

Indonesia Metal

POSITIVE (New)

Paving way to becoming a global EV hub

Race to zero emissions

The global shift towards net-zero and clean energy will have a far-reaching impact on mineral demand over the next 20 years. We expect nickel used in electric vehicles (EVs) and battery storage to increase seven-fold by 2040, as EV penetration rises. The key challenge is whether supply can be ramped up fast enough to meet demand. Given the country's abundant resources, Indonesia is strategically positioned to become a major player in the global EV supply chain, attracting global investments and opening up numerous opportunities for growth projects.

Nickel price remains elevated; China reopening boost

Strong Indonesia supply and slower global demand growth have turned nickel market balance to a surplus of 200kt in 2022E (vs -68kt in 2021), although excess is largely class-2 nickel. Class 1 supply, on the other hand, remains in deficit, pushing LME nickel prices to trade at a historical high. However, with more mixed hydroxide precipitate (MHP) supply from the newly-introduced technology of high-pressure acid leaching (HPAL) projects coming on line, this should help alleviate prices. Meanwhile, China's recovery in stainless steel consumption should partially absorb growing supply of Indonesia class 2 product, narrowing nickel surplus to 105kt/54kt in 2023E/24E. We set our 2022E/23E nickel price assumption at USD25k/21k per tonne.

Growth projects to drive long-term earnings growth

We estimate the sector offers an attractive long-term EBITDA and NPAT CAGR of 13%/19% for FY21-30E. This will be driven by organic expansions due to higher demand for critical minerals (nickel and copper) and inorganic expansions as new growth projects come on line. Our long-term nickel price assumption is USD18k/t, ~25% below the current spot price.

Initiate with POSITIVE view; INCO & MDKA as Top Picks

We initiate coverage of Indonesia's metal sector with a POSITIVE view as we believe companies under our coverage (INCO, MDKA and ANTM) will benefit from multiple new growth project opportunities stemming from rising demand for critical minerals as the world shifts towards clean energy. This drives attractive long-term earnings growth outlook (19% FY21-30E CAGR). Our Top Picks in the sector are INCO and MDKA. Key reasons are: 1) strong earnings growth outlook from future projects; 2) better proxy for class-1 products for INCO as price is pegged to the LME; and 3) for MDKA, vertically integrated EV battery supply chain and diversified multi-assets.

Stock	Bloomberg code	Mkt cap (USD'm)	Rating	Price (LC)	TP (LC)	Upside (%)	P/E (x)		P/B (x)		Div yld (%)	
							22E	23E	22E	23E	22E	23E
Merdeka Copper	MDKA IJ	6,381	Buy	4,120	5,300	29	84.9	73.6	5.7	5.3	0.0	0.0
Vale	INCO IJ	4,532	Buy	7,100	8,700	23	21.3	20.2	1.9	1.7	0.0	0.0
Aneka Tambang	ANTM IJ	3,064	Buy	1,985	2,400	22	15.7	14.1	2.1	1.9	1.4	2.2

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Companies

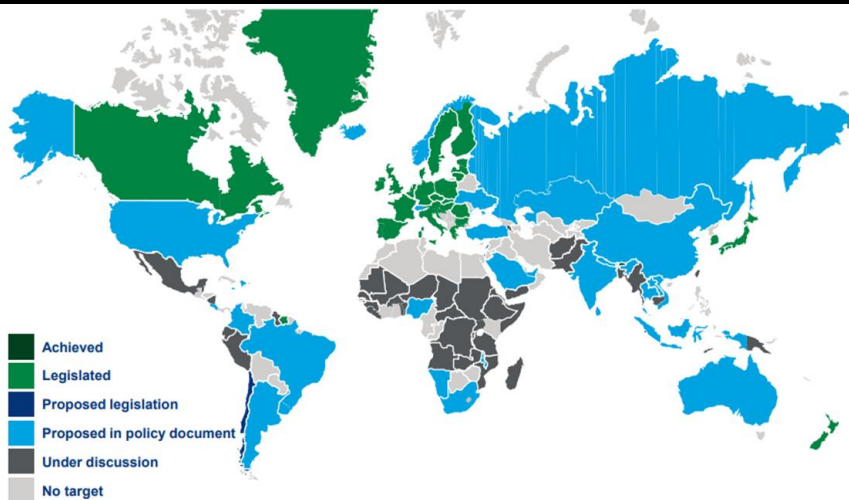
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1. Indonesia to become critical player in EV battery ecosystem

1.1 Race to zero emissions

Government and companies are increasingly committing to climate action, with the aim of reaching net zero by 2050 and limiting the rise in global temperatures to 1.5°C under the Paris Agreement. To achieve this goal, global emissions need to be reduced by 45% by 2030 and reach net zero by 2050. Transitioning towards net-zero requires transformation towards clean energy, which requires replacing polluting fossil fuel with energy from renewable sources.

