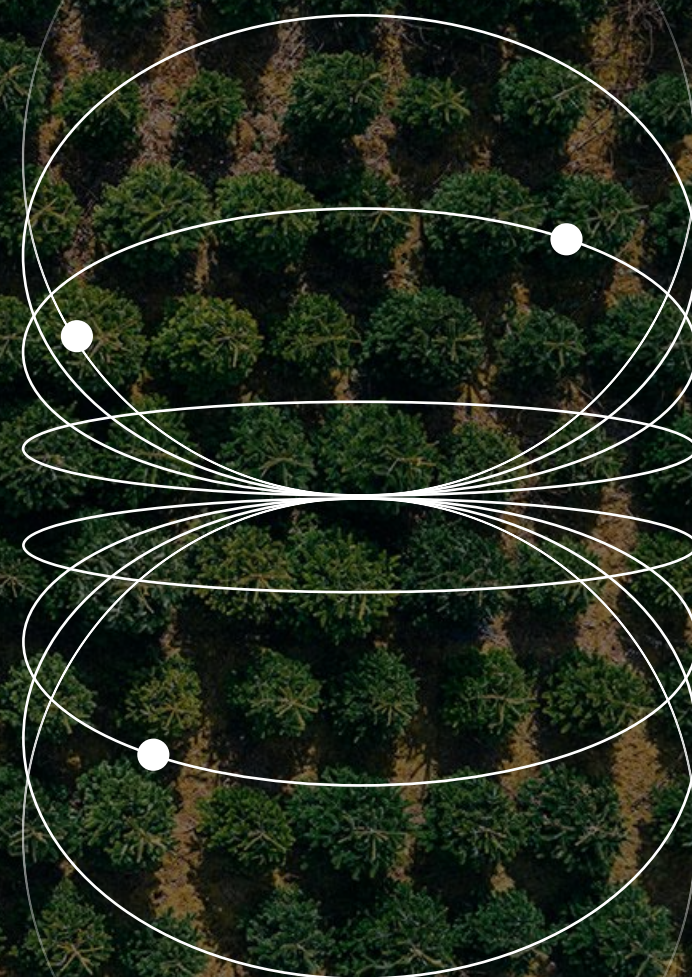




2Q25 Carbon Credit Markets in Review – CORSIA Phase I Review and Outlook

July 16, 2025

Webinar



Introduction

- All attendees are automatically muted throughout the session
- Questions – please type your questions in the Q&A window at the bottom of your screen
- Please take advantage of the available additional resources
- Screen recordings and/or AI transcribers are not permitted during this webinar.
- A recording of this webinar, and accompanying slides, will be available to registered participants via email and on www.msci.com/on-demand tomorrow

Agenda

→ 01

Market update in 2Q25

- Introduction / updates
- Corporate use of credits
- Supply and demand, surplus
- Pricing
- Ratings
- Policy

→ 02

Audience poll

→ 03

CORSIA Phase I Review and Outlook

Keynote presentation by Faris Pleho, Head of Aviation Carbon Markets from MSCI Carbon Markets

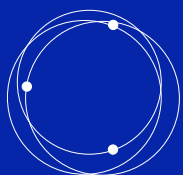
CORSIA expert panel

- *Yue Huang*, Assistant Director of Climate Policy, IATA
- *Will Gifford*, Policy Manager – Aviation and NCS Lead, IETA

→ 04

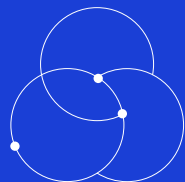
Q&A

Product enhancements in the last quarter



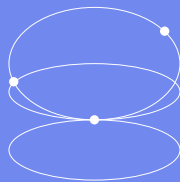
Refreshed platform on MSCI One

Enhanced capabilities, greater customization, wider integration



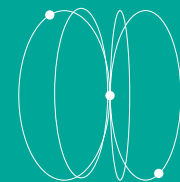
Article 6 credit ratings

Evaluate country and project risks to Article 6 credit integrity



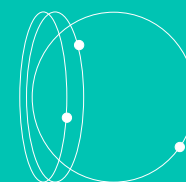
> 200 new pre-registration project ratings

Not including 292 new ratings for registered projects



13 new price indexes

Developed with MSCI Index to represent carbon credit transaction value



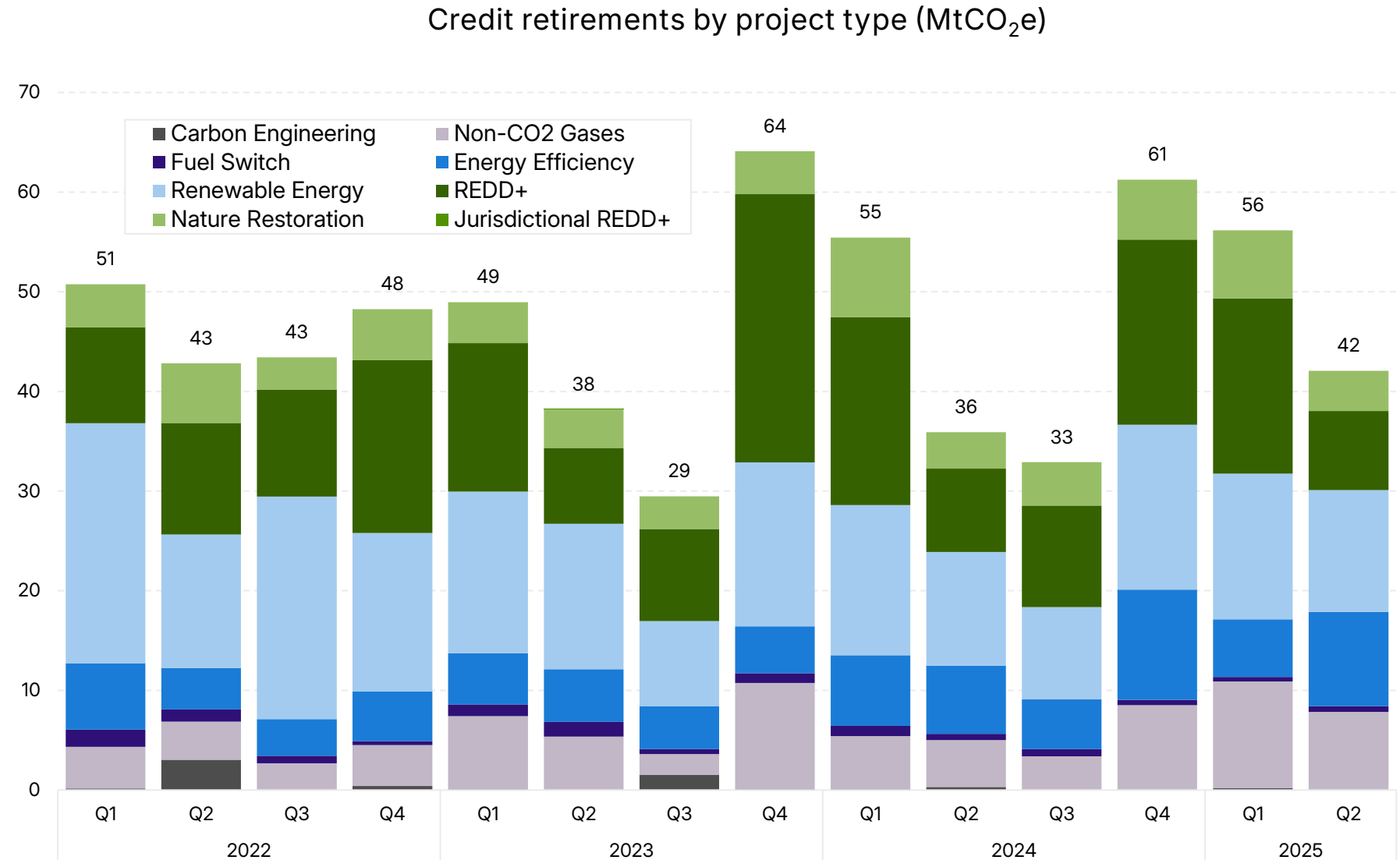
Updated market outlook reports

DACs & cookstoves

Market update 2Q 2025

Quarterly credit retirements

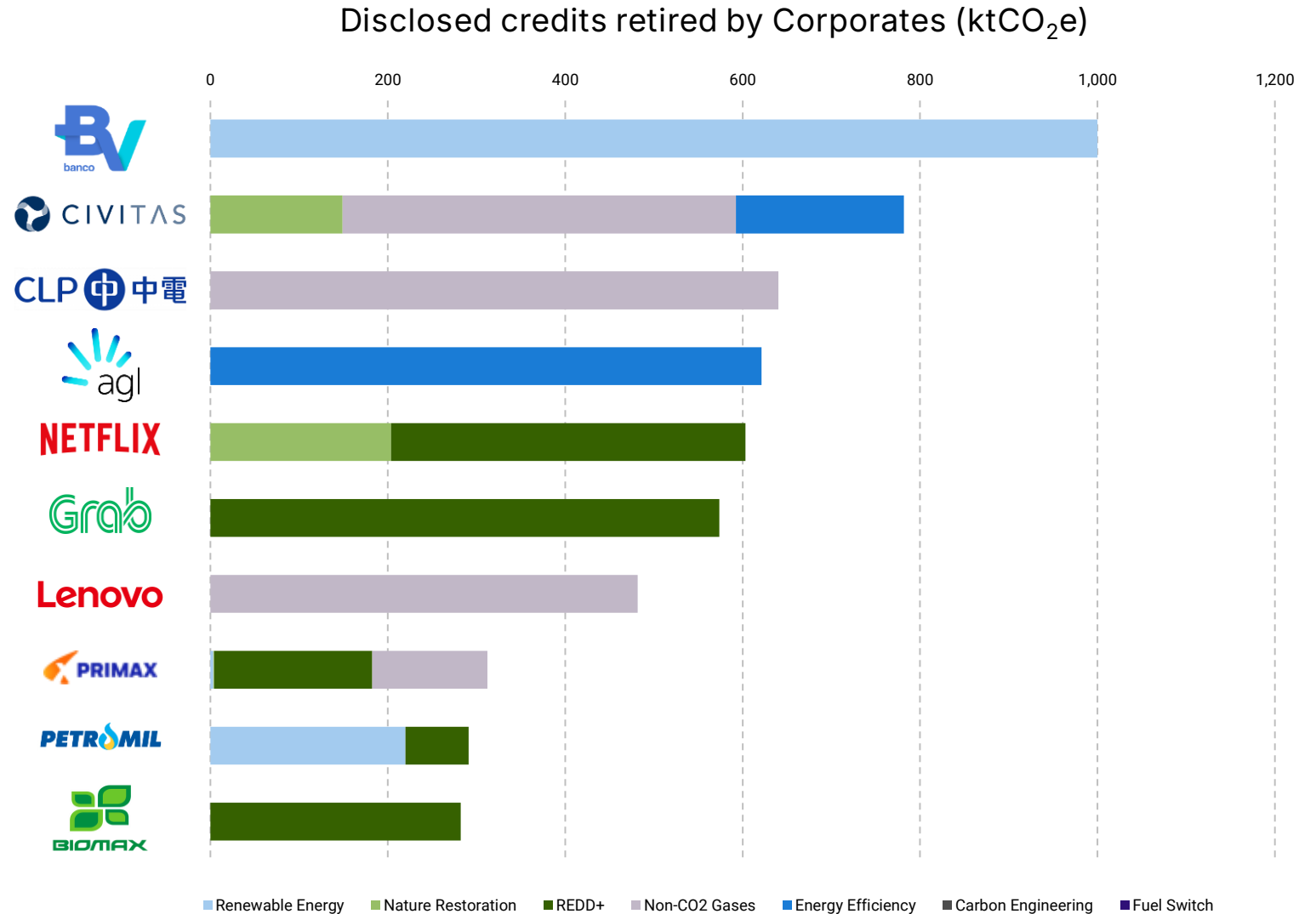
- Retirements in H1-2025 were up 7.5%(6.9 Mt) compared to the first half of last year – driven by a 17% (6.1 Mt) increase in the second quarter of 2025 compared to Q2-2024.
- Lowest quarterly volume of retirements for nature-based projects since Q2-2023.



Source: ACR, ART, BioCarbon Standard, CAR, Climate Forward, CDM (NDC eligible credits only), Cercarbono, GCC, Gold Standard, Isometric, Plan Vivo, Puro Earth and Verra.
Data as of 30-Jun-2025.

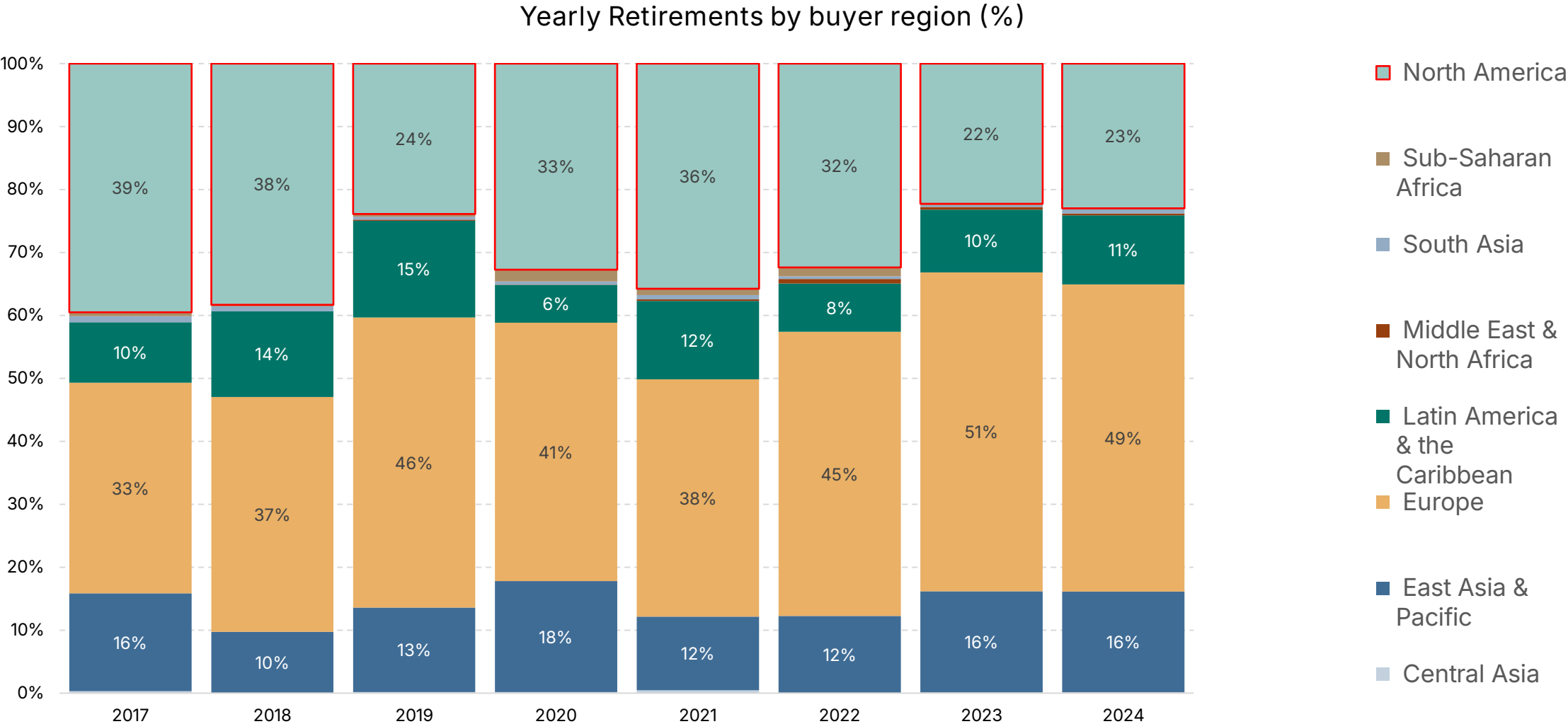
Top 10 Known Retirees 2Q25

- The top ten retirees this quarter made up 13% of all retirements
- 4 of the top 10 retirees last quarter were fossil fuel companies
- Banco BV is the 4th largest retiree this year to date. Eni continues to lead as the top retiree thus far this year, retiring 7.7 MtCO₂e.



