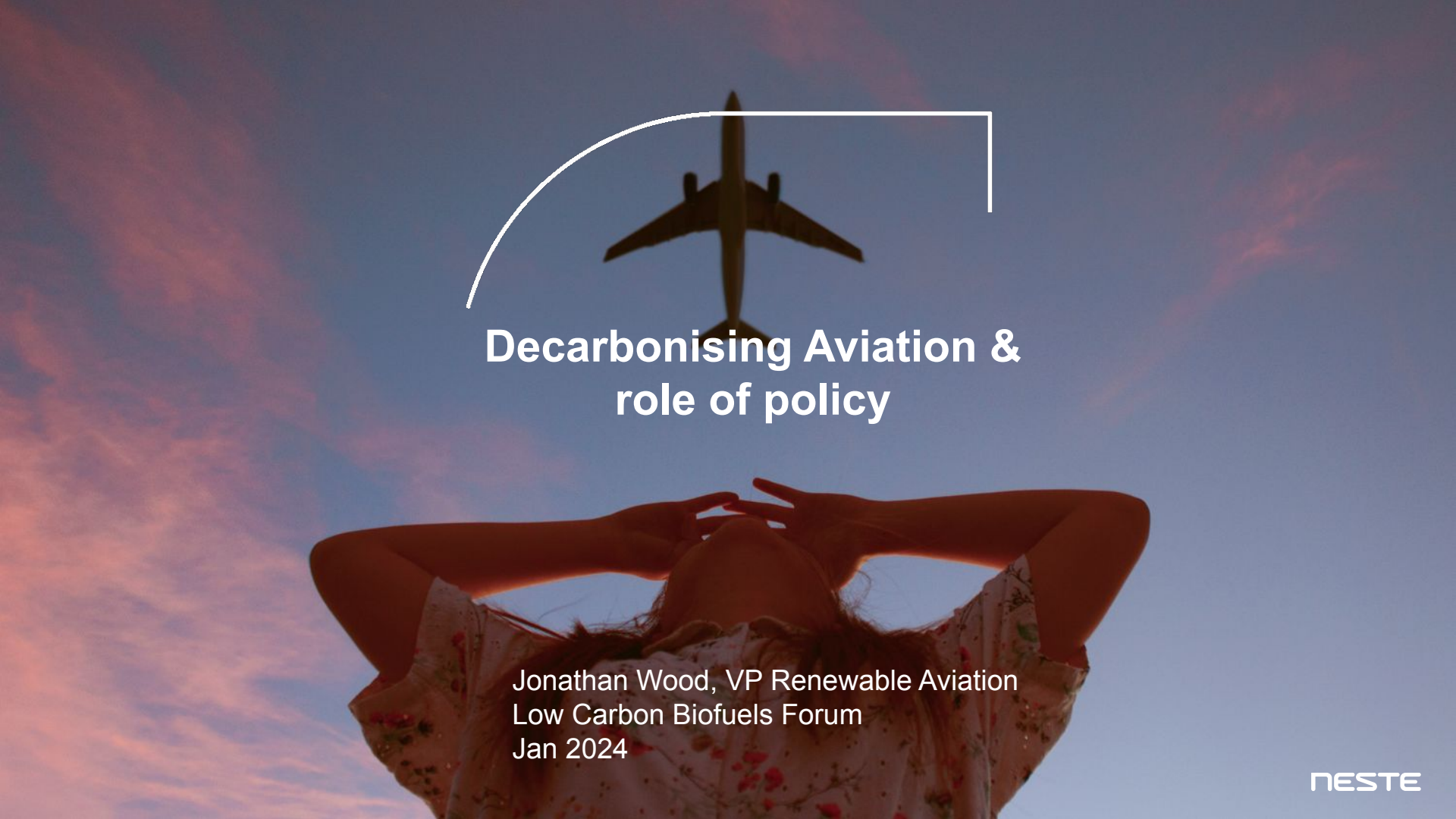


Decarbonising Aviation & role of policy

Jonathan Wood, VP Renewable Aviation
Low Carbon Biofuels Forum
Jan 2024

Driven by our purpose
Neste is a global leader in circular & renewable solutions for 3 markets - Aviation, Road Transportation and Polymers & Chemicals

We are

#1

Producer of Sustainable Aviation Fuel & Renewable Diesel with production capacity increasing from 3.2mt to 5.5mt in 2023

