



HTL in the Sustainable Aviation Fuel (SAF) market

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In the last 10 years SkyNRG has pioneered SAF down stream logistics & customer programs

We are now moving into scaling capacity due to global SAF shortage

SAF Supply

SkyNRG has successfully taken a demand aggregation approach, with the main aim to get the initial commercial SAF volumes to the market



SAF sourcing



Blending and quality assurance



Into wing delivery



Co-funding the premium



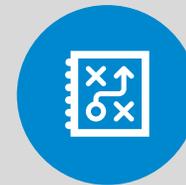
Ensuring the sustainability

SAF Capacity development

SkyNRG will use its knowledge and customer base to get production facilities build.



Development of first SAF production plant: DSL-01



Stay involved in all novel SAF technology developments

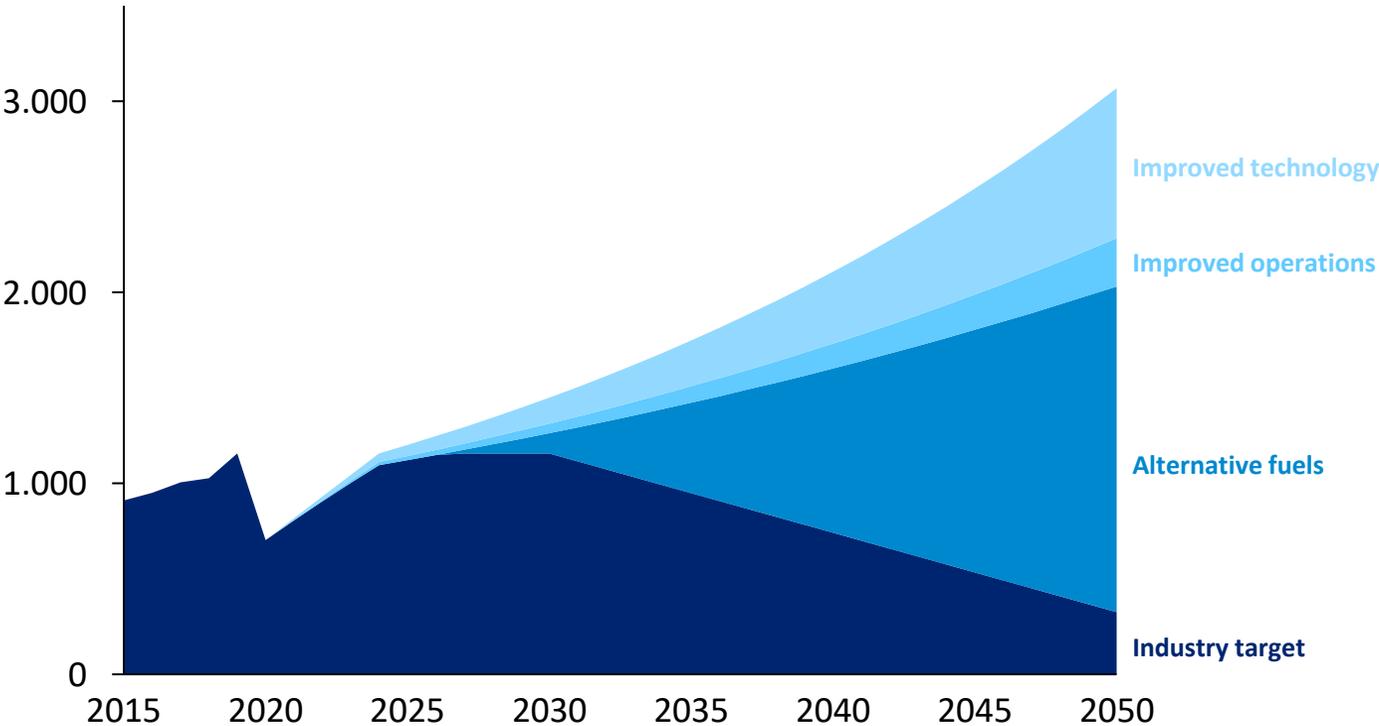


Setting up and executing on new DSL projects around the world

The aviation industry has committed to cut emissions by 50% by 2050; alternative fuels are key to achieve this goal

Aviation emissions to grow 3-fold towards 2050 if left unchecked

Global aviation emissions (Mt CO2)



Fuel switch key to reduce emissions

- ▶ The industry has committed to carbon-neutral growth after 2020 and -50% carbon emissions in 2050
- ▶ Improvements in technology and operations are expected to be insufficient to reach carbon-neutral growth
- ▶ The majority of emission reductions should come from alternative fuels



