

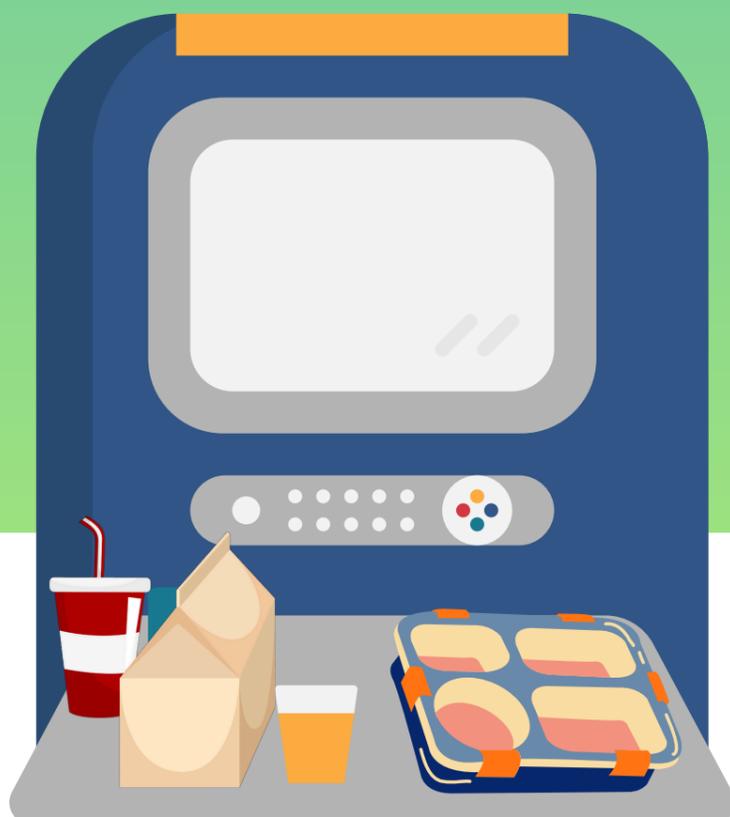


ICAO

ENVIRONMENT

# Addressing Single-Use Plastics: an Overview for Aviation

ECO AIRPORT TOOLKIT  
2024



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## ECO AIRPORT TOOLKIT 2024

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## 1. INTRODUCTION

The aviation industry uses a variety of single-use plastics (SUP) which is increasingly an environmental and regulatory problem.[1] The light weight of plastics, as well as their low costs, and safety and hygienic properties make them a leading choice for hospitality services on aircraft and at airports. But, with over 430 million metric tonnes of plastic produced each year and a third of these being disposed of after one use,[2] there is a need for the aviation sector to look at ways to reduce consumption and improve disposal. Despite the benefits for the aviation industry, plastics have a range of negative impacts on the environment and wildlife. Newly manufactured plastics are almost entirely made from non-renewable fossil fuel-based “virgin” feedstocks, [3] and greenhouse gas emissions are generated during plastic production. The disposal of plastics generates considerable pollution, especially in oceans, that impacts the health of humans and wildlife. Even with rising consumer awareness, corporate attention, and regulation, in 2022, the Organization for Economic Cooperation and Development (OECD) found that only 9% of plastic waste was recycled globally, with 22% mismanaged or littered.[4]

For aviation, some of the challenges faced include SUP usage, recycling, and replacement; the potential need for dedicated infrastructure at airports and at a municipal/city level; the considerations for monitoring and reporting, and possible contribution to circular economy. Additionally, there is a need to account for geographical context, including waste management infrastructure and informal economy, end-of-life treatment, consumer behavior, social impact, and confusion caused by marketing terminology, which is so far unregulated.[5]

This publication explores several impacts posed by SUP, such as navigating the current regulatory environment, and highlighting the challenges that the industry faces when complying with multiple regulations on SUP. Also, it aims to provide a snapshot of the current situation for the aviation industry, covering topics such as management and monitoring, replacement alternatives, and supply chain and infrastructure. Furthermore, it presents views from aviation stakeholders on potential actions that are being taken to curb the usage and negative impact of SUP.

[1] UNEP (2018). *SINGLE-USE PLASTICS: A Roadmap for Sustainability*.

[2] UNEP (2023). *Turning off the Tap*.

[3] Minderoo Foundation (2023). *Plastic Waste Makers Index*.

[4] OECD (2022). *Plastic pollution is growing relentlessly as waste management and recycling fall short*.

[5] UNEP (2021). *Rethinking single-use plastic products in travel & tourism*.

## 2. USE OF SUP IN THE AVIATION SECTOR

“Single-use plastic waste generated by passengers is a significant source of waste in the commercial aviation industry”[6], and with air traffic being predicted to grow at a 4.3% annual rate[7], the concerns around the sustainable management of SUP also grow.

A waste composition analysis conducted by the International Air Transport Association (IATA) between September 2013 and January 2014,[8] showed that about 17.3% (by weight) of the cabin waste from a flight was comprised of potentially recyclable materials, of which 2% were plastic (PET) bottles. In 2017 it is estimated that the airline industry produced up to 5.7 million tonnes of cabin waste which costs the sector US\$ 927 million. [9] “Cabin waste is costing airlines money, consuming valuable resources, and undermining the sector’s sustainability credibility.”[10]

Similarly, airports serve as crucial hubs of global connectivity, facilitating the journey of millions of passengers annually. However, amidst the continuous activities and operations, airports generate significant amounts of waste including plastic waste, and this poses a major concern for the environment and airport operations. Waste generation rates at airports are directly proportional to their passenger enplanements, with SUP representing only a fraction of the municipal solid waste at these facilities. Over 140 million metric tonnes of bottled drinks were collected at security checkpoints in 2018 at Manchester Airport Group sites,[11] while an estimated 5,000 metric tonnes of plastic waste were thrown away at UK airport security each year.[12]

Airport	Waste generation/ data year	Passenger statistics
Hartsfield-Jackson Atlanta International Airport	82.2 TPD/2019	110 million/y
Beijing Airport	76.2 TPD/2016	94.4 million/y
Los Angeles International Airport	52 TPD/2004	88.1 million/y
O’Hare International Airport	31.5 TPD/2002	84.6 million/y
Heathrow Airport	78.4 TPD/2007	80.1 million/y
Shanghai Pudong Airport	60 TPD/2018	74 million/y
Leonardo da Vinci International Airport	36.2 TPD/2018	73 million/y
Indira Gandhi International Airport	15 TPD/2018	67.3 million/y
Suvarnabhumi Airport	55.9 TPD/2018	65 million/y
Singapore Changi Airport	43.1 TPD/2018	64 million/y

**Table 1.** Waste generation rates in different airports in tonnes per day (TPD)

Source: Adapted from Sebastian, R.M. and J. Louis (2021)[13]

[6] Tschuchnik, Martina, (2020), *Sustainable Aviation: Passengers’ Single-use Plastic Waste in the Civil Aviation Industry*.

[7] ACI (2024). *The trusted source for air travel demand updates*.

[8] IATA (2019). *Cabin Waste Handbook*.

[9] IATA (2019). *Cabin Waste Handbook*.

[10] IATA (2019). *Cabin Waste Handbook*.

[11] International Airport Review (2019). *Sustainability Series: How can airports reduce their plastic waste? Note that this figure includes Manchester, Stansted, Bournemouth and East Midlands airports, which collectively serve around 42 million passengers annually.*

[12] Evening Standard. <https://www.standard.co.uk/futurelondon/theplasticfreeproject/imperial-college-london-single-use-plastic-ms-just-eat-a4063761.html>

[13] Adapted from R.M. Sebastian and J. Louis (2021) *Understanding waste management at airports: A study on current practices and challenges based on literature review*.

As air carriers and airports find ways to trim the use of SUP, they are under scrutiny. Nowadays, the industry faces regulatory policies that force environmental actions while also implementing voluntary initiatives.

Recognizing the urgency of the situation, airports and airlines are taking proactive measures to eliminate or minimize SUP from their operations. Studies have found that onboard recycling can be achieved, with airlines carrying successful programs on domestic operations. Airports such as Gatwick have created systems that turn waste into energy. New research looks to process many types of waste into sustainable aviation fuel (SAF).

From waste management systems to the elimination and replacement of unnecessary SUP, the sector seeks to contribute directly to the Sustainable Development Goal (SDG) 12 titled “responsible consumption and production”, that aims to ensure sustainable consumption and production patterns, emphasizing the efficient use of resources and the reduction of waste and pollution by eliminating SUP usage in the aviation sector.

Despite growing recognition of the need to reduce SUP, there are still several challenges in implementing effective elimination, which are discussed in the next chapter.

