

Guest Column: Unpacking cabin waste



Matt Crane, Co-Founder of the Aviation Sustainability Forum (ASF) and WTCE ambassador

In the domain of sustainable aviation, the reduction of cabin waste will play a huge role in improving the industry's overall environmental footprint. Airlines and caterers are pushing forward with waste separation trials onboard, striving to meet International Catering Waste (ICW) regulations while enhancing recycling efforts.

While key challenges persist – including aligning passenger behaviour with sustainability goals and navigating regional regulations – collaborative industry efforts, combined with innovative solutions, driven by data and technology, are needed to revolutionize waste management practices. With concerted efforts, the aviation industry aims to transform its approach to cabin waste, paving the way for a more sustainable future.

Environmental implications of passenger waste

The sector currently generates an estimated 11 million tonnes of cabin waste annually, of which 5 to 6 million tonnes is food and beverage waste. Due to EU ICW regulations and the limited waste management infrastructure at many smaller airports, the majority of cabin waste ends up incinerated or in landfill. In commercial terms, the untouched food waste alone represents an estimated USD\$5 to 6 million each year, while the annual cost of waste disposal amounts to USD\$0.5 billion.

[IATA](#) predicts that passenger numbers will double from 4.7 billion in 2024 to 10 billion in 2050 with a corresponding increase in fleet size from 26,000 to 47,000. Despite 2024 likely being a peak year for new aircraft purchases, there is a significant lack of development in sustainable cabin design that facilitates onboard waste separation and management for both passengers and crew. This overlooks ¹

an opportunity for enhancing circularity within the aviation industry.

The current CO₂e impact of cabin waste is estimated at 6.5 to 15.5 million tonnes per annum. Without intervention, this figure could potentially double by 2050.

Initiatives reducing airline waste

Airlines and caterers are actively conducting waste separation trials onboard and at catering units to comply with ICW regulations. Initiatives like the IATA-USA Gov APHIS Transatlantic Recycling Trials demonstrate progress in capturing packaging recyclables with regulatory approval. These efforts aim to build momentum and influence regulators towards risk-based regulation change.

Waste separation by crew onboard aircraft presents a prime opportunity for recycling, particularly for items like aluminum cans and plastic beverage bottles. [KLM Royal Dutch Airlines](#) has been a leader in this area, with fully engaged crew implementing a recyclables waste separation program using special galley cart skids.

Catering units are increasingly adopting bio-digesters and anaerobic digestion to manage organic waste, initially focusing on food waste from meal preparation and now expanding to include inbound galley cart food and beverage waste.

Collaborative efforts to reduce waste

Collaborative initiatives such as the IATA Sustainable Cabin Group and [The Airline Catering Association](#) (ACA) are actively working towards cabin waste reduction and more sustainable practice, advocating for ICW regulation change. The transatlantic recycling trials exemplify cooperation among caterers and airlines to demonstrate the need for risk-based regulation change.

It's clear that effective collaboration between airlines and caterers is vital for cabin waste reduction. Examples like [KLM Catering Services](#), [Qatar Airways](#) - QACC, and [Emirates Flight Catering](#) showcase successful progress where the caterer is part of the same group as the airline, which means aligning commercial objectives.

On the other hand, challenges typically arise when airlines and caterers operate as separate entities under contract, potentially hindering waste reduction efforts due to conflicting commercial interests. To address this, new contract terms can incentivize waste reduction while ensuring shared savings to maintain caterer profitability.

While ICW regulation poses challenges, these initiatives could potentially be a light at the end of the tunnel in demonstrating compliance with regulations and the potential for cabin sustainability improvement. Moving forward, further collaboration between caterers and airlines will be essential to embrace available technology and develop sustainable waste management solutions.

The impact of passenger behaviour

We need to recognize that "passengers" is a huge category - encompassing all the religious, cultural and demographics of the world - which highlights the need for tailored approaches rather than treating them as a homogeneous group.

We also need to appreciate that environmental awareness varies globally. As a result, airlines should tailor their messages accordingly, leveraging their well-established passenger insight teams to meet passenger preferences.

It's crucial to involve passengers in the sustainability journey, making them aware of cabin waste issues and encouraging their participation in adopting sustainable practices. Historically, low-cost airlines have excelled in engaging passengers in recyclable waste separation, as this often aligns with their brand model. However, full-service carriers like Qantas (domestic) are now also making great strides in this regard.

Exploring innovative solutions

From the perspective of the ASF, leveraging data will be key for airlines and caterers to understand and reduce their cabin waste. AI and AI optics, like QM-Spot and Countifi, will be increasingly used to monitor meal preparation waste and meal loading onto departing aircraft.

In time, technology will enable the monitoring of inbound waste at destination airports, providing airlines with real-time tracking of waste generation. This data profiling will enhance accuracy in meal provision and waste reduction for airlines and caterers.

Regulation-compliant waste management includes options for caterers to reduce mixed waste weight, volume, and water content before collection and disposal. These methods, developed from legacy US Navy vessel waste recovery techniques for long sea voyages, offer viable byproducts that diminish incineration or landfill impact and can even be sold as fuel.

Regional regulations and waste management practices

As one of the world's largest commercial markets, the EU has set the standard for regulatory compliance. However, EU ICW regulations such as the SUP ban and the pending Packaging & Packaging Waste Directive, lack consideration for aviation's unique needs.

These regulations, primarily aimed at domestic and HORECA markets, focus on veterinary assessment to prevent diseases like African Swine Fever from non-EU countries. Yet, they overlook the potential risks posed by caterer and supplier-manufactured products onboard flights, as well as those brought in by passengers.

Despite no reported cases of disease spread from airline-provided food and beverages, the EU ICW regulations mandate incineration or landfill disposal of inflight catering waste. This approach impedes cabin waste circularity and is increasingly being adopted by non-EU countries. However, with vision and creative thinking, the regulations can be overcome by waste processing changes and investment in regulation-compliant organic waste disposal technologies. Collaborative efforts are essential to identify short and long-term waste management solutions, empowering stakeholders to advocate for regulatory changes conducive to cabin waste reduction.

Ultimately, understanding Cabin Waste Composition – and its associated supply chain – will enable the development of solutions pathways to reduce waste and improve circularity improvement. While airlines must lead the charge by reshaping relationships within the supply chain to prioritize waste reduction, engaging crew, passengers, and aircraft manufacturers will also be key to reaching sustainability goals and optimizing onboard waste management.