



BMIH5006

**Sustainable Hospitality and Tourism management
Report**

**Environmental Impact of Aeroplane travel in the
Hospitality Industry and Sustainable Solutions**

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Executive Summary

The report focuses on the environmental impact of air transportation in the hospitality industry, in this case, carbon emissions and pollution arising from this mode of transport. This mode of transport is a cardinal element of global tourism as it transports both to and from hospitality destinations; however, it has a considerable effect on climate change. It focuses on the principal environmental damage due to aeroplane travel, such as its carbon footprint, and tries to explore the possibility of mitigating that damage through certain solutions. Some of these solutions include sustainable aviation fuels, carbon offset programs, and even high-speed trains as alternative means of travel. The report also gives examples of airlines and hospitality companies that are taking steps towards reducing their environmental footprint. Even though challenges still exist, the report emphasises that sustainable practices in aeroplane travel are possible, and the hospitality industry must take up these solutions to make way for a more sustainable future.

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Introduction

Hospitality transport refers to all those modes of transportation that are needed in the tourism and hospitality industry for the movement of guests, staff, and goods. Aeroplanes, cruise ships, buses, trains, and taxis are the primary modes that combine to make up a very vital global network for the support of tourism. The transport sector in hospitality is without doubt since it makes it possible for millions of tourists to access destinations and provides the logistical backbone for hospitality businesses like hotels, resorts, and restaurants. Of all these modes, aeroplane travel remains the main enabler of long-distance and international tourism. It makes possible access to destinations far and near, significantly adding to the world's tourism economy. The airlines transport millions of travellers annually, connecting cities and countries and facilitating the movement of business and leisure tourism. On the other hand, aeroplane travel has a massive environmental footprint due to the carbon emissions generated by aircraft engines. The aviation sector is the largest emitter of greenhouse gases across the globe, which accelerates climate change (Legrand, Chen and Laeis, 2022). The report discusses the environmental impact of aeroplane travel in the hospitality industry and reviews sustainable solutions to minimise the adverse impacts. As sustainability has become an essential aspect of the tourism sector, the reduction of carbon footprint within the industry calls for measures to mitigate the environmental impact of aeroplane travel.

Main Findings

Aeroplane travel in the Hospitality Industry

Aeroplane travel is an essential segment in the global hospitality industry, enabling the movement of tourists from one destination to another whether remote or popular. This form of transport supports both leisure and business travel and is a significant contributor to the economic health of local economies that often rely on tourism. Major international airlines, such as British Airways, Emirates, and American Airlines, transport millions of travellers to key hospitality hubs such as London, Dubai, and New York. By connecting international tourists to destinations with high demand for hospitality services, aeroplane travel directly enhances the profitability and growth of the hospitality sector (Morrison, 2022).

However, its environmental impact can be a major concern. The fast-growing source of carbon emissions originates from the sector of aviation: it contributes seriously to global warming and climate change. The adverse environmental impacts of aeroplane travel consist of three important categories:

- 1. Carbon Emissions:** Aircraft engines burn fossil fuels, which emit a lot of carbon dioxide (CO₂) and other greenhouse gases into the atmosphere. The emissions contribute to climate change and global warming.
- 2. Resource Consumption:** The aviation industry is highly dependent on fossil fuels, which are finite and non-renewable. The resource depletion issues that arise from such consumption are significant concerns for sustainability and environmental implications (Ben Youssef and Zeqiri, 2022).
- 3. Air Pollution:** In addition to CO₂, aircraft engines emit nitrogen oxides (NO_x), which can worsen air quality, particularly around airports. These pollutants contribute to smog formation and have adverse effects on local air quality and public health.

With growing environmental concerns regarding aeroplane travel, the hospitality industry is taking the necessary steps to reduce its carbon footprint. Initiatives on sustainable aeroplane travel are of great importance for global sustainability goals, and hospitality companies are also keenly searching for means to minimise environmental damage through aeroplane travel (Nikolskaya et al., 2020).

Environmental Impact of Aeroplane travel

Aeroplane travel is one of the significant contributors to global climate change due to its sizeable environmental footprint. A round trip from London to New York would produce around 986 kg of CO₂ per passenger. This number alone is enough to illustrate the impact aeroplane travel has on greenhouse gas emissions. The aviation industry relies on fossil fuels, which makes it one of the major contributors to climate change. With increasing demand for aeroplane travel, these emissions are expected to increase further (Otero and Ringertz, 2022).

One of the main issues surrounding aeroplane travel is carbon emissions. Planes consume jet fuel, which releases high amounts of carbon dioxide (CO₂), nitrogen oxides (NO_x), and particulate matter into the atmosphere. This not only contributes to global warming but also impairs air quality, especially in the vicinity of airports, which are often located close to densely populated areas. In addition, the long-haul flights that dominate the aviation sector are very fuel-intensive, worsening the environmental implications (Wynes et al., 2019).

