



FOODSERVICE PACKAGING INSTITUTE

Aluminum Update

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CRU's Aluminium Team

The CRU Aluminum Analysis team is the largest aluminum analysis team in the world covering the entire value chain



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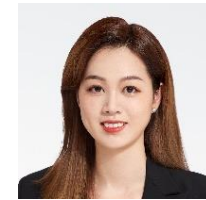
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Aluminium – Top 10 Calls for 2022

- 1**




Expect more recycled metal use in China

Investments in China will accelerate use of recycled metal with 7-8 M t/y of secondary capacity coming on stream in next five years or so. We will see primary metal re-starts in China as well.
- 2**




Guinea to supply third of China's bauxite need

Imports from Guinea will continue rising. Environmental monitoring will keep domestic mines constrained, while new refinery expansions will increase the surge in Guinea imports.
- 3**




Smelting costs are rising on higher power prices

Aluminium costs are rising on escalating power prices (as well as leading to smelter cuts in Europe). We should see a renewed steepening of the cost curve in 2022.
- 4**




Aluminium price to average highest since GFC

At least nominally, the LME will average the highest since before the GFC. Will we see more greenfield and brownfield expansion announcements as a result?
- 5**




Aluminium will emerge as major winner from EVs

Aluminium is a winner from rising EV production, thanks to rising intensity for rolled products and extrusions – battery foil will be a growing market.
- 6**




VAP premiums now set to stay stronger for longer

Smelter cuts in Europe spell further tightness in VAPs. We will see investment in secondary capacity and potential more switching to VAP at primary producers.
- 7**




Section 232 to stay

Section 232 duties are expected to remain in 2022, although come off at some point in future. The market favours a planned step-down approach versus surprise executive order which will derail nearby market order.
- 8**




Inventories lowest since GFC

Further large deficit in 2022 will see inventories fall closer to critical levels. This is a recipe for greater volatility for prices and premiums.
- 9**



Geo-political risks could swamp other challenges

Global political tensions whether for human rights, or broader sovereignty issues may draw aluminium into play as financial, or strategic supply leverage.
- 10**



Scenario – what would crash the price?

Chinese construction sector is the biggest demand risk, at 30% of Chinese aluminum demand the health of this sector could drive global markets.

