Why KLM's 'solutions' do not work

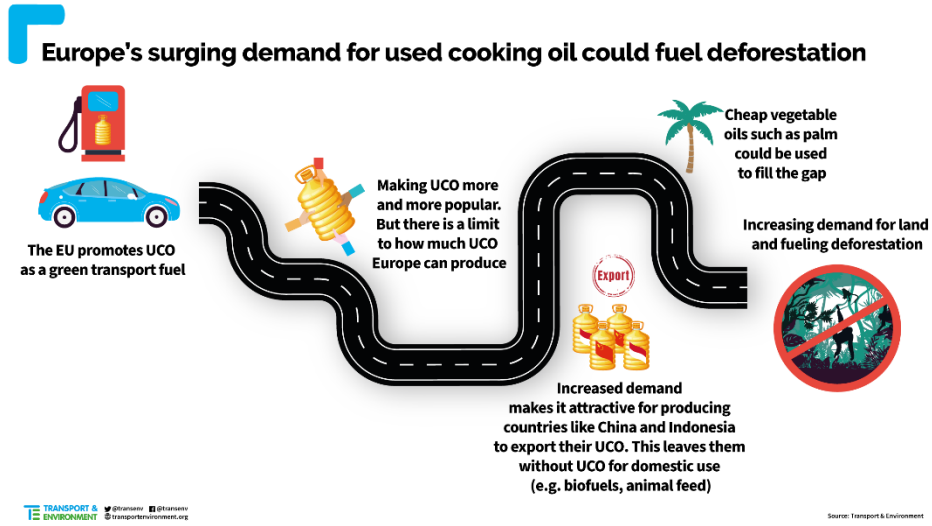
Why are biofuels and synthetic fuels not a solution?

A major problem with alternative fuels - what KLM calls "sustainable aviation fuels" - is that they are not sufficiently scalable. Currently, KLM uses less than 0.5 percent alternative fuels and says it wants to scale this up to 10 percent by 2030. Over the last years, the industry has repeatedly missed alternative fuel targets by a wide margin.

All alternatives to fossil kerosene - such as food crops, biomass or used cooking oil - come with their own problems. For example, **biofuels made from food crops endanger food production.**

Also**, biofuels can lead to deforestation** because space must be made to produce the crops. Again, this has major climate implications.

Used cooking oil is simply too scarce. In addition, **used oil carries the risk of displacement**. If we start buying more used oil from countries like China and Indonesia, these countries will have too little used oil left for their own use in animal feed, for example. They will then use more palm oil for this purpose, which in turn contributes to deforestation.



To make synthetic fuel, a huge amount of renewable energy is needed, such as solar and wind energy, of which we already have a great shortage. Moreover, it is hugely inefficient. If we start using the available renewable energy to fly with synthetic fuels, there will be less energy available for efficient uses, such as electric vehicles, industry or heating our homes.

And even if there were enough alternative fuels, they would still not be able to eliminate all the emissions. During the production of the alternative fuels, CO_2 is absorbed from the air, but **burning biofuel or synthetic fuel still releases**

greenhouse gases. As a result, while these fuels have net lower emissions, they are still not carbon neutral.

In short, alternative jet fuels are not a panacea for aviation. Such fuels exhaust our scarce global resources of biofuel and renewable energy, and can only reduce emissions, not eliminate them. If we scale this up, it could actually make the climate crisis worse. The only option is to start flying less now.

Why isn't hydrogen a solution?

Flying on hydrogen now exists only on paper, and is therefore a non-existent technology. It would therefore require a different aircraft design, new supply chains for airports and overcoming safety challenges - while KLM has now purchased all of its aircraft that cannot fly on hydrogen.

Airbus is working on a design for a hydrogen-powered aircraft, but says it would only be possible to use it from 2035 onwards, and only for distances for which you might as well use the train. In addition, the costs would be extremely high. Moreover, climate damage from flying is not only caused by CO2 emissions, but also by other effects: it is not yet clear what these (non-CO2) consequences of flying on hydrogen are. Finally, **it is important to realise that there is totally insufficient renewable energy to make green hydrogen for flying.**

In short, **hydrogen is not going to help reduce our emissions in these crucial years.**

Why is electric flight not a solution?

The big problem with electric flying is the battery. **To be able to lift a lot of weight and fly longer distances, the battery becomes so heavy that the plane can no longer get into the air.**

As aviation expert Joris Melkert explains, "It's a snowball effect: the heavier the aircraft, the larger the wings need to be to generate enough lift. But bigger wings give more drag. And you can only solve that with a better and heavier engine with extra batteries. Then you're back to square one."

Therefore, **electric flying is only possible for super short distances with few people on board**, for which we already have other transportation methods like the train. So electric flying will not be a solution for making regular aviation more sustainable.

Why isn't Flying V a solution?

Flying V is a new type of aircraft shape that KLM is developing together with TU Delft. It now exists as a 3 metre test model. **Although Flying V would consume less fuel that the existing aircraft model, it would be years before it could come into serious use.**

For a new type to come into use, airports worldwide would have to adapt to it, and aircraft manufacturers would have to actually start making the planes - Airbus and Boeing do not plan to do so for the time being, and their planning cycles are lengthy.

Moreover, KLM recently purchased one hundred new aircraft, which again have a depreciation period of over twenty years. Flying V will therefore not contribute to making aviation more sustainable in the coming, crucial years, when emissions must be reduced quickly.