Another major concern is noise pollution. Aircraft noise would disturb local communities and wildlife along airports, thus affecting public health and ecosystems. Airports are often situated in urban areas where noise disturbances can be particularly harmful to residents due to increased stress and reduced quality of life.

The aviation industry also produces a lot of waste. Part of these wastes are single-use wastes, food packaging, and containers used in beverages. These materials end up mostly in landfills and in the ocean, contributing to the ever-increasing problem of plastic pollution (Fouquet and O'Garra, 2020).

Considering these environmental factors, the aviation industry badly needs to make drastic changes in its practices to reduce the impact that aeroplane travel has on the Earth.

Sustainable Solutions for Mitigating Environmental Damage in Aeroplane travel

There have been several sustainable practices proposed and implemented within both the hospitality and aviation sectors to address the great environmental challenges brought about by aeroplane travel. Some of these solutions include

reducing carbon emissions, alternative fuels, increasing operational efficiency, and new technologies (Amankwah-Amoah, 2020). The most effective sustainable solutions that mitigate environmental damage caused by aeroplane travel include the following:

1. Sustainable Aviation Fuels (SAFs)

One of the most promising answers to mitigate the environmental impact of aeroplane travel is using Sustainable Aviation Fuels (SAFs) as shown in figure 1. The biofuels come from renewable sources such as algae, agricultural residues, and waste oils. They do not produce the same levels of carbon emissions as conventional jet fuels and can provide an 80 per cent reduction in emissions throughout their lifecycle (Martinez-Valencia, Garcia-Perez and Wolcott, 2021). Major airlines like Lufthansa, KLM, and United Airlines are already using the SAFs as part of their operation, though Lufthansa reports a strong decrease in emissions from certain flights running on SAFs. The use of SAFs could very easily reduce fossil fuel dependence among aviation industries significantly, thus working toward global climate goals (Wang, Ting and Zhao, 2024).

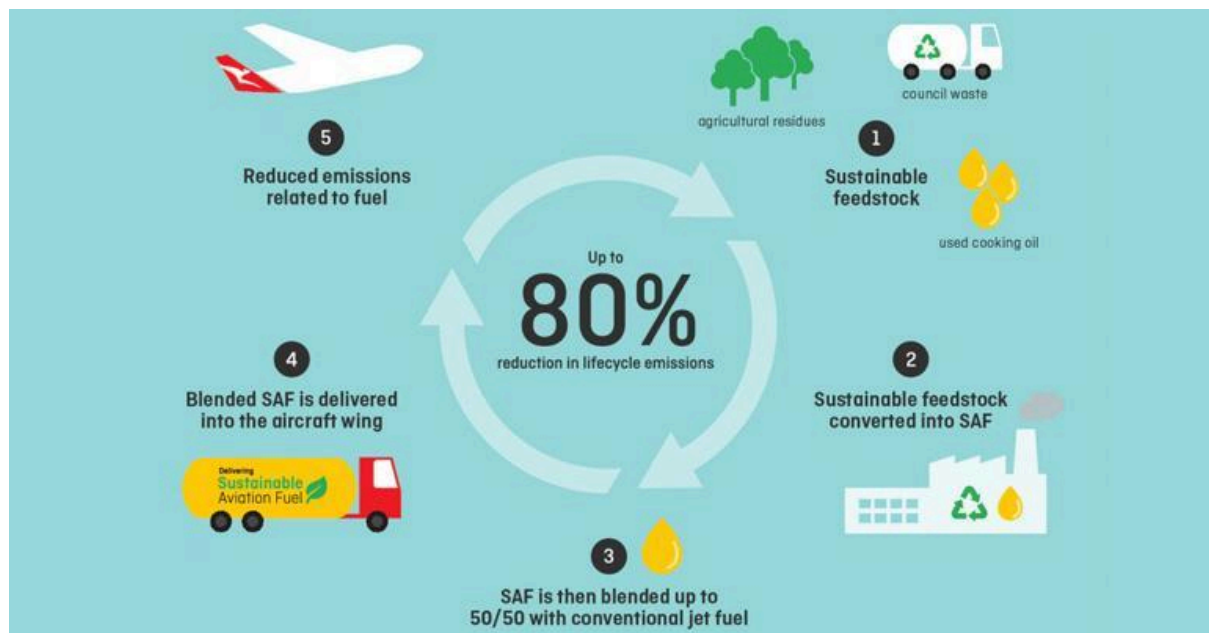


Figure 1: Sustainable Aviation Fuel

(Source: Action Renewables, 2022)

2. Carbon Offset Programs

Carbon offset programs are the second effective mitigation approach to offsetting aeroplane travel-related damages in the environment. In such a program, the airlines and hospitality firms invest in environmental projects that include planting new trees, generating renewable sources of energy, or capturing methane for offsetting emissions from the airline's flight. For example, British Airways offers a carbon offset program which allows passengers to pay for the opportunity to offset carbon emissions produced during the flight by supporting green schemes (Babakhani, Ritchie and Dolnicar, 2019). Therefore, Delta Airlines has allied with diverse environmental organisations to counterbalance carbon emissions produced during its operations. As much as carbon offsetting never eliminates complete emissions, it provides a pragmatic means through which companies and travellers can be accountable regarding the environmental effects of their activities (Ritchie et al., 2020).

