

Carbon Neutral Fossil Fuel Shipments: 4Q22 update

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The Trove Intelligence platform provides a comprehensive source of data, analytics and research on corporate climate commitments and voluntary carbon credits



Policy landscape

- Guidance for corporates on setting carbon emission, Net Zero and Carbon Neutral targets
- Mapping of 160+ organisations influencing corporate climate commitments



Carbon credit projects & transactions

- Historic issuances by type, vintage, standard
- Performance metrics
- Compliance eligibility
- Issuance forecasts



Forecasting

- Short-, medium- and long-term voluntary carbon credit price scenarios
- Issuance forecasts
- Carbon credit demand forecasts
- Forecasts for reduction and removal credits



Corporate climate commitments & carbon credit demand

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- ✓ PowerPoint charts
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Introduction and key takeaways

Introduction

This report presents Trove Research's 4Q22 update on the use of carbon credits for fossil fuel shipments.

The data and analysis behind this report are derived from public sources, the major carbon credit registries, and the Trove Intelligence platform.

We use the term fossil fuel to include various upstream and downstream energy products, as well as fossil fuels used for lubricants. Specifically, carbon neutral claims included in this analysis cover seven product areas:

Upstream products:

- Crude oil
- Condensate
- LNG
- LPG
- Ethylene

Downstream products:

- Aviation fuel
- Lubricant
- Petrol / diesel

Where data on carbon credit purchases or the size of the cargo is not disclosed, we have estimated credit purchases based on average shipment quantities and the carbon content of the product. We include all credit purchases for fuel shipments made to date, but exclude pre-announced future carbon neutral fuel claims.

Mt = MtCO₂e

Note data for past quarters may have increased versus previous publications due to newly identified fuel shipments that have recently been disclosed or identified by Trove.

Key takeaways – 2022 as a whole

25 carbon neutral fuel shipments were reported in 2022, down from 41 in 2021. These 25 shipments were offset by the retirement of 3.9 Mt of carbon credits.

LNG remained the most shipped carbon neutral fuel type, with 14 shipments reported last year. Carbon neutral crude oil shipments rose in prominence, with six reported in 2022, double the three in 2021.

By far, East Asia remained the most prominent destination for shipments, with 18 (75%) of shipments landing in the region last year.

16% of the shipments last year only offset their Scope 1 and 2 emissions, a practice which has in the past led to accusations of 'greenwashing'.

Key takeaways – 4Q22 in focus

Six carbon neutral fuel shipments were reported in 4Q22 – down from 7 in 3Q22, but up from 5 in 2Q22. 0.9 Mt of credits were retired to offset these 6 shipments.

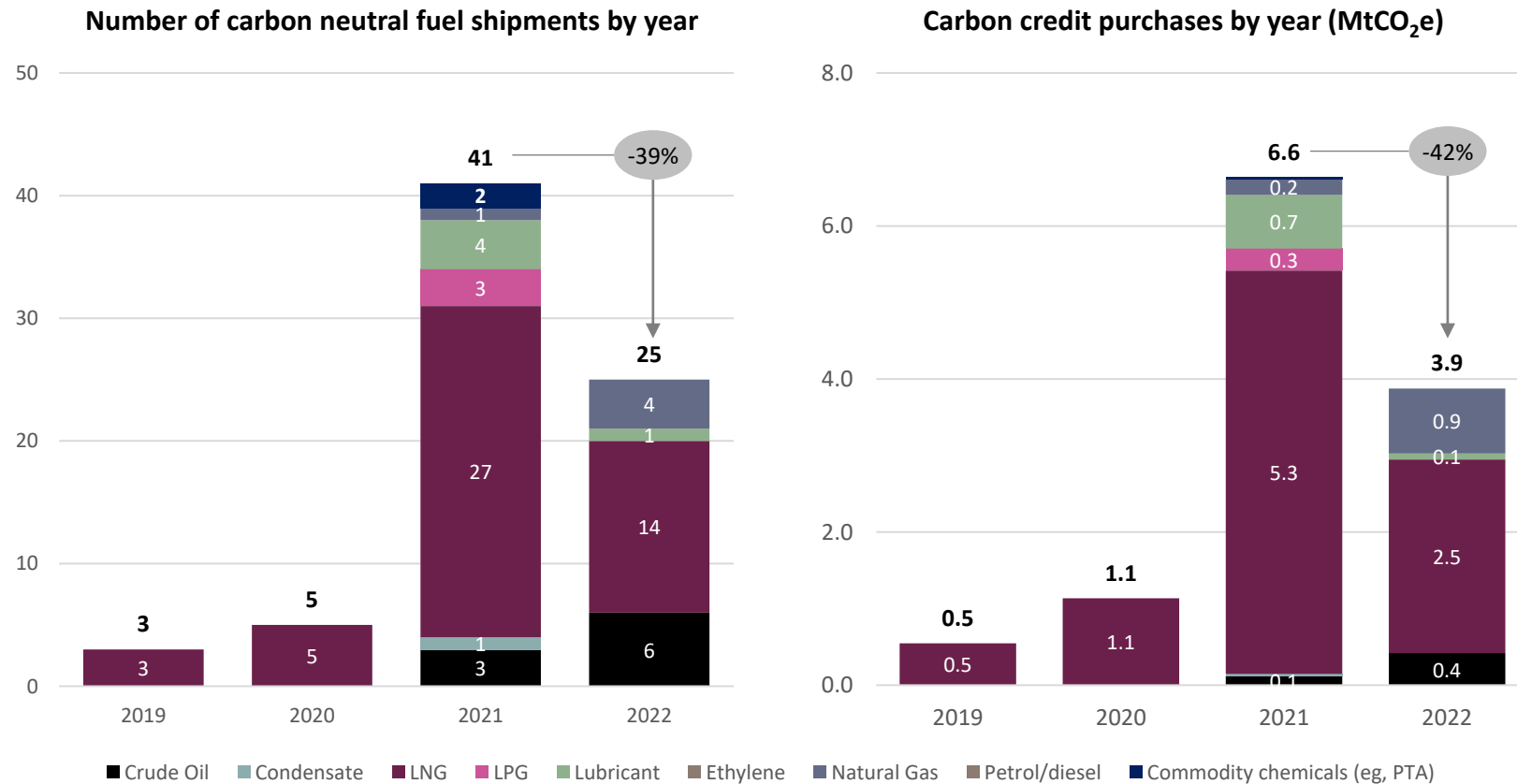
Three of the 4Q22 shipments were of LNG, two of crude oil and one natural gas. Asia was once again main recipient, with 5 of the 4Q22 shipments landing there.

