

Cobalt Market Report 2025



TABLE OF CONTENTS

1 Foreword	02
2 Executive Summary	03
3 Supply picture dominated by DRC export restrictions	05
4 Cobalt demand reaches new heights off the back of solid growth across multiple sectors	30
5 Prices rally following DRC export ban	47
6 Geopolitics and an interventionist global policy environment are shaping the cobalt and battery supply chains	55
7 Key considerations for the cobalt market	64
List of Figures	67
Glossary, abbreviations and definitions	69



Benchmark Mineral Intelligence was commissioned by The Cobalt Institute to prepare the 2025 Cobalt Market Report ahead of the Cobalt Congress in Madrid in May 2026. The report summarises the key trends in the cobalt market across supply, demand, prices, sustainability, and policy.

The report was prepared using Benchmark's actionable, proprietary data and analysis on the lithium-ion battery supply chain and broader new energy markets, particularly from its Cobalt Service.

Please note that data in this report may be different to that published in the 2024 Annual Report owing to updates to Benchmark's data.



1. FOREWORD

Cobalt has always been critical to modern life, an essential ingredient in everything from ceramics and paints to superalloys and magnets. But since the first publication of our Cobalt Market report in 2021, a new trend has emerged: cobalt has now become the focus of intense geopolitical competition as countries seek to safeguard their position in defence, technology, and clean energy supply.

Understanding cobalt therefore becomes much more complex than simply tracking a commodity: it is about navigating a fast-paced, high-stakes global landscape, in which market realities are increasingly shaped by strategic competition.

Against such a kinetic and uncertain backdrop, the Cobalt Market report offers an in-depth and publicly-accessible analysis of the global cobalt industry. We hope it will help readers to navigate a complex and strategic cobalt market and to make informed decisions.

Cobalt Institute and its members are proud to be at the forefront of advancing knowledge of this critical metal.

*Dinah McLeod,
Director General,
Cobalt Institute*



2. EXECUTIVE SUMMARY

Cobalt demand continued its strong upward trajectory in 2025, reaching 276kt and growing by 13% year-on-year (y-o-y). Battery applications remained the dominant driver, accounting for the majority of demand growth, with electric vehicles (EVs) representing the largest single segment at 39% of total demand. EV-related cobalt demand rose by 25% y-o-y to 113kt, supported by rising global battery production despite mixed regional EV sales performance. Portable electronics also saw a strong recovery, with demand increasing to 93kt (+15kt y-o-y).

Beyond batteries, demand from defence and aerospace applications increased, reinforcing cobalt's strategic importance. Superalloy demand grew to 20kt (+7.5% y-o-y), supported by both commercial aviation recovery and elevated defence spending. Military applications, including batteries, magnets, and superalloys, contributed an estimated 6.8kt of cobalt demand, highlighting cobalt's expanding role in national security and advanced technologies.

Policy decisions in the US present headwinds for end-use cobalt demand in North America. Despite this, EV sales continued to grow in the US in 2025, albeit only marginally.

Total cobalt supply was 295kt in 2025, with global mined cobalt production remaining broadly flat at 270kt. The Democratic Republic of the Congo (DRC) continued to dominate mined supply with a 73% market share, while Indonesia strengthened its position as the second-largest producer, increasing output to 42.5kt (+29% y-o-y) through continued expansion of HPAL operations. However, the defining feature of 2025 was not production growth, but policy intervention.

In February 2025, the DRC government imposed a ban on cobalt exports, later transitioning to a quota system extending through to 2027. While mine production continued, these restrictions significantly reduced material availability to global markets. As a result, cobalt accumulated in domestic stockpiles within the DRC, while ex-DRC markets experienced tightening supply. This marked a fundamental shift in market dynamics, with availability increasingly determined by policy rather than production levels.

While DRC supply was constrained, Indonesian output continued unimpeded. As a result of this, Indonesian supply in 2025 was greater than DRC exports, making the Southeast Asian country the largest effective supplier of cobalt in the market. Indonesia is expected to be the largest source of cobalt supply growth in the next five years, outpacing the DRC. On the refined side, Indonesia has become the third largest supplier in 2025, overtaking Canada.

The impact on prices of the export ban and subsequent quota system was substantial. Cobalt hydroxide prices rose by over 300% during the year, while sulphate and metal prices increased



by 266% and 130%, respectively. Price movements were driven primarily by supply-side constraints and uncertainty around export availability, rather than changes in underlying demand. The market effectively transitioned from structural oversupply to an ex-DRC deficit, highlighting the growing influence of geopolitical and regulatory factors on price formation.

Refined cobalt production increased modestly to 240kt (+5% y-o-y), with China maintaining its dominant position at 79% of global output. Indonesia recorded the fastest growth in refining capacity, nearly doubling output, albeit from a low base. Refiners adapted to changing feedstock availability and pricing dynamics, with shifts between sulphate, tetroxide, and metal production reflecting evolving market conditions. With hydroxide feedstock scarce, and demand for refined cobalt uneven, prices for various cobalt products increased at different rates, leading to brief moments where hydroxide was priced higher than cobalt metal.

Recycling and secondary supply continued to expand, contributing around 10% of total supply. However, growth remains uneven across regions and constrained by limited refining capacity outside Asia. China retains a central role in processing recycled materials, reinforcing its dominance across the broader cobalt value chain.

Geopolitics played an increasingly prominent role in shaping the cobalt market in 2025. US-China competition intensified, particularly in the African Copperbelt, while both regions pursued more interventionist policies to secure critical mineral supply. The EU continued to prioritise supply diversification and localisation, and Indonesia advanced its downstream strategy while tightening control over domestic output. These developments underscore cobalt's growing importance at the intersection of energy transition, industrial policy, and national security.

In 2026, supply will continue to be impacted by the DRC export quota system and is also threatened by rising sulphur and energy costs due to the ongoing US-Iran conflict. Indonesian producers are particularly susceptible, as 75% of sulphur within the country originates from the Middle East, passing through the Strait of Hormuz. If supply remains constrained, producers may have to cut production due to limited availability.

While demand fundamentals remain strong, the events of 2025 highlight a structural shift in the cobalt market. Policy intervention, supply concentration, and geopolitical dynamics are now key drivers of market outcomes, contributing to increased volatility and uncertainty. Despite these challenges, cobalt's essential role in batteries, defence, and industrial applications continues to support a broadly positive long-term outlook.



3. SUPPLY PICTURE DOMINATED BY DRC EXPORT RESTRICTIONS

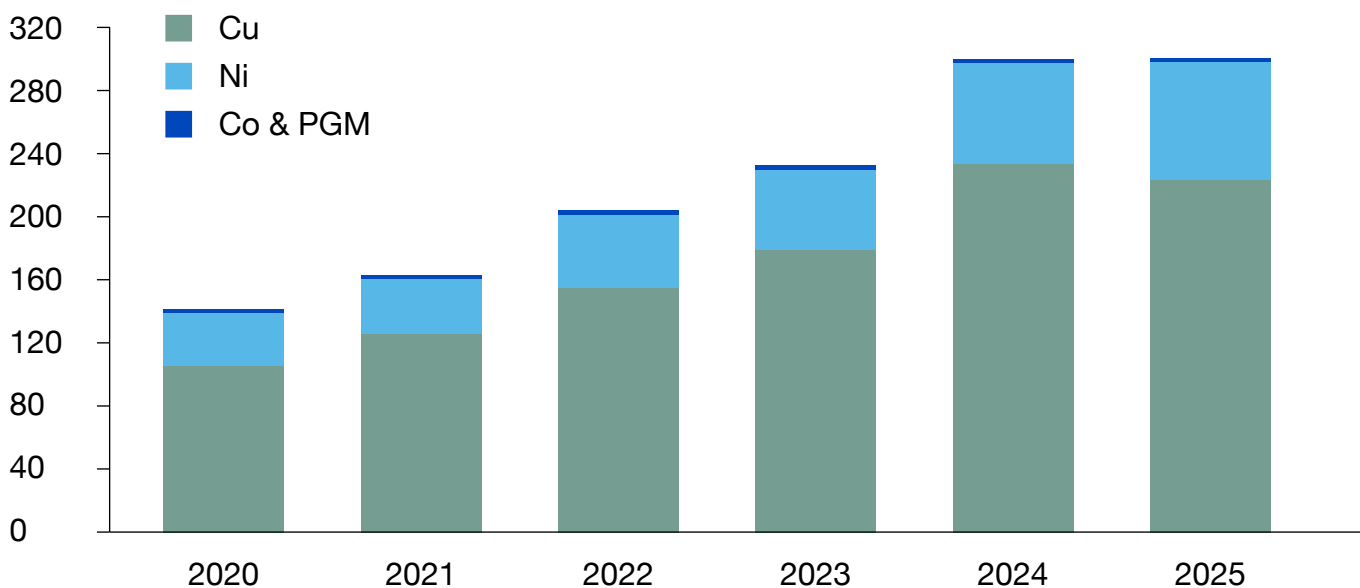
- **Global mined cobalt supply remained flat at 270kt in 2025, heavily concentrated in the DRC (73% share).**
- **DRC export ban and subsequent quota system significantly reduced cobalt availability to global markets.**
- **Indonesian production grew rapidly (to 42.5kt), emerging as a key alternative supply source via HPAL/MHP.**
- **Export restrictions led to stockpiling within the DRC while tightening supply outside the country.**
- **Recycling and secondary supply are growing but remain limited and regionally uneven.**



3.1 OVERVIEW OF MINED SUPPLY

In 2025, cobalt mined supply¹ was 270kt, effectively flat y-o-y. Benchmark has revised its estimate of 2024 cobalt supply upwards to 270kt. Cobalt is typically mined as a by-product of copper and nickel, with a small amount mined as a primary mineral or a by-product of platinum group metals (PGMs).

Figure 1. Cobalt supply by primary mineral, Unit: kt Co



Data: Benchmark Mineral Intelligence – Cobalt Forecast.

The Democratic Republic of the Congo (DRC) maintains its position as the largest producer of cobalt in the world, with 73% of global mined cobalt production within its borders, down from 77% in 2024. Indonesia – where cobalt is mined as a by-product of nickel – was the second-largest producer in 2025. Indonesia’s market share was 14% in 2025, up from 11% in 2024.

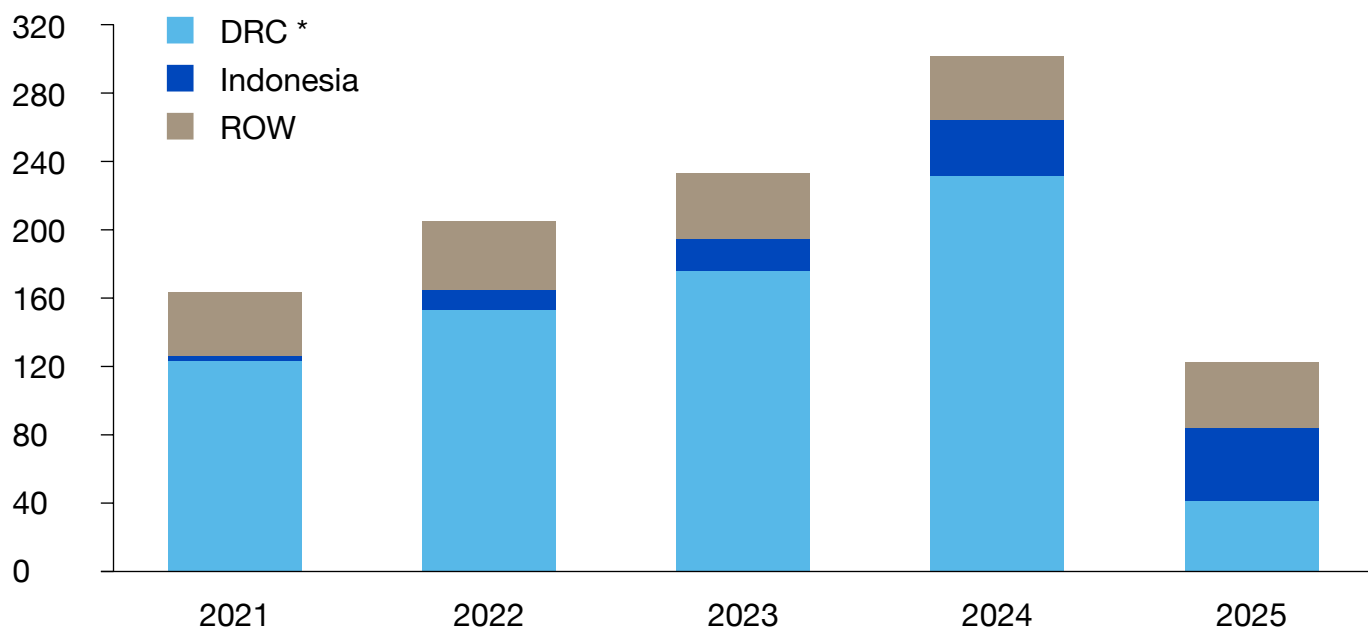
Within the DRC, cobalt is mined as a by-product of copper, with the largest single asset being CMOC’s Kisanfu (KFM) mine, which began production in 2023. Cobalt hydroxide is the main form of cobalt exported from the DRC, and has a wide range of typical cobalt content, ranging from 20-40%. In 2025, KFM is estimated to have exceeded 80kt of cobalt in hydroxide production, almost double the production of all Indonesian assets combined. KFM is notable for its lower copper-cobalt ratio; where a typical DRC asset would have a ratio of 10:1, KFM is closer to 2.6:1; therefore, for each tonne of copper mined, more cobalt is extracted than at a typical asset.

¹ Including downstream yield losses.



Cobalt mining within the DRC is dominated by a few key players: Chinese miner CMOC; Swiss commodity trader and miner Glencore; and Kazakh miner Eurasian Resources Group (ERG). CMOC operates Kisanfu (KFM) and Tenke Fungurume (TFM), Glencore manages Mutanda Mining (MUMI) and Katanga Copper Cobalt (KCC), while ERG operates Metalkol RTR along with other mines with lower cobalt production. The combined production of these three majors accounted for over 78% of DRC production in 2025 and over 57% of global production.

Figure 2. Effective global cobalt supply, Unit: kt Co



Note: * DRC volumes represent exports, not mine supply, in 2025

Data: Benchmark Mineral Intelligence – Cobalt Forecast.

Within Indonesia, mixed hydroxide precipitate (MHP) is the largest source of intermediate cobalt. MHP is produced through a high-pressure acid leaching process (HPAL) to create a powder with 35-55% nickel content and 1-5% cobalt content. MHP accounted for 92% of all cobalt in the country in 2025, while cobalt in matte, an intermediate product with up to 70% nickel content produced by smelting, made up the remaining 8%. While Indonesian MHP production only began in 2021, its growth has been significant, and it is now greater than the combined cobalt output of every other country except the DRC.

Outside of the DRC and Indonesia, mined supply increased to 38kt in 2025, a 3% increase y-o-y. MHP production was the leading source of growth for miners outside of Indonesia and the DRC, with MCC’s Ramu (Papua New Guinea), Prony Resources’ Goro (New Caledonia), and Cubaniquel’s Punta Gordo (Cuba) all increasing production in 2025. Despite this growth, low prices



at the end of 2024 led to some producers going offline, including BHP's Nickel West in December 2024, leaving Glencore's Murrin Murrin and IGO's Nova as the only operating Australian cobalt mines.

3.2 DRC COBALT EXPORT BAN CUTS GLOBAL COBALT AVAILABILITY TO 183KT

From mid-2022, cobalt prices fell, reaching historic lows by early 2025. By mid-February, hydroxide prices delivered to China were as low as \$5.60/lb, effectively at or below cost. As the DRC government tax on cobalt exports is based on market prices, this low-price environment resulted in a significant decline in the country's cobalt revenue. **On 22 February 2025, the DRC government imposed a ban on all cobalt exports from the country to reverse the price decline.**

While the initial ban period was set at four months, it was further extended on 21 June 2025 for an additional three months, with regulator l'Autorité de Régulation et de Contrôle des Marchés des Substances Minérales Stratégiques (ARECOMS) announcing the **introduction of a quota system in October**. The quota system was announced to initially run until the end of 2027, with ARECOMS having sole discretion on eligibility and allocated volumes for producers in the DRC.

The DRC used an eligibility system to determine which miners would be assigned quotas, with the following companies excluded from the quota, and **therefore unable to export cobalt**:

- Any company that exported less than 100 tonnes of cobalt in 2024, with the exception of the Entreprise Générale du Cobalt (EGC).
- Any company that owns a refinery but has not operated its own cobalt mine within the past five years.
- Any company whose cobalt mineral reserves are depleted².

For the eligible companies, the quota allocation was based on average production over the previous three years. This resulted in more recent producers, like CMOC's KFM, having proportionally smaller quota allocations compared to more established mines such as Glencore's Mutanda. Some smaller assets, particularly those who are expected to have smaller production in the next few years, (e.g. China Dongfang Mining), should not be as impacted as these newly established mines. Both the EGC and Société du Terril de Lubumbashi (STL) have been granted an exception to this calculation method.

² ARECOMS September Press Release, 2025/004



These miners are also subject to new export formalities. Companies are expected to prepay a 10% mining royalty to ARECOMS, based on their maximum export quota, at the current market price the day payment is made before they are permitted to export. Furthermore, miners must send a control sample of all exported goods, which is subject to random testing. In February 2026, ARECOMS temporarily halted exports from Lualaba due to discrepancies during this assaying process. However, market participants have reported that ARECOMS has since widened the range of cobalt grades expected within a single sample.

ARECOMS reserves the right to withdraw the quota for any company that fails to adhere to the new regulations, as well as any miner that processes third-party material, transfers its quota to another company, or refrains from exporting its allocated volumes.

An initial quota of 18,125 tonnes of cobalt was set for Q4 2025, with a split of 3,625 tonnes in October, and 7,250 tonnes for November and December.

While miners were initially hoping to ship material out shortly following the end of the ban, the necessary infrastructure and testing procedures were not in place in time to allow this, leading to delays that prevented any material leaving the country until 2026.

ARECOMS has since permitted producers to roll their quota allocations forward owing to challenges in exporting material due to delays in the approval process. As a result, the 18,125 tonnes allocated to 2025 have been added to the allocation for 2026.

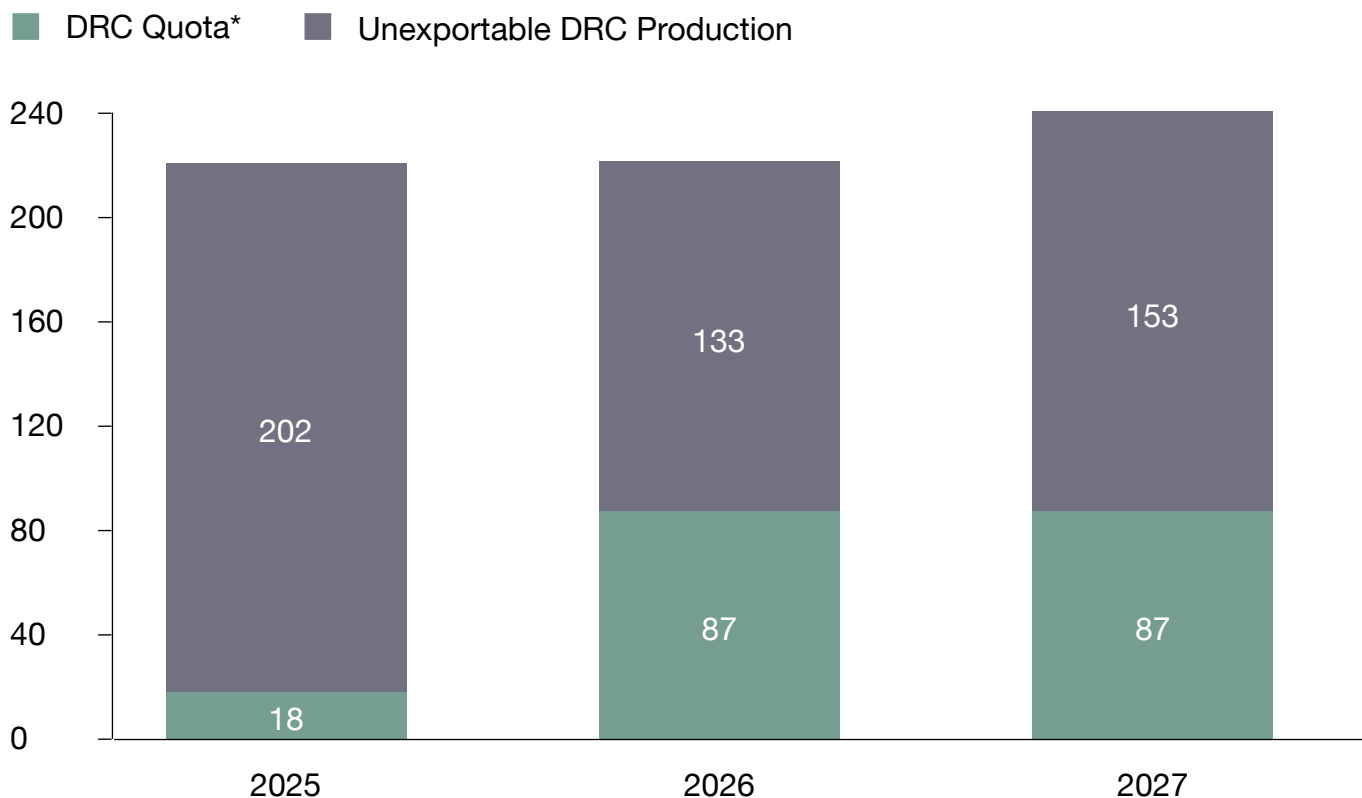
The DRC announced a **2026 quota of 87,000 tonnes of cobalt** (excluding the 18,125 tonnes from 2025), equivalent to 7,250 tonnes a month, with an **additional strategic quota of 9,600 tonnes**. ARECOMS reserves the right to adjust quotas on a quarterly basis, to ensure market stability, and to incentivise downstream value addition.

The strategic quota would be allocated to exporters at ARECOMS' discretion, and ARECOMS reserves the right to organise the purchase of cobalt stocks from companies that produce in excess of their quota allocation towards this strategic quota. However, details of this remain opaque, as ARECOMS has not disclosed how this purchasing will be decided, priced, and communicated.

In April 2026 the DRC established a strategic reserve for cobalt, as well as other DRC-designated strategic minerals, which will be managed by ARECOMS. This stockpile is aimed at giving the DRC a level to balance the market in the future. This comes after an announced plan between the DRC and the US to form a strategic partnership, discussed in Section 6.2.



Figure 3. Quota share of total DRC mined supply, Unit: kt Co



*Note: DRC quota includes ARECOMS' strategic quota of 9,600 tonnes in 2026 and 2027

Data: Benchmark Mineral Intelligence – Cobalt Forecast.

3.3 ARTISANAL AND SMALL-SCALE MINING IN THE DRC AND FORMALISATION EFFORTS

The quota also has significant implications for artisanal and small-scale mining (ASM). In the DRC, ASM refers to cobalt extraction characterised by low levels of mechanisation, and labour-intensive methods, typically undertaken by individuals, cooperatives, or informal groups. At the end of 2024, ASM was at a considerable low point, estimated by Benchmark at 1.8% of global supply, or 1.3% of DRC supply. This segment is among the most price-sensitive in the cobalt industry; consequently, the historical low prices in late 2024 and early 2025 disincentivised artisanal cobalt mining in the DRC. Additionally, quota allocations and new legal restrictions mean many prior purchasers are no longer able to export, limiting purchasing interest.

Throughout 2025, the DRC took several legal decisions, ordered action from range of institutions, and further mobilised the activities of the EGC, indicating a renewed effort to formalise artisanal mining. This includes re-stating the 2019 initiative of granting exclusive purchasing rights for



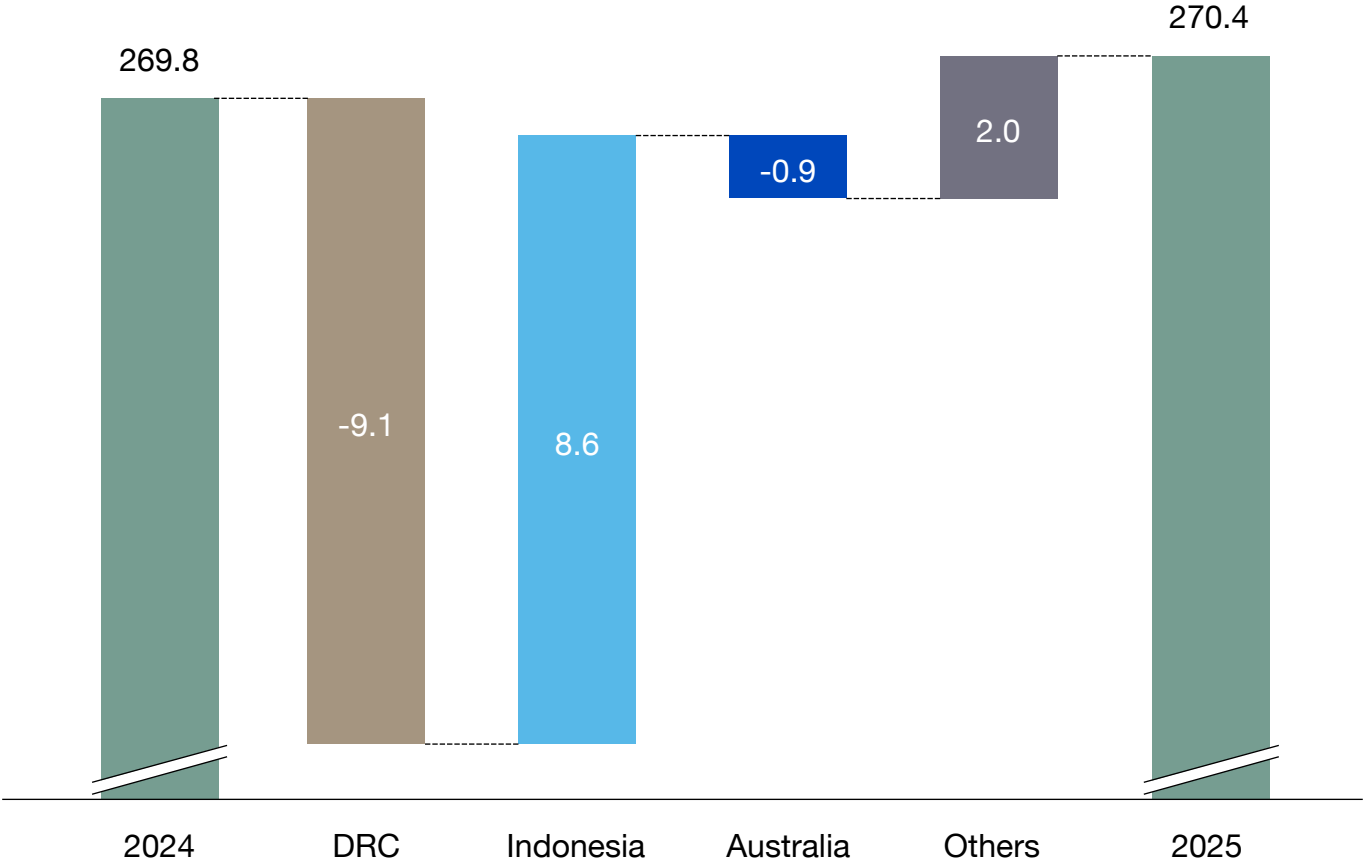
artisanal cobalt to the EGC. Sales by artisanal miners to non-integrated operators make it difficult to track production in terms of origin and tonnage. This inclusion of the EGC in this process, alongside other regulatory efforts, is aimed at improving traceability of material flows, as a basis for encouraging improved conditions. The EGC is also developing and managing sites directly.