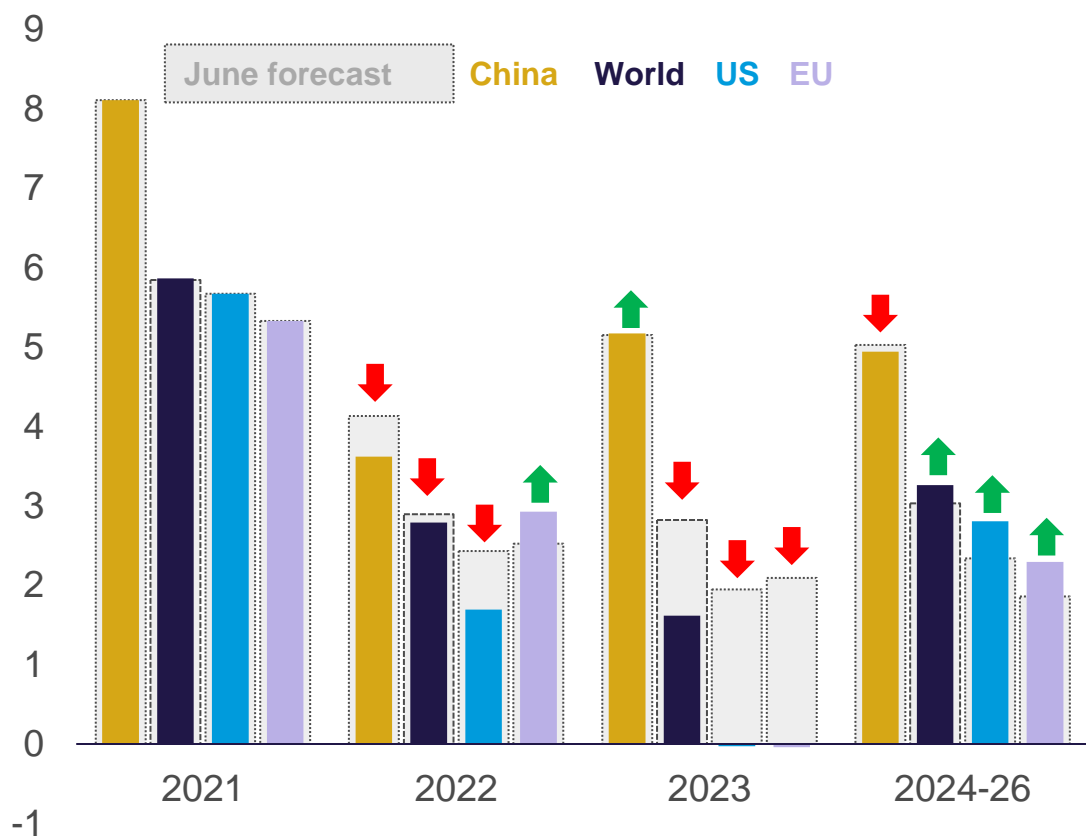
▶ Economic Outlook



Downward revision to our 2022 & 2023 global forecasts

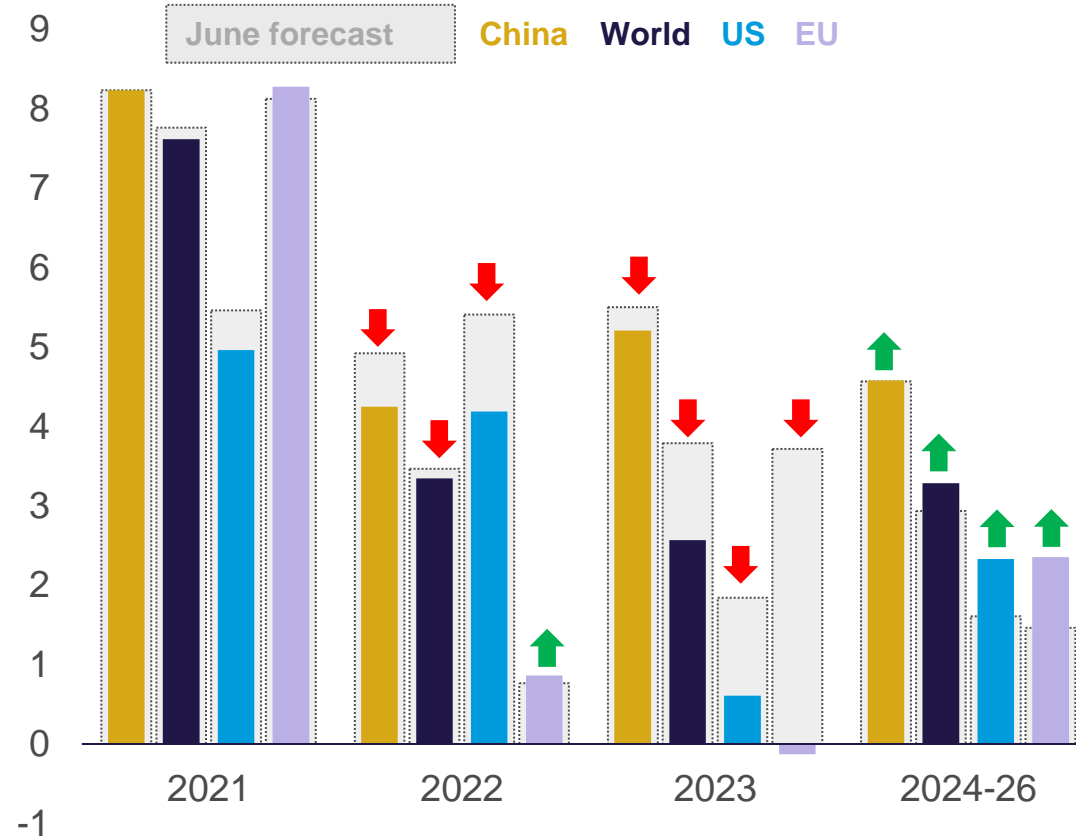
GDP growth

Percentage growth rate



Industrial Production

Percentage growth rate