There continues to be varying levels of disclosure. Last quarter, only 3 of the 6 shipments' retirements were trackable on a carbon crediting registry.

Where details were disclosed, the majority of the credits retired last quarter were nature-based, continuing the prominence of this credit type.

Carbon neutral fossil fuel shipments – annual update

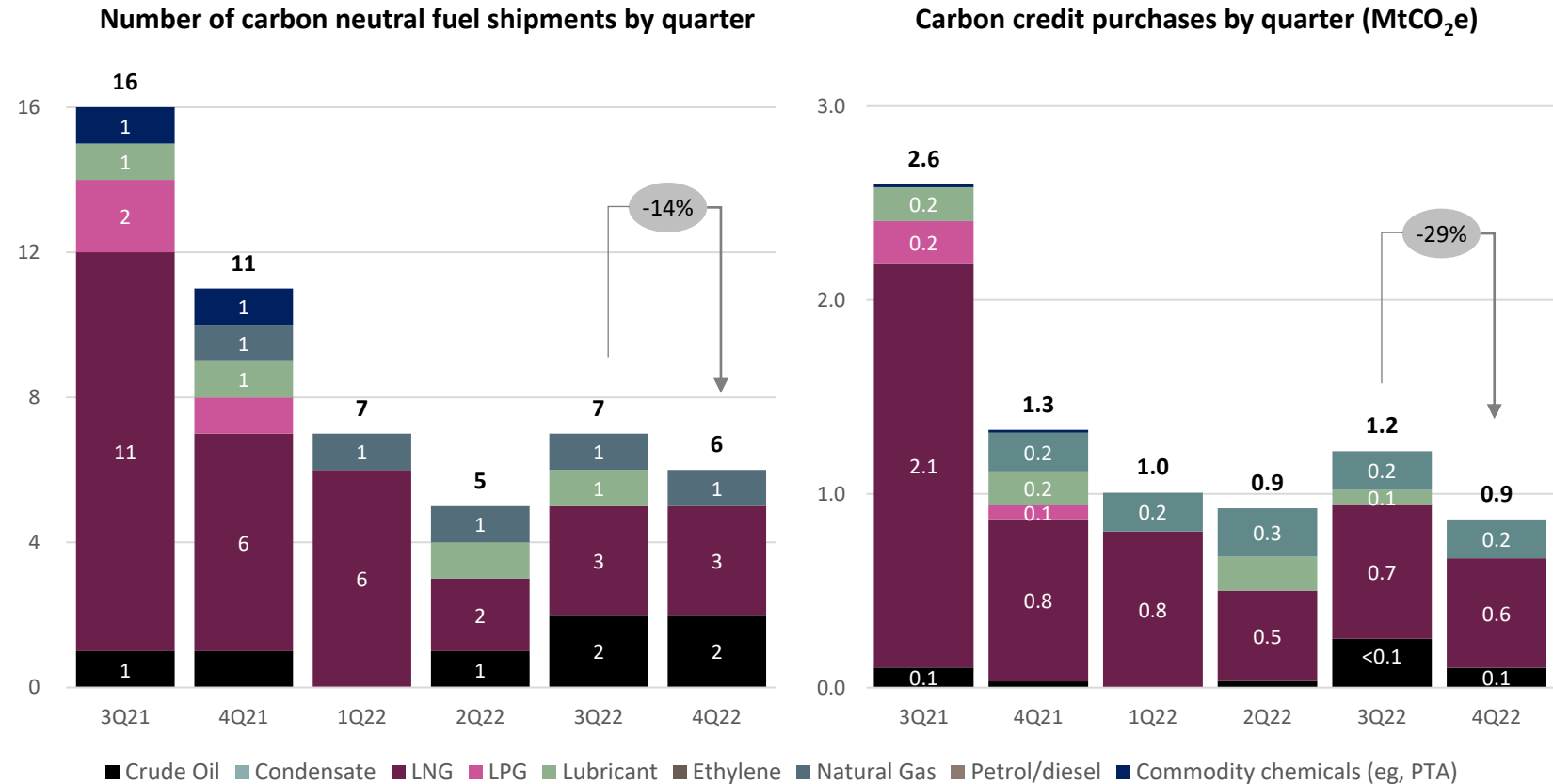
25 carbon neutral fuel shipments were reported in 2022, down from 41 in 2021.



- 25 carbon neutral fuel shipments were reported in 2022 – a fall of ~40% on 2021.
- This fall is not surprising given the geopolitical and macroeconomic challenges the world faced last year, where spiking energy prices following the Russian invasion of Ukraine put severe strain on corporate energy budgets.
- LNG continued to be the most frequently shipped carbon neutral, although its proportion of total shipments fell from 66% in 2021 to 56% in 2022.
- The number of carbon neutral crude oil and natural gas shipments increased last year, from 3 to 6 and from 1 to 4 respectively.
- East Asia remained the most prominent destination by far for shipments, with 18 (75%) of shipments landing there last year.
- 3.9 Mt of credits were retired to offset the emissions of the 25 shipments in 2022.
- Scope 1, 2 and 3 emissions were offset for 84% of the shipments in 2022; however, 16% of the shipments last year only offset their Scope 1 and 2 emissions.

