

**CORPORATE SOCIAL  
RESPONSIBILITY  
REPORT 2018**

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Waste and circular economy

# WASTE AND CIRCULAR ECONOMY

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Our business produces a variety of waste: from the sheet of paper used in an office, to aircraft engine parts, staff uniforms and the cups our passengers use onboard. We aim to minimize waste and to recycle and reprocess whenever possible throughout the supply chain.

Air France has set itself a target of recycling or reprocessing 100% of non-hazardous waste and 60% of hazardous waste by 2020. In 2018, Air France achieved a recycling and recovery rate of 90% for non-hazardous waste and 57% of hazardous waste.

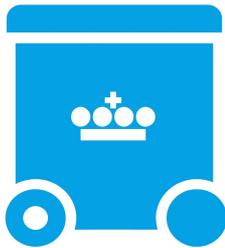
KLM has already achieved its 2020 objective of recycling and recovering 100% of non-hazardous waste and continues to work on eliminating 50% of residual waste by 2030.

## OUR AMBITION



### AIR FRANCE

100% OF NON-HAZARDOUS WASTE  
60% OF HAZARDOUS WASTE  
RECYCLED AND RECOVERED BY 2020



### KLM

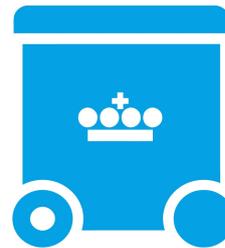
50% LESS RESIDUAL WASTE BY WASTE  
PREVENTION AND BY INCREASING  
RECYCLING BY 2030 (COMPARED TO 2011)

## OUR RESULTS 2018



### AIR FRANCE

90% OF NON-HAZARDOUS WASTE  
57% OF HAZARDOUS WASTE  
RECYCLED AND RECOVERED



### KLM

9% LESS WASTE AND 28% RECYCLED  
73% OF WASTE PRODUCED BY GROUND  
OPERATIONS IS RECYCLED

As a transport provider, we can be a catalyst in the value chain by procuring more sustainable and circularly produced goods. Everyone can recycle, produce less waste and adopt good practices. At the heart of this commitment are the “Four Rs” of the circular economy: Rethink, Reduce, Reuse and Recycle. Our ambition is to take sustainability into consideration at every phase of the lifecycle of our various products and services. This begins with design, and goes on to cover every other process along the way.

We handle a variety of different types of waste, particularly waste originating from flight and maintenance activities, both of which are subject to strict regulations. Two thirds of our non hazardous waste result from catering and onboard service: these regulations have a big impact on our waste footprint.

Reducing waste also provides a financial opportunity: several initiatives have demonstrated considerable economic benefits. We work closely with our suppliers and other parties to contribute

towards the use of sustainable materials and resources throughout the value chain.

## PREVENTING FOOD WASTE

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Air France and KLM handle food waste coming from flight operations with a permanent commitment to guaranteeing food safety and security, within a context of strict regulation. The regulations vary depending on the station and are often stringent, like the European Regulation requiring the incineration of any element having been in contact with food on flights arriving from outside the EU.

Two main levers help reduce food waste: the adjustment of the catering embarked on flights and a strict policy of merchandise inventory management.

- Based on statistics and historic flight load factors, as well as passenger habits, the number of meals actually embarked is regularly re-evaluated. This re-evaluation prevents waste creation and reduces production and transportation costs. This also reduces the onboard weight, resulting in lower CO<sub>2</sub> emissions.
- To regularly renew the in-flight service offer, some products are made available to passengers for a limited period only. At the end of this period some products are served in the Air France lounges while others may be donated to charitable organizations (*Restos du Cœur*, *Mie de Pain*, Red Cross).
- Lastly, the products that are not distributed to passengers but can be conserved, are recovered and reinserted in the flow of meal trays prepared for the ensuing flights. In this case, cost saving is combined with waste minimization efforts.

## REDUCING AND RECYCLING INFLIGHT WASTE

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To reduce the overall impact of inflight waste, we prevent waste by redesigning and by correctly separating waste, as well as by implementing recycling initiatives. For example, a significant proportion of reusable obsolete equipment, like trays, drawers, blankets and trolleys, is recycled.

- At Air France, items designed with an eco-design approach, which take the entire life cycle of products into account, are favored. Four families of materials are recycled: plastic, metal, textiles and paper. Plastics are mostly reused in the production of new materials such as Air France's drawers and serving trays.
- Items on KLM flights have been eco-designed to reduce the waste and weight on board. The new Economy class catering product features a smaller tray and cutlery as well as a salad bowl out of recycled PET. The placemat on the tray has been removed, thus saving 9 million placemats a year. KLM has also removed plastic cutlery wrapping and introduced a new headset with less plastic.
- On all of KLM's European flights, on-board waste is sorted and trolleys are adapted to collect cups. Cans, glass, aluminum lids and PET plastic bottles are also sorted and recycled. Furthermore, unused equipment like earphones and cutlery sets are kept apart and reused on other flights.
- The introduction of the Air France Press App and the KLM Media App led to replacing a part of the newspapers offered on board and reducing onboard weight (around 1,300 tons of paper waste prevented per year and 4,600 tons of CO<sub>2</sub> avoided). The paper version of the onboard magazine, Air France Magazine, is recycled (700 tons of recycled paper per year).
- KLM Catering Services continuously runs programs designed to improve waste management: waste reduction, increased share of recycled waste and identification of the appropriate reprocessing facilities. In joint efforts with Procurement, KLM achieved a 19% onboard waste

reduction per passenger, compared to 2011. Strict laws surrounding food safety on international flights prohibit recycling of almost all onboard items, although 73% of waste produced by ground operations is recycled.

