

Line of Sight



# Fueling up for the long haul

*What to watch for SAF projects in 2025*

Thursday, May 29, 2025





# Agenda

## **Introduction**

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Climate Tech Funding

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SAF Deployment

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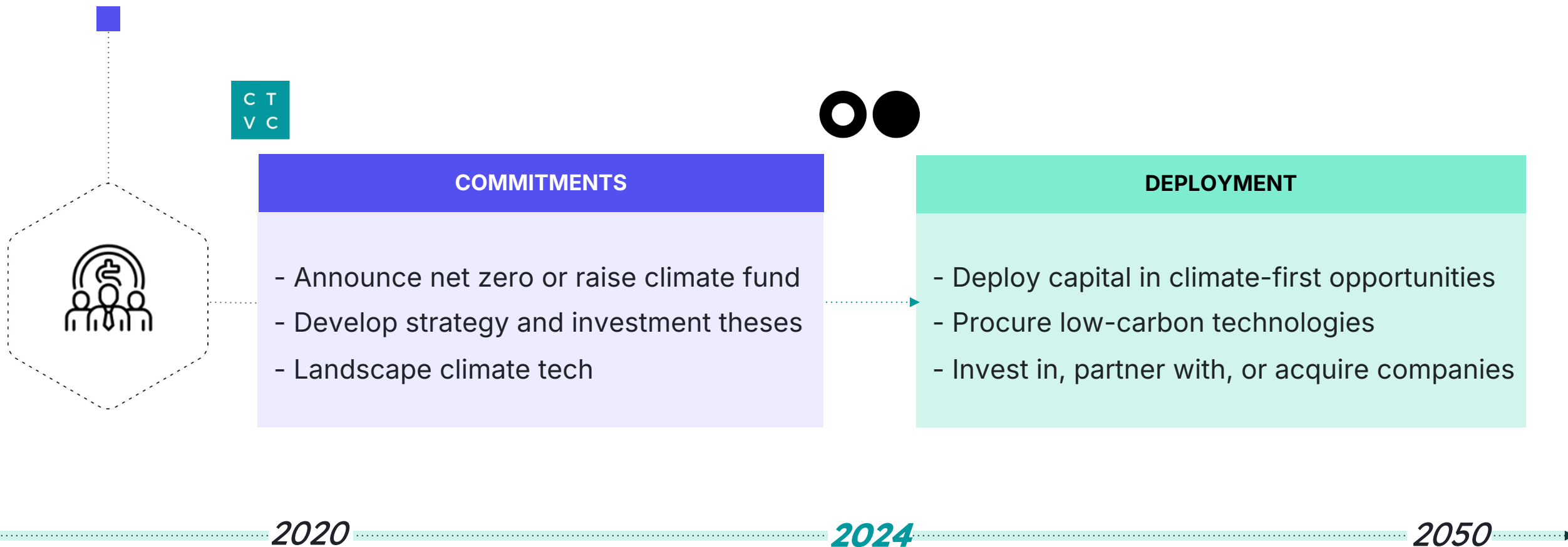
Q&A

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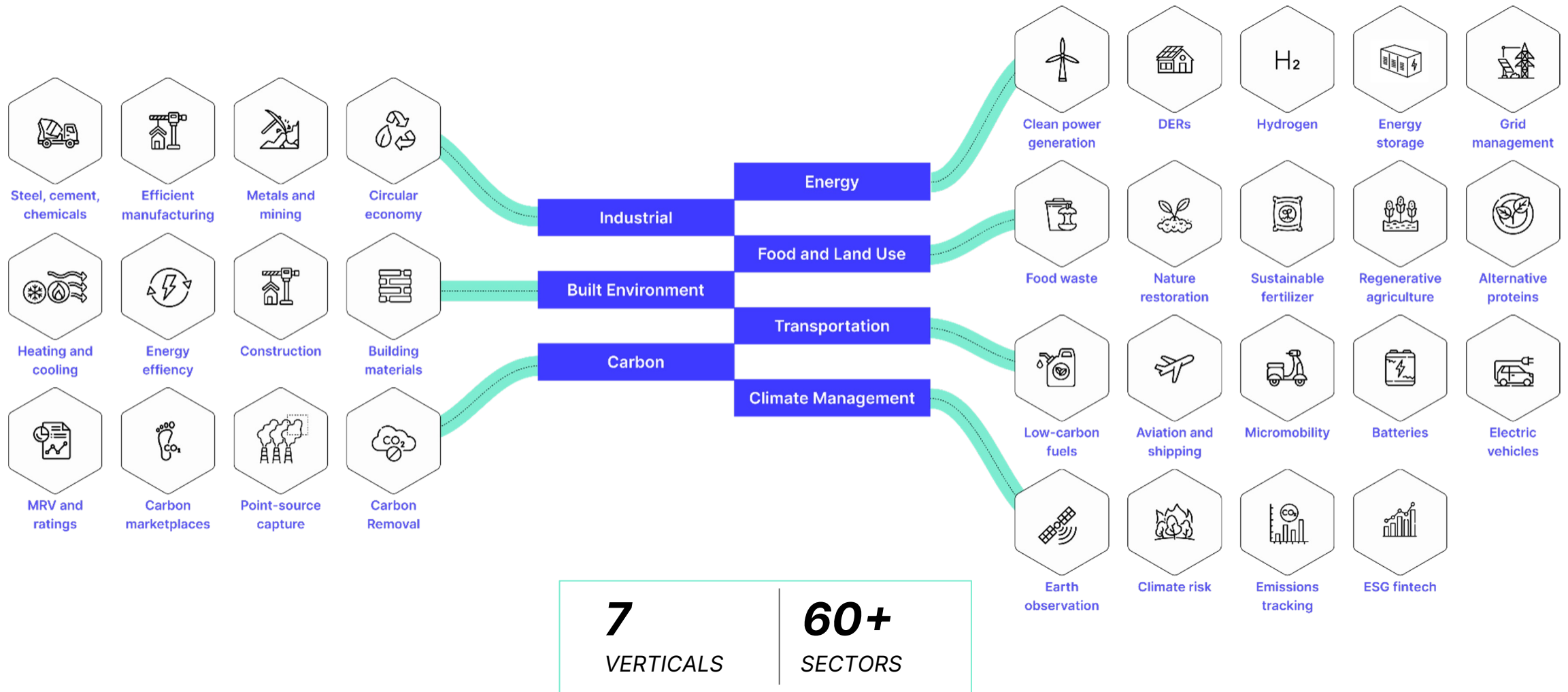
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# Sightline helps shift from commitments to deployment



