different stakeholders and the local and national level. There is an effort to focus not only on the planes and flight but also on the ground operations, where the emissions can be also lowered. The airline also chose to go with discarding old planes and using younger, modern ones.

## Material management

The airline got the Environmental management system in 1996. After that, they introduced new processes to take care of the material in the company including not only flights but maintenance, manufacturing, catering or headquarters.

- Water and air pollution – strict processes in order not to pollute water while cleaning and maintenance. The processes also involve air pollutants generated during landing, take-off and in discharge facilities
- Hazardous chemicals – because there is a need to use special chemicals during the plane’s maintenance, a special way of treatment is required. The airline is trying to have a dialogue with manufacturers about the chemicals in these products. Meanwhile, the use of these strong chemicals is strictly controlled
- Waste – the airline recognizes hazardous and non-hazardous waste. The airline recycles the waste that is possible to recycle and incinerate the waste from the cabin after disinfecting it
- Noise – the company have internal procedures that should decrease the noise from the flight and ground operations, especially during take-offs and landings. The company is also changing from the navigation method that uses regional navigation facility to GPS, which should help the planes not to fly over residential areas
- Reducing the use of single-use plastics – the plastic straws on board were replaced by certified paper ones, as well as plastic cups in the economy were replaced for paper ones. The passengers can ask for a plastic cup or use their own
- Plastic recycling – the plastic from the cabin is used as a solid fuel or as a pellet construction material. The airline wants to continue in the efforts to lower the amount of plastic waste and increase the number of recycled waste in the future (Korean Air, 2020)

## **Analysis**

These strategies are in the stage of pollution prevention with some projects leaning into Product stewardship (Hart, 1997) as the efforts to discuss with chemicals manufacturers. There are no projects that indicate clean technology, or any try to get into that stage.

The strategies connect national and local level as well as different businesses and organisations (Bass & Dalal-Clayton, 2002). However, as there is no clear indication of how exactly the airline wants to reduce the amount of single-use plastic, the long-term principle can be questioned. Otherwise, thanks to looking into the report, the author can conclude the strategies are based on analysis, as the report shows graphs and amounts of waste, recycling amounts, etc. The new way of navigation is based on innovation that should benefit not only the company, as they use less fuel, but also the people living around the airports.

The company is focused on recycling and reducing the amount of waste more than finding a sustainable substitute. Also, not using the plastic cups in economy class because of sustainability but using glass, which is heavier and can go against the efforts of reducing weight, in business class can be questionable. Of course, there it is also a matter of comfort for business class passengers.

The information is brief and not many internal processes are described but that could be because the airline does not want to show something internal to competitors. However, more information about how exactly the airline wants to reach the goals would be welcomed. Going strictly by the information accessible the author must say these strategies are lacking the long-term factor as well as a clear path on how to reach the goals.

## **Social responsibility**

The airline has a few social projects that will be briefly introduced here. As sustainability is also about the social part, the author wanted to show the airline is doing something even in the part that does not focus solely on the environment.

- Global tree planting project – this project started in 2004 and is still going. The place where the employees, locals and student plant trees is Baganuur in Mongolia. In 2019 the employees from Delta airlines joined too
- Korean Air Green Ecological Park – started in the year 2007 in Kubuqi desert in China to combat the yellow dust



- Field trips – “Make Your Dream Come True” field trip for children from the surroundings of Gimpo Airport. This is an annual event held from the year 2010. These trips are to places in Korea for underprivileged children
- Dream Library – Libraries in China rural areas. This project started in 2010 and in 2019 there were six libraries open. Korean Air donated not only books but also school supplies for the children
- English lessons – Love Sky English classes started in 2008 in Yongyu Elementary school near Incheon Airport. These classes give the children English that could be useful on overseas trips
- Habitat for Humanity – the airline started collaborating with Habitat Korea in 2001 and helps build new homes for people in need (Korean Air, 2020)

### **Analysis**

As mentioned, these are community projects, so they can not be analysed by the same criteria as the previous ones. However, analysing from the key principles of sustainable strategies (Bass & Dalal-Clayton, 2002) it is possible to see that these are people-centred, based on analysis but does not mention much of long-term factor. It is also interesting to see that few of these projects are not taking place in the country of origin.

