Technology and Market Development of SAF

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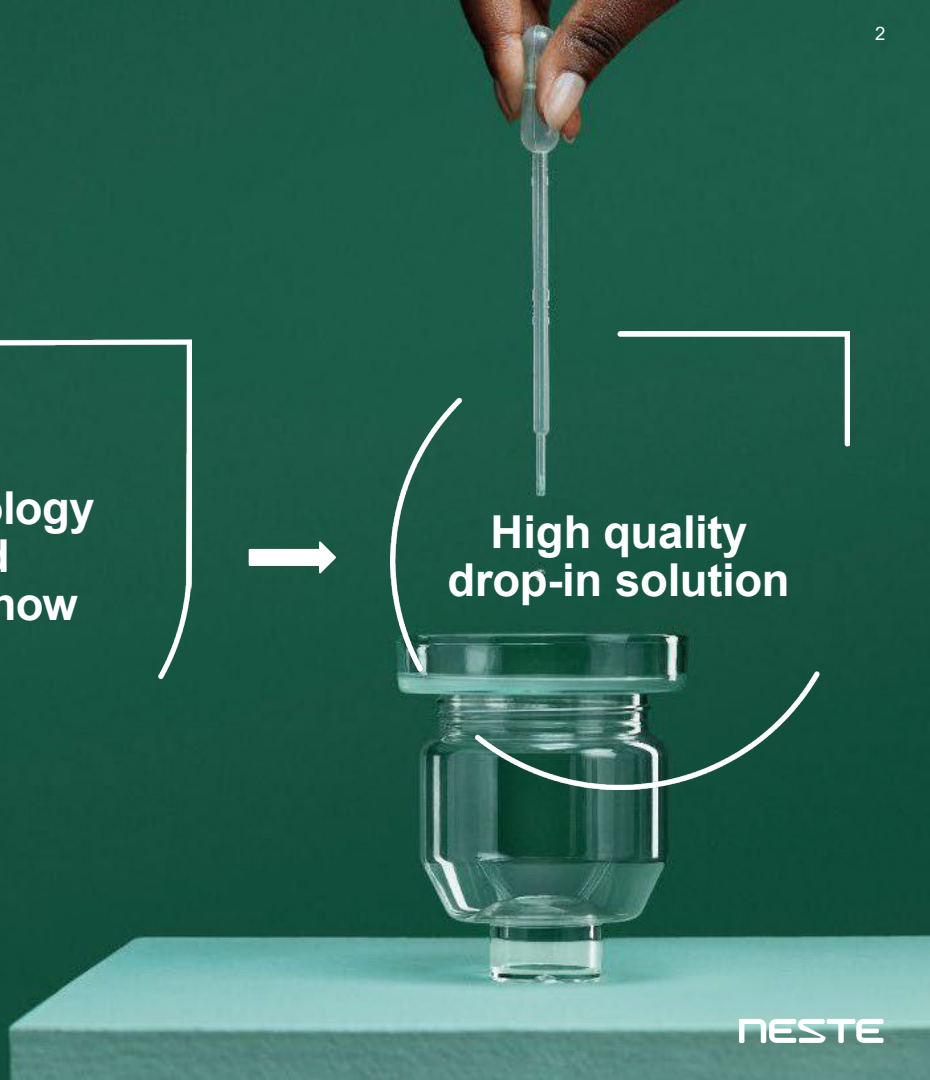
Our approach