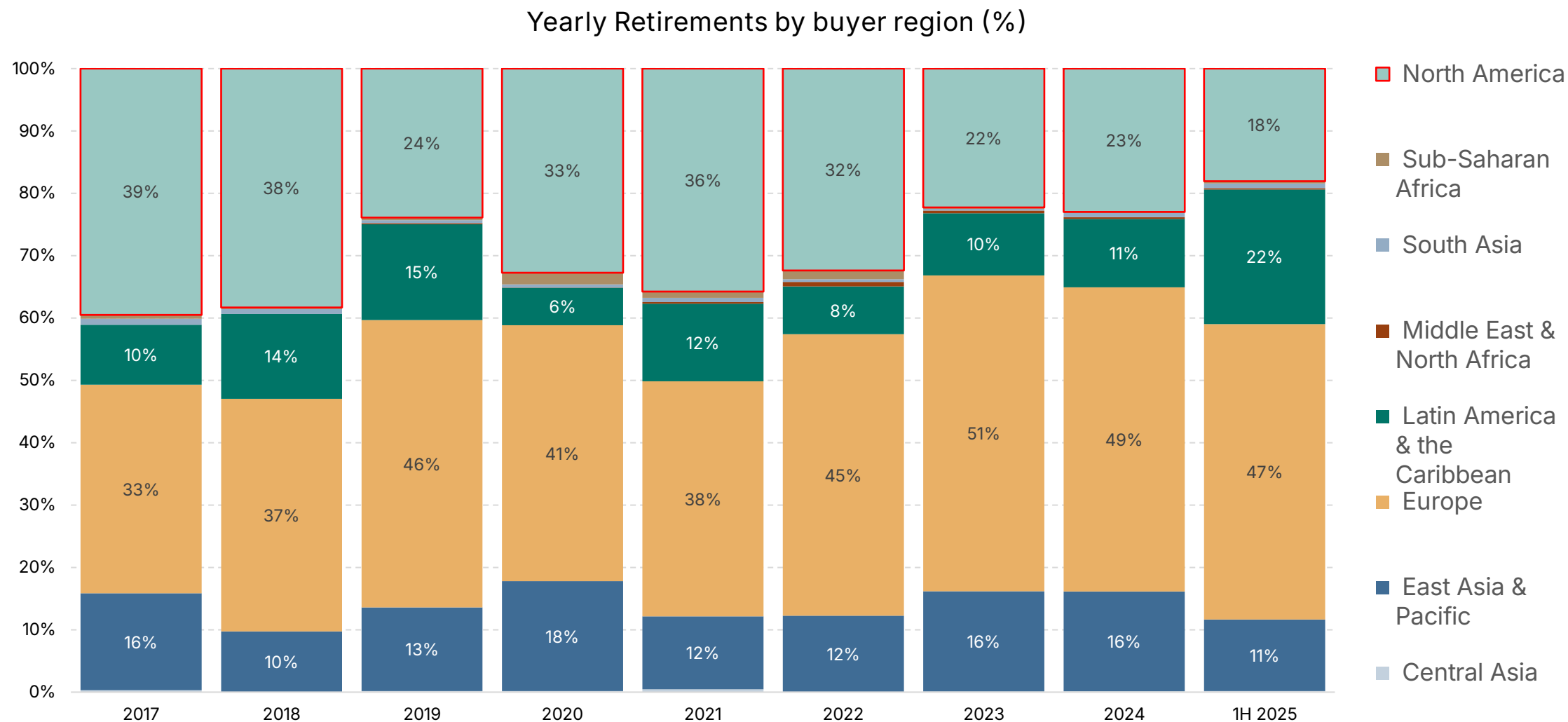
Source: MSCI Carbon Markets analysis of disclosed retirements on tracked registries. Material retiree defined as retiring over 1,000 carbon credits in the same year. *Retirements have been matched to a company where registry disclosure allows.
Data as of: 30-Jun-2025

Yearly Retirements by Buyer Region



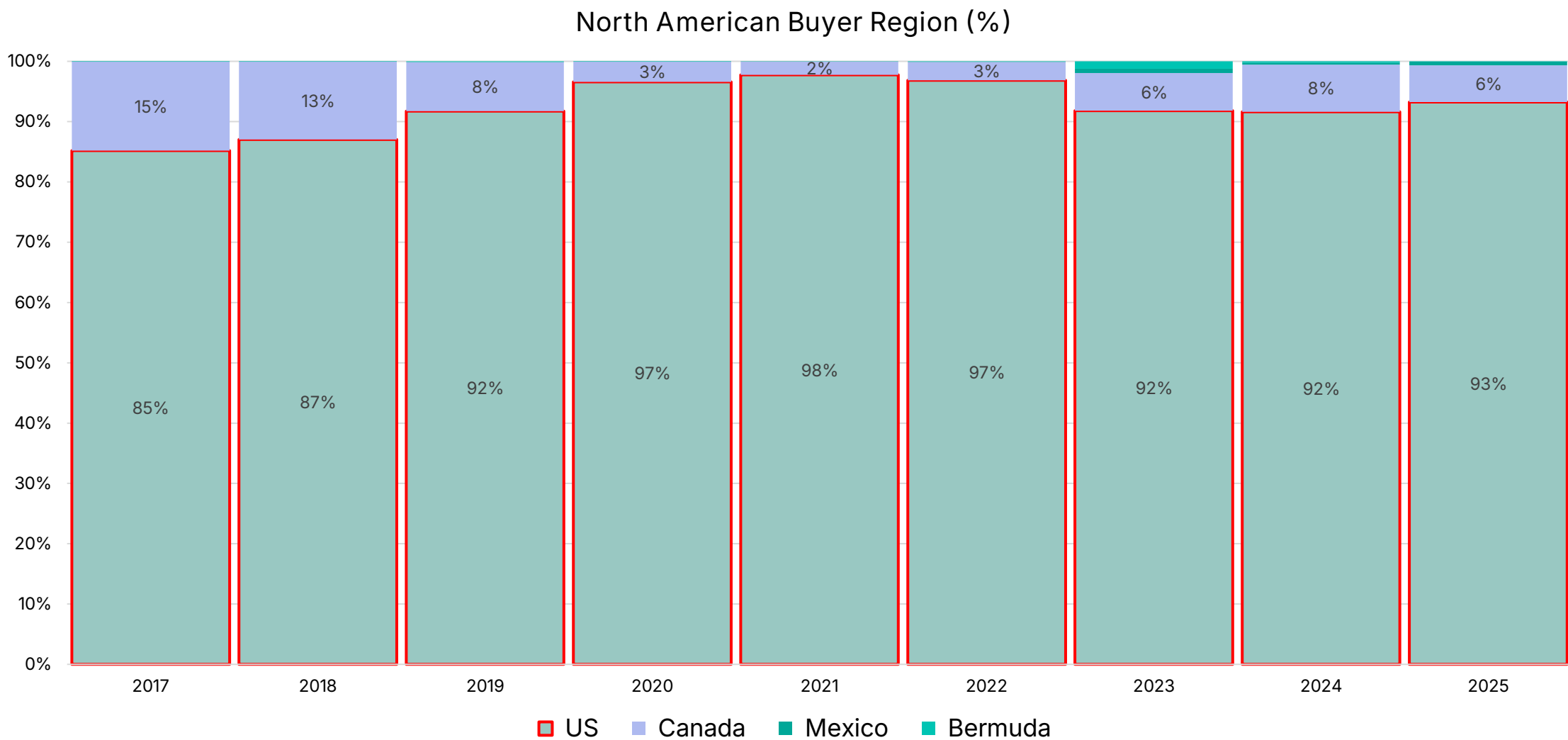
Source: MSCI Carbon Markets analysis of disclosed retirements on tracked registries. Material retiree defined as retiring over 1,000 carbon credits in the same year. *Retirements have been matched to a company where registry disclosure allows. Data as of: 30-Jun-2025

Yearly Retirements by Buyer Region



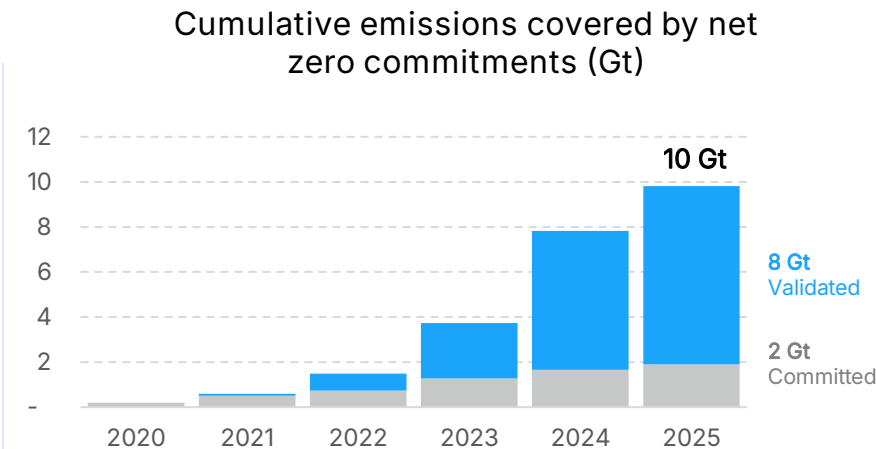
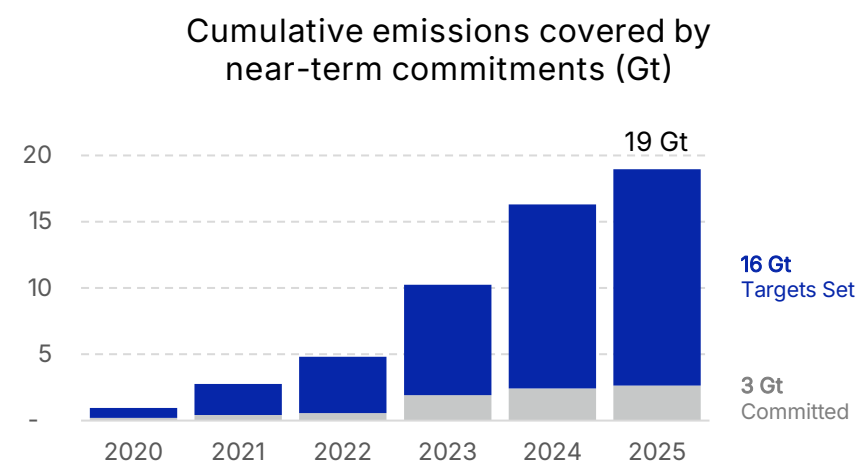
Source: MSCI Carbon Markets analysis of disclosed retirements on tracked registries. Material retiree defined as retiring over 1,000 carbon credits in the same year. *Retirements have been matched to a company where registry disclosure allows. Data as of: 30-Jun-2025

Yearly Retirements in North America



Source: MSCI Carbon Markets analysis of disclosed retirements on tracked registries. Material retiree defined as retiring over 1,000 carbon credits in the same year. *Retirements have been matched to a company where registry disclosure allows. Data as of: 30-Jun-2025

Number of long-term corporate climate commitments



787 firms made/enhanced SBTi commitments in 2Q25. ~1.4 GtCO₂e of emissions

KraftHeinz

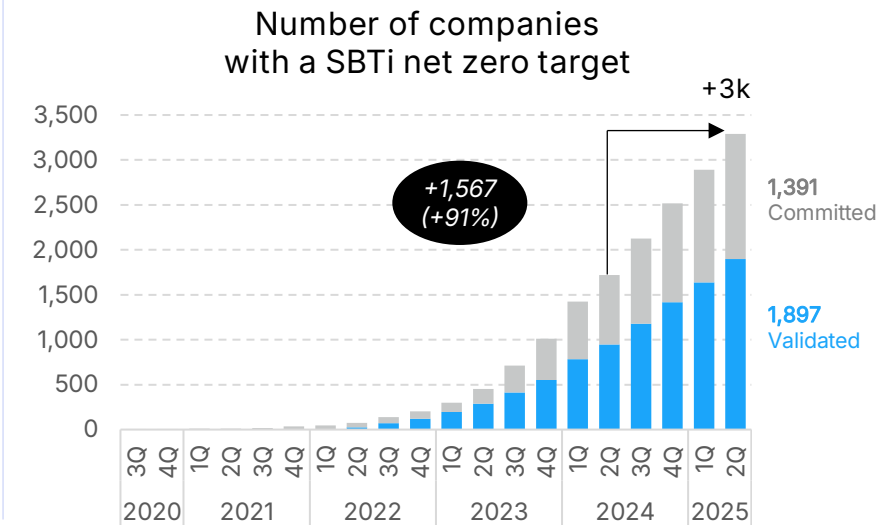
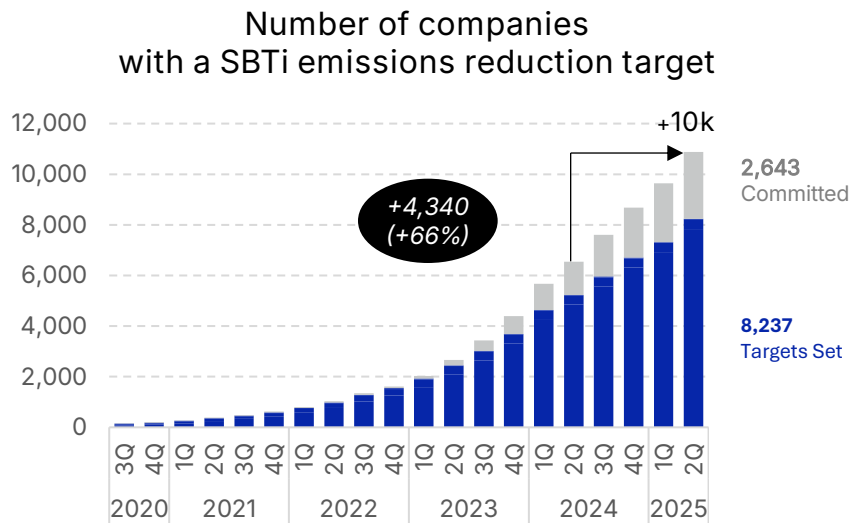
swissport

COMCAST

pepsi

octopus energy

BOSCH



63 firms' SBTi commitments were withdrawn/expired in 2Q25. ~0.03 GtCO₂e of emissions