# Climate covers monitoring, mitigation, adaptation and removal





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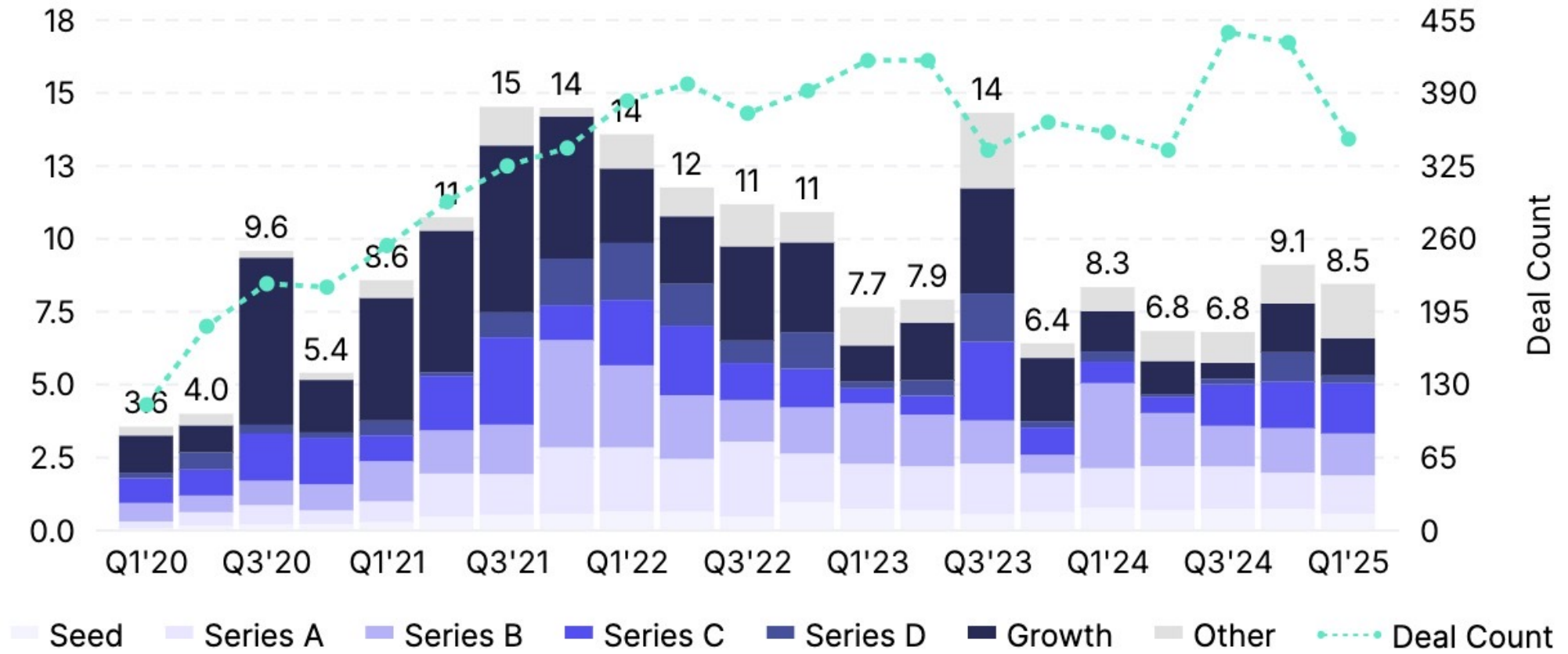
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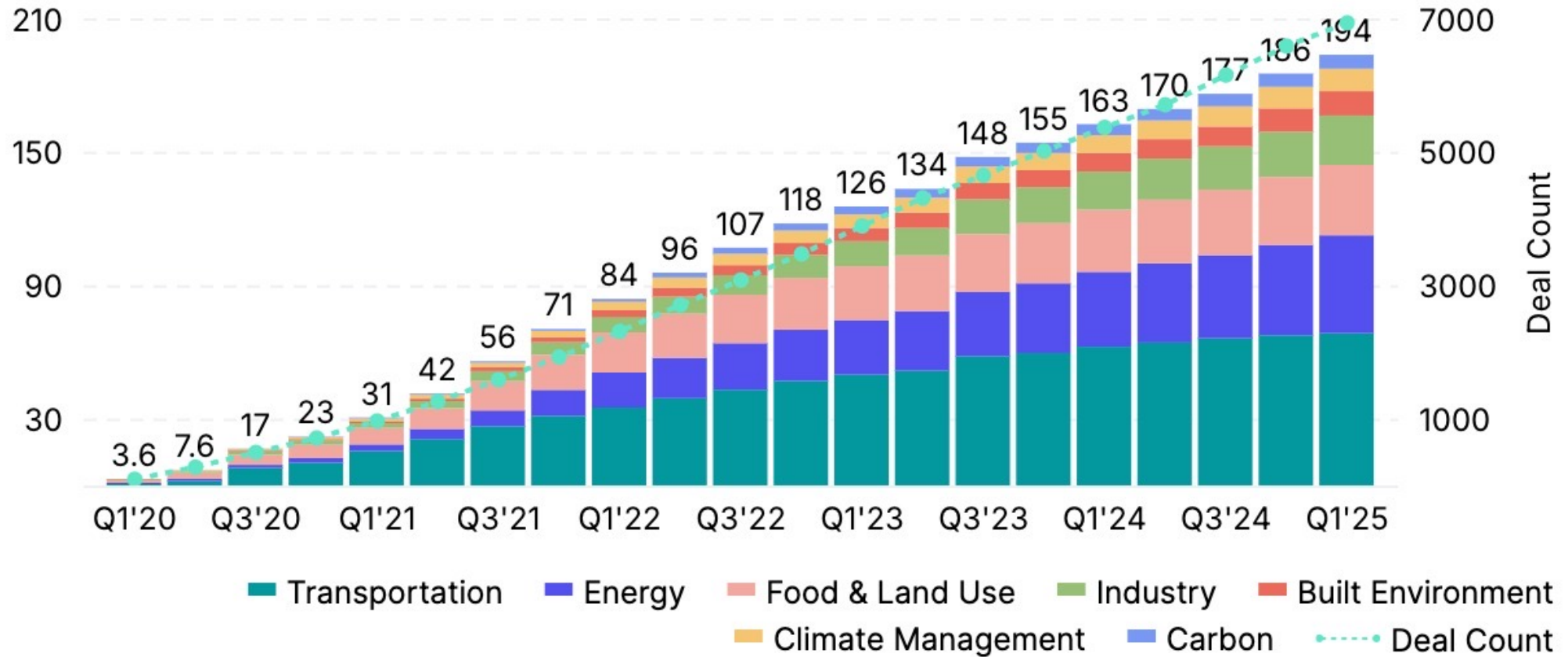
# Climate tech investment was down 14% last year

