
S&P Global

Commodity Insights

Global Transportation with Sustainable Fuel Market

Regenerative Fuels: Sustainable Mobility

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Agenda

- Introduction to S&P Global Commodity Insights
- S&P Global's biofuels demand outlook
- Global investments into HEFA-SPK/SAF production capacity
- HEFA-SPK feedstock outlook and the need for alternative pathways
- Feedstock pricing trends and how the US prices its SAF
- Summary

Intro to S&P and biofuels offerings

Commodity Insights is one of five S&P Global divisions.

At S&P Global we focus on powering the markets of the future.

The world's leading organizations rely on us for the essential intelligence they need to make confident decisions about the road ahead.

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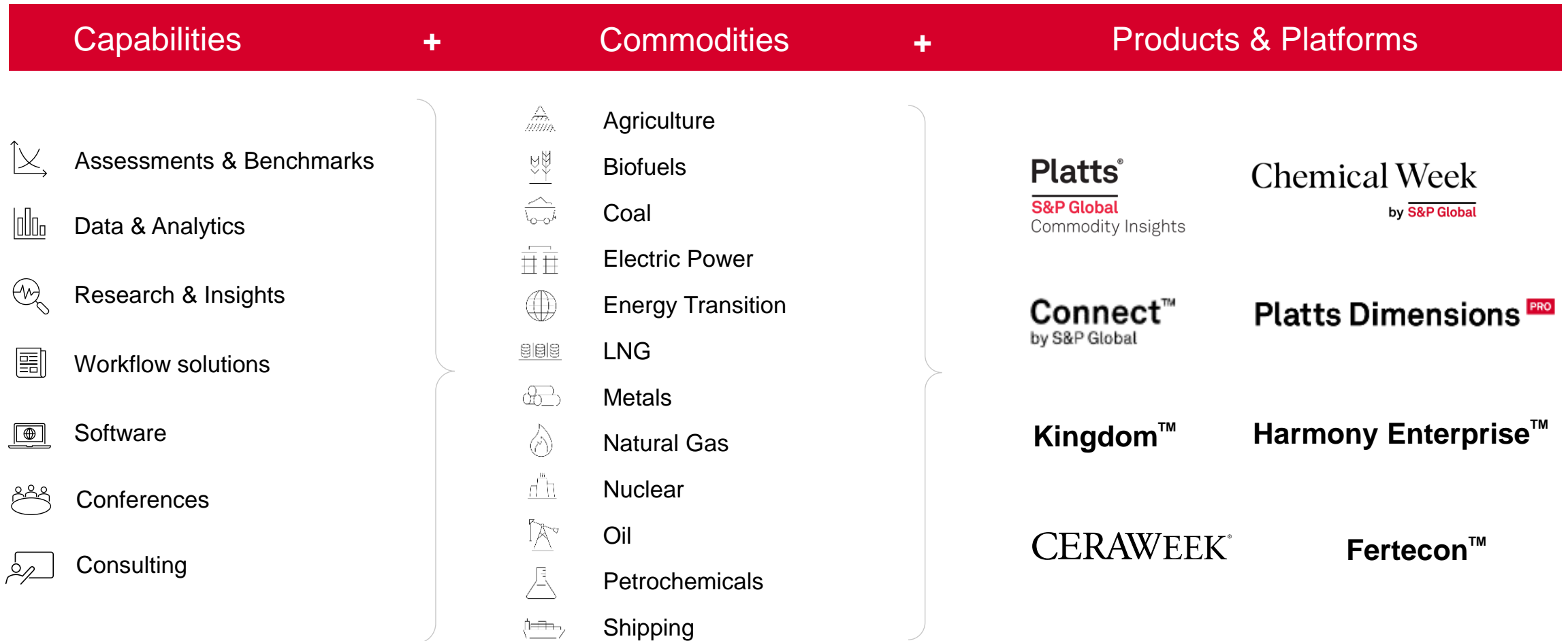
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Indices**

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Sustainable¹**

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Biofuels

Integrated intelligence for the biofuels sector, including market reporting, price assessment and benchmarks, trends analysis, and short, medium and long-term fundamentals-based forecasting.

This includes global reporting across all aspects of the biofuels value chain, from agri-feedstocks, to refined products and supporting credit/ticket markets, plus supporting policy coverage to monitor regulations that could impact biofuels markets.

Coverage & Capabilities

Price Assessments & Benchmarks

- Platts proprietary biofuels price assessments, including ethanol, biodiesel/FAME, renewable diesel/HVO, SAF, and feedstocks
- Robust and transparent methodology that brings consistency to our price coverage and guidance to our market specialists throughout the assessment process.

Market Reporting & Insight

- Daily market commentary for all major biofuel-producing regions worldwide, including ethanol, biodiesel and feedstocks
- Frequent, in-depth analysis of market drivers that impact production, trade, pricing or policy.
- Comprehensive coverage of biofuel-related legislation and mandates.
- Thorough assessment of feedstock markets, including availability, price and legislative constraints.

Market Fundamentals Forecasts & Data

- Monthly global ethanol and biofuels short-term forecasts (price, trade, production).
- Annual global biofuels long-term supply/demand and feedstock demand outlooks.
- Quarterly global biofuels and feedstocks long-term price outlooks.
- Frequently updated plant capacities database covering conventional fuels (ethanol and biodiesel) and drop-in fuels (renewable diesel and SAF). Drop-in fuel projects are also tracked.
- Global ethanol and biodiesel balances and trade backed up with historical data.

Use Cases

Traders:

- Validate prices benchmarks and short-term market fundamentals to determine trading positions.
- Demonstrate understanding of price drivers and place it into context.
- Evaluate potential trades and spot market opportunities.

Operations:

- Spot market bottlenecks early to reduce costs, maintain margins and source responsibly.
- Evaluate options for spare capacity and track competitors' output.

Strategy:

- Position long-term outlooks, based on supply-demand balance and regulation/policy.
- Develop strategies around capacity investment decisions.