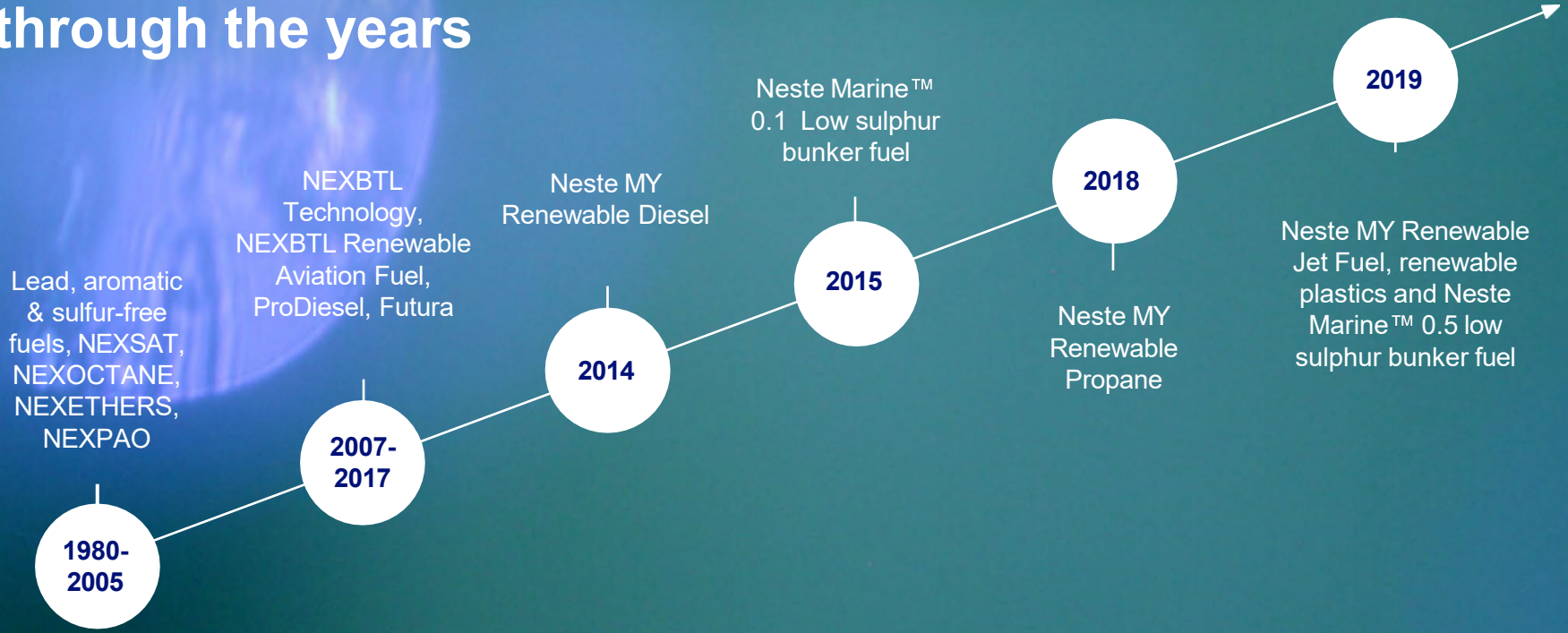
Low quality feedstock

Technology and know-how

High quality drop-in solution

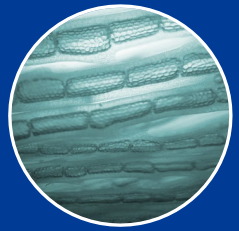


Innovation has led to cleaner top-notch solutions through the years



Scalable solutions for the future

Renewable oils and fats



Algae

Novel Vegetable Oil

Lignocellulose

