PORTLAND MARKET REPORT

AUGUST IN VIEW

THE RACE FOR SUCCESSFUL PRODUCTION OF SUSTAINABLE AVIATION FUEL AT SCALE

Thousands of holidaymakers have now returned from holiday destinations around the world, making 2023 the busiest summer for air traffic since (pre-pandemic) 2019. Evidently, of all the things the general population seems willing to sacrifice on the decarbonisation journey, flying is not one of them! With this in mind, it is little wonder that, when it comes to alternative fuels, there is currently no hotter ticket than Sustainable Aviation Fuel (SAF). Every organisation, from the International Air Transportation Association (the body that represents major global airlines) to the European Union, has mandated the use of green aviation fuel from 2030 onwards with the intention of being carbon neutral by 2050.

This is a huge ask because, bluntly speaking, planes run best on liquified fossil fuels! Battery power for aviation? No chance! No set of batteries can lift a 747 carrying 500 passengers off the ground at 200mph and then keep it in the air for 12 hours. What about liquid hydrogen? Forget it! The density of the fuel is so great that planes would either be too heavy to take off or the fuel tanks would take up 90% of the available capacity. The challenge, then, is how to successfully and sustainably decarbonise jet fuel, so that you end up with the same fuel, but one that is not derived from crude oil. To do this, three possible routes present themselves. First up and, in fact, already over the line in small quantities, is SAF made from the Hydroprocessing of Esters and Fatty Acids (HEFA) – the same manufacturing process that is used to make green diesel (ie, Hydrotreated Vegetable Oil = HVO). The second technology available is Alcohol to Jet (ATJ), whereby alcohol emanating from (non-fossil) sources (e.g., waste corn kernels) are processed into a high octane jet fuel. The final method of making renewable jet fuel is Fischer-Tropsch technology, which synthesises waste gases (municipal and agricultural) into liquids such as methanol, before converting them into jet fuel.

Of the three production routes, HEFA is easily the furthest developed, and process plants are now producing over 300 million litres of SAF globally per annum. Currently, almost all of the volume produced in this way involves the co-processing of Fats, Oils and Greases (FOGs) with crude, in oil refineries. This, however, is set to change between now and 2030, with 10 European renewable plants (including 2 in Britain) scheduled to come on-stream and produce 8 billion litres of SAF annually. On the other side of the Atlantic, ATJ has won the "sprint" to SAF production with a company called Lanzajet (backed by both Microsoft and Shell) launching its first operational plant this year in the state of Georgia. Production will be modest though (50 million litres per annum) and HEFA processing still looks like winning the US production "marathon", with over 20 SAF plants planned in the next 10 years (combined capacity = 36 billion litres). Fischer-Tropsch, on the other hand, has yet to make much headway, largely because of higher capital costs and lower production outputs.

> "THERE IS NO HOTTER TICKET THAN SAF."

With CO2 reductions of between 50-90%, airlines are desperate to get hold of SAF and thus prove their green credentials. British Airways, KLM and United Airlines are just a few of the mainstream flag-carriers that have signed long-term SAF supply deals. This looks good on paper, but there remain a number of predictable problems within the nascent SAF industry, starting with feedstock scarcity. The HEFA process is likely to dominate global SAF production until 2030, but this most promising of technology relies on waste FOGs, which are both limited in supply and already trading in the highly competitive road transport fuels market (as a source of HVO and biodiesel). Yes, there are alternatives to FOGs (palm oils, soya etc), but these open up inevitable debates around fuel for food and deforestation. Then, there is the horrific price of SAF, with the product trading today at over $3,000 per tonne, versus $990 per tonne for bog-standard Jet A1 kerosene. Finally, there is the very obvious problem of the "scalability" which will be required to meet global jet fuel consumption. To meet net zero requirements by 2050, over 500bn litres of SAF will need to be produced for the 40m commercial flights that currently take place each year. In 2022, 300m litres of SAF were produced...

Clearly then huge challenges lie ahead, and we are, once again, reminded that decarbonisation is neither simple nor quick. However, there has been a significant acceleration of activity over the last 12 months and in the States, the Inflation Reduction Act (IRA) has acted as a lightning-rod through the industry. Effectively, the 20 or so planned production plants mentioned above are now in a race to get production over the line to maximise government subsidy. At the same time, there is increasing consensus (World Economic Forum, US Dept of Energy, European Union) that there will be sufficient feedstocks for the production of SAF, without requiring seismic changes to land-use nor an upending of the agricultural supply-chain. As for prices, the logic will always be that increased supply brings prices down.

That won't happen overnight, so we can't kid ourselves that the greening of aviation will be cheap or that the solutions are straight-forward. And, with fuel overheads making up more than 30% of the overall cost of running an airline, it is inconceivable that passengers will not pay more for their flights once SAF begins to take over as the fuel of choice. Then again, such is the broad global appetite for flying, Portland would bet that the airlines will have few problems selling their seats at higher prices.

For more pricing information, see page 34

Portland
www.stabilityfromvolatility.co.uk