Carbon neutral fossil fuel shipments – quarterly update

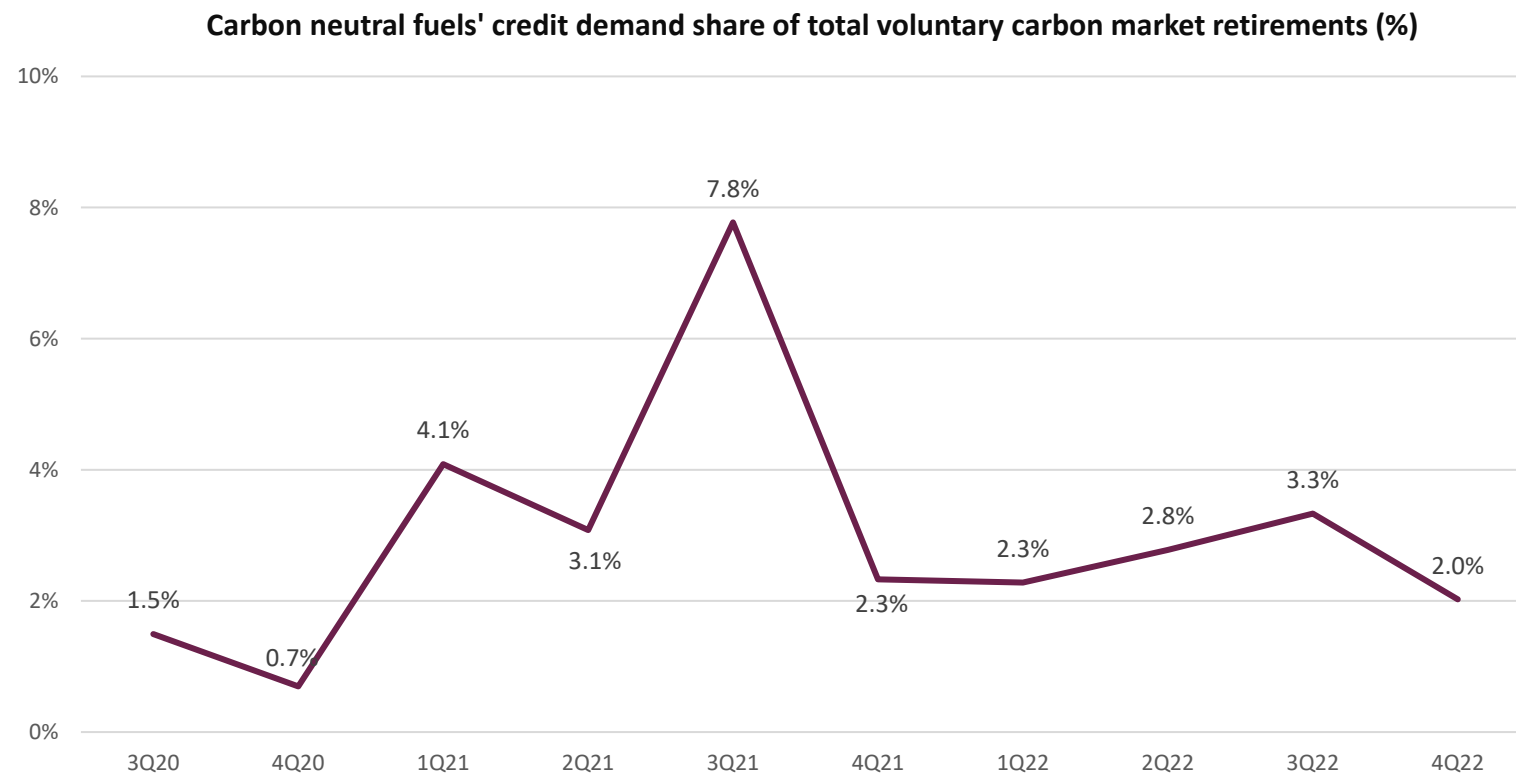
Six carbon neutral fuel shipments were reported in 4Q22 – the second lowest quarter in the last 18 months.



- 6 carbon neutral fuel shipments were reported delivered in 4Q22, one less than in the prior quarter, and five less than the same quarter a year ago.
- This took the total number of shipments since 2015 over 100 for the first time, with a total of 103 shipments now publicly reported.
- 3 of the 4Q22 shipments were of LNG, 2 were for crude oil, and 1 was for natural gas.
- Asia (in particular, Japan and Taiwan) remains the largest region for carbon neutral fuel shipment purchases, with five of the six 4Q22 shipments destined for Asian nations.
- 0.9 Mt of carbon credits were retired to offset these six fuel shipments in 4Q22, a fall of 29% on 3Q22.
- This was the lowest volume of quarterly retirements attributable to carbon neutral fuel shipments since the 4Q20.

Carbon neutral fossil fuel shipments – share of VCM retirements

Only 2.0% of voluntary carbon market retirements in the 4Q22 were for carbon neutral fuel shipments.



