Decarbonising aviation promises sky-high rewards

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In November, a Virgin Atlantic Boeing 787 took off from London's Heathrow Airport, flew across the Atlantic, and landed in New York. But there was something about this seemingly mundane journey that made it monumental. It was the fact that the plane flew entirely on a blend of waste cooking oil, animal fats, and other unorthodox fuels. It was the first time a commercial airline operated a long-haul flight entirely on sustainable aviation fuels (SAF).

According to the FT, Virgin Atlantic's co-founder Sir Richard Branson was on board and said during the flight, "I was just thinking of my histories of firsts across the Atlantic and all my previous ones I've ended up being pulled out of the sea, whether it is ballooning or boating. So I am very glad this will be my first time … that will land at an airport."

The fact that it did may have been a welcome change in the billionaire entrepreneur's adventures, but scientifically, there was nothing perilous about the journey itself. Sustainable aviation fuels can be used by any existing aircraft. While the journey would take the plane from the same origin to the same destination, it would do so at around 80% less cost to the environment given lower net emissions from sustainable aviation fuels.

What is sustainable aviation fuel?

Sustainable aviation fuel is made from biomass or waste-based organic feedstock. It can be blended with aviation fuels or used on its own in existing aircraft, thereby immediately creating an impact on decarbonising aviation.

But sustainable fuel has its challenges. Firstly, it has lower energy density. According to the World Economic Forum, one litre of jet fuel contains more energy than one litre of SAF. This means that more SAF fuel volume is required to complete the same journey compared to regular jet fuel. Secondly, it is four times more expensive than regular jet fuel. And thirdly, it currently only accounts for around 0.1% of all aviation fuels.

The opportunity

According to Our World in Data, aviation emissions have quadrupled since 1966 and account for around 2.5% of global CO_2 emissions1. Any solution that can immediately help decarbonise this sector warrants consideration.

We know that lithium-ion batteries aren't viable for long-haul commercial flights at this time. Hydrogen powered planes could be a viable option, but they may not come into operation before 2030. Given SAF's potential to make an immediate impact, it is garnering a lot of interest from governments around the world. The UK Department of Transport said that it wants to boost production and use of SAF by introducing a rule that at least 10% of aircraft fuel is made using sustainable materials by 2030[2]. Such regulatory support will inevitably pave the way for this industry to grow which will bring costs down and make SAF more ubiquitous and indeed more competitive.

The circular economy

Our traditional model of utilising natural resources has historically been linear, that is: take, make and dispose. A circular model, by contrast, is one in which we take, make and recycle. Renewable fuels are a perfect example of a circular approach, one which preserves both our natural resources and protects the environment.

At WisdomTree, we advocate the adoption of circular economy principles across all walks of life. Or at least where reasonably possible. The WisdomTree Recycling Decarbonisation UCITS ETF (WRCY), built in partnership with experts TortoiseEcofin, is founded on two key pillars. The first is waste to energy; this is the process of generating energy from waste such as garbage, animal manure, agriculture products and/or animal fats. This theme includes companies engaged in the production of renewable fuels, such as sustainable jet fuel, as well as ethanol and other biomass like wood pellets. The second pillar is recycling; these companies are engaged in recycling business activities including traditional processes such as plastic recycling, recycling plastics into original materials such as polypropylene for re-use and lithium-ion battery recycling, as well as companies engaged in carbon capture and sequestration.

1 Based on Our World in Data's 2020 estimates.

2 UK Department of Transport March 2023.

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