Stage (US\$B)



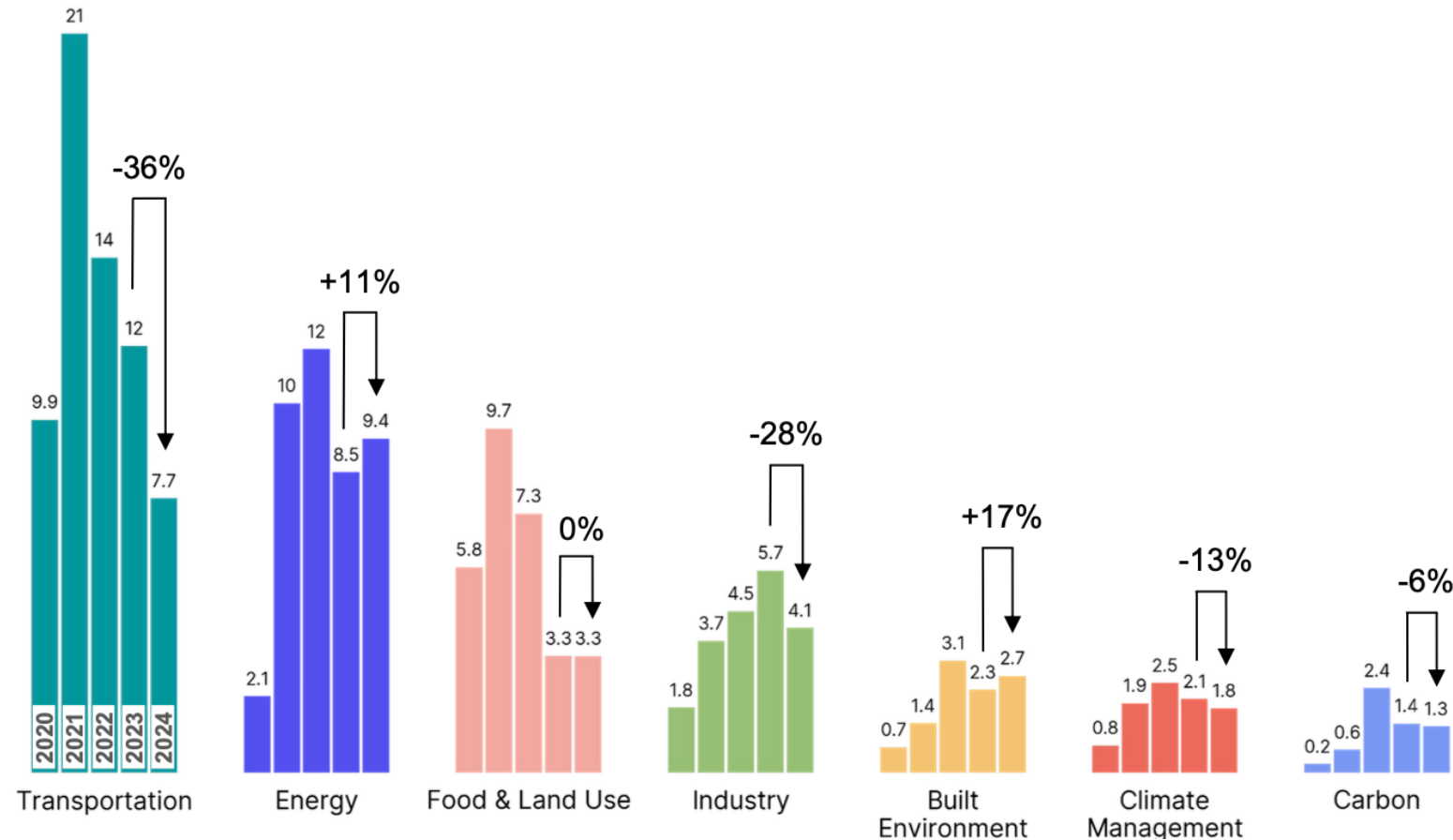
# But investment totals \$194bn since 2020