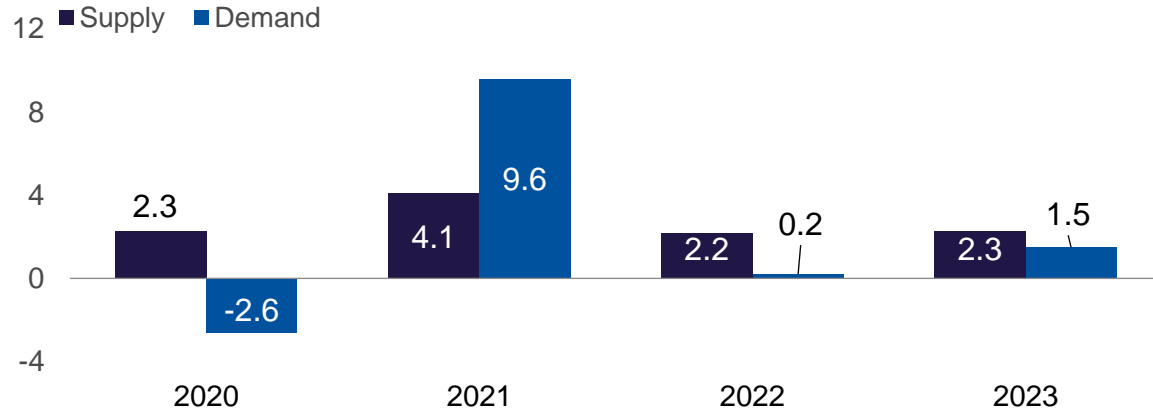




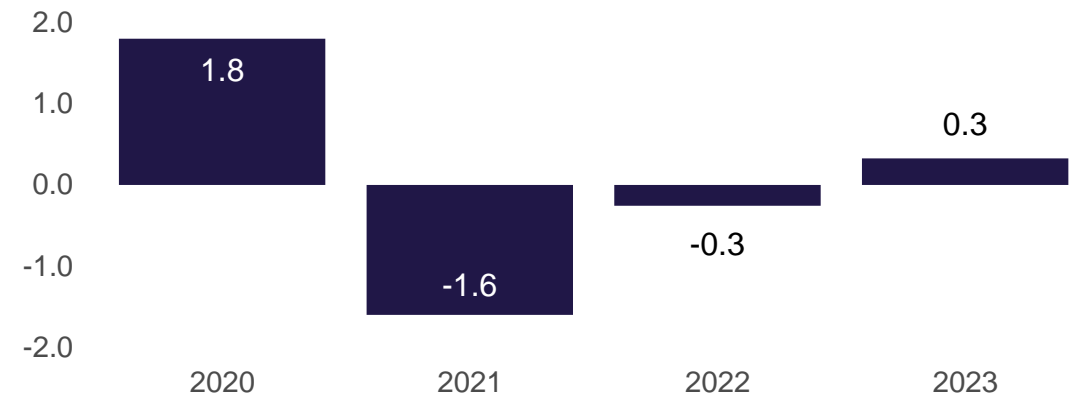
▶ Aluminium Outlook

Aluminium – Market moves into surplus, but volatility could intensify

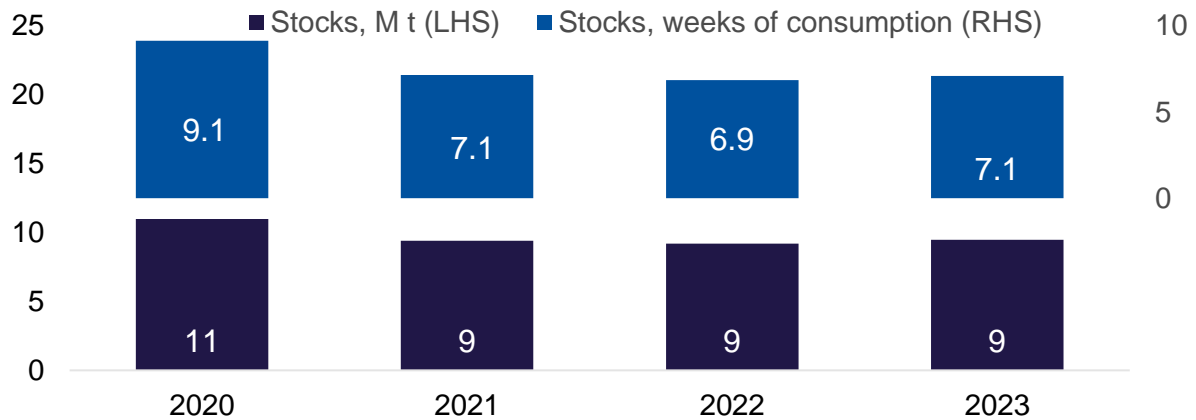