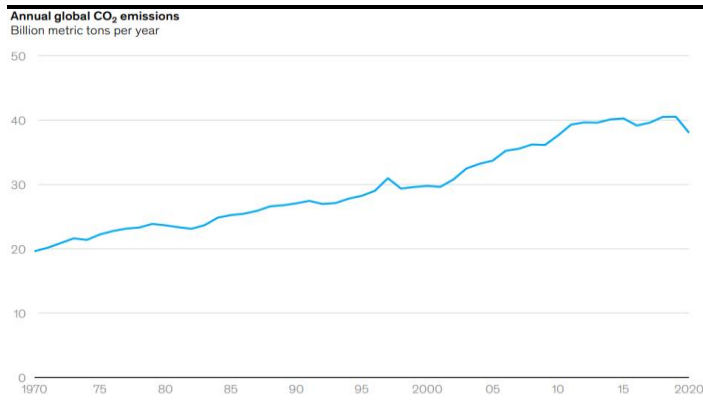
Fig 1: Status of net-zero emissions targets by country



Source: Wood Mackenzie, Maybank IBG Research

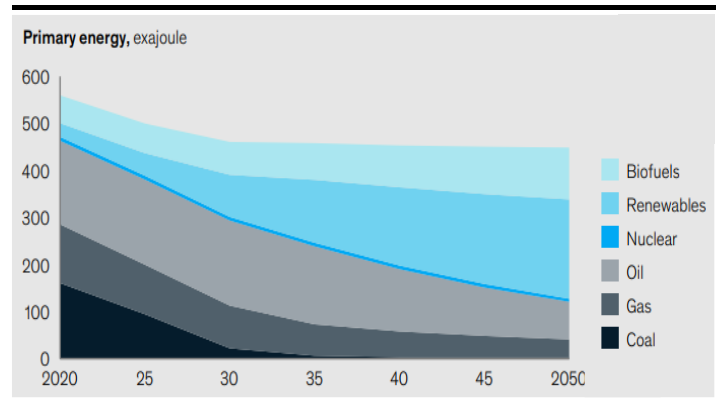
CO2 emission has risen significantly since 1970, although the rate of increase has slowed down in recent years, including temporary reduction during Covid-19. Fossil fuel currently still dominates electricity generation, but should drop sharply as the world starts to shift towards low carbon energy sources.

Fig 2: Carbon dioxide emission since 1970



Source: Mckinsey Sustainability Insights, Maybank IBG Research

Fig 3: Electricity generation - mixed forecast



Source: Mckinsey Sustainability Insights, Maybank IBG Research

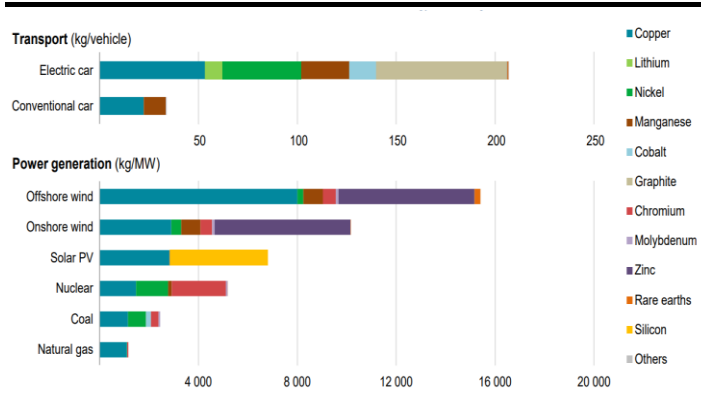
1.2 Rising demand for critical minerals

The global transition towards clean energy will have a far-reaching impact on mineral demand over the next 20 years. Minerals and metals play a

critical role in the rise of many of the clean-energy technologies that are widely used today, ranging from wind turbines, solar panels, to EVs and battery storage.

A typical electric car requires six times the mineral inputs of a conventional car and an offshore wind turbine requires nine times more mineral resources than a gas-fired power plant. The shift to clean energy will drive a huge increase in mineral demand, such as copper, nickel, lithium, cobalt, manganese and others.