## 3. CONSIDERATIONS FOR ADDRESSING SUP IN THE AVIATION SECTOR

Airports and airlines are taking action to curb or eliminate SUP consumption, and some examples are given in this publication, but given the broad range of challenges surrounding SUP pollution in the aviation sector there are several considerations that still need to be taken into account when addressing this topic.

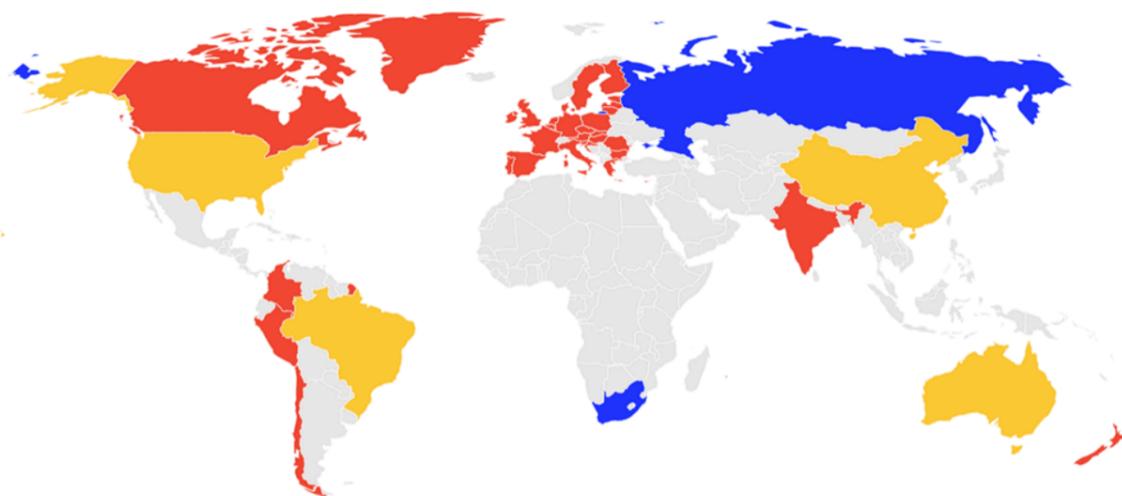
These challenges encompass various aspects, including the lack of uniformity in policy implementation across different countries, which poses a challenge for airports operating in an international context. Supply chain considerations further complicate the task, requiring careful navigation when sourcing sustainable materials and assessing cost-effectiveness. On the other hand, increased collaboration with stakeholders across the supply chain is fostering innovation and facilitating the adoption of sustainable practices.

The list of issues in this section, although not exhaustive, aims to provide context and recommendations.

## Regulatory landscape

SUP regulations are being proposed and adopted at an accelerating rate. Up until 2018, UNEP reported that 127 countries have introduced bans on SUP bags[14] and over 91 countries have introduced additional restrictions on manufacture, import and distribution of SUP products[15], including plates, cups, straws, and materials such as polystyrene.[16]

■ Countries enforcing SUPP restrictions 
 ■ Airport/state-level sub-restrictions on SUPP 
 ■ Countries proposing SUPP restrictions 
 ■ Countries under research



**Figure 1.** Single-use plastic product regulations in the world (excluding plastic bag bans).

Source: IATA Sustainability and Economics(2024)[17].

Note: The boundaries and names shown on this map do not imply official endorsement or acceptance by the United Nations.

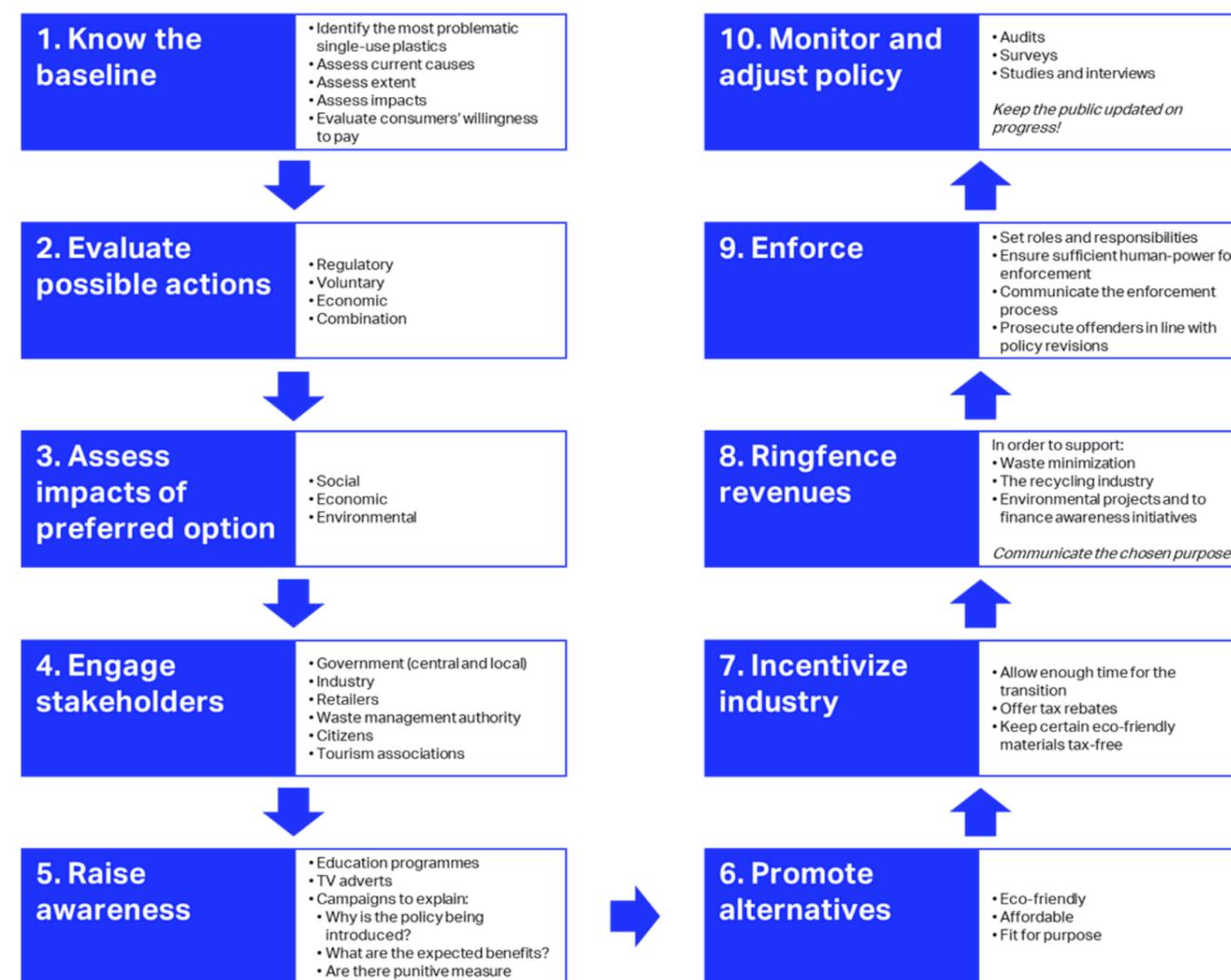
For aviation, harmonization of policy is key. Air carriers need to comply with different regulations at both ends of the journey. This problem transcends national regulations, with some jurisdictions imposing bans at the regional/state levels. In light of regulatory challenges and disparities, airports have been aiming to facilitate progress and take a leadership role in driving change, by introducing policies and initiatives related to the use of SUP. The diversity of regulatory approaches across geographies might create a challenging scenario for different aviation stakeholders, such as airlines, as these regulations introduce differing plastics rules at either end of a flight and don't take into consideration health and safety requirements. A more detailed insight into some regulatory structures for SUP adopted at the regional or national level can be seen in Appendix A.

Regardless of these various restrictions, there remains no global harmonization for SUP regulation. This was recognized by the UN Environment Programme (UNEP), which stated “when only a few front-running countries/value chains incentivize reuse, economies of scale are not achieved, and businesses may have to multiply their delivery systems to accommodate reuse and disposable systems. In the extreme, this may even result in systems being incompatible at two ends of the same business, such as with the aviation industry, confronted with reuse systems being favored in one end of the journey and illegal at the other end (International Civil Aviation Organization [ICAO] 2022).”[18]

To address the challenge presented by plastics, the Fifth Session of the United Nations Environment Assembly (UNEA-5.2) adopted a historic resolution (resolution 5/14) “to develop an international legally binding instrument on plastic pollution” with the ambition to complete the negotiations by the end of 2024.[19]

Besides regulations, other instruments are being introduced such as the Plastic Tax and the Extended Producer Responsibility (EPR) strategy. In terms of plastics taxes, the EU for example has set rules for national contribution from each Member State based on the amount of non-recycled plastic packaging waste to stimulate the transition towards a circular economy.[20] The EPR, on the other hand, shifts the responsibility upstream with the producer being responsible for the product's life cycle.[21]

In 2018, the UNEP published “Single-Use Plastics: A Roadmap for Sustainability” outlining 10 steps that governments can follow to introduce bans or levies on single-use plastics.[22] Importantly, these steps need not only be followed and implemented by governments; many of the principles are directly applicable to airports.