- To avoid product destruction and promote reuse, Air France signed a framework agreement with the association Agence du Don en Nature (ADN). By donating new, remodeled and recycled products like crockery and blankets, we support the work of ADN which collects and redistributes new non-food items to fight against exclusion in France. 51 pallets of crockery were donated to the ADN in 2017, and nearly 1,500 Air France bags were donated in 2018.

## REUSING AND RECYCLING AERONAUTICAL WASTE

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We continue to develop programs for aircraft maintenance waste. Where possible, the principle of cradle-to-cradle is applied to bring waste back into a new production cycle with the goal of streamlining and controlling all technical waste flows. The process includes procedures to reuse and recover spare parts.

- At Air France, the ongoing move up-market for the medium and long-haul cabins with the installation of new seats has been accompanied by the implementation of a recycling and dismantling process for the old seats ranging from the reuse and recycling of components to the recovery of foams and metals.



- In 2018, more than 400 tons of aircraft parts and metal were recycled at Air France Industries and KLM Engineering & Maintenance. Through the KLM's ScrapPlaza program, every year, KLM E&M sorts the flows of waste that can be reused or recycled.
- Hazardous waste from maintenance activities is subjected to a comprehensive tracing system and its management is harmonized in different maintenance sites. This approach is also reflected in the optimized management of suppliers and costs, and the search for more relevant solutions in the light of regulatory changes.



## REDUCING AND PREVENTING OFFICE WASTE

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We aim to reduce and prevent the waste generated by our on-ground non-industrial activities:

- Using Follow Print, print jobs are carried through only on request of the user at the printer, with an identification code and a confirmation of the printing tasks: since its launch in 2014, print quantity has been reduced at Air France by 30%, resulting in a savings of 36 million sheets of paper.
- Within the framework of the NET project (New Workspaces) Air France has implemented a waste collection system enabling the sorting of waste, with the goal of 100% recycled waste in 2020. This system relies on easily identifiable color coding which facilitates sorting (bio-waste, paper and cardboard, bulky waste, plastics). In 2018, 264 tons of bio waste were collected and 127 tons of paper were recycled.

## SAVING WATER

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In our continuous effort to avoid water wastage and to reduce water consumption through better management of our processes, teams are made more accountable and environmental criteria is factored into the design and realization of our tools and workstations. Maintenance activities, and in particular the washing of aircraft and engines, use the most water.

Reducing water consumption requires innovation:

- Air France Industries and KLM Engineering & Maintenance (AFI KLM E&M) use the “EcoShine” method to clean the exterior of aircraft. The process in which pads are used requires 80 times less water than the previous one: 150 liters to clean a Boeing 777, rather than 12,000 liters used

before. Another advantage of this method is that it reduces the risk of accidents at work.

- AFI KLM E&M has developed an innovative, environmentally-sound system to increase engine on-wing performance and lifespan. Engine water wash can be carried out during a maintenance visits to the hangar or the platform. The system optimizes engine performance, leading to lower fuel consumption (0.5 to 1%) and reduced CO<sub>2</sub> emissions. The engine water wash is operated according to environmental principles: the water used during the process is recovered for recycling.

*The Group's water consumption has been reported in the Air France-KLM [Registration Document](#) section 4.3.6.2.*

## **PROMOTING THE PRINCIPLES OF THE CIRCULAR ECONOMY**

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We are working on initiatives to up-cycle waste for new usage, as shown in some more recent examples:

At Air France:

- A permanent recycling system is now in place for Air France uniforms and overalls. Staff are invited to adopt good recycling practice by depositing uniforms and overalls in secure containers in the Air France premises. Once collected and recycled, they are transformed into energy in the form of heating pellets, the residues being used to manufacture cement. In total, since September 2018, 7.5 tons of textiles have been collected and recycled at the Paris-CDG site. Furthermore, employees have launched the 100% Uniforms upcycling initiative, offering a collection of non-aeronautical accessories (pouches, etc.).
- Within the framework of the Reverse project at Air France Industries' Engines, Equipment and Services department, used equipment has five possible new destinations: re-using, dismantling and re-certification, reselling (in its current state), reconditioning as a non-aeronautical product, and treatment as waste. We aim to make circular economy and the optimization of environmental and economic performance of waste reprocessing an integral part of our business.
- Certain items are being reconditioned under a range of non-aeronautical products, marked in company colors. For example, used seat covers and leather headrests were transformed into bags and pouches with handles made from old safety belts.



At KLM:

- KLM aims to reduce the amount of residual waste it produces by 50% in 2030 (compared to 2011). This will be achieved through cutting the overall amount of waste and increasing the share of recycled waste. In 2018, the amount of waste was cut by 9% and 28% of total waste was recycled. Onboard waste was reduced by 19% per passenger.



- At KLM, fourteen different kinds of waste are separated and recycled, including paper, metal, glass, plastic, wood, clothing, electrical equipment. For example, progress has been made on the reprocessing and recycling of aircraft components, polystyrene packaging and carpets.
- Multiple initiatives have been launched to tackle waste. Several partnerships with architects, startups and knowledge institutions, have resulted in innovative circular solutions. For example, the use of 3D printer to print components out of our plastic waste, and the use of old uniforms in office furniture. KLM has started to manufacture several items made from cargo straps, including bags which are now available in the Flying Blue shop. In addition, we reuse and recycle IT waste (laptops, mobile phones), and donate these revenues to Wings of Support.
- Since 2013, used KLM uniforms and old business class carpeting have been recycled into fibers used to manufacture carpets for the new World Business Class. All used carpets are recycled in collaboration with a carpet manufacturer Desso, as part of the Take Back™ program.