Rotate Reports

Market developments and implications for the industry

March 2026

Rotate helps you make better commercial decisions

Consulting | Software | Data

Key questions

State of the industry

Drivers of demand growth

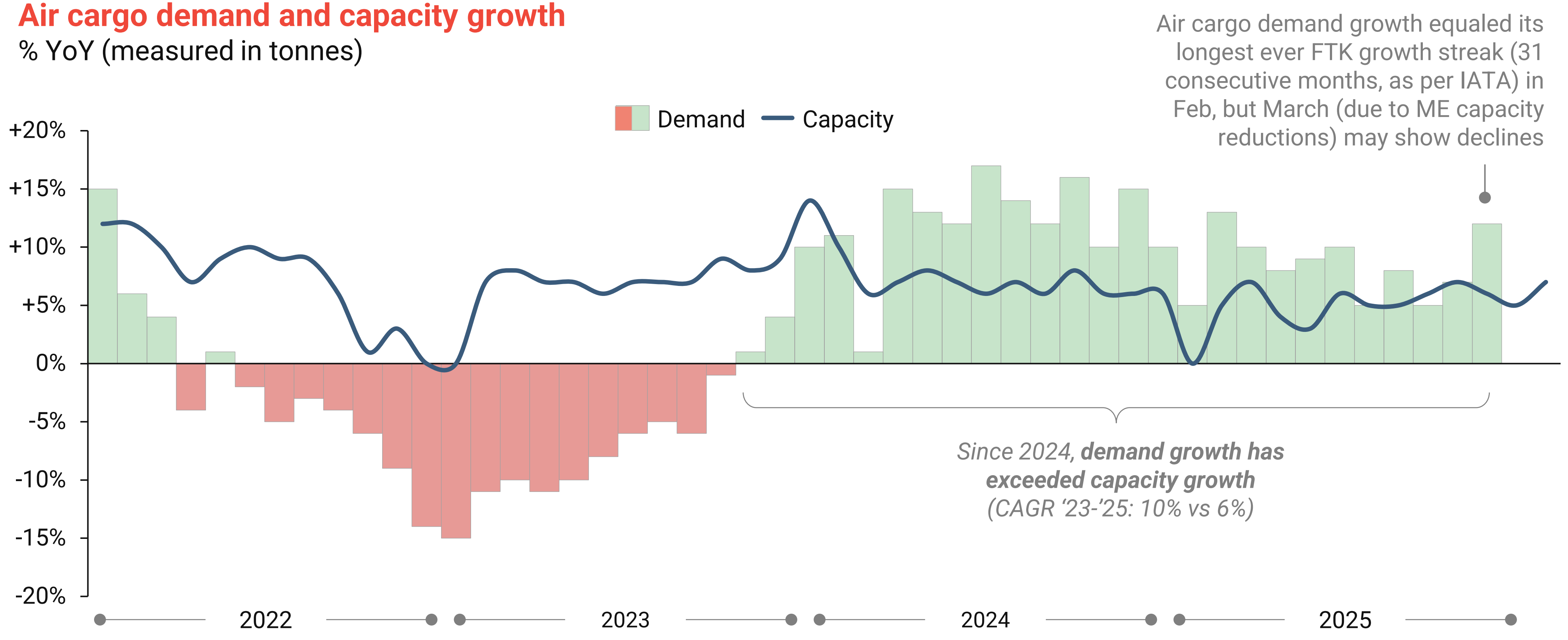
Middle East airspace closures

State of the market

Demand has outgrown capacity for most of the last 26 months

Air cargo demand and capacity growth

% YoY (measured in tonnes)



Note: International air cargo demand and capacity only, capacity by freighters and widebody passenger aircraft only (including integrators and charter flights)
Source: Rotate Live Capacity; Rotate Air demand; IATA monthly statistics, Rotate analysis (March 2026)

State of the market

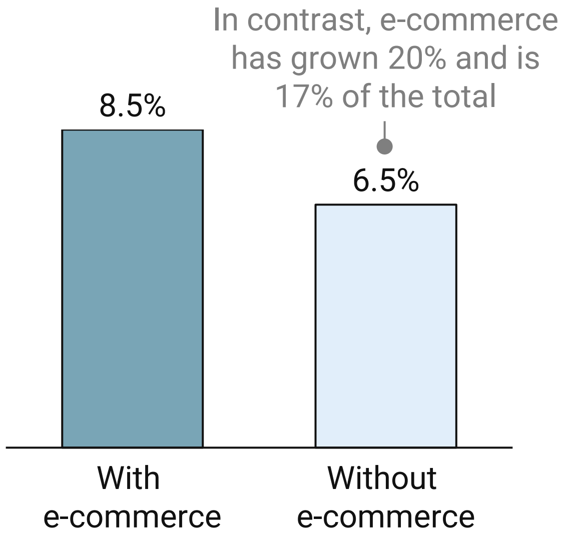
2025 growth figures vary between market sources – heavily influenced by e-commerce, ACMI/charters, and the unit of measure

01

E-commerce capture

Not accounting for e-commerce has a 2 p.p. impact on growth figures

Air cargo demand growth, 2025 vs. 2024
%

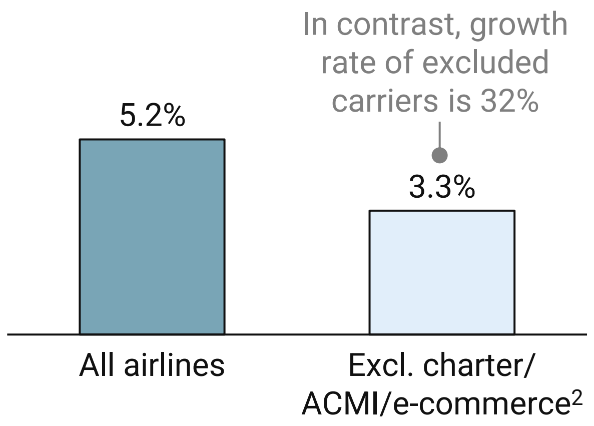


02

Carrier coverage

Fast-growing charter, ACMI and e-commerce carriers bring up global average growth figures by ~2 p.p.

International capacity growth[1], 2025 vs. 2024
% (measured in tonnes)

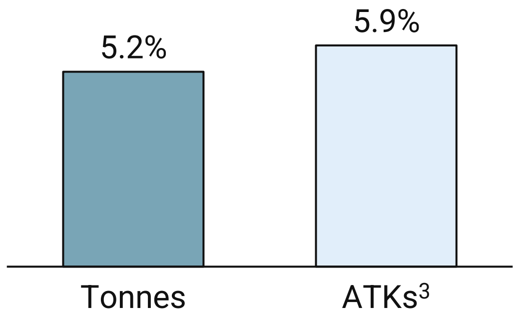


03

Unit of measure

Measuring capacity (and demand) in tonnes or ATKs/FTKs will have a ~1 p.p. impact on growth rates

International capacity growth[1], 2025 vs. 2024
%



Note: 1) Capacity analysis includes WB/NB freighters and WB passenger aircraft only; 2) Excluded airlines include (in order of absolute growth) Atlas, Kalitta, SF Airlines, MyFreighter, Central Airlines, National Airlines, Air Atlanta, China Central Airlines, Rom Cargo, One Air, Beijing Capital and 5 smaller carriers; 3) Flights between ANC and the USA counted as international; Source: Rotate Live Capacity; Rotate Air Demand; Rotate analysis (March 2026)