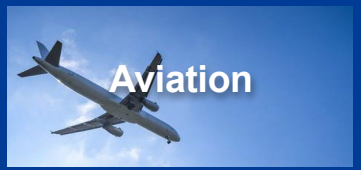
Waste plastics

Municipal waste

RenewableH_2 & PtX

Now

Mid to longer term options



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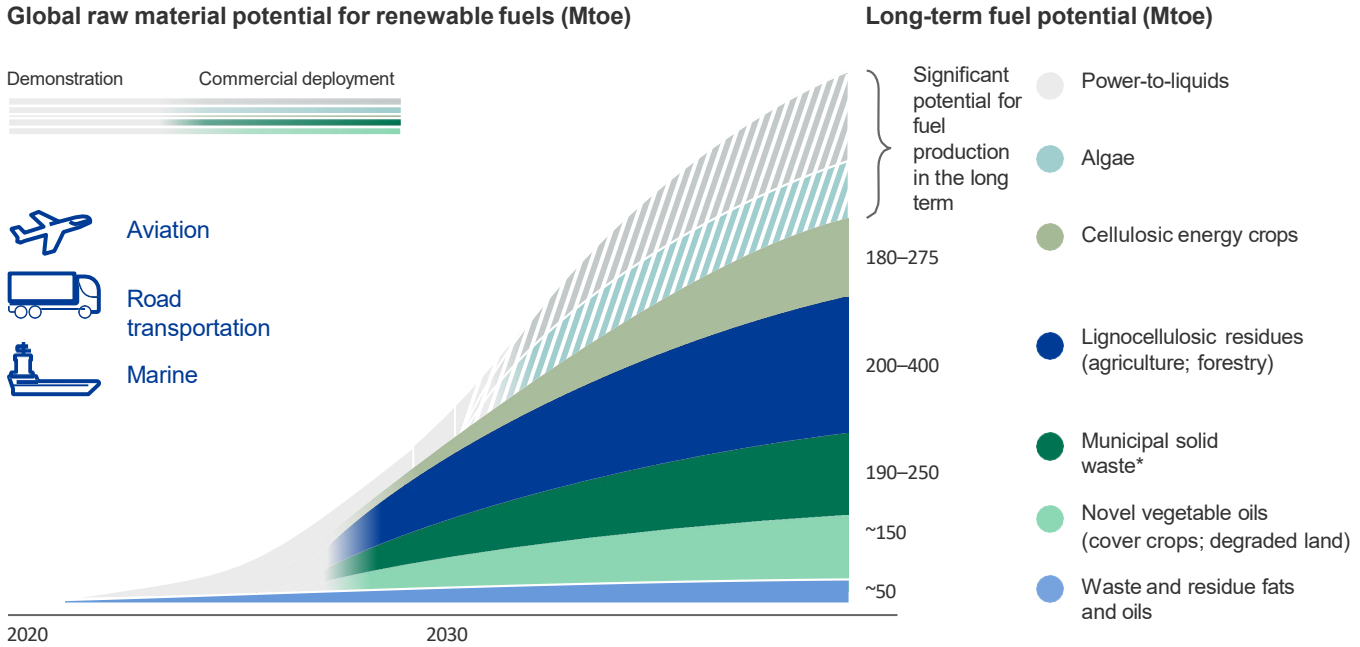
Unlocking new raw material pools with innovation to accelerate emission reductions in transportation

