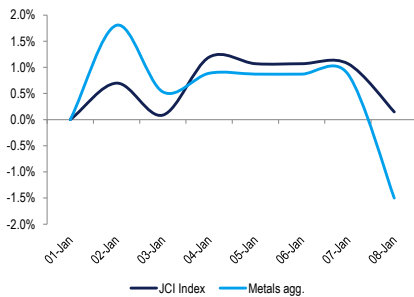


Sector Index Performance

	3M	6M	12M
Absolute	-8.5%	-14.8%	-28.5%
Relative to JCI	-14.2%	-23.2%	-37.5%



Summary Valuation Metrics

P/E (x)	2023F	2024F	2025F
ADMR IJ	10.2	8.9	9.1
ANTM IJ	11.2	10.0	8.8
HRUM IJ	9.6	10.9	10.1
INCO IJ	11.5	21.2	37.9
MBMA IJ	189.2	20.2	12.2
MDKA IJ	N/A	32.8	31.7
NCKL IJ	10.1	7.2	6.4
EV/EBITDA (x)	2023F	2024F	2025F
ADMR IJ	7.8	8.0	7.3
ANTM IJ	6.9	6.3	5.4
HRUM IJ	3.7	5.5	7.1
INCO IJ	4.4	8.2	10.2
MBMA IJ	34.7	8.7	6.4
MDKA IJ	18.4	8.4	7.8
NCKL IJ	7.2	4.6	3.7
Div. Yield	2023F	2024F	2025F
ADMR IJ	N/A	N/A	N/A
ANTM IJ	4.8%	4.5%	5.0%
HRUM IJ	N/A	N/A	N/A
INCO IJ	N/A	N/A	N/A
MBMA IJ	N/A	N/A	N/A
MDKA IJ	N/A	N/A	N/A
NCKL IJ	N/A	3.0%	4.1%

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## Prolonged softness in battery metals price to continue

- Battery-grade nickel sulphate (NiSO<sub>4</sub>) and MHP prices ended FY23 at US\$14.8k/t and US\$11.2k/t (-32%/-33% yoy) on soft EV demand.
- Price trades at near costs support, which may fall further; but lower IRR on new projects should limit supply & enable recovery in medium-term
- Maintain sector Neutral rating on soft nickel prices. Prefer non-nickel-related names: MDKA (Buy) and ADMR (Buy).

### Supply outpacing demand growth = price downtrend

Nickel sulphate and intermediates have been on a downtrend mainly on soft EV demand as China EV market was only growing by +23% yoy in 10M23 vs. +106% yoy in 10M22 driven by the removal of subsidy tariffs in China and domestic economic slowdown. In FY23, supply has been outpacing demand growth with China's NMC (nickel-manganese-cobalt) precursor output – which was made by refining NiSO<sub>4</sub> further – only growing by 12% yoy in 11M23 vs. NiSO<sub>4</sub> growth of 21% yoy. The downtrend was also in-line with other battery metals: lithium carbonate, lithium hydroxide, and cobalt sulphate prices were all declining -82%/-80%/-38% yoy in FY23.

### Potential halt in new projects may gradually spur price recovery

We expect potential halt in new HPAL projects in Indonesia to gradually support price recovery over medium to long-term as our calculation indicates that at current price level, HPAL project is not economically-attractive from NPV/IRR standpoint; IRR was only c.10% and is only slightly higher than WACC. Furthermore, should the underlying MHP/NiSO<sub>4</sub> prices turn even lower and/or ramp-up delay, the IRR would be below WACC (9.5%), indicating limited margin of error on the project from operational and financial standpoint. This might deter new projects from being built, supporting prices in the medium-to-long term, in our view.

### Falling cost-support is a downside risk to price

We view that NiSO<sub>4</sub> and its intermediates (i.e. matte/MHP) would still trade near its costs-support (i.e. Philippines HPAL). This cost-support could even fall further, driven by the costs movement of limonite ore (c.30-35% of cash costs ex-byproduct credit) and sulphuric acid price (c.15-20% costs). While sulphuric acid price currently at uptrend, which may lift the cost-support and eventually NiSO<sub>4</sub>/MHP price, there are risks that limonite ore price could fall further on soft demand, lowering the cost-support even more. Contrary to Philippines' HPAL, Indonesian HPAL such as Lygend-NCKL, HNC, and Papua New Guinea's Ramu HPAL still recording positive cash margin of around US\$4-5k/ton despite the soft price, based on our estimates. Nevertheless, falling cost-support is a downside risk to price in the short-term. As a result, we downgraded our nickel sulphate forecast in FY24F/25F to US\$15.5k/t (from US\$18k/t) and US\$16k/t (from US\$18.5k/t).

