# The Metals Debate – Nickel

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# Nickel: a question of class

Key to price is how quickly class 2 can be converted into class 1



2022 is the first year where a surplus has not emerged in class1 (LME deliverable) nickel metal but in "class 2" nickel pig iron and ferronickel as well as in stainless steel scrap and intermediates (mainly Indonesian nickel matte)



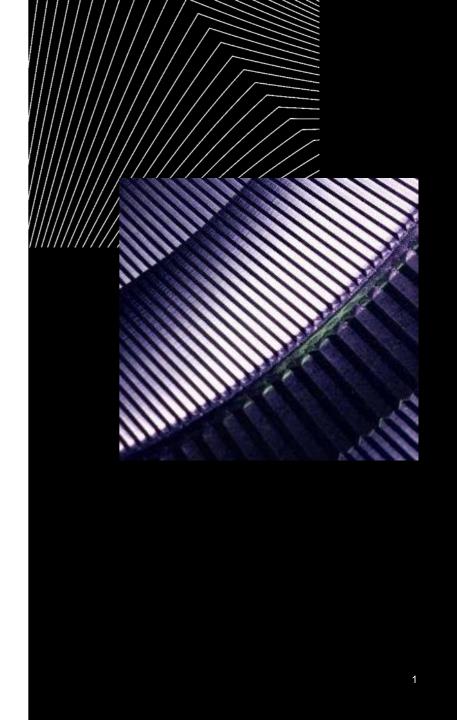
The price for class 1 (LME/SHFE) has moved to an unprecedented premium to class 2



Market surpluses likely for the next four years given the substantial overhang of under utilised Indonesian capacity to produce nickel units



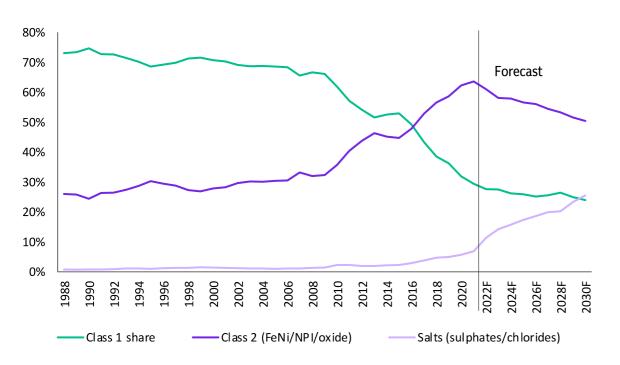
Key to LME prices is the extent to which class 2 can be converted into class 1 – limited conversion capacity is likely to be a feature of the market at least until the end of 2023



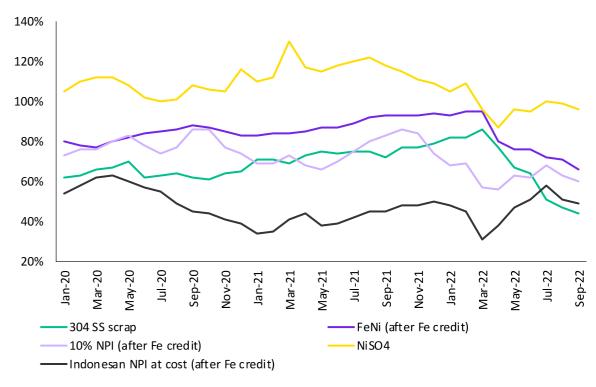
# Role of class 1 in global supply fallen sharply since LME started trading in 1988 - LME deliverable now less than 25% of total supply

# Discounts to LME for non-class 1 rise in 2022

#### Share of main nickel products in primary supply



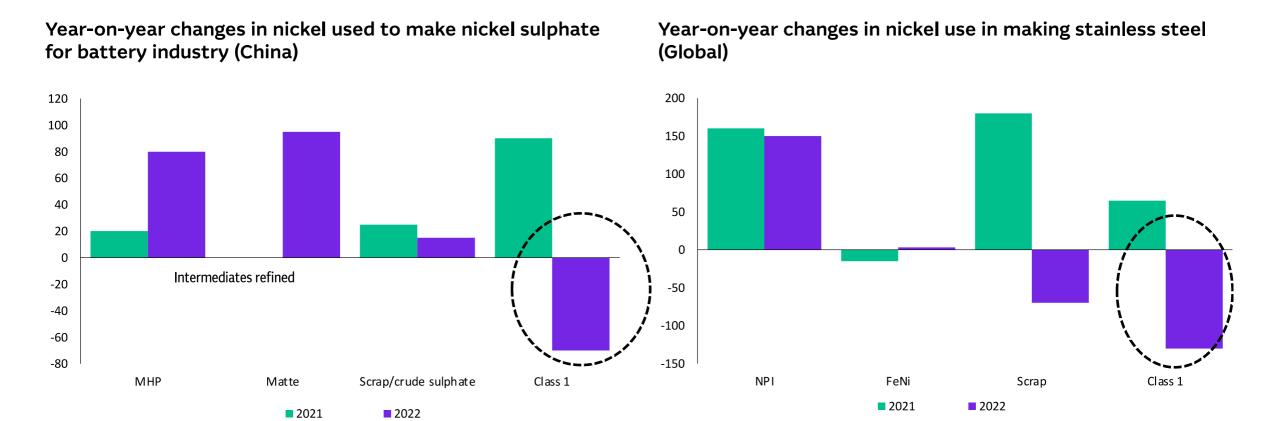
#### Value of nickel products as % of LME price (monthly)



Source: LME, CRU, Ferroalloynet, SMM, Macquarie Strategy, October 2022.

