Sustainable Aviation is possible

Letter from the Director of Air France-KLM

François Robardet
Representative of employees and former employees who are PS and PNC shareholders

N°835, Novembre 22, 2021

Si vous ne voyez pas correctement cette page suivez ce lien

If you want to read the English version it is here,

Editorial

Dear readers,

This week, I am offering you an exceptional letter.

It summarizes the work of a working group in which I participate.

On the theme of Sustainable Aviation, twelve infographics have been published on different media (LinkedIn, Twitter) by the members of the working group, as well as in my letters n°808 to 817.

You will find here the first six, translated into English. The full set of twelve infographics is here, in French

==> Remember to authorize the images. <==

In summary:
> 2.2% of flights generate 80% effects induced by contrails
> Sustainable alternative fuels reduce CO2 emissions by 80%
> Optimizing trajectories will reduce CO2 emissions from air travel in Europe by 10%
> Green piloting
> Electrical taxi systems could reduce CO2 emission between 3 to 5% of short/medium-haul flights
> The reduction of the weight of the planes allows to reduce their consumption

From next week, you will find my letter in the usual format.

Enjoy your reading
François

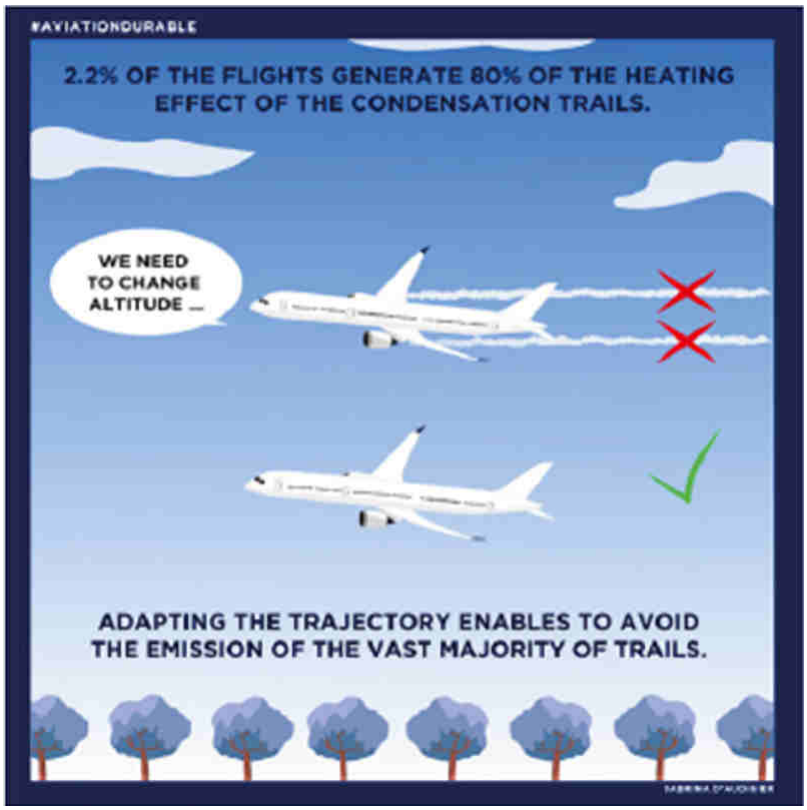
Infographies sur l'Aviation Durable

> 2.2% of flights generate 80% effects induced by contrails

(source #aviationdurable) 4 mai - A better coordination between air traffic management, meteorological services and real time data from aircrafts could drastically decrease condensation trails (‘contrails’) and thus almost cancel their heating effect.

In fact, 2 types of aviation emission can be distinguished, CO2 emission (proportional to burnt kerosene) and non-CO2 (for which a great deal of incertitude remains regarding volumes and impacts). Among non-CO2 emission, **contrails are water vapors that crystalize and create induced clouds. These clouds could represent up to half of total aviation impact**.