**Figure 2.** 10 steps to follow when introducing bans on SUP.

Source: UNEP, 2018. [23]

[19] UNEP. *Intergovernmental Negotiating Committee on Plastic Pollution*.

[20] European Commission. *Plastics own resource*.

[21] OECD. *Extended Producer Responsibility*.

[22,23] UNEP (2018). *SINGLE-USE PLASTICS: A Roadmap for Sustainability*.

[14] UNEP (2021). *From birth to ban: A history of the plastic shopping bag*.

[15] Patricio Silva et al. (2020). *Rethinking and optimising plastic waste management under COVID-19 pandemic*

[16] UNEP (2018). *Legal limits on single-use plastics and microplastics*.

[17] IATA (2024). *Chart of the Week: Lack of harmonized rules hampers plastic replacement*.

[18] UNEP (2023). *Turning off the Tap*.

At the same time, in certain circumstances, such as in the United States, airports are also affected by regulatory compliance. For example, the airports operated by the New York Port Authority have established guidance that reduces plastics use, which was required by local legislation. Plastic stir sticks and polystyrene containers are no longer provided to any customers, and vendors at the airports must provide re-usable utensils, cups, plates, bowls, etc.[24]

A sectoral approach that defines standards and recommended practices (SARPs) and considers a holistic view of the challenge of single-use plastic management in aviation is necessary to ensure proper replacements and guarantee appropriate end-of-life management.

### Lack of consistent definitions

A report by UNEP and Consumers International (2020) highlights the lack of consistency in definitions and terminology as a key driver of confusion. It recommends a requirement for standards, labels and claims to better reflect actual conditions rather than theoretical application.[25] [26]

The lack of a standardized international definition for SUP hinders the ability for an international industry like aviation to align, adapt, and overcome the challenges of replacing SUP.

With UNEP aiming to complete negotiations on SUPs by the end of 2024, a definition of SUPs is likely to follow.

### Voluntary agreements

Outside of the national or international regulatory framework, voluntary agreements on SUP are another path that organizations and states can follow to act against plastics.

One of the most renowned voluntary agreements on plastics is The Plastics Pact Network (part of the Ellen MacArthur Foundation), which is a globally aligned response to plastic waste and pollution, that enables vital knowledge sharing and coordinated action. This is a network of national and regional (multi-country) initiatives that brings together key stakeholders to implement solutions towards a circular economy for plastic, tailored to each geographic area.

It presents the following targets: eliminate unnecessary and problematic plastic packaging through redesign and innovation; move from single use to reuse; ensure all plastic packaging is reusable, recyclable, or compostable; increase the reuse, collection, and recycling or composting of plastic packaging; and increase recycled content in plastic packaging.[27]

Although these pacts lack the enforcement mechanisms of regulatory frameworks, they can provide guidance and set milestones in countries without formal targets.

[24] Port Authority of New York and New Jersey (2022). *Airport Solid Waste Management and Recycling Standards and Guidelines*.

[25] UNEP (2021). *Rethinking single-use plastic products in travel & tourism*.

[26] UNEP (2020). *Can I recycle this?*

[27] Ellen MacArthur Foundation. *The Plastics Pact Network*.

### Waste management and SUP recovery

A reality of plastic waste management is that recycling isn't scaling up fast enough to deal with the amount of plastic being produced.[28] Considering that only 9% of plastic waste is recycled globally, SUPs and their increased production strain existing recycling resources and methods.[29] Furthermore, "tight turnaround times, lack of space in catering facilities and the adoption of a precautionary approach by service providers" at airports prevent the segregation of waste, which leads to the mixing of recyclables with biohazardous waste.[30] Due to the realities of recycling and its public perception, it is important to rethink how the waste management of plastics in the travel and tourism sectors are advertised.

In 2018, ICAO published the "Waste Management at Airports" Eco Airport Toolkit. The report outlines types of waste, waste management principles, and approaches to waste management. Most importantly, the document provides a basic implementation guide for a waste management program.[31] Through improvements to the waste management system, airports, airlines, and other stakeholders can target SUPs at various points of the waste management lifecycle.

Airport sustainability programs call for minimizing plastics and effectively managing their disposal, and as part of their sustainability strategies, often set comprehensive waste management roadmaps, featuring SUP targets and initiatives.

At an airline level, the IATA Cabin Waste Handbook[32] describes cabin waste management practices and lists solutions that are already being implemented, aiming towards a zero-waste concept, and considering the waste hierarchy. Nowadays multiple airlines have incorporated targets toward SUP elimination and reduction, removing unnecessary SUP items and replacing products with different alternatives.

[28] Minderoo Foundation (2023). *Plastic Waste Makers Index*.

[29] OECD (2022). *Plastic pollution is growing relentlessly as waste management and recycling fall short*.

[30] IATA (2019). *Cabin Waste Handbook*.

[31] ICAO. *Waste Management at Airports*.

[32] IATA (2019). *Cabin Waste Handbook*.

AIRPORTS	
<b>Kansai Airports Group</b>	30% reduction in the Kansai Airport Group's use of single use plastics at each airport (Kansai, Osaka, and Kobe Airports) <sup>33</sup> . Initiatives include switching to paper shopping bags at stores, using wooden cup holders or introducing biomass amenities in hotel guestrooms.
<b>Atlanta International Airport</b>	Restrictions on the use of single-use plastics are included in leases to tenants and compostable solutions are recommended. <sup>34</sup>
<b>Delhi International Airport</b>	Removal of single use plastic at the airport and replacement with alternatives. <sup>35</sup>
<b>Sydney Airport</b>	Removal of single-use plastic bags and straws. <sup>36</sup>
<b>Dallas Fort Worth International Airport</b>	Removal of single-use straws with the aim to have 4 million straws removed from the waste stream. <sup>37</sup>

AIRLINES	
<b>LATAM Airlines Group</b>	Commitment to eliminate all SUP in its operations by 2023. <sup>38</sup>
<b>Lufthansa</b>	Replacement of SUP articles with sustainable materials by 2025. <sup>39</sup>
<b>IBERIA</b>	Aim to eliminate 100% of single-use plastics by 2025. <sup>40</sup>
<b>Hawaiian Airlines</b>	Working to phase out single-use plastics from in-flight service by 2029. <sup>41</sup>

**Table 2.** Examples of airports and airlines implementing single-use plastic removal and replacement initiatives.

[33] Kansai Airports. *Environmental Plan*.  
 [34,35,36,37] R.M. Sebastian and J. Louis (2021) *Understanding waste management at airports: A study on current practices and challenges based on literature review*.  
 [38] Simple Flying (2022). *LATAM Pledges to Eliminate All Single-Use Plastics By 2023*.  
 [39] Lufthansa. *Waste and plastic reduction*.  
 [40] Iberia. *Circular Economy*.  
 [41] Hawaiian Airlines (2023). *Hawaiian Airlines 2023 Corporate Kuleana Report Highlights Path to Net-Zero Carbon Emissions by 2050*.

## SUP leakage

Whether caused by littering of plastic waste by passengers or challenges related to appropriate airport waste disposal, SUP leakage can have a significant impact on the environment at and around airports. In this case, 'leakage' refers to plastics that fall outside the normal disposal process for one reason or another. In 2016, the Ellen MacArthur Foundation in collaboration with McKinsey & Company found that an estimated 32% of plastics escape the collection system globally.[42]

The risk of SUP leakage in the aviation sub-sector is considered to be low, at least in high and high-medium income countries, due to the strict cabin waste regulations in those countries and additional bio-security measures in place to ensure that cabin waste, especially from international flights, plastics does not escape into the environment.[43]

Regardless of the percentage of plastics that escape waste management systems at airports, airport managers seeking to improve the health of the environment at and around an airport must consider the risk of SUP leakage. Overall, collaboration is required to enhance investments in modern waste management systems to eliminate general plastic waste leakage, as well as new business models that span collection, sortation, and recycling capacity to increase overall plastic circularity.[44]

## Insufficient metrics

As with any emerging problem, insufficient metrics increase the difficulty of a business, industry, or government to overcome a challenge. In the case of SUPs, there is limited reporting on the end-of-life impacts of materials, meaning what happens after the use phase: how much is circular, mismanaged or leaked into the environment. In a 2022 paper by WBSCD, the authors provide an outline on how corporate plastics disclosure can serve as a mechanism to catalyze corporate action to avoid plastic pollution.[45]

By disclosing information, the public and advocacy groups can commend a corporation for their action or encourage them to address a perceived problem. According to the authors, challenges in adopting plastics disclosure metrics Described by the companies fall into two groups: lack of harmonization and unavailable/unreliable data.[46] For the aviation sector, the ability to harmonize and verify data with outside groups and stakeholders may increase success in the mitigation or elimination of SUPs.