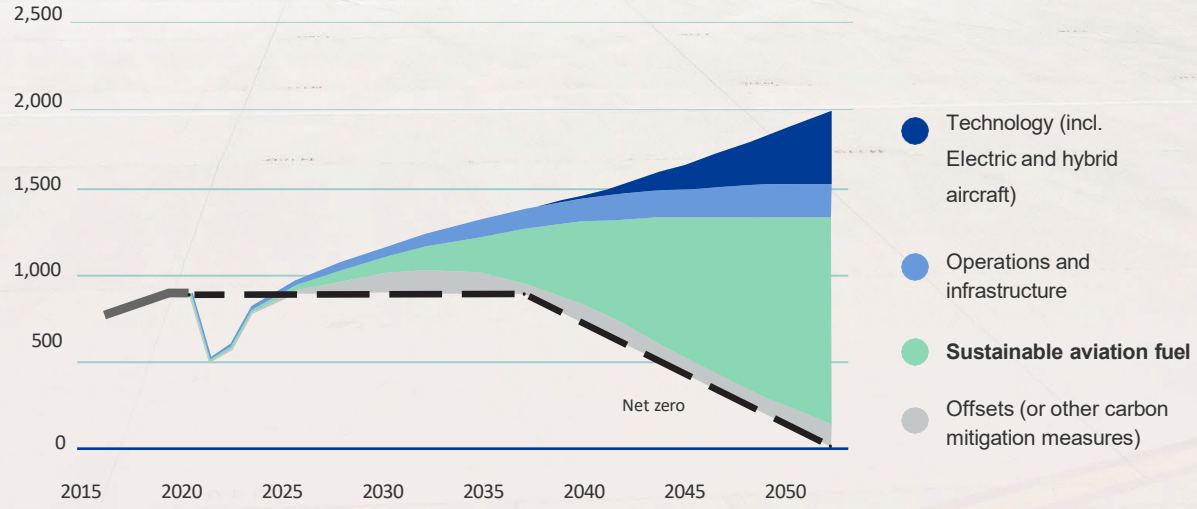


Source: Neste analysis based on WEF Clean Skies for Tomorrow and other sources. Biomass potential converted to fuel potential, using around 85% conversion efficiency (weight-based) for fats and oils and novel vegetable oils; around 25% efficiency for lignocellulosic biomass and municipal solid waste.

*80% organic waste, with 20% non-reusable, non-separable plastic waste

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)