With the EGC allocated a monthly quota of 470 tonnes, this sets a cap on legal ASM per month. While higher prices typically stimulate ASM, policy decisions by the DRC enable a more consistent production stream from a price sensitive source.

3.4 PRODUCTION IN THE DRC FALLS AMID EXPORT RESTRICTIONS

Cobalt mined production from the DRC declined marginally by 1.2% in 2025 compared to the previous year, as there were no new cobalt mine openings in 2025 within the DRC. Along with this, the DRC market share fell from 77% in 2024 down to 73% in 2025.

Figure 4. Mined cobalt supply* (2025 vs 2024), Unit: kt Co



* Note: figures include downstream yield losses. Mined figure is representative of total DRC production in 2025, not exports.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.



Chinese miner **CMOC** remains the leading producer of cobalt both within the DRC and globally. It operates the two largest cobalt mines in the DRC, KFM and TFM, and produced 117.5kt in 2025, up 3% from the previous year and exceeding its guidance target for another year. CMOC's global market share was at 39.5%, largely unchanged from the previous year.

Swiss based miner and commodity trader **Glencore's** DRC cobalt production declined 4.6% in 2025, with a total of 33.5kt of cobalt produced in hydroxide. Despite this, the company still maintained a market share of 11.3%, though this has decreased from the previous year. This drop is largely due to reduced output at its KCC asset (-15.8% y-o-y) despite the company's Mutanda operation increasing cobalt production by 34.2%.

This is indicative of Glencore's shift towards copper amid surging prices, while cobalt exports remain limited. Given limitations in 2026 and 2027, Glencore indicated in its 2025 production report that mined cobalt may be held in solution, and therefore remain unreported, to reduce processing costs.

Other leading operators in the DRC include Kazakh miner **ERG** and Chinese producer China Nonferrous Mining Corp. (**CNMC**). ERG's site, Metalkol, produced 19,000 tonnes this year, unchanged y-o-y. CNMC production in 2025 fell by 1%. While production increased marginally at Deziwa, output at Kambove and Huachin Metal Leach fell by a combined 11% y-o-y.

For miners within the DRC, the impact of the export ban on mined production was limited; while some producers focused on copper extraction, others instead continued to process cobalt, storing cobalt hydroxide within the DRC. Given the by-product nature of cobalt, strong copper prices incentivise continued mining, however, producers will have the option to dump cobalt ore into tailings for later processing, saving on costs.

A further breakdown of the effects of the DRC export limitations on the cobalt market balance, as well as price movements as a result of government decisions can be found in Section 5.

3.5 INDONESIA PRODUCTION GROWS ON THE BACK OF NEW MHP ASSETS

Indonesian cobalt production is estimated at 42.5kt of cobalt in 2025. As DRC exports were limited, Indonesian production likely exceeded the approximately 41kt the DRC was able to export before the ban was put in place, **making Indonesia effectively the leading supplier of cobalt in 2025.**



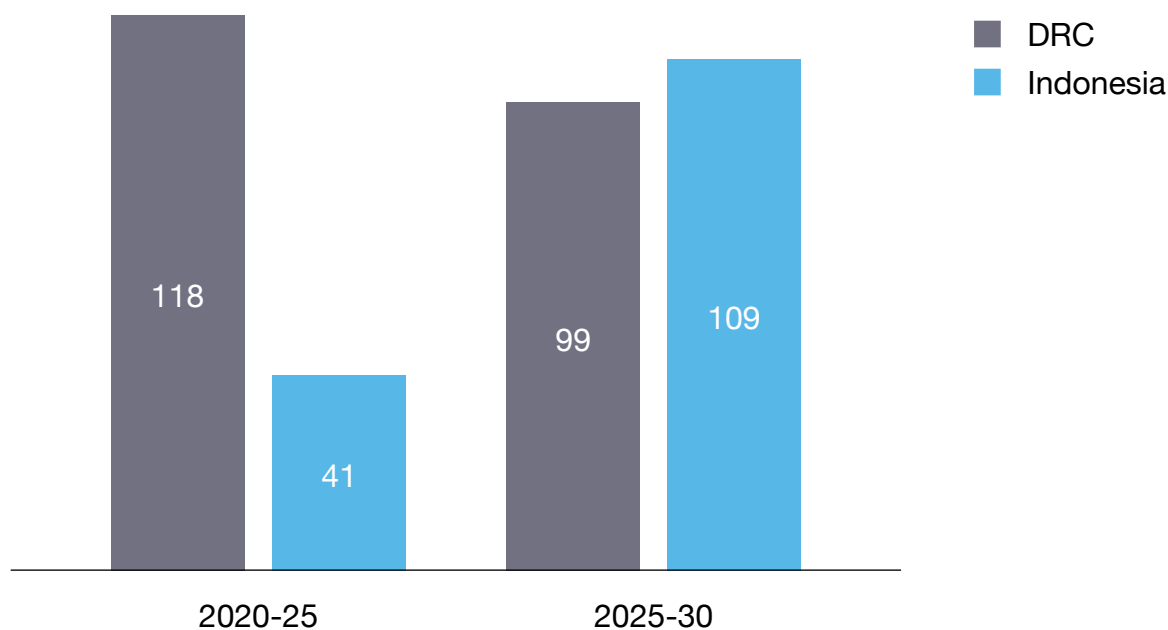
Indonesia was at the forefront of cobalt supply throughout the year, as lack of availability from DRC cobalt shone a spotlight on the second-largest producer. Following the export ban, cobalt prices rose (see Section 5) allowing Indonesian suppliers to benefit from higher by-product credits.

Indonesia’s market share grew in 2025 to 14% (up from 11% in 2024), as multiple high pressure acid leaching (HPAL) operations that came online in 2024 ramped up. This HPAL ramp-up increased cobalt production within Indonesia by 29% y-o-y in 2025. While Indonesia’s growth in the first half of the decade has been significant, adding 41kt to the cobalt market since 2020, it has been outpaced by the DRC, which added 118kt to the global cobalt supply. However, 2025 represents an inflection point, with **Indonesian growth over the next five years expected to exceed that of the DRC**: Indonesia is forecast to add 109kt by 2030, compared to 99kt from the DRC.

Lygend was the largest Indonesian producer in 2025, as its joint venture (JV), PT Obi Nickel Cobalt (ONC) ramped up after beginning production in 2024, to an output of 6.5kt. Its other JV, PT Halmahera Persada Lygend, produced 6.2kt, flat y-o-y.

PT Huafei Nickel Cobalt increased production by 35% y-o-y, with an estimated cobalt output of 10.8kt. This made it the largest cobalt asset in Indonesia, after overtaking PT Huayue Nickel Cobalt, which saw its production decline by 1% to 7.6kt in 2025.

Figure 5. Cobalt supply growth, Unit: kt Co



Data: Benchmark Mineral Intelligence – Cobalt Forecast.



Despite this growing presence as a key cobalt supplier, Indonesia remains first and foremost a nickel producer. Stainless steel represents the largest demand sector for nickel, accounting for 66% of demand in 2025. However, battery demand is growing rapidly and is one of the key drivers for new supply build out within the country.

The Indonesian government has been proactive in incentivising downstreaming within the country. A prominent example of this was a ban on nickel ore exports in 2020, which incentivised downstream development for nickel refiners within the country. This helped drive a change towards the use of limonite ore, which sits above the saprolite layer used in ferronickel (FeNi) and nickel pig iron (NPI) production for the stainless steel industry. This limonite layer had historically been discarded, however, it contains a higher cobalt content than saprolite, and therefore cobalt can be processed as a useful by-product.

The development of HPAL within Indonesia allowed refiners to target this limonite layer, which had historically been discarded. However, it contains a higher cobalt content than saprolite, and therefore cobalt can be processed as a useful by-product. HPALs process limonite into mixed hydroxide precipitate (MHP), an intermediate product that contains a similar nickel-cobalt ratio as to what battery cathode manufacturers are targeting, with a typical nickel cobalt ratio ranging from 8:1 to 12:1. HPAL operations had existed outside the country previously, however, projects were typically slow to develop and ran over budget. By contrast, new HPAL projects within Indonesia have been established much faster, partly owing to cheap Chinese capital.

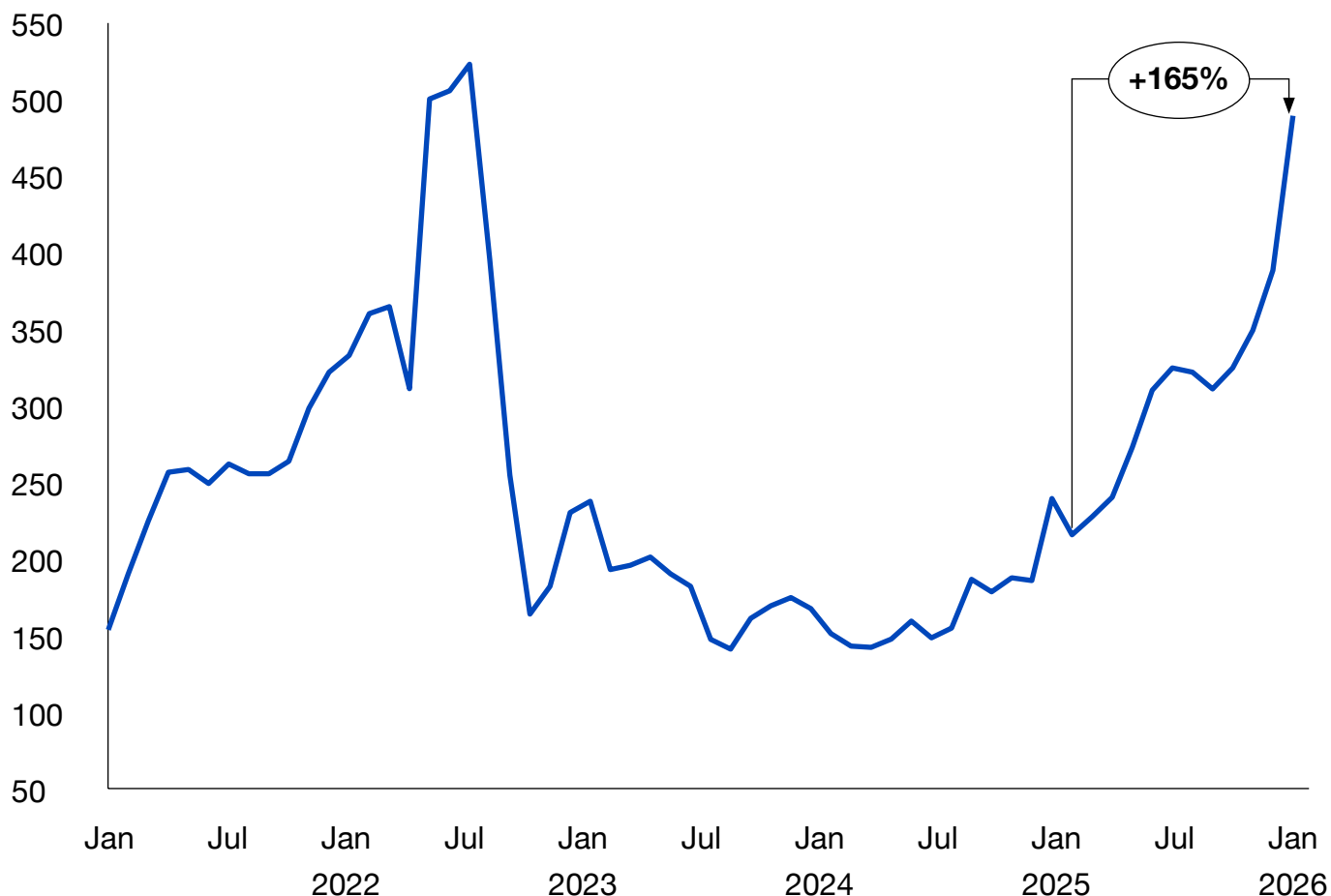
HPAL producers within Indonesia have some of the lowest nickel cash costs. Because of this low nickel cost, Indonesian HPALs were insulated to a degree from the low cobalt prices of 2024 and high cobalt prices on the back of the export ban increased by-product credits attributable to these assets.

However, HPALs are reliant on sulphuric acid, and so increasing sulphur costs can challenge this cost structure, as was seen in 2025 when imported sulphur costs increased 165%, from \$182/tonne to \$483/tonne of sulphur. Each tonne of nickel produced requires approximately 11.4 tonnes of sulphur, increasing HPAL operating costs by ~\$1.60/lb Co.

Further supply disruptions to sulphur may force some HPAL producers to limit production or pause operations entirely. In 2026, there have been increasing concerns around sulphur availability through the strait of Hormuz, through which 75% of sulphur imports flow, and which has been blockaded. If this were to continue, MHP producers may see their costs rise and there is a risk of supply disruption if costs climb too high or if sulphur becomes too difficult to obtain.



Figure 6. Indonesia landed sulphur prices, Unit: \$/t



Data: Global Trade Tracker.

3.6 DOWNSTREAMING EFFORTS IN INDONESIA LEAD REFINED SUPPLY GROWTH

Cobalt is typically refined further into chemicals or metal for a range of uses. The largest share of refined cobalt comes from cobalt sulphate, which is typically used in NCM batteries, while cobalt tetroxide, the second-largest chemical in terms of production, is often used in LCO batteries.

Global refined cobalt production reached 240kt in 2025, a 5% increase y-o-y. **Indonesia has overtaken Canada to become the third largest supplier of refined cobalt**, with supply from the Southeast Asian country increasing 99% in 2025, the largest single country increase that year. In comparison, Canada’s refined output grew 17%. Indonesia’s growth can be attributed to Yongheng Nickel (IWIP) Cathode beginning production in 2025, as well as the continued ramp up of other operations, including Halmahera Persada Lygend and PT QMB. Despite this significant growth, Indonesia’s refined production still only makes up 3% of global supply.



China remains the key producer of refined cobalt, accounting for 79% of global refined cobalt. While China maintains its dominance over the refined market, supply growth in China was relatively small in 2025, with only 4% growth compared to 2024. Finland remains the second-largest producer, however, there was no supply growth since 2024, as no new operations or expansions have opened in the country since 2021.

Table 1: Refined cobalt market share by country

Country	Share of global refined production		
	2024	2025	y-o-y
<i>China</i>	79.4%	78.6%	-0.8%
<i>Finland</i>	7.0%	6.6%	-0.4%
<i>Indonesia</i>	1.7%	3.2%	+1.5%
<i>Canada</i>	2.7%	3.0%	+0.3%
<i>Madagascar</i>	1.8%	1.9%	+0.1%
<i>Japan</i>	1.8%	1.7%	-0.1%
<i>Norway</i>	1.3%	1.3%	-
<i>Australia</i>	1.3%	1.0%	-0.3%
<i>ROW</i>	3.1%	3.0%	-0.1%

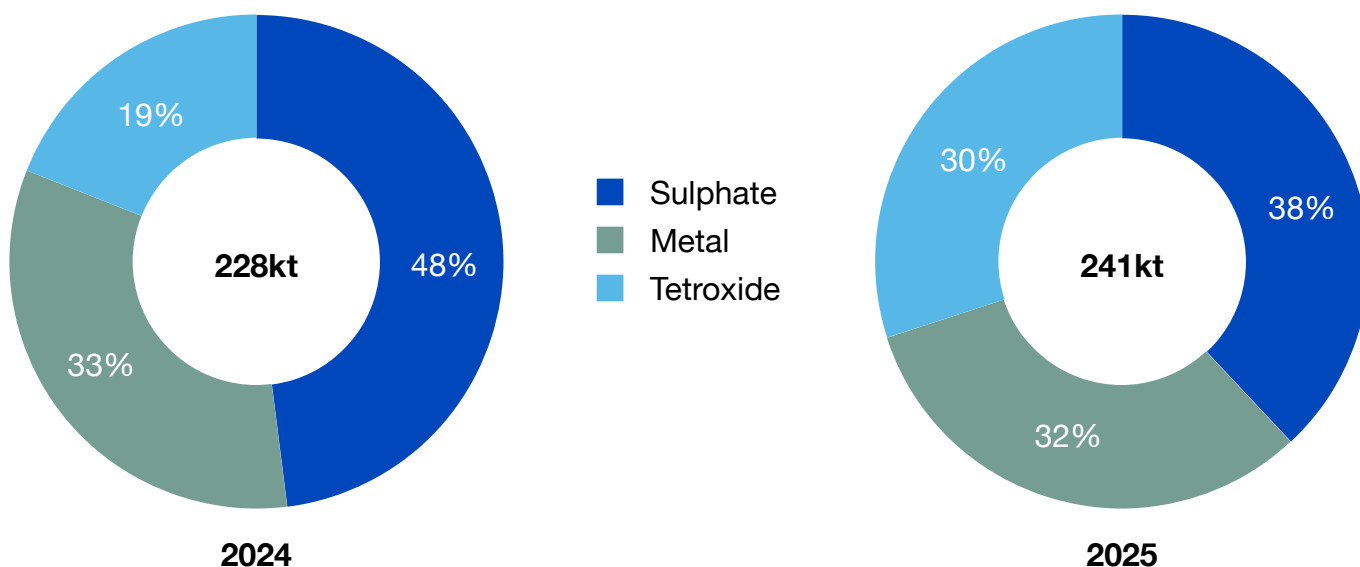
Data: Benchmark Mineral Intelligence – Cobalt Forecast.

Global cobalt sulphate production was 90kt in 2025 (cobalt contained basis). This is a decrease of 17% y-o-y, with China being the main source of this output decline, as large refiners like Greatpower and Ganzhou Tengyuan reduced their sulphate output in favour of other salts like tricobalt tetroxide. Tetroxide production globally increased sharply in 2025, by 68% y-o-y to 73kt, as refiners shifted supply focus to chase more profitable chemicals. A similar trend was observed in the previous year, with Chinese refiners building up metal capacity to take advantage of arbitrage opportunities between metal and chemical prices. With sulphate and tetroxide prices rising rapidly in 2025, and metal prices showing a comparatively sluggish rally, this arbitrage



opportunities between metal and chemical prices. With sulphate and tetroxide prices rising rapidly in 2025, and metal prices showing a comparatively sluggish rally, this arbitrage opportunity shrank considerably, leading to a slight decline in metal production in China, decreasing 2% y-o-y. Despite this, metal market share in China remains elevated, at 23%, compared to just 18% in 2023.

Figure 7. Share of refined cobalt by product type, Unit: %



Data: Benchmark Mineral Intelligence – Cobalt Forecast.

Outside of China, metal production has continued to grow steadily, with ex-China output reaching 34kt in 2025, up 8% from the previous year. The largest assets providing this growth were both from Indonesia, with Tsingshan beginning cobalt metal production in 2025, and PT Lygend ramping up after beginning production of cut cathode in late 2024. Both producers had Chinese involvement in their development, highlighting the Chinese dominance on refined cobalt production even beyond the country’s borders.

Despite the pivot away from cobalt sulphate in 2025, much of the sulphate capacity remains unchanged, therefore in a more favourable environment, supply can quickly be ramped up. In 2025, limited hydroxide supply due to the DRC export restrictions forced refiners to limit their production of refined cobalt products, with strong downstream inventories for cobalt sulphate.

Cobalt metal saw a considerable build-up of stockpiles in 2024 due to the arbitrage opportunity. However, the rally in prices following the DRC ban was relatively sluggish in metal compared to other refined products, therefore metal lines were deprioritised compared to sulphate production.



By contrast, cobalt tetroxide stock levels were smaller. Seasonality in the portable end-use market, which leads to tetroxide inventories building up in the latter months of the year, before depleting in the earlier months. Furthermore, strong pricing opportunities allowed refiners to keep margins high despite the increasing costs of raw materials. Note that these are in relative terms, as cobalt sulphate remains first in refined market share, while metal was second.

Another factor that refiners must consider is the suitability of feedstock. The ratio of cobalt to nickel in MHP makes it most suitable for cobalt sulphate production, meaning that the lower but steady supply of MHP was focused primarily on sulphate, while existing hydroxide stocks were diverted towards tetroxide and metal lines. With hydroxide stocks running short, we can expect the output of these two products to dip in the coming year, while sulphate supply may be bolstered by the reintroduction of hydroxide into the Chinese market.

3.7 COBALT SECONDARY SUPPLY: ORIGINS AND REGIONAL DISTRIBUTION

Recycled materials are expected to account for an increasing share of battery mineral supply over the coming decades. In 2025, critical mineral security was noted as a strategic priority, with many regions recognising the central role of recycling in future supply.

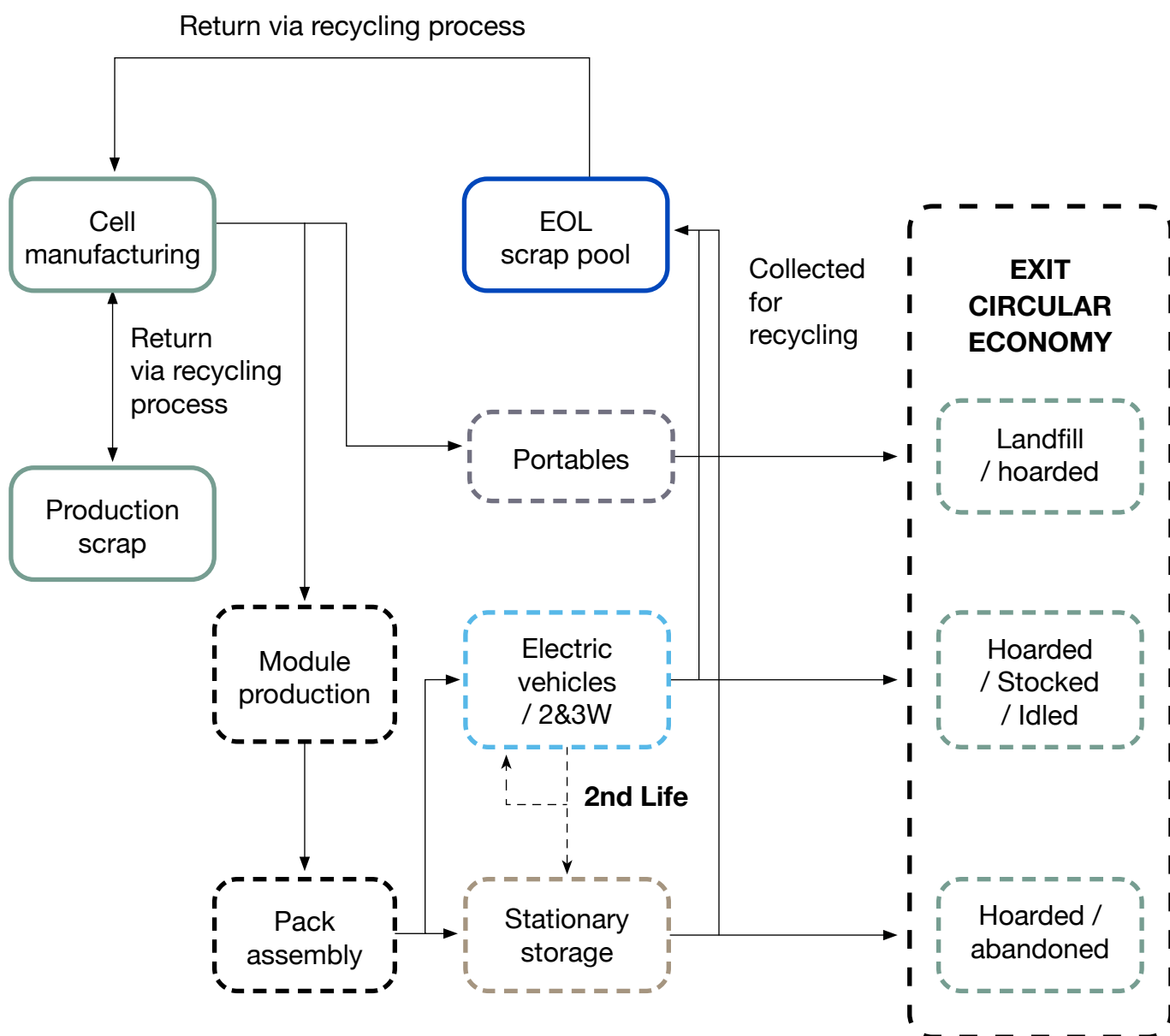
Battery recycling most commonly involves battery shredding and separation of the active material powder, known as black mass, which will be rich in cobalt when LCO, NCM, and NCA chemistries are recycled. As cobalt-containing black mass is generated and traded worldwide, the buildout of refining capacity is essential to ensure critical mineral security for ex-China regions. Expanding cobalt recovery capacity outside of China is important to ensure that material flows are not overly concentrated in China, where the most mature refining capacity is located, as well as in neighbouring Asian countries such as South Korea.