In 2022, **our customers reduced**

>11 Mt

greenhouse gas emissions with our renewable products

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

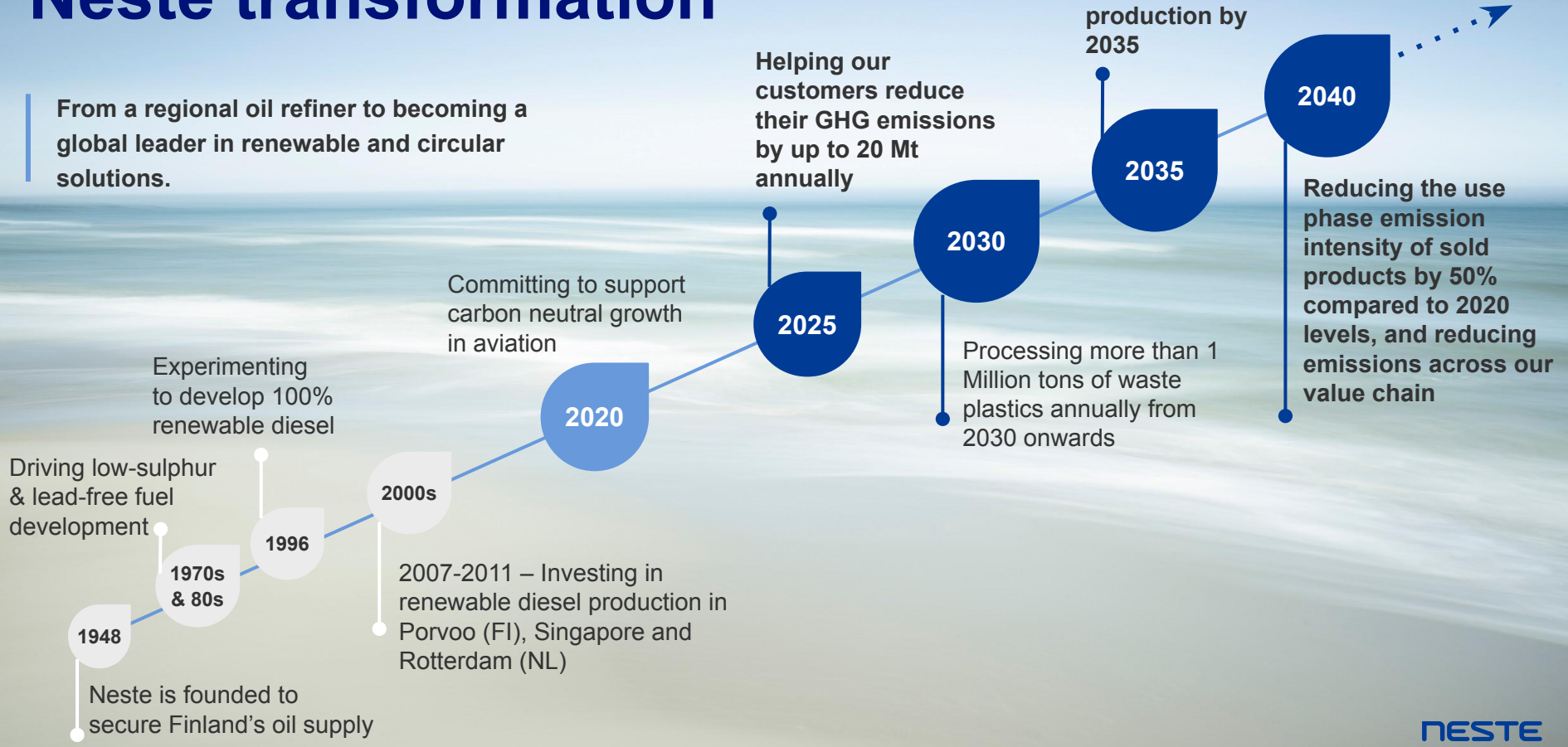
25%

of Neste's total workforce

NESTE

Neste transformation

From a regional oil refiner to becoming a global leader in renewable and circular solutions.