Source: ATAG Waypoint 2050

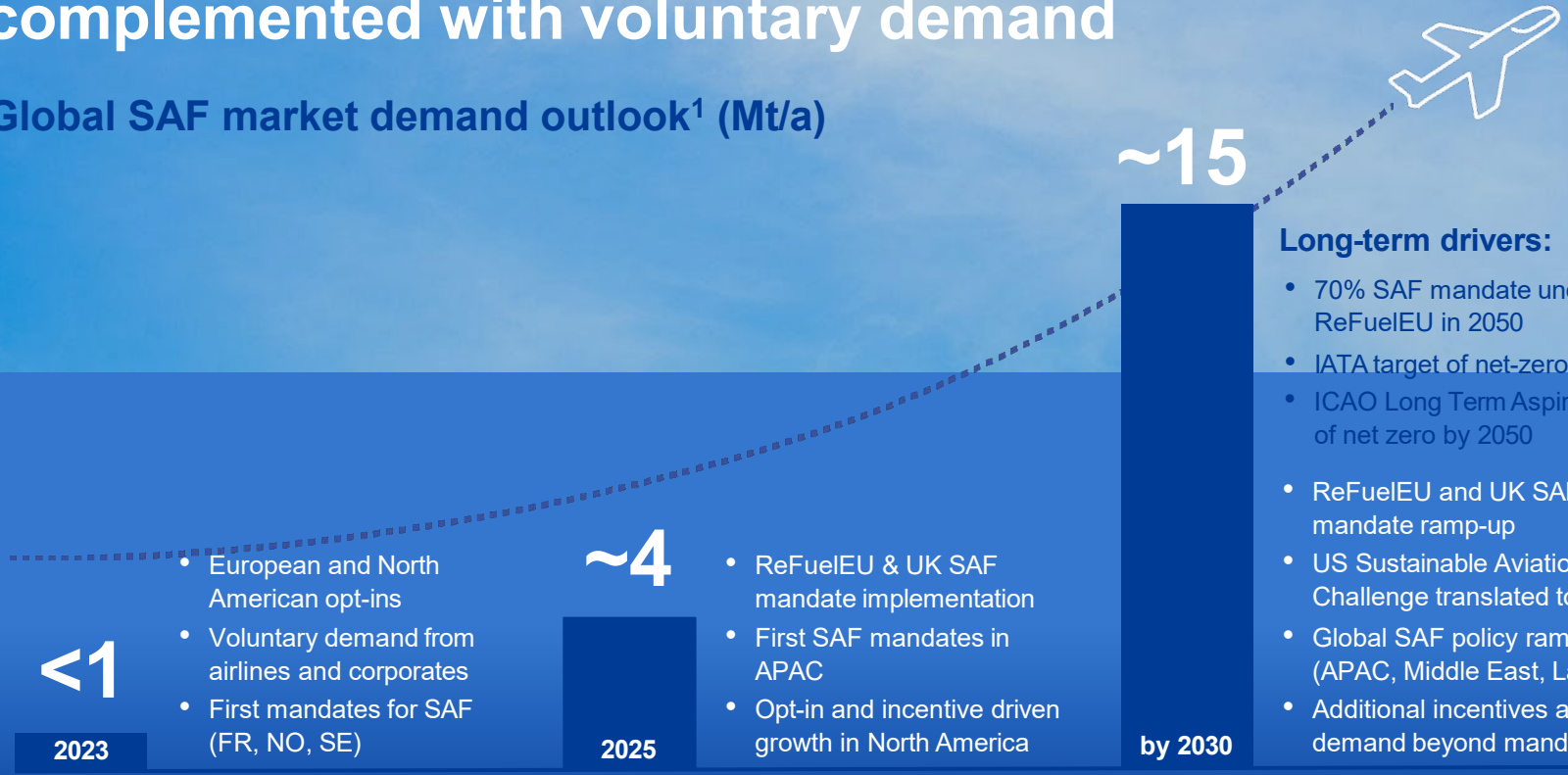
WORLD ECONOMIC FORUM

"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"

NESTE

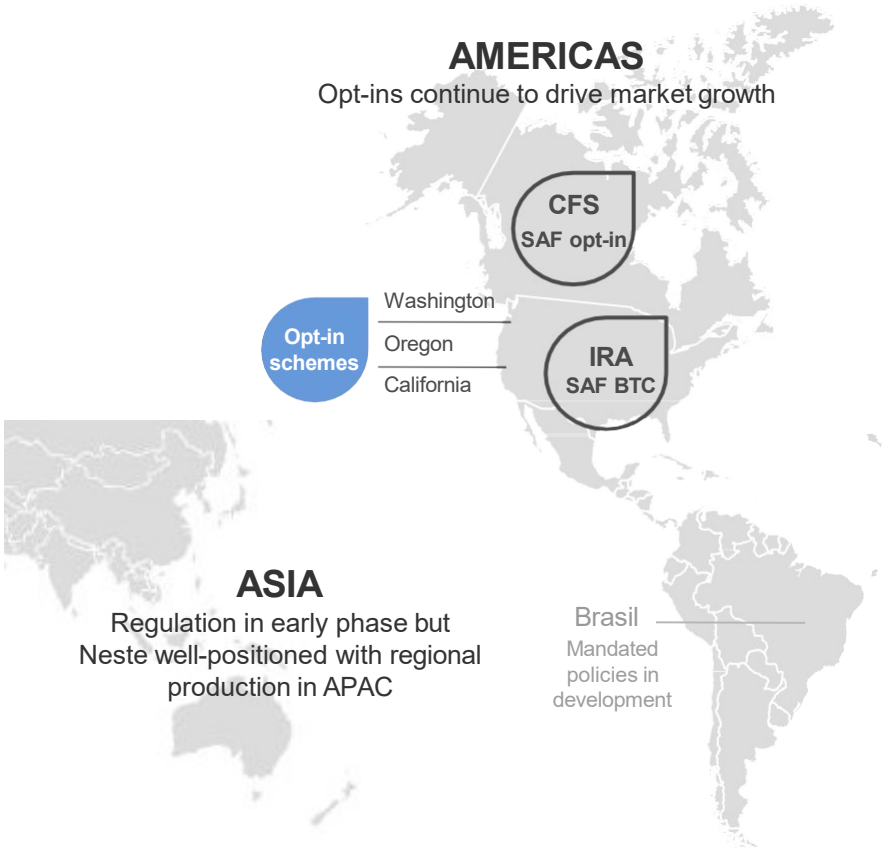
Accelerating SAF market growth is driven by regulations, complemented with voluntary demand

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



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

Strong growth in sustainable aviation fuel market with opt-in schemes, incentives and SAF mandates



AMERICAS

Opt-ins continue to drive market growth

CFS
SAF opt-in

Opt-in schemes

Washington
Oregon
California

IRA
SAF BTC

ASIA

Regulation in early phase but Neste well-positioned with regional production in APAC