Sector (US\$B)



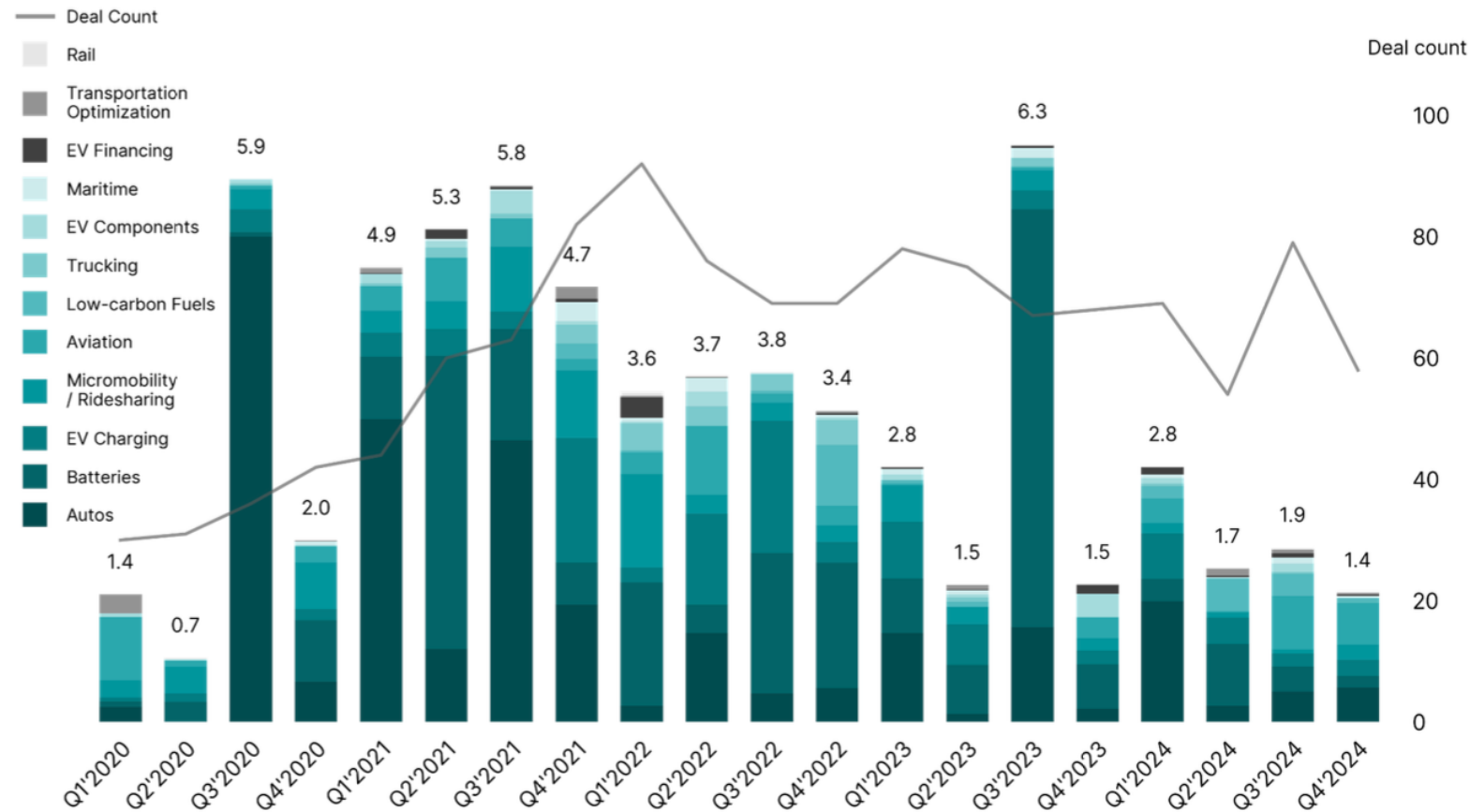
# The bad news: transport investment was hit hard in 2024

Annual investment by vertical, 2020–2024 (\$bn)