Fig 4: Minerals used in clean-energy technologies



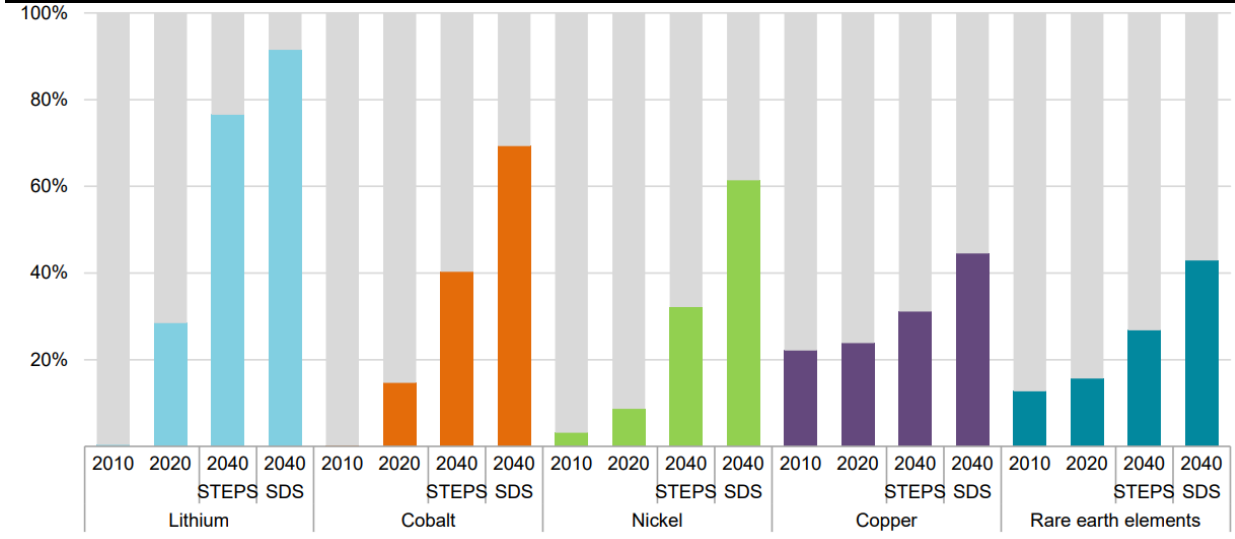
Source: IEA, Maybank IBG Research

Fig 5: Critical mineral needs for clean energy

	Copper	Cobalt	Nickel	Lithium	REEs	Chromium	Zinc	PGMs	Aluminium*
Solar PV	●	○	○	○	○	○	○	○	●
Wind	●	○	●	○	●	●	●	○	●
Hydro	○	○	○	○	○	○	○	○	○
CSP	○	○	○	○	○	●	○	○	●
Bioenergy	●	○	○	○	○	○	○	○	○
Geothermal	○	○	●	○	○	●	○	○	○
Nuclear	○	○	○	○	○	○	○	○	○
Electricity networks	●	○	○	○	○	○	○	○	●
EVs and battery storage	●	●	●	●	●	○	○	○	●
Hydrogen	○	○	●	○	○	○	○	○	○

Source: IEA, Maybank IBG Research

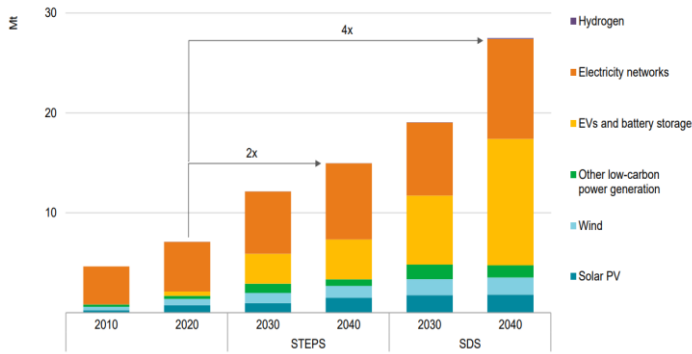
Fig 6: Share of clean-energy technologies in total demand for selected minerals



Source: IEA, Maybank IBG Research

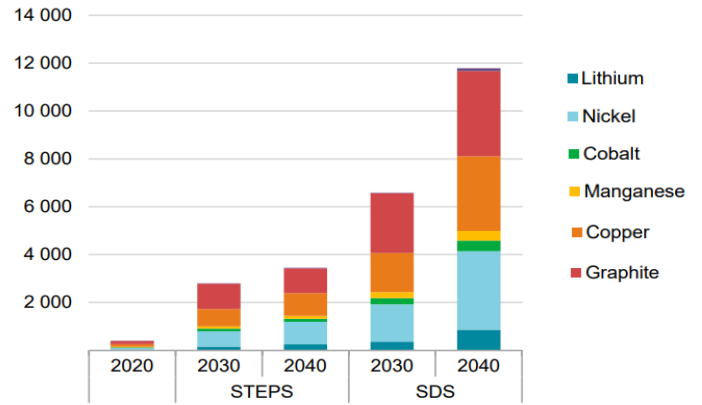
One of the fastest growing industries will be EVs and batteries, which will lead the increase in critical mineral demand. IEA estimates minerals used in EVs and battery storage to grow by at least 30x to 2040, driving demand for lithium, nickel and copper. However, development of new battery technology could shift the demand dynamics of each mineral.