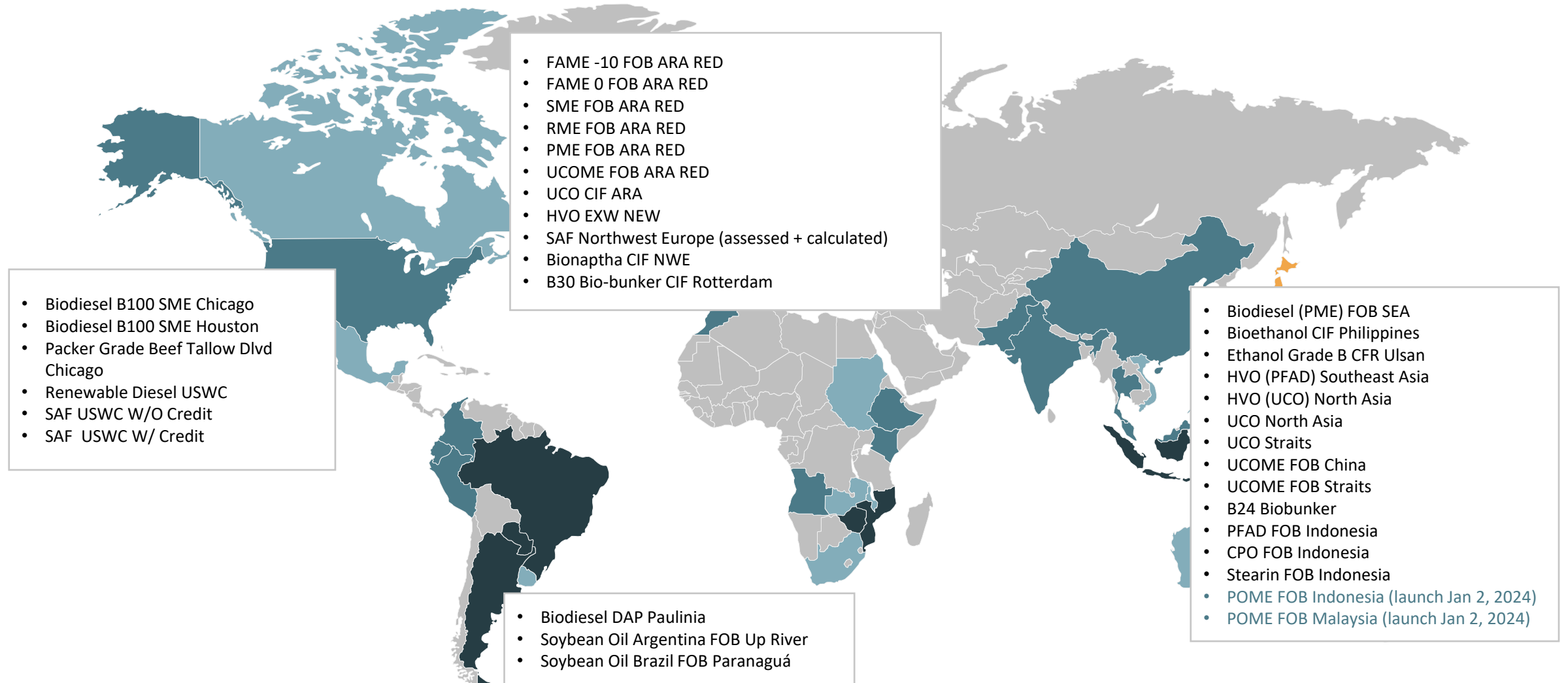
C-Suite:

- Deliver commercial strategy and outcomes.
- Understand emerging trends and assess competitive advantage.
- Help filter through the noise and support conversations with investors.

Consulting

- Project consulting services spanning all biofuels sector needs, from bespoke policy research and feasibility studies, to M&A due diligence for investments reviewing everything from market forecasts to competitor intelligence.

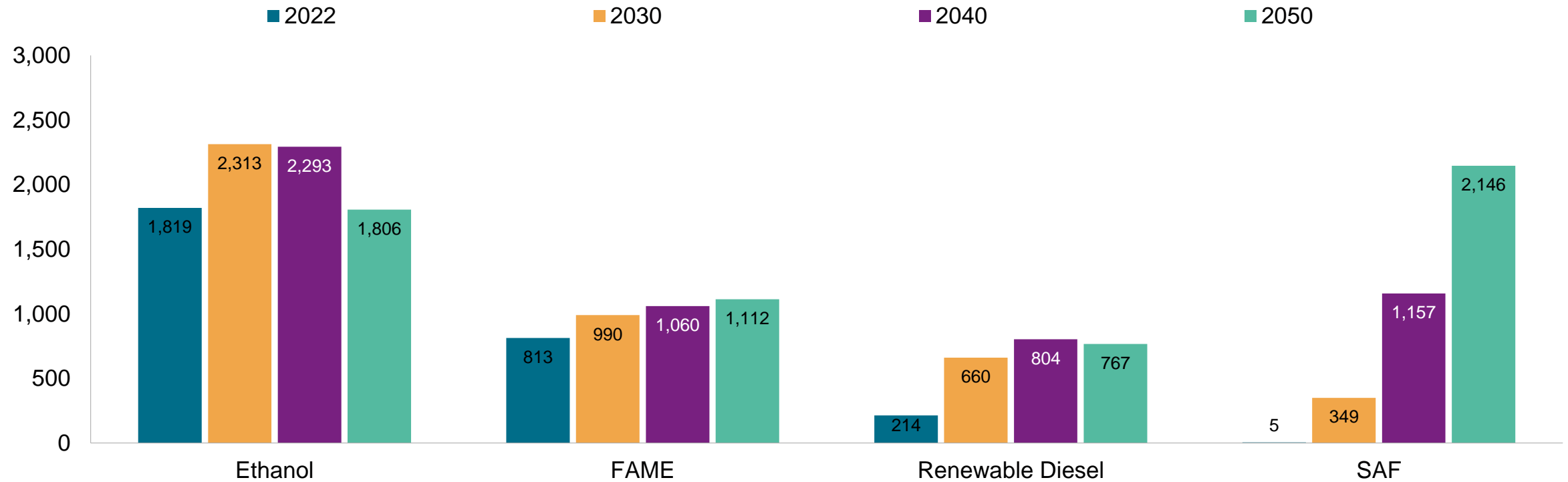
Biofuels & Feedstocks Price Assessment Coverage



S&P Global's biofuels demand outlook

With road transport demand peaking, biofuels will increasingly be utilized to decarbonize the aviation sector and supplement the decarbonization of the marine fuel sector

Global biofuels demand outlook (million barrels per day)



Data compiled Sept. 22, 2023.
Source: S&P Global Commodity Insights.
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The push for SAF has so far been driven by airlines, but policy is starting to catch up at the regional level

