



Airline commitment to Net Zero 2050

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Our commitment:

TO ACHIEVE NET ZERO CARBON EMISSIONS BY 2050

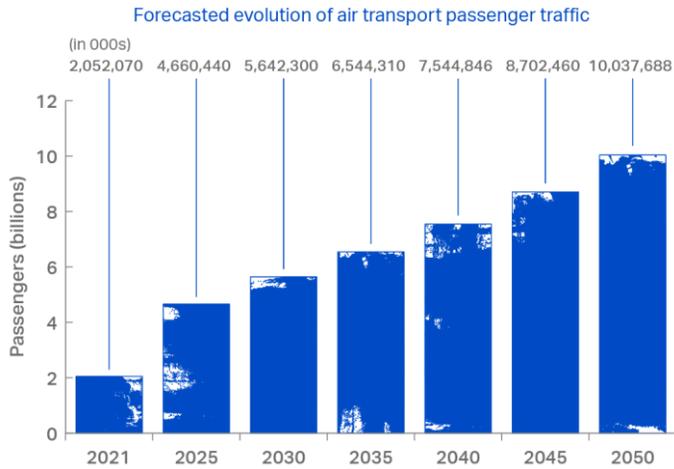
- Target aligned with Paris Agreement goal to keep global warming under 1.5 °C
- Aimed at keeping the benefit of global connectivity for future generations



The airline members of IATA have approved a resolution to achieve net-zero carbon emissions by 2050. This is in support of the Paris Agreement to limit global warming to 1.5 degrees.

This is a momentous decision, taken to ensure that future generations will continue to enjoy the benefits of global connectivity.

Our challenge



If Business-as-Usual in 2050

- over 10 billion passengers
- 1.8 Gigatons CO₂ to abate

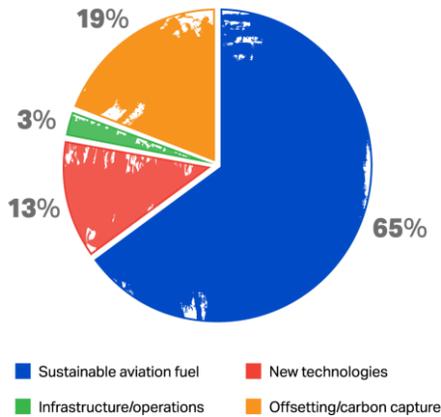


Decarbonizing aviation is a huge challenge. 10 billion passenger journeys will take place in 2050.

That means the industry will need to abate 1.8 gigatons of carbon that year.

The plan

Contribution to achieving Net Zero Carbon in 2050



Net Zero 2050 is achievable through:

Combination of measures

- Sustainable Aviation Fuel, new technologies, operational and infrastructure improvements, and offsetting/carbon capture

Collective effort

- of the entire industry together with governments, oil producers and investors



We are determined our commitment to net zero is accompanied by a robust plan.

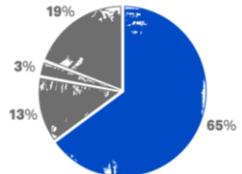
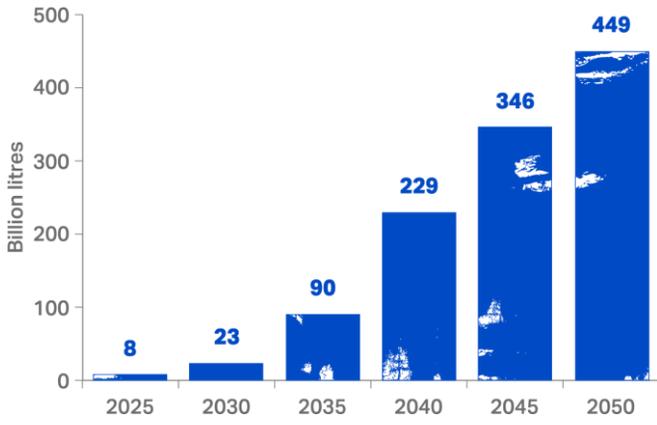
Achieving net zero will likely involve a combination of measures: Sustainable Aviation Fuel (SAF), new technology (especially related to new aircraft and propulsion systems), operational and infrastructure improvements, and offsetting and carbon capture.

The pie chart on the slide shows a potential scenario of how these measures could contribute to net zero in 2050: 65% SAF, 13% new technologies, 3% operations and infrastructure, and 19% carbon capture (which could also be used to create more SAF) and offsetting.

Delivering on all that will require a huge collective effort from the entire aviation industry and value chain, including the major oil producers and investors. Meaningful, practical government assistance will also be essential.

The plan: sustainable aviation fuel

Expected SAF required for Net Zero 2050



Big reliance on ramping up SAF production

- Production needs to go from 100 million liters today to at least 449 billion liters in 2050.
- SAF will contribute around 65% of the emissions reductions needed in 2050.



Let's do a deeper dive into the key measures to achieve net-zero, starting with SAF.

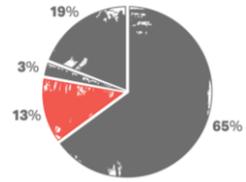
The chart makes it clear that there is a tremendous challenge to ramp up SAF production from around 100 million liters today to around 449 billion liters in 2050. However, it is important to note that this kind of increase is not unprecedented in other sectors, for example the increase in wind power generation over recent years.

It is also important to note that the industry remains committed to only using sources for SAF that do not diminish biodiversity or compete with food and water.