Fig 7: EVs and battery lead mineral demand growth



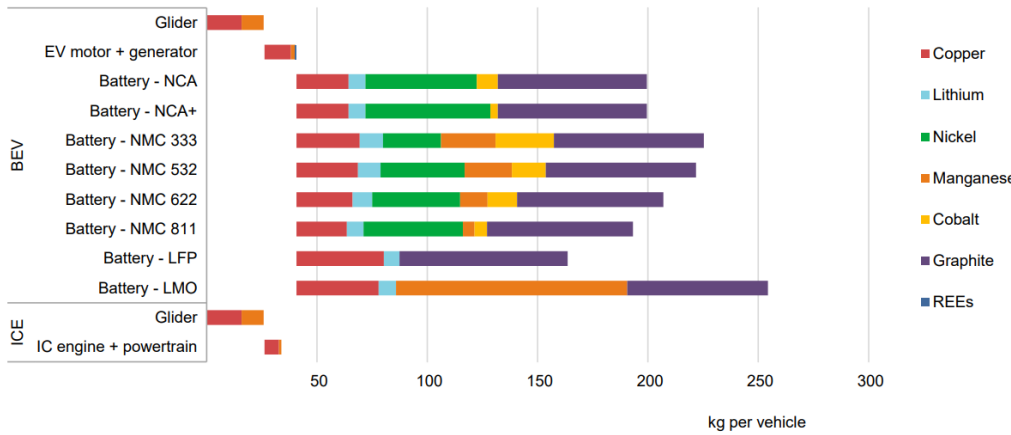
Source: IEA, Maybank IBG Research

Fig 8: EVs will drive demand for lithium, nickel and copper



Source: IEA, Maybank IBG Research

Fig 9: Typical use of minerals in ICE vs EV battery cars

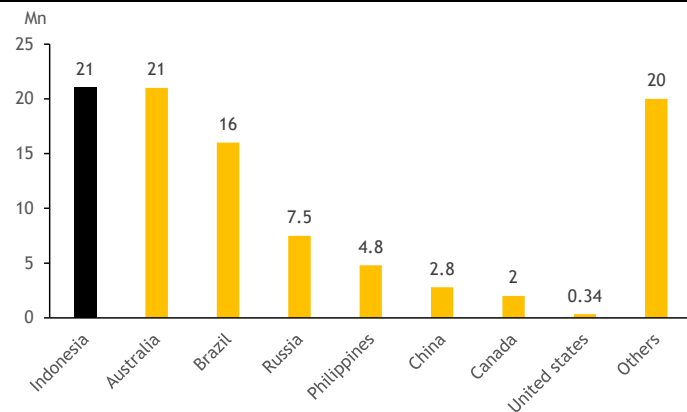


Source: IEA, Maybank IBG Research

1.3 Indonesia primed for key role in EV battery production

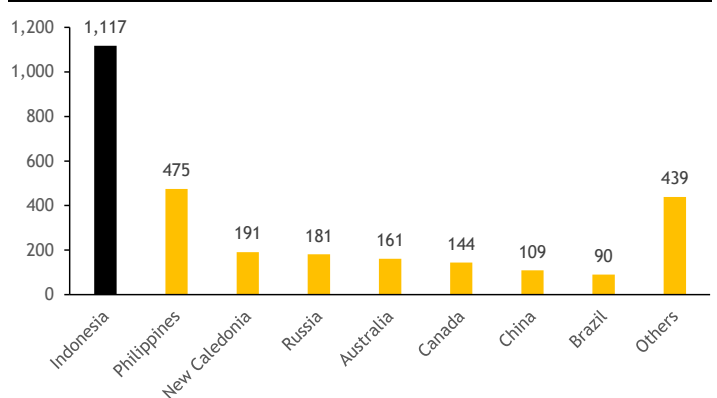
The world's nickel reserves are currently estimated at more than 95m tonnes. Indonesia holds the largest nickel reserves, along with Australia, estimated at 21m tonnes or 22% of global nickel reserves. In addition to having the largest reserves, Indonesia is currently the biggest nickel producer in the world, with 2021 output of 1.1mt or 38% of the global production. With such a strong position, Indonesia holds a key role in the EV battery supply chain.