### Maintain our sector Neutral rating with MDKA & ADMR as our top pick

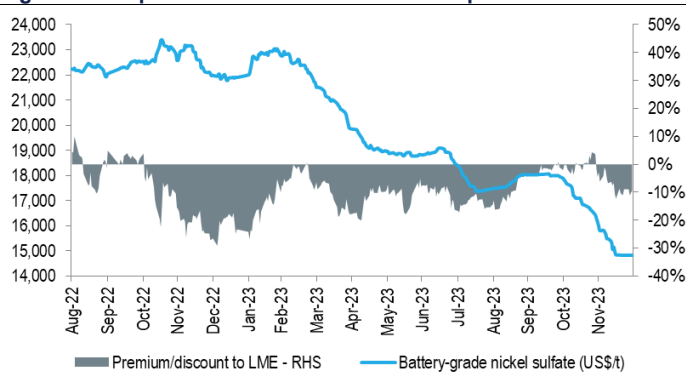
We maintain our sector Neutral rating and prefer MDKA ([report](#)) and ADMR ([report](#)). On nickel space, we prefer NCKL as it should be able to cushion the decline in battery metal prices owing to its more efficient cash costs of US\$6k/ton level vs. peers' >US\$10k/t. MBMA, HRUM, MDKA, and NCKL are affected the most by the soft battery-grade nickel as 1% change in price assumptions would negatively affect FY24F EPS/EBITDA by 0.7-1.3% (Fig. 9). Upside risk is recovery in EV-demand and other battery metals prices.

### Supply outpacing demand growth = price downtrend

Battery-grade nickel sulphate (NiSO<sub>4</sub>) prices have declined by 32% yoy in FY23 to US\$14.8k/ton (Fig. 1) mainly due to oversupply situation, which was evident in the soft first-use demand (i.e. nickel-manganese-cobalt/NMC ternary precursor) as well as end-use demand (i.e. electric vehicle); NMC precursor production in China was only growing by 12% yoy in 11M23 vs. NiSO<sub>4</sub> output growth of 21% yoy (Fig 2).

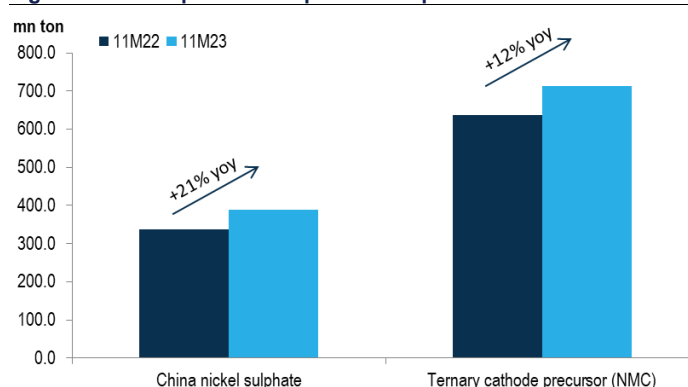
Demand growth for electric vehicle (EV) globally has also decelerated in FY23 as their biggest market, China, only recording +23% yoy growth in 10M23 vs. +106% yoy in 10M22, according to SNE Research data, driven by the removal of subsidy tariffs in China, and domestic economic slowdown.

