



SAF Showcase: Role in achieving net zero for aviation and requirements for sustainability

ISCC Event – Opportunities of sustainability certification in Japan
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Our purpose is to create a healthier planet for our children



We are

#1

Producer of Sustainable Aviation
Fuel & Renewable Diesel

In 2021, our customers
reduced

10.9 Mt

greenhouse gas emissions with
our renewable products

Our **innovation & engineering**
teams, makes out

25%

of Neste's total workforce

Solutions to three main markets

Renewable Road Transportation

Over the life-cycle, Neste MY Renewable Diesel reduces greenhouse gas (GHG) emissions by up to 90% compared to fossil diesel.

Renewable Aviation

Over the life-cycle, Neste MY Sustainable Aviation Fuel has up to 80% smaller carbon footprint compared to fossil jet fuel.

Renewable Polymers and Chemicals

Neste RE Renewable and Recycled™ is Neste's solution for the plastics and chemicals sectors to help them reduce crude oil dependency while also tackling climate change and plastic waste challenge.

NESTE

An aerial photograph of a white commercial airplane on a runway. The plane is positioned in the lower-left quadrant of the frame, facing towards the upper-left. The runway is a dark grey asphalt with yellow painted lines. The surrounding area is a mix of grey concrete and brownish-green grass.

Aviation has committed to achieving net-zero emissions by 2050

- Aviation accounts for 2-3 % of global carbon emissions - growing to >20% by 2050 if action not taken
- In addition, non-CO2 effects, like contrails, have 2x higher climate impact
- Sustainable Aviation Fuel (SAF) is key for achieving aviation industry's goal of net zero emissions by 2050
- Despite pandemic challenges, the outlook for SAF is increasingly clear

NESTE MY

Sustainable Aviation Fuel

Available Drop-in solution

- Compatible with existing jet engines and fuel supply infrastructure
- Commercially available and in use
- Used in blends up to 50%

Greenhouse gas emission reduction

- In neat form, reducing GHG emissions up to 80% compared to fossil fuels over the life-cycle
- Produced 100% from renewable waste and residue raw materials
- In-sector emission reduction, unlike offsets

Reduction of Non-CO2 effects

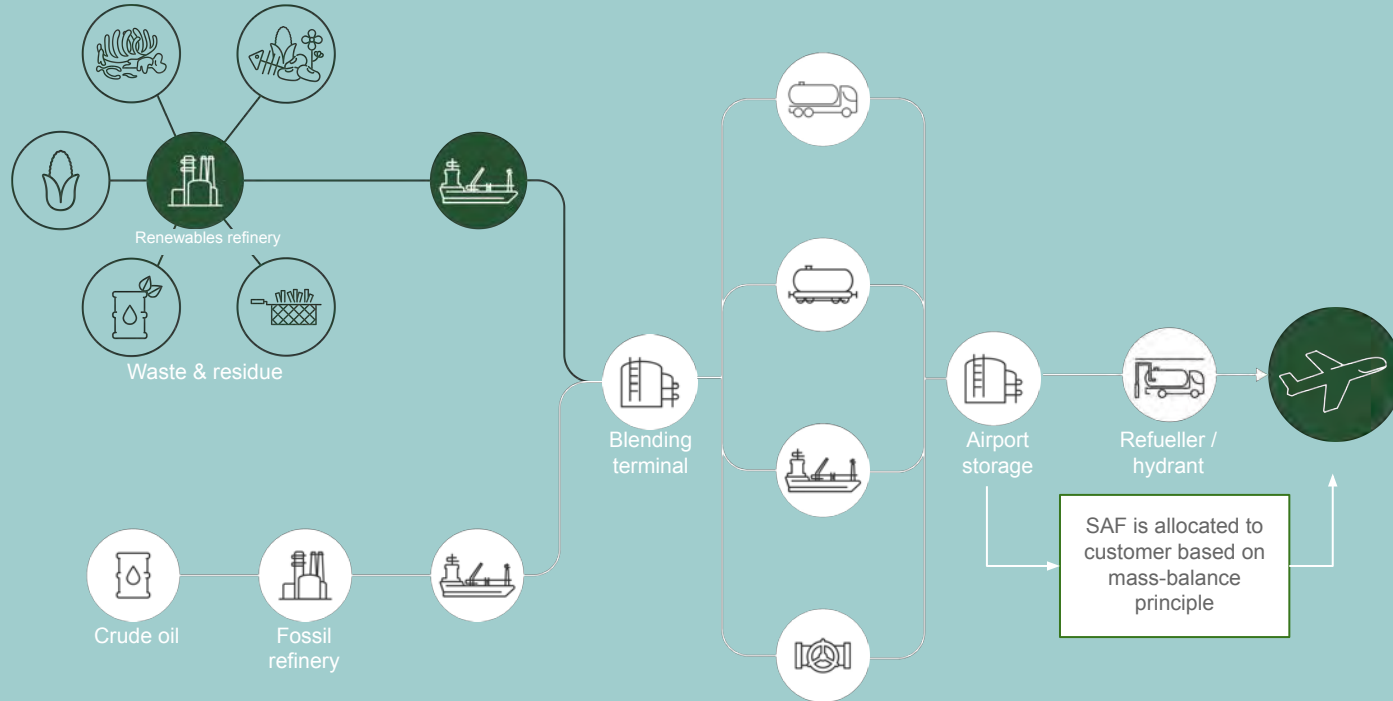
- Burns clean, reducing local emissions
- 50-70% reduction in soot particles causing contrail cirrus (largest driver of aviation's total climate impact)¹
- Aviation's total climate impact estimated to be 3x that of CO2 alone²

