

# POWERING AVIATION'S GREEN FUTURE

E-FUELS – WHY AND HOW NORWAY CAN BUILD AN INDUSTRY DEDICATED TO MAKING AVIATION FOSSIL FREE

## STATE OF THE AVIATION INDUSTRY

If aviation were a country, its emissions would be equivalent to those of all of Germany.

Despite a steep projected growth curve, airlines have limited options to rapidly reduce global emissions. Aviation is often referred to as a hard-to-abate sector. International research shows<sup>1</sup> that to reach net-zero emissions in aviation, we rely on renewable liquid energy carriers such as biofuels and e-Fuels. However, to achieve our climate targets we need to ramp-up production.

## THE MARKET OPPORTUNITY

With ReFuelEU Aviation, the EU has developed a clear and concise framework to promote the use of fossil free fuels in aviation. The set quotas target a mandatory and steadily increasing share of SAF including a minimum share of e-Fuels. Combined with the rising global demand for fossil free fuels, demand will exceed supply rapidly and create a market opportunity.

Norway can become a European leader in the production of e-Fuel by combining its renewable hydropower and highly experienced people in the process industry with imported state-of-the-art technology. Scaling e-Fuel production will create industry jobs in the districts, reduce emissions from aviation and develop a market for utilization of captured carbon.

### By 2030

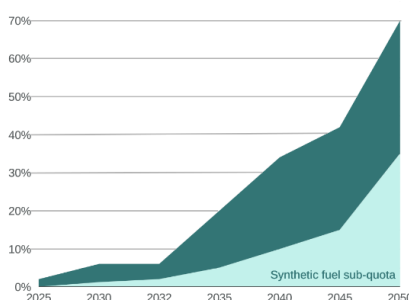
Norway alone needs

**100 million liters of SAF**

including a minimum share of

**20 million liters e-Fuels<sup>3</sup>**

Established EU quotas for SAF blending



## SAF, E-FUEL, BIOFUEL – WHAT IS IT?

SAF is collective term for *Sustainable Aviation Fuels* produced in line with international sustainability criteria.

SAF are fossil free fuels, have a significantly lower carbon footprint and according to technical analysis has the greatest potential to reduce CO<sub>2</sub> emissions from international aviation.<sup>2</sup> It can be produced applying existing technologies and using different feedstocks. SAF includes both biofuels from biomass as well as e-Fuels (or synthetic fuels) from CO<sub>2</sub> and water.

## WHY E-FUELS?

### All renewable

E-Fuels are synthetic fuels produced from CO<sub>2</sub>, water and renewable power through electrochemical reaction.

### Saving water and land

E-Fuels do not compete with food crops, use 95% less water and are 8 times more land efficient than biogenic alternatives.

### 99% less emissions

E-Fuels burn cleaner and emit up to 99% less greenhouse gasses than fossil fuels while having the same energy density and safety properties.

### Ready for use today

E-Fuels are certifiable for up to 50% blending according to ASTM D7566 and can be used in existing aircrafts and infrastructures today.

## 4 STEPS TO INCREASE THE PRODUCTION OF FOSSIL FREE FUELS IN NORWAY

1. Ensure a level playing field for airlines and producers of fossil-free aviation fuels and provide predictability for large scale investments in new plants in Norway by harmonizing the Norwegian regulatory framework with the EU and other international frameworks.
2. Pave the way for a robust fossil-free industry with green jobs, welfare, and new know-how in remote areas by prioritizing natural resources, government funding and support programs for hard-to-abate sectors such as aviation.
3. Establish a tri party collaboration between NHO Luftfart, LO and the Norwegian government to agree on binding targets and policy tools for how Norway can meet domestic emissions targets, build a new green industry and improve the competitiveness of airlines in Norway.
4. Develop a national SAF plan (Government Decision 632, 2023) to attract capital and scale up production to make Norway self-sufficient in 2030 and eliminate current import dependencies.

1) IPCC, 2023; IEA, 2023 | 2) ICAO, 2023 | 3) When EU's SAF quotas are applied