**Fig. 1: NiSO<sub>4</sub> prices & discount to LME nickel prices**



Source: Bloomberg, Shanghai Metal Market, Indo Premier

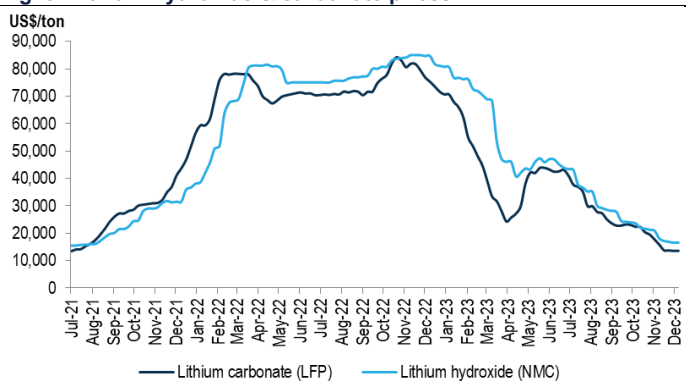
**Fig. 2: NiSO<sub>4</sub> output vs NMC precursors production – China**



Source: Bloomberg, Shanghai Metal Market, Indo Premier

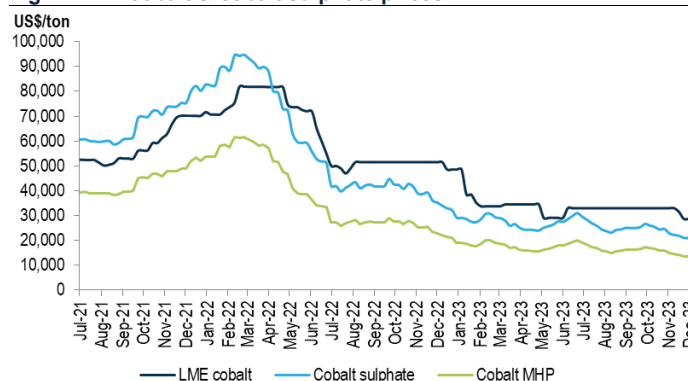
Similarly, other battery metals such as lithium carbonate, lithium hydroxide, and cobalt sulphate have also experienced a downturn; recording -82%/-80%/-38% yoy price movement in FY23 (Fig. 3 & 4), respectively. Note that lithium hydroxide is used in nickel-based batteries while lithium carbonate are mainly used in LFP (lithium-ferum-phosphate) batteries; acting as a substitute to NMC-batteries. Nonetheless, the decline in both lithium products point out to the soft EV-demand.

**Fig. 3: Lithium hydroxide & carbonate prices**



Source: Bloomberg, Indo Premier

**Fig. 4: LME cobalt & cobalt sulphate prices**



Source: Bloomberg, Indo Premier

### Potential halt in new projects may gradually spur price recovery

However, we expect potential halt in new HPAL projects in Indonesia to gradually support price recovery over medium to long-term. For example, Huayou's 3<sup>rd</sup> HPAL (120ktpa), PT Huashan has halted their construction, amid potentially softer demand and/or concern over limonite ore supply, based on our checks. Additionally, FID for Eramet's Sonic Bay HPAL has also been postponed in addition to the fact that non-Chinese-based HPAL/nickel operations historically been having higher cash-costs vs. typical Chinese HPAL (i.e. Coral Bay/Taganito in Philippines; Goro in New Caledonia) mainly due to the usage of tailing-dam vs. deep-sea tailing (DST) and/or dry-stacking technology, which may not bode well for the projects' NPV/IRR amid soft NiSO<sub>4</sub> prices.

Fig. 5: Existing and upcoming HPAL projects in Indonesia

Class-1 pipeline	Owner	Annual capacity	Timeline
Halimahera Persada Lygend (HPL)	Trimegah Bangun Persada (45.1%), Lygend (54.9%)	55,000	Operating
Huayue Nickel Cobalt (HNC)	Huayou, Nickel Industries (10% Interest), China Molybdenum	60,000	Operating
QMB New Materials	GEM, Tsingshan	50,000	Operating
PT Huafei	Tsingshan, EVE Battery, Huayou	120,000	Operating
Obi Nickel Cobalt (ONC)	Trimegah Bangun Persada (10%), Lygend (60%), Harita Group (30%)	65,000	1Q24
CATL-MBM HPAL	MBM (66%), Ningbo Brunp CATL (34%)	60,000	2H25
GEM-MBM HPAL	MBM (55%), GEM (45%; option for Ecopro 21%)	30,000	2025
Blue Sparkling Energy (BSE)	Tsingshan, HRUM*	67,000	2026
Pomalaa	Zhejiang Huayou Cobalt, Vale Indonesia, Ford	120,000	2026
Excelsior Nickel Cobalt (ENC)	NIC, UNTR	67,000	2026
Sorowako	Zhejiang Huayou Cobalt, Vale Indonesia	60,000	2027
<b>Sonic Bay</b>	<b>Eramet (51%), BASF (49%)</b>	<b>60,000</b>	<b>FID postponed</b>
IKIP 2	MBMA	120,000	N/A
SNC	Zhejiang Huayou Cobalt, Morowali	60,000	N/A
<b>Huashan</b>	<b>Zhejiang Huayou Cobalt</b>	<b>123,000</b>	<b>Construction halted</b>
LG Energy - ANTM	LG Energy Solutions, Aneka Tambang	40,000-60,000	N/A
CATL - ANTM	CATL, Aneka Tambang	40,000-60,000	N/A
PT Ceria Kobalt Indotama	Ceria Nugraha Indotama	110,900	N/A
ANEM - Gotion	Anugrah New Energy Materials, Gotion	120,000	N/A