SHI

AKÇANSA

HEXPOL

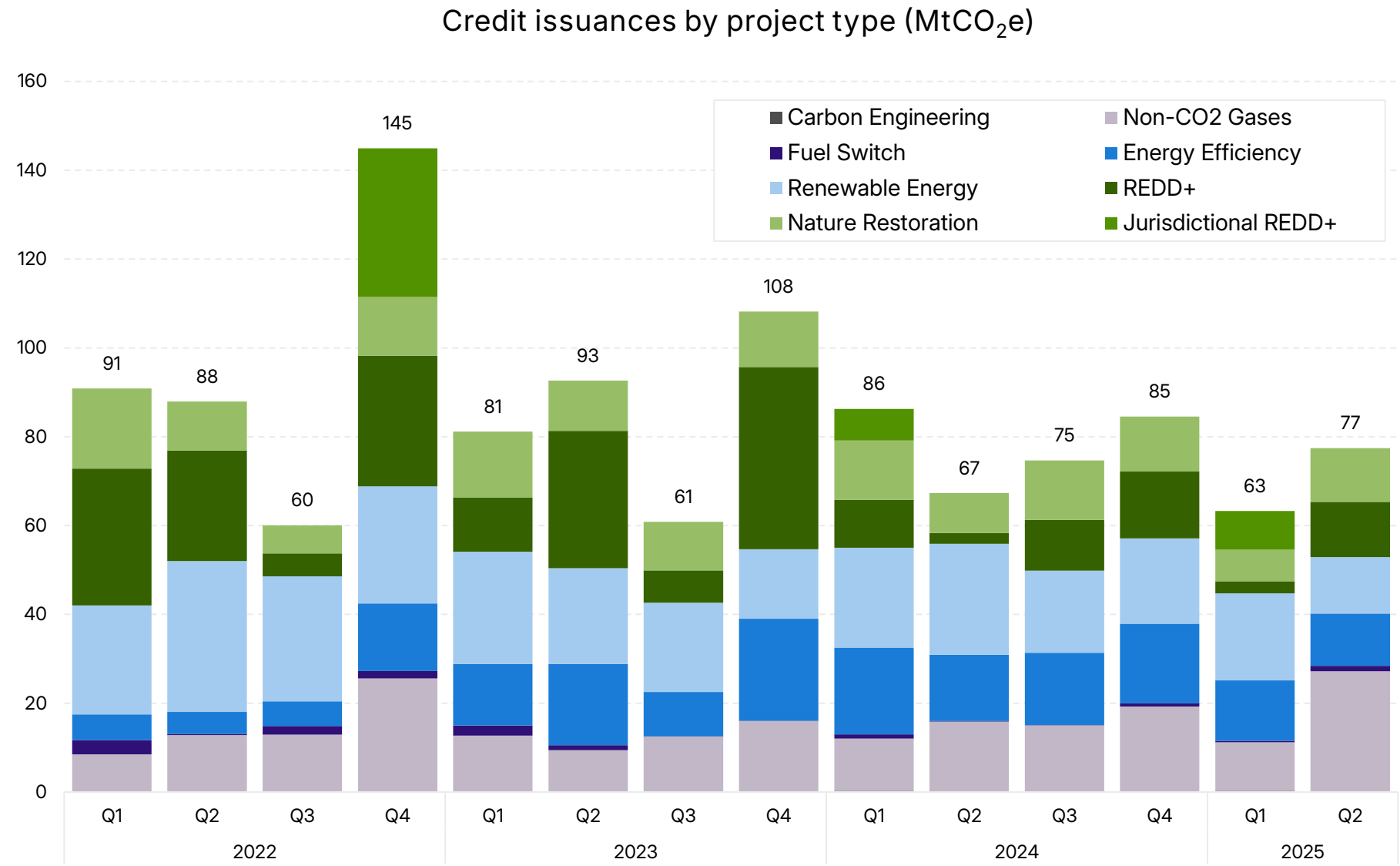
CRC

NAVISTAR

Source: : MSCI Carbon Markets tracking of SBTi companies, and MSCI Carbon Markets analysis of emissions (scope 1, 2 and 3) of those companies. Where emissions (reported or estimated) were not available, the median value of known emissions was used as a scale up factor for firms classed as 'Company' or 'Financial Institution' by SBTi. Data as of: 30-Jun-2025.

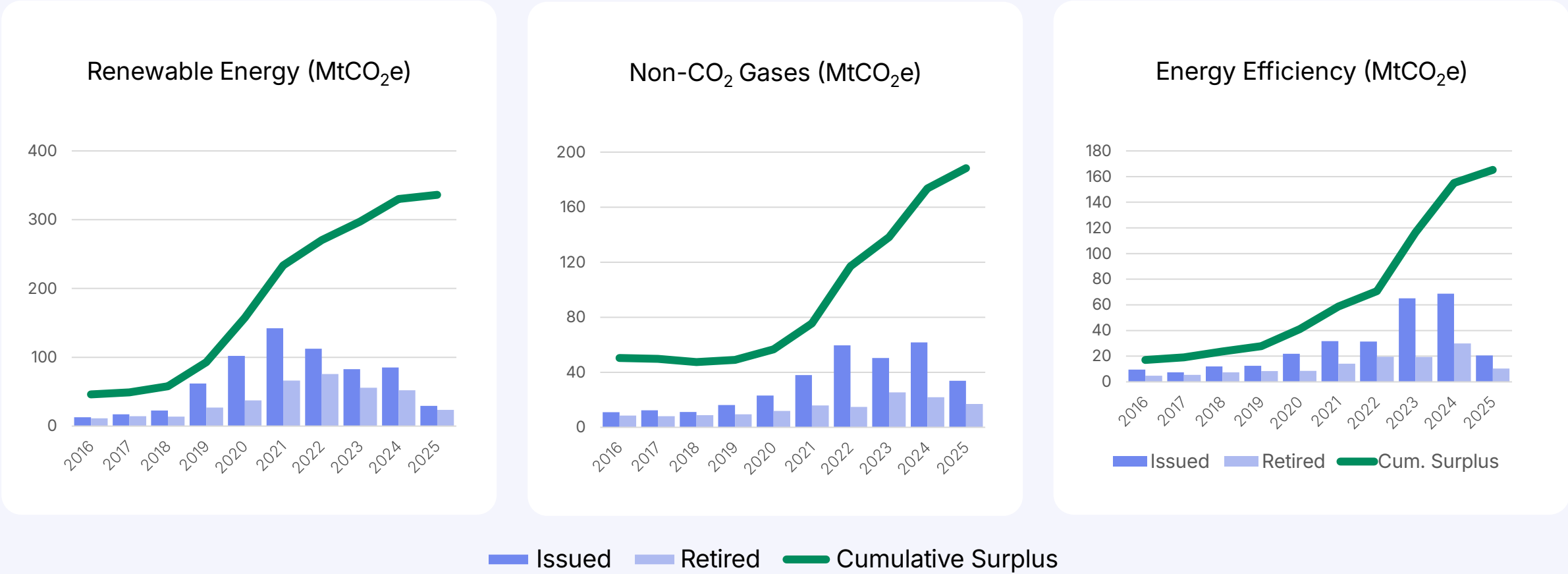
Quarterly credit issuances

- Highest quarterly volume of issuances for Non-CO₂ Gases on record; lowest quarterly volume for Renewable Energy since 2019.
- Issuances in the first half of 2025 are 8.5% (-13 Mt) lower than the first half of last year.



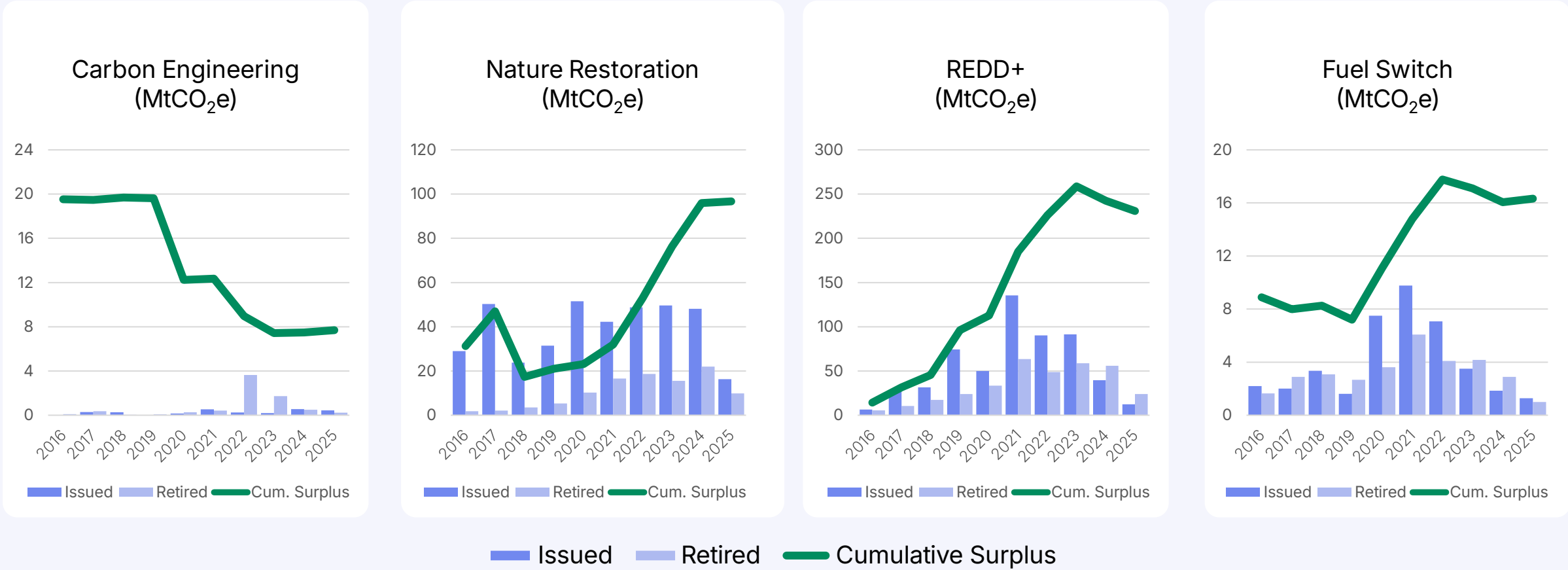
Source: ACR, ART, BioCarbon Standard, CAR, Climate Forward, CDM (NDC eligible credits only), Cercarbono, GCC, Gold Standard, Isometric, Plan Vivo, Puro Earth and Verra.
Data as of 30-June-2025.

Demand, supply and surplus by project type



Source: ACR, ART, BioCarbon Standard, CAR, Climate Forward, CDM (NDC eligible credits only), Cercarbono, GCC, Gold Standard, Isometric, Plan Vivo, Puro Earth and Verra.
Data as of 30-June-2025.

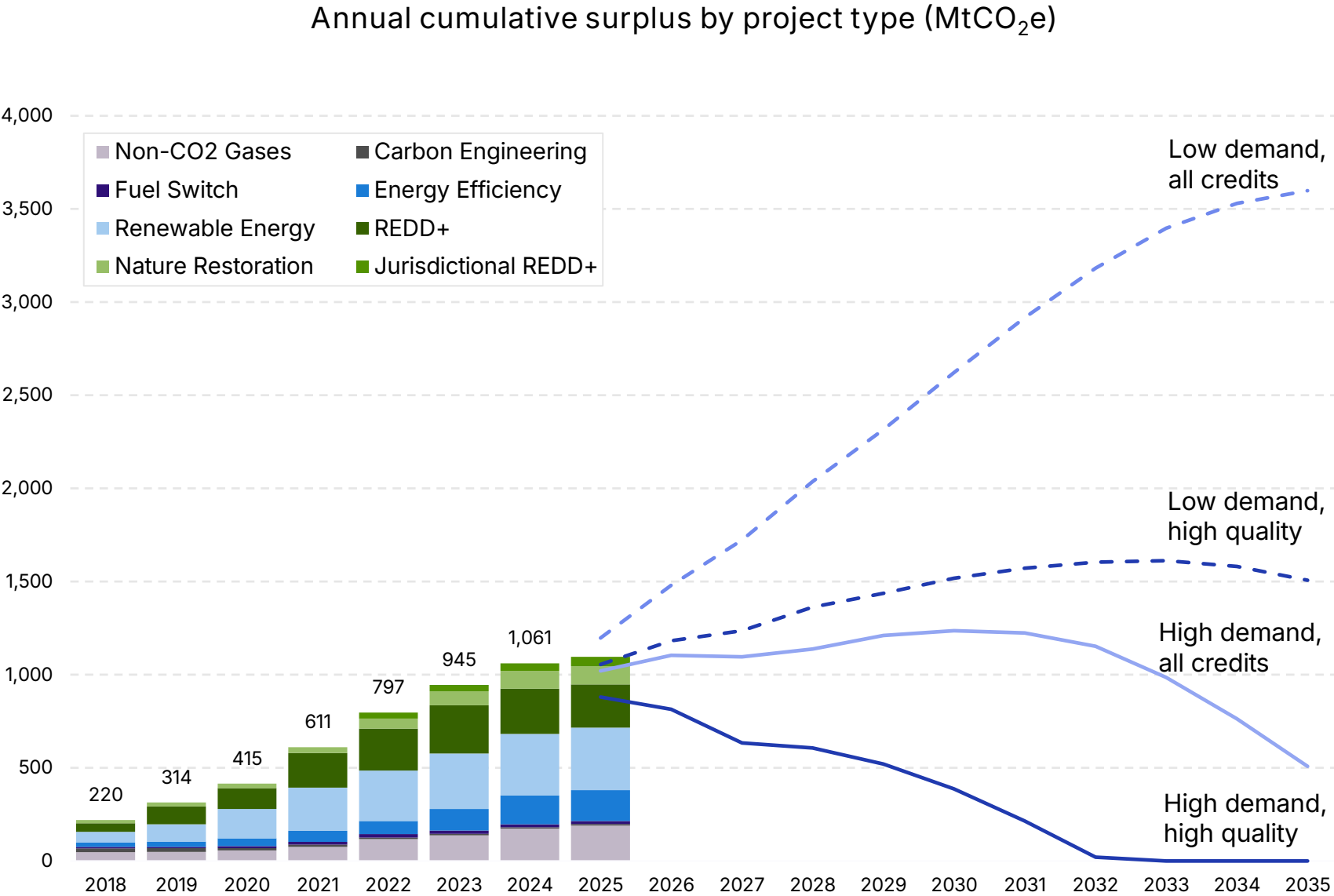
Demand, supply and surplus by project type



Source: ACR, ART, BioCarbon Standard, CAR, Climate Forward, CDM (NDC eligible credits only), Cercarbono, GCC, Gold Standard, Isometric, Plan Vivo, Puro Earth and Verra.
Data as of 30-June-2025.

