

The potential of synthetic kerosene as an alternative fuel for aviation (in Dutch)

Gerard, B., Herbschleb, B., Kistemaker, R., & Snijder, R. (2019). De potentie van synthetische kerosine als alternatieve brandstof voor de luchtvaart - Milieu-, klimaat-, financiële, infrastructurele en technologische gevolgen van het gebruik van verschillende typen synthetische kerosine als vliegtuigbrandstof Onderzoek uitgevoerd in opdracht van Beraad Vlieghinder Moet Minder (BVM2), Eindhoven, NL. The potential of synthetic kerosene as an alternative fuel for aviation - Environmental, climate, financial, infrastructural and technological impacts of the use of different types of synthetic kerosene as jet fuel. (in Dutch). Unpublished Bachelor's Thesis, Open Universiteit, Heerlen, NL.

Abstract

Aviation is growing rapidly. Aircraft are deteriorating air quality around airports. Through their emissions, also at cruising altitude, they heat up the atmosphere. The growth in greenhouse gas emissions conflicts with the Paris climate ambition. This literature study shows that synthetic aviation fuels (Gas To Liquid, biokerosene and Power To Liquid) can contribute to less air pollution around airports due to ultra-fine dust, soot and benzene. Biokerosene and PTL kerosene (if produced with sustainable electricity) can also lead to lower greenhouse gas emissions. Currently, all synthetic kerosenes are only very poorly available, mainly because it is significantly more expensive than conventional kerosene. Production is not getting under way and too few economies of scale can be achieved. In addition, PTL kerosene is only at the beginning of its technical development. The amount of biokerosene is also limited by the availability of sufficient biomass and by competitive demand for this biomass from other sectors. EU legislation and self-regulation ensure that no food is used for biokerosene, and aim to avoid indirect damage to food production, biodiversity and vulnerable nature. Large areas are needed for both renewable electricity production and biomass production. This leads to difficult balancing processes with other claims on these surfaces. This study is intended to gather the available knowledge in an overview and to make it publicly accessible. It is advisable to aim for a wider use of synthetic kerosene by influencing policy. The client is the Beraad Vlieghinder Moet Minder (BVM2) near Eindhoven Airport.