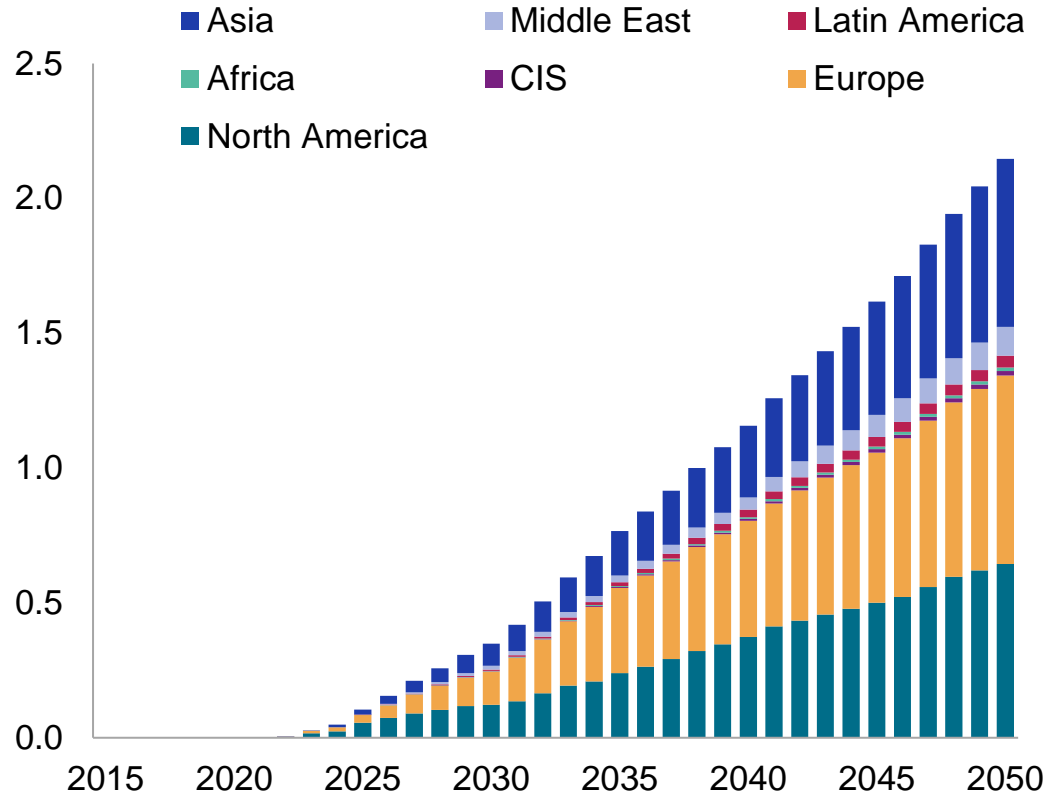


| | 2030 | 2050 | | |
|----------|---------------|---|--|---|
| Regional | Europe | 6% → 70% | | <ul style="list-style-type: none"> ReFuelEU Aviation sets target of 70% vol by 2050 in the EU. RFNBO sub-target of 35% by the same date. Norway and the UK will also have SAF targets. They target 30% and at least 10%, respectively, by 2030. |
| | United States | 10%* → 100% <i>*Based on 3-billion-gallon target</i> | | <ul style="list-style-type: none"> US Government seeking 3 billion gallons of domestic SAF production by 2030, increasing to 35 billion by 2050 under its 'SAF Grand Challenge'. 35 billion gallons is the estimate of total aviation jet fuel use in 2050. |
| | OECD Asia | Airlines driving growth | | <ul style="list-style-type: none"> Airlines providing momentum with government targets emerging <ul style="list-style-type: none"> South Korea: plans to amend its laws in 2023 to allow SAF by 2026. Japan: targeting use of 10% SAF by 2030. |
| | Non-OECD Asia | Pockets of palm-derived substitution | | <ul style="list-style-type: none"> Palm oil SAF encouraged in Indonesia (5% target for 2025). India plans 1% mandate by 2025 focused on sugarcane ATJ. Brazil aims at 1% emissions reduction mandate for aviation by 2027. |
| | Other | Airlines driving growth in Middle East | | <ul style="list-style-type: none"> Rest of world: No stated mandates but higher share expected in Middle East due to connectivity role with other key regions. |
| Global | IATA | 5% → 65% | | <ul style="list-style-type: none"> IATA's Net Zero strategy for 2050: 65% SAF, 19% offsets and carbon capture, 13% new technology; 3% infrastructure and operational efficiencies |
| | ICAO | Carbon neutral growth | | <ul style="list-style-type: none"> ICAO (UN) does not have a global SAF mandate, but supports CORSIA, a market-based mechanism to address carbon emissions from air travel |

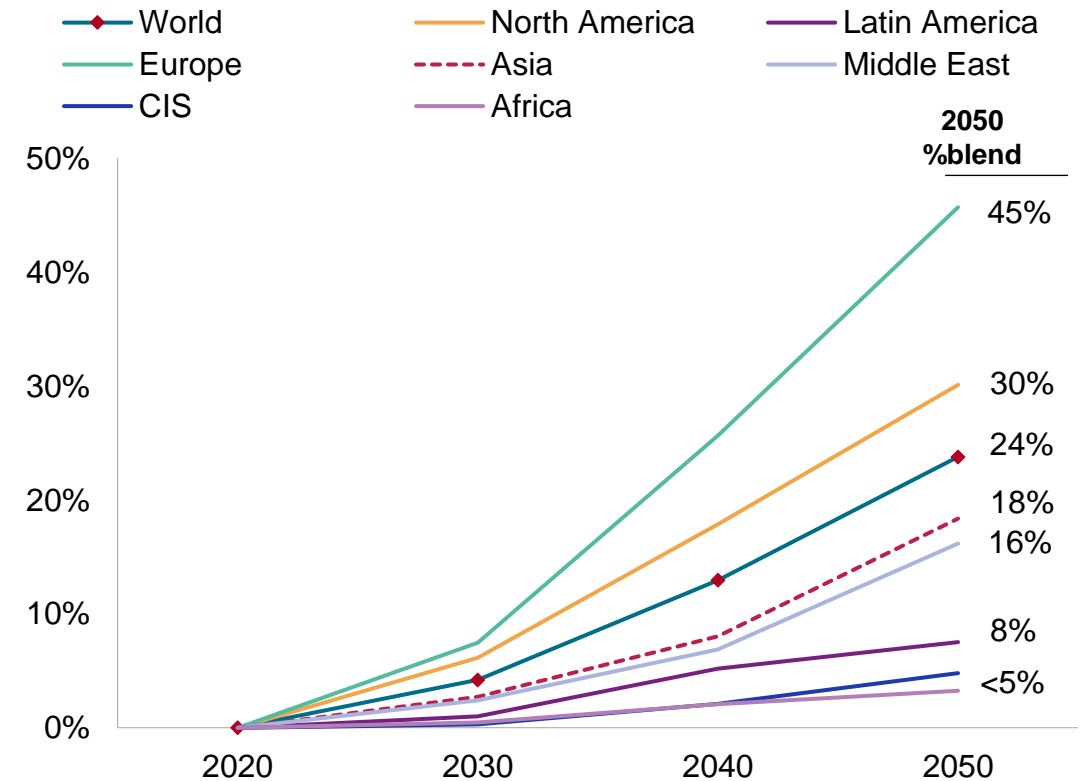
Data compiled Sept, 22, 2023.
Source: S&P Global Commodity Insights.

SAF demand is projected to grow to ~350 thousand barrels per day by 2030 and ~2.1 million barrels per day by 2050

Global SAF demand by region (million b/d)



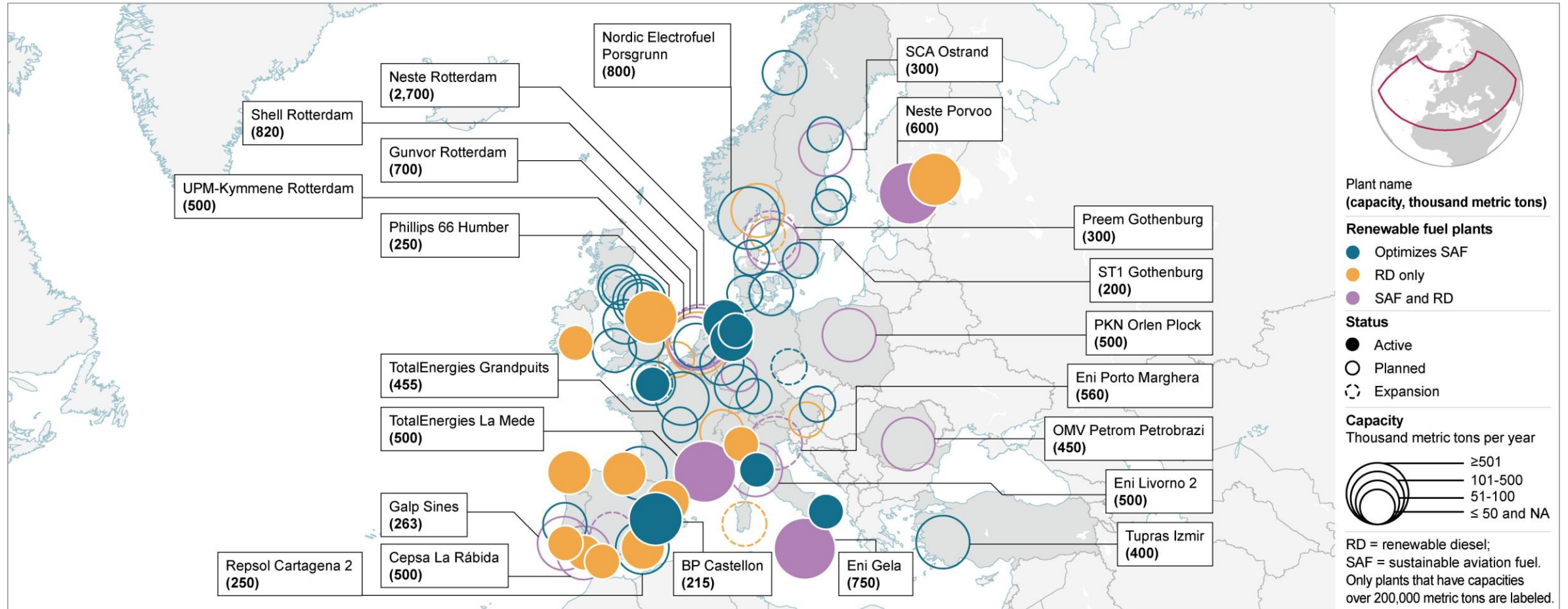
Global SAF blendrate (by % vol.)