Key questions

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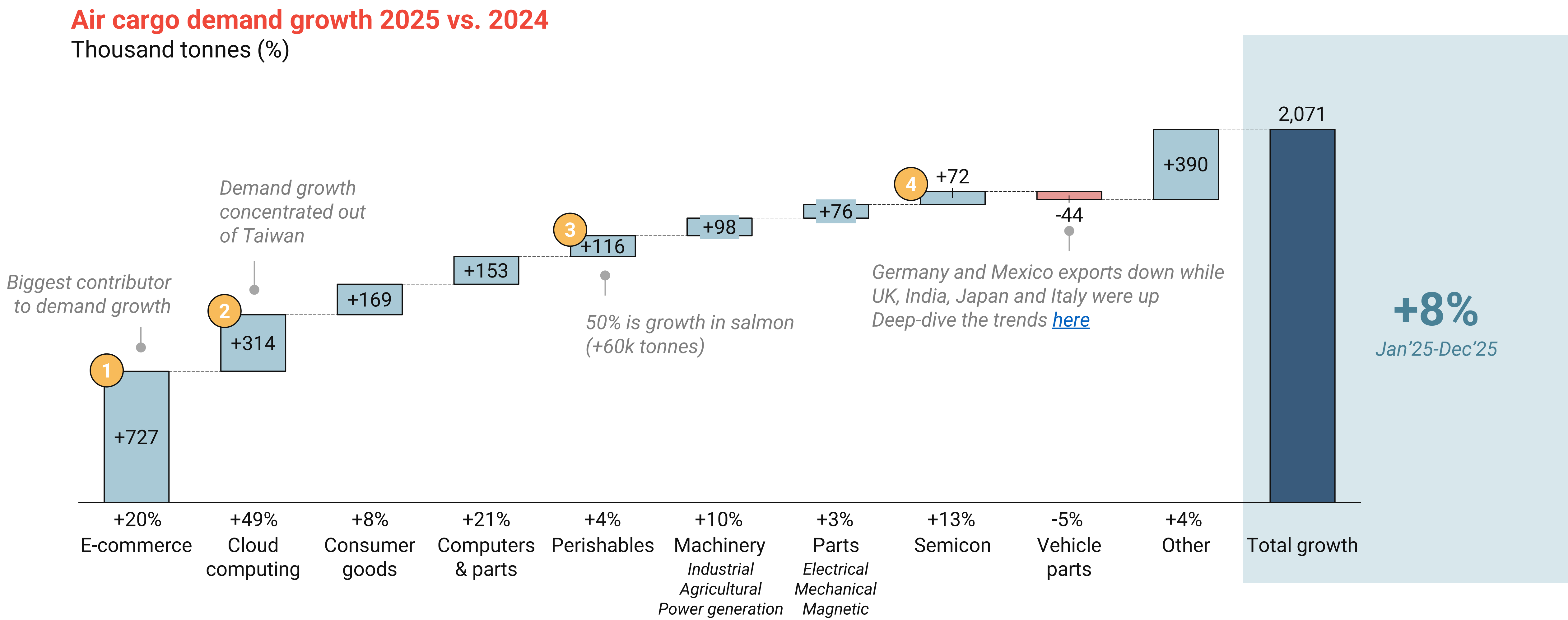
E-commerce and cloud computing made up half of the air cargo demand growth in 2025



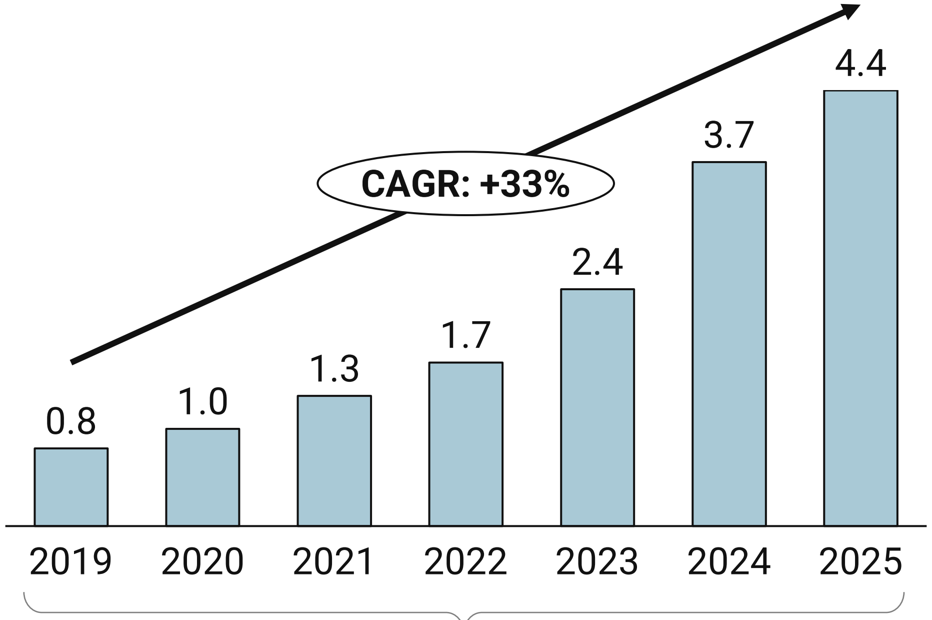
Note: Figure compares full year 2025 to full year 2024
Source: Rotate Air Demand; Rotate Analysis (March 2026)

E-commerce

E-commerce is the primary driver for China’s extraordinary growth

E-commerce exports from China[1] …

Million tonnes



China’s total CAGR: 11.2% incl. e-commerce vs. 4.1% ex. e-commerce

… and growth by destination

Thousand tonnes, 2025 vs 2024

	Thousand tonnes	YoY Growth	Demand per capita[2]
Western Europe	+217	+30%	3.0 kg
Eastern Europe	+194	+143%	1.2 kg
Southeast Asia	+150	+32%	1.4 kg
Other	+137	+25%	0.1 kg
Northeast Asia	+89	+13%	3.8 kg
Southern Europe	+74	+36%	1.9 kg
Northern America	-135	-14%	2.1 kg

Impacted by ending of de minimis exemptions

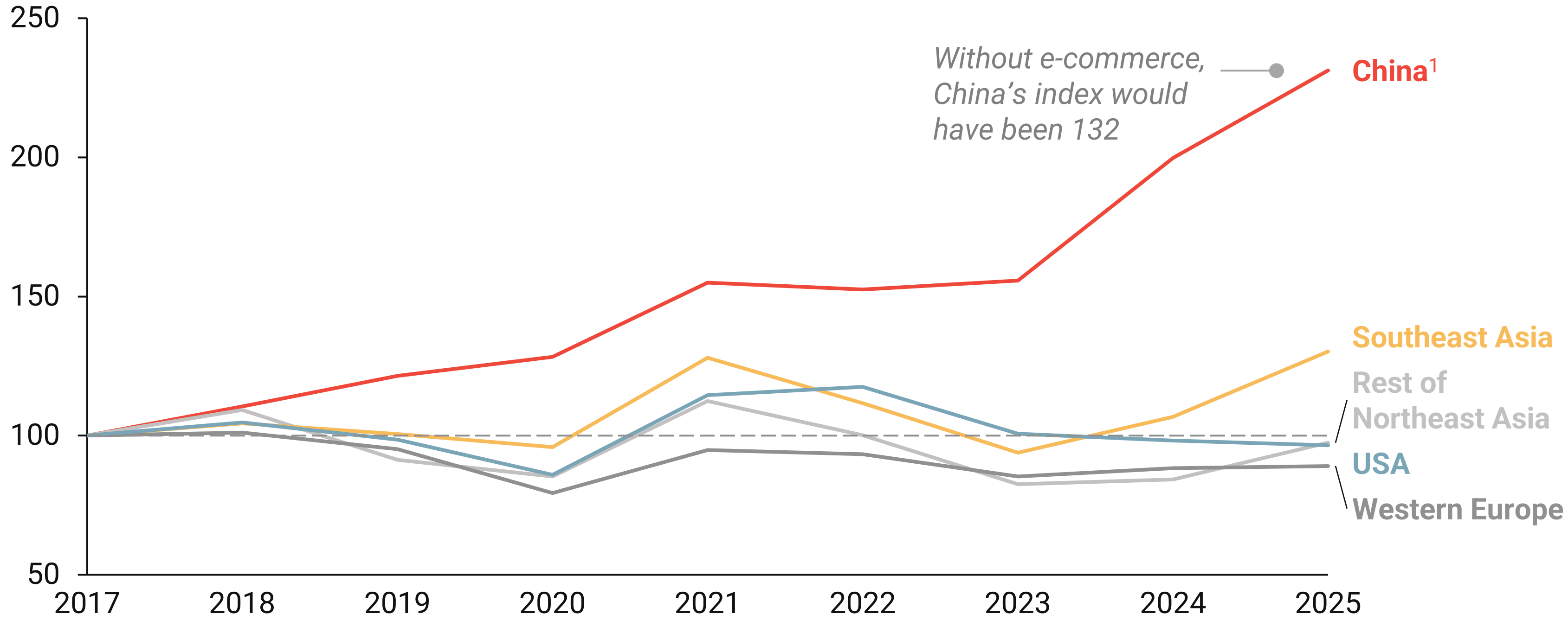
Note: 1) E-commerce exports from 2019-2021 are estimated, 2) Population of 2024 and demand of 2025
Source: Rotate Air Demand; World Population Review; Rotate analysis (March 2026)