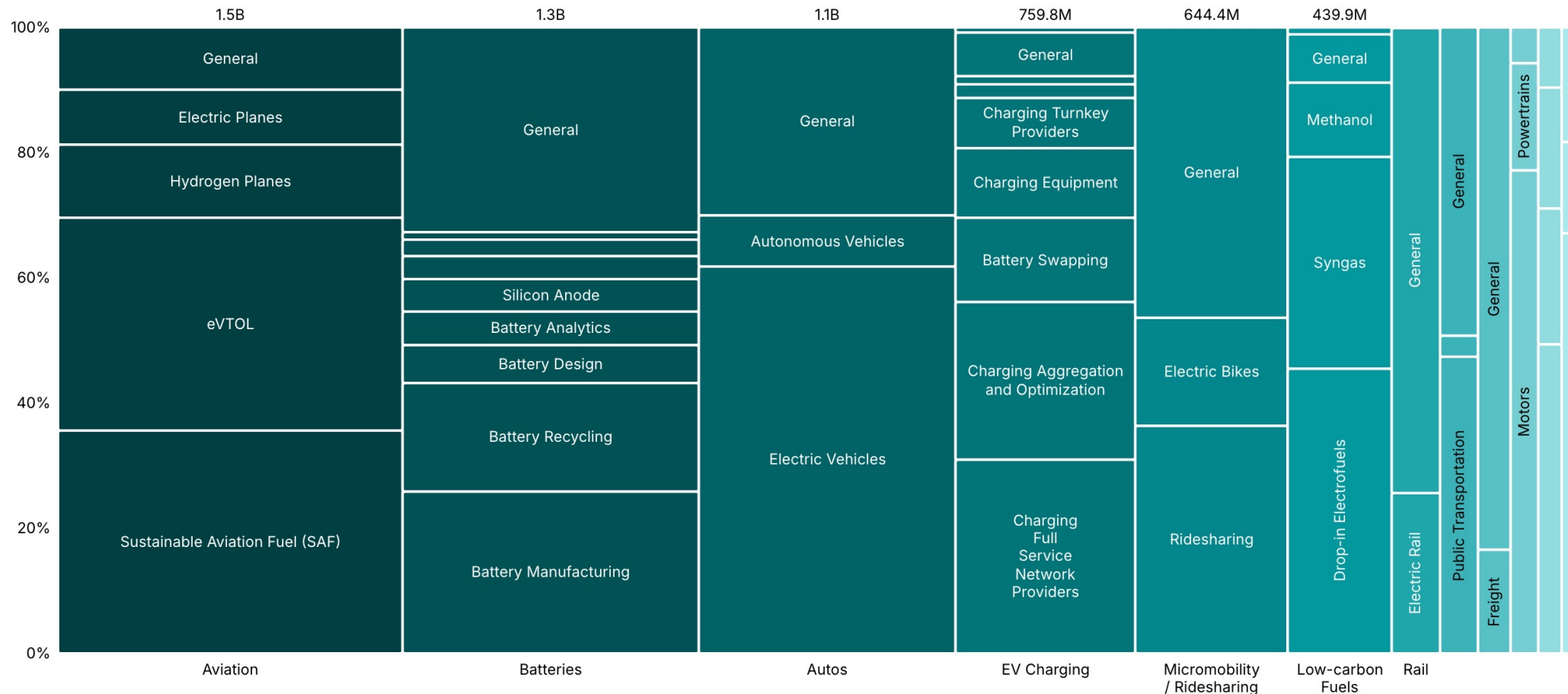
# The good news: most of that was road transport

## Quarterly investment in Transportation, 2020-2024 (\$bn)



# Aviation has crept up the investment leaderboards

Investment in Transportation by sector, April 2024-April 2025





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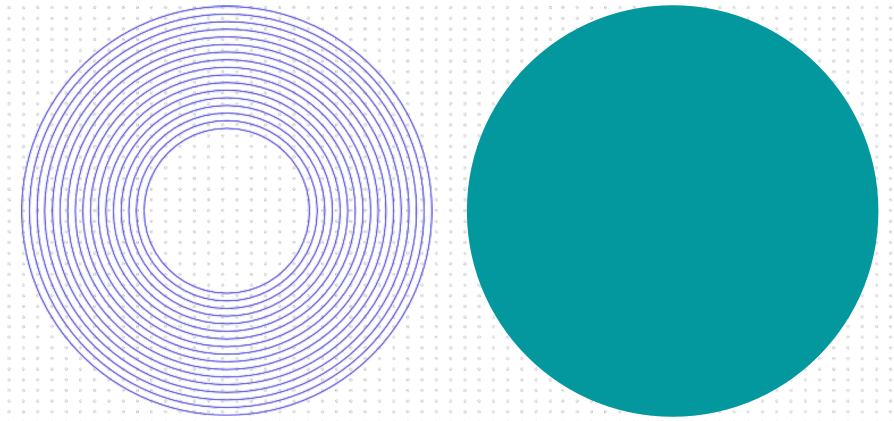
Q&A

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# SAF Deployment





# SAF Pathways

## High-Oil Biomass

Includes UCO, oil crops, algae oils, and pyrolysis oils

Hydroprocessed Esters and Fatty Acids (HEFA)

## High-Sugar Biomass

Includes corn, sugarcane, and sugar beets

Fermentation

Ethanol

Alcohol-to-Jet

Bio-SAF

## Cellulosic Biomass and MSW

Includes agricultural and forestry waste

Gasification

Syngas

Fischer-Tropsch

## Carbon Dioxide

Typically captured via CCS systems or DAC

Syngas

e-Ethanol

Fischer-Tropsch

Alcohol-to-Jet

e-SAF

## Hydrogen

Typically green hydrogen produced via renewable electricity and water

e-Methanol

Methanol-to-Jet

# Project overview

There is currently **61,937 ML/yr online across 224 operational and in-development SAF projects** with announced capacity. There are 44 projects that have not stated a capacity.