Supply & Demand Growth y/y, %



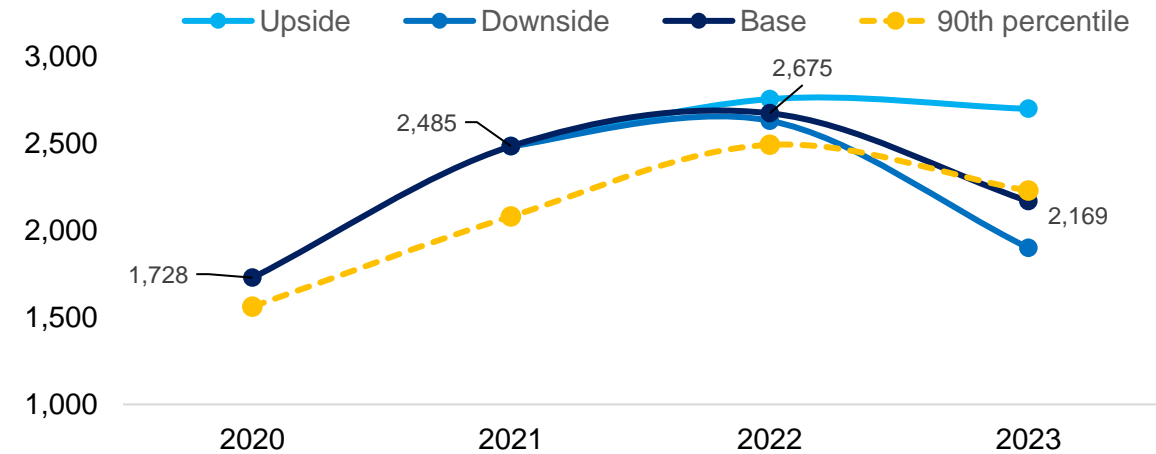
World aluminium market balance, Mt



Total Stocks M tonnes & Weeks of Consumption, %

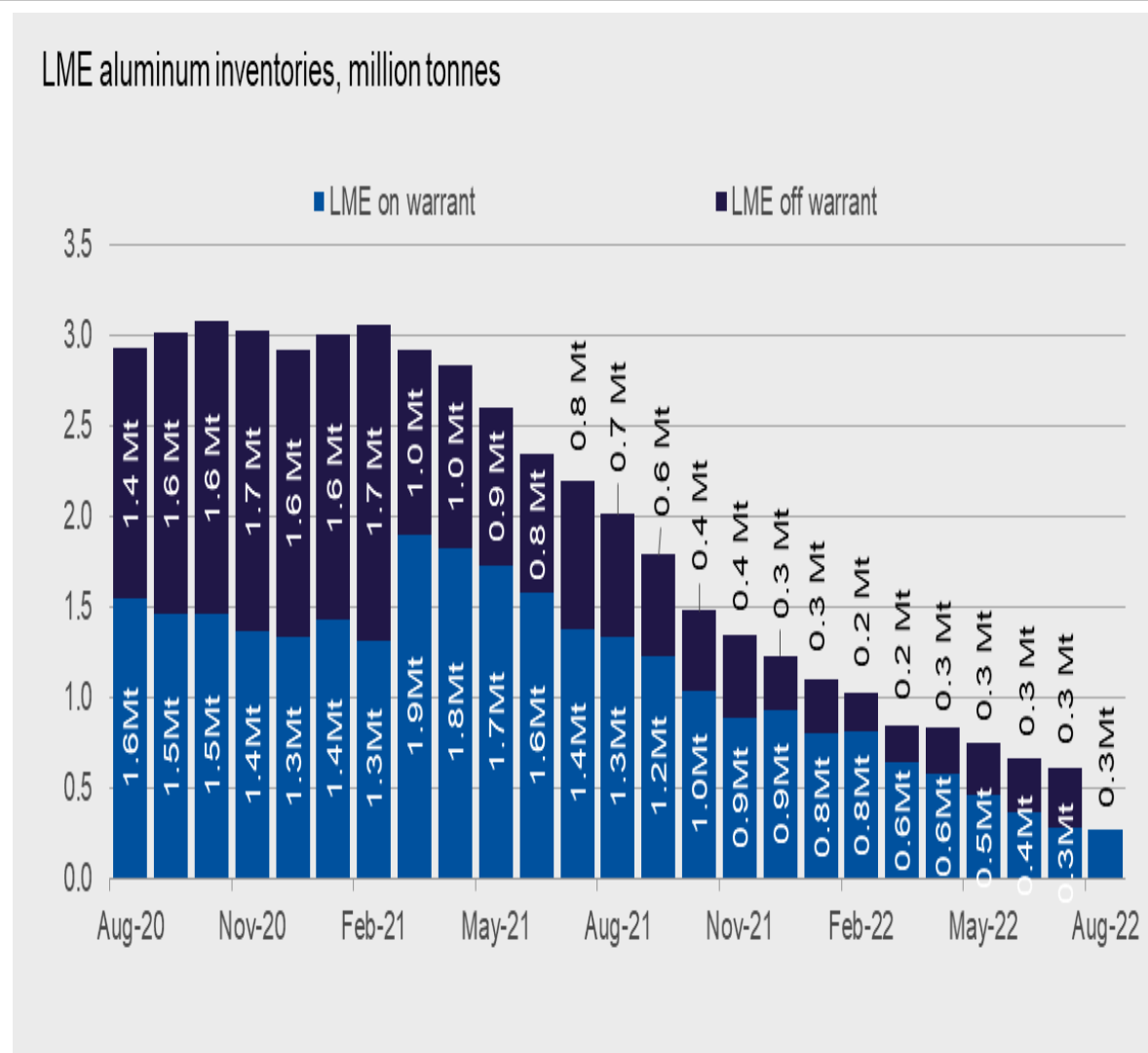
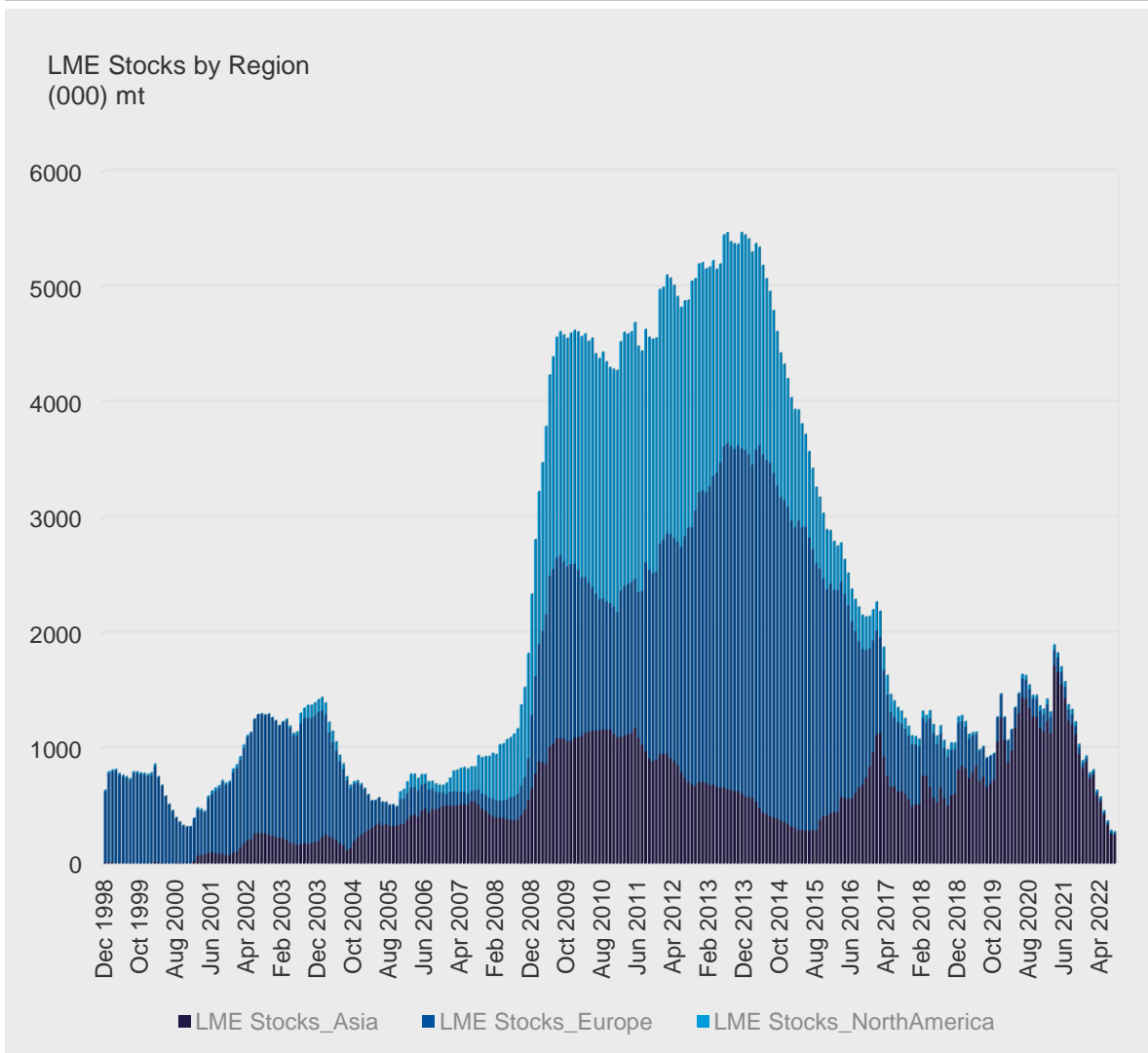