Source: Bloomberg, Company data, Indo Premier

Our calculation indicates that at current price level, HPAL project is not economically-attractive from NPV/IRR standpoint. For instance, if we assume HPAL capex intensity of US\$25k/t and weighted average costs of capital (WACC) of 9.5% (i.e. 4% risk-free rate, 1.3x beta, 5% risk premium, and 9% cost of debt), the **IRR remains quite economical at c.10%, but is only slightly higher than WACC**. However, in the event of lower underlying MHP/NiSO<sub>4</sub> prices and/or prolonged construction/ramp-up delay, the IRR would even be lower, indicating limited margin of error on the project from operational and financial standpoint.

### Update on nickel intermediates projects

So far, there are four HPAL in Indonesia, which consists of Lygend-NCKL (65ktpa), Huayue Nickel Cobalt (HNC; 60ktpa), QMB New Materials (60ktpa) and lastly, the newly-built HPAL by PT Huafei (Huayou), that is reportedly ramping-up their capacity to 60ktpa – out of 120ktpa nameplate capacity by end of FY23, based on our channel checks. It is also reported that PT Huafei is not facing technical difficulties on the ramp-up but is slowing down their ramp-up due to soft-demand, according to Norilsk Nickel.

Hence, we estimates PT Huafei's cash-costs to be higher than typical 60ktpa HPAL, as it has yet to reach its optimal utilization rate. In the event of price recovery, there is a potential that PT Huafei would eventually ramp-up their capacity, structurally capping the price recovery, in our view. Additionally, NCKL's 65ktpa HPAL, Obi Nickel Cobalt (ONC) is also set to commission by 2Q24F, adding further supply into existing market.

Similar to MHP, we expect more nickel-matte capacity to come online in FY24F. As of recently, CNGR has recently taken over 8 RKEF lines from Jiangsu Delong (Virtue Dragon) located in Stardust Estate Investment (SEI) industrial park and currently constructing the nickel-matte converters with two lines set to commission as early as Jan-24. Total capacity installed would be around 80ktpa nickel-matte by end of FY24F. We expect payability of nickel-matte to decline below the c.80% level (c.81% in Dec-23) given the additional supply in addition to the fact that conversion into sulphate or nickel-metal through matte remains profitable, which could force further decline in matte payability.

By factoring the additional supply and soft demand, we downgraded our nickel sulphate forecast in FY24F/25F to US\$15.5k/t (from US\$18k/t) and US\$16k/t (from US\$18.5k/t) and lower our MHP payability to c.77% from c.80-81% previously.

Fig. 6: Nickel sulphate supply-demand (S-D) balance

Supply-demand balance (kt)	2019	2020	2021	2022	2023	2024F	2025F
<b>Nickel sulphate</b>							
Refined production				479	548	702	807
Supply growth yoy (%)					14.5%	28.0%	15.0%
Refined consumption				494	531	621	766
Demand growth yoy (%)					7.5%	17.0%	23.4%
Market balance				(15)	17	81	41
<b>Price forecast</b>							
Battery-grade nickel sulphate (US\$/t)					19,308	15,500	16,000
Mixed hydroxide precipitate (US\$/t)					15,287	11,935	12,320
<b>Hydrometallurgy intermediates product</b>							
Indonesia nickel-matte capacity	71	72	65	184	339	477	575
Indonesian MHP production	0	0	0	36	145	307	401