In 2025, secondary cobalt supply met roughly one tenth of global demand, and this share is projected to almost double by 2040. Despite its growing importance, data on secondary supply of metals contained in lithium-ion batteries remains limited. Historically, inconsistencies in black mass classification and limited transparency have made traceability difficult. Although legislation introduced in 2025 aimed to improve tracking and regulate black mass movements, the market remains relatively opaque. As a result, bottom-up methodologies are required to estimate volumes.



Secondary cobalt supply originates from two principal streams: cell production scrap and end of life (EOL) scrap. Globally, recycled cobalt predominantly comes from EOL portable batteries and production scrap. However, regional differences are significant. In the EU, EFTA and the UK, cobalt supply is largely derived from portable battery scrap, reflecting limited domestic cell production but relatively established collection systems. In contrast, China's recycled cobalt supply is heavily driven by manufacturing scrap due to its dominance in cell production and comparatively low portable collection rates.

Figure 8. Battery recycling overview

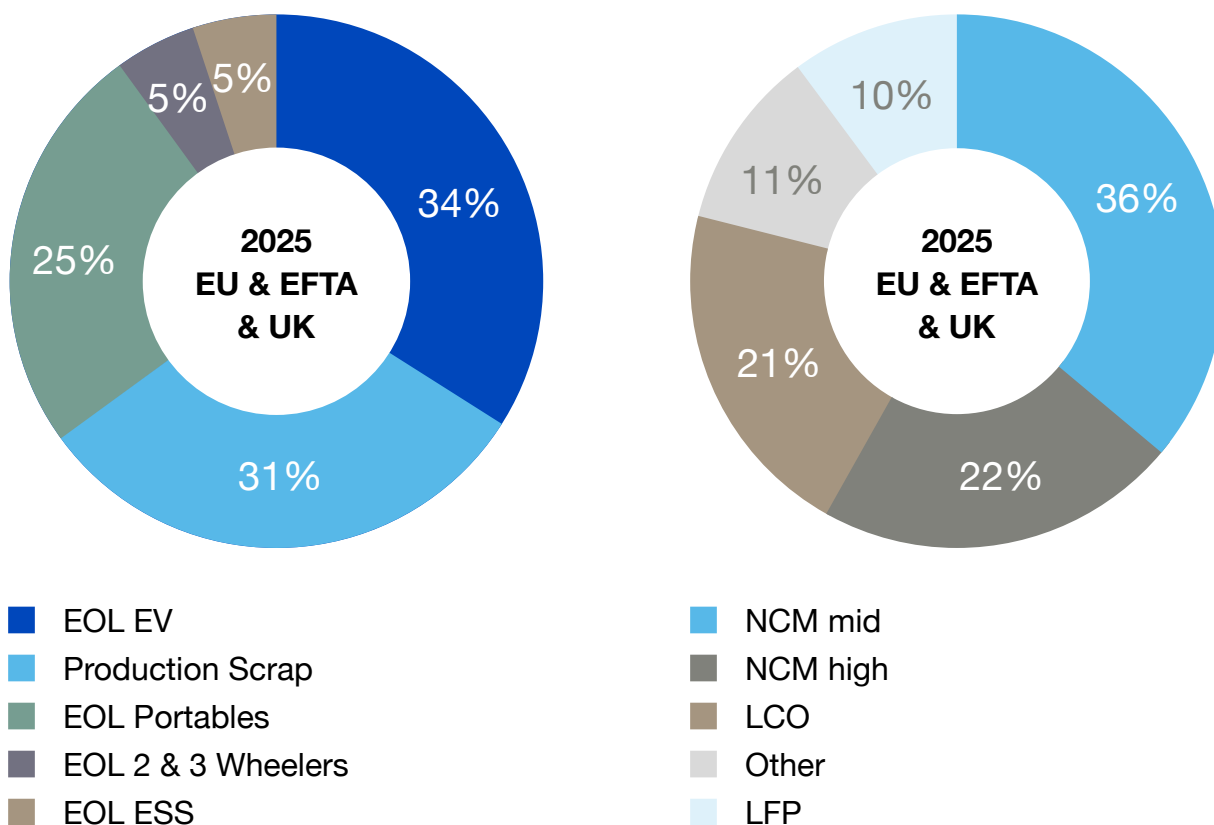


Data: Benchmark Mineral Intelligence – Battery Recycling Forecast.



Within Europe, EOL EV scrap is becoming increasingly important and is primarily composed of mid-nickel NCM chemistries. In Europe, there have been several pieces of legislation that have been announced and implemented to encourage market participants to take responsibility for materials sourcing, battery collection, extended producer responsibility and carbon footprinting, including legislation such as the EU Battery Regulation and the Critical Raw Materials Act. Although specific collection targets for waste starting, lighting, ignition (SLI), industrial, and EV batteries are not outlined in the EU Battery Regulation, Article 61 in the Regulation indicates an implicit 100% collection target for these batteries. This means that as these electric vehicles retire, batteries from EVs are set to make up a significant portion of the European scrap pool in upcoming years, with European EV scrap set to overtake production scrap before the turn of the decade. Portable LCO batteries also contribute to cobalt recovery, representing 22% of the regional cathode chemistry mix in 2025. Stronger collection targets and improved consumer and business incentives could expand cobalt recovery further. The EU Battery Regulation supports this by requiring portable batteries in devices to be easily removable, thereby facilitating higher collection and recycling rates.

Figure 9. Regional feedstock and distribution



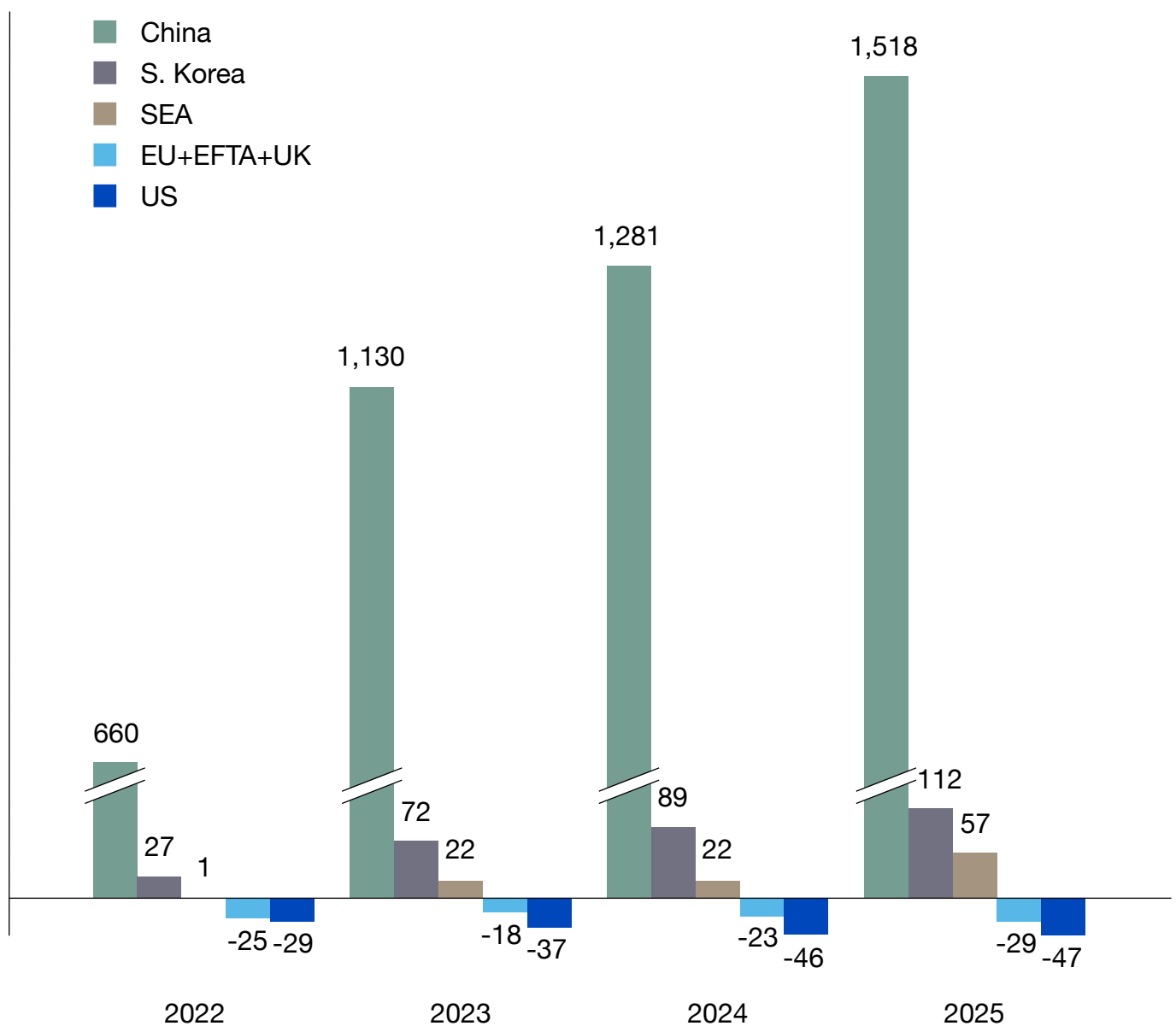
Data: Benchmark Mineral Intelligence – Battery Recycling Forecast.



REGIONAL APPROACHES TO BATTERY RECYCLING

China's longstanding leadership in the lithium-ion battery markets continues to impact the battery recycling industry. While Western regions are expanding capacity, much of the infrastructure currently in place focuses on black mass production - shredding batteries into a concentrated intermediate from which metals are subsequently extracted. Hydrometallurgical refining capacity outside Asia remains comparatively limited, resulting in black mass continuing to be shipped to Asia, particularly South Korea, Japan and Singapore, with a significant portion ultimately destined for China.

Figure 10. Refining capacity and scrap balance, 2022 – 2035, Unit: Mt recycling input



Data: Benchmark Mineral Intelligence – Battery Recycling Forecast.



The recycling market faced significant challenges in 2025. In Europe and North America, constrained feedstock resulting from gigafactory suspensions and a weaker EV demand, along with persistently depressed commodity prices, further squeezed recyclers' profit margins and moderated the pace of recycling expansion, with various companies postponing their hydrometallurgical expansions. In addition, the absence of an integrated supply chain, rising costs, and stringent environmental regulations remain major bottlenecks for localisation of black mass refining in these regions. Although black mass production capacity continues to grow in Europe and North America, downstream refining capacity is yet to be widespread.

Historically, China restricted black mass imports due to its classification as hazardous waste. This led to a workaround whereby black mass exported from Europe and North America was processed in neighbouring Asian countries before entering China as intermediate products. In 2025, China relaxed these restrictions to allow direct black mass imports, aiming to increase material inflows amid regional overcapacity in recycling. Importation, however, has been uneven. Shipments, particularly those derived from EOL batteries, were initially rejected due to failure of meeting impurity requirements, especially soluble fluorine and heavy metals. As a result, black mass payables have become increasingly polarised: high quality black mass capable of direct entry commands strong demand, while lower quality batches receive limited interest. Material failing to meet Chinese customs standards continues to move through Southeast Asia for pre-treatment before re-entering China. Additionally, there is a notable disparity between black mass payables in China and Europe, driven by several factors, including China's lithium payables framework, the generally higher quality of material available in China, logistical constraints in transporting European material, and transportation lag of Western black mass. More broadly, differences in market maturity underpin this gap, as they explain both the flow of material towards China and its advantages in terms of lower costs and more consistent material quality.

To limit movement of black mass out of Europe, in early 2025, the European Commission updated the European Waste Catalogue to classify black mass and related intermediates as hazardous waste. This introduced stricter shipment requirements, additional documentation and export restrictions to Organisation for Economic Co-Operation and Development (OECD) countries only. An 18-month grace period extends until November 2026. While intended to reduce material leakage and support domestic supply chains, the measure is unlikely to fully halt exports. Waste can still be shipped to OECD countries such as South Korea and Japan, and South Korea has already emerged as a key hydrometallurgical hub receiving increased European volumes. Without further restrictions, indirect flows to China may continue via OECD intermediaries.

Furthermore, most black mass produced in Western markets still requires further downstream processing in Asia to meet battery grade specifications. Limited vertical integration and refining expertise reduce the short-term incentive to localise these stages. India has implemented similar



controls, introducing export permits and restricting trader participation to better monitor material flows and support domestic refining. Comparable policy discussions are reportedly underway in the United States. These developments reflect a broader trend towards protectionist measures aimed at retaining critical raw materials and strengthening domestic recycling industries.

Despite regulatory support, the EU recycling sector remains underdeveloped. Hazardous waste classification and administrative requirements have increased red tape, complicating cross-border material movement within Europe. Combined with limited refining capacity, these factors reinforce Asia's continued centrality in downstream processing.

Given the concentration of refining capacity in Asia and ongoing export flows, Europe is likely to remain reliant on imported recycled cobalt to meet minimum recycled content requirements under the EU Battery Regulation. Although policy measures aim to strengthen domestic recycling ecosystems, structural and economic constraints continue to shape global material flows.

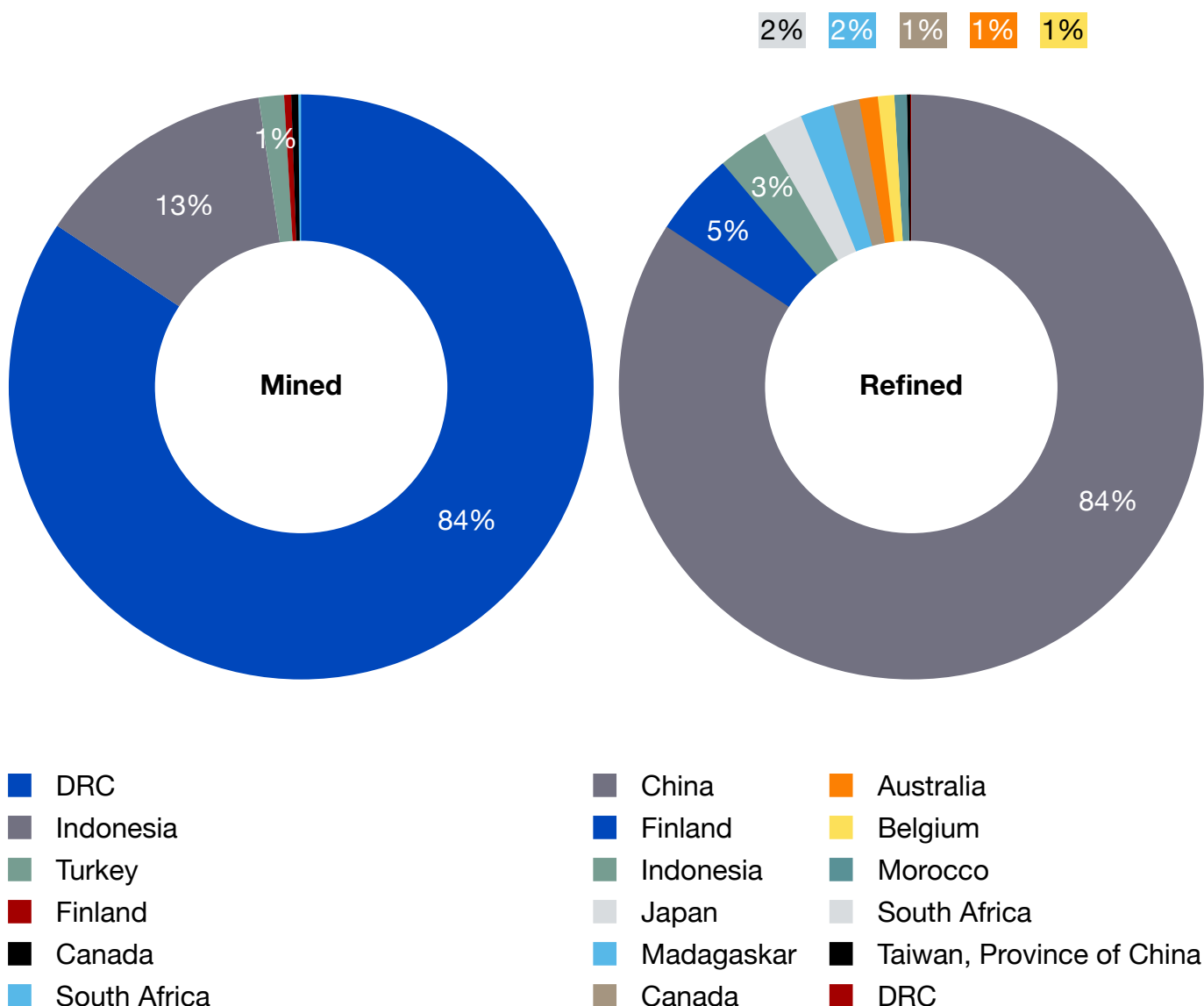
Overall, cobalt secondary supply is highly regionalised and influenced by manufacturing dominance, collection rates, refining capacity and purchasing power. While Europe is improving collection systems and regulatory frameworks, Asia remains the focal point for black mass refining and battery grade metal production. Without significant hydrometallurgical expansion in Western regions, dependence on Asian refining networks is likely to persist in the medium term.

3.8 THIRD-PARTY RESPONSIBLE SOURCING AND SUPPLY CHAIN DUE DILIGENCE GO FROM STRENGTH TO STRENGTH

In 2025, **third party responsible sourcing and supply chain due diligence assessments covered 210,244 tonnes (78%) of global mined cobalt** output across 180 mining and smelting assets, as well as **210,668 tonnes (88%) of global refined cobalt** output from 65 refinery assets, which increases 1% and 6% respectively compared with 2024 awarded cobalt mined and refined supply.



Figure 11. Geographic coverage of third-party certification among cobalt mined (LHS) and refined (RHS) supply in 2025, Unit: %



Data: Benchmark Mineral Intelligence

* Note: volume basis. The refined supply accounted in this analysis relates only to final refined cobalt products (e.g., metal, sulphate, etc.) and not crude cobalt hydroxide, to avoid double-counting. Countries without percentages produced <1% of the total awarded output in 2025

A number of established due diligence and assurance frameworks shape responsible sourcing practices relevant to the cobalt supply chain. These include frameworks such as the Initiative for Responsible Mining Assurance (IRMA), the Responsible Minerals Initiative (RMI), the Copper Mark, the Towards Sustainable Mining (TSM) initiative, and the Chinese Due Diligence Guidelines for Mineral Supply Chain (Second Edition) developed by the China Chamber of Commerce for Import and Export of Metals, Minerals and Chemicals (CCCMC).



In addition, the Consolidated Mining Standard Initiative (CMSI), currently under development, is intended to bring together several existing responsible mining standards into a single consolidated, collective framework. And the CCCMC has recently launched the global consultation for the new and revised Sustainable Mining Code – an overhaul of the 2011 Guidelines on Social Responsibility for Outward Mining Investment in China.

IRMA primarily addresses upstream risk governance at the mine site (although it now also has a chain of custody standard), with particular relevance for operations located in higher risk regions. **TSM** plays a regionally significant role in the upstream sector North America, while also being implemented in several other jurisdictions globally, strengthening environmental and community performance oversight.

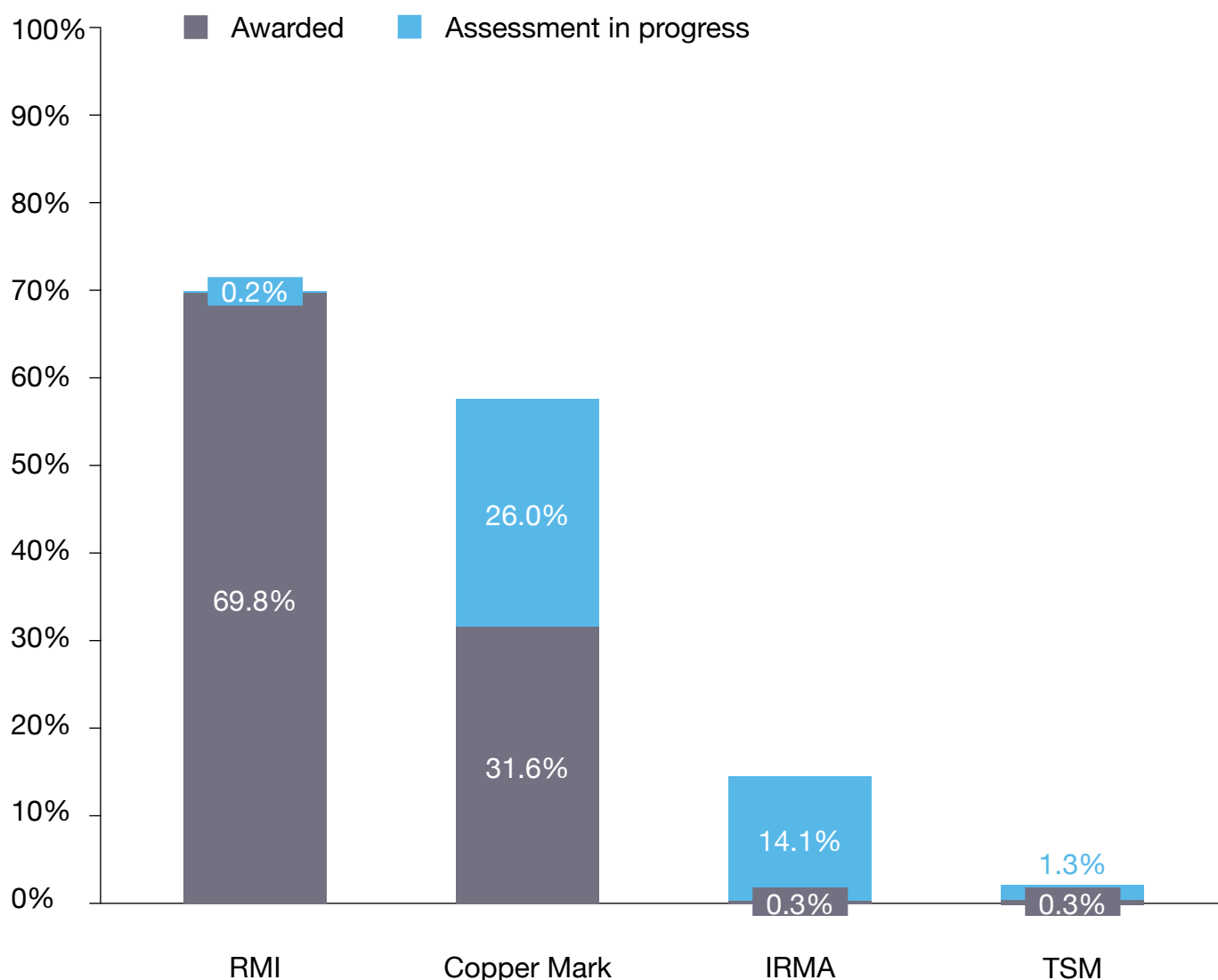
The Copper Mark functions as a cross commodity assurance mechanism, particularly relevant where cobalt is produced as a by product of copper operations. The Copper Mark currently applies to the upstream and midstream, with ambitions to move even beyond this. **RMI** operates at the midstream level, reinforcing due diligence implementation and compliance at the smelting and refining stage.

Collectively, these initiatives create a set of complementary standards and assurance mechanisms across the cobalt supply chain, spanning upstream extraction, midstream processing and region specific regulatory contexts.

Overall, cobalt mining and smelting assets demonstrate the highest level of engagement with the RMI's Responsible Minerals Assurance Process (RMAP). An estimated 70% of mined cobalt supply is processed by RMI Conformant Crude Cobalt Refiners, while one asset is an RMI Active Cobalt Refiner currently undergoing the RMI assessment, representing 0.2% of 2025 cobalt mined supply.



Figure 12: 2025 mined cobalt supply by third party assessment status compared to 2024, Unit: %



Data: Benchmark Mineral Intelligence.

The share of mined cobalt supply (69.8%) that Benchmark has determined was subject to ‘RMI RMAP-conformant’ due diligence by refineries³ declined compared with 2024 assessment status at (77.0%), despite six new assets indicating an intention to participate in RMI assessment in 2025. This decrease is primarily due to the reduced production volumes from previously associated assets in 2025.