Data compiled Sept, 22, 2023.
Source: S&P Global Commodity Insights.

Regional SAF production investments

Europe renewable diesel and sustainable aviation fuel capacity



Data compiled Sept. 11, 2023.

Source: S&P Global Commodity Insights: 2010707.

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North America Renewable diesel and SAF plants capacity

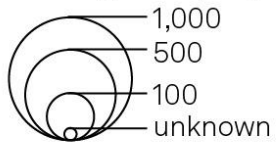
Renewable fuel plants

Renewable diesel (RD)
Sustainable aviation fuel (SAF)



Capacity

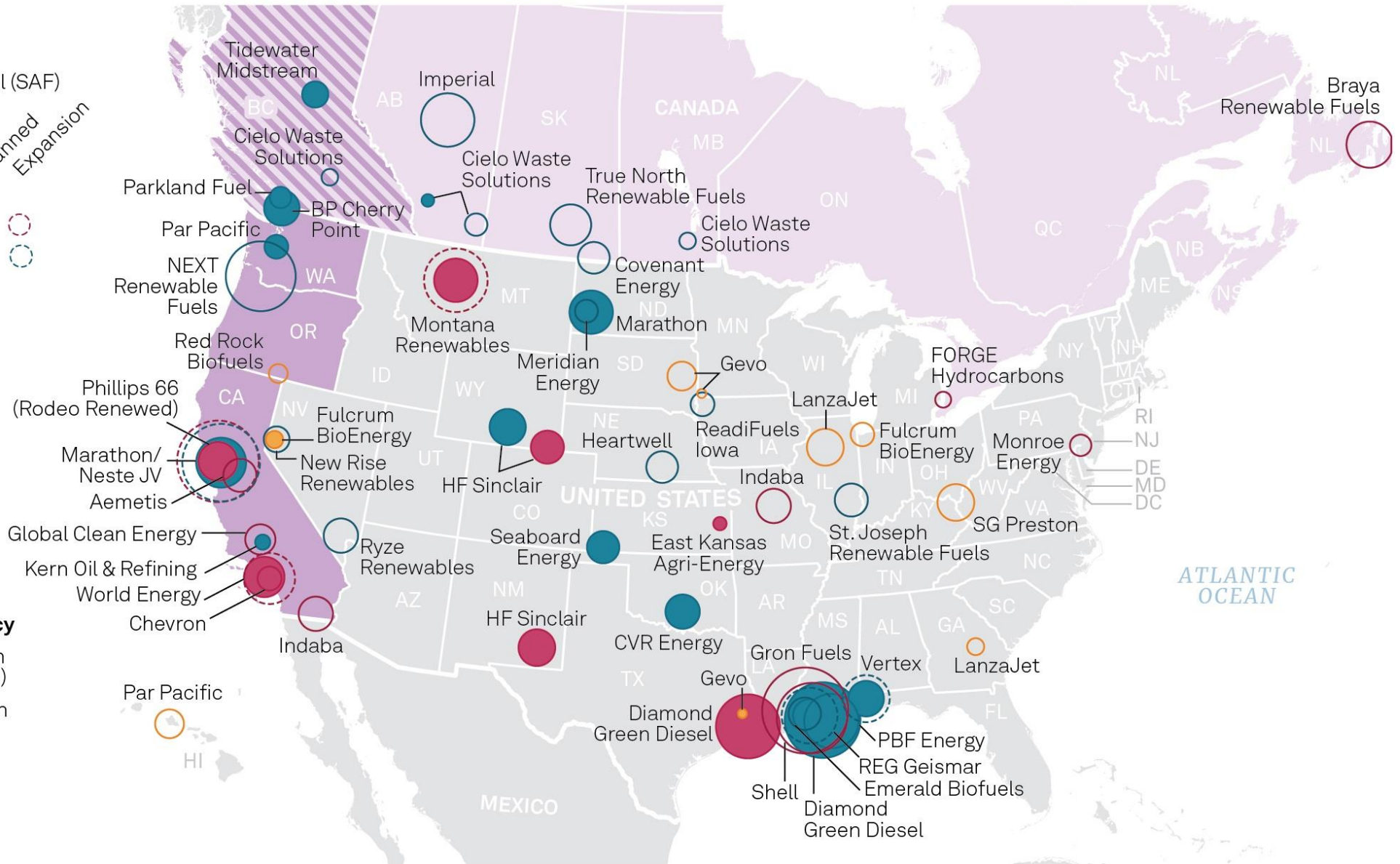
million gallons per year



State or provincial policy

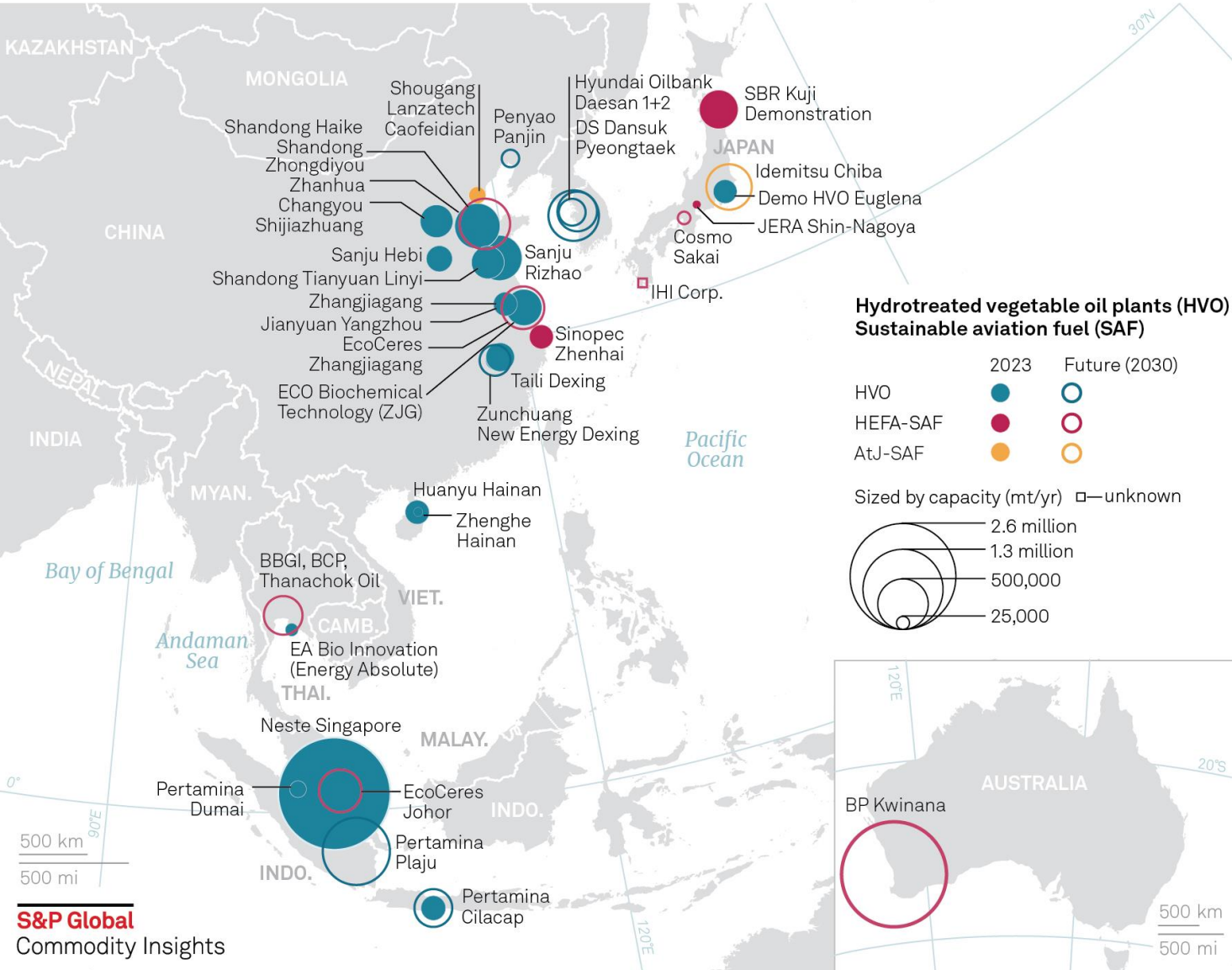
- Adopted Low Carbon Fuel Standard (LCFS)
- Canada federal Clean Fuel Regulations (to launch in 2023)

250 km
250 mi

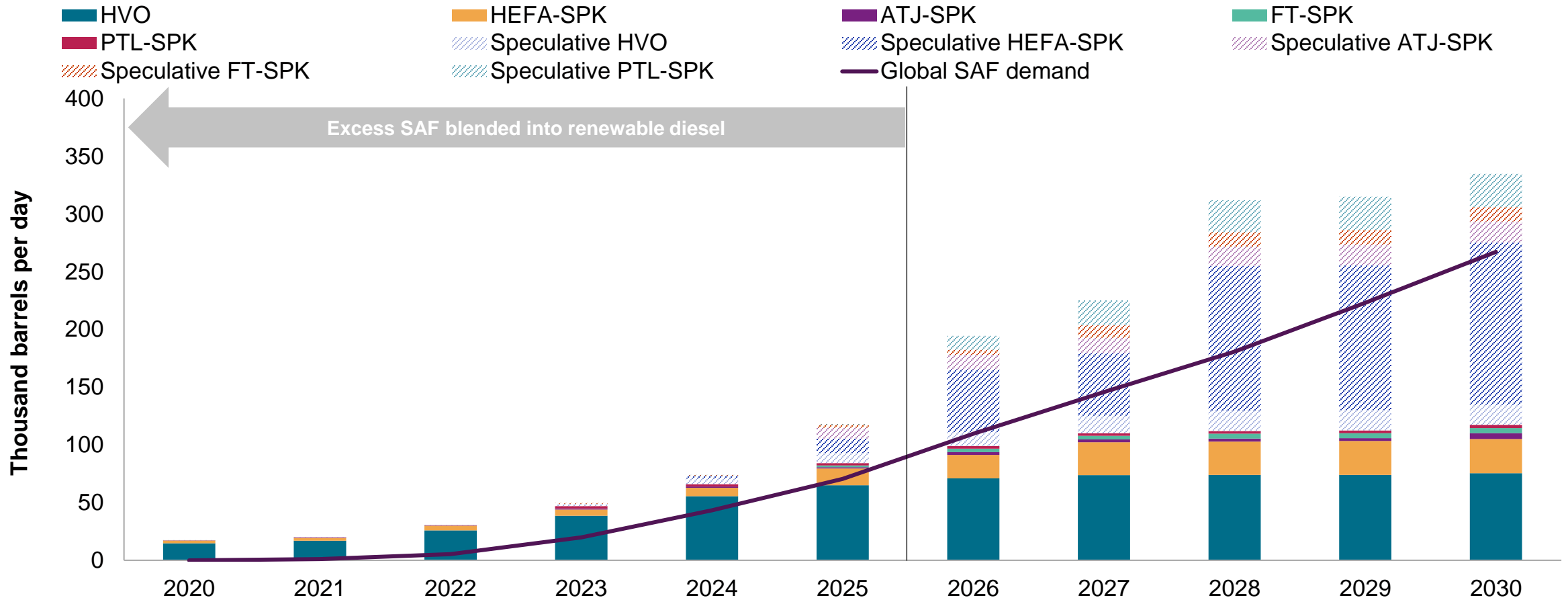


Source: S&P Global Commodity Insights, US Energy Information Administration

Renewable Diesel and Sustainable Aviation Fuel in Asia (2023)