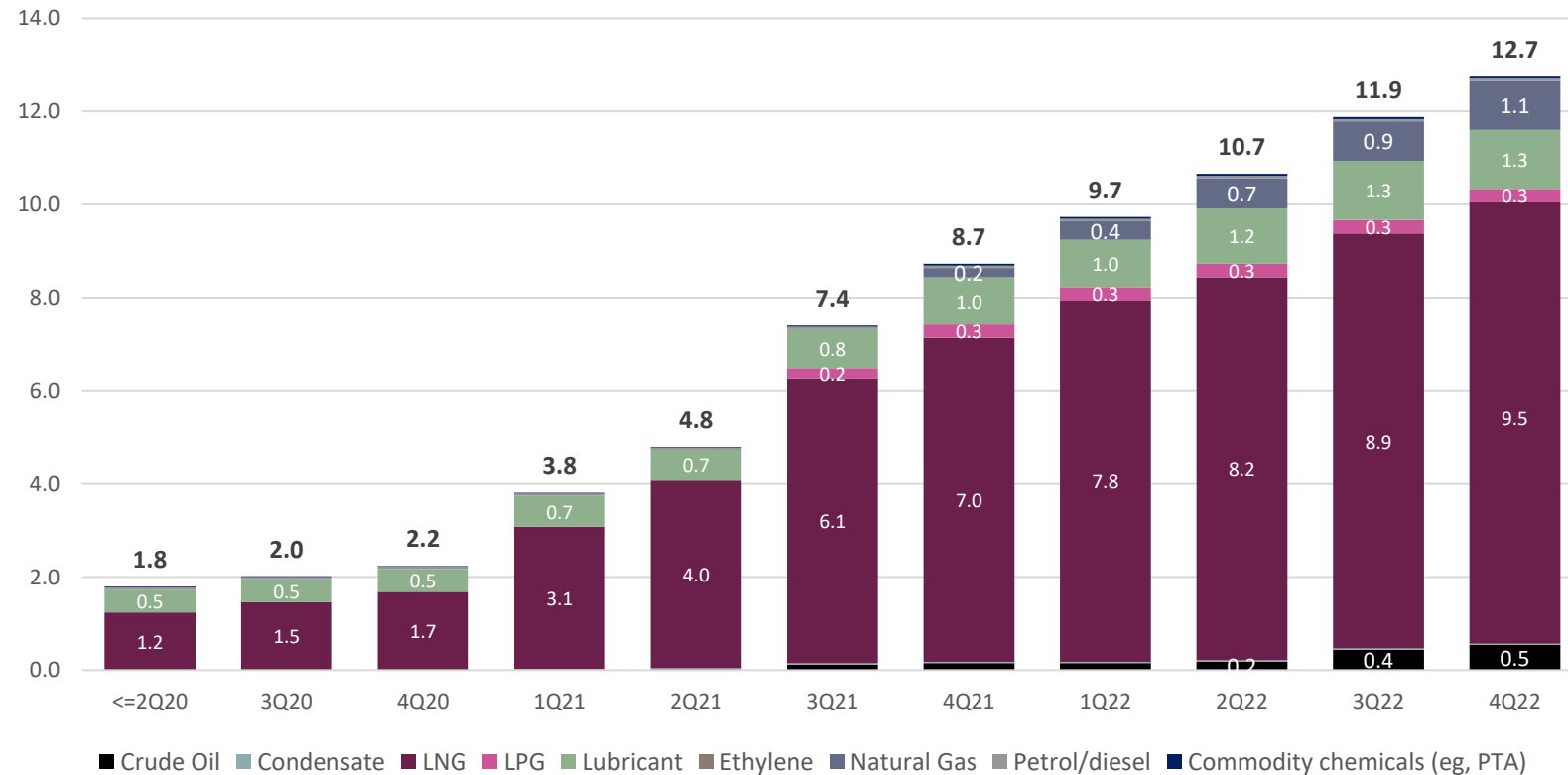
- Only 2.0% of total voluntary carbon market (VCM) retirements in 4Q22 were for carbon neutral fuel shipment claims.
- This is the lowest proportion of the total market in over two years, and reflects both a slight slowing in shipments and an increase in overall market retirements during the 4Q22.
- Carbon neutral fuel shipment's proportion of total retirements remains well below its peak of 7.8% in the 3Q21.
- Excluding that peak, retirements for carbon neutral fuel shipments have consistently averaged 2-4% over the last two years.

Carbon neutral fossil fuel shipments - cumulative credit demand

Cumulative analysis

In total 12.7Mt of carbon credits have been retired since 2017 to offset carbon fuel shipments.

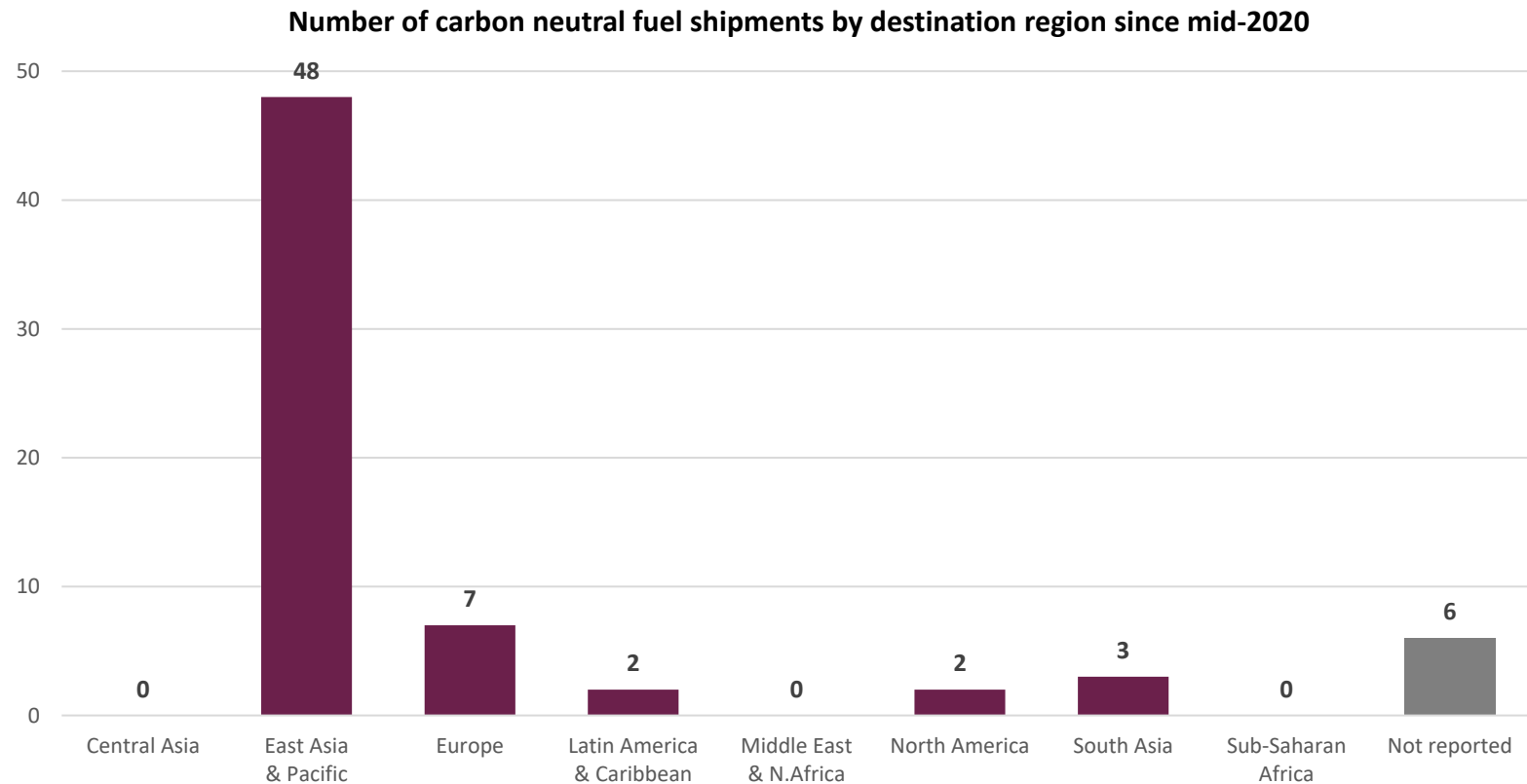
Carbon credit purchases by product type - cumulative (MtCO₂e)



