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SOME AVIATION BIOFUELS COULD BE COMPETITIVE BY 2020

But take-up of biofuels by airlines is likely to be modest in the near term unless governments introduce mandates requiring their use

London and New York, 13 February 2012 – World airlines could start sourcing a proportion of their fuel from vegetable-oil-based alternatives within the next few years. Research from analysis company Bloomberg New Energy Finance, published to its clients this month, forecasts that the cost of some biofuels – such as those based on non-food vegetable oils – could be close to that of conventional jet fuel by 2018, if production efficiency continues to improve.

While fuels based on non-food vegetable oils are looking promising, the best-known and longest established type of biofuel – based on edible vegetable oils such as soybean, rapeseed and palm – may never become fully competitive.

The third type of bio-based jet fuel covered in the study is those based on any type of woody feedstock, using a technology that has already been certified for aviation use. But Bloomberg New Energy Finance's study finds that these – produced via the gasification of wood and the Fischer Tropsch process – are unlikely to be economical for airlines until well into the 2020s. Another wood-conversion process, pyrolysis, that might be certified by 2014, may be more promising for producing cost-competitive biojet fuel before the end of this decade.

The analysis concludes that airlines may end up using only a modest proportion of biofuels (2% or less) in their fuel mix in the next few years. What they do use will most likely be conventional biofuel based on edible vegetable oil – it will not be competitive as a fuel, but some carriers may judge that it is worth spending some extra money in order to improve their environmental credentials and to gain experience of biofuels technologies.

By 2018 or so, biofuels made from the hydro-treatment of non-food vegetable oils like jatropha or camelina, or from pyrolysis of cellulosic feedstocks, should be the first types to become properly competitive with the cost of fossil-based jet fuel (assuming that these include the cost of carbon) – after they move to large-scale production.

Harry Boyle, lead bioenergy analyst at Bloomberg New Energy Finance, said: “The problem is that for the foreseeable future, even when the economics make sense, there will simply be limited availability of certified and relatively low-cost biofuel. Airlines will have to compete with the road transport industry for the output of the biofuels industry.

“If governments want airlines to burn a significant proportion of non-fossil fuel before 2020, they will have either to subsidise advanced-but-not-yet-economic biofuels or, more likely, introduce mandates

requiring carriers to use a certain percentage of sustainable biofuels in their mix, and put up with complaints that this is driving up ticket prices.”

Airlines have recently shown strong interest in the idea of using biofuels as a way of reducing their carbon emissions and improving their environmental credentials. The International Air Transport Association has said that it wants some 6% of jet fuel, or 8bn litres, to be met by biofuels by 2020.

The European Union has extended its Emission Trading Scheme to the airline industry this year, forcing carriers using EU airspace to buy allowances to offset their CO₂ emissions. However the report shows that the cost of this will be relatively minor compared to the additional price airlines would have to pay to burn biofuels rather than conventional jet fuel in the next few years.

Bloomberg New Energy Finance’s report says that producers based on edible feedstocks have the potential to produce aviation fuel at \$1.20/litre if they move to large-scale production, on the basis of current vegetable oil prices. This is well above current jet fuel prices, which are around \$0.85 in early 2012.

A better result should be possible using jatropha. If production scales up, it could produce jet fuel at \$0.86-a-litre by 2018. Pyrolysing wood may be able to produce jet fuel at \$0.90/litre by 2018.

However, even with rapid efficiency improvements in the next few years, next-generation biofuels, using the Fischer Tropsch process to convert woody biomass, will still be producing fuel no cheaper than \$2.60-a-litre in 2018. Aviation biofuel from algae is the pathway furthest from cost parity with fossil jet fuel, as we predict that large-scale, biofuel-producing algae farms will not appear this decade.

Boyle commented: “The US government has mandated that 18bn gallons (68bn litres) of road transport fuel will have to come from next-generation, or cellulosic, biofuel by 2022. Western governments could do the same for next-generation aviation biofuels, starting any time from 2018, as a way of stimulating a potentially significant industry and reducing air transport emissions.”

Michael Liebreich, chief executive of Bloomberg New Energy Finance said: “The move by the European Union to bring all airlines into the EU-ETS carbon trading scheme has focused the minds of airlines around the world on reducing their carbon emissions. While European carbon credits at the moment are so cheap they have negligible effects on ticket prices, biofuels will be competitive within a decade. However, available volume is going to be limited and airlines will be in competition for it, so those airlines which move now are likely to have an advantage later.”

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