E-commerce

E-commerce contributed to doubling of Chinese exports since 2017

Air exports by origin country, 2017-2025

Index (2017 = 100)



Observations & takeaway

- Since 2017, China air exports have more than doubled
  - Growth increasingly driven by e-commerce, which now accounts for >40% of China exports (~4.4M tonnes in 2025)
  - Without e-commerce, China exports still grew +3.5% p.a. (above the global average)
- China exports now account for **40% of global air cargo**, up from 23% in 2018

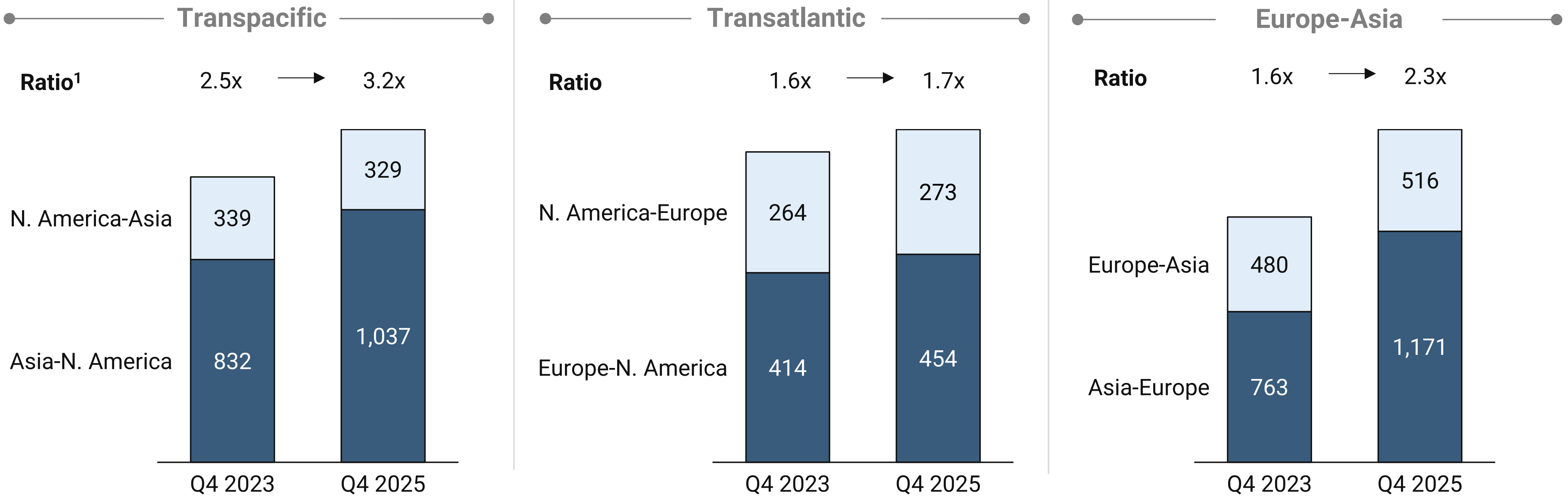
Note: 1) China exports include those shipped via Hong Kong International Airport

Source: Rotate Air Demand; Rotate analysis (March 2026)

China growth

The continued growth of China widened imbalances on key corridors

Development of air trade imbalance across key corridors
Thousand tonnes



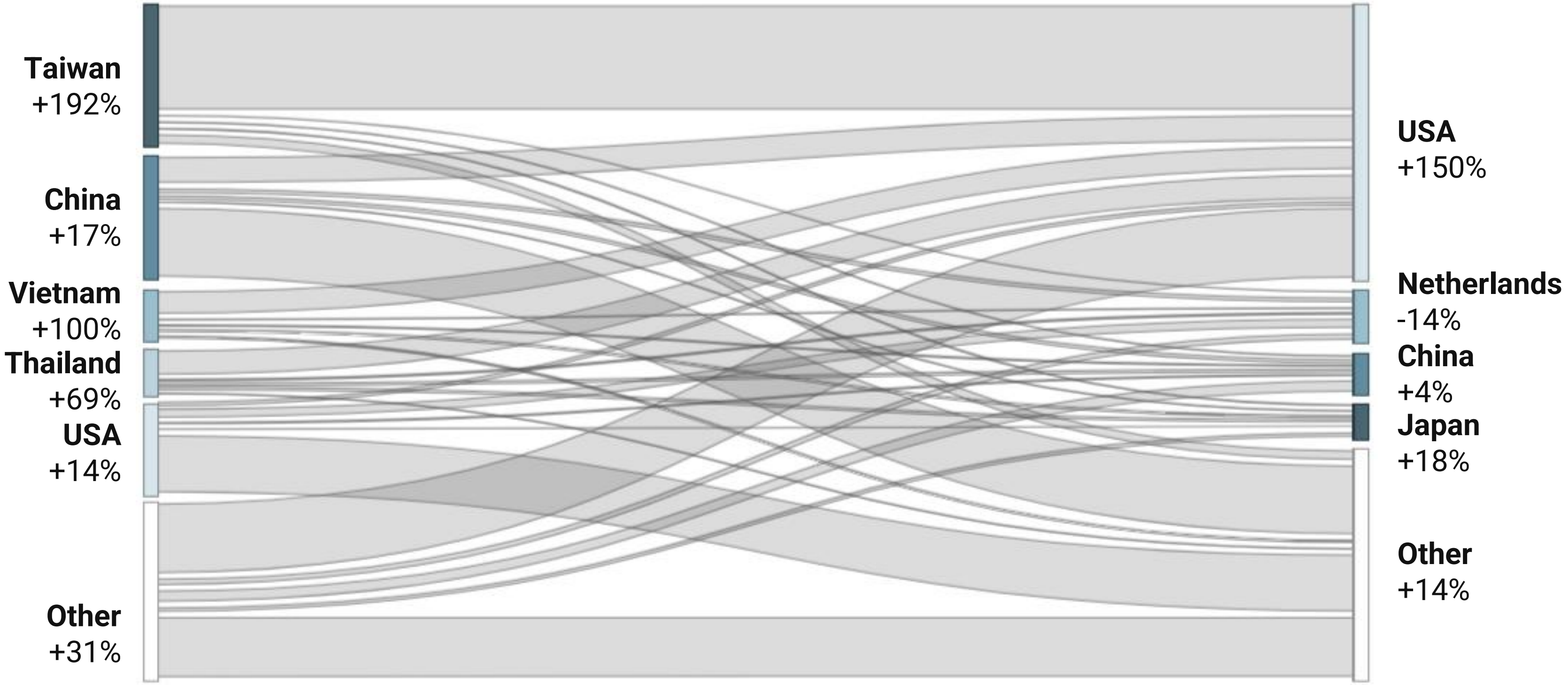
Notes: 1) Ratio of demand in tonnes
Source: Rotate Air demand, Rotate Analysis (March 2026)

Cloud computing

Quadrupling of Taiwan-USA demand reshaped demand flows

Cloud computing air demand, 2025

Tonnes



Observations & takeaway

- Tripling of Taiwan exports saw it become the **leading exporter** of cloud computing demand
  - China – the previous top-ranked exporter – shows relatively modest +17% growth
- **Vietnam and Thailand** register significant growth, nearly entirely driven by USA flows
- US imports more than doubled, to now represent **nearly 50%** of global imports