The airline information about sustainability is very brief on the website, for more information, there is a need to go into the sustainability reports. Out of the projects introduced in the theory section, Korean Air reflects only the “Managing the cabin waste” one with few mentions of not using plastic cups and straws. The one about sustainable fuel, from ICAO, is not represented. Or if the airline has any plans about it, it is not mentioned in any accessible sources. So far the strategies about fuel were more focused on efficiency and how to lower the needed amount of fuel, not on the sustainable substitute.

In the sources, the strategies are described but a long-term principle is missing with a lot of them. There seems to be lacking a long-term vision and path on how to reach the goals. Even in the sustainability report, there is not mentioned any long-term vision. The airline does make the processes and strategies based on analysis but without the long-term goal mentioned it almost seems as they are making it on the spot for the current situation, not thinking about the future.

The company does have a few community projects helping communities, mainly children, in multiple countries. As part of sustainability is also the social factor, the airline does well in this

way. The programmes are benefiting not only the people but also the environment. Also, there are volunteers and students engaged in some of the projects, so it also acts as teaching others about sustainability. However, no tab or part about teaching the customers was found on the website, so the teaching could be considered incomplete.

The recycling efforts are visible in the strategies but are not as developed as with other airlines. The company recycles waste, there was no mention of recycling other used and retiring items.

## Summary

All of the introduced airlines do have developed sustainable strategies and plans for the future. They have goals with outstretched deadlines they want to reach, and the strategies are made accordingly. All three airlines have, apart from the information on the website, reports about sustainability the general public can access. This part is about summarizing and evaluating the airlines, not comparing them between themselves as that would not be possible.

Emirates is more focused on reducing waste and increasing fuel effectiveness than to think about sustainable fuels. Their strategies are not so focused on changing the fuel as to make the one they already have more effective either through newer planes or other means. The strategies of this airline are focused on processes inside the company and targeting the planes and flight, not so much on the ground operations or other part of the airline's operations. However, the airline takes pride in helping with the environment, as, maybe, some kind of offset, with the environmental project. There are as well strategies where the company is helping the community with donations through charity.

Finnair seems to be thinking in the longest term, as the strategies already include the thought about electric flying. This airline is very focused on sustainability and does not limit the efforts only to the plane and flying but also to the airport and ground workers. The recycling efforts are worth mentioning too- the airline actively uses products from recycled materials in business class. There is also an effort from the airline to educate the customers and help them think about sustainable behaviour. However, some social projects or community help are missing in the strategies apart from giving the unused amenity kits and meals to charities.

Delta's strategies revolve a lot about fuel efficiency and recycling, even the old uniforms. The strategies are not described in detail, however, still provide some information. The airline has a clear deadline in the strategies and goal in mind, e.g., with sustainable fuel. These strategies align with projects from aviation organisations. Delta also has a lot of community project to help people in need or children. The customers of the airline can use the miles they collect from the flights to help a charity or can educate themselves on the company websites and offset their flight. The long-term principle is, however, missing from some of the strategies, as the company does not mention what they plan to do when they reach the established goal.

Korean Air also has strategies that focus mostly on recycling instead of generating less waste. The information mentions recycling the used material, not any projects like recycling uniforms or billboards. The target regarding the fuel seems to be better efficiency, there is no mention of

sustainable fuel and any intention of using it in the future. Overall, the long-term key factor in the strategies is missing, the strategies seem to be a written report of what is done in the present without much thought about the future. Even if the report mentions analysis of obtained data, the strategies, as are, do not show any vision for the future. The company addresses all of the pollution mentioned in the theory section in their report and provide information related to each of the pollutants. Also, the airline is active in community services and is having projects not only in the country of origin but other countries too.

## Discussion

The focus of the thesis was to find out if the airlines do have developed sustainable strategies and what are their plans for the future. The results from the acquired data showed that all researched airlines have developed strategies and, to some degree, plans for future development. The data however suggest differences between each airline's future plans and which way the airlines want to go. It also shows the correlation between the airline strategies and the international aviation organisation projects.

The airlines' projects were in correlation with the international aviation organisations projects described above with two exceptions being missing sustainable fuel project from Korean Air and Emirates. This implies the airlines are incorporating the projects from organisations into their own strategies and are trying to develop them. The airlines' strategies are targeting three general topics being the CO<sub>2</sub> emissions, generated waste, and social projects.