¹ Results from flight tests carried out as part of the Emission and Climate Impact of Alternative Fuel (ECLIF) project in 2015 and 2018 by NASA and DLR

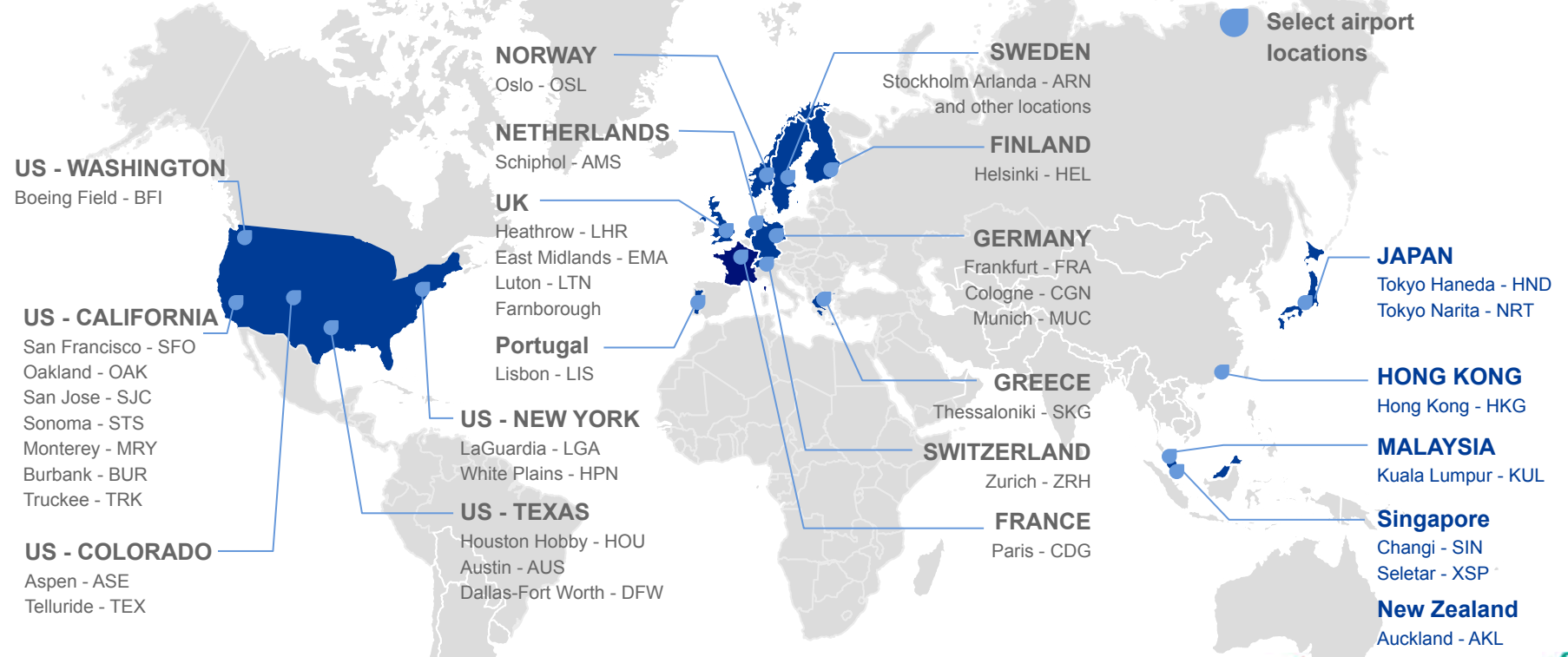
² Lee et al 2021



SAF is a drop-in solution, requiring no investments or modifications to aircraft or fuel supply infrastructure