Brasil
Mandated policies in development

EUROPE

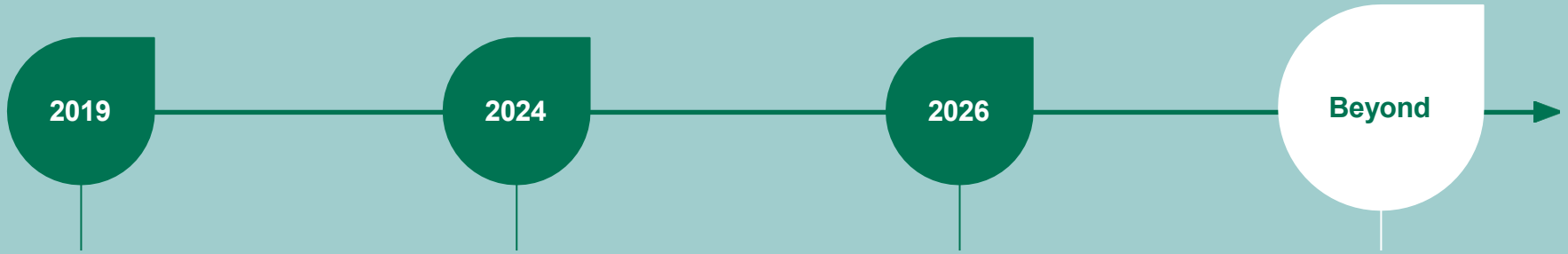
Regulation and commitments are progressing

	2022	2030
Norway	0.5%	30%
Sweden	0.8%	27%
Netherlands	opt-in	14%
UK	opt-in	10%
France	1%[8]	ReFuel EU
ReFuelEU Proposal for SAF % of aviation fuel at EU airports	2% by 2025	6%

2022 2030 % of SAF required in fuel volume

NESTE

Neste SAF production capability to increase 15-fold by early 2024

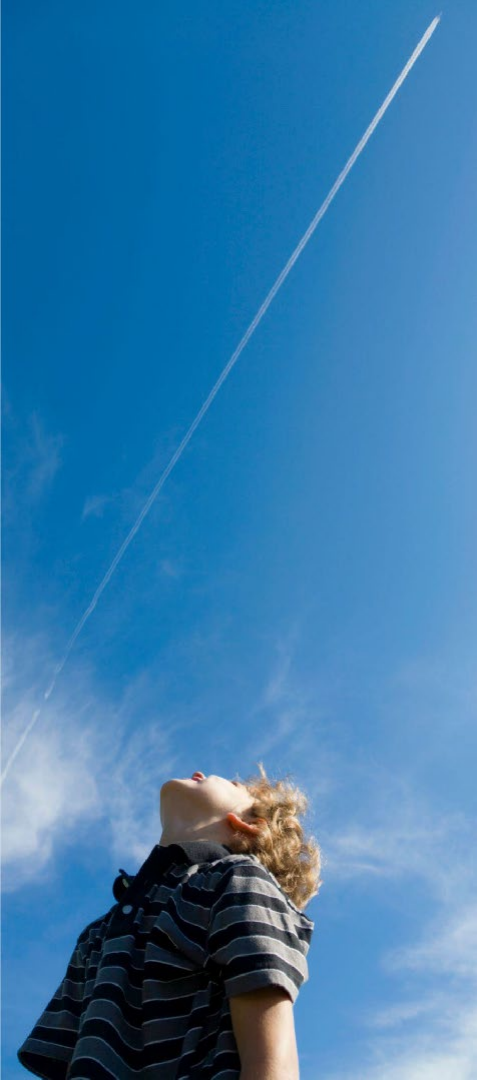


100 kt/a SAF
Total global production capability

1.5 Mt/a SAF
Capability in 2024 with completed Singapore refinery expansion and ongoing investments in the Rotterdam refinery.