## Guidance for replacement alternatives

Of the potential solutions to the SUP challenge, replacement alternatives such as multi-use plastics, or non-plastic alternatives might be seen as an obvious action, but there are different considerations to take into account. While in ground operations cutlery and crockery are some of the easiest items to replace, having more reusable items will increase the need for more resource efficient infrastructure. There are certain SUP items that cannot be replaced due to regulations. For example, the use of plastics bags for safety and security purposes. As ICAO states, all liquids, aerosols and gels (LAGs) need to be transported in Security Tamper-evident Bags (STEBs).[47]

[42] World Economic Forum (2016). *The New Plastics Economy*.  
 [43] UNEP (2021). *Rethinking Single-Use Plastic Products in Travel & Tourism*.  
 [44] McKinsey & Company (2022). *Addressing the challenges of plastic waste*.  
 [45,46] WBSCD (2022). *Enabling Corporate Plastics Disclosure*.  
 [47] ICAO. *Liquids, Aerosol and Gels & Security Tamper-Evident Bags*.

The lack of consistent guidance for alternatives also generates a problem in finding adequate replacement products that comply with regulations. In the case of airlines, there are replacement alternatives that don't comply with regulations at both ends of a journey. [48] Also, some alternatives (such as bioplastic) are a significant threat to recycling programs.[49]

Noting that direct replacement might generate unexpected environmental and social outcomes, the guidance should be done considering a life cycle assessment (LCA) approach, that allows for comparison of different replacement alternatives, keeping in mind that methodologies need to be robust and the results peer reviewed. To curb the guidance issue, governments, with input from airports and airlines, must act to create guidance materials on alternatives to SUP and pathways to the reduction of SUP usage, taking into consideration all environmental trade-offs (i.e., greenhouse gas emissions, water usage, etc.).

### Towards Circular Economy

The current supply chain of plastics is established and efficient and can provide large volumes of mass-produced products for use cheaply. This is a challenge in several ways to sustainability. Any replacement alternative would have to scale up to meet the demand, and every product has life cycle considerations, including sourcing of raw materials, production, and distribution. Plastic products are made from petroleum, so their initial production consumes a non-renewable resource in the process, which raises concerns on life cycle. And then, there is the end of the life cycle. Plastics don't biodegrade. Consequently, the waste considerations for SUP are quite significant, and how they are managed as waste is a major factor of their environmental impact. Acceptance of new products by the public may take some time as well.

Replacement products are closely linked to the supply chain. If there is strong demand for a product, it is likely the suppliers will produce it.

In 2021, Sebastian and Louis conducted a systematic review of the various aspects of airport waste management. The researchers found that "rising passenger volumes and expansion of airport activities have considerably increased the types and quantities of waste generated at airports. With many regional and national governments emphasizing on waste diversion from landfills, numerous airports are gradually transitioning to sustainable alternatives". The duo also found that "despite being a pressing issue, there is limited literature on waste management initiatives and their efficiency at airports".[50]

Nevertheless, airports are embracing the move towards the circular economy, in which effective waste management plays a pivotal role, as the full product lifecycle is planned such that it is sustainably produced, used, and disposed, and the end stage is reuse, recycling, or another sustainable option other than landfilled. Circular economy extends beyond waste management, presenting a comprehensive approach that transforms waste management into a novel economic business model. In the context of a circular economy, products, including SUPs, are specifically crafted for reuse, disassembly, refurbishment, remanufacturing, and/or recycling. Moving towards circular economy is key for addressing SUPs and many airports embrace such circular strategies.

[48] Airlines (2022). *Asymmetric regulation hampers single-use plastic replacement.*

[49] UTS (2023). *Why bioplastics won't solve our plastic problems.*

[50] Sebastian and Louis (2021). *Understanding waste management at airports: A study on current practices and challenges based on literature review.*

For example, London Gatwick introduced a waste management strategy centered around the principles of the "Circular economy," aiming to maximize the utilization of recovered resources within the airport premises. The initiative involved enhancing collection facilities or adopting a novel approach to waste logistics. Other airports, such as Schiphol, have goals of becoming completely circular by 2050. The airport implemented many innovative circular projects such as using recycled plastic as a building floor.

At the macro level, the availability of waste, recycling, and composting infrastructure and material markets can greatly affect airport waste programs. As sustainability is integrated in more of their operations, airports are looking for solutions that will allow them to achieve higher levels of performance and endure changing conditions.[51] The airport environment is diverse and includes many entities such as the airport management, employees, tenants, FBOs, airlines, and passengers and it requires the involvement and collaboration of all parties to successfully implement a waste reduction or recycling program.[52]

Examples of additional actions to address SUP	
Examples	➤ Awareness campaigns and trainings with stakeholders- tenants, public, employees, passengers, etc.
	➤ Provision of guidelines and creation of working groups focused on SUP elimination.
	➤ Assessing, auditing, and monitoring SUPs at the airport premises.
	➤ Installation of waste recycling devices at terminals, as well as plastic reduction signages and posters.
	➤ Creating initiatives encouraging use of reusable cups and other items with incentives (e.g., price discounts) or restricting free access to SUP items by passengers (e.g., straws or cutlery) as a phase out.
	➤ Development of roadmaps and SUP reduction and removal plans.
	➤ Installation of water refill stations.

Table 3. Examples of additional actions to address SUP.[53]

Strategies solely centred on a single solution are insufficient in combatting plastic pollution. Efforts should concentrate on decreasing the usage of SUPs, altering consumer habits, and enhancing the collection and recycling of SUP waste. It is crucial that awareness-raising initiatives are complemented by government incentive and regulatory programs that are based on consultation with airports, airlines, and other relevant stakeholders.

There is a need to address this issue across the plastics value chain, taking a holistic approach based on the circular economy principles (such as reduce, reuse and recycle), as well as responding to cross-border regulatory frictions. Investing in developing innovations related to products design, such as these using materials like seaweed to produce straws and packaging[54], will also facilitate progress towards reducing SUPs. At the global level, organizations such as the World Economic Forum call for ambitious and coordinated policy mechanisms, spanning the full plastic life cycle, and pointing out to insufficiency of voluntary measures[55].

[51,52] National Academies (2018). *Airport Waste Management and Recycling Practices.*

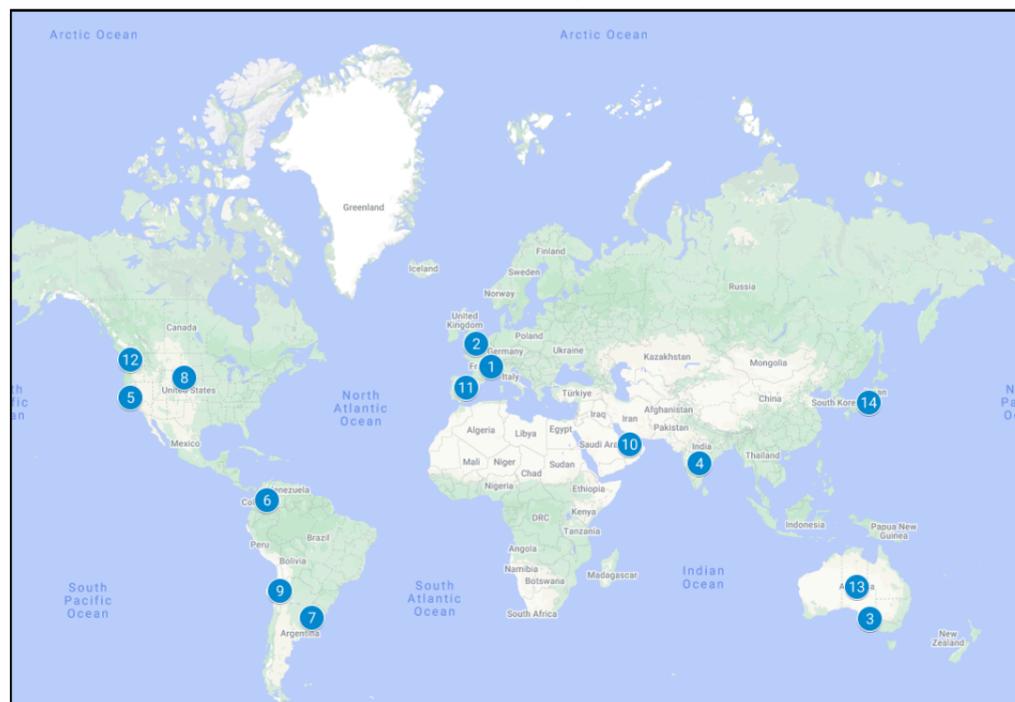
[53] Adapted from Tschuchnik, Martina (2020). *Sustainable Aviation: Passengers' Single-use Plastic Waste in the Civil Aviation Industry.*

[54] World Economic Forum (2024). *5 ways seaweed is helping tackle the climate crisis.*

[55] World Economic Forum (2024). *Voluntary initiatives to end plastic pollution aren't enough. A global treaty is now needed.*

## 4. GOOD PRACTICES IN THE AVIATION SECTOR

In response to the SUP challenges, airports and airlines worldwide are implementing proactive measures to address SUPs effectively.



