

Land Area Required to supply the world with 100% Sustainable Aviation Fuel (SAF) and keep us all connected.

using

■ Solar Methanol

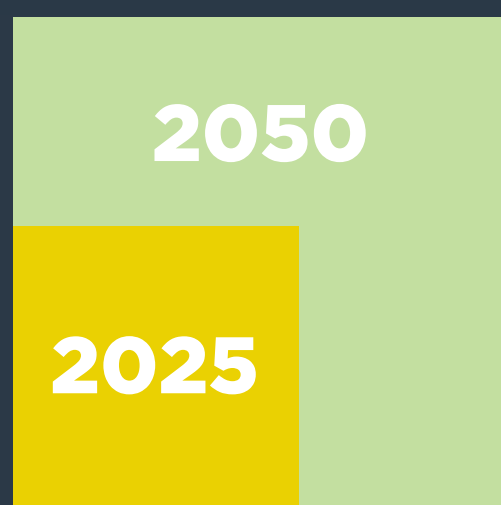
2025 74,200 km²

2050 222,800 km²

Process and Assumptions

Solar PV fields generate 85 kWh/m²/year. It takes 53 kWh to make 1kg of green hydrogen with electrolysis. H₂ and captured CO₂ form methanol, which contains 56,800 BTUs per gallon and is refined into kerosene aviation fuel (128,100 BTUs per gallon). The process provides a use for captured point source CO₂ emissions.

using



Corn Ethanol

2025 1.8 million km²

2050 5.5 million km²

Process and Assumptions

Corn is grown as a monoculture crop not to eat but instead to be mashed, cooked, and fermented to make ethanol, which contains 81,300 BTUs per gallon and is refined into kerosene aviation fuel (128,100 BTUs per gallon). Land use intensity of corn ethanol is 347.1 km²/TWh/year (McDonald et al. 2009).

Process generates additional point source emissions.

Squares represent km² areas and are to scale with the world map. Assumes 100 billion gallons of aviation fuel consumption per year in 2025 and 300 billion in 2050. Does not include private flights.

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