The CO<sub>2</sub> emissions projects focus on fuel efficiency, younger planes, lowering the weight of the aircraft and, in two of the four airlines, sustainable fuel. These projects indicate the airlines are trying to offset the carbon footprint and think about the future and how to lower the emissions even more, which supports Gössling's, et al. (2007) claim. Finnair, Korean Air and Delta airlines already have a goal of becoming carbon neutral by a certain year and strategies how to achieve it. This strengthens the hypothesis of the airlines trying to become more sustainable and not to pollute the environment more. The project of sustainable fuel was highlighted on the ICAO website as an important one and it is interesting only two members out of four adopted it. It may be because the airlines did not have time to incorporate the project into their strategies or because there is not a suitable producer in their country. Or the airlines may have the project but did not present it on their websites or in their report meaning the author could not find information about it. Finnair, as the only one, does even have a project about electric flying and how to achieve it. This could indicate the airline is thinking beyond the long-term and is acknowledging the sustainable fuel may be just another step in obtaining full aviation sustainability and seem to be preparing for it.

The airlines claim the younger the fleet the more fuel-efficient the planes are. However, there should be research done if this is really sustainable behaviour. The Emirates say their fleet is approximately 6,5 years old. The engines may be more efficient, but these are new planes that have to be manufactured and that is not an easy, cheap or sustainable process. Therefore, it would be advisable not to change the fleet that often and think about other options for how to

save fuel apart from the ones the airlines are already doing. Even if the old planes are not being deconstructed and are sold to another carrier, the carbon footprint and all costs with manufacturing new plane were already done.

The waste management projects were focused on recycling or using sustainable materials instead of, mostly, single-used plastics. These projects were aligned with the IATA Cabin waste project described in the theory section. All four of the airlines have this type of project in their strategies, which indicates certain importance and urgency to solve problems emerging from overusing single-use plastics and overall too much material. The airlines were trying to replace the single-use plastic in their daily operations, including in the cabin, or the employees' water bottles. There was also at least one strategy focused on recycling in each airline projects. The airlines manifested different level of recycling while some recycle only waste, other recycles uniforms or unused amenity kits from the cabin.

However, there was a certain concern in the materials used as a substitute for plastic. Some of the airlines do not disclose the materials they are using; some admit it is paper or wood. Even considering the paper bags can be made of recycled paper, it is still paper that is made out of wood. The paper cups are also mostly coated with a plastic layer to hold the liquid inside, which makes any recycling efforts difficult. This can lead to the situation, where replacing the plastic in good faith with wooden or paper products creates a problem with even more deforesting to meet demand. Therefore, it would be advisable for the airlines to revisit the strategies and think of various different material that can replace the plastic to avoid going from one overused material to another and creating another problem.

Overall, the waste management projects were showing an effort to solve the problem and innovative tendencies, e.g., replacing the paper document in the cockpit with tablets. It can be said the airlines are trying to lower the amount of generated waste but with some of the waste projects there is not enough data about the future, so it is hard to say in the long-term key principle of sustainable strategies (Bass & Dalal-Clayton, 2002) was fulfilled.

The last projects described were mostly either social projects, partnerships or environmental protection. Since part of sustainability is a social aspect, these projects were described to show the sustainability idea is not only about the environment. The airlines manifest an effort to give back to society and help where it is needed. Each of the airlines has its own type of society projects, one helps veterans, while the other helps children. It can be argued this is done for public image, and it may be possible, but it does not lessen the results the airlines have.

Overall, the airlines do have developed sustainable strategies, even if some of them are missing the long-termness. This connects to the second part of the problem statement; the airlines' strategies are, mostly, made for the near future, and only a few of the strategies work with a term that seems to be more than the nearest few years. Even if the airlines claim the effort to become carbon neutral by a certain date, the strategies still seem not to have this deadline incorporated. The thesis should help airlines, not only the researched ones, to understand what they are missing in their sustainable strategies and which way to focus to improve them.

The limitation in this thesis was the inability to ask directly about sustainable strategies. The author tried contacting the airlines, but none of them responded. So, the only source of data was the information on the website. These data were already put on the website by someone, so there is a possibility of not having the whole data. Also, the option the airlines purposely did not put the whole data because of possible business competitors is possible. Given the option to ask additional questions maybe there would be information explaining the concerns author described. The data gathered from reports were about the last year, 2020, where the covid-19 pandemic started, so some of the data the airlines presented about the amount of CO<sub>2</sub> saved of the amount of waste recycled could have been distorted by that.