Source: Bloomberg, Company data, SMM, Indo Premier estimates

### Falling cost-support is a downside risk to price

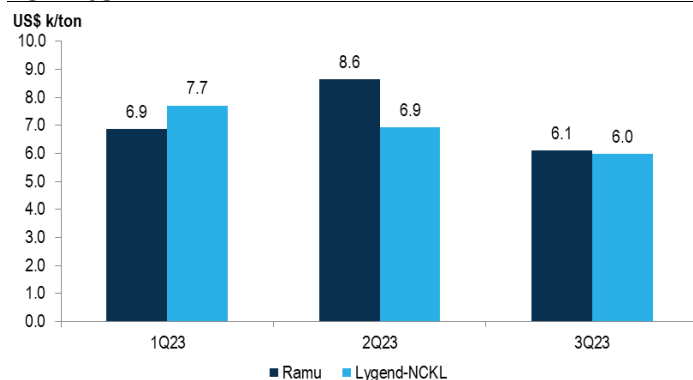
Currently, Lygend-NCKL's and Ramu HPAL are both able to record positive cash margin, even at current MHP price of US\$11k/ton, as their cash costs (after cobalt credit) were around US\$6k/ton in 3Q23 (Fig. 7), which may suggests that MHP price could decline further given the wide cushion to the costs support. While undisclosed, we expect other HPAL cash costs (i.e. HNC) to be relatively similar and only slightly higher vs. Lygend-NCKL given its completely similar process design by ENFI and the overall capacity. While for QMB, it could have higher cash costs as it may have yet reached optimal capacity owing to ramp-up difficulties in early-FY23.

Note that MHP producers, particularly in Indonesia, would still be able to enjoy profitable cash margin as ore prices (c.30-35% cash costs) were now on a downward trend, in-line with the decline in LME nickel prices. Integrated producers such as Lygend-NCKL have also taken advantage of the tax holiday and hence would not sell limonite ore to the HPAL smelter at a premium price over the benchmark price as the profit would be subject

to 22% corporate income tax vs. 0% tax on the smelter operations. However, this could be partially offset by the rise in the other big cash-cost component, sulphur – to create sulphuric acid (c.15-20% of cash costs), as China sulphur price is rising by c.10% in end-FY23 from Oct-23 low.

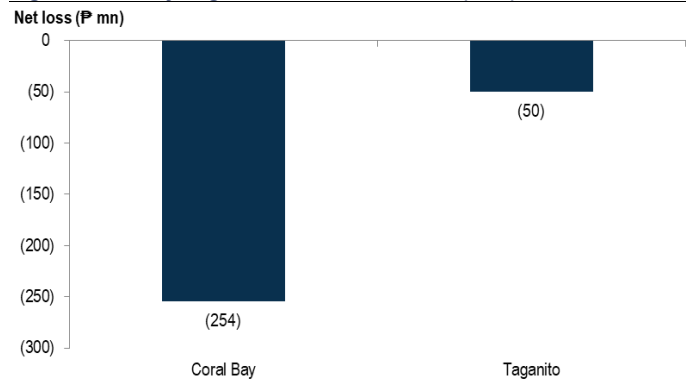
Overseas MHP producers such as Coral Bay/Taganito HPAL in the Philippines have experienced loss starting in 3Q23 mainly on lower nickel and cobalt prices (Fig. 8), albeit it was also mentioned that there are additional repair and maintenance costs involved. Note that Coral Bay/Taganito uses tailing-dam for its waste-disposal method – vs. deep-sea tailing for Ramu & dry-stacking for Indonesian HPALs – and were not built using the same technology with Indonesian HPAL, translating into higher cash costs. Moa HPAL in Canada, have also started to experienced Adj. EBITDA loss in 3Q23, but this may not affect NiSO<sub>4</sub> prices situation in China given no direct contribution to the overall market balance as Moa have further refined the intermediates products to nickel metals.

**Fig. 7: Lygend-NCKL's HPAL & Ramu cash costs**



Source: Company data, Indo Premier

**Fig. 8: Coral Bay/Taganito HPAL net income (loss) in 3Q23**



Source: Company data, Indo Premier

Similarly, nickel sulphate producers' profit, has remain bleak at current price level and its price has since stabilized on costs support, according to Shanghai Metal Market (SMM). However, we think nickel sulphate prices could remain on a downtrend, once more supply of intermediates (i.e. MHP and matte) come into the market, lowering its payability, and pushing cash costs and NiSO<sub>4</sub> prices further down.