In 2020, a British study evaluated that only 2.2% of flights generate 80% effects induced by contrails. Therefore, a shift in trajectory of this small number of flights would allow a massive reduction in aviation non-CO2 impact.



My comment: *I was surprised to discover the importance of the radiative effect of condensation trails.*

With the help of big data, it is possible to modify the trajectories of aircrafts at a lower cost to reduce considerably the emission of these trails.

> Sustainable alternative fuels reduce CO2 emissions by 80%

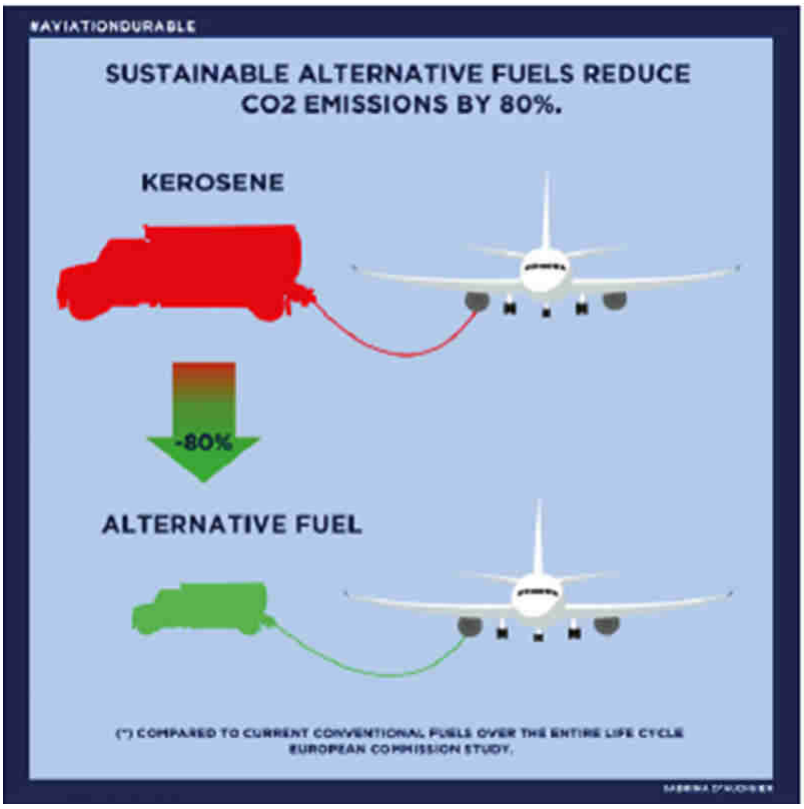
(source #aviationdurable) 11 mai - More than 330k commercial flights have been completed since 2011, fueled by a mix between traditional kerosene and Sustainable Aviation Fuel (SAF).

SAF reduce CO2 emission by up to 80% in comparison with traditional kerosene!

Morover, SAF come from waste and do not compete with food agriculture nor imply an over consumption in land and water.

The 28th of October, Airbus, Safran and the French Ministry of Transports have completed the first single-aisle aircraft flight running with 100% sustainable aviation fuel (SAF). The unblended SAF was provided by Total Energies. **It is made from Hydroprocessed Esters**

and Fatty Acids (HEFA), which primarily consists of used cooking oil, as well as other waste fats.



My comment: *Initially, sustainable alternative fuels will be made from residues or waste.*

The most efficient long-term solution seems to be the production of synthetic fuel from CO2 in the atmosphere. This technique is currently being tested in plants in Switzerland and Norway.

> Optimizing trajectories will reduce CO2 emissions from air travel in Europe by 10%

(source #aviationdurable) 18 mai - The Single European Sky project would allow a 10% reduction in CO2 aviation emission by improving air traffic management, reducing the fragmentation of European airspaces and overall optimizing trajectories.

Eurocontrol Think Paper #10 (April 2021) evaluates this potential between 8.6% and 11.2%, confirming European Parliament projections.