- By the end of 4Q22, a total of 12.7 Mt of carbon credits had been retired in order to offset 103 fossil fuel shipments.
- The vast majority of these credits have been used to claim carbon neutrality for pre-refined products, in particular LNG (9.5 Mt or 75%).
- 68 of these shipments, retiring 10.9 Mt of credits, have sailed since the middle of 2020.
- During the last 2.5 years, the diversity of fossil fuel products offset has broadened somewhat – however, LNG has remained by far the most frequently offset product.

Carbon neutral fossil fuel shipments – source of demand

Since mid-2020, three quarters of all shipments have been delivered to the East Asia & Pacific region.

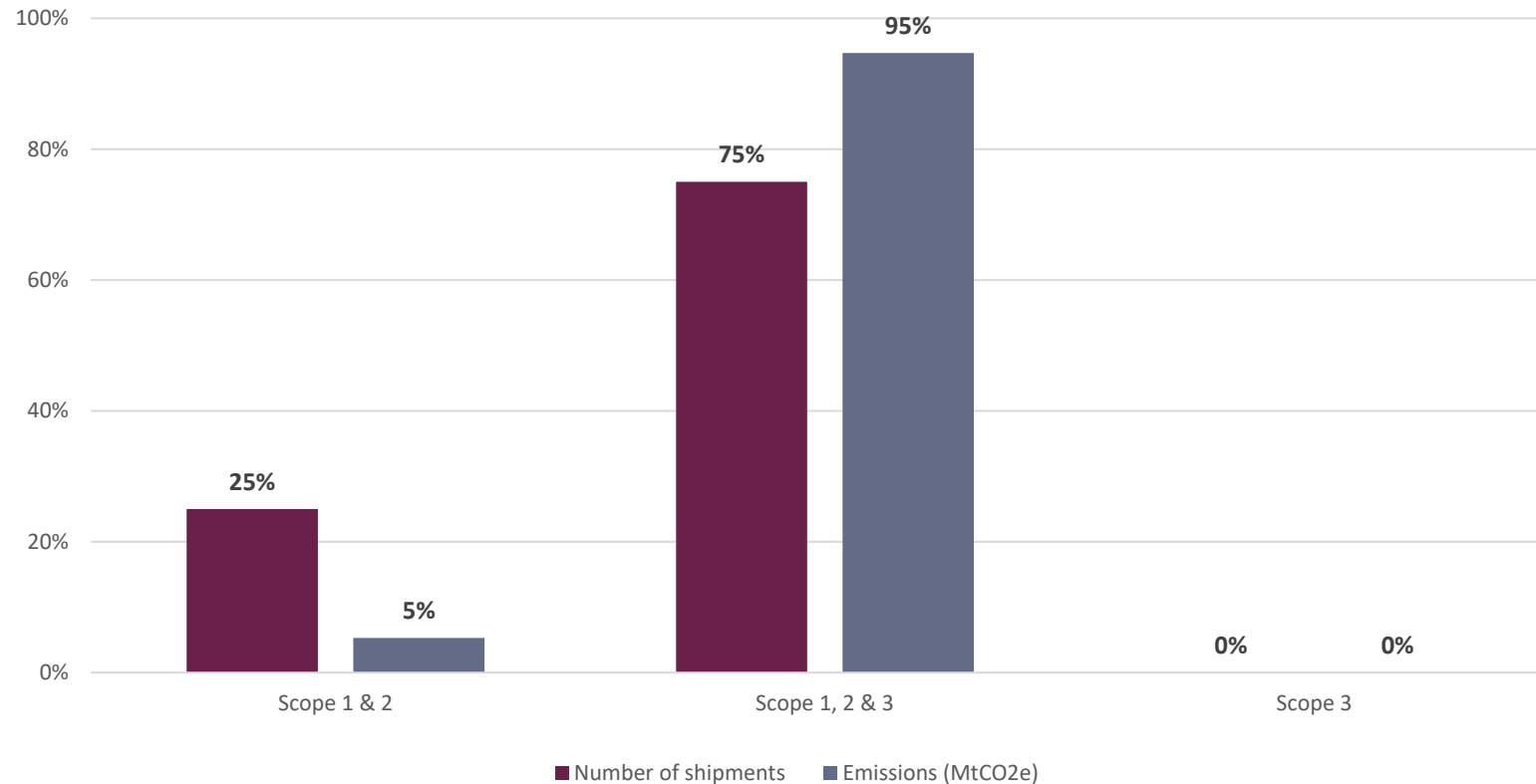


- 71% of the 68 shipments (and 70% of the associated carbon credits) since mid-2020 have been delivered to East Asia & Pacific.
- Four of the six shipments in the 4Q22 also sailed there, with the remaining two sailing to India and Europe.
- Japan is, by far, the most common destination for carbon neutral fuels and credit used, receiving 28 shipments since mid-2020, including two of the six 4Q22 shipments.
- Taiwan (10 shipments) and China (9 shipments + 1 to Hong Kong) are the next largest recipient markets.
- Europe has received 7 shipments since mid-2020 – including one in the last quarter. This was the first shipment to land in Europe for over a year, reflecting tightened European energy budgets in the light of surging energy prices and Russia's invasion of Ukraine.