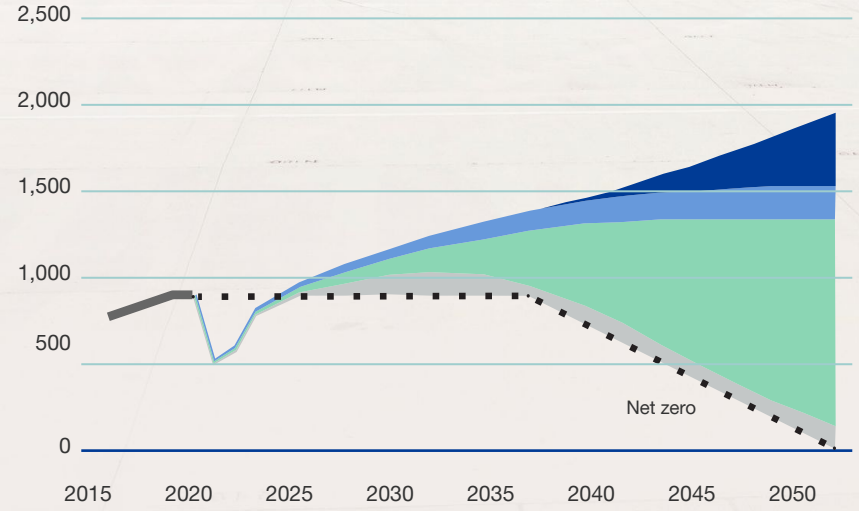


Aviation has committed to achieving net-zero emissions by 2050

- Aviation accounts for 2-3 % of global carbon emissions - growing to >20% by 2050 if no action taken
- In addition, non-CO_2 effects, like contrails, have approximately 2 times higher climate impact than CO_2 emissions alone
- Sustainable Aviation Fuel (SAF) identified as one of the key elements in helping achieve these goals
- Despite the pandemic and geopolitical challenges, the outlook for SAF is increasingly clear

Aviation relies on Sustainable Aviation Fuel, and other pathways, to achieve its 2050 targets

Aviation CO_2 emissions trajectory and reductions by measure (Mt CO_2e)



- Technology (incl. Electric and hybrid aircraft)
- Operations and infrastructure
- **Sustainable aviation fuel**
- Offsets (or other carbon mitigation measures)

WORLD ECONOMIC FORUM

"Together we can put the global aviation sector on the path to net-zero emissions by 2050 by accelerating the supply and use of SAF technologies to reach 10% of global jet aviation fuel supply by 2030"

Source: ATAG Waypoint 2050

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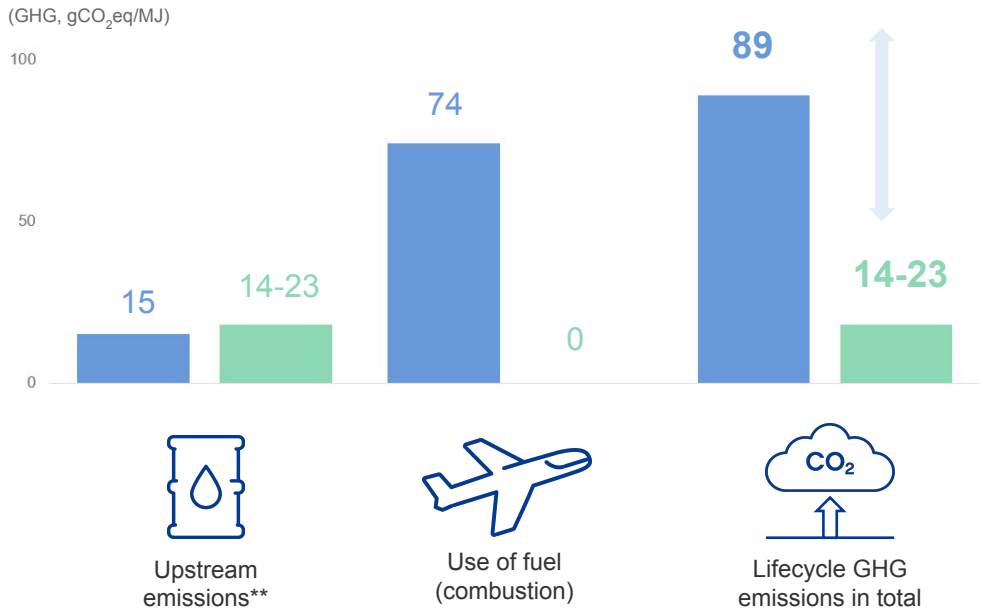
SAF can reduce the GHG emissions up to 80%* over the lifecycle compared to fossil jet fuel



NESTE MY
Sustainable Aviation Fuel

Made from

100%

waste and residues, such as used cooking oil

Drop-in solution requiring

zero

additional investment in infrastructure

available today

Fossil jet fuel
Neste MY SAF from waste and residues

The fuel lifecycle extends from raw material extraction to the consumption of the fuel.
* According CORSIA LCA methodology
**Production of feedstock, transports, refining