Fig 10: Global nickel reserves



Source: USGS, Maybank IBG Research

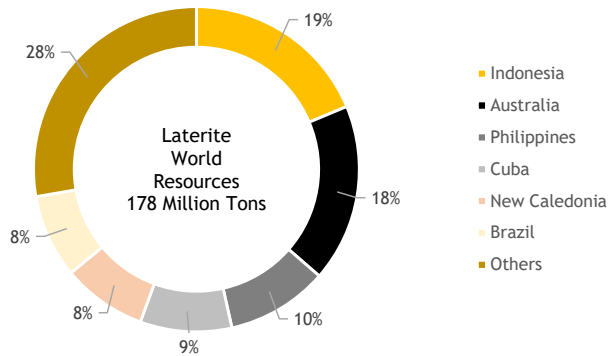
Fig 11: World nickel production by country



Source: Wood Mackenzie, Maybank IBG Research

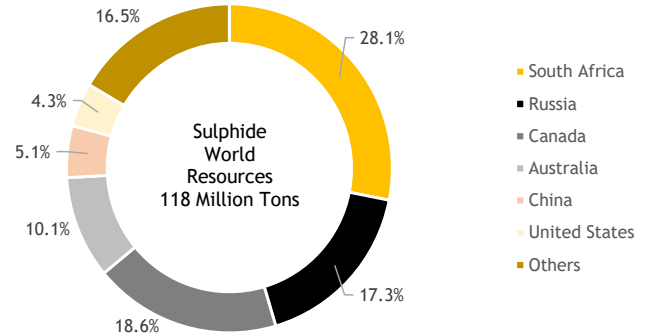
Meanwhile, the world’s total nickel resources are estimated by the Nickel Institute at around 300m tonnes, with about 60% in laterites and 40% in sulfide deposits. Sulfide nickel typically is located deep underground but contains higher Ni grade, while laterite nickel typically is found at the surface and has lower Ni grade compared to sulfide. Indonesia holds 19% of the world’s laterite ore, estimated at 33.3m tonnes.

Fig 12: Laterite nickel reserves by country



Source: Nickel Institute, Maybank IBG Research

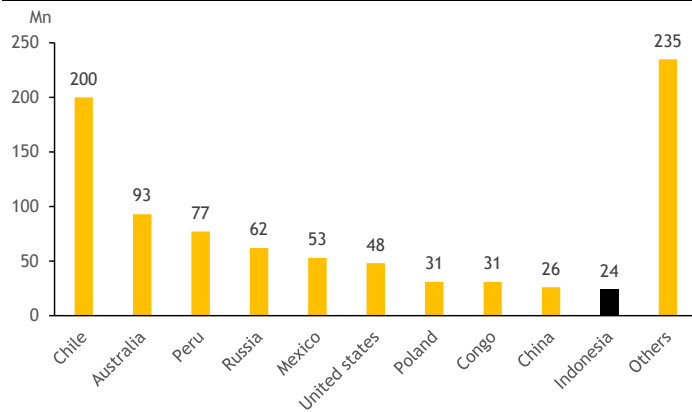
Fig 13: Sulfide nickel reserves by country



Source: Nickel Institute, Maybank IBG Research

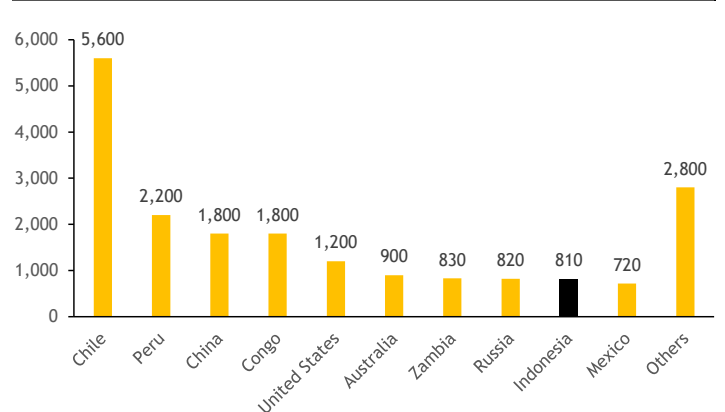
Aside from nickel, Indonesia has large deposits of copper, another important mineral for EVs and batteries. Indonesia holds 10% of global copper deposits, estimated at 24m tonnes. Indonesia is also the ninth largest copper producer in the world, with annual output of 810k tonnes.