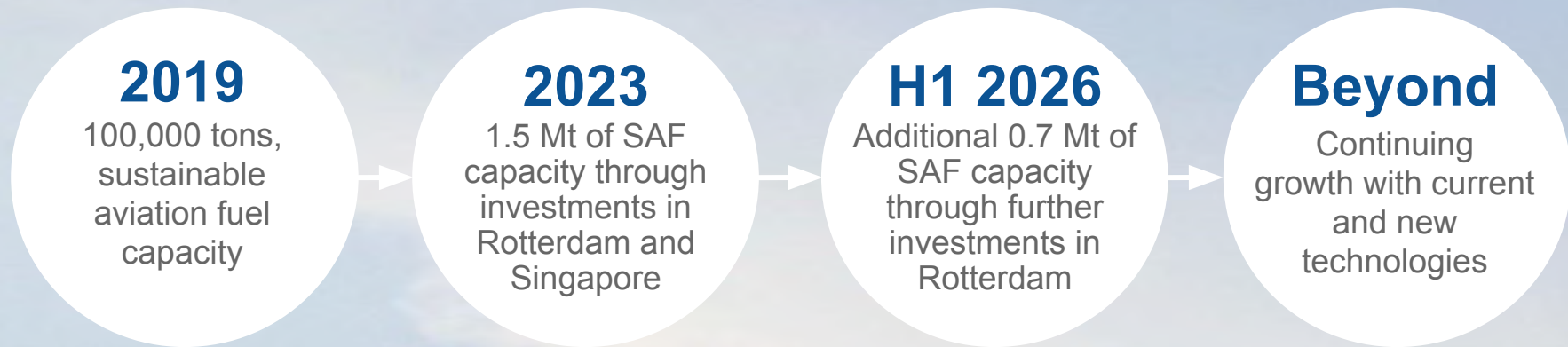


Neste's SAF is available globally, both through Neste's own network of airports and through distributors





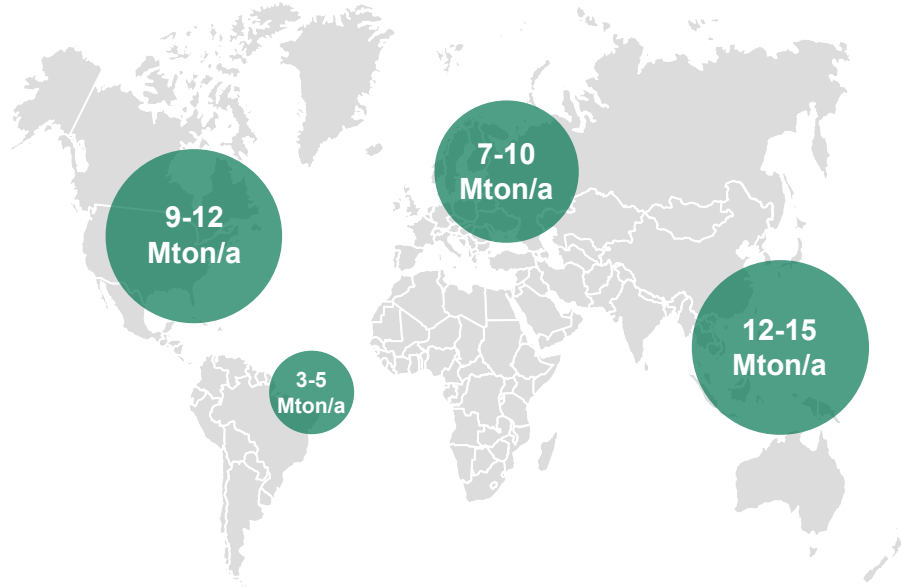
Neste's Sustainable Aviation Fuel capacity will reach 1.5 Mt by end of 2023, and 2.2 Mt by H1 2026