Aluminium 3M LME Price Forecast, USD/t



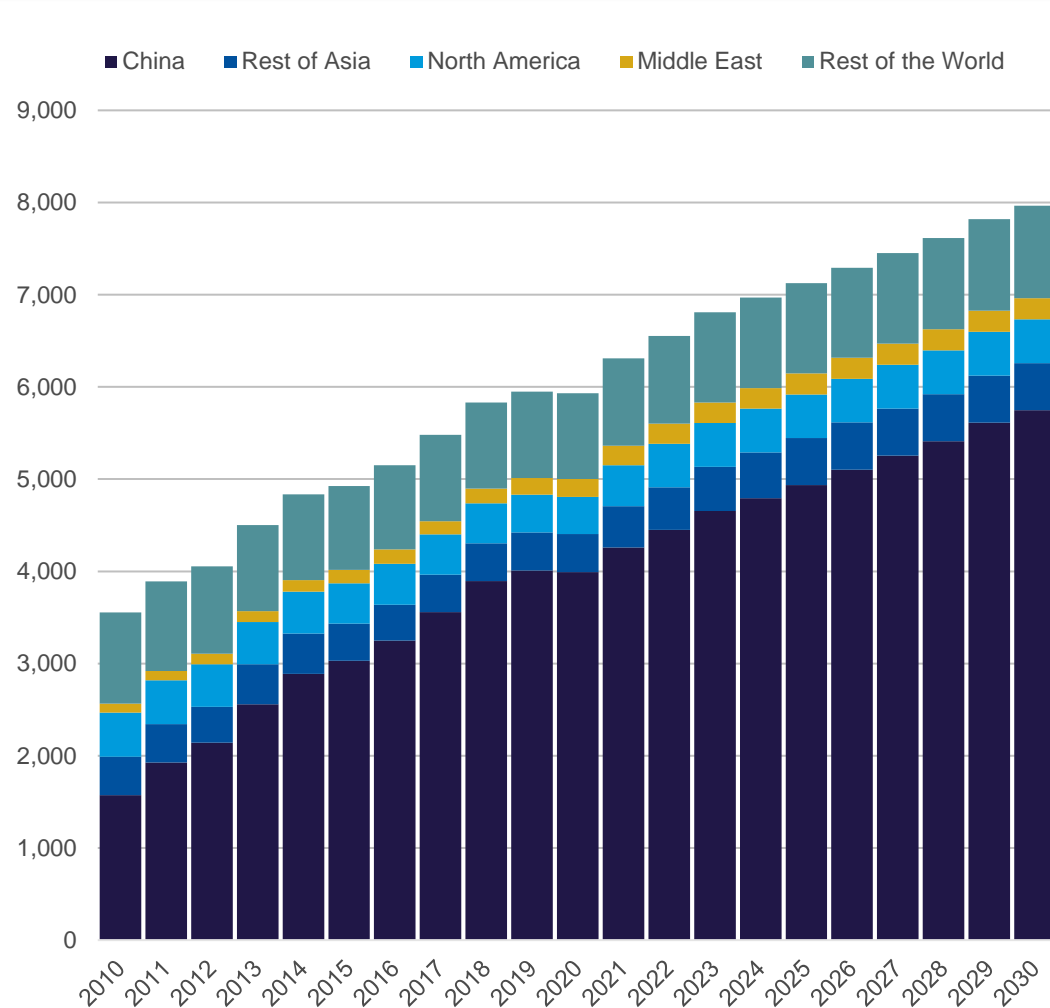
DATA : CRU,LME

LME stocks finally show signs of rising off bottom as demand stalls

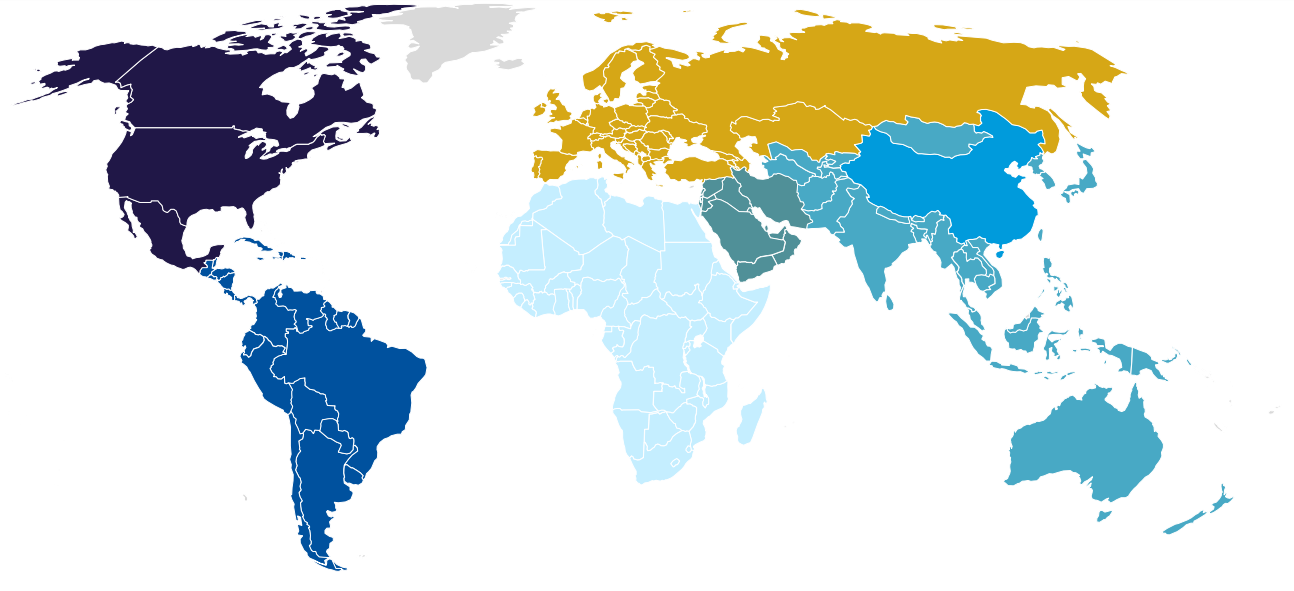