**Figure 3.** Examples of Airports and Airlines Worldwide Implementing Proactive Measures to Address Single-Use Plastics (SUP)

### 1. Lyon Airport (France) (VINCI Airports)

Lyon Airport adopted the goal of Zero Waste to landfill by 2030. In 2022, the airport performed a trial called ZEFIRO with the objective of substituting the 4,900 disposable cups a day that were thrown away at the airport.[56]

A life cycle analysis study[57] was conducted to compare the environmental impact of the beverage container system previously in place with that targeted by the project. The results obtained show quite clearly the environmental benefits of switching to the non-disposable solution. However, this environmental benefit depends on the number of times the cups are reused. The study, based on only 7 reuses of these cups, showed that below 4 reuses, the disposable cup was preferable. Moreover, these cups can be reused more than 500 times. It is therefore essential to extend the life of these cups.

To reduce the number of cups (environmental gains) it must be ensured that passengers in the terminal can easily return their cups. To do so, it is essential to communicate effectively at any time during the consumption cycle.

Transportation also plays a major role in the project. It should be aimed for the delivery of large quantities to avoid half-empty trucks, to minimize deliveries, and search for production facilities closer to the airport to increase the environmental impact of the project as a whole.

All these considerations led to the design of the project:

- an unattractive cup to prevent passengers from keeping them
- communication on the cup; by the vendor at the time of sale; in the bins; on the advertising screens;
- a clearly identified collection system along the entire passenger route;
- cups cleaned directly in a terminal room, reducing transport-related emissions to zero.

### 2. London Gatwick Airport (United Kingdom) (VINCI Airports)

In 2018, Gatwick became the first airport to achieve a Zero Waste to Landfill accreditation from the Carbon Trust Standard. The standard provided a framework for verifying these claims. It recognized the airport for actively diverting its non-hazardous waste streams from landfill through the following actions: (1) redesigning collection and transport logistics, (2) sorting and separation of materials on site, (2) biomass generation with organic waste, (3) processing of category 1 international catering waste, (4) promoting passenger recycling and reuse and (5) staff canteen campaign to reduce single use plastics.

As part of the promotion to reduce single use plastics, in 2019 Gatwick launched the UK's first airport reusable coffee cup trial called "Cup Cup and away", which allowed customers to borrow one of the 2,000 reusable take-away cups around the airport, instead of disposable ones. The idea being that the passengers could buy their coffee or tea, borrow a take-away refillable cup while still at the airport, and drop it off later at one of the five designated "Cup Check-In" points before their flight.

### 3. Adelaide Airport (Australia)

In collaboration with Green Industries South Australia (Plastics Free SA), Adelaide Airport is supporting an ongoing program to eliminate single-use plastics from food and beverage tenants to support the attainment of its waste targets of 30% reduction of waste and 60% recycling rate by 2030. The project applies to the Adelaide Airport landside terminal, plaza, port cochure and carpark area with collaboration occurring with Green Industries South Australia (South Australian Government), Plastics Free SA (South Australian Government delivery partner), food and beverage tenants and Cleanaway waste and recycling contractors.

Total project funding of \$225,000 was expended for the installation of three waste stream bins with organic waste compartments in the terminal, the installation of a 12 m3 pendulum organic waste compactor and a plastics free education package. Education included the development of an induction program and a stakeholder engagement program that involved working directly with food retailers to assist them in switching from single-use plastics to better alternatives, such as reusable or compostable items.

The program is ongoing to continually collaborate and educate tenants on transitioning to a plastics-free future

[56] Lyon Airport. *Take action together with project ZEFIRO.*

[57] Vinci Airports (2022). *Rapport d'impact environnemental du projet Zefiro.*



Figure 4. Adelaide Airport's plastic free induction guide.



Figure 5 Adelaide Airport new terminal collection bins with organics waste stream and compostable food packaging.

Such actions contributed to the results, between 2018 and 2022, of:

- 595,498 pieces of handbags, paper bags etc. were made from jute material.
- 32,14,920 plastic plates were replaced with starch-based plates.
- 27632 kg compostable bags used for aircraft waste collection.
- These sustainable products prevented 276 metric tonnes of plastic directly, 551 kl petroleum and 1655 tCO2e indirectly.



Figure 4. Rajiv Gandhi International Airport's efforts for children's awareness on SUP during World Environment Day 2018.

#### 4. Rajiv Gandhi International Airport (Hyderabad) (India)

Rajiv Gandhi International Airport has adopted a holistic effort to develop actions aimed at SUP elimination that also had significant co-benefits, yielding positive societal outcomes, working with its stakeholders through:

- Sensitization of stakeholders about SUP and its consequences.
- Performing audits and assessments of SUP users.
- Replacing plastic with jute products by partnering with local communities through the CSR arm GMR Varalakshmi Foundation (GMRVF).
- Replacing plastic cutlery and carry bags.
- Introducing compostable plastics, in accordance with ISO 17088.
- GMR Hyderabad International Airport (GHIAL) banning the SUP from February 2020.



Figure 5. Women empowerment at Rajiv Gandhi International Airport while reducing plastics.

## 5. San Francisco International Airport (United States)

In the move to achieve zero waste to landfill goal, San Francisco International Airport (SFO) took the initiative to prohibit the sale of any beverage in plastic bottles in 2019. This initiative made SFO, the first airport in the world to prohibit the provision or sale of single-use bottles in plastic or aseptic paper. It was further expanded in 2021 and now the sale of any beverages including sodas, teas, and juices in plastic or aseptic paper packaging are also prohibited at the airport.

SFO is working and showcasing an effective stakeholder engagement by working with their concessions and tenants on supporting policies of eliminating single use plastic from the airport and by providing a guide of approved alternatives to plastic beverage bottles to all the retailers.

As per their waste characterization studies, it was found that 33% of the items sent to landfill are food ware and beverage container and now the initiative will avoid approximately 1,000,000 fossil fuel-based beverage containers ending up in a landfill per year.

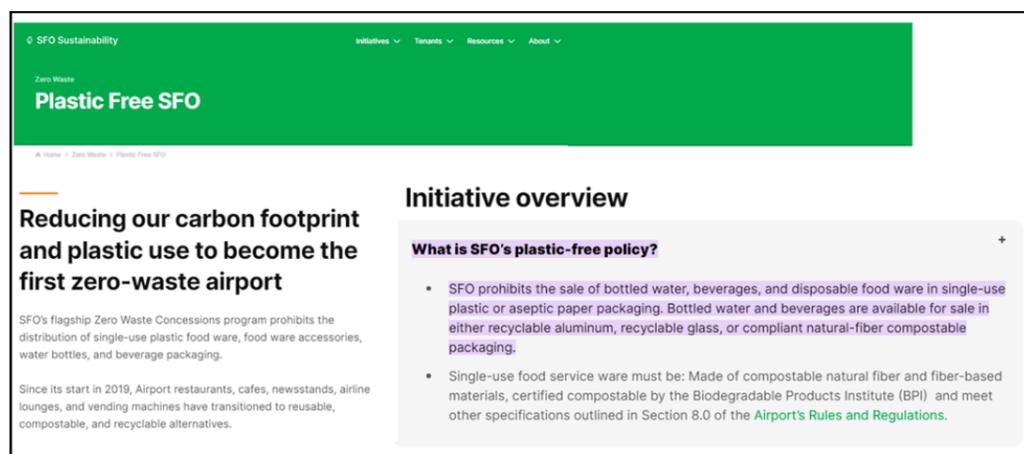


Figure 6. San Francisco International Airport's plastic-free policy.

## 6. Bogotá, El Dorado International Airport (Colombia)

El Dorado International Airport is consolidating the Circular Economy Plan aligned with Colombia's National Circular Economy Strategy focused on reducing virgin raw materials used directly or indirectly in the operation and strengthening the circularity of materials thanks to the waste management process that has been underway at El Dorado, where to date 65% of the waste generated is being revalued. The goal for 2025 is to revalue 70% of the waste generated.

Regarding the management of single-use plastic, according to the characterizations carried out by Waste to Worth in 2022, El Dorado International Airport (AIED) generates 1,031 kg/day of usable material that enters the Sorting and Recovery Station (ECA).