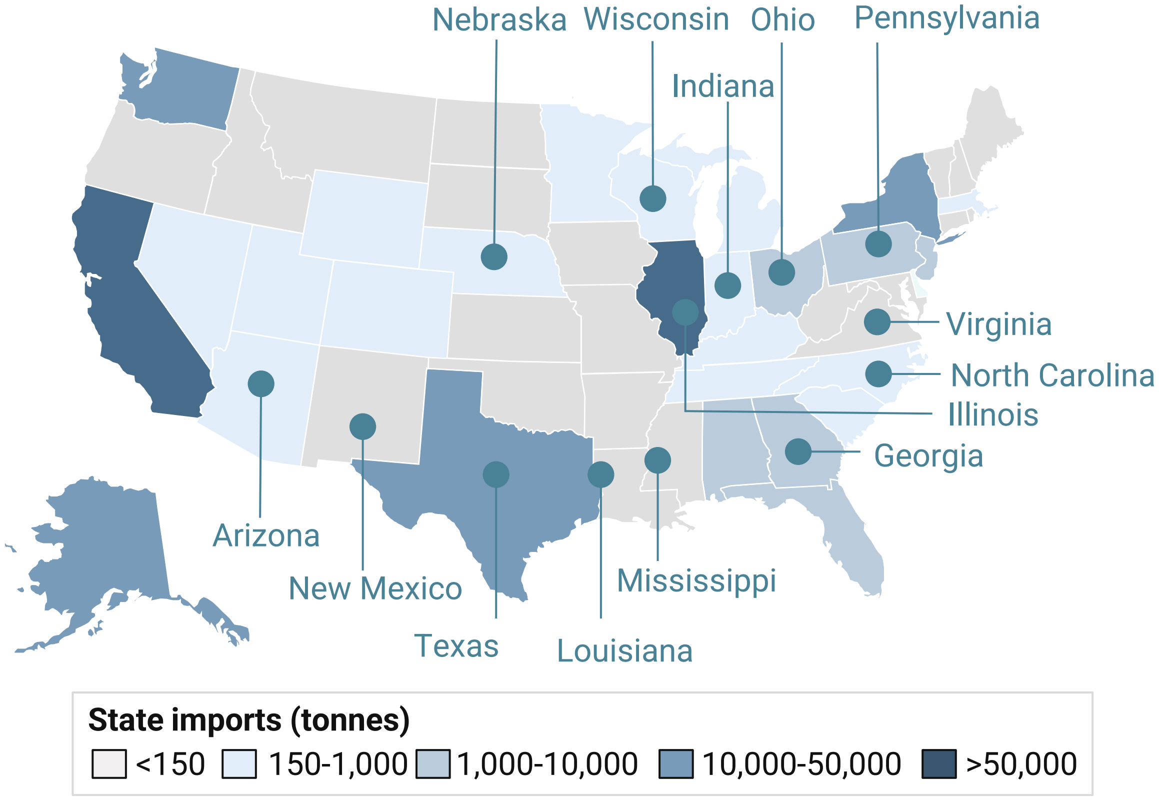
Note: Cloud computing equipment made up of cloud computing parts, non-8471 data processing units and communication apparatus for data transmission
Source: Rotate Air Demand, Rotate analysis (March 2026)

Cloud computing

California, Chicago, and Dallas are used as key gateways

Gateways for imports of cloud computing

Tonnes of imports, 2025



Observations & takeaway

- US imports of cloud computing equipment is **concentrated at major gateways**
  - Chicago (124k tonnes), Los Angeles (65k tonnes), San Francisco and other CA gateways (75k tonnes) and Dallas (32k tonnes)
  - Growth in import demand has been most concentrated in Chicago (+240%)
- Hyperscale datacentres are more often located in **rural states**, requiring onward distribution of sensitive equipment from major gateways

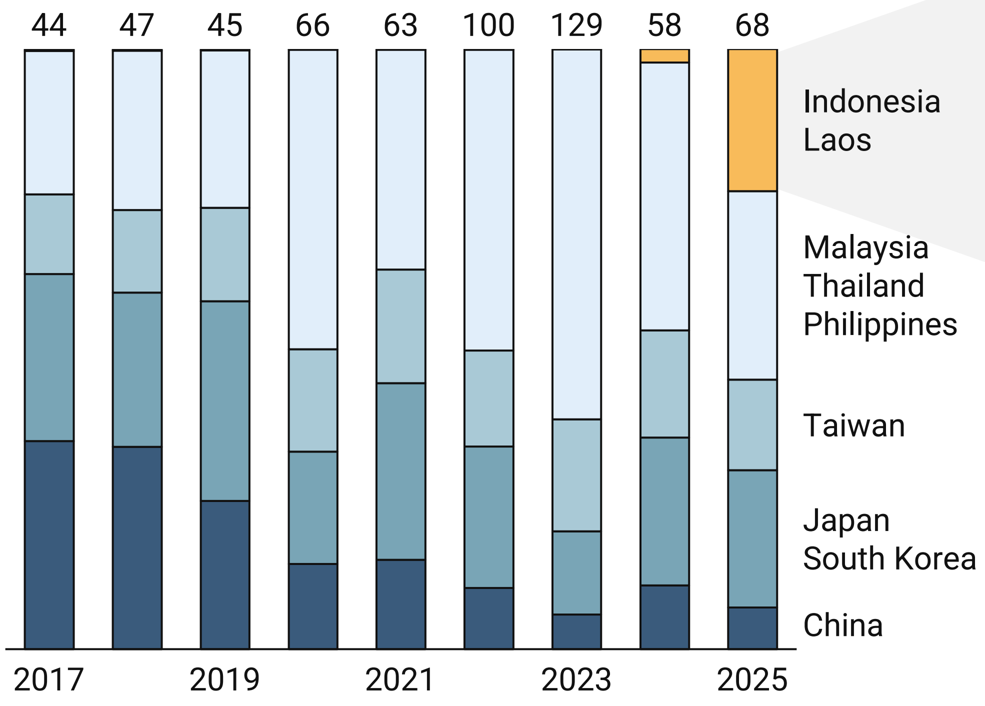
Note: 1) Hyper-scale data centres only, either recently delivered or under construction
Source: Various news outlets, Rotate Air Demand, Rotate analysis (March 2026)

Semiconductors

US imports of semiconductors shifted to Indonesia (and Laos) – however the true source may still be China

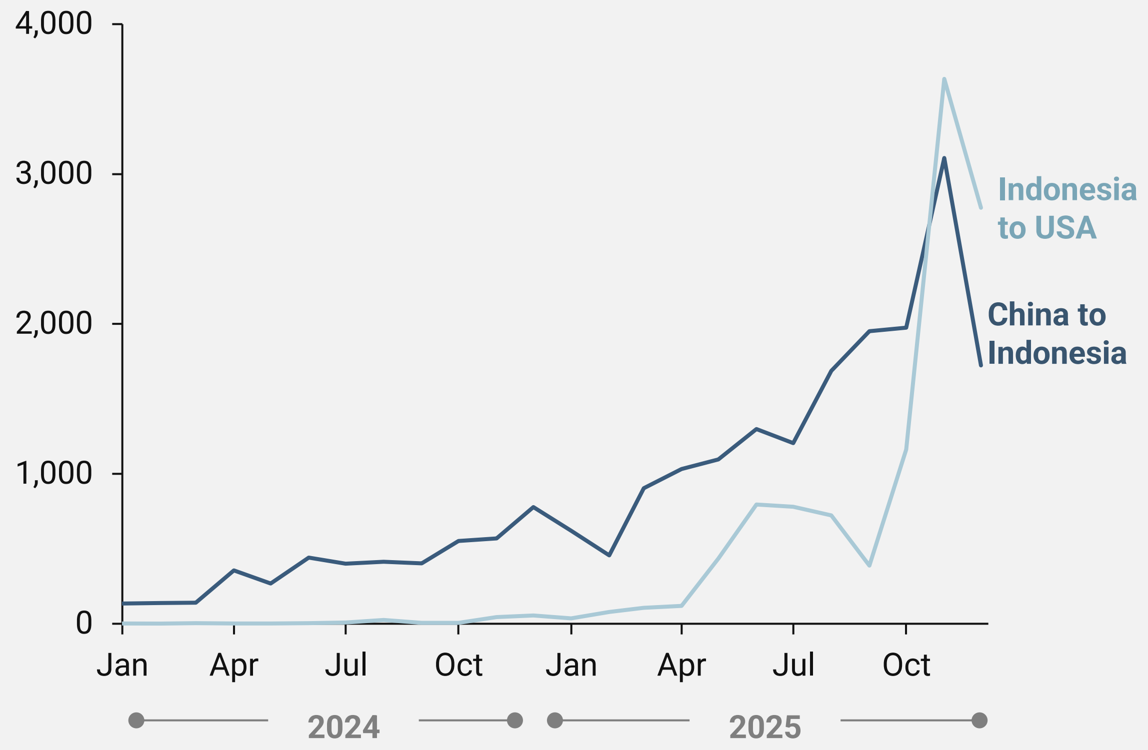
US imports of semiconductors, by origin

Thousand tonnes



Air demand for photosensitive semiconductor cells

Tonnes per month



Source: Rotate Air Demand; Rotate Analysis (March 2026)