Overview of Foil Market

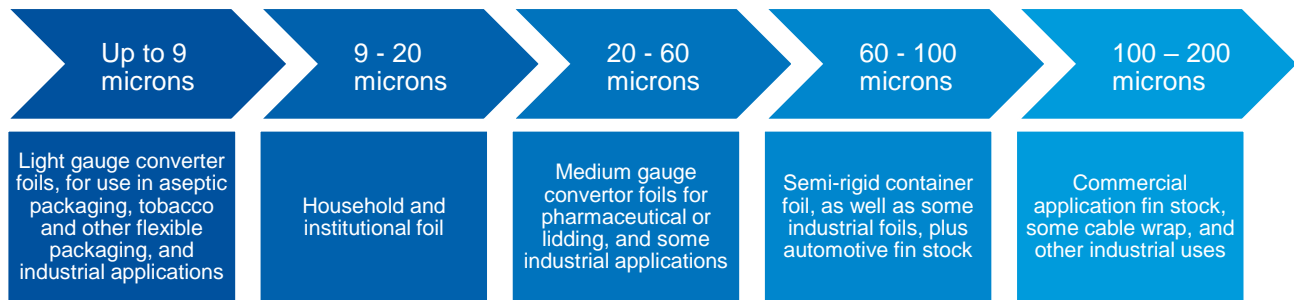
Foil production by country and region, 2010-2030 ('000 t)



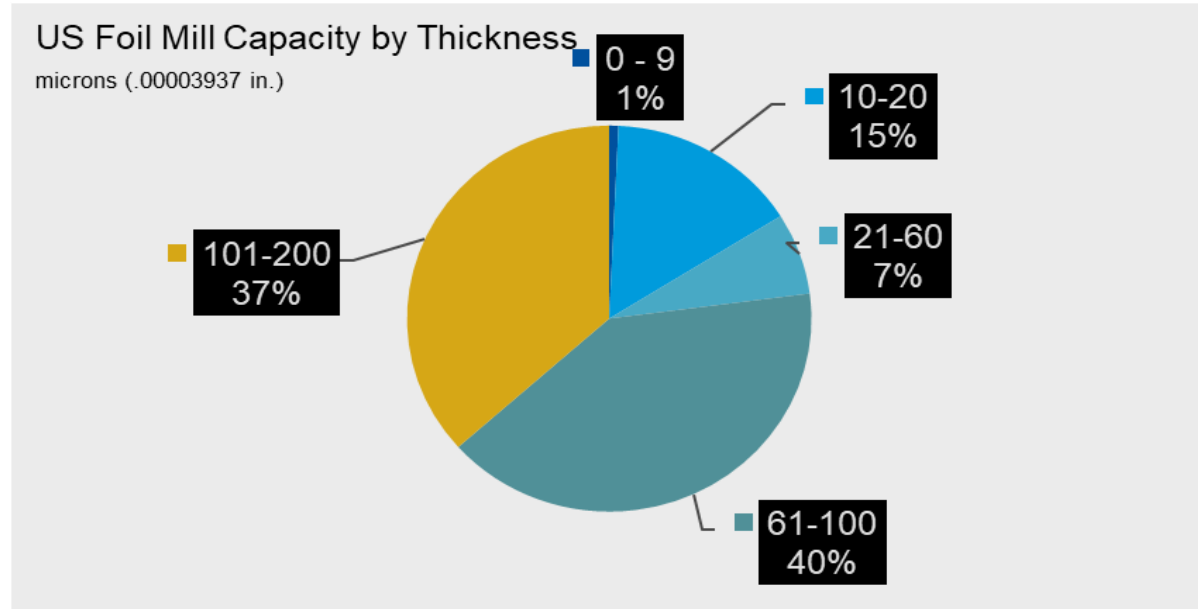
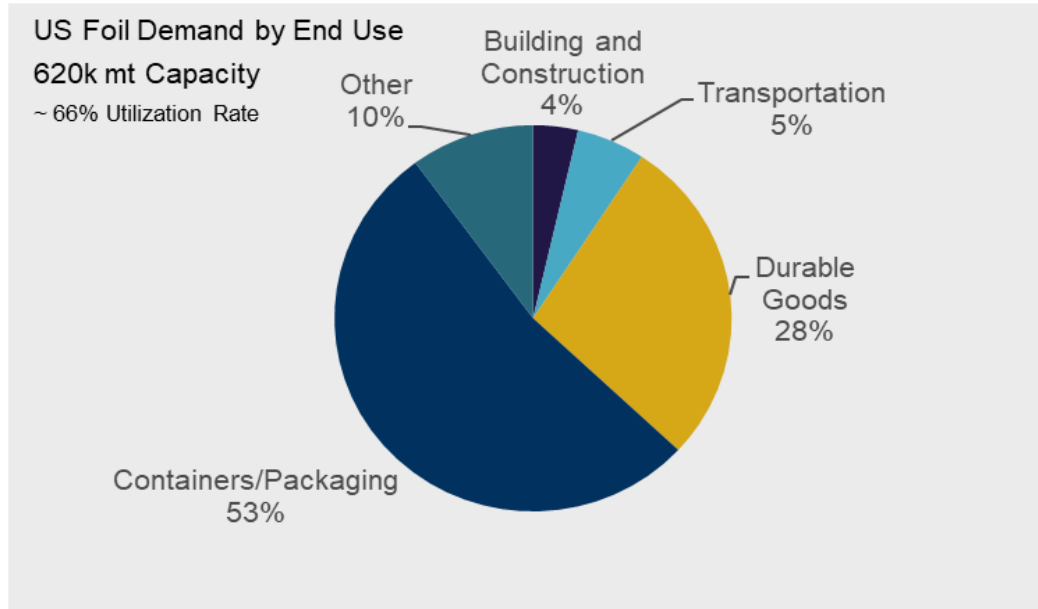
CRU regional breakdown