Fig 14: Global copper reserves



Source: USGS, Maybank IBG Research

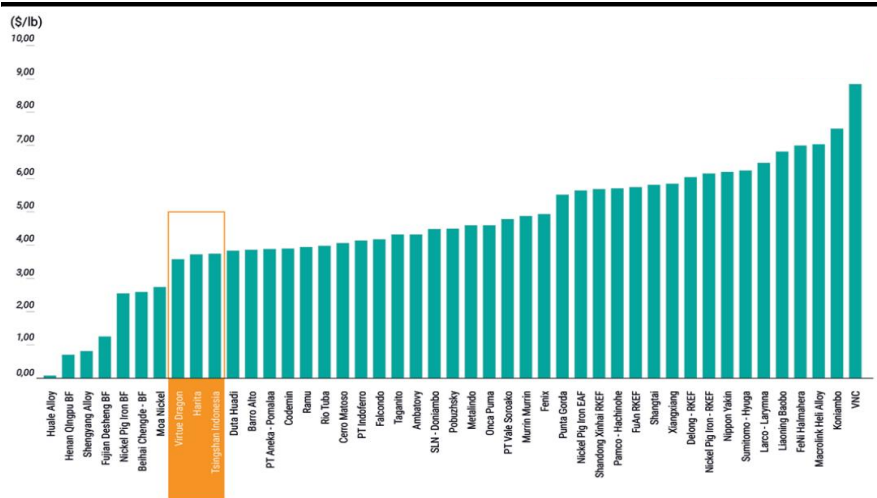
Fig 15: Global copper producers



Source: USGS, Maybank IBG Research

Other than abundant mineral reserves, Indonesia also has low mining and labor cost compared to other mineral-producing countries. As a result, Indonesia has one of the lowest cash costs for nickel smelters in the world (Fig 16), which provides a strong competitive advantage for Indonesia to become a key player in EVs and batteries. Furthermore, Indonesia has a large population of 270m people and it’s the 16th largest economy (projected to be #4 in 2050), which is ideal for becoming the manufacturing hub for EVs and batteries.

Fig 16: Global smelters cash cost curve



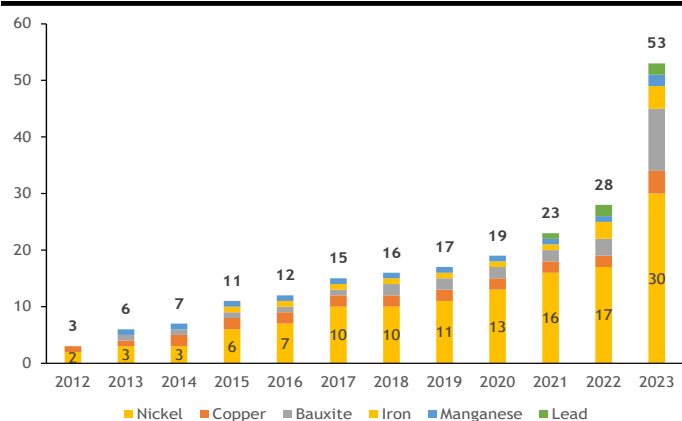
Source: Wood Mackenzie, Maybank IBG Research

1.4 Attracting global EV and battery investment

Under the current government administration, Indonesia has focused on developing the downstream industry, especially in the mining sector. Paired with its abundant mineral reserves, low mining and labour costs and a large population base, Indonesia has managed to attract many domestic and foreign investments into the nickel and other mineral industries.

As of 2021, there were 23 smelters operating and the number is expected by the Ministry of Energy and Mineral Resources to grow and more than double in 2023 with a total investment value of USD21b. Out of the 32 new smelters planned, nickel has the highest growth with 15 new smelters over the next two years, doubling to 30 smelters by 2023.

Fig 17: Indonesia mineral smelters



Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

Fig 18: Investment value of new mineral smelters plan

Sector	Existing	Plan	Total	Investment Value (USD mn)
Nickel	15	15	30	7,973
Copper	2	9	11	8,647
Bauxite	1	3	4	203
Iron	2	2	4	4,374
Manganese	1	1	2	24
Lead	0	2	2	29
Total	21	32	53	21,250

Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

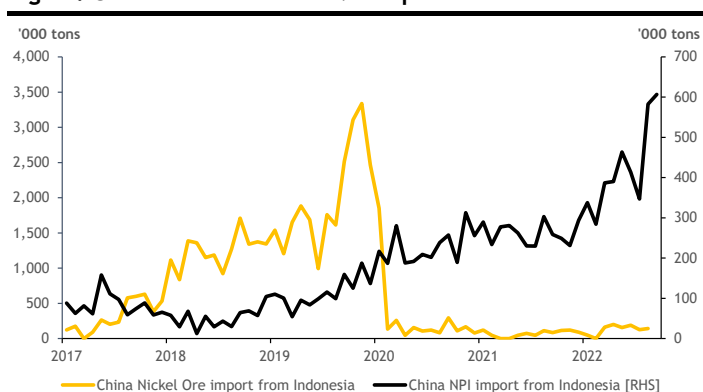
Currently, the investments are dominated by domestic and Chinese steelmakers with ferronickel (FeNi) and nickel pig iron (NPI) as the end products. This is the result of Indonesia’s ore export ban in 2020, which prompted many Chinese players to invest in Indonesia and forced local nickel players to build smelters for ore processing. This has resulted in an increase in Indonesia NPI exports, especially to China.

Fig 19: Indonesia nickel smelters - class 2 supply (NPI/FeNi)

Nickel	Company name	Product	Capacity output ('000 ton Ni)	Years completed	Location	Progress
1	COR Industri Indonesia	FeNi	100	2017	Morowali, Sulawesi Tengah	100%
2	Vale Indonesia	Ni Matte	80	2010	Sulawesi Selatan	100%
3	Tsingshan Steel	NPI	500	2017	Morowali, Sulawesi Tengah	100%
4	Aneka Tambang	FeNi	90	2010	Kaloka, Sulawesi	100%
5	Virtue Dragon	NPI	1,000	2021	Kanowe, Sulawesi	100%
6	Weda Bay Nickel	NPI	300	2020	Halmahera, Maluku	100%
7	Fajar Bhakti Lintas Nusantara	NPI	120	2015	Halmahera, Maluku	100%
8	Wanatiara Persada	NPI	160	2019	Halmahera, Maluku	100%
10	Century Metalindo	FeNi	25	2013	Banten	100%
11	Sulawesi Resources	NPI	150	2023	Morowali, Sulawesi Tengah	17%
12	Wanxiang Nickel Indonesia	FeNi	350	2023	Morowali, Sulawesi Tengah	22%
13	Ang and Fang Brother	NPI	130	2023	Morowali, Sulawesi Tengah	22%
14	Arthabumi Sentra Industri	NPI	75	2023	Morowali, Sulawesi Tengah	86%
15	Ceria Nugraha Indotama	FeNi	250	2023	Kolaka, Sulawesi Tenggara	43%
16	Mapan Asri Sejahtera	NPI	21	2023	Kolaka, Sulawesi Tenggara	84%
17	Bintang Smelter Indonesia	NPI	250	2023	Kanowe, Sulawesi	27%
18	Mahkota Konawehea	FeNi	62	2023	Kendari, Sulawesi	21%
19	Macika Mineral Industri	NPI	93	2023	Konawe, Sulawesi	25%
20	Artha Mining Industry	FeNi	200	2023	Bombana, Sulawesi	44%
21	Sinar Deli Bantaeng	NPI	238	2023	Bantaeng, Sulawesi	40%
22	Aneka Tambang	FeNi	160	2023	Halmahera Timur	37%
23	Aneka Tambang	FeNi	64	2021	Halmahera Timur	97%
24	Teka Mining Resources	FeNi	300	2023	Halmahera Tengah	40%
25	Smelter Nikel Indonesia	NPI	76	2021	Banten	44%

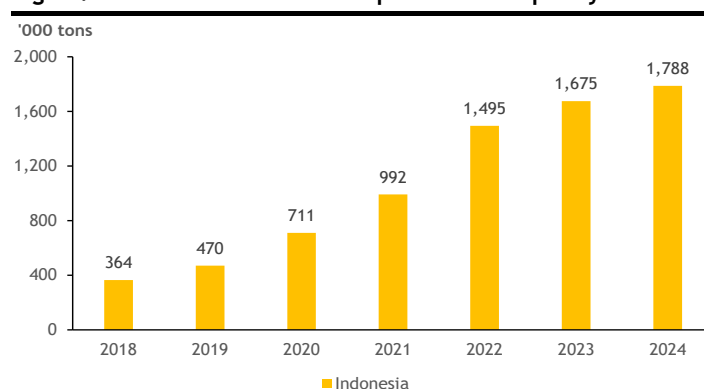
Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

Fig 20: China nickel ore and NPI imports from Indonesia



Source: Bloomberg, Maybank IBG Research

Fig 21: Indonesia nickel smelter production capacity



Source: Wood Mackenzie, Maybank IBG Research

While currently installed nickel smelters are mainly dominated by class-2 products, such as NPI and ferronickel for stainless steel making, we see more class-1 nickel supply from 2025 onwards with the new installed HPAL technology used to convert low-grade limonite ore nickel to mixed hydroxide precipitate (MHP). Global leading EV battery manufacturers such as Huayou, CATL, LG and others are racing to build their HPAL operations in Indonesia to tap into the country's raw material supply.