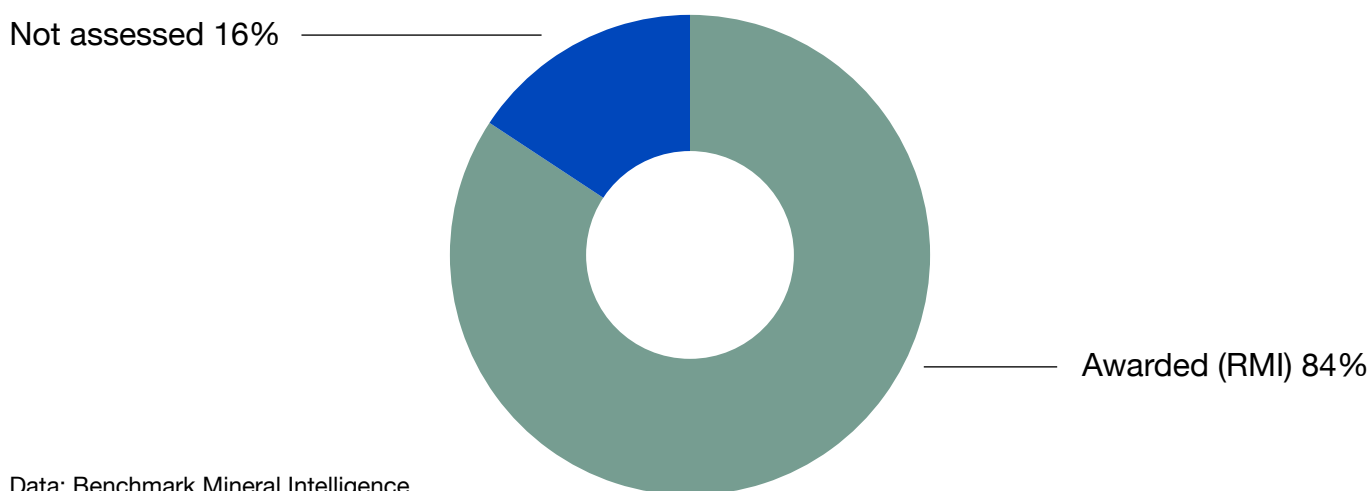
³ Although the RMI assessment applies to refiners, all the cobalt sourced, including mined material, is subject to due diligence by these refiners which is verified in the scope of the RMI evaluation. Through detailed understanding of the supply chain, Benchmark has been able to quantify the amount of mined cobalt that falls within the scope of the assessment.



With respect to the cobalt refining sector, alignment with and participation in RMI assessments is widely adopted, particularly through the Responsible Minerals Assurance Process (RMAP)⁴. As a globally recognised industry assurance mechanism for mineral supply chains, RMAP is aligned with the OECD Due Diligence Guidance and is frequently used by companies to demonstrate compliance with regulation and customer expectations in the EU, the US, and other jurisdictions. It also offers relatively low implementation costs and broad coverage.

This is reflected in the increasing share (+2% y-o-y in 2025) of refined cobalt supply engaging with RMI⁵, with 84% now covered by RMAP-conformant or participating facilities. The increasing rate of participation suggests that cobalt refiners are prioritising internationally recognised due diligence frameworks to secure or maintain market access and meet downstream customer requirements.

Figure 13: Share of 2025 refined cobalt supply by engagement with RMI's assessment, Unit: %



As of 1 January 2026, RMI retired its standalone cobalt refiner standard, transitioning refiners to the **Global Responsible Sourcing Due Diligence Standard for All Minerals**, aligned with OECD guidance and recognised by the LME. Refiners may optionally expand RMAP assessments to cover broader ESG risks through the **Supply Chain Due Diligence Plus (SCDDP)** module (piloted in 2025), and assess their own operations using the separate but complementary Facility Standard.

⁴ Benchmark Cobalt Sustainability Index Q4 2025.

⁵ Note: volume basis. The refined supply accounted in this analysis relates only to final refined cobalt products (e.g., metal, sulphate, etc.) and not crude cobalt hydroxide, to avoid double-counting.



While the share of mined cobalt supply subject to ‘RMI RMAP-conformant’ due diligence by refineries declined in 2025, higher shares of supply were undergoing assessment or awarded by other third-party assessments.

In particular, the share of mined cobalt supply engaged in or awarded **the Copper Mark increased by 25% to 57.6%**, primarily driven by Eurasian Resources Group’s Metalkol operation and Glencore’s Katanga and Mutanda assets receiving Copper Mark recognition in 2025. It is also noteworthy that CMOC Group Ltd.’s KFM, the largest cobalt-producing mining asset – accounting for 25% of the global mined cobalt output – is currently participating in the Copper Mark assessment process.

A 10.5% increase in the share of mined cobalt supply in the process of being assessed by IRMA was determined when comparing to 2024 statistics, largely attributable to the inclusion of CMOC’s TFM, the second-largest mined cobalt producing asset (14%), which is in the process of IRMA assessment.

Furthermore, a **1.5% increase in the share of mined cobalt supply covered by TSM assessments** can be attributed to Sherritt International Corp.’s Moa Bay, and the Terrafame operation, both of which have implemented the TSM framework and are undergoing external verification.

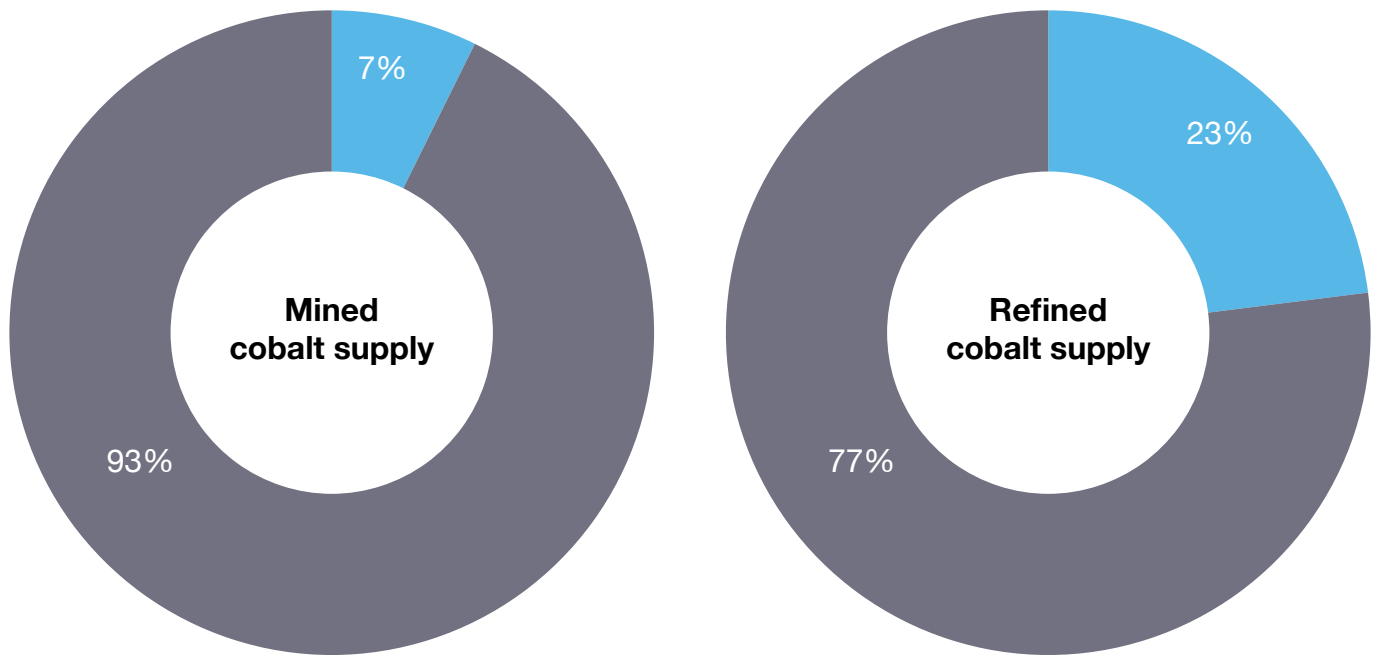
In 2025, **7.25% of global mined cobalt supply underwent the CCCMC (China Chamber of Commerce of Metals, Minerals & Chemicals Importers & Exporters)⁶’s mineral supply chain due diligence assessment.** Of the assessed mined cobalt supply, 99% achieved Level AA – the second highest performance tiers – with these assets primarily located in the DRC. In terms of refined cobalt, a higher proportion of supply was assessed in 2025. All assessed refining assets are Chinese cobalt refiners, each of which achieved Level A rating, indicating consistent but comparatively lower performance relative to the highest assessment tiers observed in mining.

⁶ The CCCMC due diligence framework uses a tiered rating structure – from AAA (highest to C (lowest) – to assess company performance against its responsible mineral supply chain standards (aligned with OECD Guidance).



Figure 14: Share of 2025 mined and refined cobalt supply by CCCMC assessment status

■ Awarded ■ Not assessed



Data: Benchmark Mineral Intelligence.

This increasing certification engagement rate is because of the addition of newly assessed assets in 2025, and it reflects increasing uptake in third-party certification across the upstream and mid-stream parts of the cobalt value chain.



4. COBALT DEMAND REACHES NEW HEIGHTS OFF THE BACK OF SOLID GROWTH ACROSS MULTIPLE SECTORS

- **Total cobalt demand rose to 276kt (+13% year-on-year), with EVs as the largest segment (39% share).**
- **Battery demand dominated, supported by strong gigafactory output despite mixed regional EV sales.**
- **Defence and aerospace demand increased, reinforcing cobalt's strategic importance for national security.**
- **China remained central to battery production and cobalt consumption globally.**



4.1 COBALT DEMAND EXCEEDED 275KT IN 2025

Total cobalt demand hit 276kt in 2025, up by 13% compared with 2024 and continuing the previous year's trend of double-digit growth. Benchmark has revised its 2024 estimate of cobalt demand upwards to 245kt. Annual demand growth was equivalent to 32kt of cobalt contained, a similar level to the annual demand growth seen in 2024.

Electric vehicles (EVs) represented the single largest demand segment, with gigafactories producing batteries for this application consuming 113kt Co – y-o-y growth of +25%. As a fraction of total demand, EVs gained further market share to 39%, driven primarily by continued growth in mid- and high-nickel cathode chemistries. EV sales increased significantly in every area except North America in 2025.

Portable electronics – the second-largest cobalt segment – posted demand growth of +15kt in 2025, bringing absolute demand for the segment to 93kt. The portables sector has seen a rebound from replacement demand and growing battery pack size demand from AI. Rising gigafactory output in Malaysia and China for the sector contributed to cobalt growth in LCO and mid-nickel NCM for these applications.

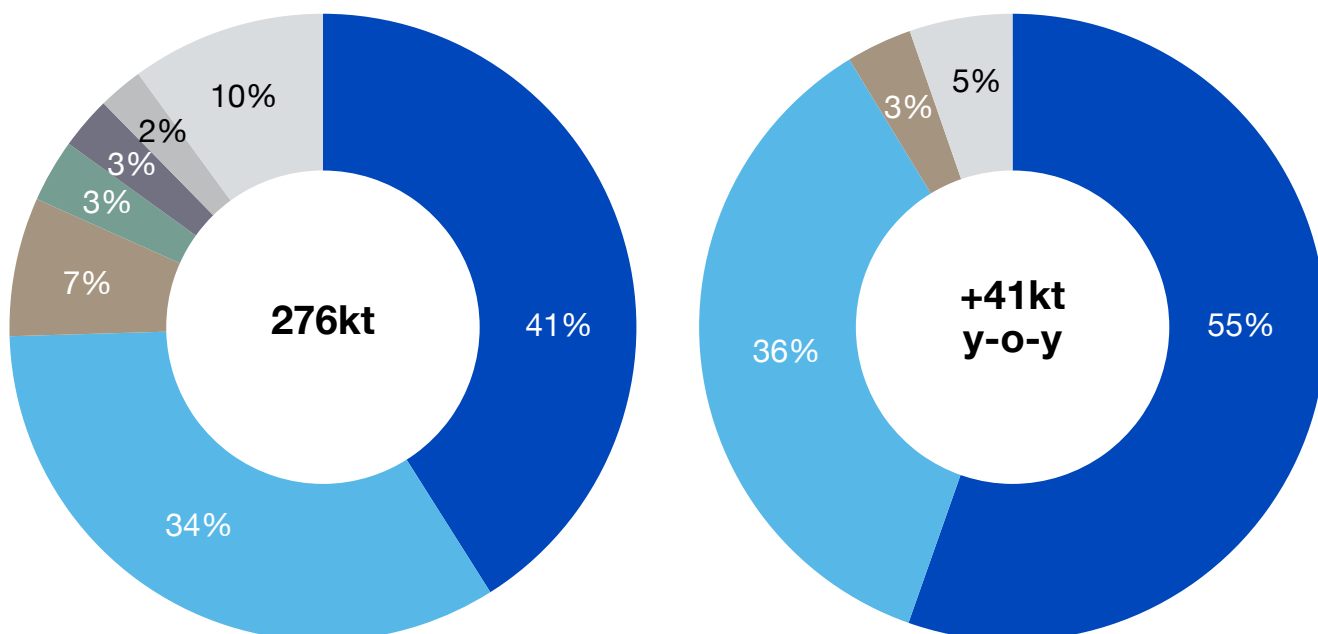
Superalloys represent the largest non-battery cobalt demand segment and reached 20kt of cobalt demand in 2025, up by 7.5% from 2024. Superalloy demand is primarily driven by aerospace, as the high-temperature resistant alloys find applications in turbines. Superalloys require alloy-grade cobalt metal, which represents a relatively small component of total refined supply, and is distinct from battery value chains. Other superalloy applications include in gas turbines – which are seeing some demand growth from AI datacentre buildouts.

Both batteries and superalloys are finding growing use in military applications. Superalloys represent a more traditional segment here given their historical use in fighter jets and other high-temperature applications (such as propulsion systems). But battery demand is also growing; drones are perhaps the most visible application, but lithium-ion batteries are also used in military vessels, vehicles, jets, missiles, bases, and space applications, as well as wearable applications (soldier power). Permanent magnets containing cobalt are also used in defence applications. While the combined demand from these military battery applications for cobalt is relatively small, (6.8kt in 2025), it represents a deeply strategic part of the supply chain.



Figure 15: Cobalt demand (LHS) and annual growth (RHS) in 2025 by application, Unit: kt Co

■ EV
 ■ Portables
 ■ Superalloys
 ■ Hard metals
 ■ Govt. stockpiling
■ Catalysts
 ■ Others



Note: Other minor applications include ceramics, colours, hard facing uses, tyres, soaps, paints and magnets.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.

4.1 2025 SETS A NEW RECORD FOR EV SALES

In 2025 a total of 20.8 million passenger car and light-duty vehicle (PC & LDV) EV sales were recorded, with a further 460,000 bus and truck EV sales. The total sales growth was +22% y-o-y, down from +26% in 2024 on the back of a higher total base and a slight growth slowdown in China.

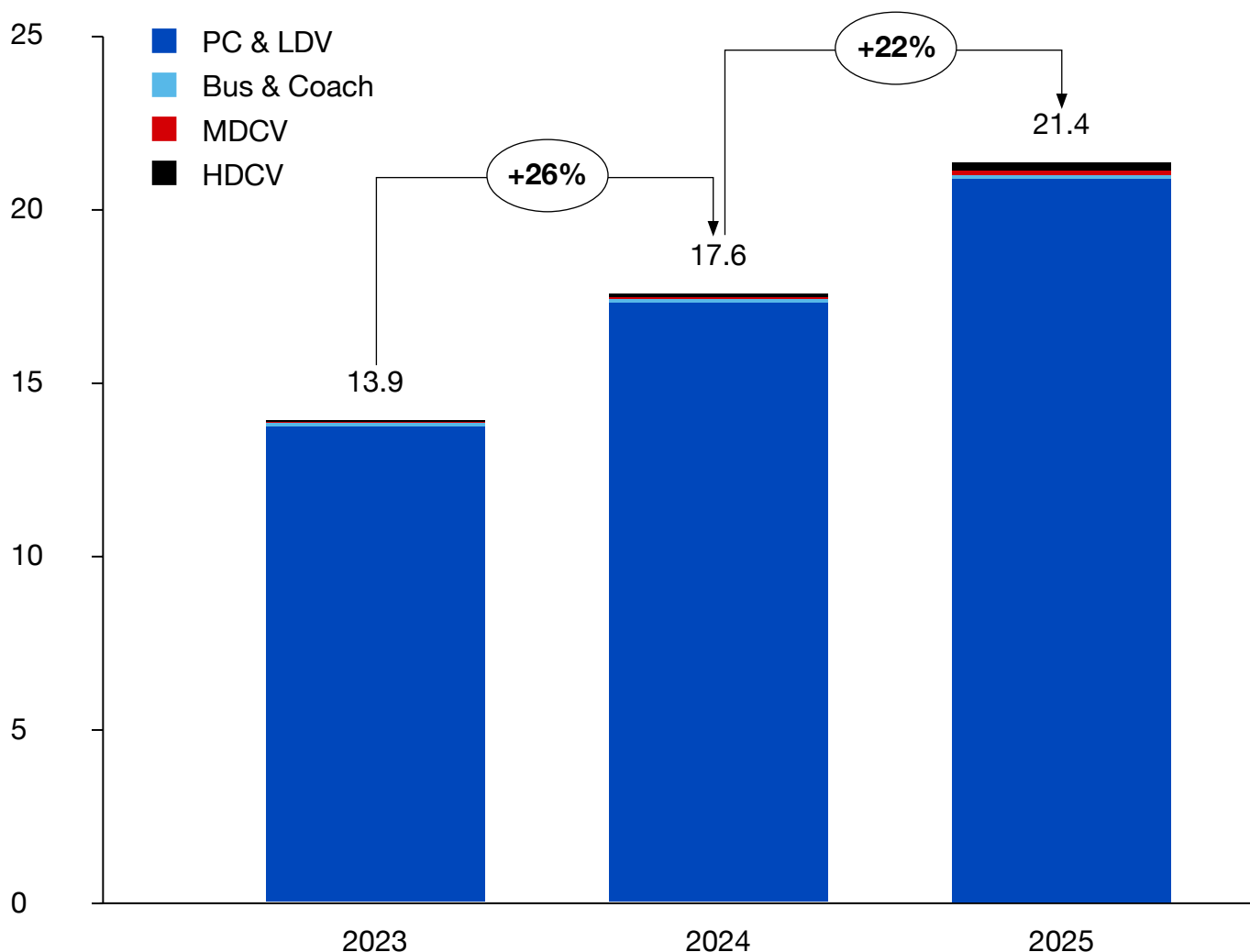
EU & EFTA & UK⁷ reversed its negative 2024 performance to become the fastest growing major region increasing 31.6% y-o-y across all vehicle classes. This was primarily driven by the step change in EU emissions standards kicking in. Despite a weakening of implementation allowing compliance across 2025-2027, new models and renewed efforts from OEMs propelled the market forwards.

⁷ European Union plus European Free Trade Association countries (Iceland, Liechtenstein, Norway and Switzerland) plus the United Kingdom



In China, an exceptionally strong first half of the year was slowed dramatically in H2 as growth rates failed to maintain. Pauses to the popular subsidy scheme hampered penetration rate growth in some key regions.

Figure 16. EV sales by vehicle class, 2023-25, Unit: M units

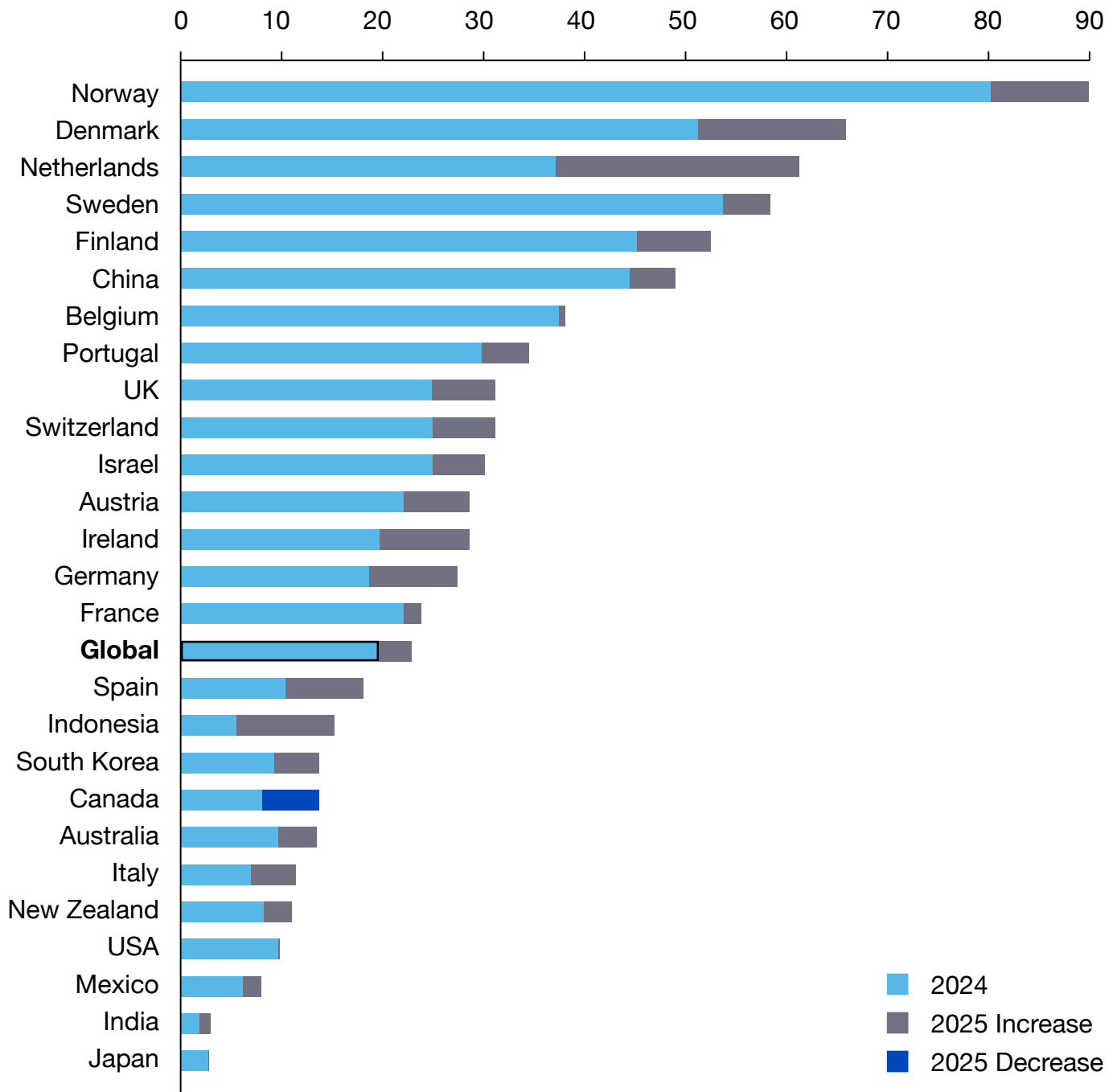


Data: Benchmark Mineral Intelligence – EV and Battery Quarterly Outlook.

EV penetration rates showed growth across the globe. In the US, the elimination of federal tax credits on 30 September 2025, alongside the reduction of corporate average fuel economy (CAFE) standards fines to zero and the introduction of protectionist policies aimed at onshoring vehicle production and supply chains, significantly weakened market momentum. **As a result, US EV sales grew by just 1% in 2025.** Elsewhere in North America, Canada was the only major market to see a decrease in EV sales, with tariffs and subsidy removals playing a significant part in that downwards movement. Globally, EV penetration ended at 22.9%, firmly above 1 in 5 vehicles sold with plug-in charging capabilities.



Figure 17. EV PC & LDV penetration rates, 2024 vs. 2025, Unit: %



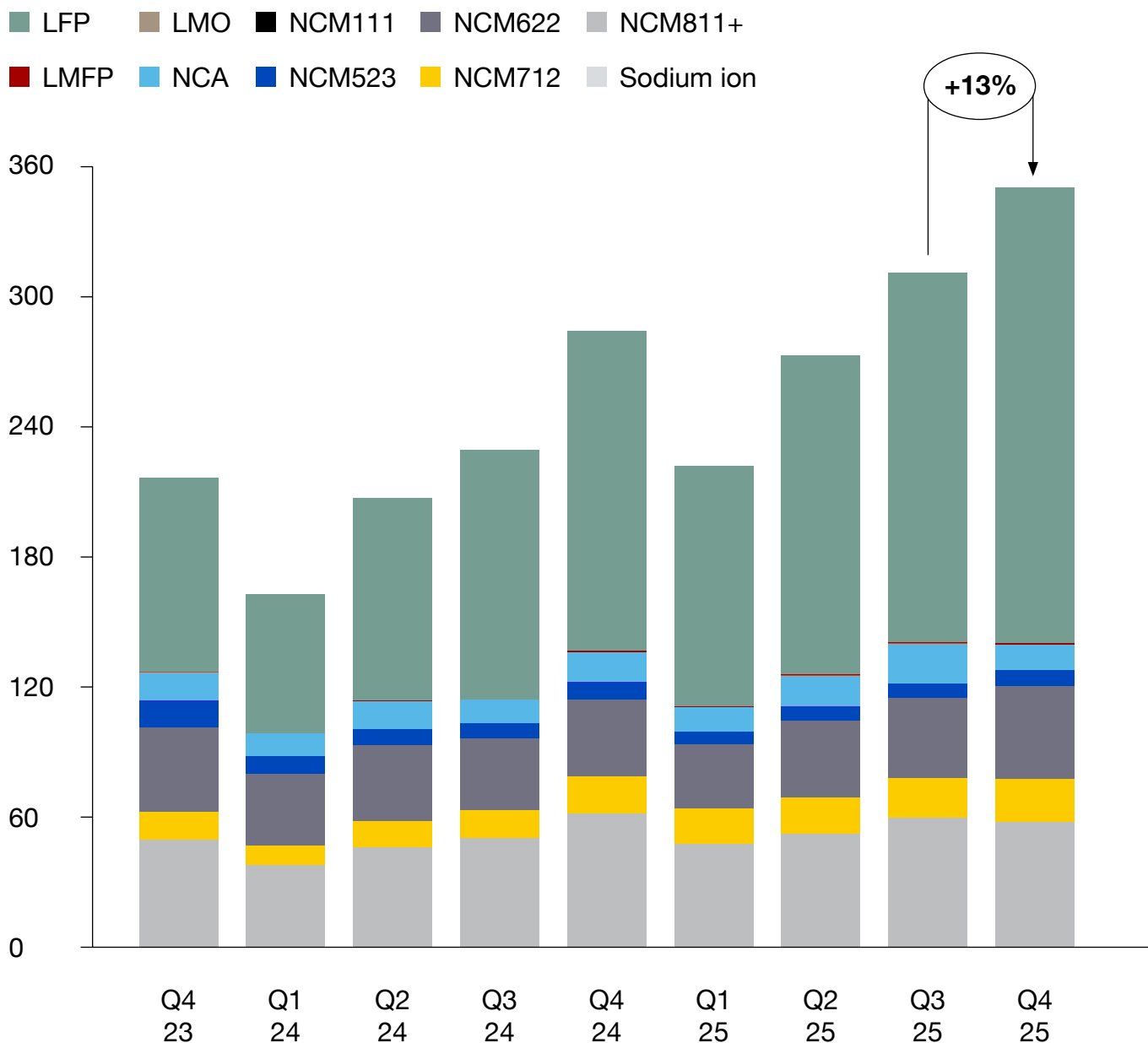
Data: Benchmark Mineral Intelligence – EV and Battery Quarterly Outlook.