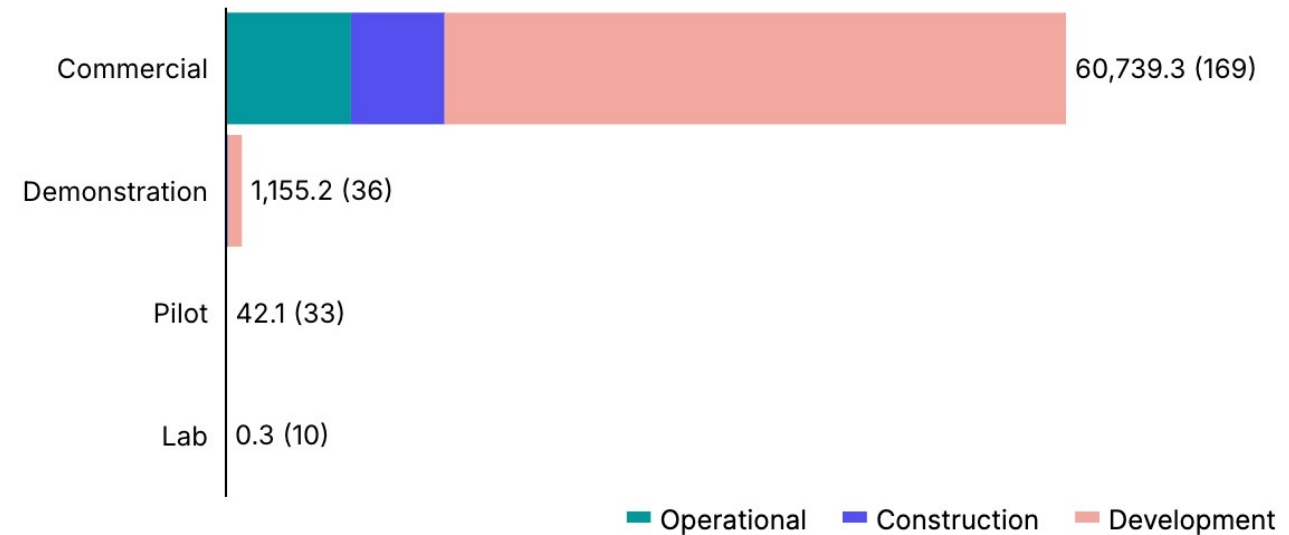
There is currently **9,167.3 ML/yr operational SAF capacity across 43 projects** globally as of April 2025. The average project size is 213 ML/yr, and the largest are coprocessing facilities from ADNOC and S-Oil that could theoretically produce more than 2 billion liters per year.

The largest operational standalone SAF plant is **Neste's Singapore refinery, with a capacity of around 1,137 ML/yr.**

**Commercial scale dominates the project pipeline.** We define commercial scale as greater than 100 ML/yr for bio-SAFs and 25 ML/yr for e-SAFs. There are 169 projects meeting this threshold, 21 of which are online today.

## SAF Projects by Scale (ML/yr)

Pipeline by Scale (ML/yr)

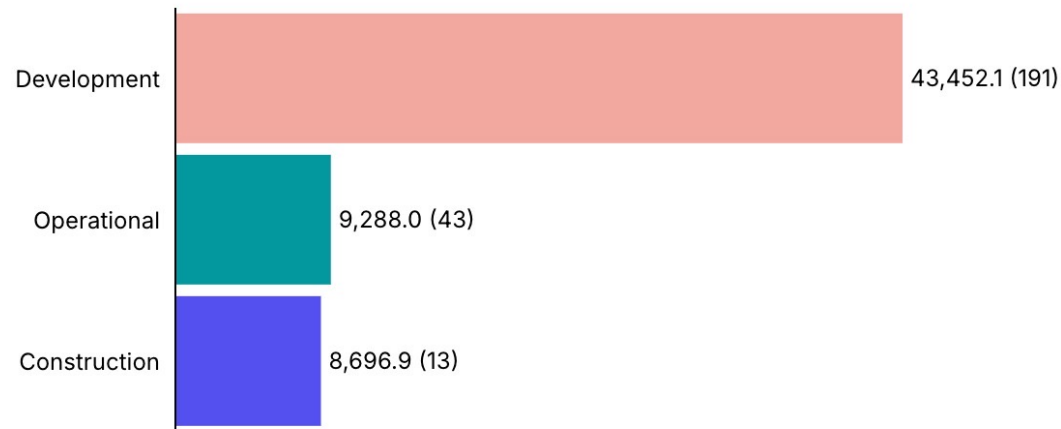


Source: **sightline**  
climate

Note: For projects without specific SAF capacity, we assume they are optimizing for SAF production