Hypothetical global SAF production versus projected demand

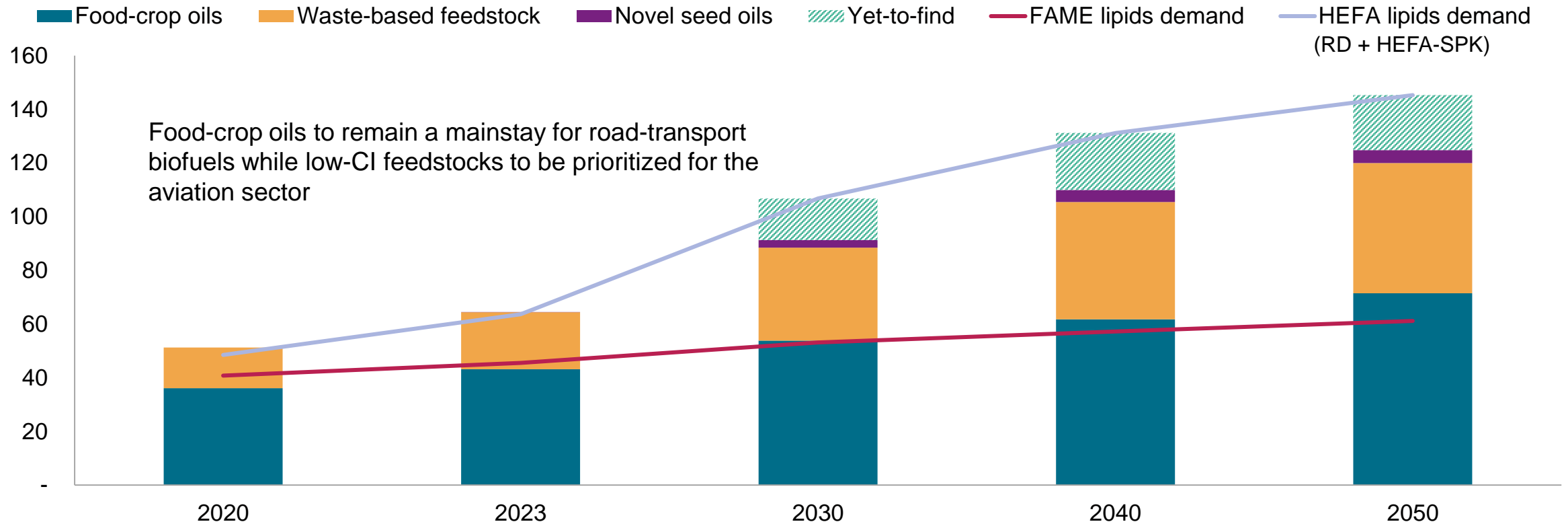


Data compiled June 1, 2023.
 Source: S&P Global Commodity Insights.
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HEFA-SPK feedstock outlook and the need for alternative pathways

Where will the lipids feedstocks come from? We currently see a shortage looming

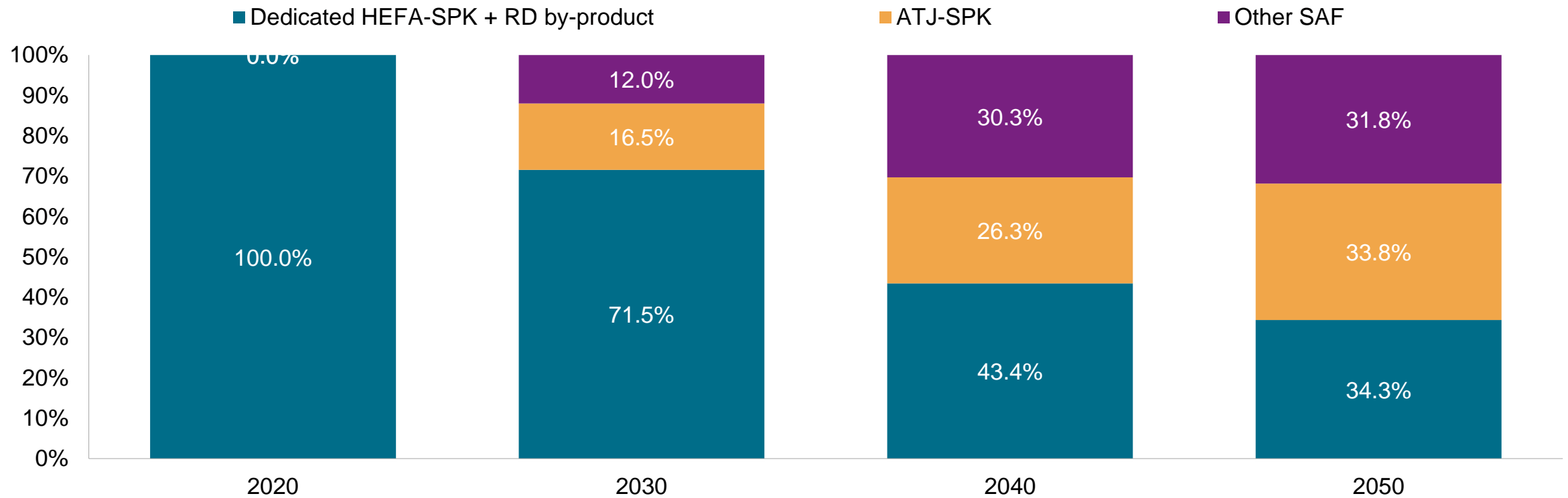
Global fuel sector lipids demand



Data compiled Sept. 1, 2023.
 Source: S&P Global Commodity Insights.
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There isn't enough waste-based oils in the world to meet decarbonization targets

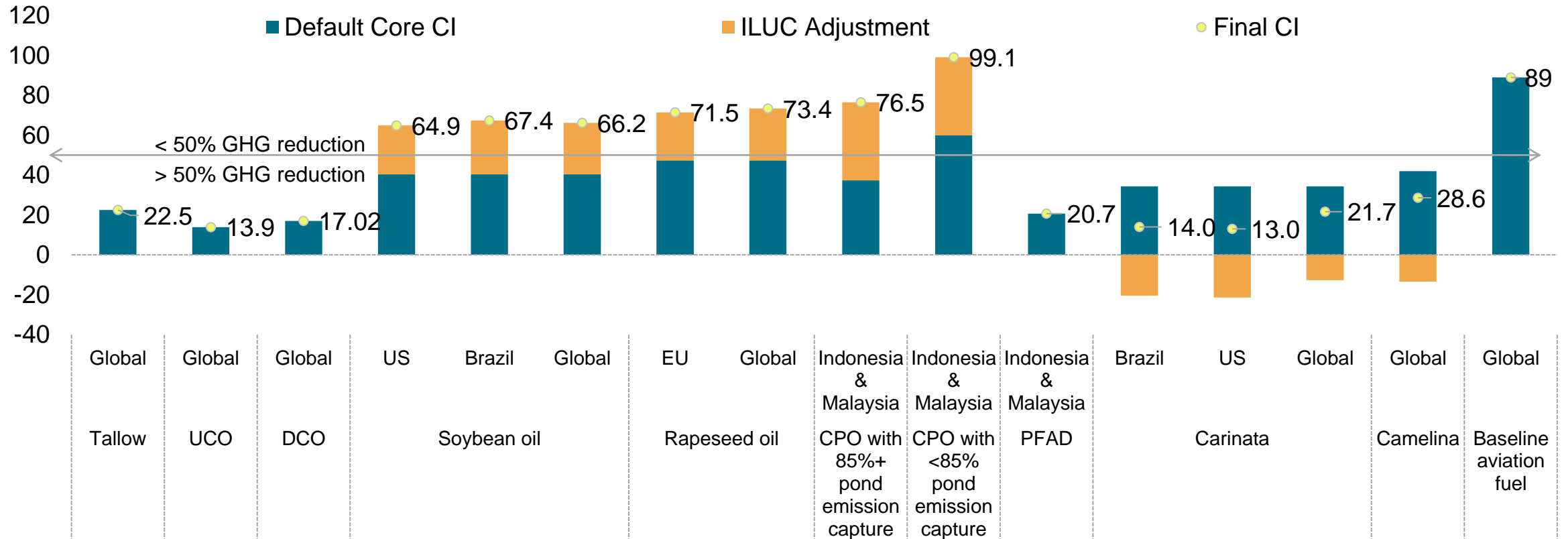
World SAF supply by pathway



Data compiled Sept. 22, 2023.
Source: S&P Global Commodity Insights.
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ICAO CORSIA's default LCA assessment for HEFA aviation fuels

CORSIA default SAF pathways for HEFA fuel conversion process (carbon intensity gCO₂e/MJ)