EV battery demand across all vehicle classes reached 1,276 GWh in 2025, a 30% increase compared to 2024. Growth in battery demand was therefore 8 percentage points higher than in EV unit sales, a function of notable increases in battery pack size in major regions, and a shift in favour of BEVs.

Additional battery demand from hybrids and fuel cell vehicles contributed a further 18 GWh.



Figure 18. EV cathode battery chemistry market share by quarter, 2025, Unit: GWh



Data: Benchmark Mineral Intelligence – EV and Battery Quarterly Outlook.

4.3 GIGAFACTORY OVERCAPACITY TO BOOST COBALT DEMAND BEYOND END-USE SALES

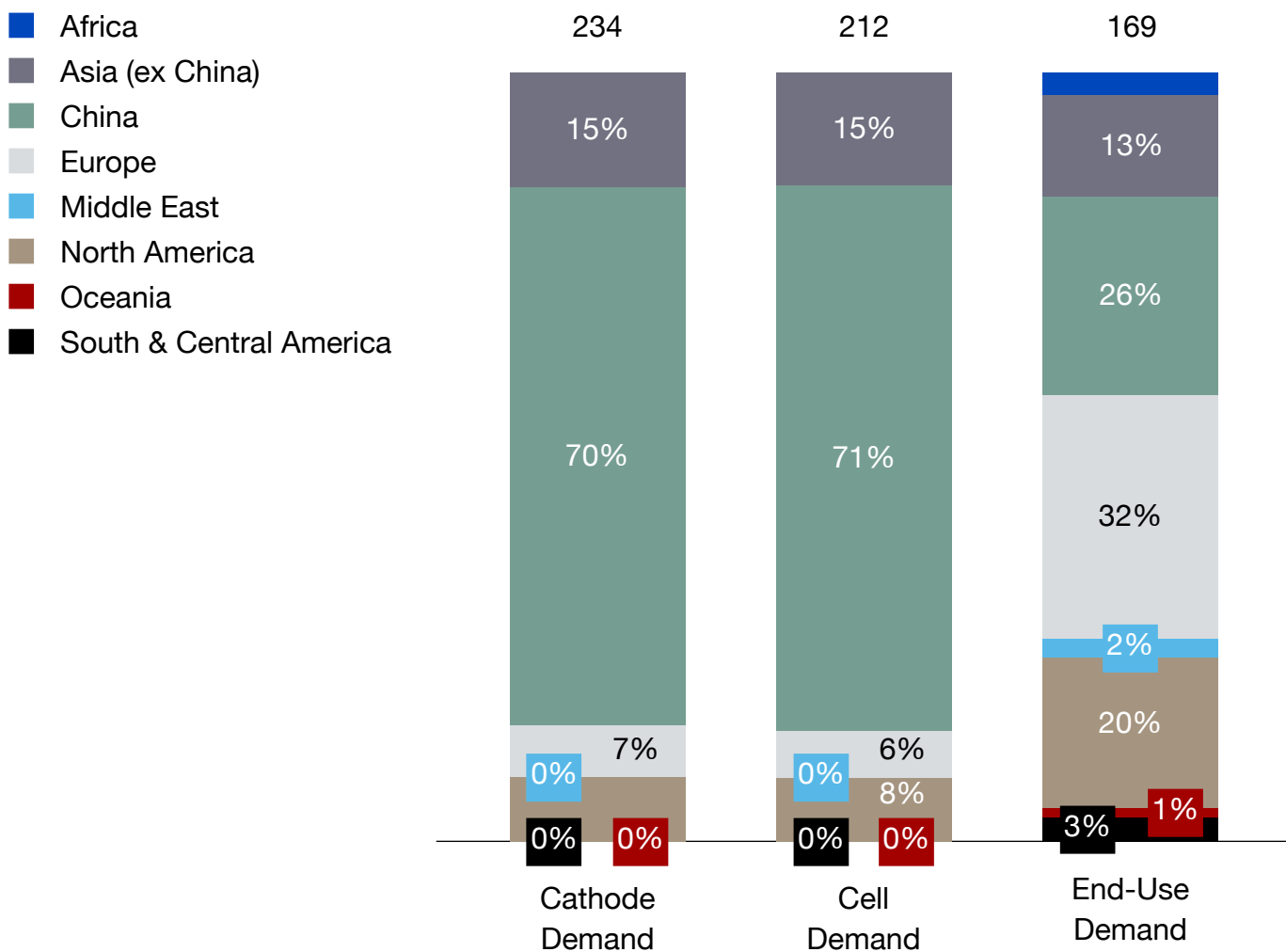
For EVs sold in 2025, the market share of ternary cathodes (NCM/NCA) fell by 8 percentage points in 2025, with a combined market share of 44%. This outcome came off the back of continued LFP growth share (and overall market growth) in China, as well as weak EV sales in more NCM-dominant western markets.



However, NCM/NCA had a stronger performance at a gigafactory output level, where 48% of batteries produced for EV use (MWh basis) had these chemistries – up 2 percentage points from 2024.

There are also differences on a regional level. Cobalt battery demand from end-use applications is largely driven by EV sales in North America and Europe, regions which accounted for 51% of end-use cobalt demand from batteries this year. This is due to the higher proportion of EVs with cobalt containing batteries, while in China LFP batteries dominate the EV market. But despite this end-use demand being driven by ex-China markets, a majority of global cobalt requirements for cell and cathode manufacturing came from China in 2025. This market share is expected to decline as cathode and cell capacity expands in other regions; however, China will remain the largest consumer of cobalt in the battery supply chain.

Figure 19: Cobalt demand through the battery supply chain, 2025, Unit: kt Co

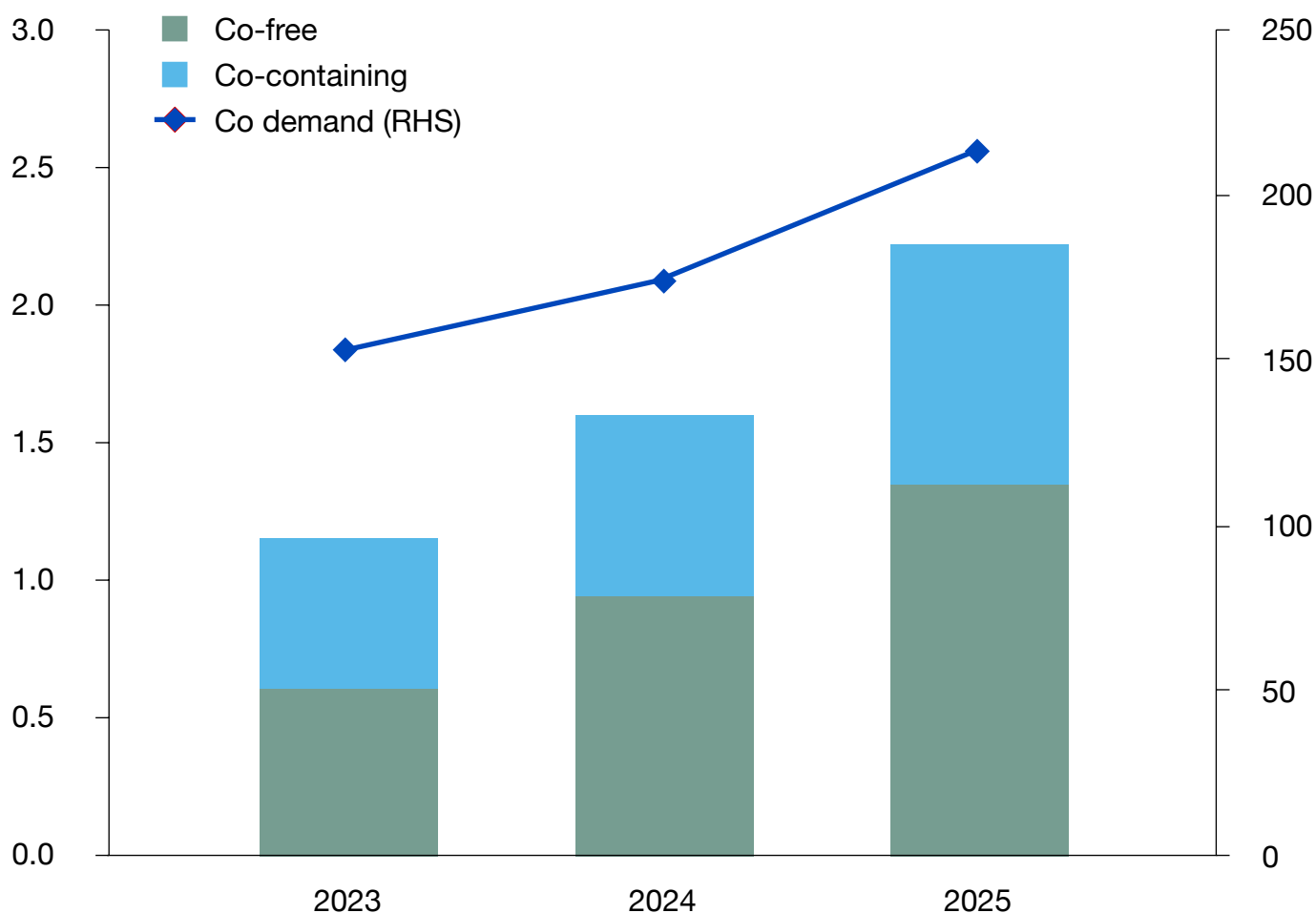


Data: Benchmark Mineral Intelligence – Cobalt Forecast.



By the end of 2025, EV cell (lithium and sodium ion) nameplate capacity reached over 3.4TWh, compared to supply of 1.5TWh, indicating a global average utilisation rate of less than 50%. Supply (considering ramp-up periods and utilisation rates) shows a more realistic picture, however the current oversupply is expected to persist.

Figure 20. Cobalt-containing and cobalt-free lithium-ion battery production and associated cobalt demand, Unit: TWh (LHS), kt Co (RHS)



Data: Benchmark Mineral Intelligence – Cobalt Forecast.

Total EV demand for cobalt rose off the back of this increase in gigafactory output to 113kt in 2025, up from 91kt in 2024. China is the largest immediate demand sector for both cathode and gigafactory demand for cobalt, with its factories producing NCM and LCO batteries of which many are ultimately used in overseas end-use applications. In contrast, European and North American demand is substantially lower than for end use, indicating those regions’ deep reliance on Chinese-controlled value chains, and catalysing some of the key policy movement seen in 2025 (see Section 6 for more details).



Overall, cobalt-containing battery production rose by 32% y-o-y in 2025 to 868GWh. While this MWh growth does not correlate directly with cobalt demand growth in tonnage terms (as different chemistries have differing cobalt intensities), it did directly contribute to **battery demand for cobalt growing by 22% in 2025 to 212kt**.

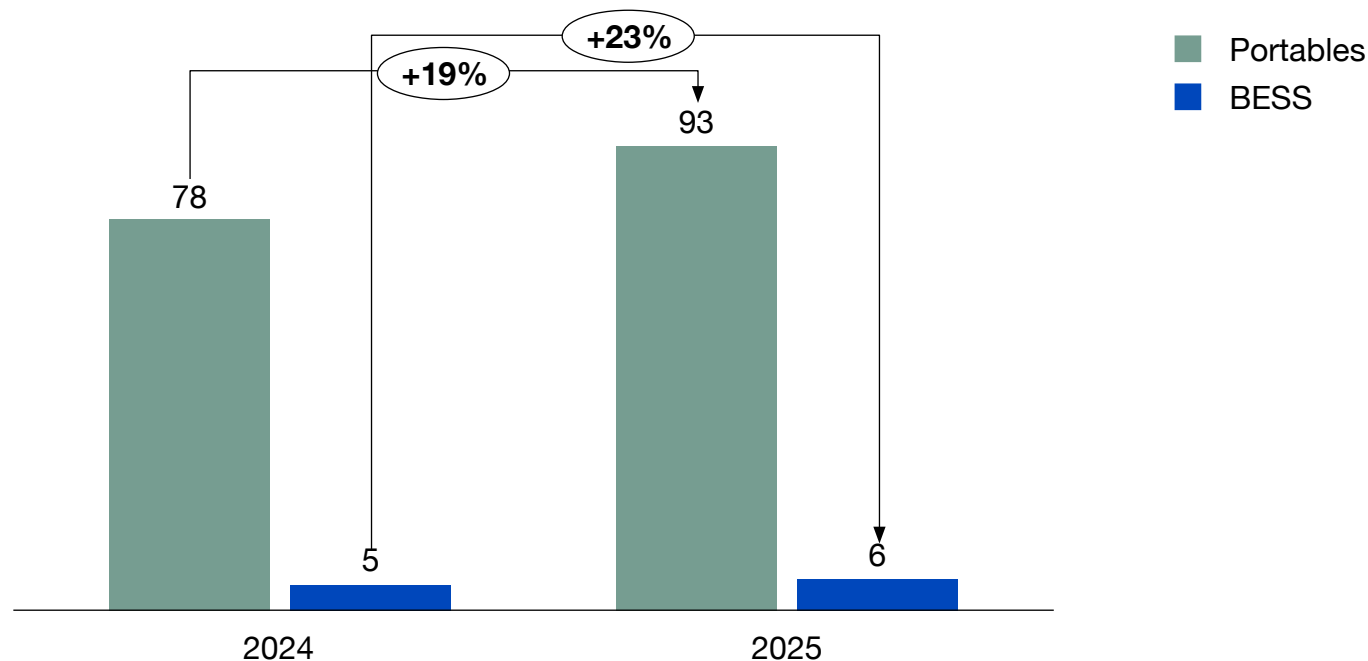
Looking ahead to 2026, growing gigafactory output is set to push cobalt demand to even greater heights, even as LFP continues to dominate in end-use (see Section 7 for more details).

PORTABLE AND STORAGE DEMAND RISES OFF NEW GIGA-FACTORIES

Portable demand for cobalt rose to 93kt in 2025 – 1.7kt higher than EV demand in 2024 – and accounted for 34% of total battery cobalt demand. The rise came as facilities producing batteries for portable applications increased their output.

Battery energy stationary storage (BESS) demand – the smallest battery demand segment – contributed 6.2kt in 2025, up from 5.1kt in 2024. The segment has strong upside potential in MWh terms, however, as it is primarily focused on cobalt-free chemistries, its potential impact on cobalt demand remains limited.

Figure 21: Cobalt demand from portable and BESS applications, 2025, Unit: kt Co



Data: Benchmark Mineral Intelligence. – Cobalt Forecast.



4.4 DEFENCE DEMAND FOR COBALT GROWS AMID GLOBAL GEOPOLITICAL TENSIONS

Defence applications represent an important demand segment – although comparatively small, it has strategic implications. Total cobalt demand from defence applications is estimated at 6.8kt in 2025, of which 32% comes from superalloys, 52% from batteries used in defence applications, and 16% from magnet usage.

Table 2. Cobalt use in defence applications

Application	Component	Segment	Material
Aircrafts	Combustor	Superalloys	Ni/Co superalloy
	Sensor/Avionics	Magnets	SmCo
Missiles	Propulsion systems	Magnets	SmCo
	Control actuator	Magnets	SmCo
Aircraft Carriers	Integrated full electronic propulsion	Superalloys	Ni/Co superalloy
	Propulsion with outboard electric motors	Magnets	SmCo
Corvettes/Frigates /Submarines	Electric motors	Magnets	SmCo
Drones	Batteries	Batteries	LCO

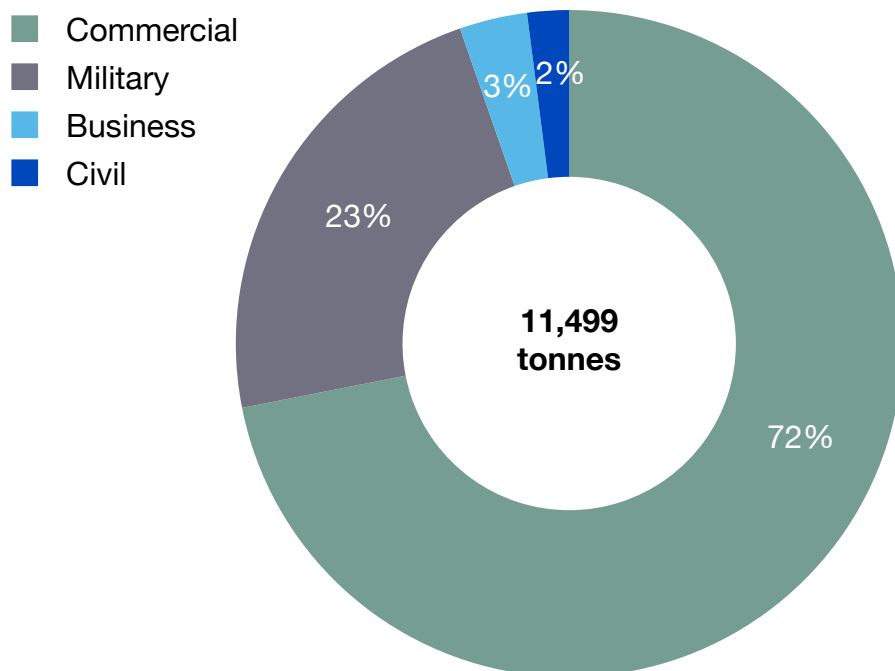
Data: Benchmark Mineral Intelligence.



SUPERALLOY DEFENCE DEMAND

The largest non-battery application for cobalt is superalloys, which are used primarily in commercial and defence aerospace applications. Superalloy demand increased to 20kt in 2025, up 7.5% from 2024, supported by increased defence spending.

Figure 22. Share of cobalt demand in aviation in 2025



Data: Benchmark Mineral Intelligence.

One of the largest demand sectors for superalloys is their use in both commercial and military aircraft, with commercial applications accounting for 72% of cobalt used in aviation. Military jet demand for cobalt was estimated at 2.6kt in 2025. The bulk of superalloys used in military aviation is due to necessary maintenance, repair, and overhaul (MRO), as opposed to newly manufactured aircrafts, with MRO accounting for 86% of cobalt demand in military turbojets and turbofans.

Supply for this sector is much more limited than the wider cobalt market, with only a few select suppliers producing eligible material for the superalloy sector. Benchmark assesses the following suppliers and assets as part of its alloy grade prices:

- Glencore's Nikkelverk
- Sumitomo Metal Mining's Niihama
- Vale's Canadian Port Colbourn and Long Harbour alloy grade rounds
- Jinchuan's cut cathode production



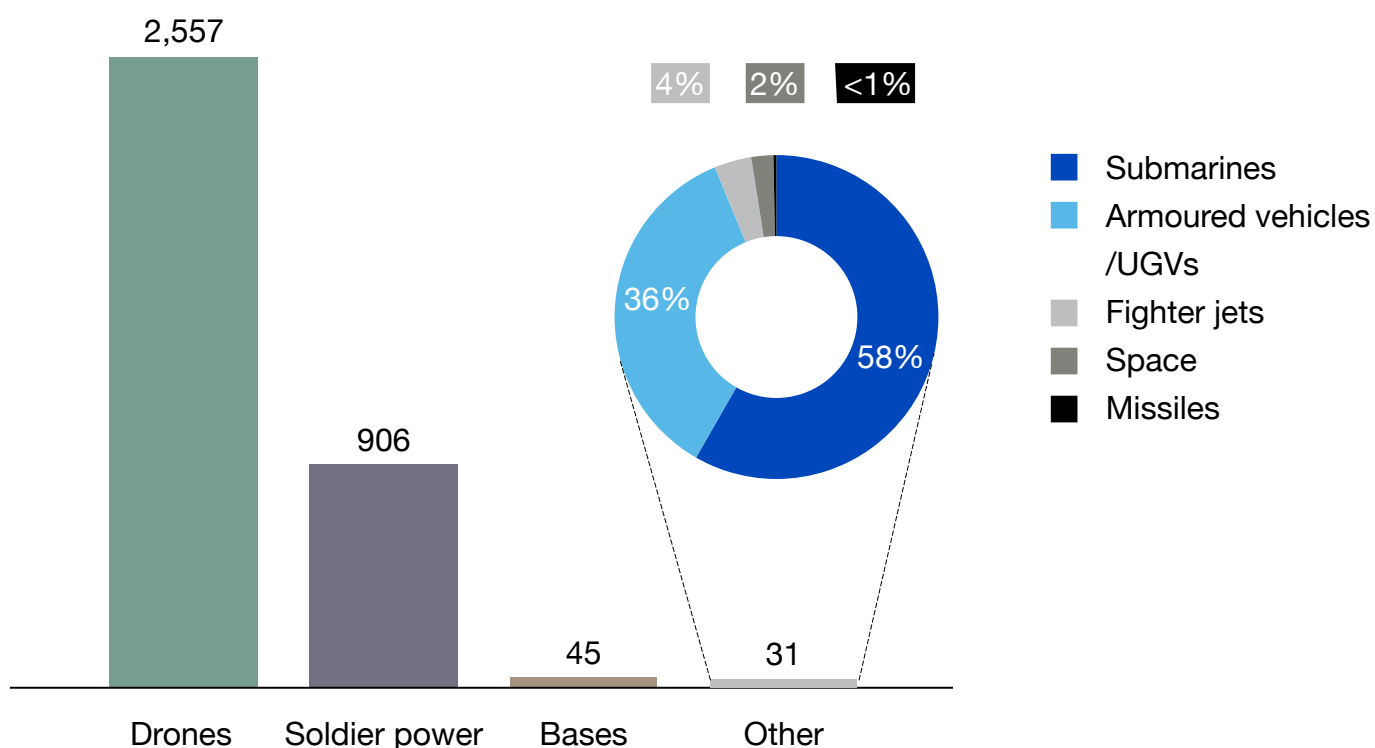
Production from these key suppliers is estimated at only 15kt in 2025. This limited source of suitable metal from relatively few suppliers, as well as the strategic nature of superalloys for defence applications gives military applications an outsized presence within the cobalt market.

Beyond aviation platforms themselves, nickel- and cobalt-based superalloys are also used in integrated full electric propulsion systems for naval vessels such as aircraft carriers.

BATTERY DEFENCE DEMAND

Battery demand from defence applications continues to grow as militaries increasingly update technology amid increasing geopolitical tensions.

Figure 23: Cobalt demand in defence battery applications in 2025, Unit: t Co



Data: Benchmark Mineral Intelligence.

Drones represent the largest cobalt demand of the battery defence applications discussed here. In 2025, cobalt demand from this segment was 2.6kt. Of this, a majority (56%, or 1.4kt Co) came from Europe, with the key driver being the Russia-Ukraine war. China accounted for 42% of demand (1.1kt), with comparatively little demand elsewhere (the US, the third-largest segment, accounted for less than 1%).

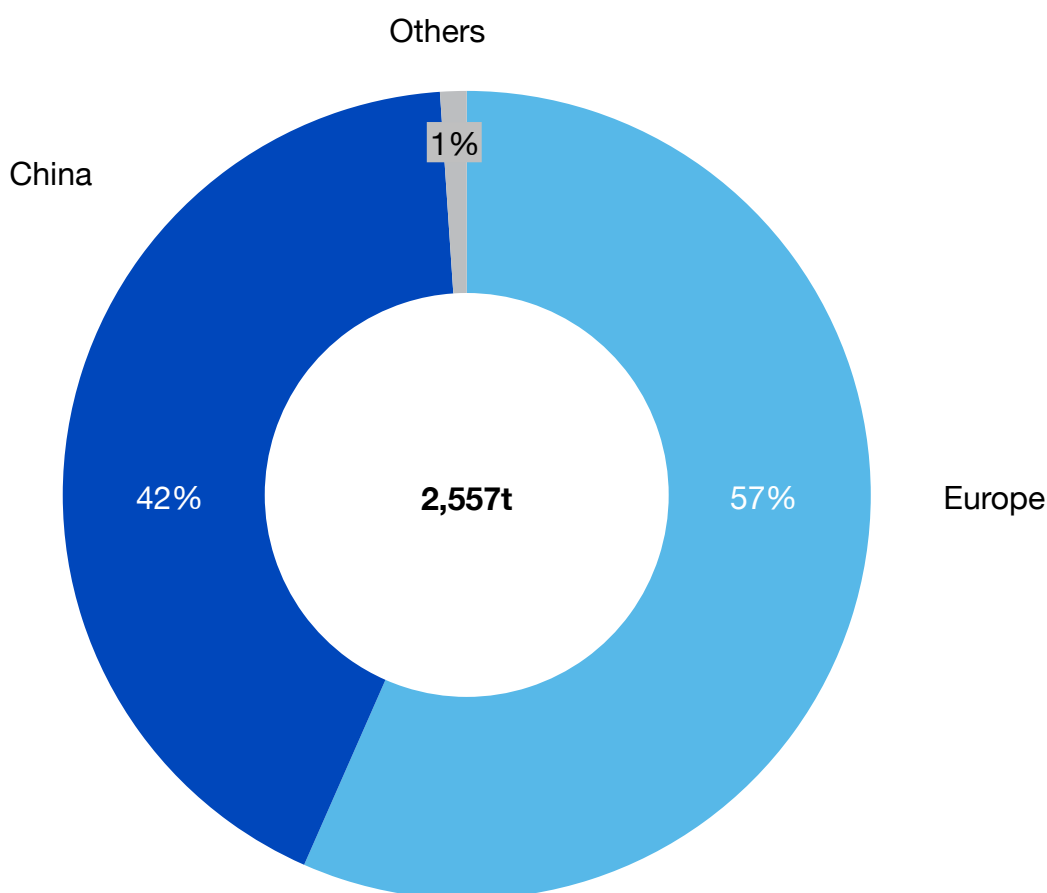


Battery demand from military drones has surged since the Russia-Ukraine conflict began, driven mainly by first-person view (FPV) unmanned aerial vehicles (UAVs). Before the conflict, lithium-ion battery use in UAVs was limited, as most larger models relied on internal combustion engines with only small auxiliary packs. Some are now shifting gradually to lithium ion.