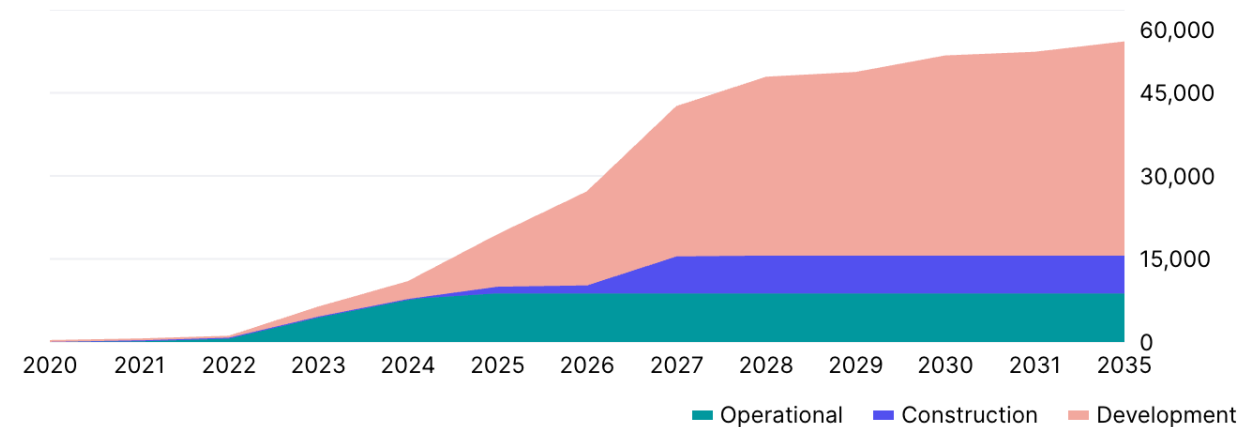
# Projects by status

## SAF Projects by Status (ML/yr)



Note: data labels are total capacity and (project count).

## SAF Projects by Status, 2020-2040 (ML/yr)



Operational Construction Development

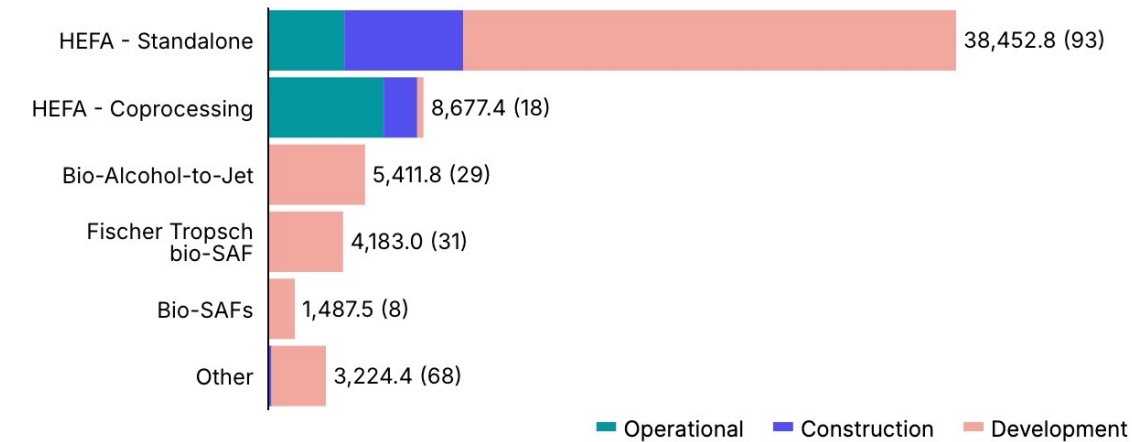
**Most of the pipeline is in development**, or 191 projects totaling 43,452.1 ML/yr. Only 13 projects or 8,696.9 ML/yr are in active construction.

**Online SAF capacity could jump sharply in the next five years**, if planned projects actually go to completion. Of course, not all of this capacity will get built, and not all of it on time. But an upward trend seems likely.

**Beyond 2027 the curve flattens**, given the above chart is not a forecast but a time-series representation of the current pipeline. Should policy environments continue to tighten in several jurisdictions, or new incentives offered, we expect new project announcements and the upward trend to continue.