The plan: new technology

New aircraft technology

- Electric, Hybrid and Hydrogen propulsion will play a role in the path to net zero.
- New types of plane could come into service in 2030's and 2040s.
- New aircraft technologies will contribute around 13% of the emissions reductions needed in 2050.



	By 2025	By 2030	By 2035
Engine	Electric	Electric or Hydrogen	Hydrogen
Seats	9 to 19	50 to 100	100 to 150
Flight time	< 60'	up to 90'	Up to 120'



Turning to new aircraft technology, we have been cautious and suggested that this could contribute around 13% of the emissions reductions we will need in 2050.

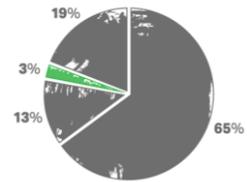
The key technologies will be electric, electric-hybrid and hydrogen aircraft. These will start to be available for regional and short-haul services in the 2030s and 2040s. Long-term these are exciting technologies but it's important to stress that the industry is not reliant on these to meet net-zero.

The plan: operations/infrastructure

Operations and infrastructure improvements can be implemented to deliver immediate emissions reductions

Examples:

- Retro-fitting winglets
- Light-weight seating
- Fuel efficiency management systems
- Reduced engine taxiing
- Air traffic management programs such as Single European Sky and NextGen can deliver significant savings



Operations and infrastructure can contribute **around 3%** of the emissions reductions needed in 2050.



Operations and infrastructure contributes a small amount in 2050 but it should be noted that this 3% contribution is over and above improvements which the industry will continually make over this period, which are typically 1.5-2% per year.

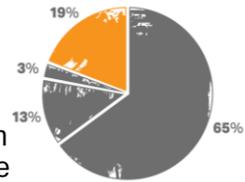
Examples of operational improvements typically include retrofitting aircraft for better aerodynamics (such as winglets) continually reducing weight, and maximizing operational efficiencies of engines.

Air traffic management will be a crucial area of additional efficiency improvements. The delivery of programs such as Single European Sky can significantly reduce wasted emissions.

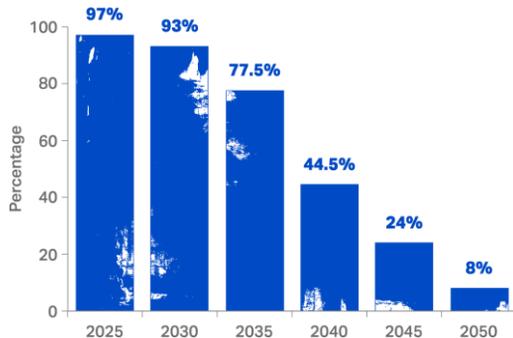
The plan: offsetting/carbon capture

Offsetting will play a diminishing role in the industry strategy as other technologies develop

CCUS* removes carbon from the atmosphere and could be used for SAF production



Estimated percentage reliance on offsets for industry CO₂ reduction



Offsetting and Carbon Capture can contribute **up to 19%** of the emissions reductions needed in 2050.

*Carbon Capture, Utilization and Storage



Our net-zero commitment is based on removing as much as possible in-sector or at source. However, we may have a situation in 2050 where some emissions may still need to be offset or removed from the atmosphere by other means.

The chart shows how rapidly the industry's use of offsetting will diminish over the next 30 years. The initial reliance fades as SAF comes on stream in large quantities.

The types of offsets seen today – which are independently verified to genuinely reduce emissions – will change over the coming years. The emergence of Carbon Capture and Storage is foreseen to be a vital weapon in the fight to meet the Paris goal. If the process also involves utilizing the carbon to generate SAF, it could even be a carbon-negative option. CCUS is a long way from being fully-scaled up but it is nevertheless an exciting technology.

What we need to achieve net zero by 2050

Manufacturers	Accelerate research on airframe designs, electric/hydrogen propulsion
Air Navigation Service Providers	Catch up: implement Aviation System Block; upgrade programs (e.g., SES); collaborate on efficiencies, and prepare for electric and hydrogen aircraft
Governments	Policy support for SAF, and implement ICAO standards
Oil industry	Cost-competitive production of SAF
Corporates	Boost SAF purchase agreements
Researchers	Fast-track R&D on electric/hydrogen aircraft and CCUS
Investors & the carbon markets	New financial products to de-risk investment, and work with the aviation sector
Passengers	Be aware and support aviation's decarbonization efforts



Our plan to reach net zero cannot be achieved by airlines alone. We can set the direction and make the commitments, but we need all partners in the industry, and governments, to play their part.

We've seen the exciting potential of radical new technologies. Manufacturers are researching electric and hybrid options. This work need to be accelerated.

Air Navigation Service Providers need to implement route efficiencies as soon as possible. There are "wins" we can put in place now which can help to cut emissions while we await the increased SAF production.

In terms of SAF, the big oil producers need to come to the party in a big way. We have seen some recent announcements from big players like Shell and BP, this is welcome, but they must deliver.

Governments can play a huge role, whether it is providing the right policies to promote SAF production, encouraging R&D in radical technologies, or pushing ANSPs to make the necessary route reforms. We also need governments to work on holistic policies to ensure that the industry can utilize new energy sources. For example, a hydrogen-powered plane is not much use unless there is the infrastructure to generate and transport green hydrogen.

Finally, we invite passengers to be aware of the industry's plans, and to support them. As consumers and citizens, flyers have the power to influence governments to take the right

policy decisions to ensure that the freedom to fly is extended to future generations. By ensuring the sustainability of air transport, the world can continue to benefit from the amazing power of connectivity.



Q & A