Foil product breakdown by gauge



US Foil Mill Capacity and Mix



- US foil rolling capacity servicing a variety of end use markets and applications
- Mix by thickness and application are limiting factors, not all foil is the same
- US demand is underserved by domestic capacity despite modest investments in debottlenecking
- Emerging demand from EV development and EV battery makers will further tighten US supply/demand balance
- Foil imports more closely monitored and oversight by USITC, metal-origin requirements in IRA, Chips Act and BBB legislation
- Lotte mill investment and other investment likely as demand forecast remains robust, post-Covid and War in Ukraine

US Rolling Mill investments to meet demand, close the domestic supply gap, utilize federal program \$s

#1 Novelis: Bay Minette, Alabama

- \$2.5bn for 600 kt operational in 2025
- 60/40 split between can stock and ABS
- Mid-South location for scrap and product flow
- Leverage: Core FRP business is Cans and ABS

#2 Manna Capital – Ball: Las Lunas, New Mexico

- \$2.0bn for 600kt operational in 2025
- 100% Can sheet powered by renewable energy
- Southwest location for scrap and product flow
- Leverage: Ball’s forward order book

#3 Steel Dynamics: Southeast US location to be advised

- \$2.2bn for 600kt operational in 2025
- Can/Auto/Service Center mix 45%-35%-20%
- 5.6% stake by Unity Aluminum, formerly Braidy
- Leverage: OmniSource scrap management platform

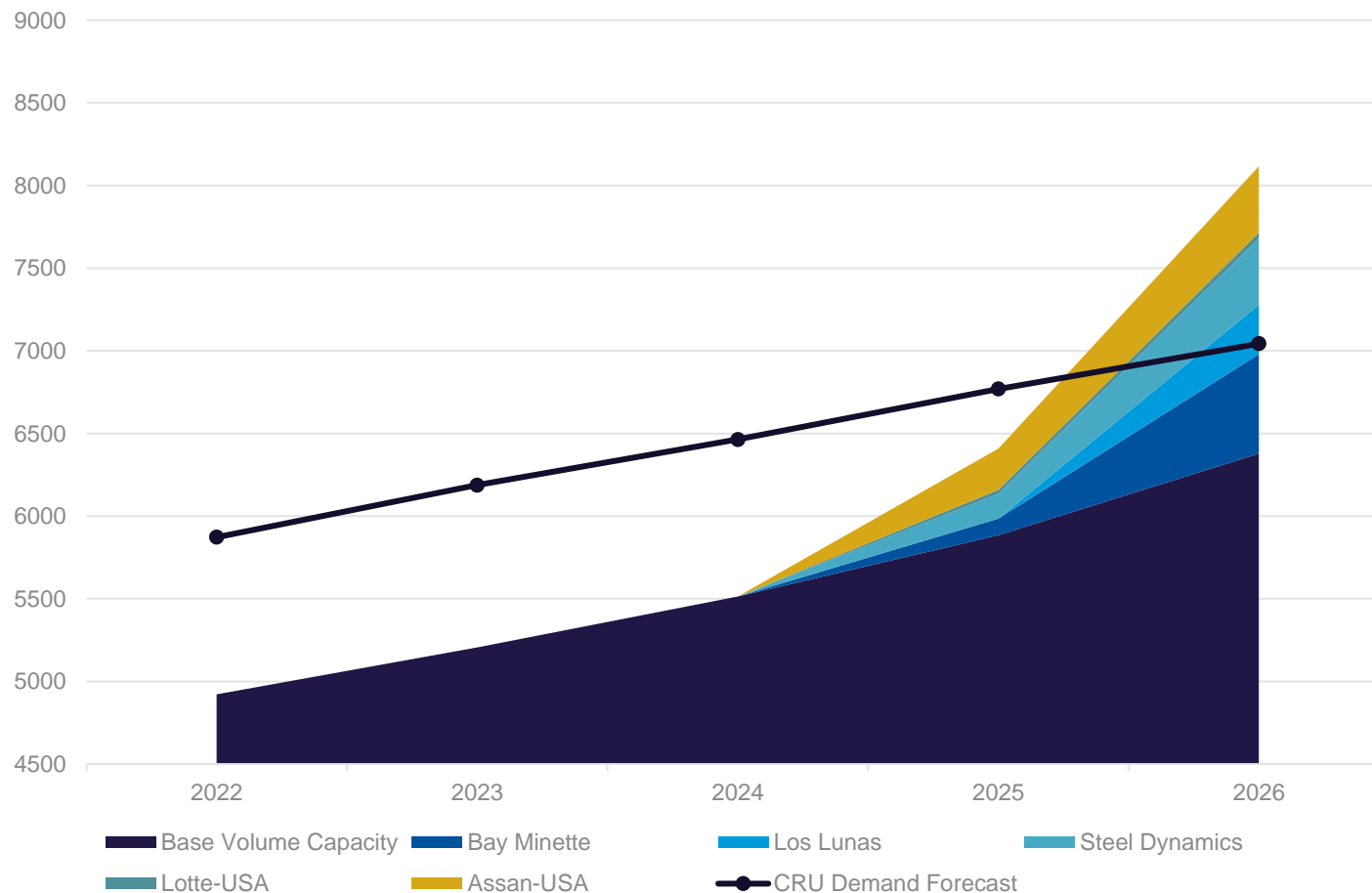
#4 Lotte: South Korean parent entering US rolling space for EV foil