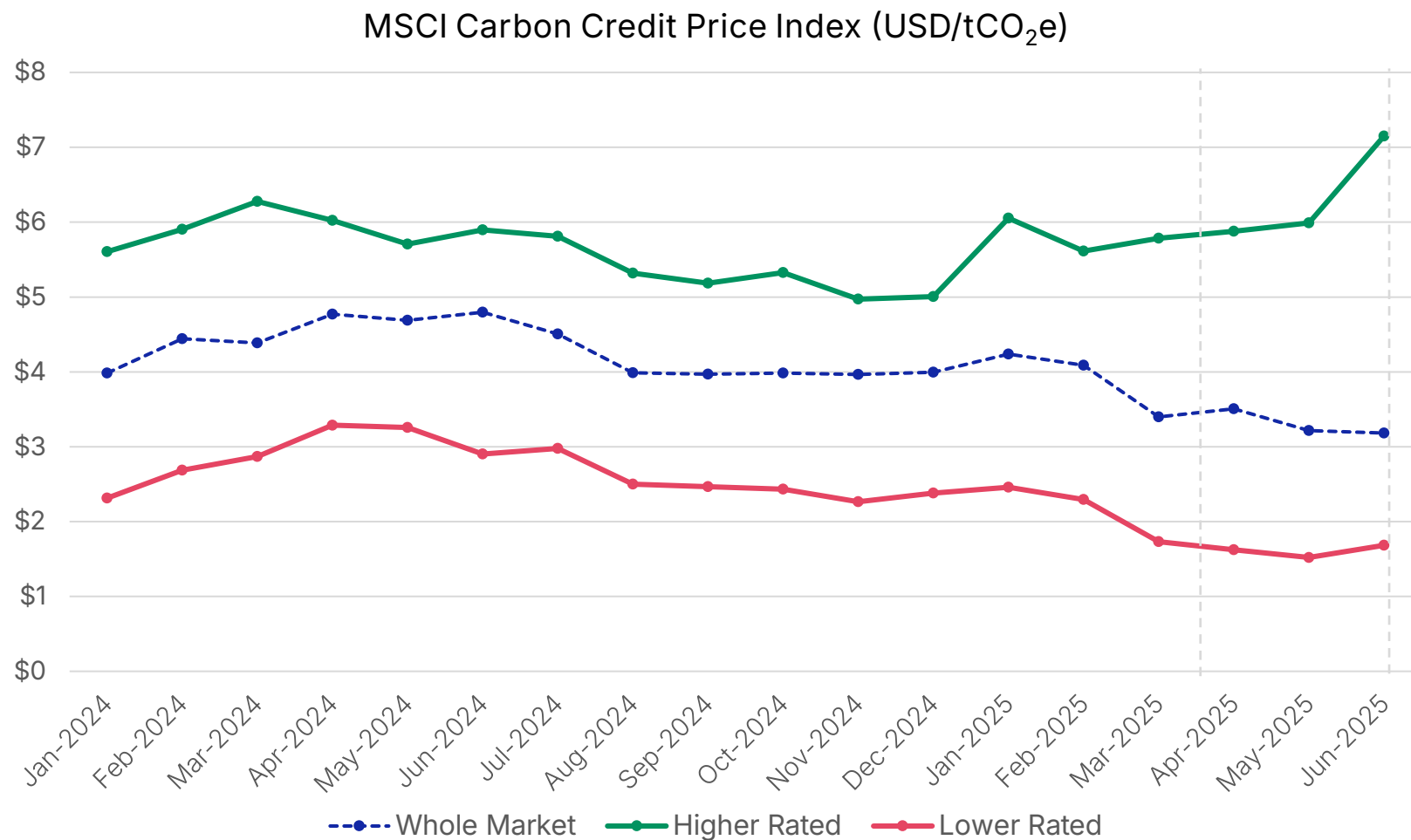
Surplus forecasts by rating

- Under high demand, we expect the surplus of high quality credits to run out entirely by 2033.
- Even under low demand, we expect the surplus of top-rated credits of some project types to deplete by 2028.



Prices increase for higher-rated projects

- Whole Market averaged \$3.3 in 2Q25, from \$3.9 in 1Q25
- Credits from higher-rated projects averaged \$6.4 in 2Q25, up from \$5.8 in 1Q25
- Credits from lower-rated projects averaged \$1.6 in 2Q25, down from \$2.1 in 1Q25
- 2Q25 premium for higher-rated credits at 300%



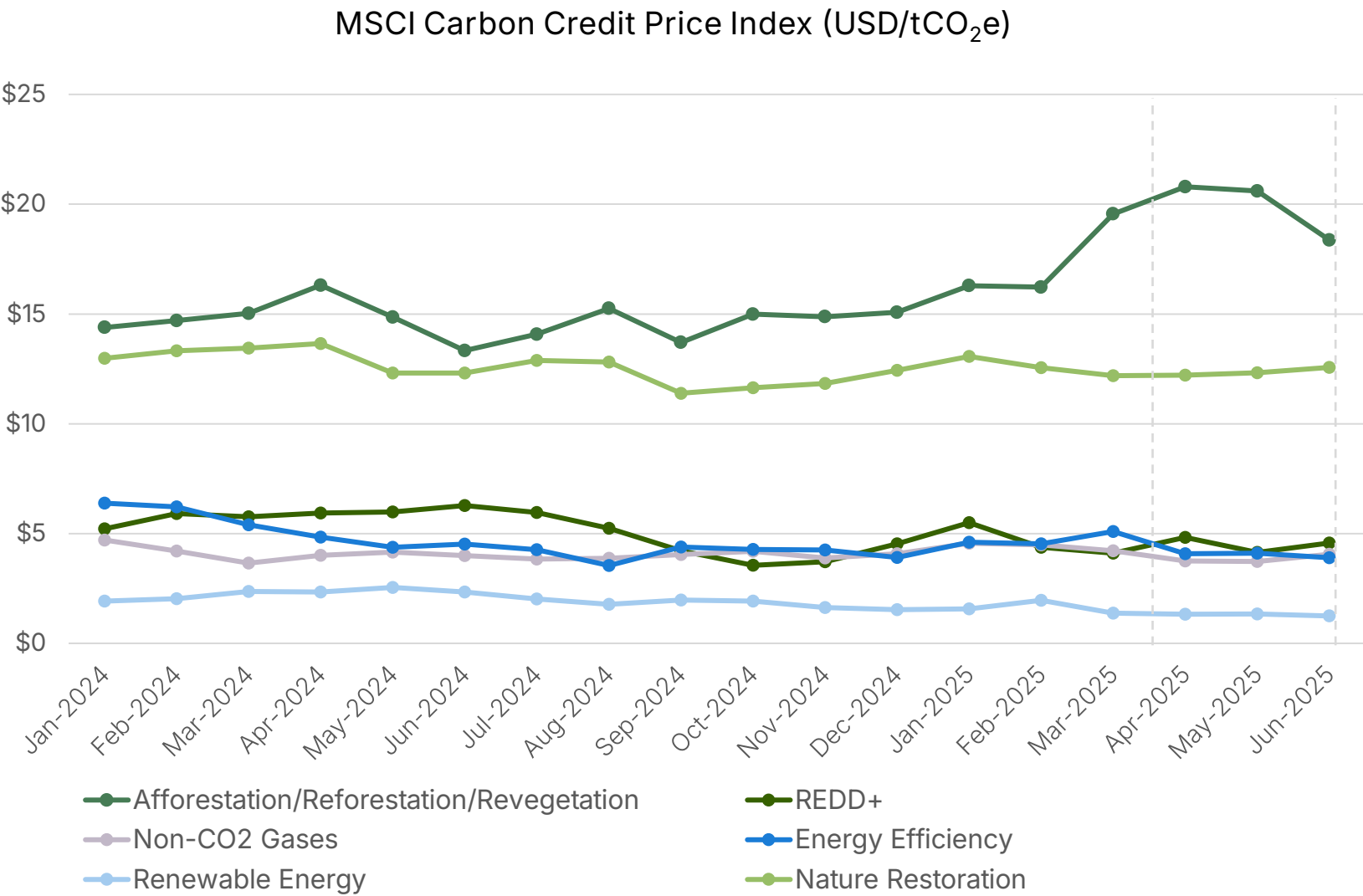
MSCI Global Carbon Credit Price Index

MSCI Global Rated BBB and Above Carbon Credit Price Index

MSCI Global Rated BB and Below Carbon Credit Price Index

Nature-based removal prices at record high

- Afforestation / Reforestation / Revegetation averaged \$19.8 in 1Q25 up from \$17.5 in 1Q24
- Index reached \$21.7 in late June, its highest recorded level
- REDD+ prices were flat at \$4.5 average in 2Q25
- Other types trending slightly lower



MSCI Global Afforestation/Reforestation/Revegetation Carbon Credit Price Index
MSCI Non-CO2 Gases Carbon Credit Price Index
MSCI Global Renewable Energy Carbon Credit Price Index

MSCI Global REDD+ Carbon Credit Price Index
MSCI Global Energy Efficiency Carbon Credit Price Index
MSCI Global REDD+ Carbon Credit Price Index

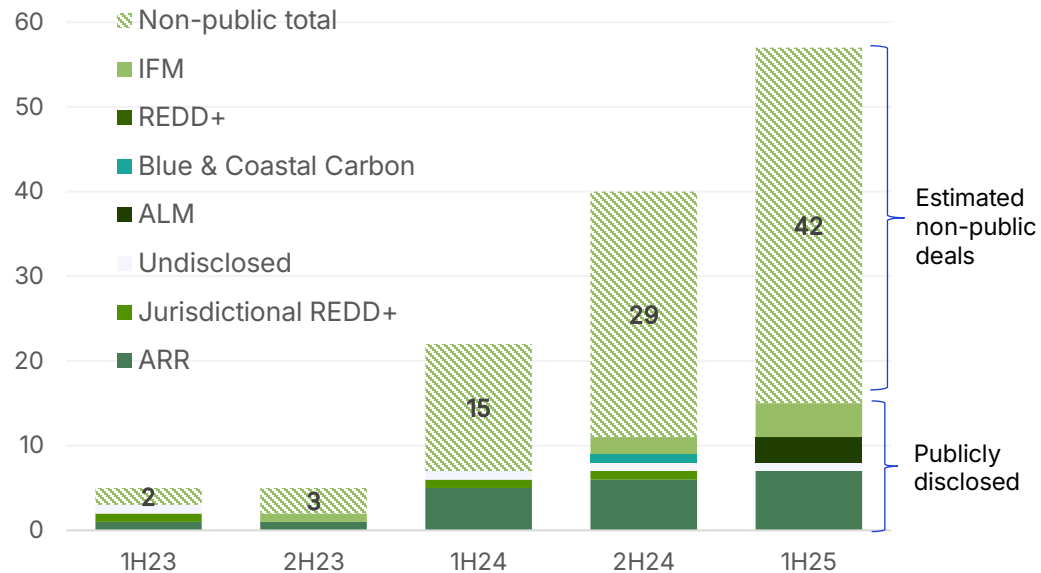
Information Classification: GENERAL

Tracking NBS offtake deals

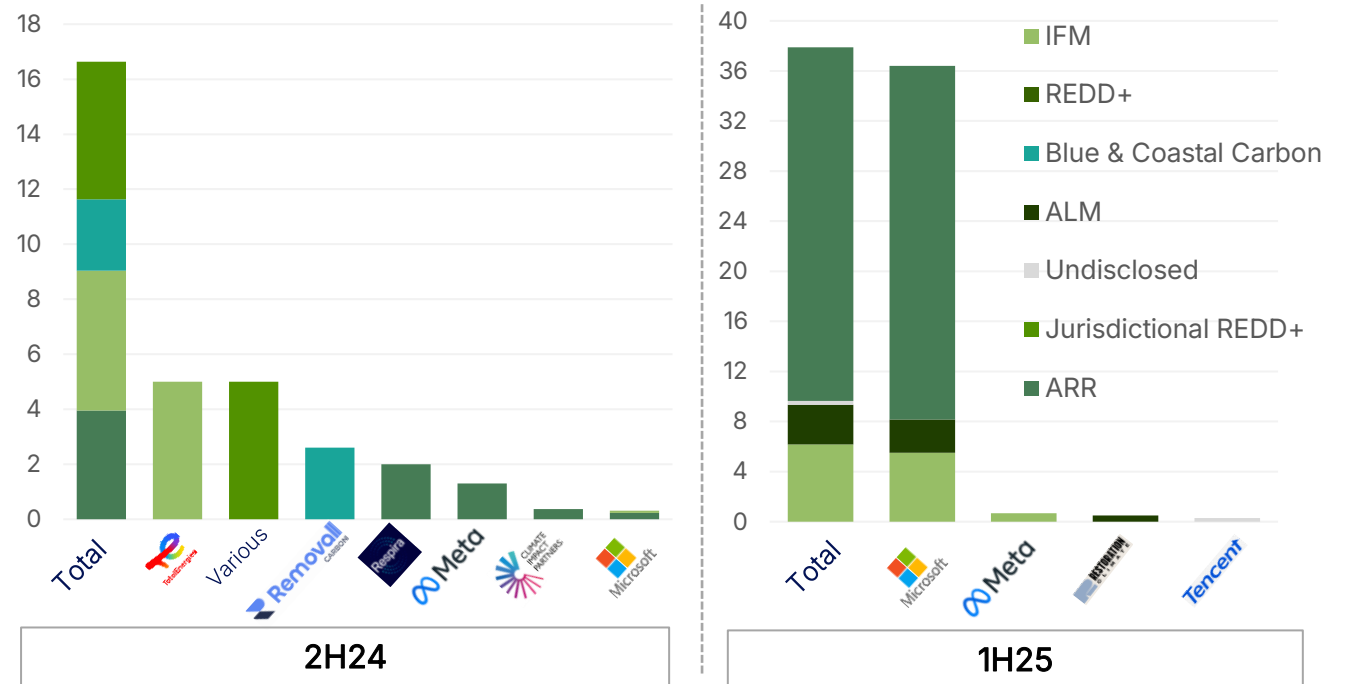
- 15 public deals in 1H25, up from 11 in 2H24
- Microsoft dominates at over 36 million tonnes contracted in 1H25

- Number of non-public deals reported to MSCI increasing
- Pay-on-delivery most common structure

Number of NBS offtakes announced since 2023



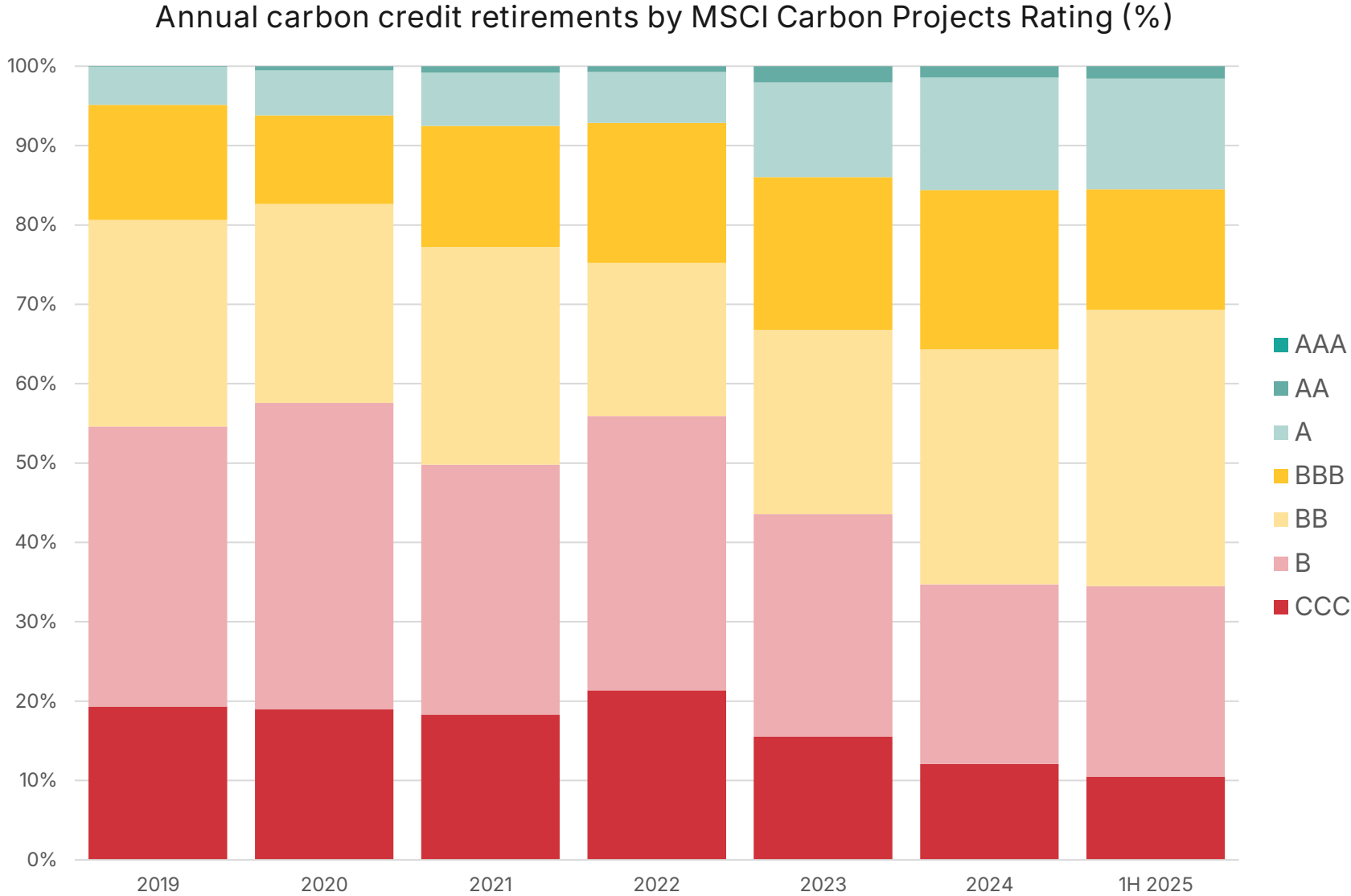
Size of publicly reported NBS offtakes, including commitments (MtCO₂e)