To increase the impact of the ECA efforts, it was recommended to focus on the use of E&E made of PET, PP and HDPE and paper, since these are the materials that have the most robust value chains in the recyclable materials market in Bogotá, which means that they can generate a greater benefit in economic, environmental and social terms for the entire Airport Ecosystem and the city itself. This exercise also identified that the airport community plays a key role in this transition to the Circular Economy.

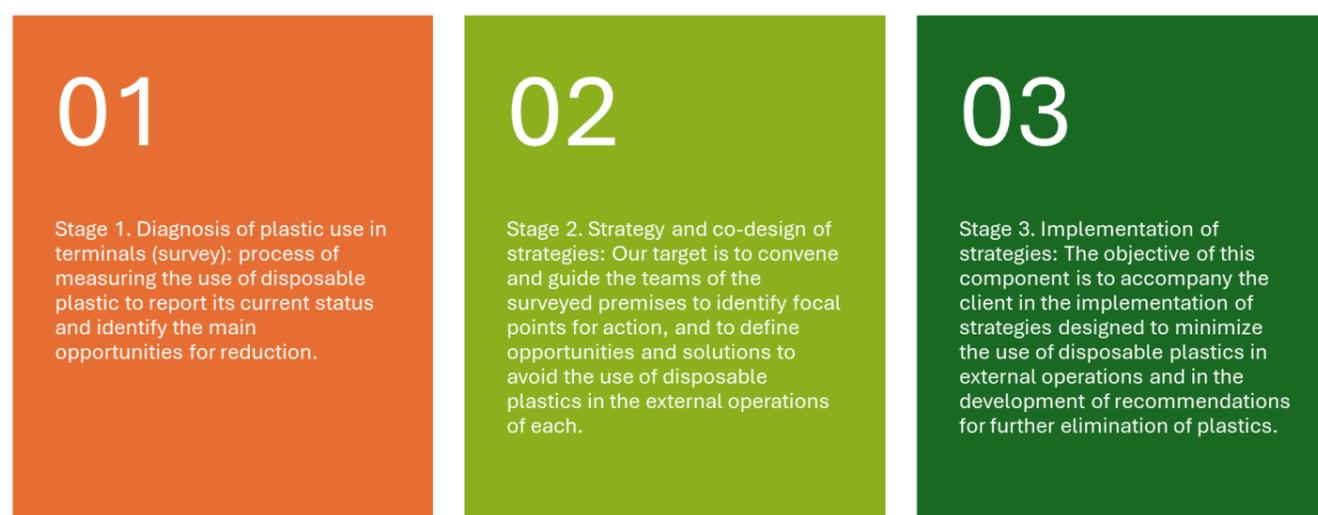
Opain and Waste to Worth have worked on the development of a Pact for Circularity and a Packaging Policy for Circularity that involves the entire airport community and aims to promote the use and sale of 100% recyclable E&E that can be used in the value chains including plastic and paper cups, cardboard containers, PET bottles and other materials present in the ecological points of commercial areas. The Packaging for Circularity Policy seeks to maximize the valorization of E&E materials used at the airport, promoting their use, and avoiding their disposal in landfills.

As of 2023 El Dorado Airport has made use of and given a second use to approximately 78% of the waste generated in the Air Terminal and has also installed 65 water refilling points that accounted for more than 1.7 million single-use plastic bottles that were no longer used in 2022, promoting responsible consumption of water and plastic.

## 7. Aeropuertos Argentina 2000 (Argentina)

"Destino Plástico Cero" is an initiative of Aeropuertos Argentina 2000 that aims to reduce single-use plastics in their terminals. It is a path of transformation together with strategic allies to reduce environmental impact and plastic footprint at the airports. By 2023, Aeropuertos Argentina set the target of reducing the use of disposable plastics by 10% in 8 of the country's airports and only in the sectors of gastronomic concessionaires and retailers.

Together with Unplastify, a consultancy firm specializing in the issue of single-use plastics, the focus is on the reduction of disposable plastics in cups and cutlery, bags, and food packaging, and design a strategy that is being implemented in the following stages shown below.



## 8. Delta Air Lines

As part of its 2021 Environmental, Social and Governance (ESG) report[58], Delta revealed progress in their efforts to reduce the environmental impacts of their operations. Aside from efforts to increase the fuel efficiency of aircraft and the speed the implementation of sustainable aviation fuels, Delta also highlighted progress in the reduction of SUPs across their operations. Focused on sourcing more sustainable products for future years, the company also resumed onboard recycling and continued their product donation of existing SUPs.

On aircraft, Delta aims to reduce SUP consumption by approximately 4.9 million pounds through the sourcing of alternative packaging for beverages and food, the replacement of plastic utensils and the introduction of 100% recycled bedding. Additionally, Delta resumed on-board recycling after the temporary pause caused by the COVID-19 pandemic. To identify products that best reduce the airline’s greenhouse gas footprint, Delta developed a life cycle analysis tool to compare environmental metrics of different product types before implementing them into their operations.

At airports, Delta also made efforts to reduce the usage of SUPs. Since the airline operates Delta Sky Clubs (airport lounges), the company made changes at airports to include the switch to eco-friendly packaging for packaged foods and an emphasis on reusable serviceware. At specific airports, such as Minneapolis-Saint Paul and San Francisco International Airports, the company set zero-waste targets with an effort to recycle and compost to achieve 90% landfill diversion.

The final aspect of Delta’s efforts to reduce SUPs was the donation of unused materials to various organizations. In 2021, the company provided 1.9 million pounds to organizations in need, amounting to 7 million dollars of items.



Figure 7. Delta Airlines eliminating onboard single-use plastics.

## 9. LATAM Airlines Group

In 2024, LATAM announced that it has eliminated 96% of single-use plastics in its operations, that represent more than 1,700 metric tonnes.[59]

The process, that has taken over 3 years, involved different areas of the company and considered the replacement of disposable plastics with reusable options, bio-based and biodegradable materials. For example, in the business cabin, reusable cotton bags have been introduced for rest elements and amenities. In economy cabin, reusable tableware and bamboo cutlery has been introduced.

Alternative options have not been only implemented in the air. In airports, paper labels and paper courtesy bags are being implemented.

The group also has an onboard segregation program called “Recycle your trip”, operating in domestic flights in Chile, Peru, Ecuador, Colombia, and Brazil. During 2023, more than 170 tons of PET plastic bottles were segregated and managed for recycling.

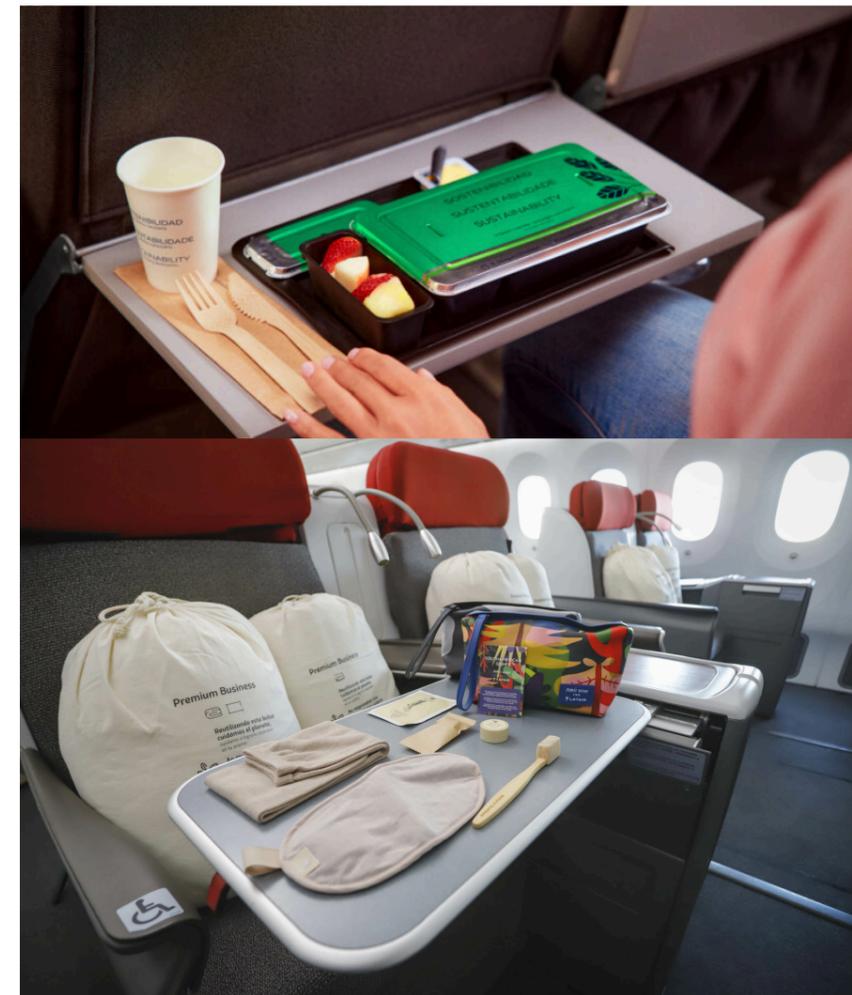


Figure 8. LATAM Airlines Group eliminates single-use plastic.