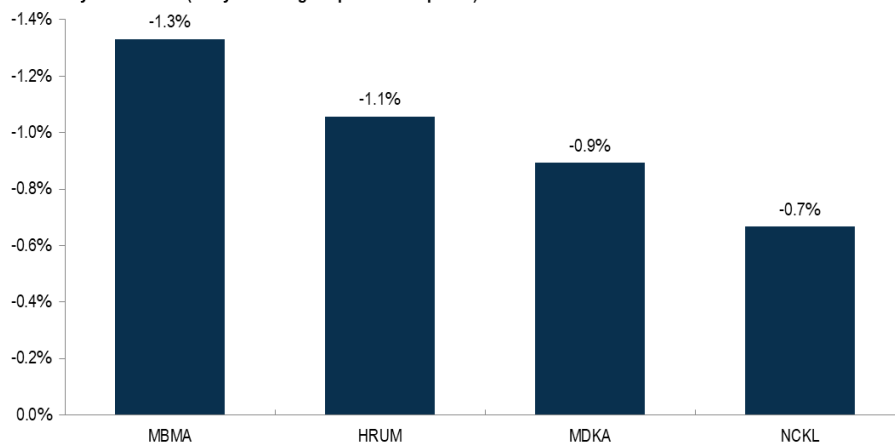
We think structural demand recovery would be the only upside catalysts for a rally/recovery in nickel sulphate prices, either through inorganic (EV-subsidy) and/or organic demand growth.

### Impact to listed nickel miners

We conducted sensitivity analysis for metal-miners under our coverage, by assessing the impact of 1% change in the nickel sulphate/MHP/matte price assumptions into its earnings per share forecast (Fig. 9) in FY24F. MBMA would be the most affected, followed by HRUM, MDKA, and NCKL.

**Fig. 9: Earnings sensitivity towards nickel sulphate/MHP/matte price**

Sensitivity to FY24F NP (every 1% change in price assumptions)



Source: Indo Premier estimates; \*EBITDA for MBMA/MDKA.

**Fig. 10: Peers comparison table**

Ticker	Company	Rating	Target price (Rp/share)	P/E			EV/EBITDA			Dividend yield (%)		
				23F	24F	25F	23F	24F	25F	23F	24F	25F
ADMR IJ	Adaro Minerals Indonesia	Buy	1,650	10.2	8.9	9.1	7.8	8.0	7.3	N/A	N/A	N/A
ANTM IJ	Aneka Tambang	Buy	2,100	11.2	10.0	8.8	6.9	6.3	5.4	4.8%	4.5%	5.0%
HRUM IJ	Harum Energy	Buy	1,750	9.6	10.9	10.1	3.7	5.5	7.1	N/A	N/A	N/A
INCO IJ	Vale Indonesia	Hold	5,560	11.5	21.2	37.9	4.4	8.2	10.2	N/A	N/A	N/A
MBMA IJ	Merdeka Battery Materials	Buy	940	189.2	20.2	12.2	34.7	8.7	6.4	N/A	N/A	N/A
MDKA IJ	Merdeka Copper Gold	Buy	3,500	N/A	32.8	31.7	18.4	8.4	7.8	N/A	N/A	N/A
NCKL IJ	Trimegah Bangun Persada	Buy	1,250	10.1	7.2	6.4	7.2	4.6	3.7	N/A	3.0%	4.1%

Source: Bloomberg, Indo Premier



## SECTOR RATINGS

- OVERWEIGHT : An Overweight rating means stocks in the sector have, on a market cap-weighted basis, a positive absolute recommendation
- NEUTRAL : A Neutral rating means stocks in the sector have, on a market cap-weighted basis, a neutral absolute recommendation
- UNDERWEIGHT : An Underweight rating means stocks in the sector have, on a market cap-weighted basis, a negative absolute recommendation

## COMPANY RATINGS

- BUY : Expected total return of 10% or more within a 12-month period
- HOLD : Expected total return between -10% and 10% within a 12-month period
- SELL : Expected total return of -10% or worse within a 12-month period

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