Demand for higher integrity credits increasing

2x
share of retirements rated A or higher
from 7% in 2022 to 15% in 1H 2025

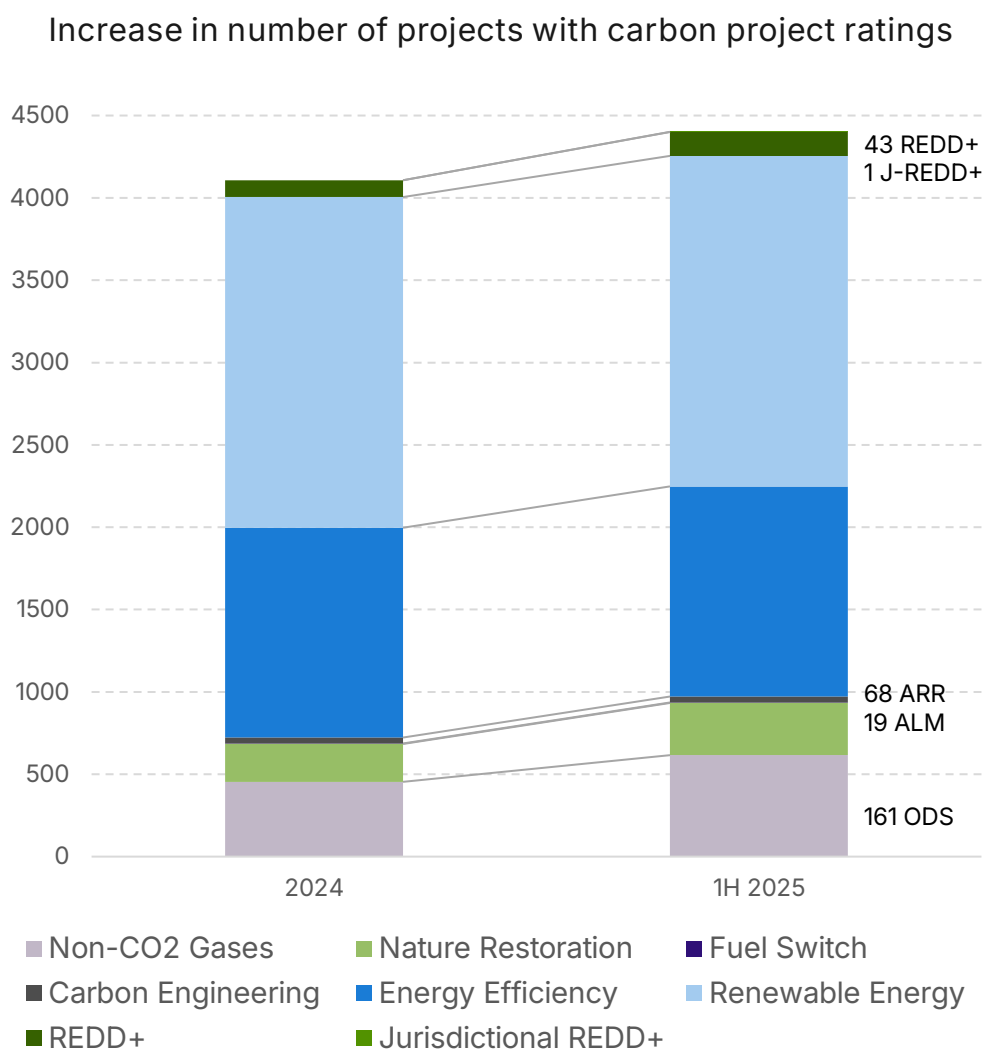
35%
of credits retired in 1H 2025 were rated B or CCC
from 56% in 2022



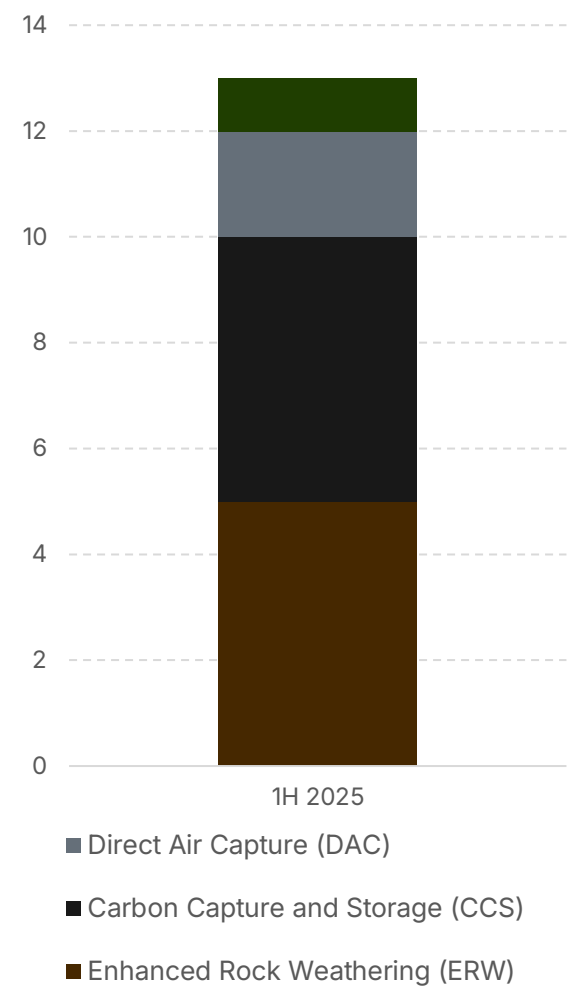
Data as of July 11, 2025. Source: MSCI Carbon Markets.
Registries included: ACR, ART TREES, BioCarbon, CAR, CDM (NDC-eligible projects only), Climate Forward, EcoRegistry, Global Carbon Council (GCC), Gold Standard, Isometric, Puro Earth, Plan Vivo and Verra.
~20% of retirements by volume are yet to receive a full Carbon Project Rating.

Increase in ratings coverage

- Carbon Project Ratings for >4,400 projects
- Preliminary Integrity Assessments for >1600 projects
- Pipeline Rating coverage for >200 projects
- 15x due diligence reports ; 30 new deep – dive dashboards



Preliminary integrity assessment of newer carbon engineering project types



Data as of July 11, 2025. Source: MSCI Carbon Markets.
Afforestation/reforestation/revegetation (ARR) , Agricultural Land Management (ALM), (ODS) Ozone Depleting Substances (CFCs, HFCs & PFCs)

Trends in Policy and Guidance in the last Quarter



European Commission proposes EU 2040 climate target, including the use of carbon trading¹

Omnibus I & II 'simplification' packages²

Future of Green Claims Directive³ hangs in the balance



Global development of compliance and voluntary markets – the multipolar world

ASEAN region is making significant progress on national markets and regional cooperation



Article 6 cooperation continues to grow, new countries entering the market

Switzerland claimed first successful trade

MSCI forecasts suggest Article 6 may account for 50% of demand by 2035

Sources: 1. [European Commission](#), 2. [European Commission](#), 3. [European Parliament](#)
MSCI Carbon Markets

Major EU policy developments leading to more questions than answers



European Commission Leading Drive to 'simplify' regulations¹

- Proposed amendments to:
 - Corporate Sustainability Reporting Directive (CSRD)
 - Corporate Sustainability Due Diligence Directive (CSDDD)
 - EU Carbon Border Adjustment Mechanism
 - EU Taxonomy
 - InvestEU



Uncertain Future for the Green Claims Directive²

- Proposal was not withdrawn, but talks have stalled³
- No agreement on ex-ante verification for all claims
- Council unable to agree excluding micro-enterprises
- Bottom line: No clarity on what claims are permitted



European Commission releases proposed EU 2040 Target⁴

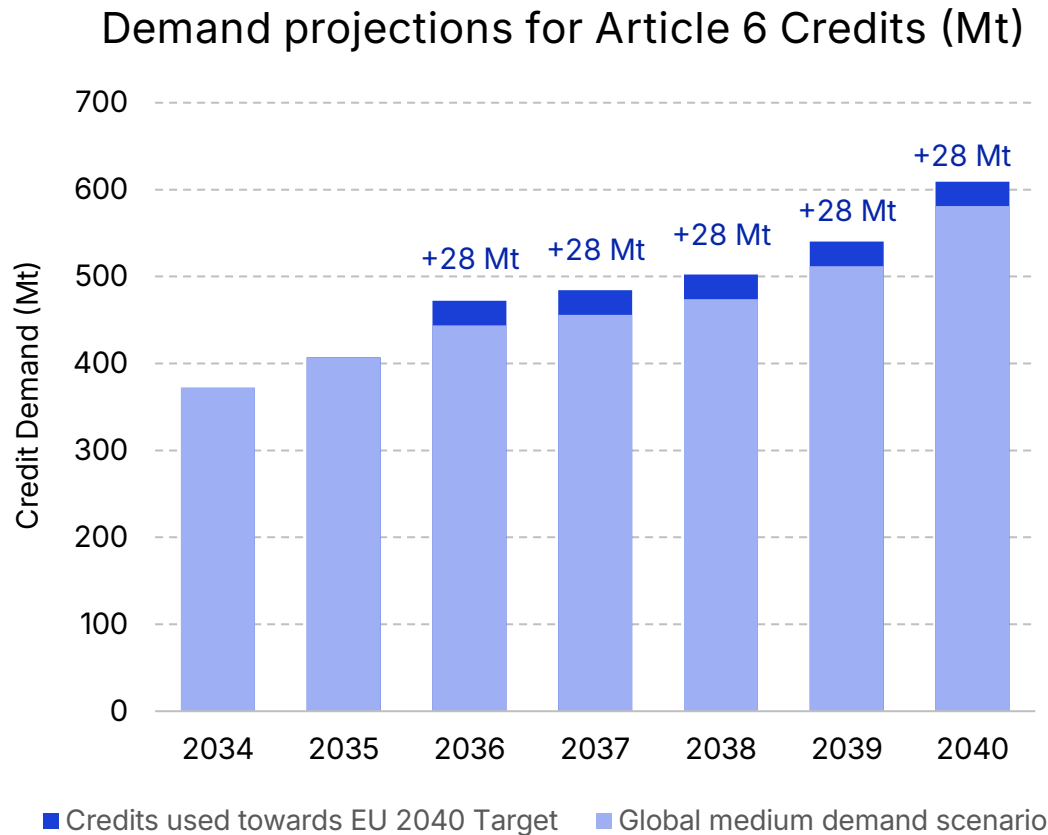
- Proposes use of international credits for up to 3% of 1990s emissions
- Could increase overall credit demand by 1-5%*
- And Article 6 demand by 4-10%*

1. [European Commission](#), 2. [European Parliament](#) 3. [ESG News](#), 4. [European Commission](#).

Source: MSCI Carbon Markets

* based on MSCI's projected medium credit demand scenario and interpretation of the [EU 2040 Target proposal](#) as a limit on credits equal to roughly 28Mt/yr. Data as of July 15, 2025.

Major EU policy developments leading to more questions than answers



1. [European Commission](#)

Source: MSCI Carbon Markets

* based on MSCI's projected medium credit demand scenario and interpretation of the [EU 2040 Target proposal](#) as a limit on credits equal to roughly 28Mt/yr. Data as of July 15, 2025.

2040 EU climate target

A path to competitiveness
& climate neutrality by 2050

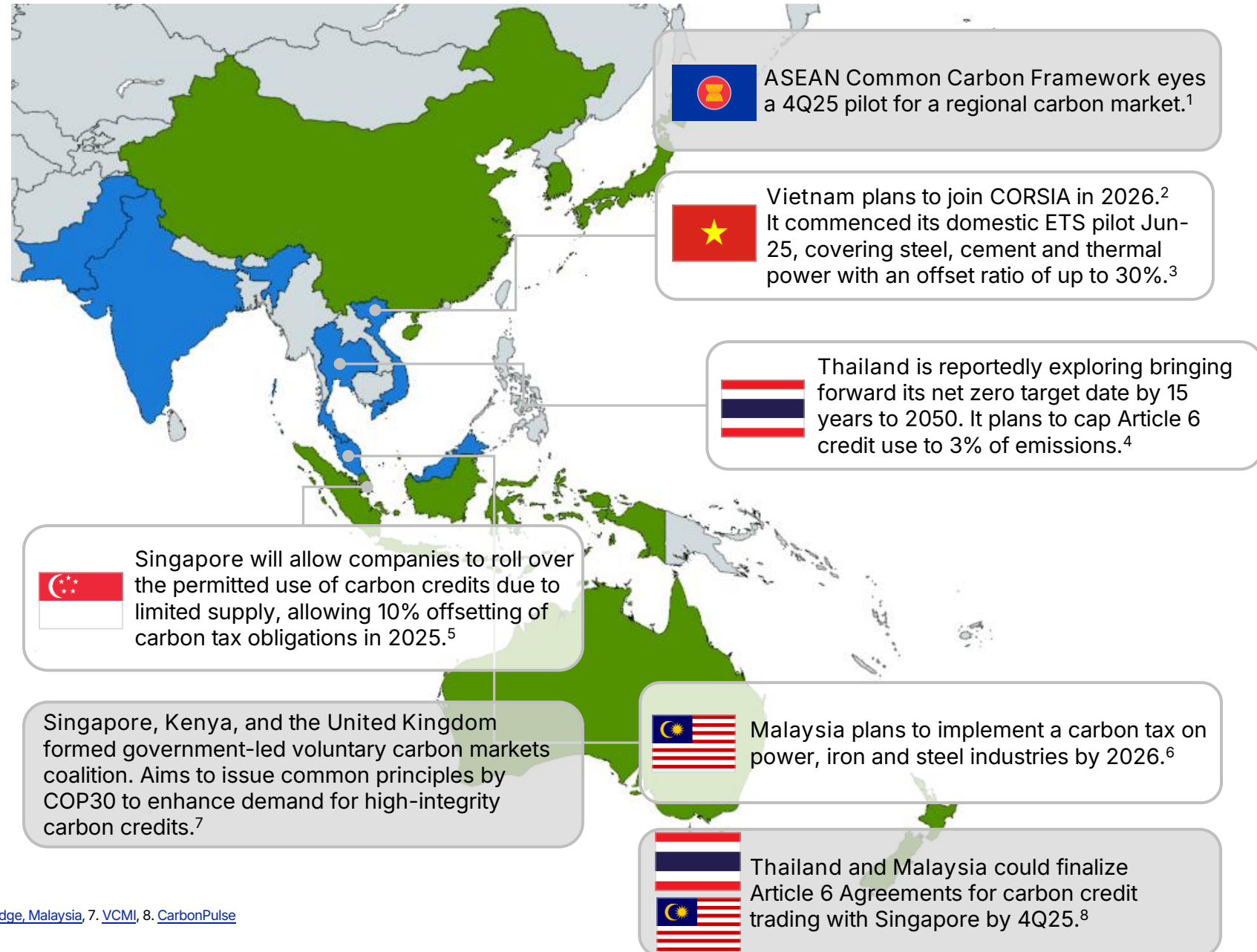


European Commission releases proposed EU 2040 Target¹

- Proposes use of international credits for up to 3% of 1990s emissions
- Could increase overall credit demand by 1-5%*
- And Article 6 demand by 4-10%*

Carbon markets on the rise in ASEAN

- Compliance markets are developing across APAC, particularly in the ASEAN region.
- Cross-border initiatives seek to boost liquidity and supply
- Broader trend towards more models of collaboration between countries



1. [CarbonPulse](#), 2. [CarbonHerald](#), 3. [Reuters](#), 4. [Eco-Business](#), 5. [The Business Times](#), 6. [The Edge, Malaysia](#), 7. [VCMi](#), 8. [CarbonPulse](#)
Source: MSCI Carbon Markets analysis as of July 16, 2025.