Both Russia and Ukraine have rapidly expanded FPV UAV production, with Russia targeting 2 million units in 2025 and Ukraine reportedly reaching capacity for 4.5 million units per year. Many of these designs evolved from modified commercial drones, and China's commercial drone industry is also reported to be a supply source.

Outside the conflict, FPV UAV production remains low, though rising tensions in the Middle East have prompted some states to seek Ukrainian UAV technologies. Middle East cobalt demand for drone batteries was small in 2025 (4t), although the continuing conflict in the region may lead to this increasing in 2026.

Figure 24: Cobalt demand in drone batteries by region, 2025, Unit: t Co



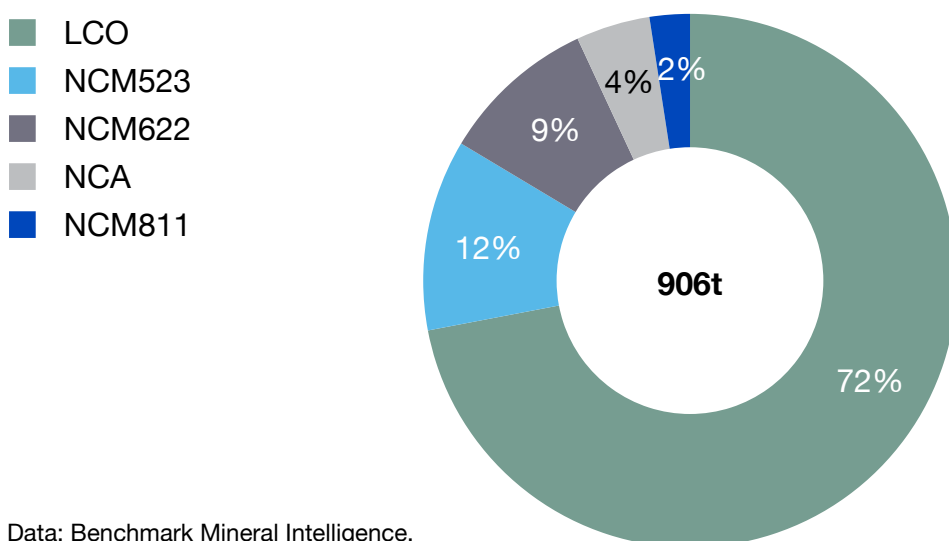
Data: Benchmark Mineral Intelligence.



The second-largest battery defence demand application for cobalt is **soldier power**, which is heavily weighted towards high-cobalt LCO chemistries, leading it to contribute 906t to cobalt demand in 2025, the second-largest segment after drones.

The soldier power market is a growing niche within military energy storage, driven by the electrification and digitalisation of infantry forces. Modern troops depend on numerous battery-powered devices, including radios, GPS units, night vision goggles, weapon sights, lasers, and sensors, increasing overall energy needs as forces become more connected. High energy density and safety make cobalt-based lithium-ion chemistries particularly relevant. While individual batteries are small in capacity, global troop numbers and regular replacement cycles sustain demand.

Figure 25: Cobalt demand in soldier power by battery type, 2025, Unit: t Co



Other defence battery demand beyond drones and soldier systems remains small but diverse, spanning bases, vehicles, submarines, aircraft, missiles, and space assets. Military bases are increasingly deploying lithium-ion Battery Energy Storage Systems (BESS) for backup power, forward operating bases (FOBs), and microgrid support. While lead-acid still dominates, lithium-ion is growing due to longer life, reliability, and cost benefits, supported by solar-plus-storage systems for improved energy resilience.

Base power contributed 44t cobalt in 2025. Submarines, fighter jets, and unmanned or hybrid ground vehicles together consumed 30t Co in 2025, led by submarine use. Missiles remain reliant on single-use thermal batteries, contributing only 95kg Co in 2025, while space systems use < 3 MWh of small lithium-ion batteries (700 kg Co). Across these niche applications, lithium-ion adoption is expanding gradually alongside ongoing modernisation efforts.



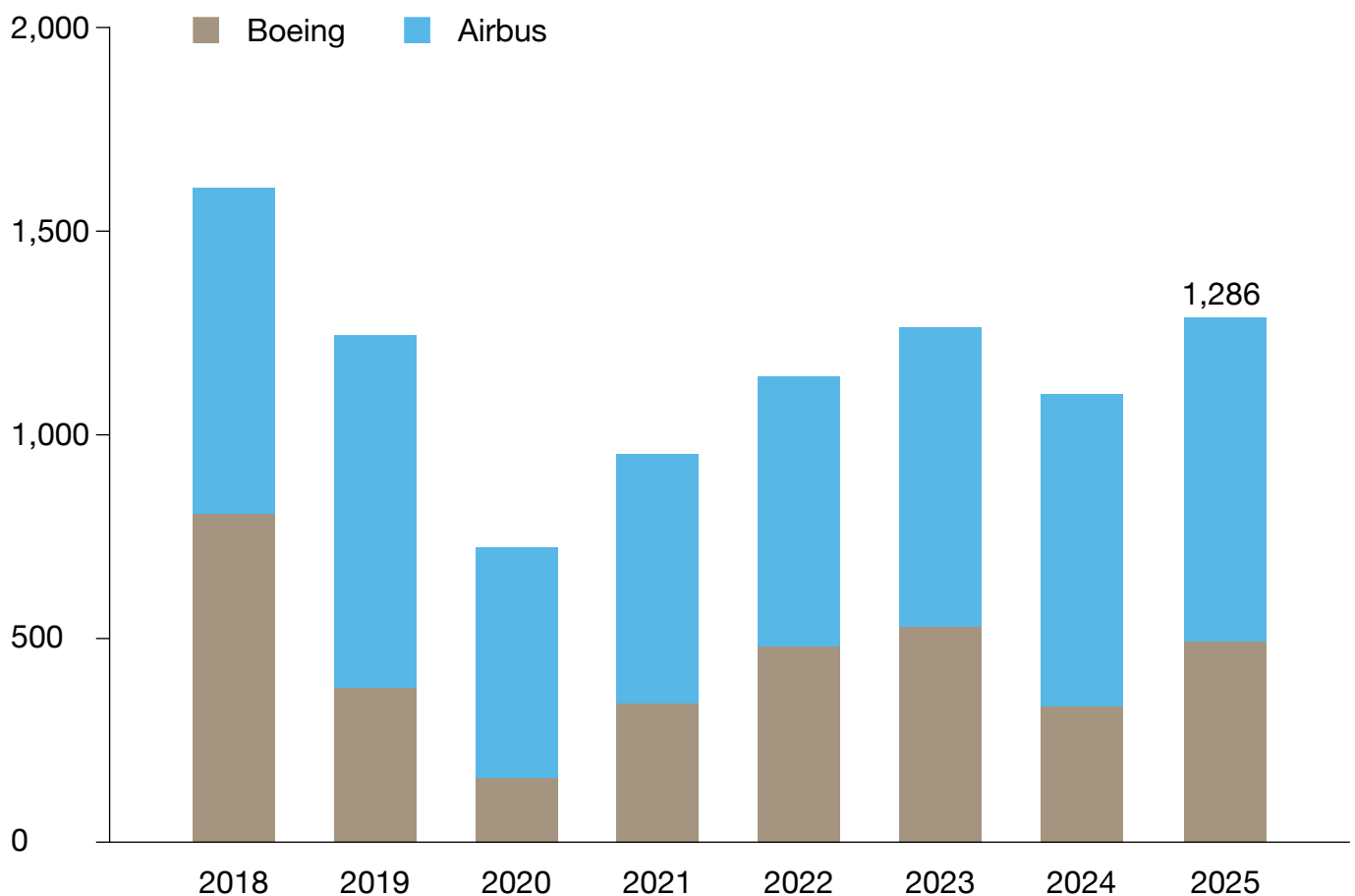
DEFENCE MAGNET DEMAND FOR COBALT

Cobalt also finds usage in some rare earth permanent magnets (REPMs) – particularly samarium-cobalt (SmCo) magnets. These magnets find uses in military applications – including in aircraft sensors and avionics, missile propulsion systems and control actuators, and electric motors in certain military vessel and vehicle applications. Cobalt demand in these applications is estimated at just over 1kt in 2025.

4.5 TOTAL INDUSTRIAL DEMAND FOR COBALT CONTINUES TO GROW

Total industrial demand for cobalt grew from 54kt in 2024 to 56kt in 2025, an increase of around 4%. Stronger growth in the superalloys sector continued to underpin demand, while gains in other industrial end-uses remained comparatively modest.

Figure 26: Boeing and Airbus commercial deliveries, Unit: number of aircraft



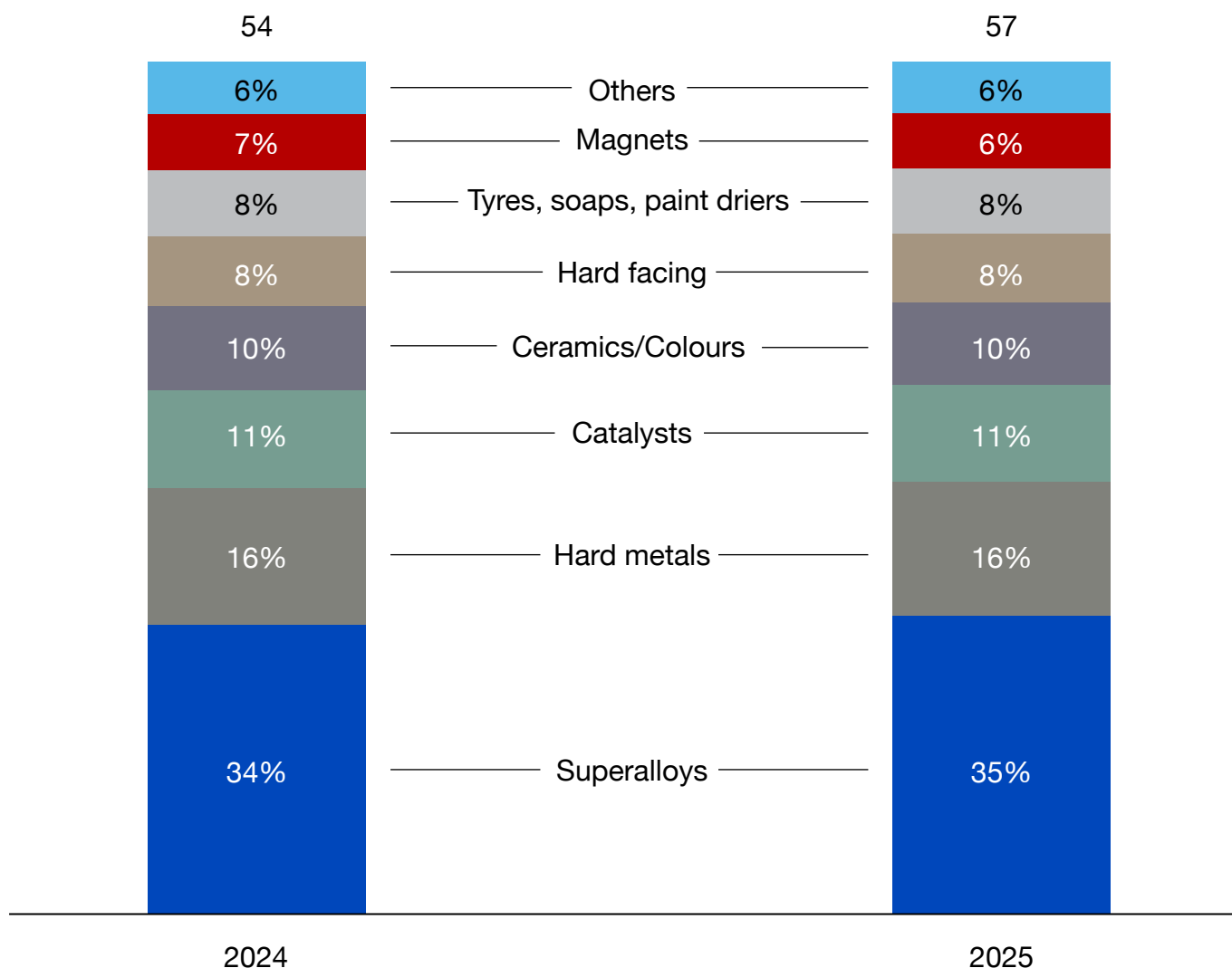
Data: Benchmark Mineral Intelligence – Cobalt Forecast.



Both Boeing and Airbus, in their respective long-term market outlooks, continue to anticipate global commercial aircraft deliveries of more than 40,000 units over a 20-year horizon. Commercial aircraft deliveries from Boeing and Airbus recovered in 2025 from the weaker levels seen in 2024. In 2024, combined deliveries were just under 1,300 aircraft, with the decline from 2023 driven primarily by Boeing, while Airbus deliveries rose by 4% y-o-y to 766 units. In 2025, Airbus deliveries increased further to 793 aircraft, while Boeing also improved on its 2024 performance, supported by a stronger delivery run-rate early in the year.

Hard metals recorded solid growth in 2025, while ceramics, colours, and magnets also posted steady increases.

Figure 27: Cobalt demand in industrial applications, 2024-25, Unit: kt Co



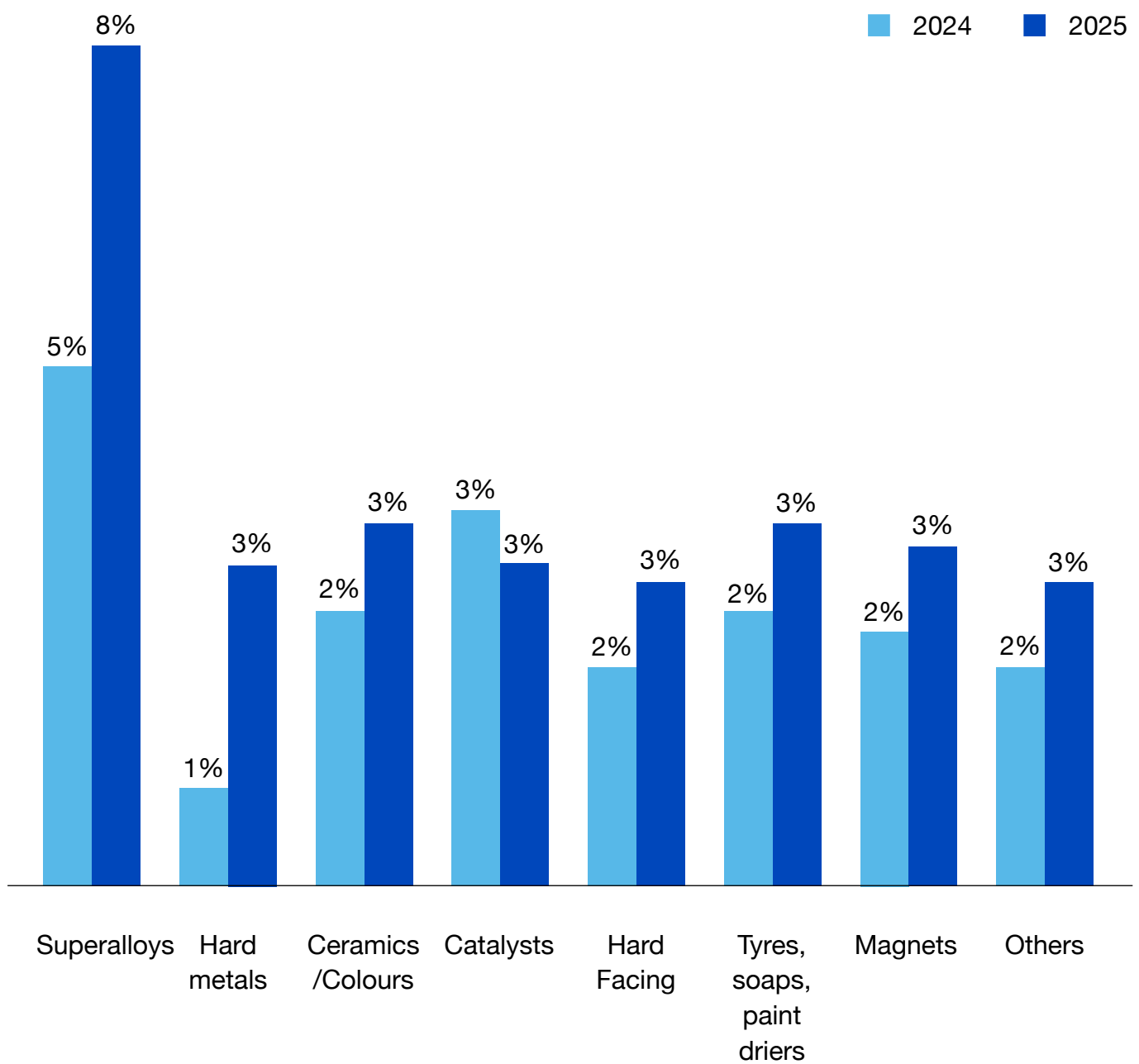
Note: superalloy demand is inclusive of defence applications.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.



Although industrial applications of cobalt account for a smaller share of total demand than batteries – and offer less dramatic growth potential – they remain an important and, in many cases, strategic segment of demand. Their relatively steady growth can provide reliable support for certain refined product types, such as rounds used in superalloy applications. While battery demand is expanding more quickly, it can also be more volatile, particularly in response to policy shifts and changes in the electric vehicle market. Many industrial applications, though smaller in scale, are therefore on a firmer footing.

Figure 28: Cobalt demand growth from industrial applications, 2024-25, Unit: %



Data: Benchmark Mineral Intelligence – Cobalt Forecast.



5. PRICES RALLY FOLLOWING DRC EXPORT BAN

- **Cobalt prices surged across all products in 2025 due to DRC export restrictions.**
- **Hydroxide prices rose by more than 300%, with strong gains also seen in sulphate and metal markets.**
- **The market shifted from apparent oversupply to effective deficit due to restricted exports.**
- **Pricing dynamics became increasingly driven by policy rather than underlying demand.**
- **Greater volatility emerged as stockpiles tightened and procurement uncertainty increased.**

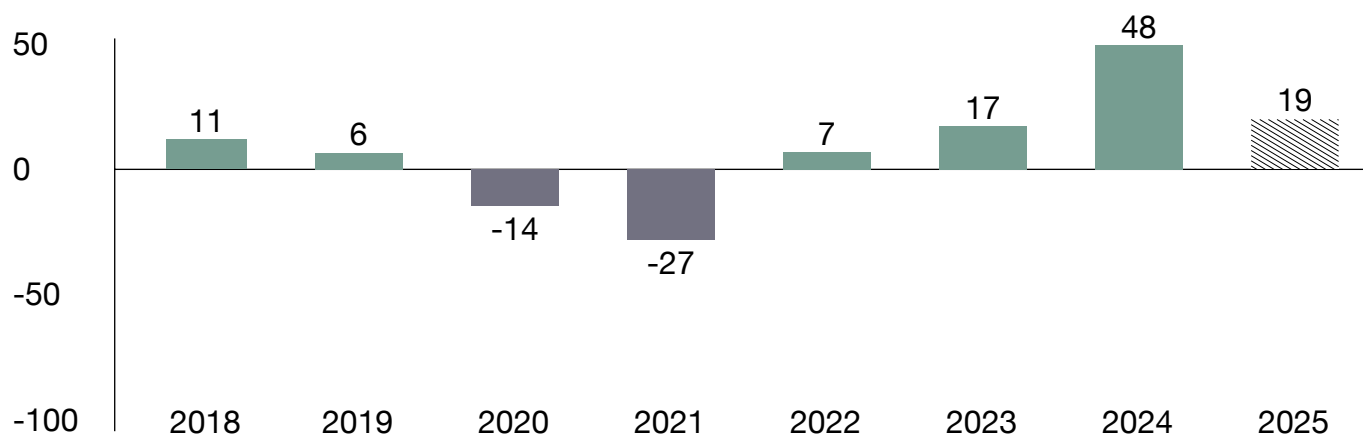


5.1 MARKET BALANCE

In 2025, the cobalt market remained in structural oversupply based on mine supply, with the market balance at +19kt – equivalent to 7% of demand. By comparison, the surplus in 2024 was 19% of demand that year, at +48kt.

However, given that much of the mined material in 2025 was inaccessible to the market due to export restrictions by the DRC government, pricing dynamics were largely disconnected from this oversupply, and the effective ex-DRC balance was in deficit.

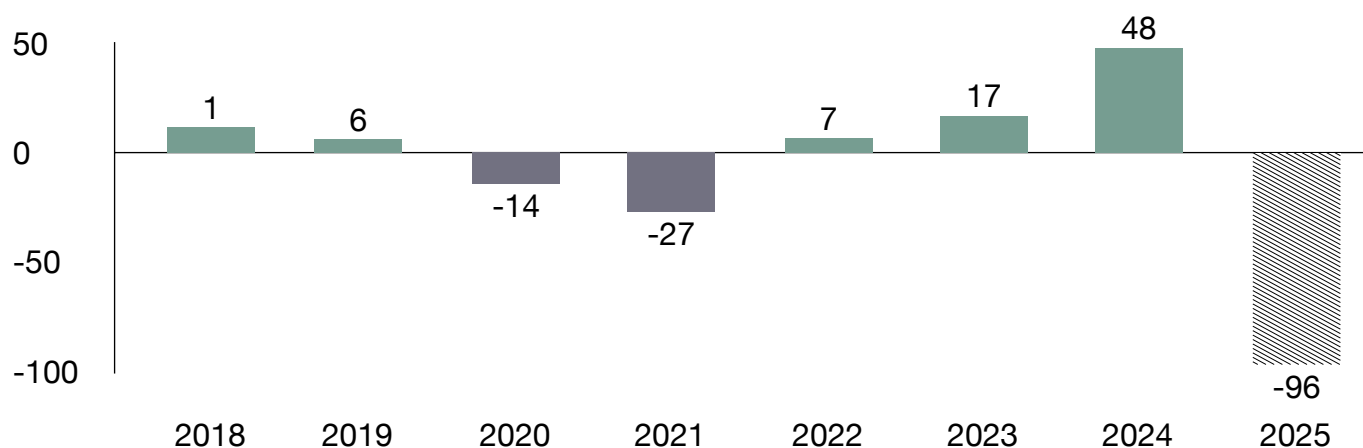
Figure 29: Cobalt market balance, kt Co



Note: supply basis includes total DRC mine supply.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.

Figure 30. Cobalt market balance, ex-DRC, Unit: kt Co



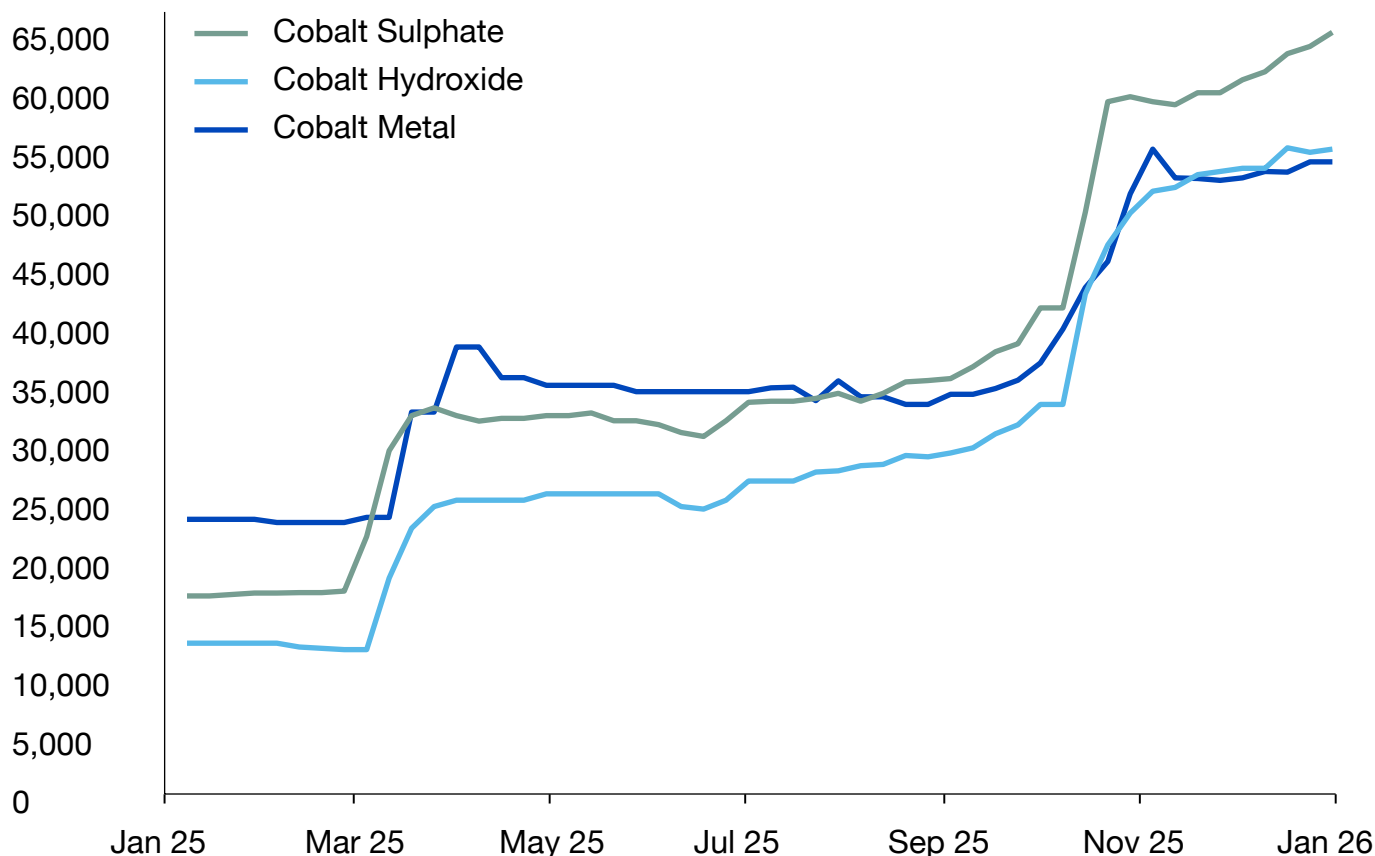
Note: supply basis includes DRC exports and ex-DRC production.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.