[58] Delta Airlines. *ESG Report 2021. Reducing Waste.*

[59] Aviación al día (2024). *LATAM eliminates 96% of single-use plastics in its operations.*

## 10. Emirates

Emirates recycles over 500 metric tonnes of plastics and glass from flights landing in Dubai each year.[60] Cabin crew separate used plastic and glass bottles from the airline's flights, and in collaboration with Emirates Flight Catering, these items are sent to a recycling plant in Dubai.

Emirates' Economy Class blankets are made from recycled material, each piece saving 28 plastic bottles from landfill, while wooden tea and coffee stirrers, paper straws and inflight retail bags are made using wood and paper from responsibly managed forests. Complimentary toy bags, baby amenity kits and plush toys are made from recycled plastic bottles and other alternative materials, and belt bags, duffle bags and backpacks are fabricated from a yarn that is made from 100% recycled plastic bottles.

Emirates has also implemented a closed loop process in partnership with deSter FZE UAE to remanufacture old and damaged onboard service items, such as plastic dishes, bowls, and trays, into new serviceware to be used again onboard.[61]



Figure 9. Emirates' closed loop recycling initiative.

## 11. Iberia

Joining IAG Group "5 through 2025 strategy", Iberia is moving from a linear consumption model to a circular one that will allow them to reduce their environmental impact, aiming to eliminate 100% of single-use plastics by 2025.[62]

As part of the initiative to achieve this goal the airline has reduced more than 30 metric tonnes of plastic waste in VIP rooms, by reducing plastic packaging in our products and choosing reusable and recyclable packaging.

As part of the Zero Cabin Waste Project, in 2023, the airline estimated a reduction of 200 metric tonnes of plastics on board.[1] Some of the actions that have been implemented summarized below.

In the Premium Lounges of the Adolfo Suárez Madrid-Barajas airport, cans and plastic containers have been eliminated and replaced by reusable glasses.

## 12. Alaska Airlines

In 2023, Alaska Airlines announced the full implementation of Forest Stewardship Council (FSC) certified paper cups for inflight beverages, being the first carrier in the U.S. to replace plastic cups. With this initiative more than 55 million plastic cups were eliminated.[64]

Other actions implemented by the airline are the introduction of Boxed Water™ cartons, with 92% of plant-based materials, eliminating 1.8 million pounds of single-use plastic water bottles each year. And, since 2018, the removal of plastic straws and stir sticks.

These efforts are part of the airlines' commitment to replace the top five waste-producing items by 2025 and continuing to recycle.

Figure 10. Alaska Airlines' initiative to eliminate plastics on board..

[60] Emirates. *Our Planet. Consuming Responsibly.*

[61] Emirates (2023). *Emirates unveils new closed loop recycling initiative to reduce plastic.*

[62] Iberia. *Circular Economy.*

[63] Iberia (2023). *Iberia to reduce up to 200,000kg of plastic on its flights this year.*

[64] Alaska Airlines (2023). *Alaska Airlines eliminates inflight plastic cups: West Coast-based airline becomes first U.S. carrier to replace plastic with planet-friendly alternative.*

### 13. Qantas

In 2022, the airline announced that cutlery, bags, wrapping, and cups are not going to be found on Qantas flights by 2027, excluding items required for medical or health and safety reasons, and aims to be zero waste to landfill by 2030.[65]

As part of the actions driven by this commitment, Qantas is looking into:

- Minimizing waste through more efficient inflight and ground operations.
- Introducing innovative product and packaging alternatives targeted at removing single-use plastics and reducing waste to landfill.
- Replacing plastic cutlery in our domestic network with responsibly sourced wooden cutlery.
- Expanding waste material recovery pathways, including recycling, processing of organic material composting, specialty recycling trials, and exploring waste to energy.

Since 2019, Qantas has removed or replaces more than 200 million SUP from its operations.

### 14. Japan Airlines

JAL has set a goal to eliminate all new petroleum-derived single-use plastics in the cabin and lounge by 2025.[66] To achieve this commitment, it has introduced environmentally friendly materials to replace different items in domestic and international flights, as well as economy cabin. The items replaced vary from lids, muddlers, food containers and tray mats. The airlines also introduced plant-based shopping bags for inflight sales and in airport stores.

At airport level, in January 2024, the group ceased the provision of non-woven carry-on baggage storage bags on domestic flights and at airports. For cargo operations, plastics sheets used to protect products from water damage will be switched to products containing environmentally friendly materials and incorporating options to avoid that these items are disposed of as waste.[67]



**Figure 11.** Japan Airlines use paper container, lid and tray mat to eliminate plastics on flight.

## 5. CONCLUSIONS

As part of a linear economy, SUP are extracted, produced, and used only once before being disposed of or ending in the environment. From there only a very small circular flow of plastic is cycled back into new uses.[68] To move beyond this linear economy and towards a circular economy, users and producers throughout a products lifecycle must work in tandem to move beyond the linear economy. For airports and airlines, the challenge lies in eliminating unnecessary SUP items and reducing its overall use, ensuring that it is not mismanaged.

The sector needs to navigate a complex regulatory landscape, therefore joint advocacy efforts that allow for multistakeholder collaboration are important. Also, the development of guidelines and creation of working groups focused on SUP elimination will accelerate proper recycling and waste management processes. Alternatively, developing standardized procedures for assessing, auditing, and monitoring the use of SUP on the airport premises will increase the amount of data available and guide compliance towards reporting requirements. Collaboration with other business to introduce SUP replacements with eco-friendly products is important (ensuring that the impacts of plastic alternatives are also evaluated). Finally, when States do not take action, airports can introduce bans on SUP products on airport premises, while also considering implications of such measures and consistency to avoid the patchwork of requirements that can affect airlines.

Airports and airlines have been successful in implementing a number of initiatives and principles that can be further adopted to move towards a more circular economy, but without the infrastructure to address SUP management, airports and airlines might struggle to address recycling or elimination of SUPs.

To allow for growth, the industry must find ways to limit the environmental impacts of aviation. It is crucial that airports, airlines, and the entire aviation value chain work together, as well as with other stakeholders such as governments, to find common solutions to the SUP challenge.

[65] Qantas. *Reducing our waste through circularity.*

[66] Japan Airlines (2022). *Further Expanding Efforts to Reduce Single-use Plastics in Cabin.*

[67] Japan Airlines. *Effective Use of Limited Resources.*

[68] UNEP (2023). *Turning off the Tap.*

## 6. APPENDICES

### APPENDIX A - Selected current SUP restrictions at the regional or national level

Location	Application	Definitions	Items
<b>European Union</b>	<p>From 3 July 2021, 10 single-use plastic items are being addressed by a Directive on the reduction of the impact of certain plastic products on the environment. From the removal of products that have available and affordable sustainable alternatives to limiting the use of other SUPs, the Directive set targets on the collection of plastic bottles and incorporating recycled content in PET beverage bottles.</p> <p>The 27 Member States of the European Union transposed the Single Use Plastics (SUPs) Directive into national legislation.</p>	<p>This Directive applies the following definitions:</p> <p><b>Single Use Plastic Product (SUPP):</b> “means a product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for a refill or re-used for the same purpose for which it was conceived”[69]</p> <p><b>Biodegradable plastic:</b> “means a plastic capable of undergoing physical, biological decomposition, such that it ultimately decomposes into carbon dioxide (CO<sub>2</sub>), biomass and water, and is, in accordance with European standards for packaging, recoverable through composting and anaerobic digestion”[70]</p>	<p>The directive bans:[71]</p> <ul style="list-style-type: none"> <li>• cotton bud sticks</li> <li>• cutlery (forks, knives, spoons, chopsticks)</li> <li>• plates</li> <li>• straws</li> <li>• beverage stirrers</li> <li>• sticks to be attached to and to support balloons</li> <li>• food containers made of expanded polystyrene</li> <li>• beverage containers made of expanded polystyrene, including their caps and lids</li> <li>• cups for beverages made of expanded polystyrene, including their covers and lids</li> <li>• products made from oxo-degradable plastic.</li> </ul>

[69] European Commission. *Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment*. [Article 3 (2)].

[70] European Commission. *Directive (EU) 2019/904 on the reduction of the impact of certain plastic products on the environment*. [Article 3 (16)].

[71] Library of Congress (2021). *European Union: Ban on Single-Use Plastics Takes Effect*.