Article 6 cooperation ramping up, oversight of integrity remains key

1. Negotiations are moving forward

53

'Seller' Countries

▲ + 24 vs 1 year ago

11

'Buyer' Countries

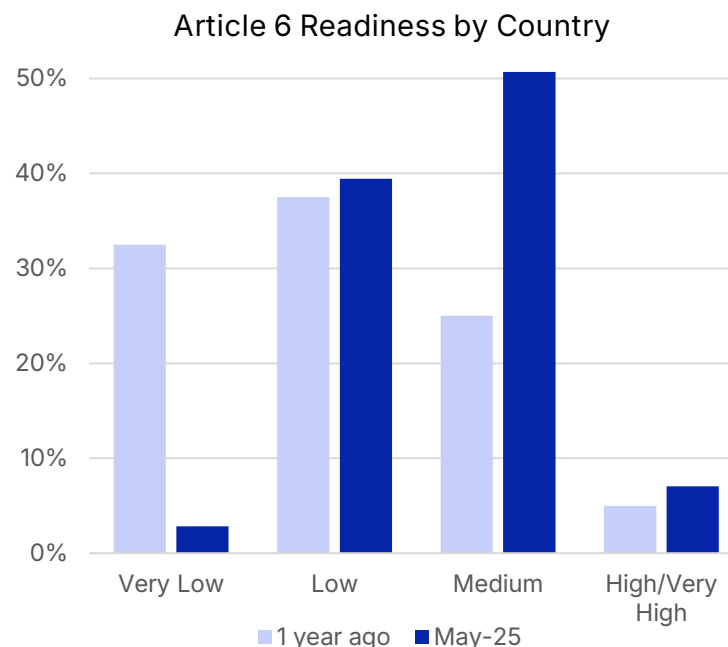
▲ + 8 vs 1 year ago

29.6

Estimated volume of ITMOs (MtCO₂e)

▲ + 0.8 Mt vs 1 year ago

2. Countries increasing readiness to engage in Article 6 trading



3. International oversight of Article 6.2 is limited



Now live on MSCI One: Article 6 Integrity Assessments, covering country-level and project-level risks

See our [blog](#) for more insights on credit quality and policy stability risks for Article 6-authorized projects.

Sources: MSCI Carbon Markets' Article 6.2 Transactions data, MSCI Carbon Markets Article 6 Readiness Assessment. Data as of July 15, 2025.

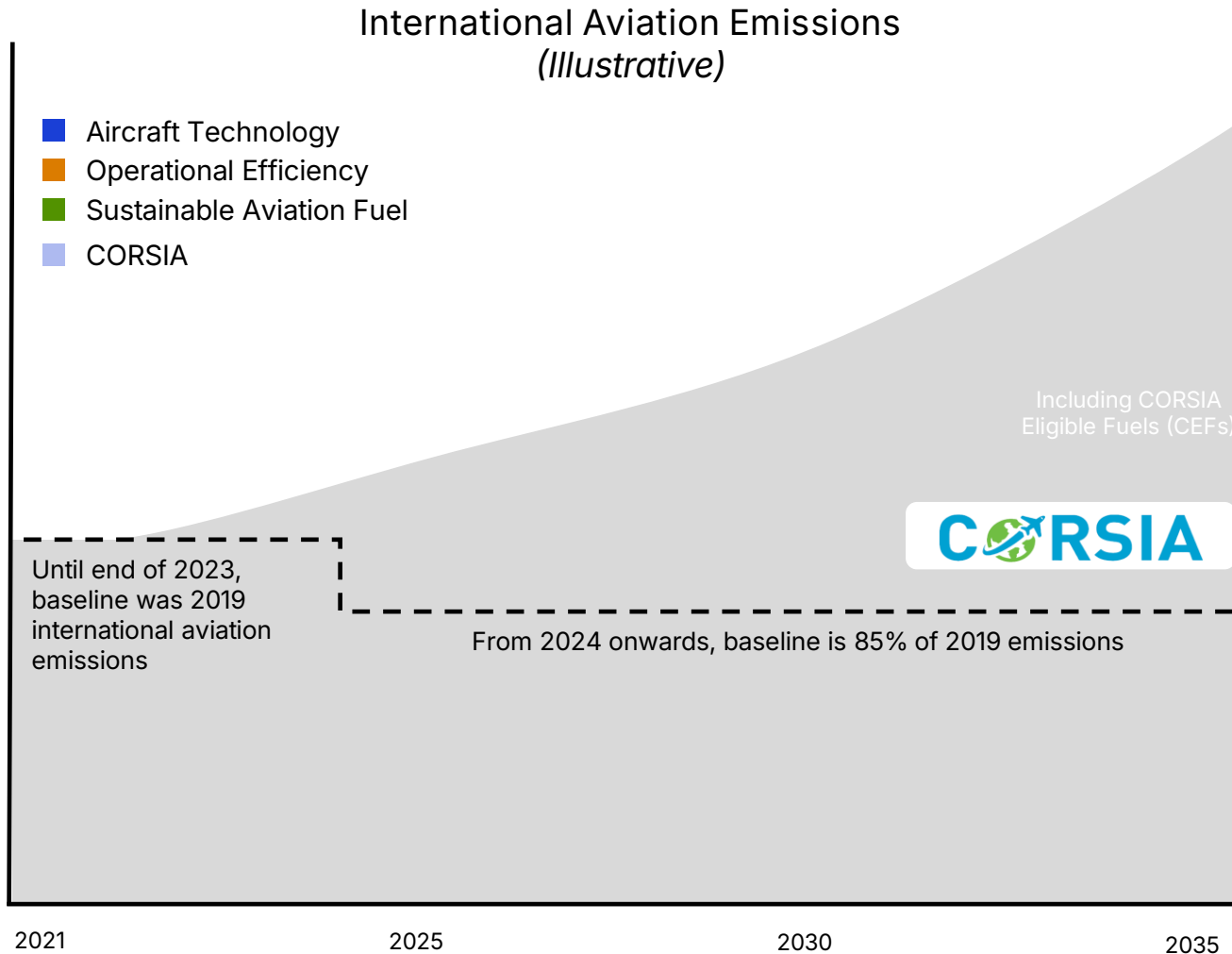


Audience poll

What will be the price
of CORSIA-eligible carbon
credits at the end of Phase I?

CORSIA Phase I Review and Outlook

What is CORSIA?



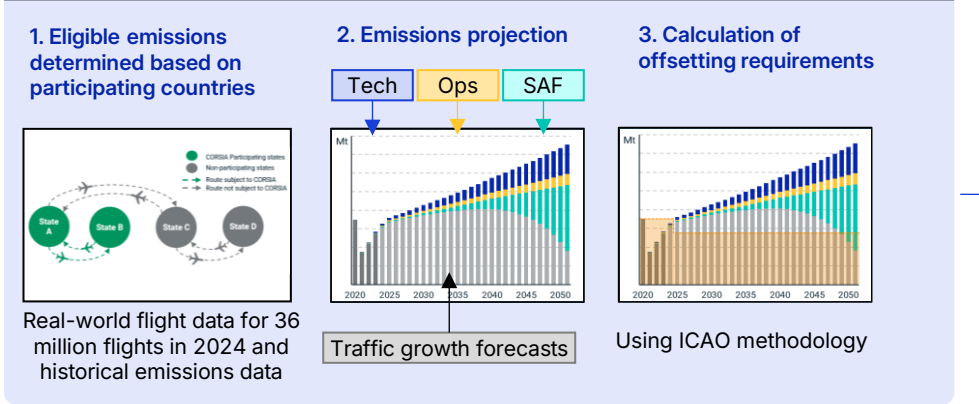
Source: ICAO, CORSIA Standards and Recommend Practices Annex 16, Volume IV [Link](#)

Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

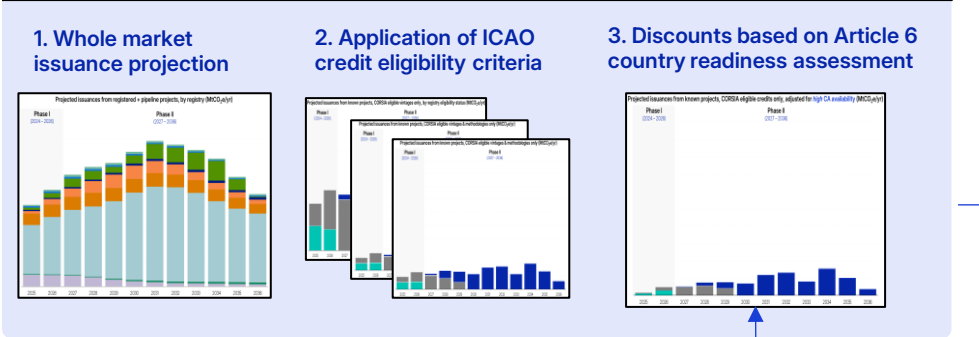
- Airlines must address emissions exceeding 85% of their 2019 levels starting in 2024.
- This can be achieved by purchasing carbon credits or CORSIA-eligible fuels (CEFs).
- Three phases; Phase 1 began in January 2024 with 129 participating countries.
- From 2027, participation becomes mandatory for countries with significant international aviation activity.
- Credits used towards CORSIA obligations must:
 - meet ICAO eligibility criteria (vintage, crediting period, registry etc.);
 - incorporate measures to avoid double counting - achieved by the issuing project's host country granting authorisation for a corresponding adjustment under Article 6 of the Paris Agreement.

CORSIA scenarios model - methodology overview

CORSIA-eligible demand volume



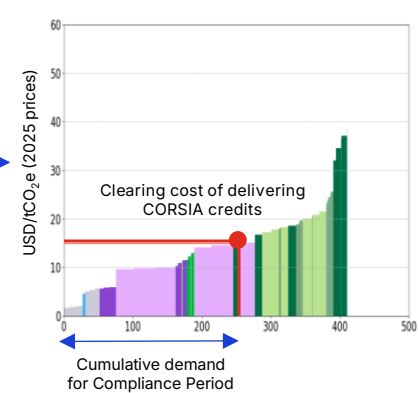
CORSIA-eligible supply volume



Article 6 Readiness assessment for over 70 countries provides the necessary input on the availability of authorisations

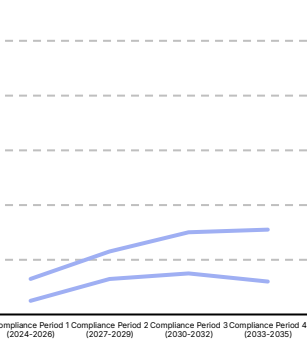


Marginal cost of meeting CORSIA demand



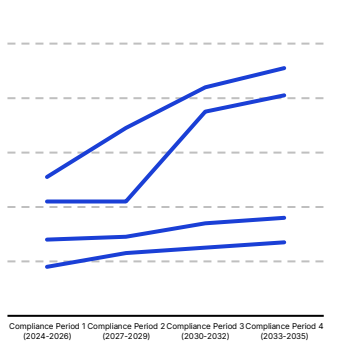
Supply MAC curves constructed using project development cost models for >10 project types

Corresponding Adjustment premium



Article 6 Corresponding Adjustment premium modelled based on proprietary Article 6 market forecast model

CORSIA price scenarios



CORSIA-eligible credit price = marginal cost of meeting CORSIA demand + CA premium

Projected demand for CORSIA credits in Phase I (2024 – 2026)

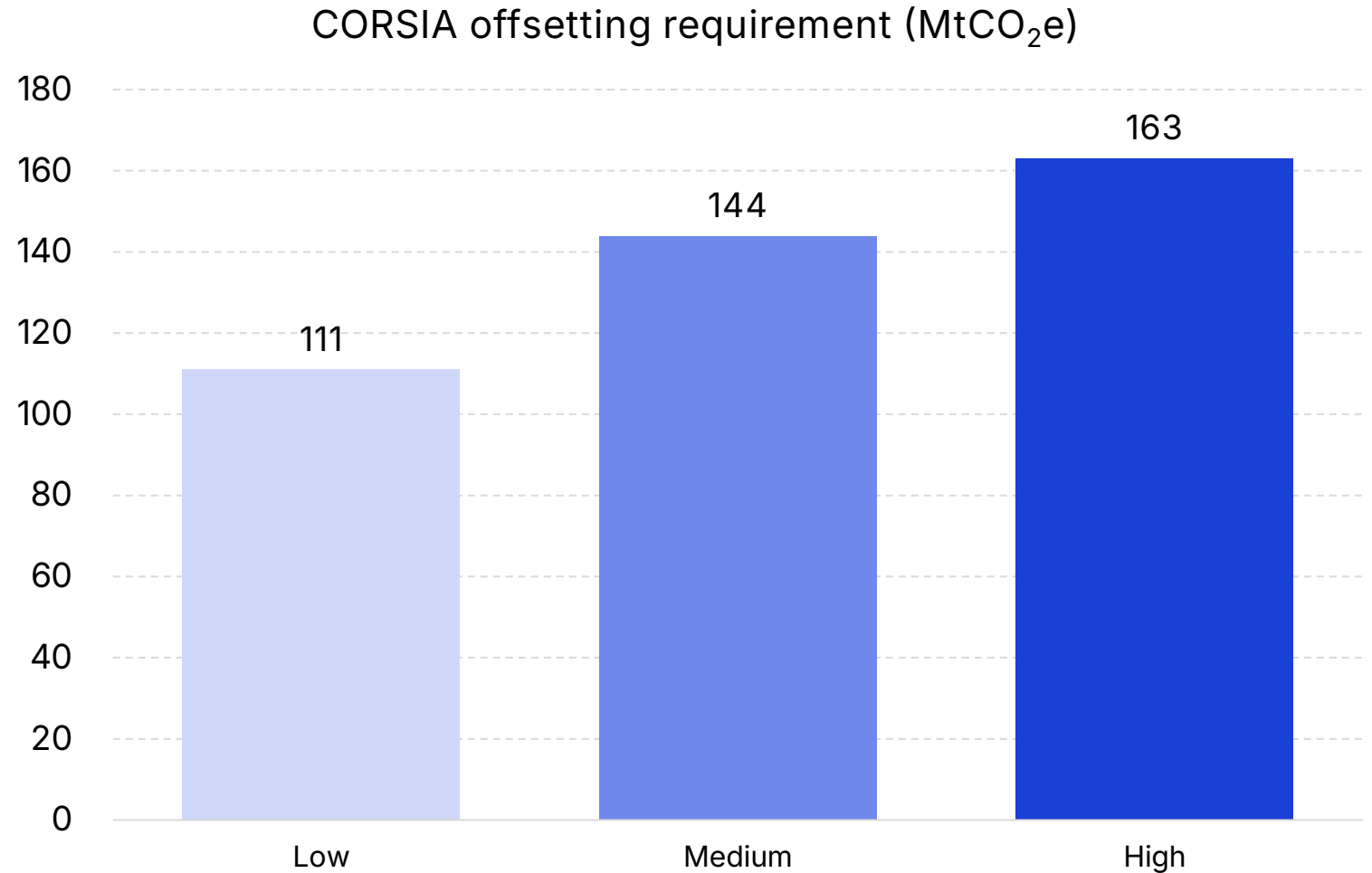
CORSIA offsetting requirements are driven by:

Aviation industry factors:

- Aviation traffic growth
- Technology adoption and fleet renewal
- Operational efficiency improvements
- Sustainable aviation fuel (SAF) utilisation

Geopolitical factors:

- Country participation
- Country regulation and enforcement
- Airline compliance

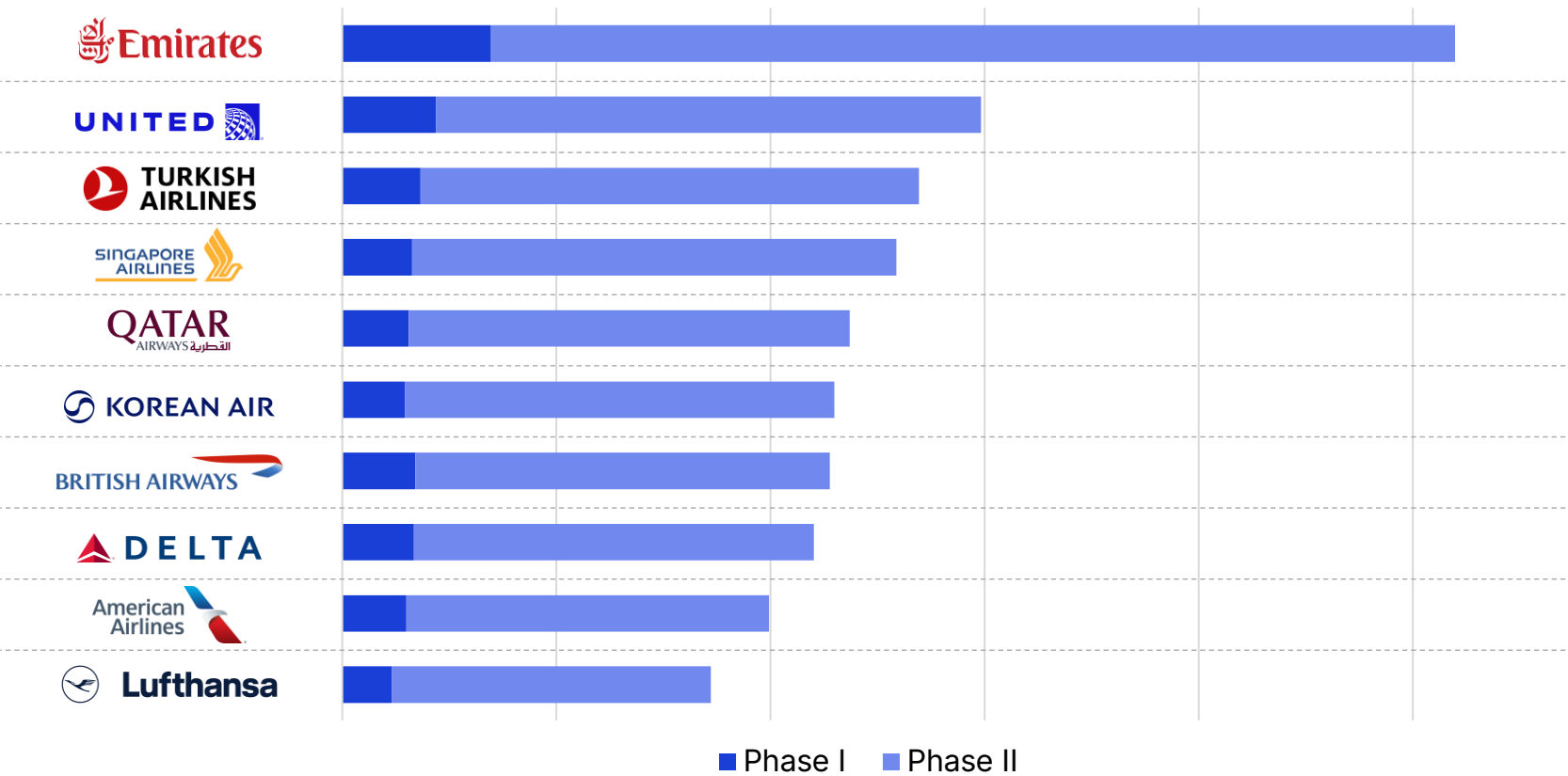


Source: MSCI Carbon Markets, CORSIA Market Outlook Report, June 2025

Airlines with the largest demand for CORSIA credits

Large airlines with extensive international route networks, but limited domestic routes, will likely be the largest purchasers of CORSIA credits.

Relative Airline¹ CORSIA Credit Demand for Phase I and Phase II for High Scenario

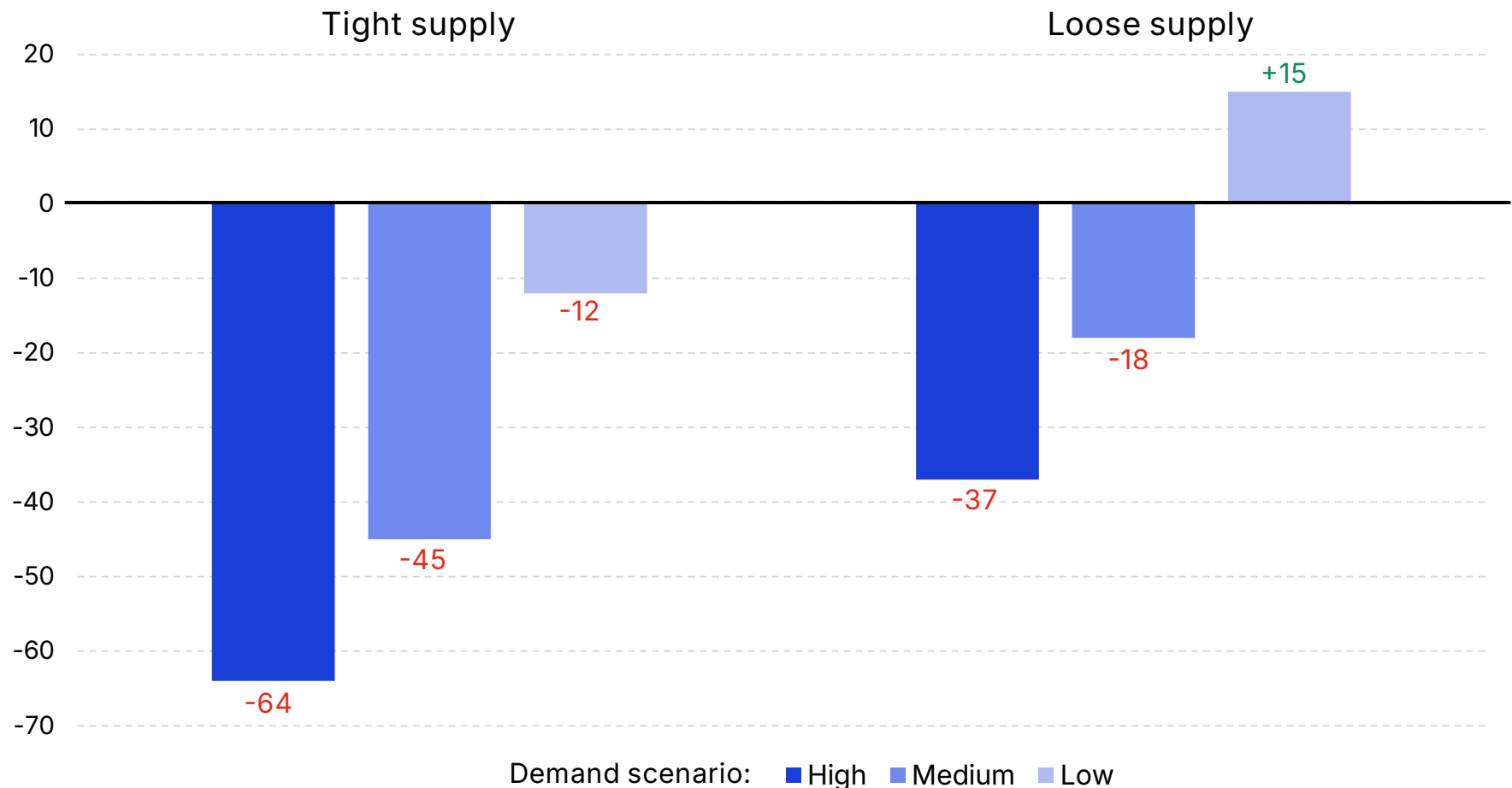


We project the 10 largest airline buyers will make up 34% of all CORSIA demand to 2035.

Details: 1. Data shown is for individual airlines and not airline groups through to 2035.
Source: MSCI Carbon Markets, CORSIA Market Outlook Report, June 2025

CORSIA supply-demand gap for combined scenarios

Projected CORSIA Phase I supply-demand gap (MtCO₂e)



During Phase I

There is a potential supply shortage in 5 out of 6 scenarios between **-12 to -64 Mt**

In just 1 scenario there is supply surplus of **+15 Mt**

Source: MSCI Carbon Markets, CORSIA Market Outlook Report, June 2025

Potential CORSIA cost of compliance

CORSIA-eligible credit prices range from USD 26 – 63/t in Phase I (2024-26) and up to USD 124/t in compliance period 4 (2033-35).

CORSIA-eligible credit prices for Phase I
(USD/tCO₂e, 2025 prices)

	2024 end year review	2025 mid year review
High Demand, Tight Supply	51	▲ 63
Low Demand, Loose Supply	18	▲ 26

Average annual cost of
CORSIA compliance

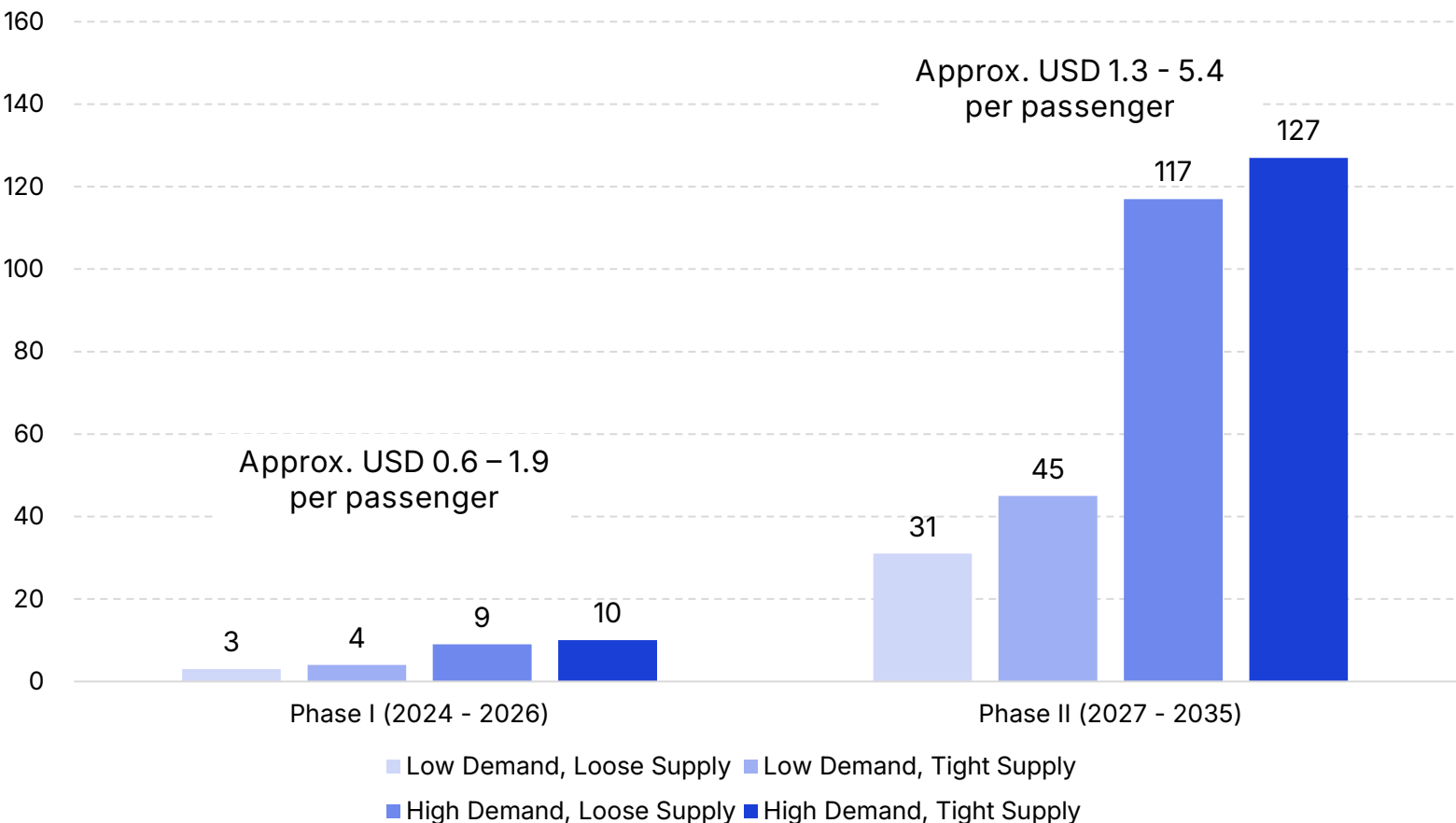
During Phase I

USD 1 – 3 bn

During Phase II

USD 3 – 14 bn

Projected cumulative compliance cost for CORSIA (USD bn, 2025 prices), by Phase



Details: 1. Note projected prices are 2025 prices (i.e., do not account for general inflation).

Source: MSCI Carbon Markets, CORSIA Market Outlook Report, June 2025

Key issues facing CORSIA

- Enforcement signals remain weak - UK is consulting on a £100/t penalty, but broader enforcement mechanisms are still limited.
- Article 6 readiness improving, but slowly - More countries are building their Article 6 capacity to authorise credit use for CORSIA, yet institutional progress is uneven and gradual.
- US stance on CORSIA uncertain, and others may follow - Ambiguity over US commitment to Phase I and enforcement in Phase II could weaken overall demand and set a precedent for others to opt out.
- CORSIA post-2026 may be shaped by EU ETS changes - EU will reassess CORSIA's effectiveness in July 2026 and may expand the EU ETS to cover international flights arriving or departing in the EU.