Perishables

Salmon is going up(stream), but lobsters and peppers are red

Selected top growers and decliners within perishables

Commodity	Demand growth *Thousand tonnes, 2025 vs 2024*	YoY Growth *2025 vs 2024*	CAGR *2025 vs 2022*	Top 3 countries by outbound demand
Salmon	+69	16%	17%	
Cut flowers	+22	6%	5%	
Boneless beef	+12	27%	11%	
Cherries	+11	13%	18%	
Papayas	+9	21%	10%	
Chrysanthemums	+7	9%	9%	
Lobsters	-8	-18%	-5%	
Sweet peppers	-11	-9%	6%	
Lamb meat	-23	-19%	30%	

Greyed-out flags indicate that outbound demand declined YoY 2025 vs. 2024

Observations & takeaway

- Salmon is the main **absolute growth driver** within perishables
- For most selected commodities, 2025 growth is **broadly in line with the 3-year CAGR**
- Declines in lamb meat and sweet peppers appear more like **one-off reversals** versus the longer-term CAGR:
  - **Lamb meat:** likely linked to weaker Australian output in 2025 following a strong prior year
  - **Sweet peppers:** decline appears less structural, and may reflect lower Dutch output and/or short-term source mix effects

Source: Rotate Air Demand; Rotate Analysis (March 2026)

Key questions

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Middle East airspace closures

Middle East airspace closures

Airspace closures directly impacted 13% of global capacity

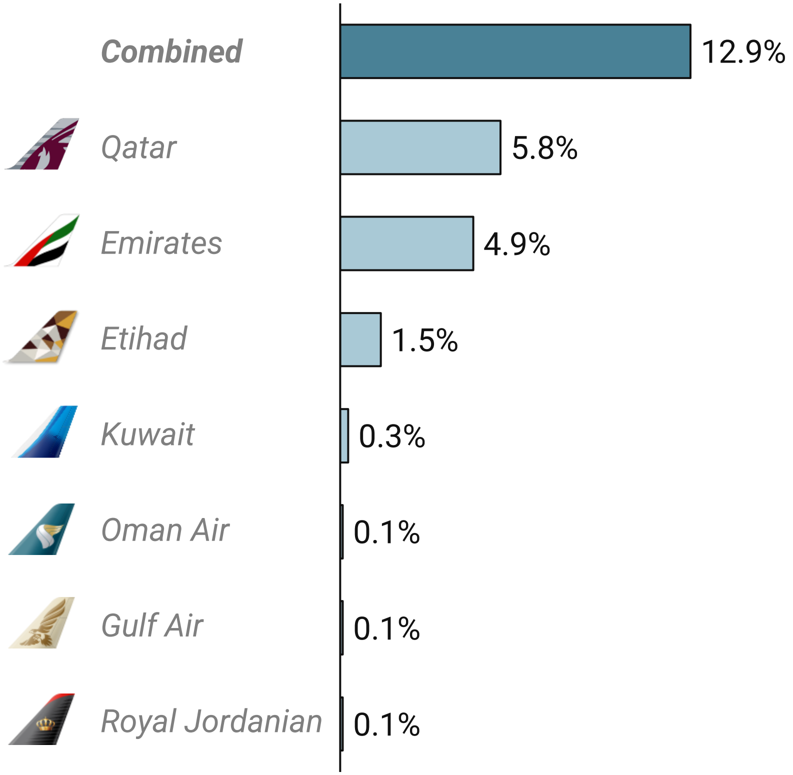
Flights cancelled as travel warnings issued after strikes on Iran BBC

1 March 2026

"Qatar Airways confirmed the temporary suspension of flights to and from its capital Doha due to the closure of Qatari airspace, while Emirates said it was temporarily stopping services to and from Dubai."

Global capacity share by Gulf carriers

% of global international capacity, Jan-Feb 2026



Combined	12.9%	*Carriers jointly operate **~25k tonnes capacity/day, equivalent to 250 B777F flights***
Qatar	5.8%	*Suspended all operations until March 3*
Emirates	4.9%	*Suspended all operations until March 3*
Etihad	1.5%	*Suspended most flights until Tue Mar 3* *Restarted some flights out of AUH on Monday*
Kuwait	0.3%	*Suspended all operations until March 3*
Oman Air	0.1%	*Heavily impacted operations at MCT hub*
Gulf Air	0.1%	*Suspended all operations until March 3*
Royal Jordanian	0.1%	*Heavily impacted operations at AMM hub*

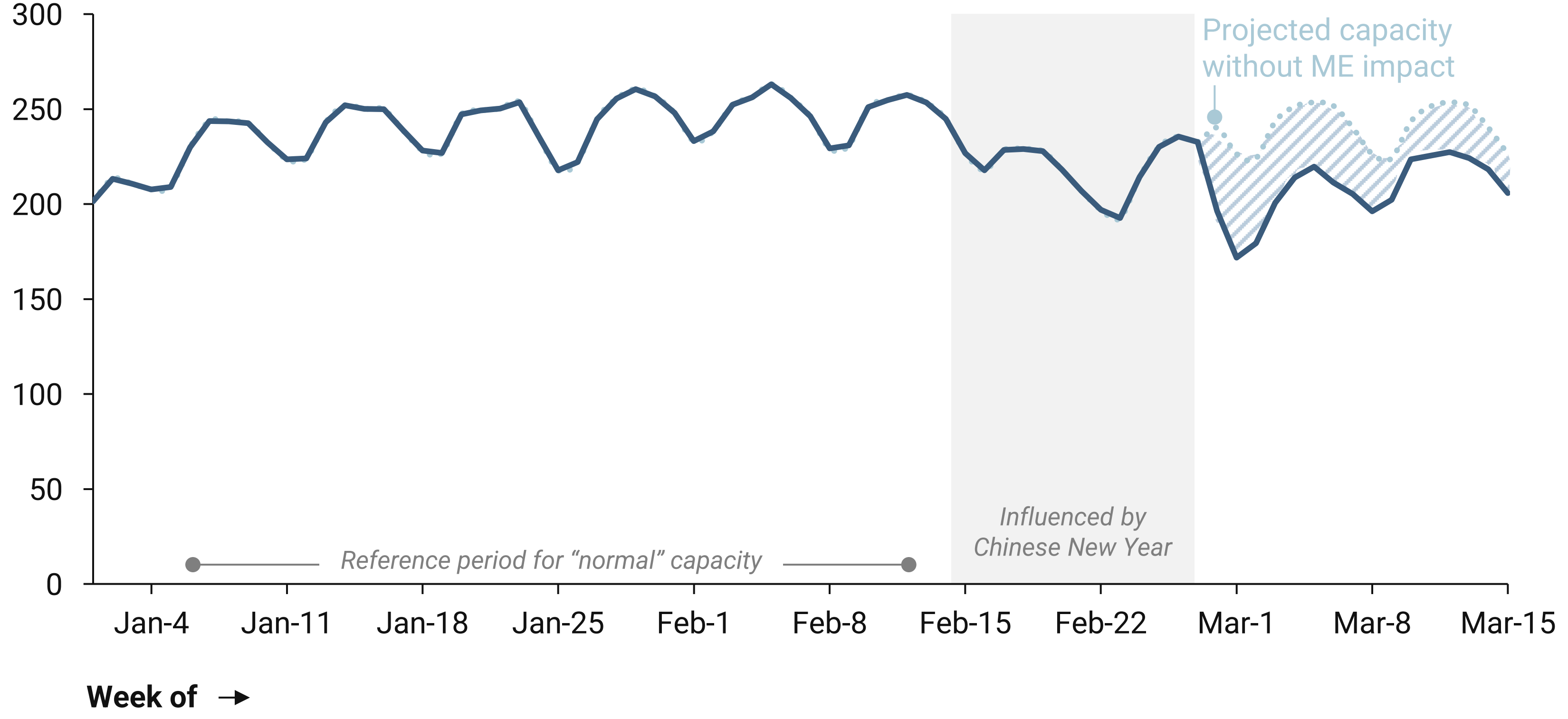
Note: Figures include all freighters and widebody passenger flights only, analysis considers international sectors only
Source: Rotate Live Capacity, Rotate analysis (February 2026)