NESTE

SAF mandates and other policy frameworks are being established across the globe to create demand certainty for investments

Americas

	2025	2030
British Columbia (Canada)	-1.7%	-10%[1]
Canada federal	Opt-in	Opt-in[2]
US state level	LCFS opt-in CA, OR; incentives IL, WA	+ LCFS in IL, MN, MI, NM, NY
US federal	RFS opt-in; SAF BTC / CFPC[3]	RFS opt-in, TBA
Brazil	1% (2027)	

- Market growth in the US driven by a mix of federal and state level incentives (opt-ins and tax credits)
- British Columbia plans to implement an aviation specific emission reduction target
- First LatAm SAF mandate expected for Brazil

EMEA

	2025	2030
European Union	2%	6%[4]
United Kingdom	TBA	10%[5]
Turkey, UAE	Policies considered	

- SAF mandates in place (NOR, SWE, FRA) to be superseded by an EU-wide SAF mandate in 2025
- UK plans to follow similar timeline
- Policy discussion starting in the Middle East

Asia Pacific

	2025	2030
Japan	TBA	10%[6]
New Zealand	TBA	TBA
Singapore	TBA	TBA
South Korea India, Australia	Policies considered	

- Frontrunner countries such as Japan and New Zealand setting comparable targets and timelines for SAF adoption as Western peers
- SAF policy discussion spreading to an increasing number of countries

1) Intentions Paper proposal to introduce a carbon intensity reduction target for jet fuel starting in 2024, with -10% CI target in 2030; 2) Canada federal Clean Fuel Standard 3) BTC (Blenders Tax Credit) expected to change to a CFPC (Clean Fuel Production Credit) in 2025; 4) Agreement on ReFuelEU Aviation with 2030 level of 6% including 1.2% RFNBO sub-mandate; 5) UK Net Zero Strategy; 6) METI proposal on May 26, 2023.

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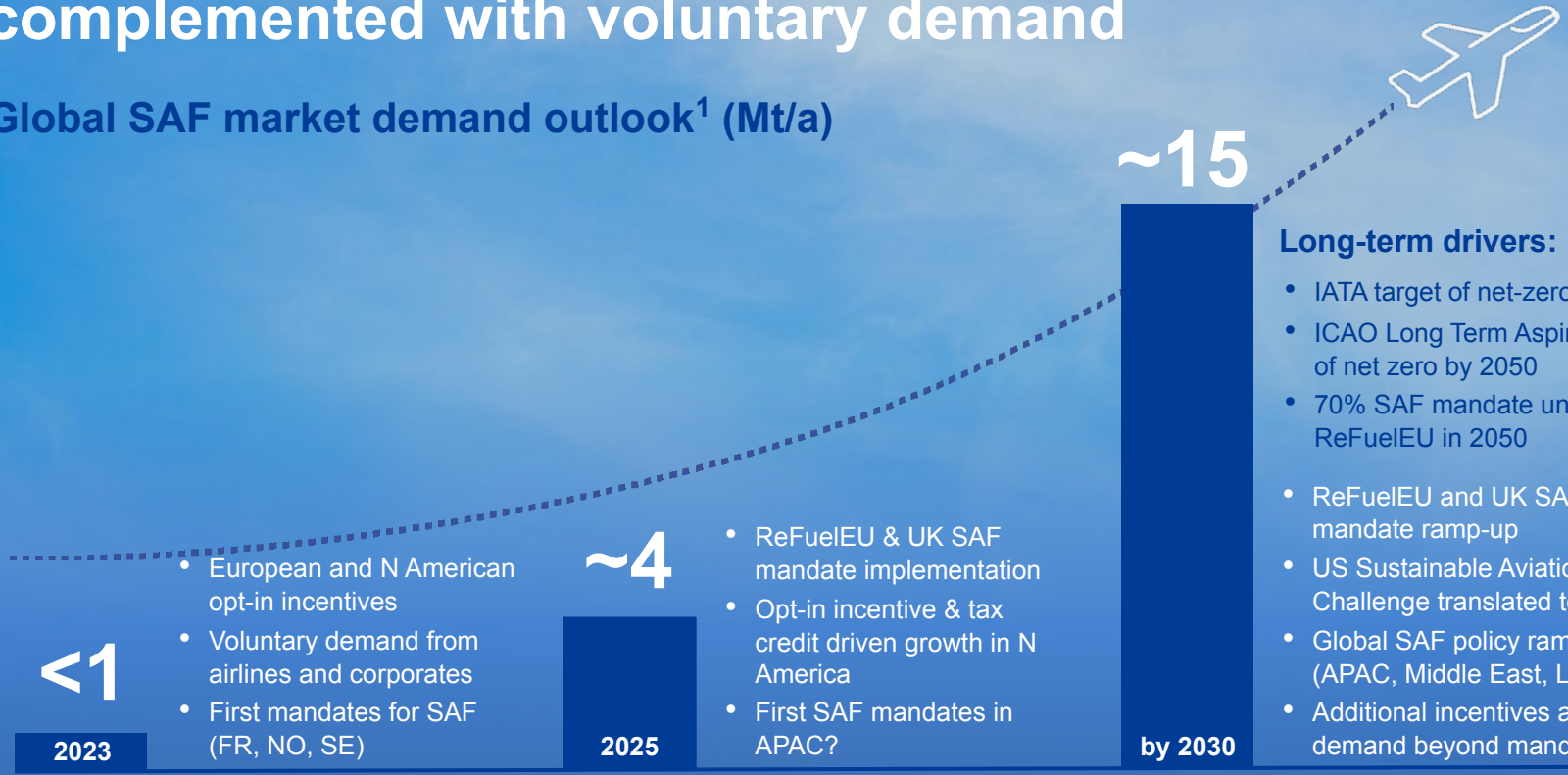
Accelerating SAF market growth is driven by regulations, complemented with voluntary demand