As miners were unable to export, cobalt stockpiles in the DRC have been built up, while ex-DRC stockpiles were drawn down as the market could not access new supplies of cobalt hydroxide from the DRC. Government stockpiling, most notably from China, was estimated to be lower in 2025 compared to 2024 – as the low prices in 2024 provided an opportunity for bodies like the Chinese National Development and Reform Commission (NDRC) to purchase large volumes of cobalt at a reduced price.

Figure 31. Cobalt prices, 2025, Unit: \$/t cobalt contained



Data: Benchmark Mineral Intelligence – Cobalt Price Assessment



5.2 COBALT HYDROXIDE

Benchmark's assessed⁸ cobalt hydroxide (CIF Asia) prices increased by 328% throughout 2025, rising from \$5.90/lb at the beginning of the year to \$25.25/lb by year-end. Unlike in 2024, when prices were pressured by persistent oversupply, the 2025 market was defined primarily by supply-side disruption stemming from policy intervention in the DRC. The year began with prices flat at \$5.90/lb for several weeks, reflecting continued structural oversupply, subdued EV demand growth, and the ongoing adoption of cobalt-lean battery chemistries. Minor weakness through the early part of the year saw prices soften to \$5.65/lb, as bearish sentiment remained prevalent and downstream inventories, particularly in China, were sufficient to meet near-term demand.

Prices rose sharply in late February and March following the DRC's announcement of a four-month cobalt export ban. This triggered an immediate repricing across the cobalt supply chain, as market participants moved to secure feedstock amid growing uncertainty over future availability. Hydroxide prices climbed rapidly from below \$6.00/lb to \$11.50/lb, as offers withdrew and sentiment shifted decisively bullish. Despite ample Chinese inventories initially cushioning the physical market, the scale and suddenness of the policy intervention established a materially higher trading range.

In Q2, hydroxide prices remained elevated but relatively stable, holding largely between \$11.50/lb and \$11.75/lb through much of the quarter. The initial panic eased as the market adjusted to the new conditions, although support remained firm given the lack of clarity over the duration of restrictions. When the DRC extended the export ban in June, prices began moving higher once again, rising gradually to the low-\$12.00/lb range. This second phase of strength was more measured than the initial rally but confirmed that the market floor had shifted upward.

Q3 saw a continued increase in hydroxide prices, supported by tightening stockpiles and mounting concern over medium-term feedstock availability. Prices rose steadily through the quarter from \$12.25/lb to \$15.25/lb, even as underlying demand remained relatively flat. By this stage, fears of oversupply had largely given way to concerns over a genuine shortage, with inventories reportedly falling to only a few weeks of coverage in some parts of the supply chain.

In late September, the DRC replaced the export ban with a quota system extending to 2027, formalising state control over cobalt exports and prompting a further repricing of the market. This led directly into the strongest rally of the year in Q4, when hydroxide prices surged from \$15.25/lb to a peak of \$25.30/lb. Export disruption under the quota system, combined with restocking by Chinese refiners returning from Golden Week and increased speculative activity, drove sharp

⁸ All cobalt prices in Section 5 are from Benchmark's Weekly Cobalt Price Assessment



gains through October and November. Although prices stabilised somewhat towards year-end, hydroxide finished 2025 at record highs, with gains driven almost entirely by regulatory supply constraints rather than any substantial improvement in demand.

The introduction of an export quota system by the DRC represents a structural shift in the cobalt market, rather than a continuation of the temporary supply disruption seen under the earlier export ban. The policy does not simply restrict volumes; it fundamentally alters the mechanism through which supply reaches the market. By capping exports while allowing production to continue, the state has effectively assumed control over the timing and availability of cobalt units entering global trade. As a result, the market is transitioning away from a model driven by continuous physical flows and towards one shaped by discretionary release decisions.

This shift has important implications for market balance. Prior to intervention, the cobalt market had been characterised by persistent surplus conditions, with production consistently exceeding demand. The quota system has inverted this dynamic, creating an apparent deficit not through a meaningful increase in consumption but through the administrative restriction of exports. The resulting tightness in the market is not a signal of improving end use demand or tightening cost curves, but rather a function of policy induced scarcity. As such, conventional price responses to demand signals are weakened, and the relationship between price and underlying fundamentals becomes less direct.

Price formation under this framework becomes increasingly mediated by policy. With export volumes set or adjusted by the state, the marginal unit is no longer determined by the next tonne produced, but by the next tonne released into the export market. This introduces an implicit policy reaction function into pricing dynamics. In periods of price weakness, there is scope for tighter export control or delayed shipments to support the market. Conversely, periods of excessive price strength may incentivise incremental releases or quota adjustments to stabilise conditions. The result is a market that begins to resemble a managed commodity system, where pricing outcomes are influenced as much by strategic decision making as by supply and demand fundamentals.

At the same time, the quota system is contributing to the accumulation of material within the DRC. Production that exceeds export allowances is effectively redirected into domestic inventories, creating a growing stockpile that sits outside the visible global market. This introduces a latent source of supply that does not contribute to day-to-day price formation but retains the potential to re-enter the market under different policy conditions and drastically shift the pricing dynamics yet again. The presence of this inventory overhang creates an asymmetry in market risks. In the near term, restricted exports support higher prices and tighter conditions. Over the medium term, however, the existence of significant state-controlled inventories raises the possi-



bility of sudden supply releases, particularly if policy objectives shift or fiscal pressures increase.

Downstream participants, particularly refiners dependent on Congolese feedstock, are likely to experience greater procurement uncertainty as a result of these changes. Shipment timing becomes less predictable, and availability is increasingly tied to administrative processes rather than purely commercial considerations. This encourages more reactive purchasing behaviour, including concentrated restocking periods and greater reliance on inventory drawdowns or alternative feedstocks where available. Such dynamics have the potential to amplify price movements during periods of tightness, as buying activity becomes clustered rather than evenly distributed over time.

The introduction of quotas signals the emergence of cobalt as a managed strategic material. With a dominant share of global supply concentrated in a single jurisdiction and export flows subject to state control, pricing is increasingly shaped by policy considerations alongside commercial factors. In this context, the recent price strength in cobalt hydroxide should be understood not simply as a response to tighter market conditions, but as the outcome of a deeper transition from market clearing supply dynamics to a system in which availability, and therefore price, is determined by the controlled release of material into the global market.

5.3 COBALT METAL

Benchmark cobalt metal prices (EXW Europe) increased by 130% throughout 2025, rising from \$10.75/lb at the beginning of the year to \$24.75/lb by year-end. While the year opened in a similarly weak environment to 2024, characterised by oversupply, muted battery-sector demand, and bearish sentiment across the cobalt complex, prices shifted sharply higher following supply-side intervention in the DRC. Early in the year, cobalt metal prices remained relatively subdued, fluctuating narrowly around the low-\$10.00/lb range as ample cobalt units and weak downstream confidence limited support.

This changed abruptly in late February, when the DRC imposed an initial four-month export ban on cobalt. Although cobalt metal was not the most immediate expression of the supply shock, the tightening outlook for upstream material quickly filtered through to refined products. Prices rallied strongly in response, rising from around \$10.83/lb to \$17.50/lb over the initial phase of the disruption. This reflected both direct concern over future feedstock availability and a broad improvement in sentiment across the wider cobalt market.

In Q2, cobalt metal prices traded at elevated but relatively volatile levels. Following the initial rally, prices eased back into the mid-\$15.00/lb range as the market absorbed the first shock and physical tightness had yet to fully materialise. Nevertheless, the extension of the DRC export ban



in June reinforced the view that supply disruption would persist, helping maintain a much higher trading range than had prevailed at the start of the year. The metal market remained sensitive to developments in feedstock availability, with each policy update from the DRC supporting confidence in higher prices.

Q3 saw prices recover further, with cobalt metal rising from the mid-\$15.00/lb range to above \$20.00/lb by the end of the quarter. This increase was driven by mounting concern over the sustainability of inventories, as stockpiles continued to tighten across the supply chain. Although demand conditions did not materially improve, the market increasingly priced cobalt metal on the basis of scarcity rather than consumption fundamentals. The introduction of a quota system in late September added further support by signalling that export controls would remain in place through to 2027.

In Q4, cobalt metal experienced its strongest gains of the year, climbing from \$20.85/lb to above \$25.00/lb in October before stabilising in the low-to-mid \$24.00/lb range through year-end. This rally was driven by disruption associated with the implementation of the DRC quota regime, alongside renewed buying from Chinese refiners returning from Golden Week to depleted inventories. Spot availability tightened significantly, while speculative interest added further upward pressure. Although some consolidation followed, cobalt metal finished 2025 at substantially higher levels, with pricing driven primarily by geopolitical supply risks rather than any marked recovery in real demand.

5.4 COBALT SULPHATE

Cobalt sulphate (EXW China) prices increased by 266% throughout 2025, rising from RMB 25,750/tonne at the beginning of the year to RMB 94,250/tonne by year-end. After falling sharply in 2024 amid weak NCM demand growth and a persistent oversupply of cobalt units, the sulphate market in 2025 was instead shaped by escalating supply disruptions originating upstream in the DRC. The year began with prices flat at RMB 25,750/tonne, reflecting continued weakness in EV demand expectations, comfortable inventories in China, and the ongoing shift towards lower-cobalt battery chemistries.

This subdued market changed rapidly in late February following the DRC's announcement of a four-month export ban. Sulphate prices responded immediately, rising from RMB 26,000/tonne to RMB 49,500/tonne over a short period as participants reassessed the availability of cobalt feedstock for refining. Although Chinese inventories initially provided a degree of insulation from immediate shortage, the market moved quickly to price in the risk of prolonged disruption. This sharp upward move marked a decisive reversal from the oversupplied conditions seen at the



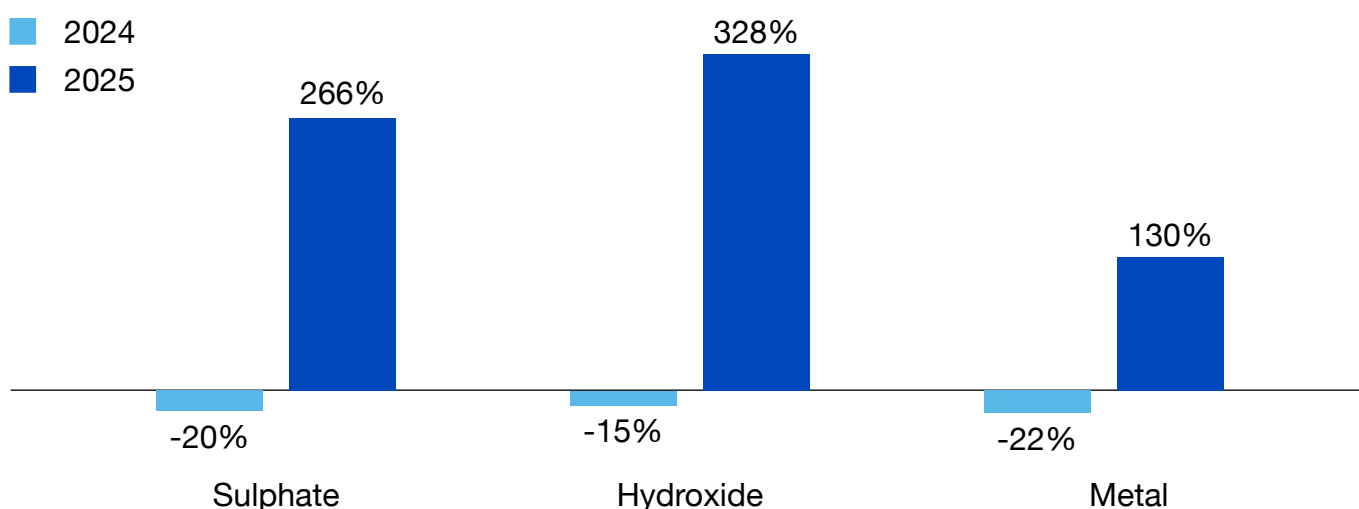
start of the year.

In Q2, cobalt sulphate prices remained elevated but broadly stable, fluctuating mostly in the RMB 47,500–48,500/tonne range. The market paused following the initial shock, with participants monitoring inventory levels and awaiting clarity on the duration of the DRC ban. However, sentiment remained firm, and the extension of the ban in June provided renewed support. Prices began trending upward again towards the end of the quarter, with the market increasingly recognising that the earlier repricing was unlikely to unwind quickly.

Q3 saw further steady gains, as tightening stockpiles and concern over medium-term feedstock access supported higher offers. Sulphate prices rose from RMB 47,500/tonne to RMB 61,000/tonne through the quarter, despite little meaningful change in downstream battery demand. By this stage, the market had largely transitioned from one defined by surplus material to one increasingly concerned about physical availability, particularly as inventories continued to fall.

The strongest move came in Q4, after the DRC replaced its export ban with a quota system extending to 2027. This formalised long-term restrictions on cobalt exports and triggered another major repricing event. Sulphate prices surged from RMB 61,000/tonne to RMB 87,500/tonne in October, before continuing higher to RMB 94,250/tonne by year-end. The move was driven by quota-related export disruption, aggressive restocking by Chinese refiners after Golden Week, and speculative buying in an increasingly illiquid spot market. Although spot activity slowed towards the end of the year, sulphate prices remained near record highs, with 2025 defined not by improving demand, but by the impact of administrative scarcity on the broader cobalt market.

Figure 32. Cobalt price changes y-o-y in 2024 and 2025, Unit: %



Data: Benchmark Mineral Intelligence – Cobalt Price Assessment.



6. GEOPOLITICS AND AN INTERVENTIONIST GLOBAL POLICY ENVIRONMENT ARE SHAPING THE COBALT AND BATTERY SUPPLY CHAINS

- **US–China competition intensified over critical minerals, especially in the African Copperbelt.**
- **The US adopted a more interventionist approach, including stockpiling and strategic investments.**
- **China reinforced its dominance across refining and supply chains under its latest industrial strategy.**
- **The EU prioritised supply security, localisation, and reduced external dependency.**
- **Indonesia continued its downstream strategy while tightening control over domestic output.**



6.1 INTRODUCTION

Geopolitics and industrial policy continued to shape the critical mineral and battery supply chains over the past year, characterised by a more interventionist global policy environment, a growing discussion about the need to derisk critical mineral projects through government intervention to support supply diversification, and stronger downstream and industrialisation ambitions across producing countries, including Indonesia.

Increasing supply security and securing access to cobalt, in particular, remained high on the geopolitical agenda because they sit at the intersection of clean energy deployment, industrial competitiveness and defence resilience. Concerns over critical mineral supply concentration and China's dominance across much of the cobalt supply chain and key parts of the battery value chain also remained central policy drivers.

In the last year, the following geopolitical and policy developments have impacted the cobalt battery and other related supply chains:

- A deepened US involvement in the DRC and an intensification of US-China geopolitical competition over access to mineral assets and trade routes in the African Copperbelt;
- The Trump Administration's clear focus on boosting critical minerals supply security through its "Energy Dominance" policy agenda and the adoption of the One Big Beautiful Bill Act (OBBBA), which hampered downstream cobalt demand;
- The start of China's next industrial development phase with the adoption of the country's 15th Five-Year Plan (2026-2030), centred around technological self-reliance, supply chain security and more qualitative export growth;
- A continuation of the EU's "competitiveness" policy agenda, centred around increasing attempts to increase manufacturing competitiveness, defence and industrial supply security
- A continuation of Indonesia's "downstreaming" and value-add strategy under President Prabowo, but with tighter control over its domestic output.

Against this background, this section examines in more detail the geopolitical and policy developments and their relevance to the cobalt supply chain.



6.2 US-CHINA GEOPOLITICAL COMPETITION OVER ACCESS TO MINERALS IN THE AFRICAN COPPERBELT INCREASES

The African Copperbelt remained central to both the global energy transition and intensifying geopolitical competition, especially between the US and China. US involvement in the region deepened, mainly through its engagement with the DRC and Rwanda, aimed at addressing the conflict in Eastern DRC, facilitating US access to critical mineral assets and challenging China's corporate embeddedness in the Congolese cobalt-copper industry.

One of the key pillars of US engagement remained the Sakania-Lobito Corridor upgrade, which entails upgrading the logistical infrastructure connecting the DRC (and potentially Zambia) via the Angolan rail network to the Port of Lobito. This is framed as a mechanism for diversifying cobalt and other mineral export routes away from China. In December 2025, the US International Development Finance Corporation (DFC) issued a letter of interest indicating it could provide up to \$1 billion in financing for the rehabilitation, operation, and transfer of the Dilolo–Sakania railway line in the DRC.

However, the US engagement moved beyond infrastructure and corridor support and evolved into a broader minerals-for-peace strategy, combining regional diplomacy with additional efforts to secure access to Congolese assets. This included a non-binding memorandum of understanding (MoU) between Orion Critical Minerals Consortium and Glencore to acquire a 40% stake in the MUMI and KCC assets, valuing them at roughly \$9 billion.

The Trump Administration brokered a peace deal between the DRC and Rwanda in June 2025, resulting in the Washington Accords for Peace and Prosperity in December 2025. However, the conflict in eastern DRC had not been fully resolved and fighting persisted with continued M23 activity. This had led to sanctions against the Rwandan Defence Force and some of its officials for supporting the M23, complicating US security cooperation with Rwanda and raising the threat of further sanctions. Nevertheless, the US-DRC Strategic Partnership, part of the Washington Accords, created a Strategic Asset Reserve, including cobalt and copper assets, with a joint steering committee and a right of first offer for US participants on qualifying projects. It also included an agreement to establish a coordinated strategic minerals reserve in the DRC. In line with this, the US DFC committed to backing the Gécamines–Mercuria joint venture through a prospective equity investment to improve the commercialisation of copper, cobalt, and other critical minerals and ease US access to this. As a result, by early 2026, Gécamines, through its trading joint venture with Mercuria, had already reportedly sold and started shipping around 100,000 tonnes of copper committed to the US and had stated a future objective to secure sales rights for up to 40,000 tonnes of cobalt.



Meanwhile, China's role in the wider region remained structurally dominant, especially in asset ownership and trade ties in the Congolese copper-cobalt industry, with 72% of the DRC's mined cobalt supply coming from Chinese-majority-owned assets in 2025. China has also reinforced its broader infrastructure footprint through the modernisation of the Tanzania-Zambia Railway (TAZARA), backed by a roughly \$1.4 billion financing package led by Chinese entities, including CCECC, with implementation preparations advancing in late 2025. This illustrates how competition in the Copperbelt is shaped not only by asset ownership but also by control over trade routes and corridors. At the same time, the sale process around Chemaf, a privately owned copper-cobalt producer in the DRC, centred on the Étoile mine and the Mutoshi project, was illustrative of US efforts to support alternative, non-Chinese ownership: a proposed acquisition by China's state-owned Norinco group did not secure Congolese approval, whereas US firm Virtus Minerals and its operating partner, India's Lloyds Metals, reached a deal to acquire Chemaf, with the support of Orion.

6.3 THE TRUMP ADMINISTRATION CONTINUES TO DOUBLE DOWN ON CRITICAL MINERALS SUPPLY SECURITY

US President Trump's first year in office and his domestic "Energy Dominance" policy agenda have reshaped the critical mineral and battery supply chains. Driven by national security and through a state "capital markets" approach, the Trump Administration continued to place significant emphasis on boosting domestic critical mineral production to maximise control over critical mineral supply chains and reduce US dependence on China. Even though Presidents Xi Jinping and Donald Trump reached a trade truce in late October 2025, delaying some export controls on rare earths, battery technologies and equipment, critical minerals supply chains, including the cobalt supply chain, have been affected by macroeconomic volatility and uncertainty stemming from US-China tit-for-tat tensions.

To boost critical mineral supply security and to derisk and make US critical mineral projects economically viable, the Trump Administration has pursued an interventionist domestic industrial policy. It expanded the US government's role in the critical minerals industry, with federal government departments such as the Department of War (DOW), playing central roles in several government equity deals. A compelling illustration of this is the July 2025 MP Materials–Department of Defense (now Department of War) deal, which combined a \$400 million government equity investment with a 10-year price floor for neodymium-praseodymium, a long-term government-backed magnet offtake commitment, and a \$150 million performance-linked loan for additional processing capacity.



State-backed stockpiling has been another US policy priority, with Project Vault as the clearest example, which was unveiled in February 2026. This roughly \$12 billion public-private initiative, supported by a \$10 billion loan from the US Export-Import (EXIM) Bank, aims to build a strategic reserve and emergency inventories of critical minerals, including cobalt, for US civilian industrial use, next to the US's existing ability to stockpile cobalt through the Defense Logistics Agency (DLA) for defence industrial needs. Project Vault would provide a 60-day buffer against price swings, supply disruptions, and geopolitical coercion, particularly amid US concerns over China's dominance in critical mineral supply chains.

At the same time, the Trump Administration scaled back Biden-era clean energy support through legislative overhauls of the US Inflation Reduction Act (IRA) and the Bipartisan Infrastructure Law (BIL), with the adoption of the One Big Beautiful Bill Act (OBBBA) in July 2025. Notably, the IRA Section 30D clean vehicle tax credit has been removed, which weakened the outlook for EV adoption in the US. Both the IRA Section 45X production tax credit (PTC), relevant for battery and critical mineral production, and the 48E investment tax credit (ITC), relevant for energy storage, have been kept. Still, both tax incentives will gradually be phased out. Also, new stringent so-called 'prohibited foreign entities' (PFE) rules have been added, denying access to 45X PTC and 48E ITC if there is a certain level of Chinese involvement. These regulatory changes have reduced EV battery and, in turn, critical mineral demand in North America in the near- and medium-term. Prior to Trump winning a second term in office, Benchmark had forecast North American cobalt demand would reach nearly 85kt by 2030. Benchmark has since downgraded this demand to just shy of 45kt.

Despite weaker North American downstream demand and even with the Trump administration's push to expand domestic production, the North American mined cobalt supply will still fall short of demand, underscoring continued US dependence on imported and allied cobalt supply. This reinforces the strategic importance of friendshoring, offtake agreements and investment in overseas cobalt assets. In response, the Trump administration pursued a transactional resource diplomacy, concluding several bilateral critical minerals frameworks and cooperation arrangements with countries including Australia, Japan, Saudi Arabia, the DRC, and Ukraine. These arrangements are typically linked to public financing and de-risking tools, with particularly important roles for the DFC and US EXIM Bank.

Notwithstanding the Trump administration's strong preference for bilateral resource diplomacy, the US has also engaged in wider plurilateral efforts on critical minerals, including at the G7 level, to mobilise trusted partners and investment to develop ex-China resilient supply chains. In addition, the US has proposed a preferential trade zone for critical minerals designed to expand ex-China production, encourage investment in projects within this zone, and shield those projects from unfair competition through reference prices, price floors, and potentially adjustable



tariffs. Alongside this, the administration announced the Forum on Resource Geostrategic Engagement (FORGE) in February 2026, to succeed the Minerals Security Partnership (MSP).

Finally, although the Trump administration has pursued its “America First” tariff agenda to support domestic manufacturing, some upstream critical mineral inputs have remained exempt because of the US’s heavy reliance on imports. In particular, cobalt ores and concentrates and cobalt sulphate were excluded from the 10% Section 122 import tariff introduced in February 2026, after the US Supreme Court struck down the administration’s earlier sweeping IEEPA tariffs. Likewise, the Section 232 investigation into processed critical minerals and derivative products did not lead to additional tariffs. Despite the October 2025 US-China trade truce, the Trump administration launched two new Section 301 trade investigations, amongst others against China, covering alleged manufacturing overcapacity and alleged failure to take action on forced labour.

6.4 CHINA’S NEXT DEVELOPMENT PHASE CENTRED AROUND TECHNOLOGICAL SELF-RELIANCE, SUPPLY CHAIN SECURITY AND EXPORT GROWTH

Despite meeting its 2025 5% GDP growth target, China set a lower 2026 GDP growth target of 4.5-5%, broadly in line with international forecasts, including the IMF’s January 2026 World Economic Outlook (WEO) Update, which projects 4.5% growth for China in 2026. The lower target reflects a more difficult external geo-economic environment and some structural domestic constraints. Although China continues to stress the importance of boosting consumption in its policy narrative, China’s economic growth model in practice remains heavily shaped by industrial production, investment, and export competitiveness, especially in higher-value manufacturing. At the same time, the economy continues to face structural weaknesses, including deflationary pressures and intense low-cost price competition and low utilisation rates averaging little over 40% in industries such as EVs and batteries, which have fuelled global concerns about excess capacity and spillovers into global markets. Against this backdrop, Beijing has intensified its campaign against so-called “involution-style competition”, including in EV- and battery-related sectors. to curb destructive low-price competition, encourage industrial upgrading and consolidation, and steer industry towards higher-quality development and exports.