# Projects by technology

## SAF Projects by Technology (ML/yr)

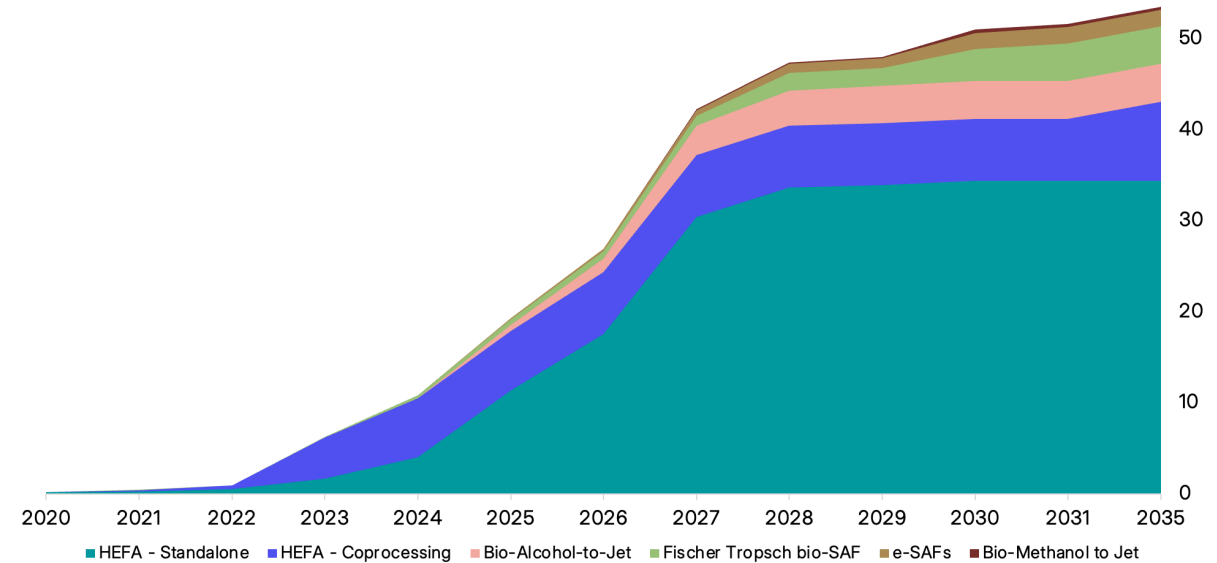


Source: sightline climate

**Standalone HEFA** makes up the largest share with 90 projects in the pipeline. The technology is mature and has a higher SAF yield than coprocessing facilities, making it the natural fit for early projects.

**Coprocessing HEFA has the highest proportion of operational projects**, due to the low cost of adding that capability to existing refineries and a low market demand for new coprocessing projects as they can produce a maximum of 5% SAF blended with Jet A.

## SAF Projects by Technology (BL/yr)



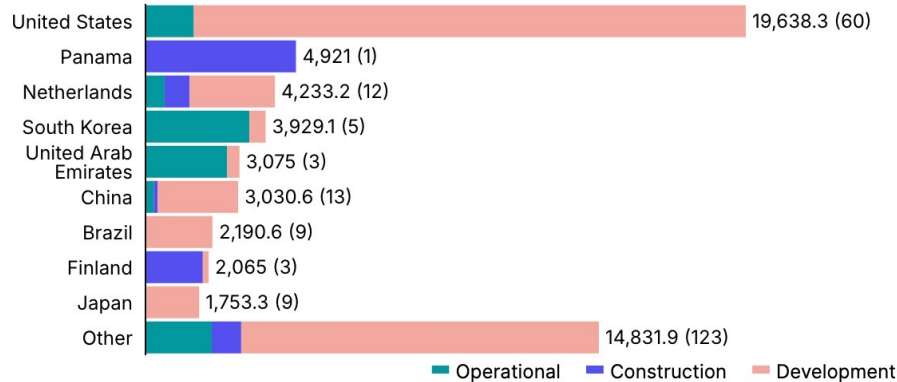
**Standalone HEFA** is currently the largest technology for SAF production, given the relative technical maturity, existing assets that can be repurposed, and current availability of feedstock. It will start to plateau around 2028 as feedstock constraints and competitive technologies start to make an impact.

**Bio-Alcohol-to-Jet** is the next largest pure-play constituent in the pipeline. Despite being relatively new as a technology, the availability of ethanol feedstock and the high proportion of output that is SAF makes it a popular choice for new projects.

# Projects by location

## SAF Projects by 10 Country (ML/yr)

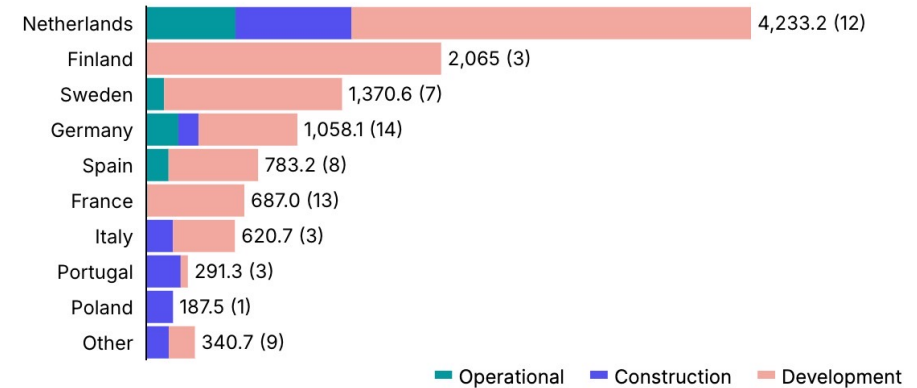
Pipeline by Geography (ML/yr)



Source: sightline climate

## EU SAF Projects by Country (ML/yr)

Pipeline by Geography (ML/yr)



Source: sightline climate

**The US leads in SAF project development**, supported by policies like the 45Z tax credit and the LCFS. These financial incentives and the acceptance of crop-based biofuels like corn ethanol-to-jet have driven much of the development in the US. However, the uncertainty caused by the current administration has put a damper on project development plans going forward.

**Refuel EU Aviation could drive SAF development in Europe.** The requirement that airlines, airports, and fuel producers gradually increase the proportion of fuel used that is SAF has driven significant project announcements in the second half of 2023 and into 2024. The lack of clarity on these guidelines prevented large-scale project development, but it appears that the floodgates have now opened, with most projects slated to come online in the second half of the decade. The addition of a specific requirement for e-SAFs has had a clear impact: Around 2/3rds of planned e-SAF capacity is in Europe, despite Europe only making up 20% of total planned capacity.

# Q&A