Middle East airspace closures

More than 500k tonnes of international cargo capacity was lost to date

Daily international capacity, 2025

Thousand tonnes



Observations & takeaway

- Global capacity fell by as much as -22% as airspaces around the Middle East closed on March 1
- Since then, capacity has recovered, but is still -10% below expected levels
- Average global capacity loss over the two-week period has been -15%
- In total, **more than 520k tonnes** of international cargo capacity was lost, equivalent to over two days of global capacity within just over two weeks

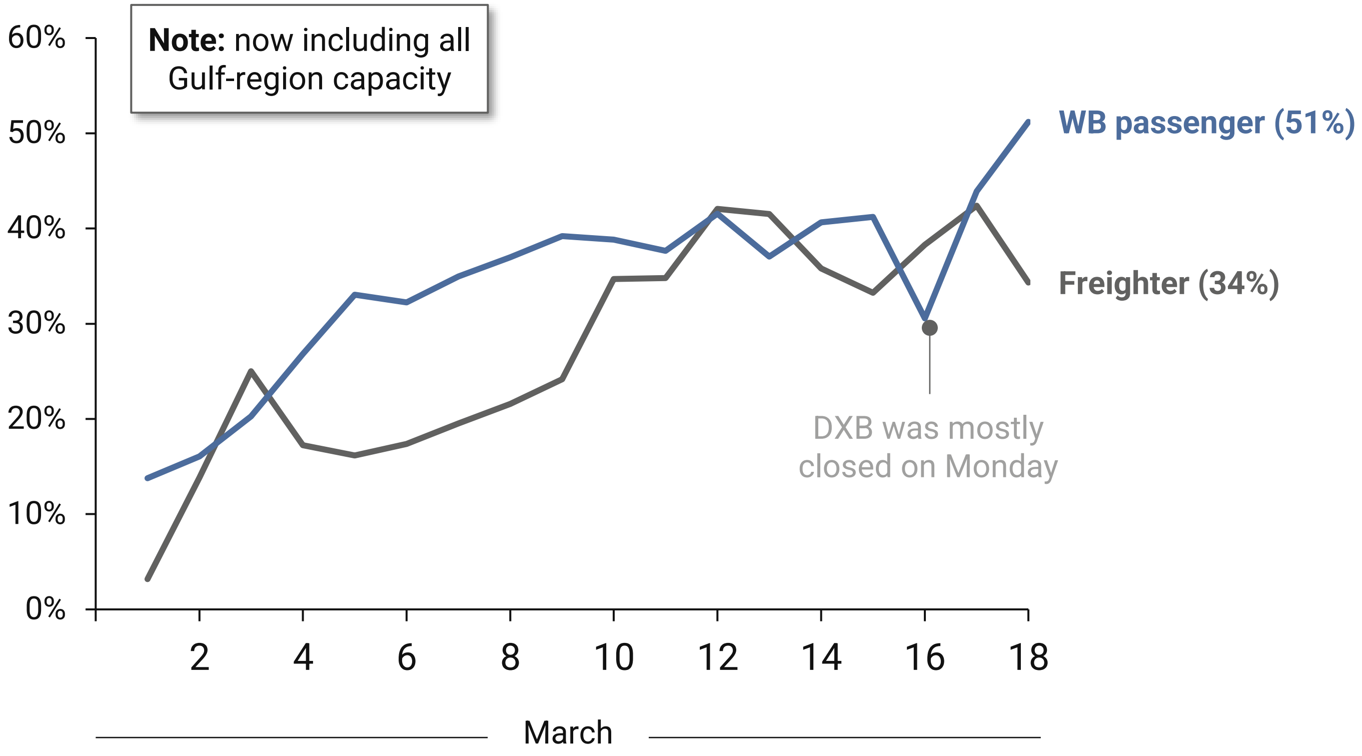
Note: International capacity only by freighters and widebody passenger aircraft; Capacity in alternative scenario assumed to be the same as the day-of-week average of the reference period;
Source: Rotate Live Capacity; Rotate analysis (March 2026)

Middle East airspace closures

Flights to/from the Gulf region continue to recover, with AUH and DXB capacity back to 50-70% of 2026 averages

Capacity recovery from the Gulf region[1]