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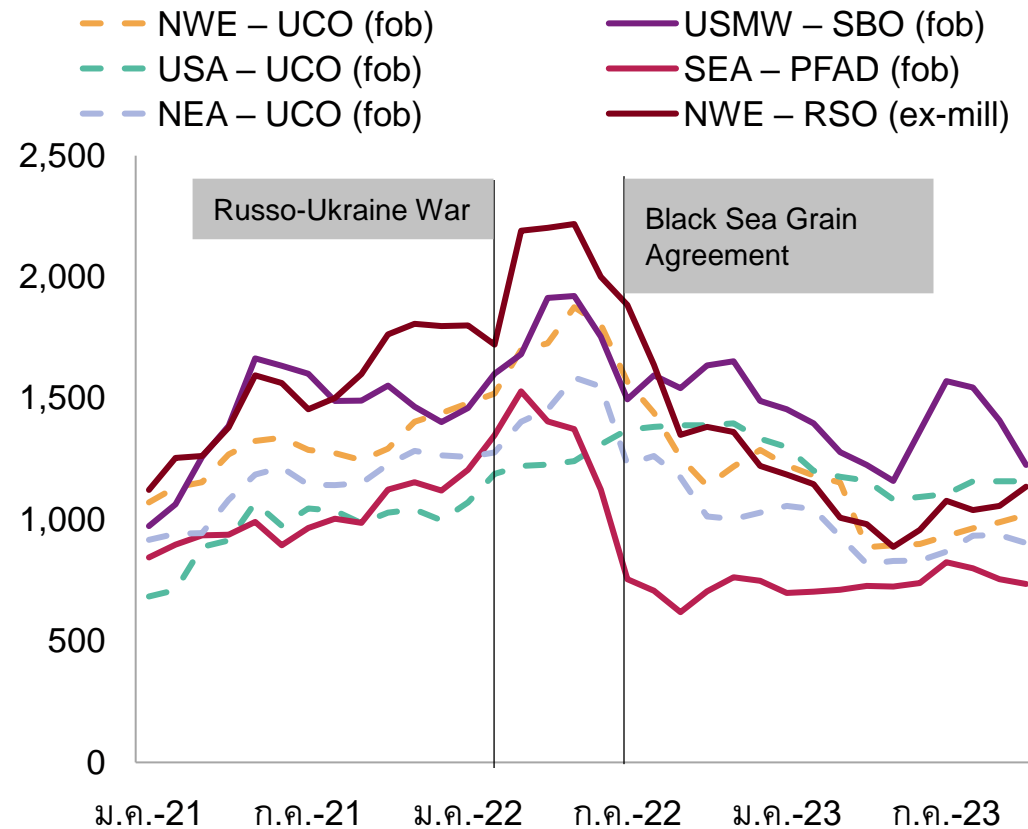
Note: Negative ILUC adjustments are still tentative, and may be adjusted up to 0 at a later point past the pilot phase

Source: S&P Global Commodity Insights.

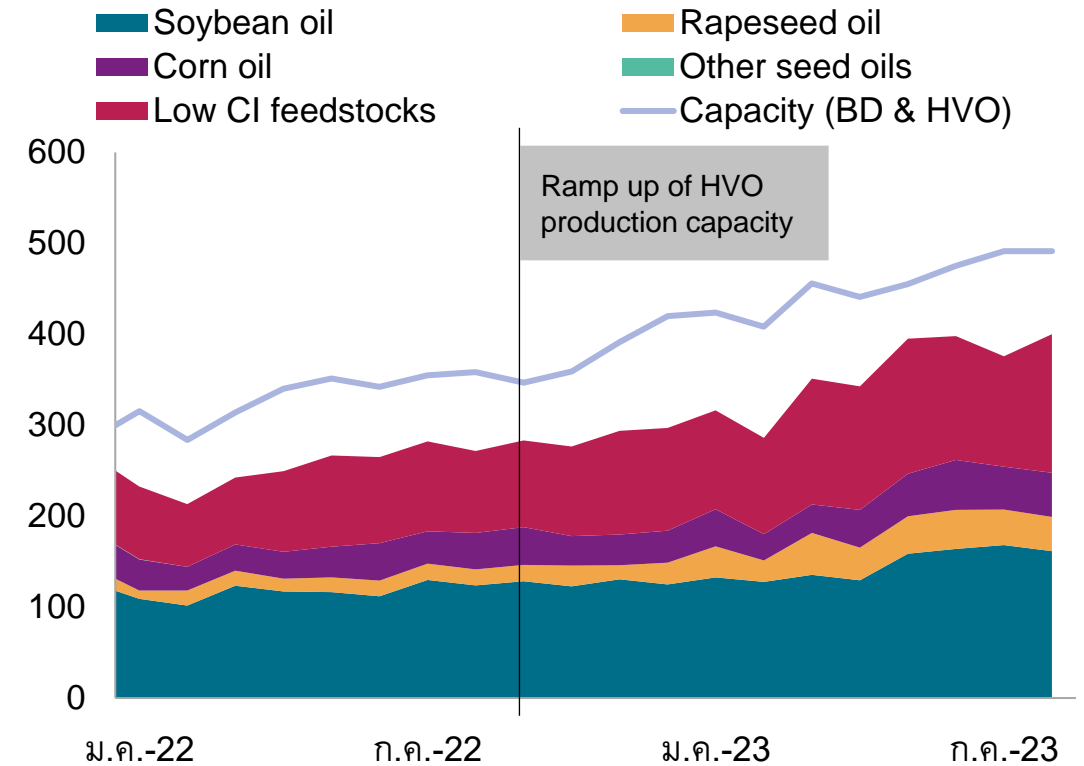
Feedstock pricing trends and how the US prices its SAF

Feedstock prices are increasingly being influenced by the biofuels market, with the US reflecting this the most

Benchmark feedstock prices (US\$ per metric ton)

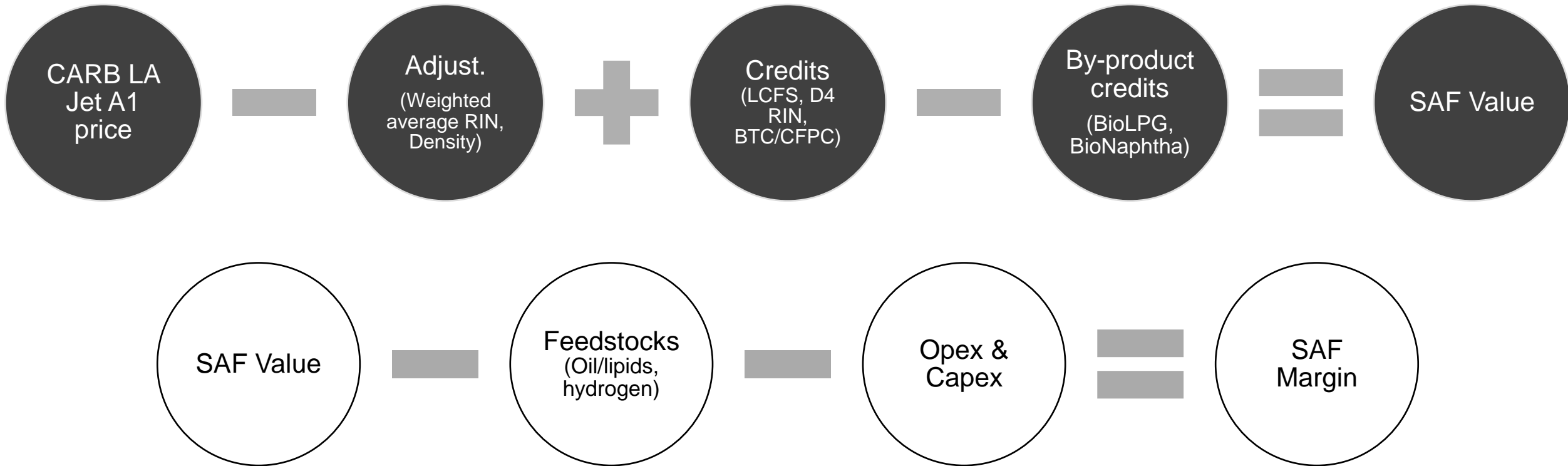


US biofuel production (million gallons) capacity and feedstock use (million pounds)