# Lower-prices intermediates and NPI drive out class1 nickel use from batteries and stainless steel in 2022

Class 1 demand down by around 200kt YoY in 2022, equal to 2021's stocks draw



Source: Xinze, SMM, Ferroalloynet, Macquarie Strategy, October 2022.

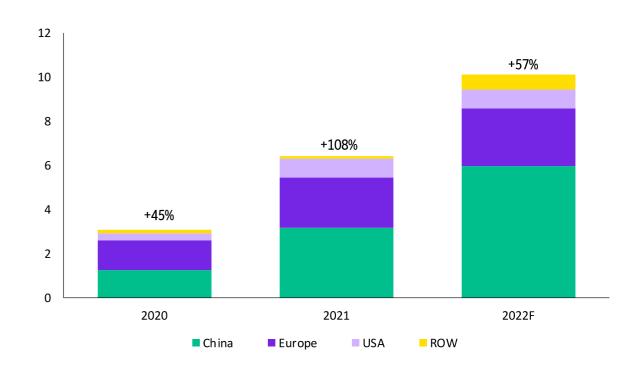
# Electric vehicles becoming main growth driver for nickel

# In 2022 batteries growth contrasts with stainless decline

## Global stainless steel production by region - mt melt

# +13.5% -2.7% -1.8% 40 40 20 20 20 202 2021 2022F China Indonesia Other Asia Europe Rest of world (US/Brazil/SA)

## Global EV sales by region (BEV+PHEV) - million cars



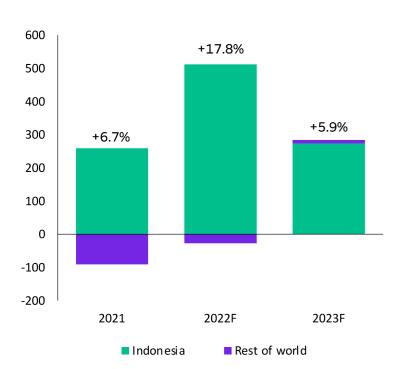
Source: CRU, World Stainless, Rho Motion, Macquarie Strategy, October 2022.

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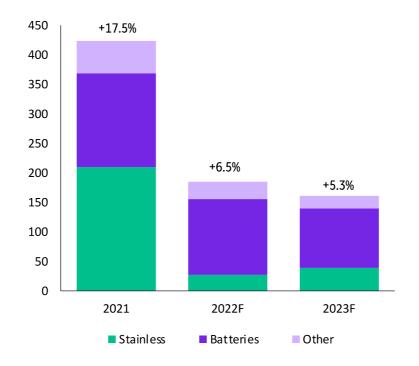
# Nickel in a nutshell

# From deficit to surplus as supply growth accelerates in 2022 and demand growth slows

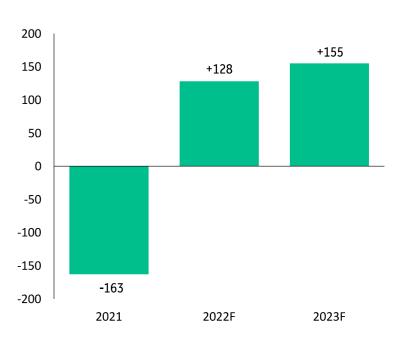
## Changes in world nickel supply (kt Ni)



# Changes in world nickel use (kt Ni)



# Global nickel balance (kt Ni)



Source: INSG, CRU, Macquarie Strategy, October 2022.

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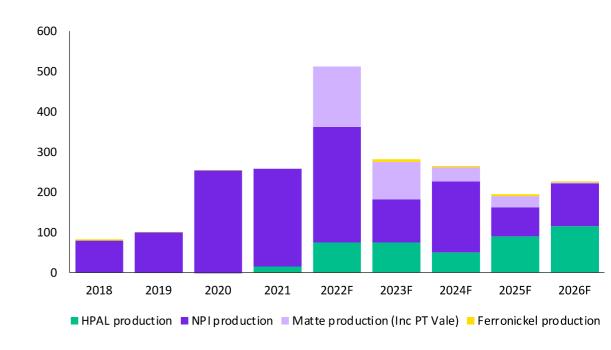
# Big growth in Indonesian supply in 2022 partly reflects delays in 2021 due to Covid

Indonesia to reach 60% of world supply in 2025/6 vs. 28% in 2020

## Projected total Indonesian supply to 2026 ('000t Ni)

#### 3000 70% 60% 2500 50% 2000 40% 1500 30% 1000 20% 500 10% 2017 2018 2025F 2019 2020 2021 2022F 2023F 2024F 2026F Ni matte (Vale) Ore exports Matte for batteries/metal FeNi (Antam) Share world supply

## Year-on-year changes in Indonesian supply



Source: Company reports, Ferroalloynet, SMM, Mysteel, Macquarie Strategy, October 2022.

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# Summary of outlook - from deficit to surplus

	2020	2021	2022F	2023F
Stainless production	52335	59380	57762	60260
% change	-1.8%	13.5%	-2.7%	4.3%
Nickel use	2418	2842	3027	3188
% change	0.4%	17.5%	6.5%	5.3%
Nickel supply	2511	2679	3155	3343
% change	3.9%	6.7%	17.8%	5.9%
World market balance	+92	-163	+128	+155
Estimated market stocks	720	539	667	822
Weeks' demand	15.5	9.9	11.5	13.4

## Russian disruptions the biggest risk factor

- Strong Indonesian supply and slower stainless demand growth swing market back into surplus in 2022
- Surplus to get bigger in 2023
- For the moment, we assume no disruption to Russian supply
- Surplus mainly in class 1 but class 1 getting back to balance and small surplus likely in 2023

Source: INSG, Company reports, Macquarie Strategy, October 2022.

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