Carbon neutral fossil fuel shipments – scope coverage

Since mid-2020, one in four carbon neutral fuel shipments has only offset Scope 1 and 2 emissions¹, disregarding downstream emissions such as transportation and combustion.

Emission scope coverage of carbon neutral fuel shipments since mid-2020 (%)



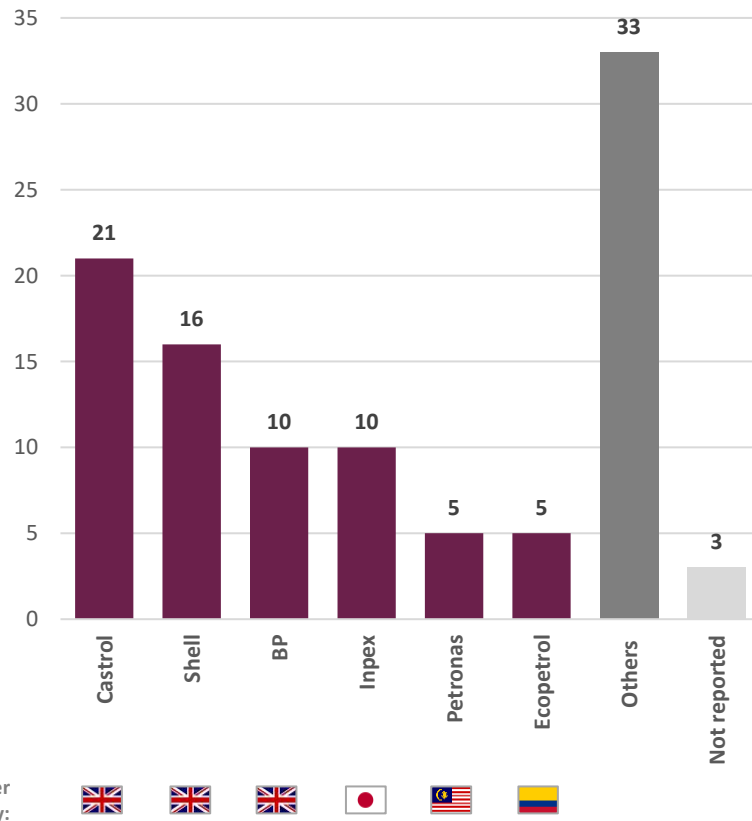
- 17 (25%) of the carbon neutral shipments claimed since mid-2020 have only offset their Scope 1 and 2 emissions – i.e., the emissions from upstream extraction, production and intermediate transportation of the fuel.
- These shipments have not offset their downstream – Scope 3 – emissions such as combustion. Arguably, claiming these shipments as carbon neutral is misleading.
- However, these Scope 1 and 2 shipments are associated with, on average, smaller shipments. A larger majority of shipments in terms of tCO₂e do offset all of Scope 1, 2 and 3 emissions.
- The proportion of shipments that haven't fully offset all three scopes has declined in recent quarters. Indeed, all 6 of the 4Q22 shipments offset all their full Scope 1 to 3 emissions.

1. In rare cases where companies don't indicate the scope of emissions they've offset, their offsetting is assumed to cover just Scopes 1 and 2 unless past practice for the companies involved has been to offset all three scopes.

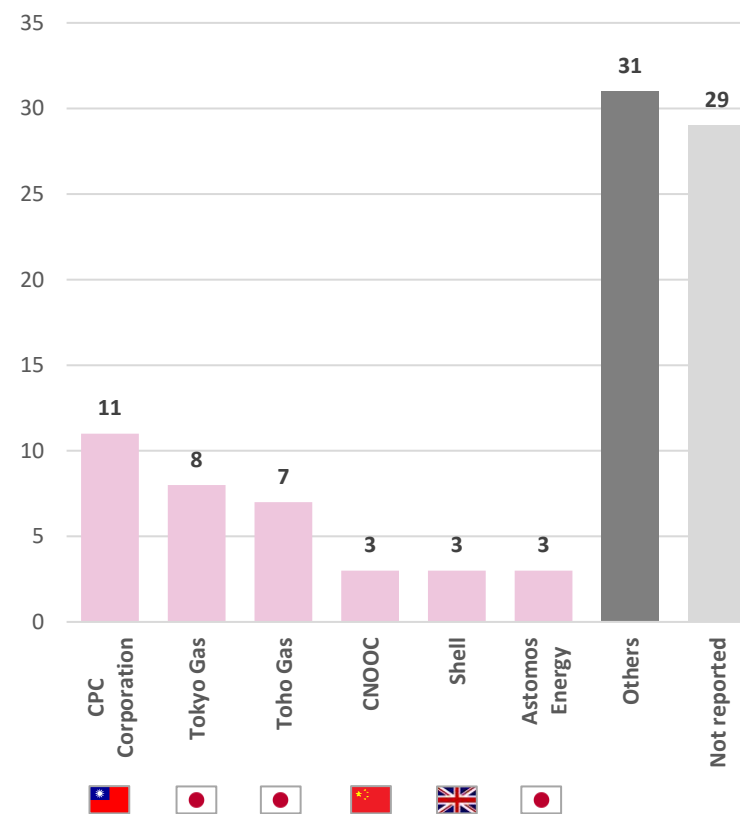
Carbon neutral fossil fuel shipments – leading players

The largest disclosed buyers of carbon neutral fuel shipments include CPC Corp, Tokyo Gas and Toho Gas.