3. Electrification of Aircraft

Electric aircraft is one of the exciting emerging solutions for reducing the environmental footprint of aeroplane travel. Electric planes can reduce emissions from short-haul flights, which are more fuel-intensive in most cases. Companies such as Aviation Aircraft and Rolls-Royce are working on electric aircraft for short-distance travel (Schwab et al., 2021). Although electric aircraft remain in the testing phase, examples such as Alice, an all-electric aircraft designed by Eviation, reveal that electric propulsion could be a future alternative for flights in regional terms as shown in figure 2. Commercial operation of electric aircraft would significantly bring down the general carbon footprint associated with the air transport sector (Ansell and Haran, 2020).

Aircraft Electrification



Figure 2: Aircraft Electrification

(Source: OpenPR, 2024)

4. High-Speed Rail Alternatives

For some routes, high-speed rail is a viable and environmentally friendly alternative to short-haul flights. High-speed trains are more energy-efficient than aeroplanes and emit significantly less carbon. High-speed rail networks are an efficient alternative to aeroplane travel in Europe and Asia. For instance, the Eurostar train between London and Paris emits about 90% less carbon than flying the same route (Milewicz, Mokrzan and Szymański, 2023). Besides, high-speed rail travel is also much more comfortable and convenient for passengers with greater flexibility, thus less likely to need several changes of connections. Hospitality companies operating in regions that have extensive networks of high-speed rail can offer such transportation to guests. This, therefore, reduces the carbon footprint associated with aeroplane travel (Chen, Wang and Hu, 2020).

5. Effective Flight Operations

There are other changes that airlines can make in operations to make them environmentally efficient. Optimisation of routes, the use of fuel-saving aircraft, and frequency of air traffic management systems lead to a reduction of fuel consumption and emissions. For instance, low-cost carrier EasyJet has implemented a series of initiatives aimed at cutting fuel burn. It includes more fuel-friendly aircraft as well as optimisation of routes (Afonso et al., 2023). Similarly, Delta Airlines used a myriad of fuel-saving strategies including reducing the weight of aircraft, optimising engine performance, and optimising ground operations in its airports. These small yet impactful improvements to day-to-day operations can, collectively, add up to make a big difference in reducing the environmental footprint of aeroplane travel (Ekici et al., 2022).

Challenges and Feasibility

While the sustainable solutions outlined offer promising ways to reduce aeroplane travel's environmental impact, several challenges hinder their widespread adoption.

The biggest barriers are the SAFs' pricing and availability, as they still cost more than traditional jet fuel today. The problem is that there is no significant production, and further breakthroughs in the technology are also required. Indeed, while the amounts of SAF currently being produced grow, the economies of scale at which these higher-priced fuels have to be operated remain a very significant barrier - especially for lower-cost airlines and smaller hotel groups. Electric aircraft are still in the experimental phase, though promising for the long term. The technology is capital-intensive in terms of both aircraft development and supporting infrastructure, such as charging stations and specialised airport facilities. Electric planes are also currently limited to short-haul flights, making them unsuitable for long-distance travel, which remains a significant portion of the aviation sector's emissions (Hassan, Santos and Vink, 2021).

The adoption of high-speed rail as a substitute for short-haul flights is also restricted because, in countries with underdeveloped or unviable rail networks, this is not possible without considerable investment in infrastructure. Ultimately, the potential of these solutions to be cost-effective might be a problem in smaller hospitality

companies but the long-term environmental and economic benefits make it worthwhile for the sector (Greer, Rakas and Horvath, 2020).

Conclusion and Recommendations

This sums up that aeroplane travel has remained an important part of hospitality industries, but it helps tourists and business individuals reach distant high-demand destinations. Its environmental aspects are carbon emission, resource exhaustion, and atmospheric pollution, causing a significant issue for sustainability attainment in the hospitality sector. Potential solutions for improving these adverse factors include the integration of Sustainable Aviation Fuels, carbon offset projects, and electrical aircraft. However, issues concerning cost, infrastructure, and widespread adoption will have to be overcome before such solutions can gain widespread use.

It is suggested that the hospitality industry work together with airlines, governmental agencies, and organisations concerned with environmental impact toward accelerating the adoption of sustainable aviation practices. The hospitality business should engage in active encouragement of alternative means of transport for aeroplane travel, for example, using high-speed rail for short distances, and engage in carbon offset programs to mitigate the effects of travelling by air. Hospitality businesses integrating these initiatives in their operations contribute to reducing carbon footprints by the hospitality industry and promoting a more sustainable future. These efforts will add not only to the environment but also to the thriving demand from customers for sustainability in the hospitality industry, hence improving the long-term business viability.

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