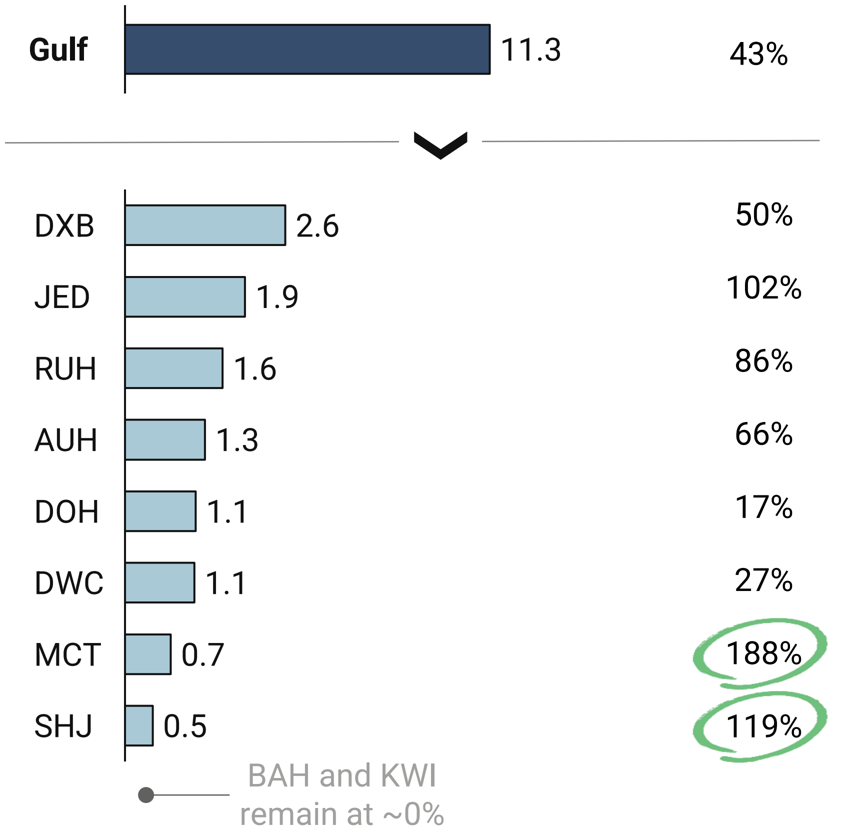
Index: average 2026 weekday[2] = 100%



Capacity by Gulf airport, 18 March 2026

Thousand tonnes

Recovery[2], %

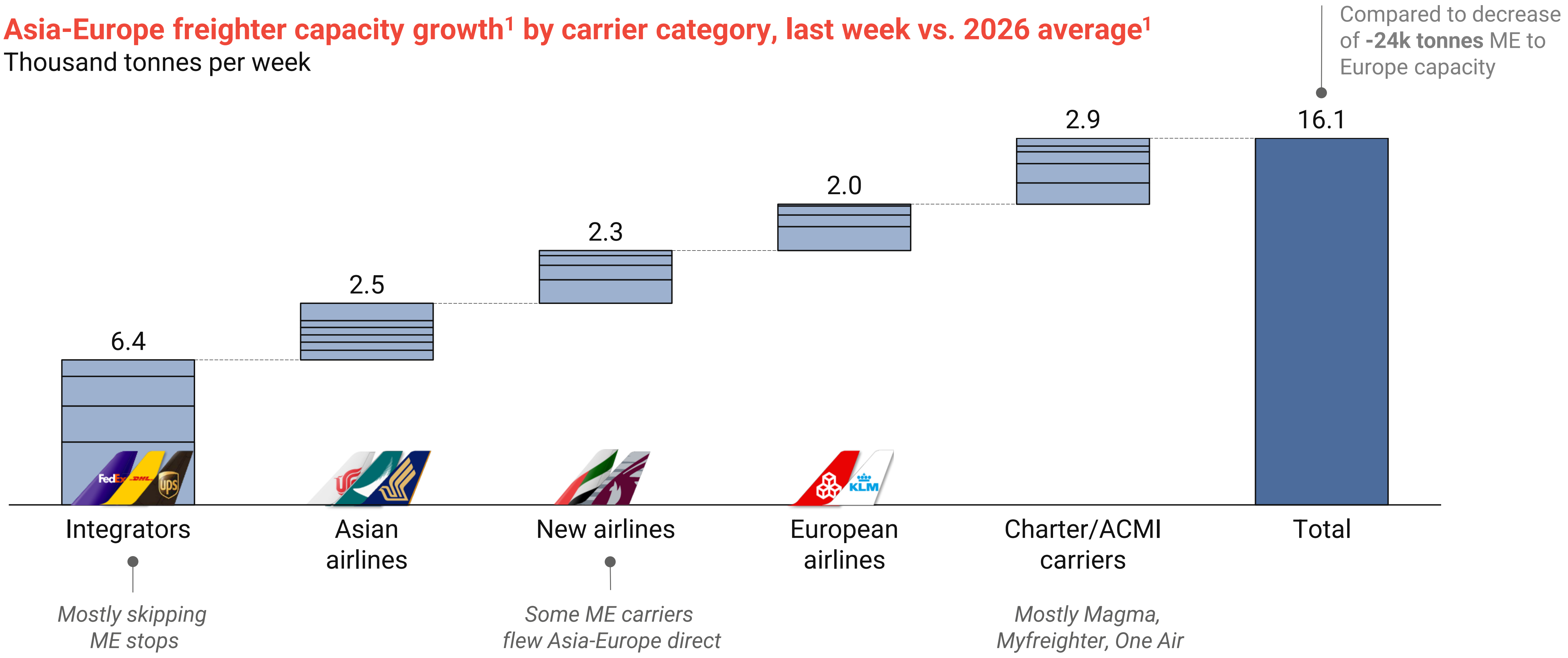


Note: Figures include all freighters and widebody passenger flights only, analysis considers international sectors only; 1) Gulf region including Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Suai Arabia, and Qatar; 2) Comparing average capacity in week 2 to week 7 in 2026 (pre-CNY); Source: Rotate Live Capacity; Rotate analysis (March 2026)

Middle East airspace closures

Strong direct Asia to Europe capacity growth partially compensates for decline of ME capacity

Asia-Europe freighter capacity growth[1] by carrier category, last week vs. 2026 average[1]
Thousand tonnes per week



Note: 1) Growth comparing last week (week 11) vs. the average of week 2 to week 7 2026 (pre CNY)
Source: Rotate Live Capacity, Rotate analysis (March 2026)

Middle East airspace closures

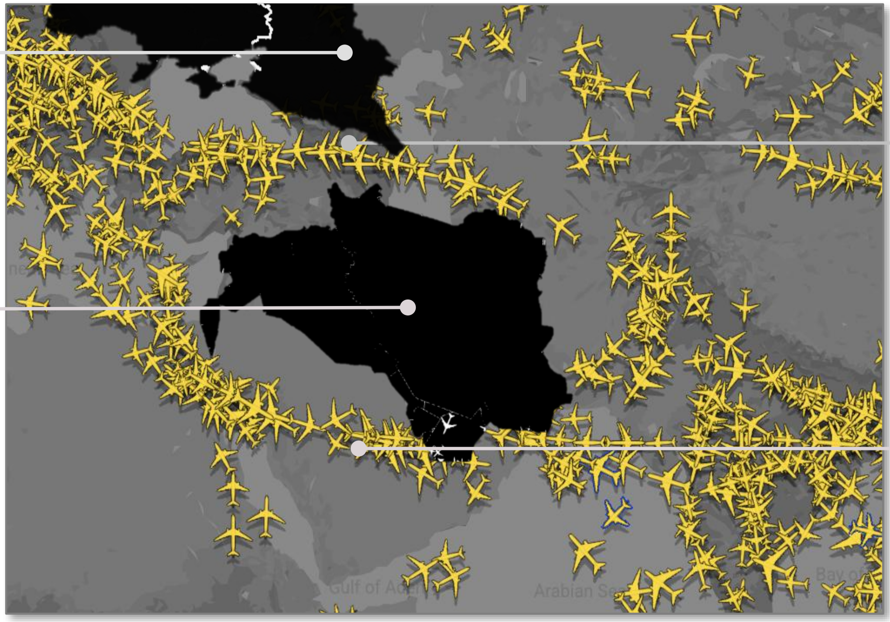
Most Asia-Europe flights now depend on a narrow 150km corridor through Azerbaijan

Airline traffic over the Middle East

Snapshot of 10 March 2026

Restricted airspace due to sanctions[1]

Restricted airspace due to ME conflict



Flight paths squeezed as Iran conflict closes more airspace BBC

Open corridor over Azerbaijan (Armenia, Georgia)

- Only a 150km-wide corridor remains open, making it extremely congested
- **~23% of global demand uses this corridor**
- Due to congestion, some flights are rerouted via southern Saudi Arabian airspace

Open corridor through southern Saudi Arabia

- Flights rerouted from Azerbaijan airspace to Saudi Arabia result in:

Distance[2]	*Block hours*[3]	Freighter cost[4]
+15%	**+1.6** h	**+0.22** *USD/kg*

Note: 1) Except for local Russian aircraft and Chinese airlines; 2) Great circle distance difference between FRA-GYD-HKG and FRA-RUH-HKG; 3) assuming average airspeed of 900km/hr; 4) Includes incremental fuel cost for a B777F, assuming an 86% load factor and a fuel price of $3.24 per gallon, and additional crew and maintenance cost for 1.6 block hour
Source: FlightRadar24; EIA (Jet-A spot fuel prices); Brent Crude Oil; Rotate analysis (March 2026)