The author would recommend for the airlines to think and present more the long-term element of their strategies and focus on innovative projects like sustainable fuel and material to replace the single-use plastic that does not put pressure on the environment. Also, if possible, educate their customers so they know why something in the plane changed or what impacts can the flight have and how to offset it. There should be new research done on the sustainability of buying new planes so often and how to recycle waste from the cabin better. Also, a discussion about aircraft waste laws should be held. If the laws change, the waste should be easier to handle and recycle.

## Conclusion

This research aimed to evaluate if the chosen airlines have developed sustainable strategies and if they have plans for the future. Based on the qualitative analysis of the data from the website it can be concluded that the airlines do have sustainable strategies incorporate into their business and have plans for the near future. These results indicate the airlines are trying to become more sustainable and less environmentally harmful. The strategies were, sometimes, evaluated as missing a key principle, however, they overall should help the airlines in becoming more sustainable.

The analysis was made through qualitative research by obtaining data from the airlines' websites and analysing them according to Thematic analysis. This approach was chosen to answer the research question and allowing the author to evaluate if the airlines have future plans regarding sustainability and what exactly are these plans. Quantitative methods would not provide the kinds of answers the research was aiming for. The chosen method of the analysis proved to be the correct one for obtaining desired results and answers.

The author expected to find certain degrees of sustainable strategies in every airline's business strategy, however, the level of development and sophistication, as well as, in some airlines, the view into the future was unexpected. Some of the airlines showed more consideration for the future than was expected.

The airlines had strategies focusing on three key projects: CO<sub>2</sub> footprint, managing waste and social or environmental projects. These projects correspond with the example ones described in the theory section from IATA and ICAO. Every airline chose a different approach to these projects and the problems it represents.

To combat the CO<sub>2</sub> footprint the airlines focus on fuel efficiency, giving the planes proper maintenance, optimize the fly routes, having a young fleet and, two of them – Finnair and Delta Airlines, by researching and investing into sustainable fuel and trying to use it. Finnair even researches electric flying. These efforts may help with some of the negative impacts aviation has. These impacts were described in the theory section mentioning noise and air pollution.

Managing the waste, either from the cabin, catering or ground operation, the airlines use recycling as a primary way to deal with the problem. All four airlines recycle to some degree, even one-time projects like making school bags from old billboards were mentioned. Another point was reducing the usage of single-use plastics and replace them with different materials.



Any effort the airlines may have with the waste from the cabin is limited, as the cabin waste is under laws about special treatments.

The last projects targeting social help were included to show the sustainability is not only about the environment. The airlines have their own social projects, apart from Finnair, where this section was replaced by mentioning the main sustainable organisation the airline is part of. The social projects differ airline from the airline. Delta airlines helps veterans and people in need of housing, Korean air reconstructs and equips libraries and Emirates started a natural reserve and a carbon-neutral resort.

During the research, many new questions arose. The author tried contacting the airlines to get a chance to ask additional questions, however, maybe because of the pandemic, none of the airlines answered. Apart from additional questions, new opportunities for the research came to light. There should be more research done on sustainable behaviour of the airlines, e.g., on points of buying new planes too frequently or possible substitute for plastic.

The airlines themselves should consider thinking more into the future, not only the, seemingly, nearest future in a few years. Also, the usage of sustainable fuel should be more often, not just on few flights a year. The author would also recommend thinking about different materials that can be used as a replacement for plastic, not only wood and paper. Educating the customers seems like a good way to teach the general public more about sustainability and the reasons why they can not use a plastic straw on the flight anymore.

By writing the thesis the author learnt about the sustainability strategies making, more in-depth about sustainable development in tourism as well as airlines' view on sustainability, how the airlines approach sustainability and what data they measure and collect. For herself, the author considers this thesis as an excellent learning experience in the field she is interested in.

This research aimed to study the airlines' sustainable strategies and their view for the future. The goal was met, as the strategies were described and analysed. The thesis should contribute to the research of sustainability in aviation and show what the airlines are adopting into their strategies, what are the results and how far into the future are they thinking. The author's comments may aid any airline thinking about their strategies, ways to improve them and how could a person outside of the company view them.

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