My comment: *The "Single European Sky" project was initiated in 2004.*

It is based in particular on the SESAR program, which aims to modernize traffic management systems and operational procedures.

The research and development phase of SESAR is scheduled to end in 2024.

A similar project, NextGen, is being conducted in the United States. It could be deployed around 2025.

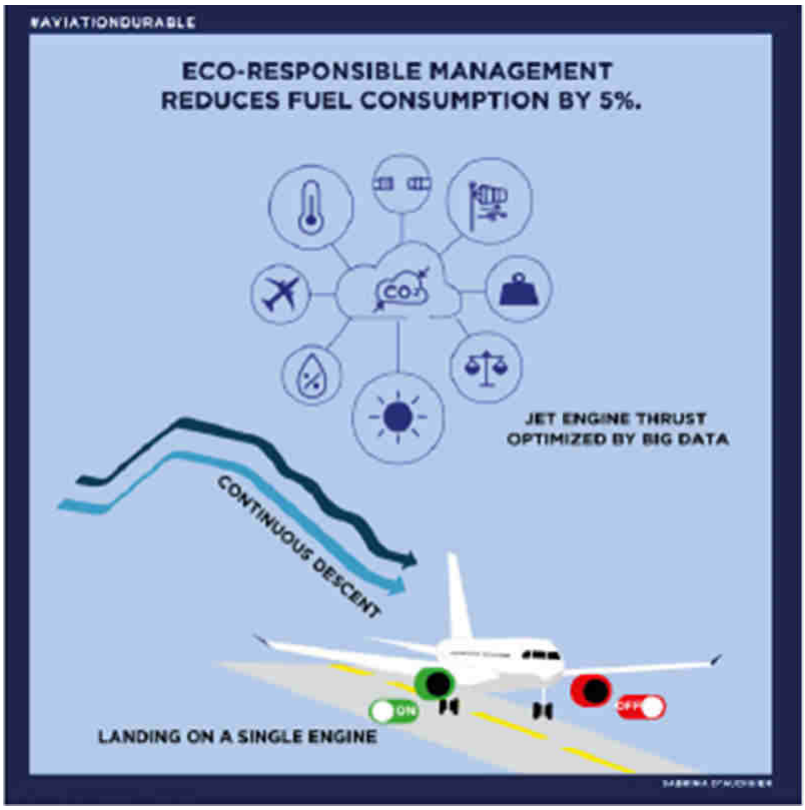
These projects aim to manage continental traffic more efficiently. The current systems are close to saturation. They also have difficulty managing weather events.

> Green piloting

(source #aviationdurable) 25 mai - **By leveraging the available data and optimizing on-ground and in-flight procedures, fuel consumption can be reduced by up to 5%.**

“Green piloting” is a thing! For example, a Boeing 777 landing in Paris Charles De Gaulle (CDG) can reduce CO2 emission by 700kg if one

engine is shut down during taxi to the gate.



> Electrical taxi systems could reduce CO2 emission between 3 to 5% of short/medium-haul flights

((source #aviationdurable) 1er juin - Did you know ? **Electrical taxi systems could reduce CO2 emission between 3 to 5% of short/medium-haul flights.**

In order to move on the ground (phase called taxi), aircrafts use their engines that are not designed for this use.

According to ICAO 9988 Document, **electrical taxi solutions could reduce CO2 emission up to 33kg per minute**.

Therefore, the longer and repetitive are the taxi phases, the more we reduce C02 emission, particularly true for short/medium-haul flights.

My comment: *The installation of an engine in the front wheel of aircraft is interesting for medium-haul aircraft, but it is not envisaged for long-haul aircraft.*

Considering the duration of the flight, the reduction in fuel consumption on the ground for a long-haul aircraft would be less than the additional consumption due to the weight of the equipment

> The reduction of the weight of the planes allows to reduce their consumption

((source aviationdurable) 8 juin - **Aircraft fuel consumption is directly proportional to their weight**. Therefore, airlines and manufacturers always look for ways to lighten aircrafts.