Number of carbon neutral fuel shipments since 2017
– by seller



Number of carbon neutral fuel shipments since 2017
– by buyer

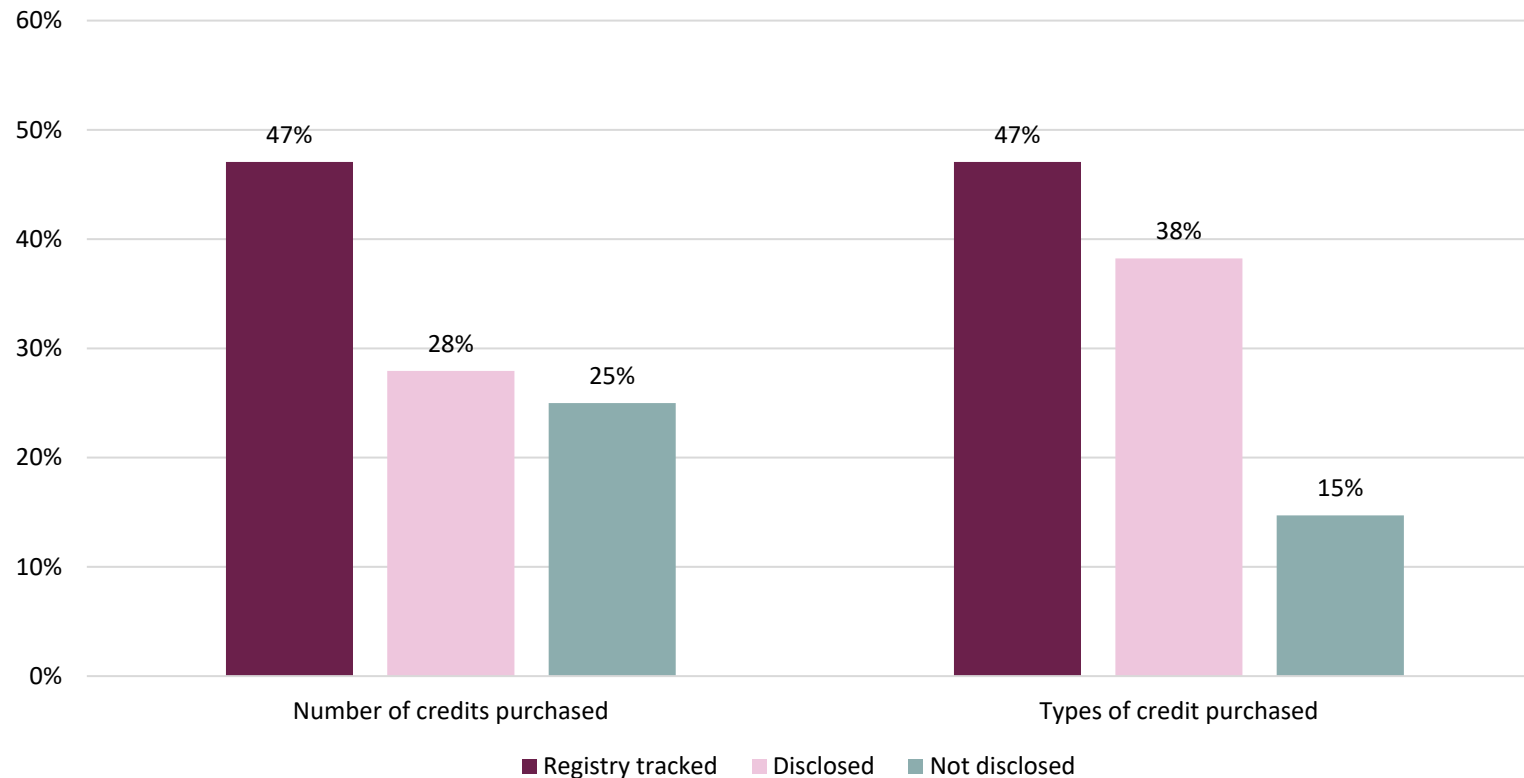


- British headquartered firms Castrol, Shell and BP are the largest sellers of carbon neutral fuel shipments. Collectively, they have delivered 46% of all disclosed shipments.
- Japanese Inpex, Malaysian Petronas and Colombian Ecopetrol are also major sellers. Ecopetrol is unusual among these firms as its main carbon neutral fuel product is crude oil.
- The largest disclosed buyers of carbon neutral fuel shipments are all based in Asia, with Taiwanese CPC Corp, and Japanese Tokyo Gas and Toho Gas all leading the way. All three of these firms reportedly received shipments in the last quarter.
- Details on the seller of a carbon neutral shipment is generally publicly available (in all but 3% of reports). However, a buyer is not named in 30% of reports.
- It should be noted that some firms are involved in multiple parts of the value chain and are therefore sometimes named as a seller of some shipments and a buyer of others (including Shell, Inpex and Toho Gas).

Carbon neutral fossil fuel shipments – credit disclosure transparency

Only 47% of the credits retired to offset the 63 shipments since mid-2020 are trackable on a registry.