2.2 Mt/a SAF
Total global production capability through further investments in our Rotterdam refinery.

Continued growth with both our current NEXBTL technology and future SAF technology pathways



History and specification overview

ASTM D7566 approved pathways

2009: Fischer-Tropsch SPK
2011: Hydroprocessed Esters and Fatty Acids SPK
2014: Hydroprocessed Fermented Sugars SIP
2015: Fischer-Tropsch SPK with aromatics
2016: Alcohol-to-jet SPK
2020: Catalytic Hydrothermolysis SK
2020: Hydroprocessed Hydrocarbons, Esters and Fatty Acids SPK
2023: Alcohol-to-jet SKA
2024-: *more to come*

SPK = Synthesized Paraffinic Kerosine
SIP = Synthesized iso-paraffins
SK = Synthesized Kerosine
SKA = Synthesized Kerosene with Aromatics

HEFA-SPK

The synthetic blending component (SBC) produced by Neste's NEXBTL technology.

HEFA: Mono-, di-, and triglycerides, free fatty acids and fatty acid esters.

Processing must include hydrogenation and deoxygenation + hydrotreating or isomerization or fractionation or their combination.

Max 50 vol-% blend with Jet A/A-1 allowed.

Neste SAF timeline

2011: Neste's HEFA used in 1187 Lufthansa flights

2015: Supplied to Oslo airport as part of ITAKA project

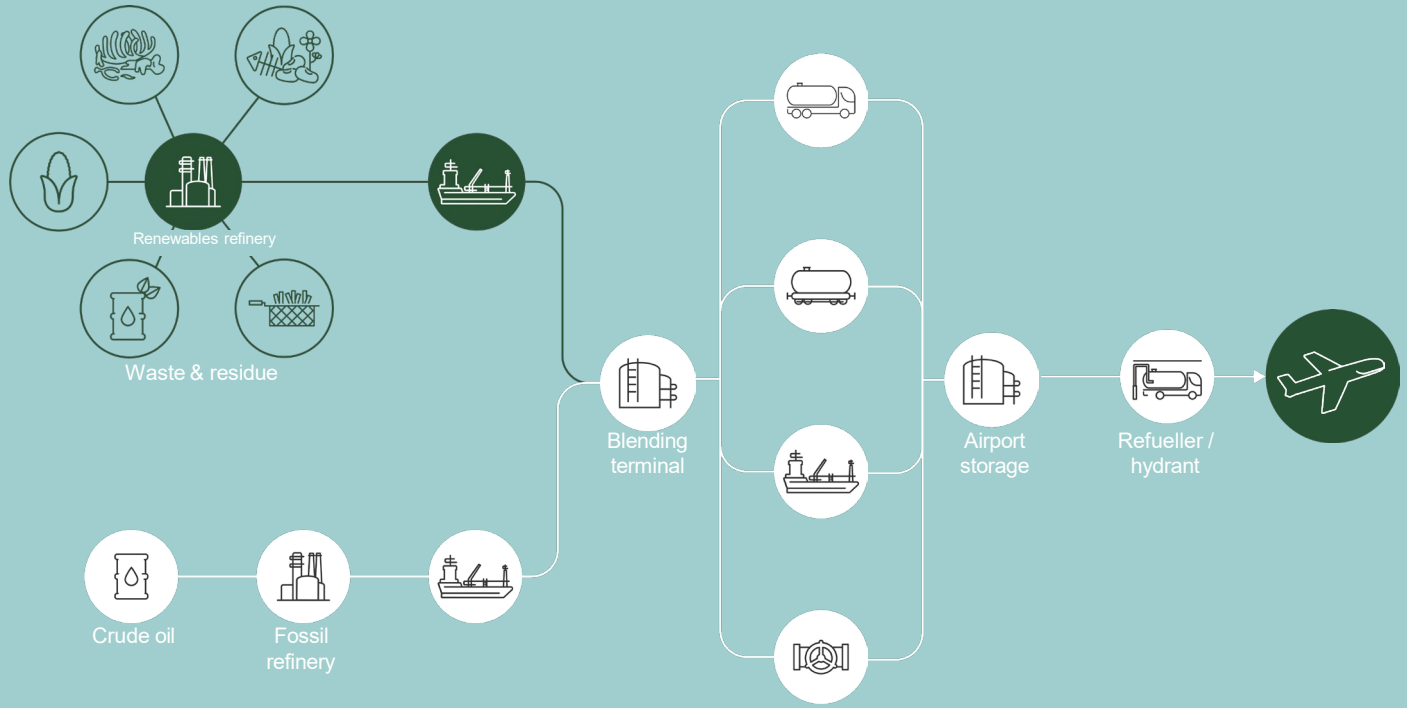
2018: Regular production started

2019-2022: Extending availability, establishing market leadership

2024: Increase production capability by 10-15x through Singapore and Rotterdam investments

NESTE

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



Global supply chain capabilities and channel partners enable managing 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.

NESTE

Neste has a strong foundation for value creation in the growing SAF market

Neste has signed global, multi-year SAF supply agreements with leading aviation customers

AIRFRANCE KLM

- **1 million tons** (342 million gallons) of SAF supplied **over 8 years**, starting 2023
- One of the largest SAF agreements ever signed