CORSIA expert panel

Please type your questions in the Q&A box at the bottom of your window



Yue Huang

Assistant Director of
Climate Policy



Will Gifford

Policy Manager, Aviation and
NCS Lead



Faris Pleho

Vice President, Head of Aviation
MSCI Carbon Markets



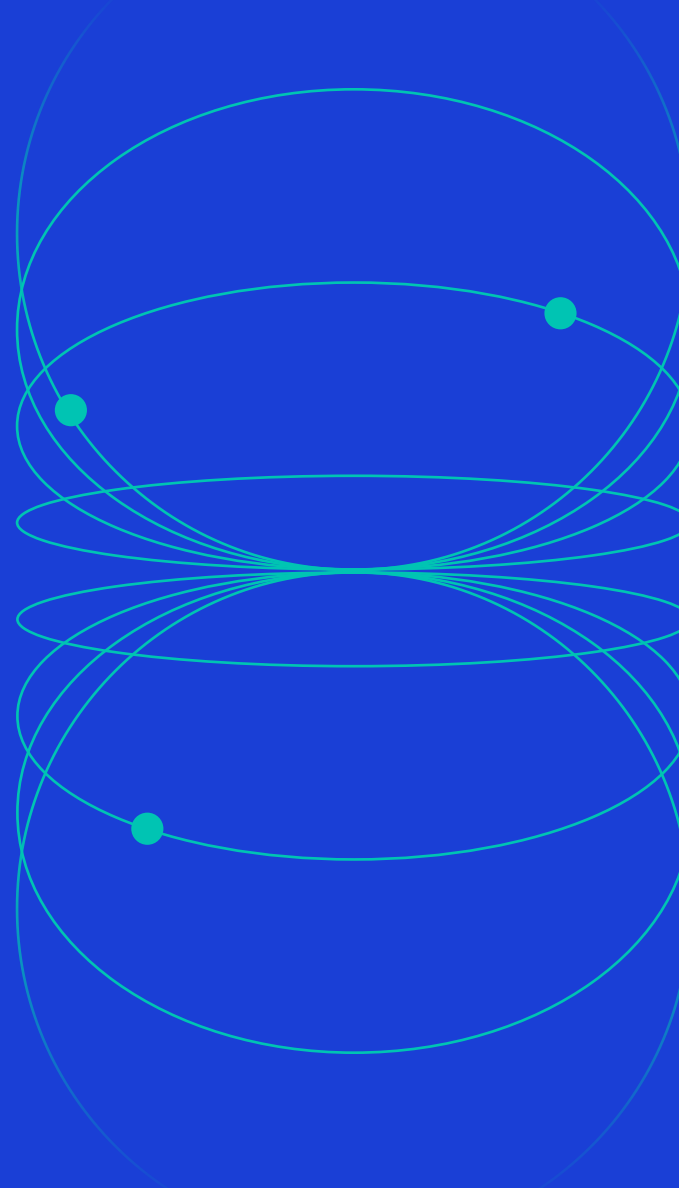


Thank you

Please follow us on [LinkedIn](#) (MSCI Carbon Markets) or [sign up to our newsletter](#) to hear about our future webinars.

Contact →

carbonmarkets@msci.com



MSCI Carbon Markets

Investor-Grade Data and Insights

✓ Interactive platform

✓ Weekly / monthly reports

✓ Research notes and webinars

✓ Ppt / Excel downloads

✓ Direct data feeds (/APIs)

✓ Access to analysts



Policy & guidance

- Analysis and consensus tracking on key policy & guidance updates across 180+ organizations
- 40+ detailed country policy profiles
- Article 6 of the Paris Agreement and jurisdictional credit analysis



Carbon credit projects & transactions

- 300+ fields for ~30k projects across 15+ registries
- Issuances / retirements by type, vintage, standard
- Performance metrics and compliance eligibility
- Developer profiles and investment tracking



Carbon credit prices

- Weekly prices for exchange & OTC transactions
- Price tracking across project types, vintage year, country, credit quality, and additional attributes
- Engineered CDR transactions & NBS offtake tracking
- Carbon credit price calculator & indicative quotes



Corporate data

- >15k corporates' credit buying tracked & modelled
- Historic retirements analyzed at project level
- Future demand modelled, segmented and costed
- Assessments of climate ambition & progress
- Templated outputs for regulatory disclosures



Carbon project ratings

- Integrity ratings for >4k projects, plus assessments for >500 pipeline and >50 early-stage CDR projects
- Six major risks analyzed (additionality, quantification, permanence, co-benefits, legal & ethical and delivery)
- Tonne discount factor & project disclosure scores
- Custom scoring based on user preferences



Forecasting

- Short-, medium- and long-term scenarios for voluntary carbon credit supply, demand & prices
- Covering reduction / removal / CORSIA credits
- Interactive scenario forecast model
- Detailed development cost models, by project type



Carbon Dioxide Removal market analysis



Nature-based Solutions market analysis



CORSIA / Aviation market analysis



Geospatial platform



Contact

The process for submitting a formal index complaint can be found on the index page of MSCI's website at:
<https://www.msci.com/index-regulation>.

Americas

United States
+1 888 588 4567 (toll free)

Canada
+1 416 628 1007

Brazil
+55 11 4040 7830

Mexico
+52 81 1253 4020

Asia Pacific

China
North: 10800 852 1032 (toll free)
South: 10800 152 1032 (toll free)

Hong Kong
+ 852 2844 9333

India
+ 91 22 6784 9160

Malaysia
1800818185 (toll free)

South Korea
800 852 3749 (toll free)

Singapore
800 852 3749 (toll free)

Australia
+612 9033 9333

Taiwan
008 0112 7513 (toll free)

Thailand
0018 0015 6207 7181 (toll free)

Japan
+81 3 4579 0333

Europe, Middle East & Africa

South Africa
+ 27 21 673 0103

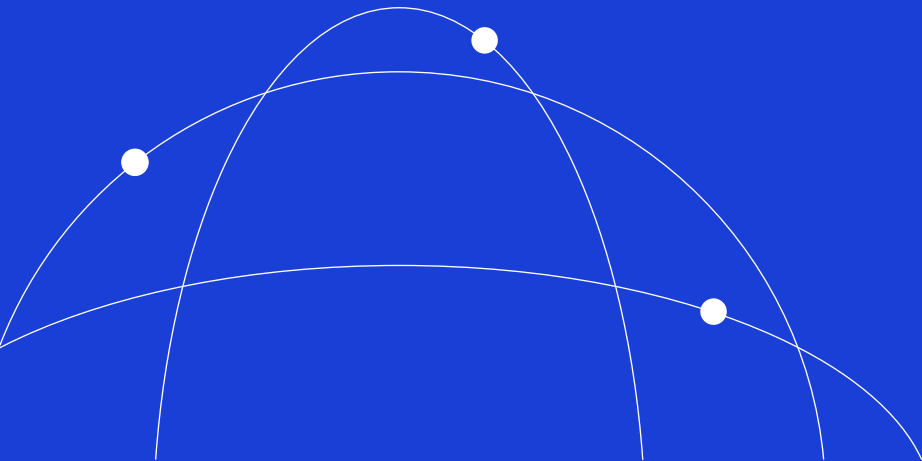
Germany
+ 49 69 133 859 00

Switzerland
+ 41 22 817 9777

United Kingdom
+ 44 20 7618 2222

Italy
+ 39 02 5849 0415

France
+ 33 17 6769 810



About Us: ESG

About MSCI ESG Research Products and Services

MSCI ESG Research products and services are provided by MSCI ESG Research LLC, and are designed to provide in-depth research, ratings and analysis of environmental, social and governance-related business practices to companies worldwide. ESG ratings, data and analysis from MSCI ESG Research LLC. are also used in the construction of the MSCI ESG Indexes. MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc.

About MSCI Inc.

MSCI is a leading provider of critical decision support tools and services for the global investment community. With over 50 years of expertise in research, data and technology, we power better investment decisions by enabling clients to understand and analyze key drivers of risk and return and confidently build more effective portfolios. We create industry-leading research-enhanced solutions that clients use to gain insight into and improve transparency across the investment process.

To learn more, please visit www.msci.com

Notice and Disclaimer

This document and all of the information contained in it, including without limitation all text, data, graphs, charts (collectively, the "Information") is the property of MSCI Inc. or its subsidiaries (collectively, "MSCI"), or MSCI's licensors, direct or indirect suppliers or any third party involved in making or compiling any Information (collectively, with MSCI, the "Information Providers") and is provided for informational purposes only. The Information may not be modified, reverse-engineered, reproduced or redisseminated in whole or in part without prior written permission from MSCI. All rights in the Information are reserved by MSCI and/or its Information Providers.

The Information may not be used to create derivative works or to verify or correct other data or information. For example (but without limitation), the Information may not be used to create indexes, databases, risk models, analytics, software, or in connection with the issuing, offering, sponsoring, managing or marketing of any securities, portfolios, financial products or other investment vehicles utilizing or based on, linked to, tracking or otherwise derived from the Information or any other MSCI data, information, products or services.

The user of the Information assumes the entire risk of any use it may make or permit to be made of the Information. NONE OF THE INFORMATION PROVIDERS MAKES ANY EXPRESS OR IMPLIED WARRANTIES OR REPRESENTATIONS WITH RESPECT TO THE INFORMATION (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF), AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, EACH INFORMATION PROVIDER EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES (INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF ORIGINALITY, ACCURACY, TIMELINESS, NON-INFRINGEMENT, COMPLETENESS, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE) WITH RESPECT TO ANY OF THE INFORMATION.

Without limiting any of the foregoing and to the maximum extent permitted by applicable law, in no event shall any Information Provider have any liability regarding any of the Information for any direct, indirect, special, punitive, consequential (including lost profits) or any other damages even if notified of the possibility of such damages. The foregoing shall not exclude or limit any liability that may not by applicable law be excluded or limited, including without limitation (as applicable), any liability for death or personal injury to the extent that such injury results from the negligence or willful default of itself, its servants, agents or sub-contractors.

Information containing any historical information, data or analysis should not be taken as an indication or guarantee of any future performance, analysis, forecast or prediction. Past performance does not guarantee future results.

The Information may include "Signals," defined as quantitative attributes or the product of methods or formulas that describe or are derived from calculations using historical data. Neither these Signals nor any description of historical data are intended to provide investment advice or a recommendation to make (or refrain from making) any investment decision or asset allocation and should not be relied upon as such. Signals are inherently backward-looking because of their use of historical data, and they are not intended to predict the future. The relevance, correlations and accuracy of Signals frequently will change materially.

The Information should not be relied on and is not a substitute for the skill, judgment and experience of the user, its management, employees, advisors and/or clients when making investment and other business decisions. All Information is impersonal and not tailored to the needs of any person, entity or group of persons.

None of the Information constitutes an offer to sell (or a solicitation of an offer to buy), any security, financial product or other investment vehicle or any trading strategy.

It is not possible to invest directly in an index. Exposure to an asset class or trading strategy or other category represented by an index is only available through third party investable instruments (if any) based on that index. MSCI does not issue, sponsor, endorse, market, offer, review or otherwise express any opinion regarding any fund, ETF, derivative or other security, investment, financial product or trading strategy that is based on, linked to, or seeks to provide an investment return related to the performance of any MSCI index (collectively, "Index Linked Investments"). MSCI makes no assurance that any Index Linked Investments will accurately track index performance or provide positive investment returns. MSCI Inc. is not an investment adviser or fiduciary and MSCI makes no representation regarding the advisability of investing in any Index Linked Investments.

Index returns do not represent the results of actual trading of investable assets/securities. MSCI maintains and calculates indexes, but does not manage actual assets. The calculation of indexes and index returns may deviate from the stated methodology. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the

securities underlying the index or Index Linked Investments. The imposition of these fees and charges would cause the performance of an Index Linked Investment to be different than the MSCI index performance.

The Information may contain back tested data. Back-tested performance is not actual performance but is hypothetical. There are frequently material differences between back tested performance results and actual results subsequently achieved by any investment strategy.

Constituents of MSCI equity indexes are listed companies, which are included in or excluded from the indexes according to the application of the relevant index methodologies. Accordingly, constituents in MSCI equity indexes may include MSCI Inc., clients of MSCI or suppliers to MSCI. Inclusion of a security within an MSCI index is not a recommendation by MSCI to buy, sell, or hold such security, nor is it considered to be investment advice.

Data and information produced by various affiliates of MSCI Inc., including MSCI ESG Research LLC and Barra LLC, may be used in calculating certain MSCI indexes. More information can be found in the relevant index methodologies on www.msci.com.

MSCI receives compensation in connection with licensing its indexes to third parties. MSCI Inc.'s revenue includes fees based on assets in Index Linked Investments. Information can be found in MSCI Inc.'s company filings on the Investor Relations section of msci.com.

MSCI ESG Research LLC is a Registered Investment Adviser under the Investment Advisers Act of 1940 and a subsidiary of MSCI Inc. Neither MSCI nor any of its products or services recommends, endorses, approves or otherwise expresses any opinion regarding any issuer, securities, financial products or instruments or trading strategies and MSCI's products or services are not a recommendation to make (or refrain from making) any kind of investment decision and may not be relied on as such, provided that applicable products or services from MSCI ESG Research may constitute investment advice. MSCI ESG Research materials, including materials utilized in any MSCI ESG Indexes or other products, have not been submitted to, nor received approval from, the United States Securities and Exchange Commission or any other regulatory body. MSCI ESG and climate ratings, research and data are produced by MSCI ESG Research LLC, a subsidiary of MSCI Inc. MSCI ESG Indexes, Analytics and Real Estate are products of MSCI Inc. that utilize information from MSCI ESG Research LLC. MSCI Indexes are administered by MSCI Limited (UK) and MSCI Deutschland GmbH.

Please note that the issuers mentioned in MSCI ESG Research materials sometimes have commercial relationships with MSCI ESG Research and/or MSCI Inc. (collectively, "MSCI") and that these relationships create potential conflicts of interest. In some cases, the issuers or their affiliates purchase research or other products or services from one or more MSCI affiliates. In other cases, MSCI ESG Research rates financial products such as mutual funds or ETFs that are managed by MSCI's clients or their affiliates, or are based on MSCI Inc. Indexes. In addition, constituents in MSCI Inc. equity indexes include companies that subscribe to MSCI products or services. In some cases, MSCI clients pay fees based in whole or part on the assets they manage. MSCI ESG Research has taken a number of steps to mitigate potential conflicts of interest and safeguard the integrity and independence of its research and ratings. More information about these conflict mitigation measures is available in our Form ADV, available at <https://adviserinfo.sec.gov/firm/summary/169222>.

Any use of or access to products, services or information of MSCI requires a license from MSCI. MSCI, Barra, RiskMetrics, IPD and other MSCI brands and product names are the trademarks, service marks, or registered trademarks of MSCI or its subsidiaries in the United States and other jurisdictions. The Global Industry Classification Standard (GICS) was developed by and is the exclusive property of MSCI and S&P Global Market Intelligence. "Global Industry Classification Standard (GICS)" is a service mark of MSCI and S&P Global Market Intelligence.

MIFID2/MIFIR notice: MSCI ESG Research LLC does not distribute or act as an intermediary for financial instruments or structured deposits, nor does it deal on its own account, provide execution services for others or manage client accounts. No MSCI ESG Research product or service supports, promotes or is intended to support or promote any such activity. MSCI ESG Research is an independent provider of ESG data.

Privacy notice: For information about how MSCI collects and uses personal data, please refer to our Privacy Notice at <https://www.msci.com/privacy-pledge>.