- \$238.7M battery foil mill, nearby KY auto and battery plants
- 36,000 mt EV cathode focus, operational in 2025

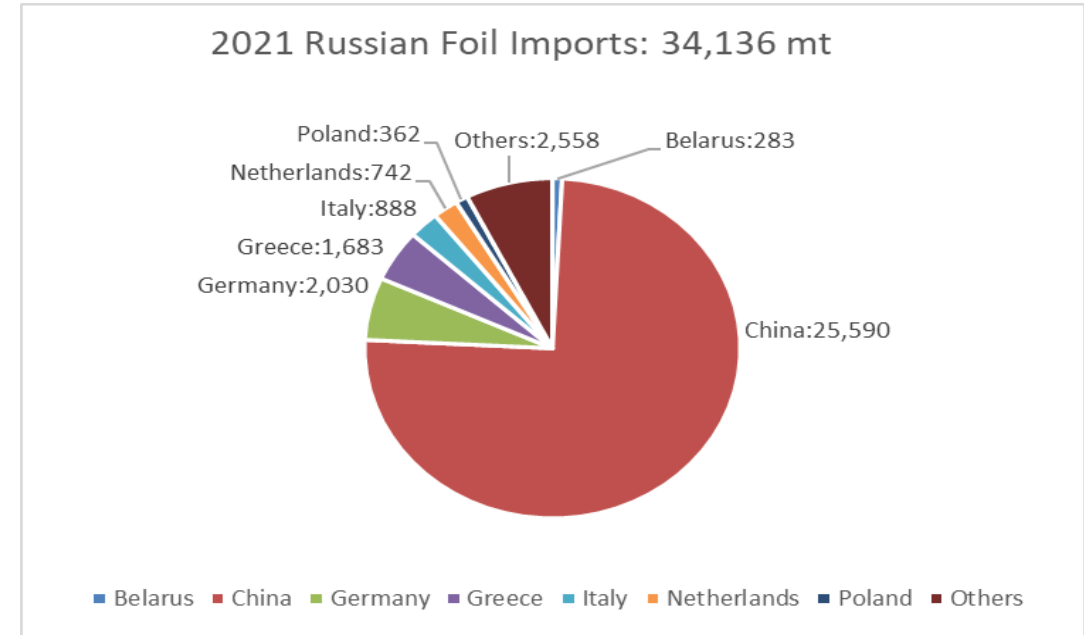
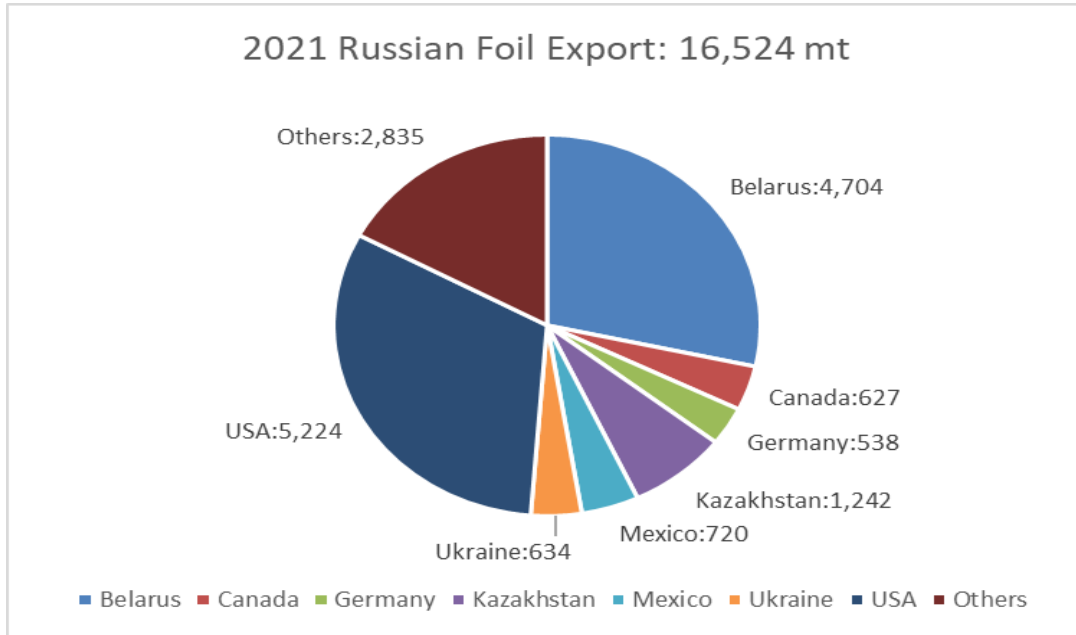
#5 Assan-Kibar: Turkey parent, leveraging current commercial position

- \$460M, 120,000 mt investment plan, location is TBA
- US location strategic to tap into legislated projects and funding

North America FRP Supply/Demand Balance
(000 mt)



Russian Foil imports 2:1 versus exports, China key supplier



- US exposed to 6% of all Russian aluminum exports, EU has much greater exposure
- Russian metal continues to flow and is traveling circuitous routes to market adding costs, and lowering price to attract buyers
- Change in trade flows does not put US foil +8% y/y growth forecast at risk
- China's foil supply position to Russia may be a template for further trade flows between these two countries
- Depending on product mix, a sanctioned-Russia may be net-neutral balancing its domestic foil S/D
- Aluminum is "congealed energy"! Watch energy prices, the winter-heating-season (Europe and China) for clues to 2023 prices



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Aluminum Update

Thank you for your time and attention!

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