These themes carry directly into China’s 15th Five-Year Plan (2026–2030), whose outline was approved by the National People’s Congress in March 2026. Officially, the plan places domestic demand, higher-quality development, technological self-reliance, and energy and supply chain security at the centre of China’s development phase. For the cobalt and battery supply chains, the most relevant implication is that China is likely to continue deepening its control across



the battery value chain, with continued emphasis on upstream mineral access, stockpiling and building strategic reserves, recycling and circularity, as well as to reduce its dependence on foreign critical inputs, technology, and IP, and incentivise domestic R&D to localise and expand (next-gen) technologies. In line with this, the plan calls for annual growth of roughly 7% in R&D spending across strategic sectors.

6.5 THE EU'S POLICY AGENDA CONTINUES TO BE SHAPED BY COMPETITIVENESS, DEFENCE AND ECONOMIC SECURITY, WITH A CENTRAL ROLE FOR COBALT

The European Union's (EU) policy and geopolitical agenda continued to be shaped by competitiveness, defence and economic and energy security, with critical raw materials (CRMs), including cobalt and batteries, framed as critical inputs. This agenda is driven by the ongoing impact of Russia's war against Ukraine and by broader deterioration in the geopolitical environment, including heightened uncertainty about long-term US security commitments and intensifying geoeconomic competition with China. Against this background, cobalt is recognised as both a critical and strategic raw material (SRM) under the Critical Raw Materials Act (CRMA), given its importance for green and digital transitions, as well as for defence and aerospace.

The EU's industrial policy has increasingly converged with this defence agenda. The ReArm Europe / Readiness 2030 initiative and the subsequent Defence Readiness Roadmap 2030 reinforced the view that defence preparedness depends on industrial capacity, innovation and resilient supply chains for critical inputs. This is particularly relevant for cobalt, which matters not only for batteries used in drones and other military systems, but also for superalloys and aerospace applications. In parallel, negotiations on the European Defence Industry Programme (EDIP) advanced in 2025, including the creation of a defence security-of-supply regime intended to improve the resilience of supply chains for critical defence inputs.

To meet the non-binding 2030 domestic production and supply diversification benchmarks in the CRMA, the EU unveiled 13 strategic projects outside the EU in June 2025, following the 47 strategic projects within the EU unveiled earlier. These 13 projects outside of the EU benefit from EU political recognition, facilitated access to finance, and offtakes. Projects with cobalt relevance include: the Integrated Dumont Nickel Project in Canada, Kobaloni Energy Zambia Ltd in Zambia, and the São Miguel Paulista nickel and cobalt refinery restart project in Brazil. However, cobalt is expected to fall short of the 10% mining, 40% processing, and 25% recycling CRMA benchmarks to meet EU battery demand by 2030, underscoring the need to accelerate supply



diversification through the non-EU strategic projects and strategic partnerships. As for the EU-DRC strategic partnership, tangible progress on investments and public-private cooperation has remained limited since the official endorsement of an implementation roadmap at the end of 2024.

To accelerate the EU's CRM supply localisation and diversification efforts, the EU unveiled its RESourceEU Action Plan in December 2025, which contains the following cobalt-relevant policy implementation priorities:

- **A Critical Raw Materials Centre** will be established in 2026, intending to become a strategic intelligence, finance, project steering, stockpiling and joint purchasing body. In the meantime, a Raw Materials Mechanism has been launched to facilitate demand aggregation, joint raw material purchasing, offtakes and storage solutions, with strategic stockpiling test programs to be launched in several EU member states.
- An **EU CRM financing hub** will be set up to finance and de-risk CRM projects, aiming to mobilise EUR 3 billion within the next 12 months and to deploy various funding mechanisms (loans, guarantees and equity), and potential price support mechanisms.

Finally, in line with its competitiveness agenda and its 2025 Clean Industrial Deal, the EU unveiled the long-awaited Industrial Accelerator Act (IAA), a legislative proposal designed to strengthen European manufacturing competitiveness, localise supply and stimulate demand for European-made batteries and EVs through 'Made in EU' requirements, streamline permitting and apply conditions to major foreign direct investments (FDI). The broader significance of the IAA for the cobalt supply chain lies on the downstream demand side and in the EU's attempt to localise battery and EV manufacturing, reduce strategic dependencies and generate more local value through stringent FDI conditions in Europe's CRM, battery and EV industrial ecosystem.

6.6 INDONESIA CONTINUES ITS DOWNSTREAMING AND VALUE-ADD STRATEGY, BUT WITH TIGHTER CONTROL OVER ITS DOMESTIC OUTPUT

Under President Prabowo, Indonesia has continued its so-called "downstreaming" strategy, developed under the previous President Jokowi and aimed at converting the country's nickel dominance into a broader battery and EV industrial ecosystem, with cobalt produced largely as a by-product of laterite nickel processing. Prabowo's wider economic strategy also treats downstreaming as a pillar of his reported 8% GDP growth ambition. However, the country's policy has



shifted from maximising volume to managing oversupply, supporting prices and pushing more value-added investment. That was reflected in the government's decision to tighten nickel governance, including moving to annual RKAB approvals, setting a lower 2026 nickel ore quota and signalling stricter control over permits and illegal mining. Indonesia has also continued to favour downstream projects linked to the battery chain, with reported royalty adjustments making limonite-fed HPAL projects more attractive for battery applications. Weaker nickel prices, overcapacity and the global shift towards LFP batteries have reduced appetite for nickel-cobalt-intensive chemistries and slowed parts of Indonesia's battery investment pipeline.

Geopolitically, Indonesia continued to position itself as a middle power pursuing a pragmatic balancing strategy rather than aligning exclusively with the US, China, or the EU. China remained the dominant industrial actor and investor in Indonesia's nickel and cobalt value chains, with Chinese-backed investments still deeply embedded in smelting and refining. At the same time, Jakarta has sought to diversify its trade and investment relationships with the US and the EU through a US-Indonesia trade agreement, lowering the US tariff rate on Indonesian exports to 19% and the EU-Indonesia Comprehensive Economic Partnership Agreement (CEPA), with both sides explicitly linking the deal to more secure access to CRMs.



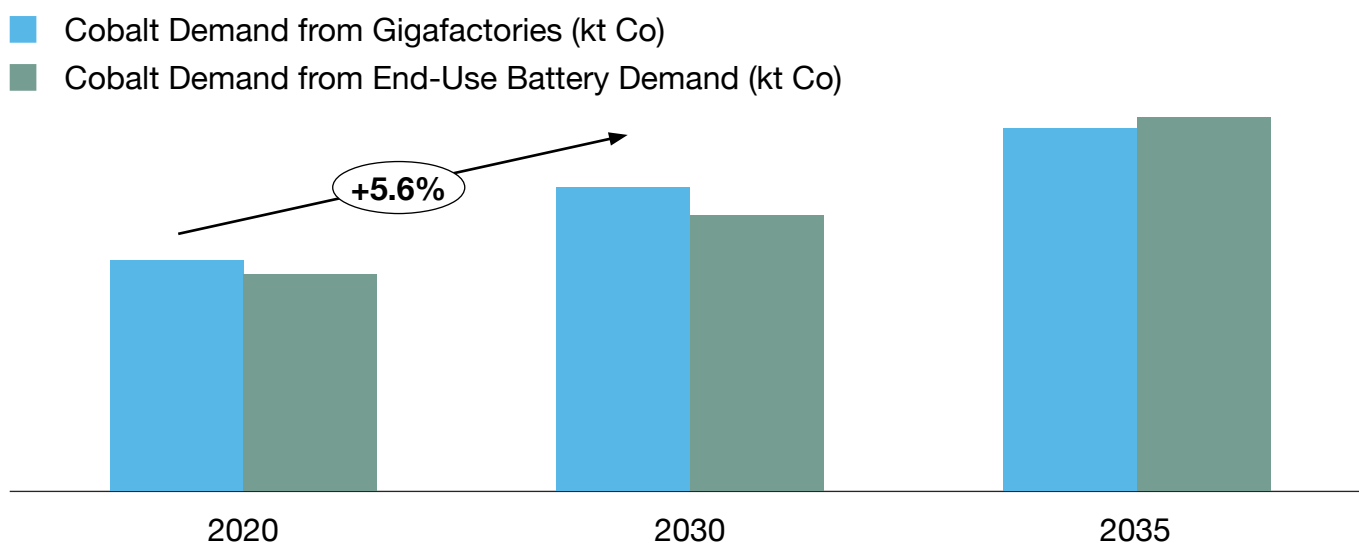
7. KEY CONSIDERATIONS FOR THE COBALT MARKET

The cobalt market in 2025 was dominated by the DRC export ban, highlighting the key role that policy intervention and geopolitical dynamics now play. This evolving supply-side picture coincided with the supportive growth in demand for cobalt from battery, defence and other industrial applications.

Looking ahead, several key themes will impact the cobalt market in 2026 and beyond:

- **Gigafactory overcapacity** will continue to drive demand growth even beyond end-use applications. While end-use demand is driven primarily by North America and Europe, cathode and cell demand for cobalt remains China dominated, with China accounting for 63% and 68% of demand in 2026 accordingly. While cathode and cell capacity is expected to be built outside of China, Chinese gigafactory build up remains the key demand growth driver in the short term, outpacing end-use cobalt demand until 2034.

Figure 33. Cobalt demand from Gigafactories and end-use batteries, Unit: kt Co

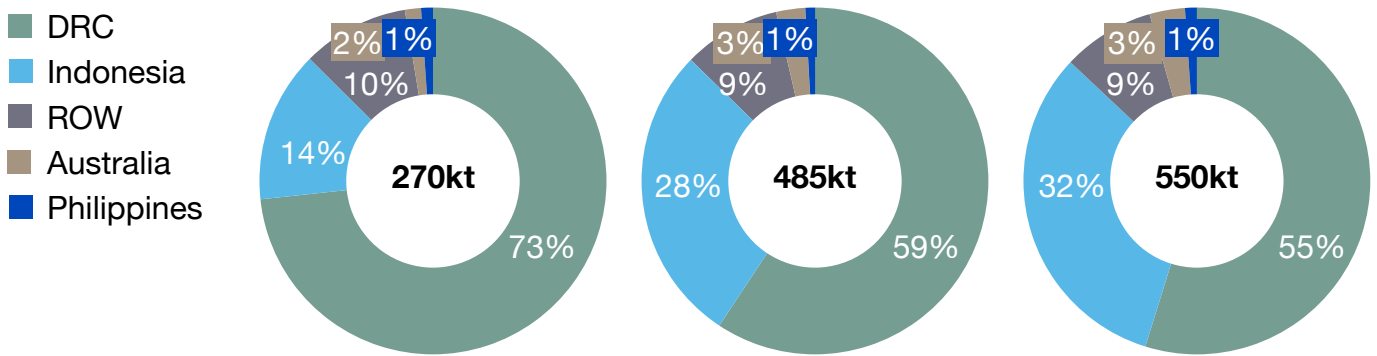


Data: Benchmark Mineral Intelligence – Cobalt Forecast.

- **Cobalt supply** is expected to continue to grow rapidly over the next decade, from 270kt in 2025 to a forecast 550kt in 2035. Along with this, the DRC is expected to lose market share as Indonesia leads in supply growth, with Indonesia reaching 32% market share by 2035. However, future DRC supply will remain the leading source of global mined cobalt, staying above 50% market share through to 2040.



Figure 34. Cobalt supply* by country, Unit: kt Co

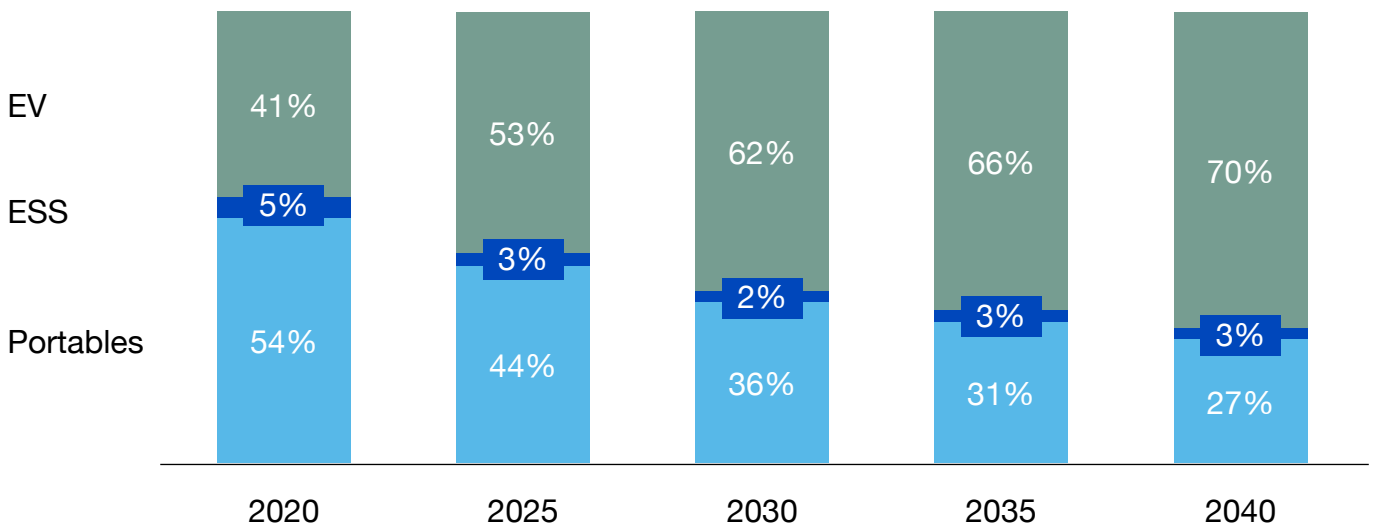


Note: Figures include downstream yield losses.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.

- Cobalt battery demand will remain dominated by EVs.** Cobalt demand from EVs is forecast to be 10% y-o-y in 2026, while portables lag slightly with 9% growth y-o-y in 2026. While ESS applications are expected to grow, battery ESS applications are dominated by LFP, and so represent a much smaller fraction of total cobalt battery demand. By 2035, EV demand is expected to reach 220kt, a GAGR of 6.5%, while the CAGR for portables in the same period is only 0.3% due to the market being relatively mature. ESS growth is stronger than portables through to 2035, with a CAGR of 3.8%, however, this remains a relatively small part of the cobalt market.

Figure 35. Cobalt demand* by battery application, Unit: kt Co



* Note: Demand adjusted for supply chain lags, excluding government stockpiling.

Data: Benchmark Mineral Intelligence – Cobalt Forecast.



- The **DRC export quota** system will continue to be a key price driver theme in the short-term. The quota system will support prices in the short-term. Persistent delays in cobalt exports have pushed prices higher into 2026, with 2025 quota allocations being rolled into 2026. While the DRC has shown a desire to ensure sufficient volume reaches the market, supply uncertainty is likely to increase volatility as disruptions can eat into ex-DRC stockpiles.
- And **Indonesia nickel quotas** have the potential to impact HPAL output. The current quotas – which apply to domestic miners – set strict limits on nickel ore mining within Indonesia, and therefore may risk a lack of feedstock availability for domestic HPAL producers. However, market participants have shared expectations that the announced quotas may be raised by 30%, alleviating pressure on refiners.
- The **2026 Middle East conflict** has increased energy prices and potentially reducing sulphur availability. Indonesian HPALs are particularly vulnerable to this, given 75% of sulphur used in the country originates from areas of the Middle East currently under blockade. Persistent high sulphur prices and lack of availability have reportedly already forced HPAL producers to downgrade expected production.
- **Continued geopoliticismation** of the cobalt market will impact dynamics. With rising political tensions, critical minerals, including cobalt, become increasingly vital for defence purposes. Securing supply of these critical minerals is likely to become an increasing concern for countries.



LIST OF FIGURES

Figure 1. Cobalt supply by primary mineral, Unit: kt Co	06
Figure 2. Effective global cobalt supply, Unit: kt Co	07
Figure 3. Quota share of total DRC mined supply, Unit: kt Co	10
Figure 4. Mined cobalt supply* (2025 vs 2024), Unit: kt Co	11
Figure 5. Cobalt supply growth, Unit: kt Co	13
Figure 6. Indonesia landed sulphur prices, Unit: \$/t	15
Figure 7. Share of refined cobalt by product type, Unit: %	17
Figure 8. Battery recycling overview	19
Figure 9. Regional feedstock and distribution	20
Figure 10. Refining capacity and scrap balance, 2022 – 2035, Unit: Mt recycling input	21
Figure 11. Geographic coverage of third-party certification among cobalt mined and refined supply in 2025, Unit: %	24
Figure 12. 2025 mined cobalt supply by third party assessment status, Unit: %	26
Figure 13. Share of 2025 refined cobalt supply by engagement with RMI's assessment, Unit: %	27
Figure 14. Share of 2025 mined and refined cobalt supply by CCCMC assessment status	29
Figure 15. Cobalt demand (LHS) and annual growth (RHS) in 2025 by application, Unit: kt Co	32
Figure 16. EV sales by vehicle class, 2023-25, Unit: M units	33
Figure 17. EV PC & LDV penetration rates, 2024 vs. 2025, Unit: %	34
Figure 18. EV cathode battery chemistry market share by quarter, 2025, Unit: GWh	35
Figure 19. Cobalt demand through the battery supply chain, 2025, Unit: kt Co	36
Figure 20. Cobalt-containing and cobalt-free lithium-ion battery production and associated cobalt demand, Unit: TWh (LHS), kt Co (RHS)	37



Figure 21. Cobalt demand from portable and BESS applications, 2025, Unit: kt Co	38
Figure 22. Share of cobalt demand in aviation in 2025	40
Figure 23. Cobalt demand in defence battery applications in 2025, Unit: t Co	41
Figure 24. Cobalt demand in drone batteries by region, 2025, Unit: t Co	42
Figure 25. Cobalt demand in soldier power by battery type, 2025, Unit: t Co	43
Figure 26. Boeing and Airbus commercial deliveries, Unit: number of aircraft	44
Figure 27. Cobalt demand in industrial applications, 2024-25, Unit: kt Co	45
Figure 28. Cobalt demand growth from industrial applications, 2024-25, Unit: %	46
Figure 29. Cobalt market balance, kt Co	48
Figure 30. Cobalt market balance, ex-DRC, Unit: kt Co	48
Figure 31. Cobalt prices, 2025, Unit: \$/t cobalt contained	49
Figure 32. Cobalt price changes y-o-y in 2024 and 2025, Unit: %	54
Figure 33. Cobalt demand from Gigafactories and end-use batteries, Unit: kt Co	64
Figure 34. Cobalt supply* by country, Unit: kt Co	65
Figure 35. Cobalt demand* by battery application, Unit: %	65



GLOSSARY, ABBREVIATIONS AND DEFINITIONS

GENERAL

\$: US dollar.

AI: artificial intelligence.

ARECOMS: l'Autorité de Régulation et de Contrôle des Marchés de Substances Minérales Stratégiques. The DRC strategic minerals regulator.

ASM: artisanal and small-scale mining.

BESS: battery energy stationary storage.

BHP: BHP Group Ltd., the world's largest mining company (also known as Broken Hill Proprietary Co.).

Black mass: a mixture of crushed metals produced from shredding battery scrap.

CAGR: compound annual growth rate, %.

CAFE: corporate average fuel economy.

CCCMC: China Chamber of Commerce for Import and Export of Metals, Minerals and Chemicals.

CCECC: China Civil Engineering Construction Corporation.

CEPA: Comprehensive Economic Partnership Agreement.

CIF: cost, insurance and freight, a shipping arrangement under which the seller is responsible for delivery of goods onto the ship and insuring the shipment until it reaches destination.

CMOC: CMOC Group Ltd., the largest cobalt producer, formerly known as China Molybdenum Co., Ltd.

Co: chemical symbol for cobalt.

Cobalt chemical: refined chemicals containing cobalt, in the form of cobalt sulphate for batteries, and other specialty products.

Cobalt metal: refined metal products in the form of briquettes, cathodes, broken cathodes and rounds.

Cu: the chemical symbol for copper.



bn: billion.

DFC: U.S. International Development Finance Corporation.

DRC: Democratic Republic of the Congo.

EFTA: European Free Trade Association, includes Iceland, Liechtenstein, Norway, and Switzerland.

EGC: Entreprise Générale du Cobalt.

EOL: end of life material for recycling.

ERG: Eurasian Resources Group.

ESG: Environmental, social and governance.

EU: European Union.

EXIM: Export-Import Bank of the United States.

EXW: Ex-works, a shipping arrangement under which the seller is only responsible for making goods available at a location, with the buyer responsible for transport and insurance costs.

FeNi: ferronickel, a crude nickel intermediate commonly used to make stainless steel.

FORGE: Forum on Resource Geostrategic Engagement.

FPV: First-person view.

GDP: gross domestic product.

Gécamines: la Générale des Carrières et des Mines. DRC state-owned copper-belt focused corporation.

GWh: gigawatt-hour, one billion watt-hours.

HPAL: high pressure acid leaching process for cobalt and nickel refining.

IAA: Industrial Accelerator Act.

IEEPA: International Emergency Economic Powers Act.

IRMA: Initiative for Responsible Mining Assurance.

ISA: International Seabed Authority.

JV: joint venture

KCC: Kamoto Copper Company, a Glencore majority-owned copper-cobalt producer in the DRC.

KFM: CMOG Kisanfu Mining SARL, the largest cobalt mine in the world, owned by CMOG.

kt: kilotonnes, equivalent to 1,000 metric tonnes.

kWh: kilowatt-hours, equivalent to 1,000 watt-hours.



lb: pound mass; one metric tonne is approximately 2,204.62lb.

LCA: life-cycle assessment, a methodology for assessing environmental impact.

LDV: light-duty vehicle.

LHS: left hand side, typically for a chart axis.

Li: chemical symbol for lithium.

Li-ion or LiB: lithium-ion battery, the current dominant battery technology.

M: million.

MWh: megawatt-hour, one million watt-hours

M23: March 23 Movement, a Rwanda-backed rebel group in the DRC

Matte: a crude intermediate product of ore refining, typically of nickel, copper or lead.

MHP: mixed hydroxide precipitate containing cobalt and nickel.

m-o-m: month on month change.

MoU: memorandum of understanding.

MUMI: Mutanda Mining, a Glencore majority-owned copper-cobalt producer in the DRC.

NATO: North Atlantic Treaty Alliance.

NDRC: National Development and Reform Commission, a Chinese government department that is responsible, among other things, for strategic mineral stockpiling. Formerly this was done by the State Reserve Bureau (SRB).

Ni: chemical symbol for nickel.

NPI: nickel pig iron, an intermediate nickel product from laterite mining which is typically used to make stainless steel.

OECD: the Organisation for Economic Co-operation and Development.

OEM: original equipment manufacturer, e.g. automotive company.

PC: passenger car, or in the context of portable electronics, personal computer.

PFE: prohibited foreign entities.

PGM: platinum-group metals.

R&R: ore reserves and resources. Resources include concentrations of minerals of economic interest whereas reserves are those that can be economically recovered.

REE: rare earth element.

RHS: right hand side, typically for a chart axis.



RMAP: Responsible Minerals Assurance Process.

RMB: renminbi, the Chinese yuan.

RMI: Responsible Minerals Initiative.

ROW: rest of the world.

SLI: starting, light, ignition batteries, used to start internal combustion engines.

SmCo: samarium-cobalt, a type of permanent magnet.

STL: Société pour le traitement du terril du Lubumbashi, a subsidiary of Gécamines which operates a tailings recovery site at Big Hill in the DRC.

t: metric tonne.

TAZARA: Tanzania-Zambia Railway Authority.

TFM: Tenke Fungurume, a copper-cobalt mine majority-owned by CMOC.

TMC: TMC the metals company Inc., a deep-sea mining company.

TSM: Towards Sustainable Mining.

UAV: unmanned aerial vehicle.

UGV: unmanned ground vehicle.

US: United States of America.

y-o-y: year on year change.

CATHODE CHEMISTRIES:

CAM: cathode active material.

LCO: lithium cobalt oxide.

LFP: lithium iron phosphate (no cobalt).

LMFP: lithium manganese iron phosphate (no cobalt).

NCA: lithium nickel cobalt aluminium oxide.

NCM: lithium nickel cobalt manganese oxide. Typically referred to with the ratio of each metal e.g. 622 contains a 6:2:2 ratio of nickel to cobalt to manganese.



ELECTRIC VEHICLES:

BEV: battery electric vehicle.

EV: electric vehicle.

HEV: hybrid electric vehicle, with both an internal combustion engine and an electric motor.

ICE: internal combustion engine, typically powered by either petrol or diesel.

PHEV: plug-in hybrid electric vehicle.

REEV: range extended electric vehicle – powered by a battery, with a small internal combustion engine to recharge the battery.

ZEV: zero emission vehicle.

GEOPOLITICS:

BIL: Bipartisan Infrastructure Law, a US federal statute.

CID: EU Clean Industrial Deal.

CRM: Critical Raw Material.

CRMA: EU Critical Raw Materials Act.

DOC: US Department of Commerce.

DOE: US Department of Energy.

DOW: US Department of War.

EWC: European Waste Catalogue.

FYP: Five-year plan, Chinese social and economic development initiatives.

MINVEST: Minerals Investment Network for Vital Energy Security and Transition.

MSP: Minerals Security Partnership.

OBBBA: One Big Beautiful Bill Act.

PGI: Partnership for Global Infrastructure and Investment.

SRM: Strategic Raw Material.



Contact us if you have any questions



Marina Demidova

Head of Communications and
External Affairs

mdemidovaext@cobaltinstitute.org



Will Talbot

Research Manager

wtalbot@benchmarkminerals.com

Roman Aubry

Analyst

raubry@benchmarkminerals.com

www.benchmarkminerals.com

+44 1483 578877 | ci@cobaltinstitute.org

3rd Floor, 45 Albemarle Street, Mayfair, London W1S4JL UK

www.cobaltinstitute.org

LinkedIn: Cobalt Institute