Location	Application	Definitions	Items
<p><b>India</b></p>	<p>From 1 July 2022, the Indian Ministry of the Environment, Forest and Climate Change has announced plastic bans in Plastic Waste Management. The ban applies to the manufacture, import, stocking, distribution, sale, and use of identified single use plastic items, which have low utility and high littering potential.[72] The Rules state that the local bodies are responsible to frame byelaws.</p>	<p>The definitions in the Rules include:[73]</p> <p><b>Biodegradable plastics:</b> “means that plastics, other than compostable plastics, which undergoes degradation by biological processes under ambient environment (terrestrial or in water) conditions leaving any microplastics, or visible, distinguishable or toxic residue, which has adverse environment impacts, adhering to laid down standards of Bureau of Indian Standards and certified by Central Pollution Control Board.”</p> <p><b>Plastic:</b> “means a material which contains as an essential ingredient a high polymer such as polyethylene terephthalate, high density polyethylene, Vinyl, low density polyethylene, polypropylene, polystyrene resins, multi-materials like acrylonitrile butadiene styrene, polyphenylene oxide, polycarbonate, Polybutylene terephthalate”</p> <p><b>Single-use plastic commodity:</b> “means a plastic item intended to be used once for the same purpose before being disposed of or recycled”.</p>	<p>The following SUP have been prohibited:[74]</p> <ul style="list-style-type: none"> <li>• Earbuds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration</li> <li>• Plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic, or PVC banners less than 100 micron, stirrers</li> </ul>

[72] Ministry of Environment, Forest and Climate Change (2022). [Ban on identified Single Use Plastic Items from 1st July 2022](#)

[73] Ministry of Environment, Forest and Climate Change (2021). [Plastic Waste Management \(Second Amendment\) Rules](#)

[74] Press Information Bureau (2022). [Ban on Single Use Plastics](#).

Location	Application	Definitions	Items
<b>Australia</b>	The Australian Government Department of Agriculture, Water and the Environment has published the National Plastics Plan 2021 to set National Packaging Targets for the phasing out of problematic and unnecessary SUPs by the end of 2025.[75] They apply to all packaging that is made, used, and sold in Australia. including banning the use of expanded polystyrene food containers by December 2022.[76] However, each state and state and territory have different dates and single-use plastic items will be banned.[77]	<p>For example, definitions introduced by South Australia's Single-use and other Plastic Products Legislation include:[78]</p> <p><b>Plastic:</b> 'material made from, or comprising, organic polymers whether plant extracts or of fossil fuel origin'.</p> <p><b>Compostable:</b> refers to a subset of biodegradable plastic. Compostable plastics are generally made from plant material that return to base organic components when processed under certain conditions such as those provided in a commercial composting environment.</p> <p><b>Biodegradable:</b> plastics are made from plant-based materials such as corn and wheat starch rather than petroleum and break down into organic material and water over time and under certain conditions.</p>	<p>The following items might be taken into consideration with differing entry dates depending on the state:[79]</p> <ul style="list-style-type: none"> <li>• Balloon sticks/ties</li> <li>• Bread tags</li> <li>• Carry bags - lightweight</li> <li>• Carry bags - heavyweight</li> <li>• Coffee cups containing plastic</li> <li>• Confetti</li> <li>• Cotton bud sticks</li> <li>• Cups and lids</li> <li>• Cutlery</li> <li>• Drink Stirrers</li> <li>• EPS food trays</li> <li>• EPS loose fill packaging</li> <li>• EPS molded packaging (i.e., for electronics)</li> <li>• Fruit and veggie produce bags</li> <li>• Fruit and veggie stickers</li> <li>• Helium balloon releases*</li> <li>• Microbeads</li> <li>• Pizza savers</li> <li>• Plates and bowls</li> <li>• Polystyrene food and drink containers</li> <li>• Pre-packaged &amp; attached items (straws, cutlery, etc.)</li> <li>• Soy sauce fish</li> <li>• Straws</li> <li>• Takeaway containers</li> </ul>

[75] Australian Government Department of Agriculture, Water and the Environment (2021). *National Plastics Plan 2021*.

[76] APCO. *Australia's 2025 National Packaging Targets*.

[77] C. Wahlquist (2021). *'Single-use plastics' to be phased out in Australia from 2025 include plastic utensils and straws*.

[78] Replace the waste. *Definition of plastic*.

[79] Marine Conservation (2023). *Plastics Scorecard*.

Location	Application	Definitions	Items
<p><b>Canada</b></p>	<p>On December 25, 2021, the Government of Canada published the proposed SUPs Prohibition Regulations, in the Canada Gazette, Part I, which propose a ban on the manufacture, import and sale of single-use plastic items. SUPs will be regulated under the Canadian Environmental Protection Act (CEPA), which was published in the Gazette on May 12, 2021. The draft regulations currently propose a one-year transition period between final publication and coming into force, but the federal government is also considering a shorter transition period since the market has already made significant progress in moving away from the targeted single-use plastic products. As such, the bans could come into force as early as the end of 2022.</p> <p>On February 11, 2022, the Government of Canada also released a technical paper titled “Recycled content for certain plastic manufactured items Regulations” and sought feedback to inform proposed regulations which may be published as early as late 2022. The initial proposal is to set minimum recycled content requirements for certain plastics with a focus on packaging such as bottles, films (e.g., shrink wrap), rigid, flexible, foam containers, and more.[80]</p>	<p>Key terms for understanding the Regulations include:[81]</p> <p><b>“Single-use”</b>: Plastic items are considered single-use if they are designed to be discarded after being used once.</p> <p><b>Plastic</b>: broad category of synthetic chemicals (called polymers) that can have different sources, physical properties, and additives.</p>	<p>Items included are:</p> <ul style="list-style-type: none"> <li>• checkout bags</li> <li>• cutlery</li> <li>• foodservice ware made from or containing problematic plastics</li> <li>• ring carriers</li> <li>• stir sticks</li> <li>• straws</li> </ul>

[80] Government of Canada (2022). *Technical issues paper: Recycled content for certain plastic manufactured items Regulations*.

[81] Government of Canada (2023). *Single-use Plastics Prohibition Regulations - Technical guidelines*.

Location	Application	Definitions	Items
<p><b>China</b></p>	<p>The National Development and Reform Commission and the Ministry of Ecology and Environment have published plastic bans on identified plastic items. The Civil Aviation Administration of China have banned plastics in from 2022 in airports with an annual passenger throughput of 200 or more passengers will 1) not actively provide disposable non-degradable plastic bags in terminals and parking buildings, and 2) supervise the banning of disposable non-degradable plastic straws, stir sticks, meal/cup holders and bags in supermarkets, restaurants, passenger rest areas and other areas in terminals.</p> <p>By 2025, the use of non-degradable plastic straws, disposable non-degradable plastic rain cloth, wrap film and other cargo packaging supplies will be significantly reduced. Starting from 2022, domestic (including regional) passenger flights will stop providing disposable non-degradable plastic straws, stir sticks, meal/cup holders and bags; starting from 2023, the implementation will be gradually extended to international passenger flights.[82]</p>	<p>(not clearly defined)</p>	<p>Items included are:</p> <ul style="list-style-type: none"> <li>• disposable non-degradable plastic bags</li> <li>• disposable non-degradable plastic straws, stir sticks, meal/cup holders and bags</li> <li>• disposable non-degradable plastic rain cloth, wrap film and other cargo packaging supplies</li> </ul>

[82] CAAC. 2021. *Work Plan for Plastic Pollution Control in Civil Aviation Industry (2021-2025)* Officially Issued.

Location	Application	Definitions	Items
<b>United Kingdom</b>	On November 20, 2021, the United Kingdom's Department for Environment announced plans to ban single-use plastics. A year later, the Environment Secretary started talks with businesses, environmental groups, scientists, and civil society on shaping a legally binding global treaty that aims to end plastic pollution by 2040.[83] In January 2023, as part of the effort to end plastic pollution, the United Kingdom announced bans on specific single-use plastic items starting from October 2023.	<p>Guidance provided include definitions such as:[84]</p> <p><b>Polystyrene</b> is a polymer made from styrene monomers. Only polystyrene that has been through a foaming process is in the scope of this ban. Foaming is a method of expansion of the material at any point during its manufacture, by any means (such as heat from steam, expansion during cooling), using any blowing agent (such as butane, pentane, propane).</p>	The ban will include single-use plastic plates, trays, bowls, cutlery, balloon sticks, and certain types of polystyrene cups and food containers.[85]

[83] GOV UK (2022). *UK leads the way on ending plastic pollution.*

[84] GOV UK (2024). *Single-use plastics bans and restrictions.*

[85] GOV UK (2023). *Far-reaching ban on single-use plastics in England.*



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