Global SAF market demand outlook[1] (Mt/a)



1) Including opt-in into road mandates and voluntary demand. Source: Neste estimates.

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SAF availability - Neste global supply chain and channel partners enable growth and serving diverse customer segments

Global supply chain has been expanded...

…to serve global customers across the key regions

Network of key airports where Neste MY SAF is available[1]

2021	2023
7	>25

Distribution and blending hubs

2021	2023
2	5

Pipeline deliveries

US: Colonial and Buckeye Pipeline, SFPP
Europe: CEPS, CIM, Exolum UK

Selected customers and channel partners:

American Airlines, DELTA, AIRFRANCE KLM, ANA, World Fuel Services, AIR NEW ZEALAND, UNITED, Lufthansa, IAG, SINGAPORE AIRLINES, Signature Aviation, ITOCHU

1) Including airports with over 1 million passengers where branded Neste MY Sustainable Aviation Fuel is available to airline customers, either directly from Neste or via a channel partner; Neste MY SAF is also available at several smaller and general aviation airports.

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The growth path of sustainable aviation fuels is based on continuously expanding raw material base

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

Realization of full potential will requires scale up of new technologies (3-stage roadmap)

1 Up to 10% of global jet fuel use

2 Potential exceeds global jet fuel use

3 Technical potential "unlimited"

POWER-TO-LIQUIDS (CO_2 capture)

TECHNOLOGIES NEAR COMMERCIALIZATION (Gasification/Fischer-Tropsch, Alcohol to Jet - municipal solid waste, lignocellulosic, etc.)

HEFA[1] (waste and residue oils and fats as raw materials)

Neste SAF scale up

- Current: 100 kton/a in Porvoo
- 2023: 1 Mton/a in Singapore (under construction)
- 2023: 450 kton/a in Rotterdam (feasibility study on-going)
- SAF capacity included in future renewable refineries