Source: S&P Global Commodity Insights.
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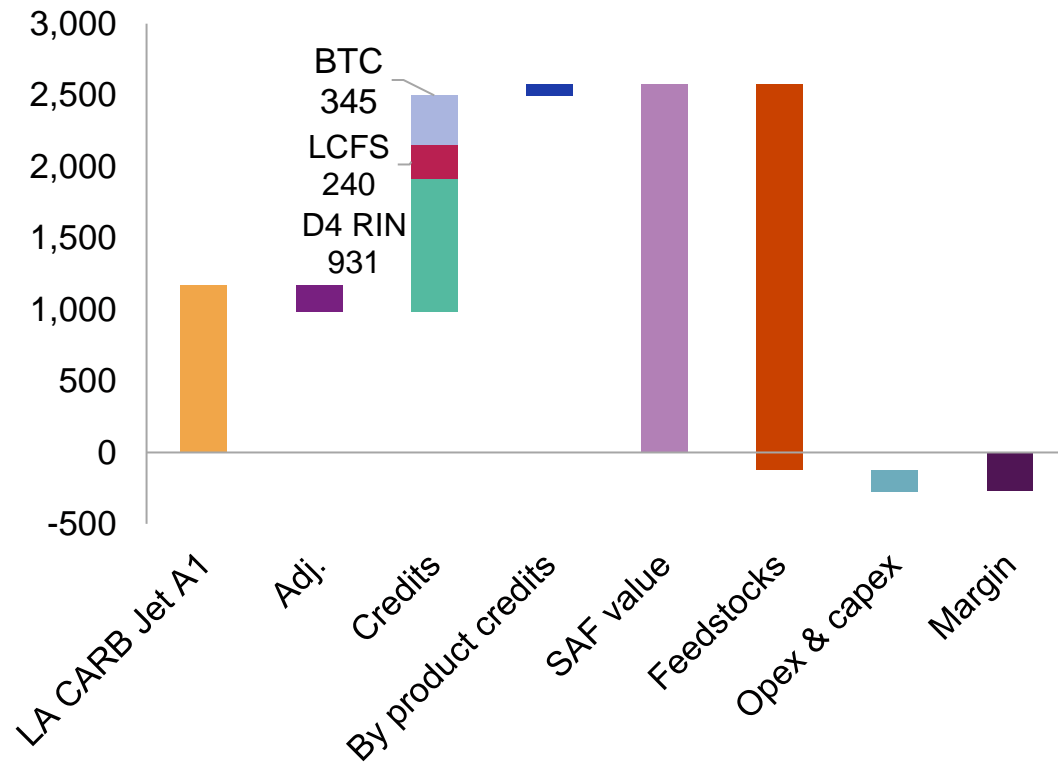
US West Coast SAF value and cost



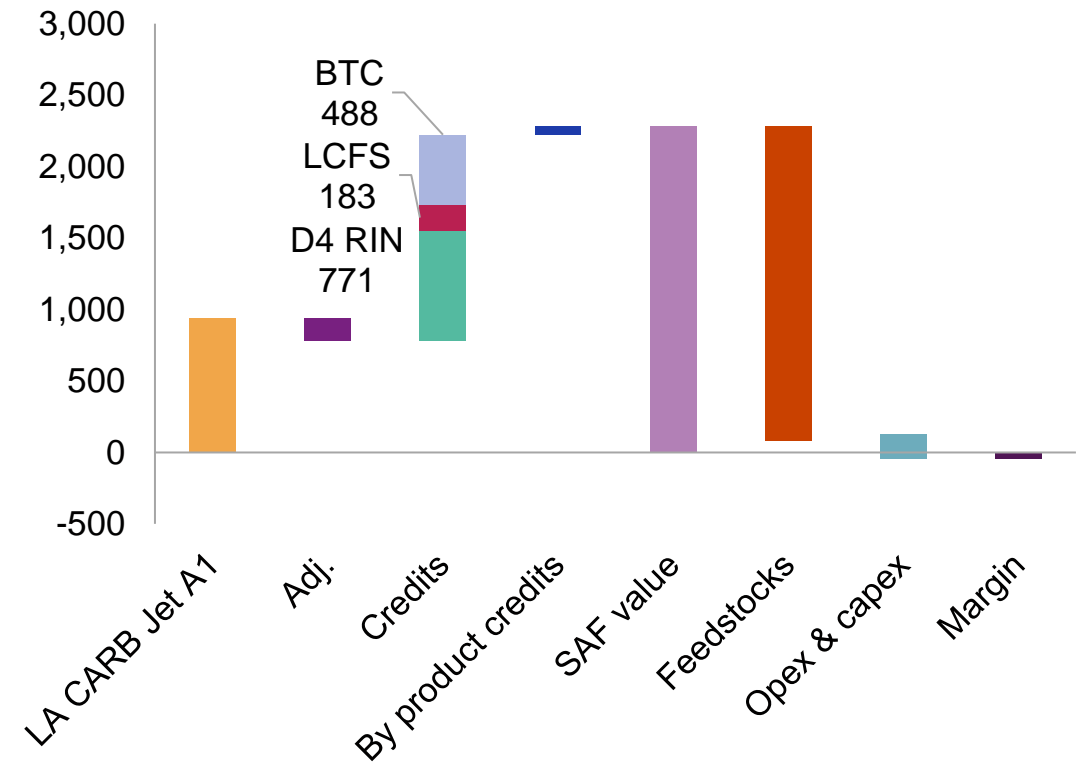
Source: S&P Global Platts

A declining LCFS credit and strong demand for low CI feedstocks to impact HEFA-SPK profitability

US West Coast HEFA-SPK indicative margins, Tallow (CI 33.5) – 2022 (US\$/metric ton)



US West Coast HEFA-SPK indicative margins, Tallow (CI 33.5) – 2023 (US\$/metric ton)



Summary

Summary

- SAF and Renewable Diesel markets are fragmented, outside North America and Europe, regions haven't focused specifically on promoting the use of the fuel.
- There are a couple of solutions to the coming feedstock crunch, but clarity in legislation and LCA carbon accounting will be required. Furthermore, due to the lack of low-CI feedstock supply, the market has to be pragmatic in its approach to decarbonization.
- S&P Global's SAF demand outlook is one constrained by supply. In the medium term we are constrained by HEFA feedstock demand and in the long term, we are further constrained by how quickly alternative pathways would be able to scale commercially.
- In markets where vegetable oil can be used for biofuels, there will be significant influence by growing biofuels demand. Our expectation of UCO prices is that it would be at parity or hold a slight premium to vegetable oil prices. However, this could change if legislation around non-compliance in the EU firms up, or a defacto carbon credit value is established like in the US.

Q&A

Contact us

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