Manufacturers use design levers: composite material has allowed a 20 to 25% reduction in weight compared with previous generation of aircraft.

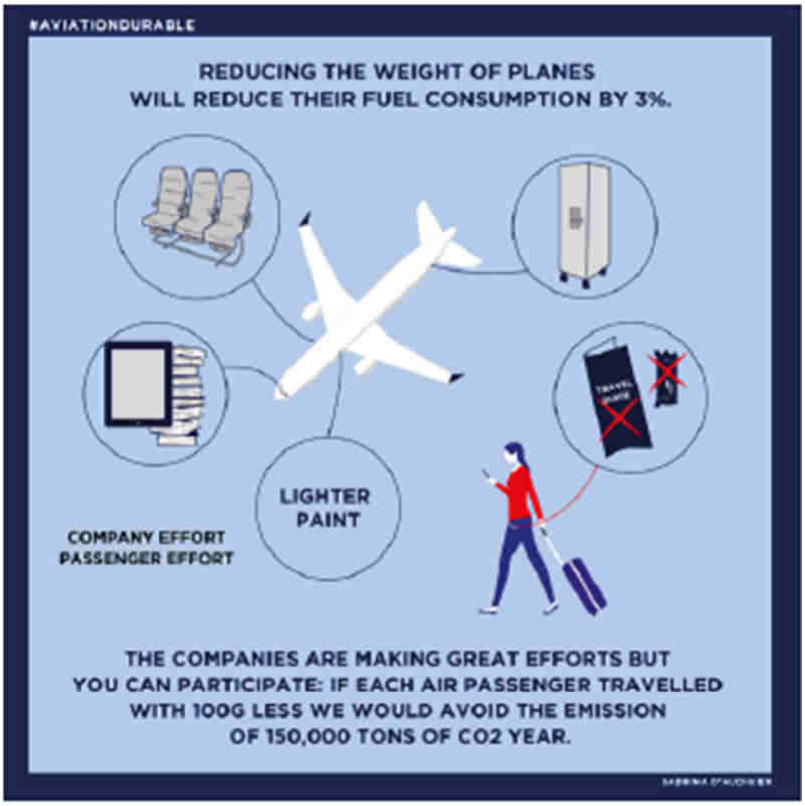
Many others levers have been explored and not yet significantly deployed:

- The French company Expliseat has developed a seat 3-times lighter than existing ones, representing more than 1 ton reduction for a A320/B737 aircraft type, reducing by 4% fuel consumption and CO2

emission

- Electronic Flight Bags (EFB), which has digitized the traditional paper documentation for pilots, have permitted a ~15kg reduction in weight for every flight

- Also, United Airlines has reduced the offering of paper magazines in their aircrafts by 28kg, saving 643 000 liters of fuel in a year representing 1600 tons of CO2 emission.



My comment: *Reducing the weight of an aircraft is the second most important concern of aircraft and engine manufacturers, after flight safety*

End of the Sustainable Aviation Infographics

A bientôt.

Pour retrouver les dernières revues de presse du lundi, c'est ici

Si vous appréciez cette revue de presse, faites la circuler.

Les nouveaux lecteurs pourront la recevoir en me communiquant

l'adresse email de leur choix.

François Robardet

Administrateur Air France-KLM représentant les salariés et anciens salariés actionnaires PNC et PS.
Vous pouvez me retrouver sur mon compte twitter @FrRobardet

Lors de mon élection, j'ai reçu le soutien de la CFDT et de l'UNPNC

Cette revue de presse traite de sujets liés à l'actionnariat d'Air France-KLM.

Si vous ne voulez plus recevoir cette lettre/revue de presse, [désabonnez-vous]

Si vous préférez recevoir la revue de presse sur une autre adresse, merci de me l'indiquer.

Pour me joindre : message pour François Robardet. 10966 personnes reçoivent cette revue de presse en direct