Source: Neste estimates

[1] HEFA = Hydroprocessed Esters and Fatty Acids

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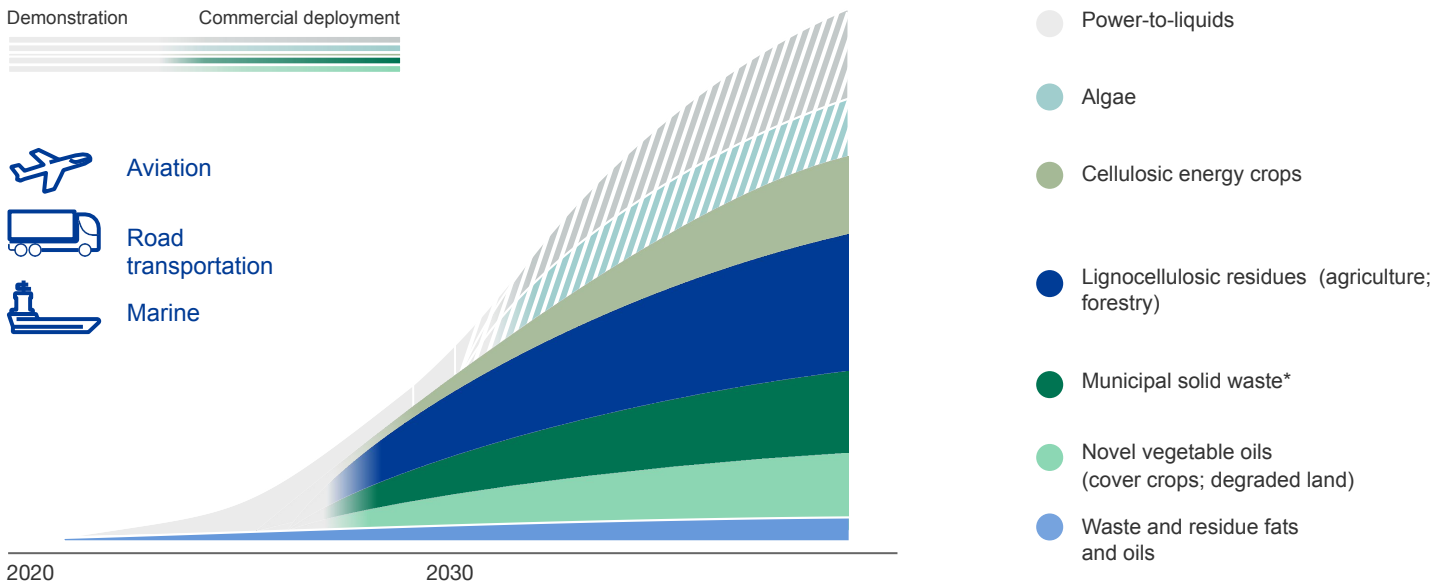
Unlocking new raw material pools with innovation to accelerate emission reductions in transportation

Global raw material potential for renewable fuels (Mtoe)



Source: Neste analysis based on WEF Clean Skies for Tomorrow and other sources. Biomass potential converted to fuel potential, using around 85% conversion efficiency (weight-based) for fats and oils and novel vegetable oils; around 25% efficiency for lignocellulosic biomass and municipal solid waste.
*80% organic waste, with 20% non-reusable, non-separable plastic waste

Refuel EU Aviation - main points

- Scope: Fuel suppliers, aircraft operators & EU airports
- Gradually increasing SAF & synthetic aviation fuel supply obligation for aviation fuel suppliers as of 2025
- Flexibility to fulfil SAF supply obligation at any EU airport for first 10 years* (no book & claim yet)
- Non-tankering obligation for aircraft operators (90% of total yearly aviation fuel required)
- No national SAF mandates allowed alongside ReFuelEU
- Revenues from fines should be earmarked from the national budgets to boost SAF production and deployment
- EC to review operation of Regulation by 2027, then every 4 years

* Contribution to minimum share of SAF as a weighted average over all the aviation fuel supplied across Union airports for that reporting period. As of 2035, minimum share required at every Union airport

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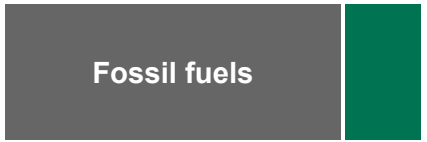
Voluntary demand can generate additional demand for SAF in addition to supply mandate policies

SAF from mandates & opt-in incentives do not respond to voluntary action



Renewable fuels obligations
Mandated or opt-in SAF fulfil renewable fuel mandate

Climate benefits are limited in regulation

Voluntary SAF reduces the demand for fossil fuels

Voluntary SAF
Can truly reduce the demand for fossil fuels

Accelerate the Net Zero transition with climate benefits

Note: Illustrative only - not in scale

Together with industry bodies, we are shaping the market & its evolving standards

Standards emerging for reporting emission reduction

- SBTi developing guidelines for setting targets
- First aviation guidance published in 2021
- SAF is a Scope 3 emission reduction

SCIENCE BASED TARGETS

Movements towards a standardized market

- Coalitions (eg WEF Clean Skies for Tomorrow) aim to create a tradable SAF market
- Enable corporates to report emission reductions and accelerate the uptake of SAF

WORLD ECONOMIC FORUM

NESTE

The key levers to drive emission reductions in aviation

Policy support

SAF mandates are the main policy tool to push for sectoral impact on emission reductions

Voluntary markets

can accelerate SAF uptake and help companies meet their climate targets

Innovation and production

ramping-up production and innovating new production pathways and raw materials