Proportion of carbon neutral fuel shipments since mid-2020 that have disclosed their credit details



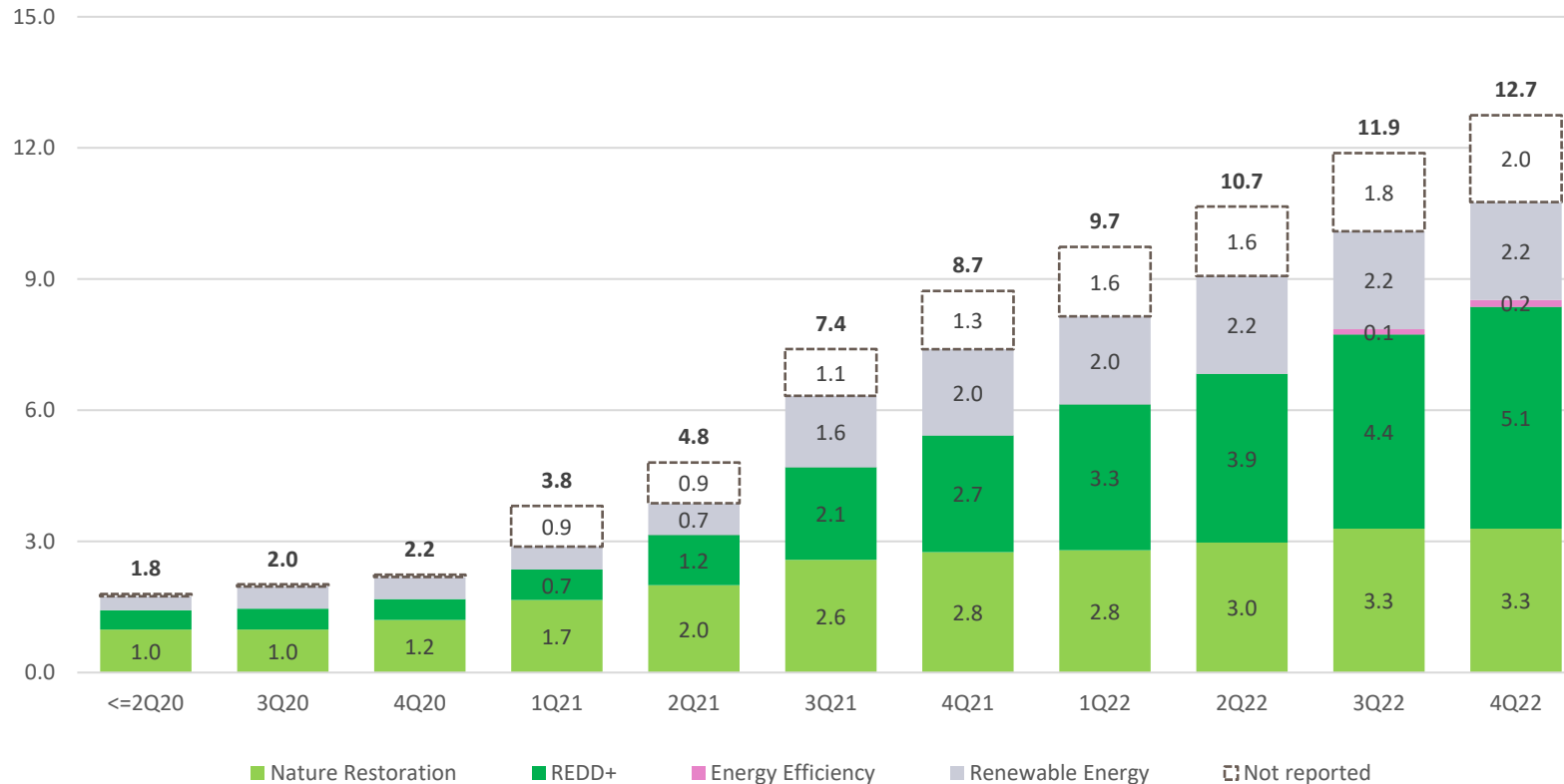
- Of the 63 shipments of carbon neutral fuels reported since mid-2020, 47 (or 74%) have disclosed the number of credits purchased, and 53 (84%) have disclosed some sort of description of the type of credits retired.
- Fulllest disclosure is given when a credit retiree reports to the relevant carbon credit registry the retiree party and purpose.
- Since mid-2020, we have identified only 45 (65%) shipments that have disclosed this to a carbon credit registry (primarily Verra).
- In the 4Q22, three out of the six reported shipments were readily identifiable on the carbon credit registries (Shell's and Chevron's LNG shipments to CPC, plus Tokyo Gas's receipt of an LNG shipment). In addition, Ecopetrol disclosed that it had offset its two crude oil shipments with credits from REDD+ projects on the Pacific coast of Colombia.

New last quarter! On Trove's carbon neutral fuel shipments dashboard ([here](#)), subscribers can click onto a registry verified shipment and see details of the credits retired.

Carbon neutral fossil fuel shipments – type of credits

Nature-based credits are the most common type of credits used to offset carbon neutral fuel shipments.

Carbon credit purchases by project type - cumulative (MtCO₂e)



- 8.4 Mt of nature-based credits have been used to offset carbon neutral fuel shipments.
- This represents 77% of total retirements where the project type has been disclosed.
- At 2.2 Mt (or 19%), Renewable Energy credits are the next commonly used project type.
- As per the prior slide, 15% of the 103 shipments to date, with circa 2.0 Mt of credit retirements, have not disclosed any details on the type of credits retired.
- Of the 0.9 Mt of carbon neutral fuel shipment related retirements in 4Q22, 0.6 Mt of them were nature-based, with limited disclosure provided on the remainder.

New last quarter! On Trove’s carbon neutral fuel shipments dashboard ([here](#)), subscribers can click onto a registry verified shipment and see details of the credits retired.

Note where the use of multiple project types is disclosed, but the exact quantities of each type is not disclosed, we assume an even split between project types (i.e., 50-50).

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