Note: 300 Mt of fossil fuels are burned every year to fuel airplanes (in 2019)

Waste and residue fats & oils availability expected to grow to 40 Mton/a by 2030

Regional split of waste and residues availability in 2030



Feedstock categories with substantial growth potential beyond 40 Mton/a

- Novel vegetable oils¹, algae oils
- Lignocellulosics and municipal solid waste enabled by new technologies
- Raw materials enabled by Power-to-X technologies

1) Novel vegetable oils from advanced agricultural concepts such as silvopasture, intermediate cropping and use of degraded lands

The scale up of sustainable aviation fuel potential will need to proceed through three main phases



Current



Used cooking oil

Waste oil from food cooking



Animal fat

Food industry waste



Residues from vegetable oil processing



Technical corn oil

Residue from ethanol production



Fish fat

Fish processing waste

Near future

5 - 10 years



Lignocellulosic



Municipal solid waste

Future

> 10 years



Algae



Power-to-X

Continuing growth of the SAF market will require policy support to create demand certainty for investments

AMERICAS

Opt-ins continue to drive market growth and additional long-term policy frameworks for SAF expected

Opt-in schemes

Washington¹
Oregon
California

SAF BTC

New York & other states considering opt-in schemes

2021 2030

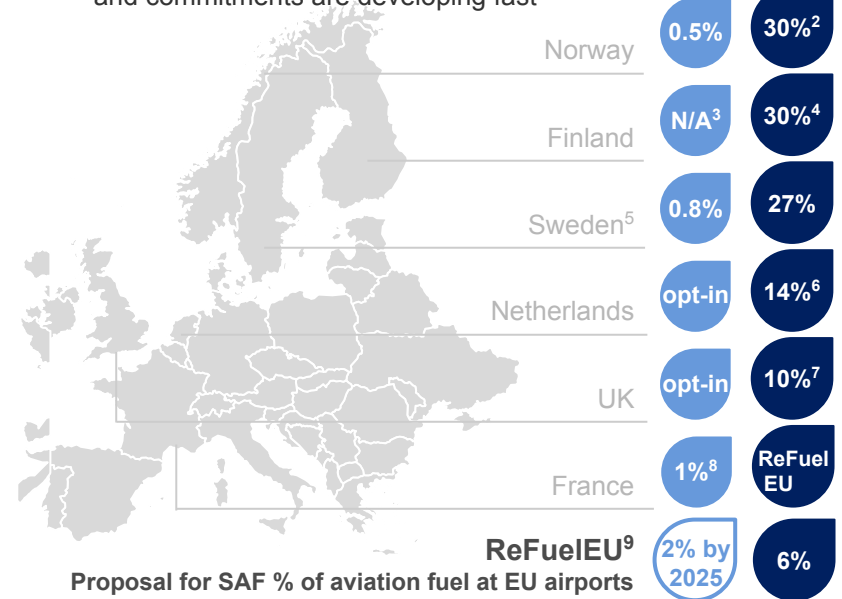
% of SAF required in fuel volume

ASIA

Regulation in early phase, but frontrunner countries setting comparable targets to Europe & Americas

EUROPE

Regulation, national level mandates and commitments are developing fast



Opt-in refers to scheme where a renewable fuel mandate can be fulfilled with using renewable fuels either in road transportation or aviation.

1) Start of program in 2023 2) Proposal 3) Mandate expected in the near future 4) Proposal 5) GHG reduction mandate 6) Up to 14% 7) Up to 10% 8) 1% from 2022 implemented 9) The EU-level regulation proposal to ensure SAF account at least 2% by 2025 and 5% by 2030 of aviation fuels at EU airports

Neste announced the delivery of first ever CORSIA certified SAF batch to American Airlines in July 2022



CORSIA certified Neste MY Sustainable Aviation Fuel™ was delivered to American Airlines at the [San Francisco International Airport](#).

Objective of the pilot was to demonstrate certification of [SAF as a CORSIA eligible fuel that can be used by an airline to meet its emissions obligation under CORSIA](#).

Compliance with the CORSIA sustainability criteria requires independent [attestation by an ICAO-approved Sustainability Certification Scheme \(SCS\)](#). For this pilot, the certification was provided by ISCC.

[Demand for CORSIA-certified SAF is today limited](#). One reason is that the economic incentive for CORSIA is less competitive compared to other schemes, like the EU RED or the Renewable Fuel Standard (RFS) in the United States.



Thank you