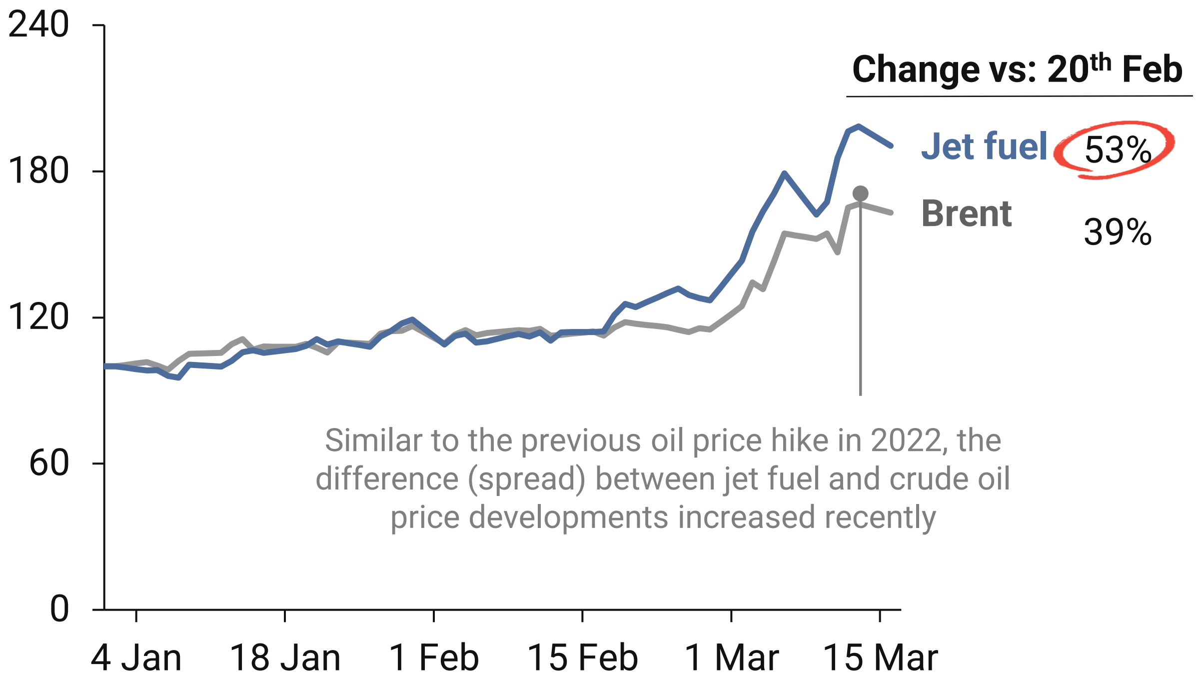
Middle East airspace closures

Fuel price uncertainty has reminded us of this classic from 2009 WCS

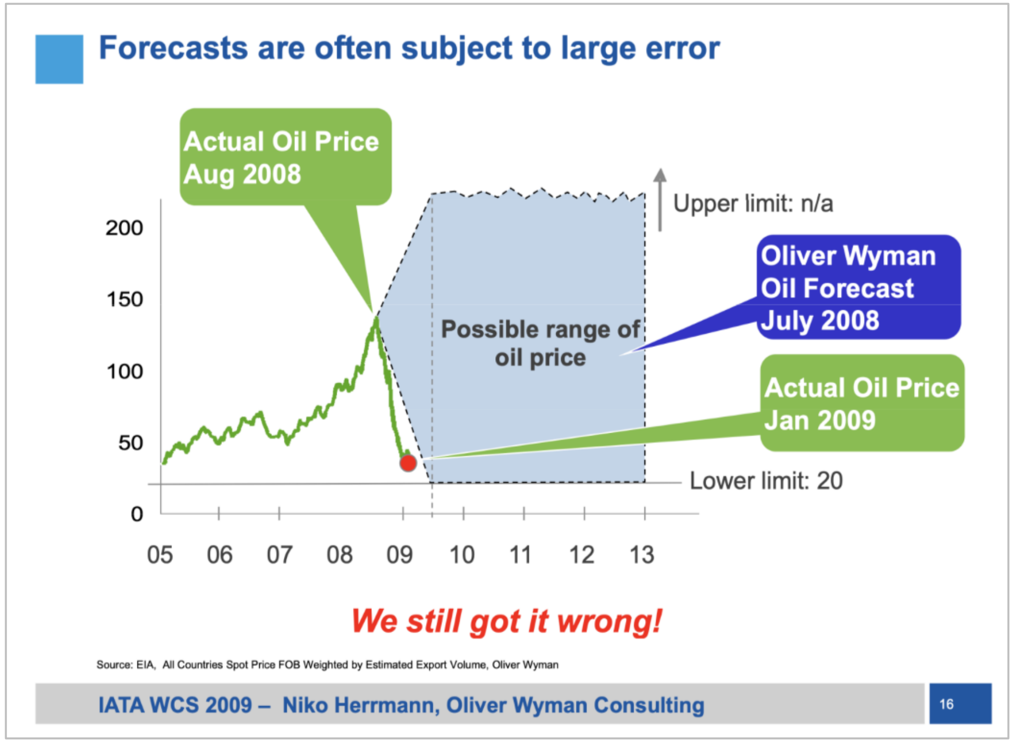
Jet fuel prices have increased >50% since end of February …

Jet fuel vs Brent fuel price development, Jan-March 2026

Index (January 1st = 100)

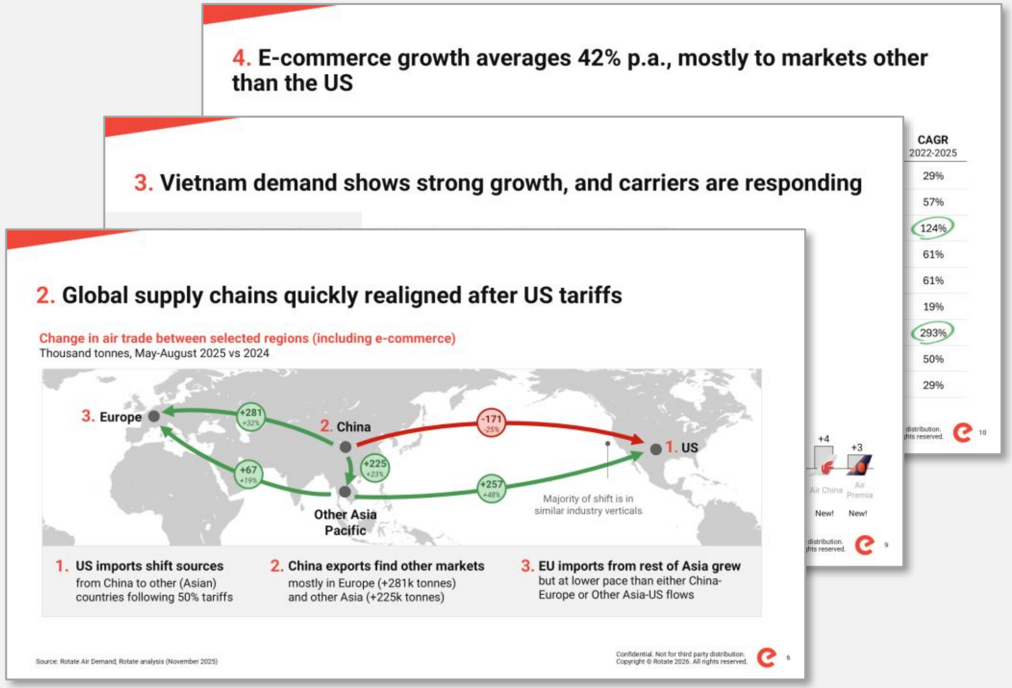


… and what happens next is anyone's guess



Source: Europe Brent Spot Price (EIA); U.S. Gulf Coat Kerosene-Type Jet Fuel Spot Price (EIA); Rotate analysis (March 2026)

About Rotate Reports



Selection from earlier Rotate reports

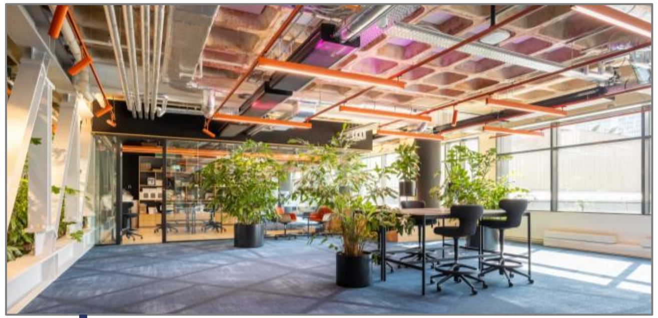
Thought pieces by Rotate Consulting

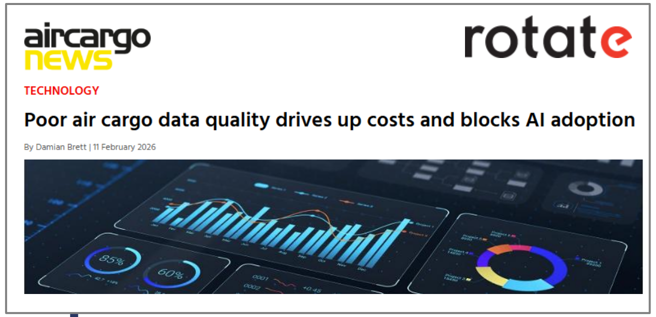
- Our team of 10+ consultants has worked on 100+ assignments across airlines, airports, integrators, forwarders, handlers, investors and governments

These Rotate Reports are exclusive to our customers

- Rotate offers industry-leading capacity and demand data, accessible via LLM interface launched in 2025
- If you are interested in learning more about Rotate’s strategy consulting capabilities and data products, please reach out to commercial@letsrotate.com

What’s new at Rotate?





New Utrecht office

We started with 5 people in a shared workspace, but now with 30+ we needed a home in Utrecht. In the most visible sign of our expansion yet, we moved into our new office in January

Now with 60+ people at Rotate!

We have added people in both Utrecht and Kuala Lumpur:

- Focus on customer success
- Grow strategy consulting
- Build up in our data and software engineering

In the news to inform the industry

The importance of data quality in air cargo was recently highlighted by Air Cargo News

Read the article here

It ~~never~~ works for Cargo

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