- Supporting AF-KLM in **reducing CO_2 emissions per passenger/km 30% by 2030**

UNITED

- **160 kt** (52.5 million gallons) of SAF **over 3 years** across three locations (Amsterdam, San Francisco, Los Angeles)
- Supporting United in the commitment to reach **net zero without offsets by 2050**

DHL

- **320 kt** (109 million gallons) of SAF **over a 5 year period**, extending cooperation that started in 2020
- Supporting Deutsche Post DHL Group in achieving the industry-leading target of **30% SAF blending for all air transport by 2030**

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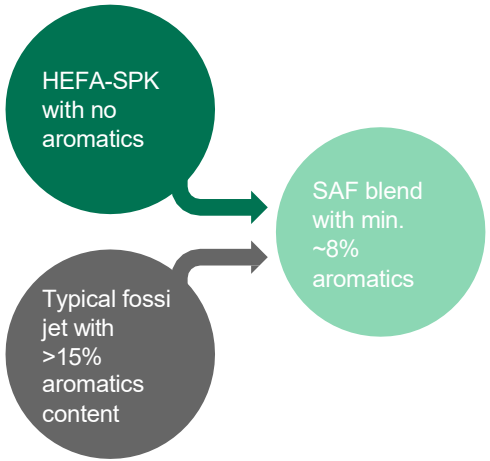
Three different routes to 100% SAF exist, each with their own timelines, uncertainties and collaborations required

Overview of paraffinic and aromatic routes to reaching 100% SAF

Today - Blends of max. 50% SAF



Future - 100% SAF

1. Blending aromatics produced from a renewables source into paraffinic SAF
2. Producing SAF through a technology pathway that yields fuel with right level of aromatics

Aromatic (or drop-in) SAF routes, fleet-wide compatibility

3. Standardization and approval of 100% paraffinic SAF (Jet X)

Paraffinic SAF route, compatible with designated aircraft only

Paving the way towards 100% SAF: Demonstrations and tests with industry front runners

Neste is enabling and supporting 100% SAF flight demonstrations and engine tests with customers and OEMs:

100% paraffinic SAF (HEFA-SPK)

- ECLIF3 - Flight and Ground tests (2021)
- Braathens & ATR: Demonstration Flight (2022)

100% drop-in SAF (HEFA-SPK + SAK)

- Emirates Boeing 777 - Demonstration flight (2023)
- Bell 505 - Single engine demonstration (2023)
- Emirates Airbus A380 - Demonstration flight (2023)

Activities around 100% SAF demonstrations and tests involve fit-for-purpose analysis and acceptance work which later can be used for 100% SAF ASTM approval process


NESTE
Change runs on renewables