The global SAF market is taking off, largely driven by policy

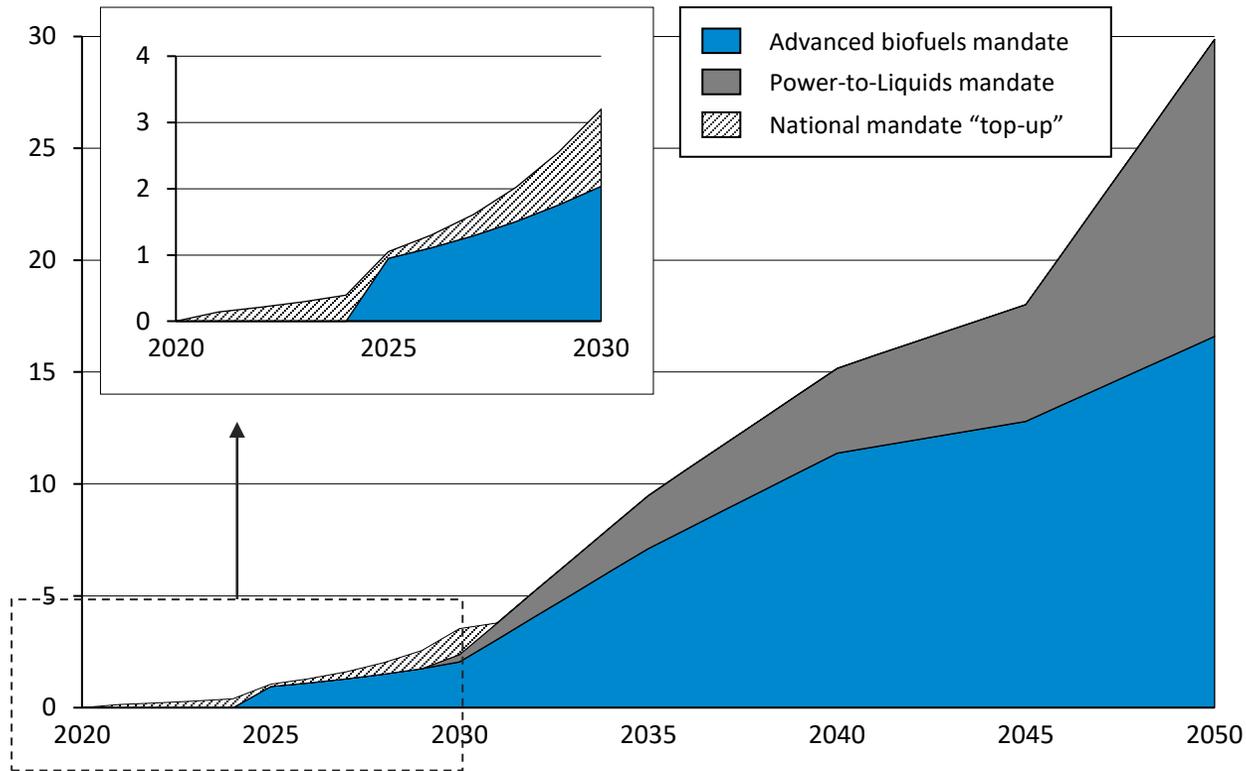
SAF incentives in various jurisdictions – installed or anticipated



- 1 SAF is recognized under the US RFS and California's LCFS, which cover a significant part of the price gap
- 2 Norway and Sweden have enforced ambitious SAF mandates since 2020 and 2021, respectively
- 3 Indonesia has a SAF mandate in place of 3% in 2020, increasing to 5% in 2025
- 4 **The EU RED II provides incentives for SAF under RED II. As a next step, the EU is discussing a SAF mandate of 2% in 2025, growing to 63% in 2050**
- 5 Several members states (e.g., Netherlands, France, Germany, Finland, Spain) are planning to install SAF obligations beyond the EU mandate
- 6 The UK is investigating a SAF mandate starting in 2025
- 7 Canada, Japan, China, Australia and Brazil are exploring options to stimulate SAF

The EU is leading the pack, with an anticipated SAF mandate of ~30 Mt SAF in 2050

EU demand side: SAF mandates in the EU (Mt SAF)¹



¹ Based on: EC, Proposal for a Regulation of the European Parliament and of the Council on ensuring a level playing field for sustainable air transport, 2021 ([link](#)), communication on national mandates.

Important assumptions:

- ▶ Countries implementing/discussing a more ambitious mandate than the EU (e.g. Sweden) stick to those targets, creating a national mandate "top-up"
- ▶ EU jet fuel demand will recover to pre-COVID volumes in 2024, after which it remains constant at 47.4 Mt

EU supply side

- ▶ Internal SkyNRG analysis² shows that supply can largely match demand up till 2030 if announced plants and capacity switches materialize
- ▶ This demand will mainly be met by SAF produced from waste oils/fats, a limited feedstock base
- ▶ Production technologies using different feedstocks will be needed in the second half of the coming decade, and even more so to match the steep demand increase between 2030 and 2040
- ▶ Alongside gasification + Fischer-Tropsch and Alcohol-to-Jet, HTL could be one of the technologies that meets this demand
- ▶ Two major hurdles to overcome:
 - Upgrading of HTL biocrude to SAF has proven difficult in the past, more research is needed
 - ASTM approval of the HTL production pathway is essential and the approval process should be started to catch current momentum

² Available on: <https://skynrg.com/a-market-outlook-on-sustainable-aviation-fuel/>