Fig 22: Indonesia's nickel smelters - class 1 supply

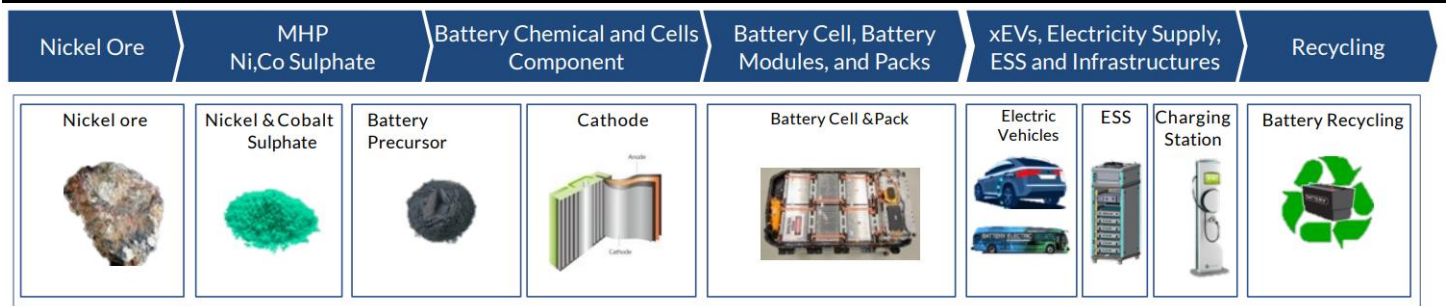
No	Company name	Product	Capacity output ('000 ton Ni)	Years completed	Location
1	Halmahera Persada Lygend	MHP / HPAL	365	2021	Obi island, North Maluku
2	Huayue Nickel Cobalt	MHP / HPAL	60	2022	Morowali, Sulawesi Tengah
3	Huafei Nickel Cobalt	MHP / HPAL	120	2023	IMIP, Morowali
5	Huashan Nickel Cobalt	MHP / HPAL	120	2024	South Sulawesi
6	Vale Indonesia Huayou Ford	MHP / HPAL	120	2025	Pomalaa, East Sulawesi
7	Vale Indonesia Huayou	MHP / HPAL	60	2025	Sorowako, South Sulawesi
8	Aneka Tambang - CATL	MHP / HPAL	50	2025	North Maluku
9	Aneka Tambang - LGES	MHP / HPAL	50	2026	North Maluku

Source: Company, Maybank IBG Research

Indonesia, through the Indonesia Battery Corporation (IBC), a state-owned company, has a vision to build an EV ecosystem in the country from upstream (nickel ore mine) to downstream (battery producers and EV manufacturer). Going forward, we believe more foreign investments will set foot in Indonesia, not only in the EV battery makers but EV manufacturers as well.

Hyundai has built its factory in Cikarang, West Java with annual production capacity of 150k units. Ford has partnered with Huayou and INCO to build an HPAL plant in Sulawesi. Tesla is currently in discussions with the government about the possibility of opening manufacturing facilities in Indonesia. We believe Indonesia will become a critical player in EVs and the battery industry.

Fig 23: Indonesia Battery Corporation EVs roadmap



Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

2. Battery: key for the BEV industries

2.1 Lithium-ion cathode: nickel, aluminium, cobalt, manganese, and iron phosphate

Lithium-ion (Li-ion) battery is a widely used battery type today as it has characteristics of being lightweight, rechargeable and powerful. The R&D in li-ion battery is a long journey, mainly as the lithium-based battery has been developed since the 1970s during the oil price spike, with various results.

Fig 24: Comparison of different lithium-ion battery chemistries

Cathode	Anode	Energy Density (watt-hours/kg)	Number of Cycles	Applications
LFP (lithium Iron Phosphate)	Graphite	85-105	200-2,000	Energy storage
LMO (lithium-manganese oxide)	Graphite	140-180	800-2,000	Power tools, medical devices, electric power trains
LMO (lithium-manganese oxide)	LTO*	80-95	2,000-25,000	
LCO (Lithium-Cobalt oxide)	Graphite	140-200	300-800	Mobile phones, tablets, laptops, camera
NCA (Nickel-Cobalt Aluminum oxide)	Graphite	120-160	800-5,000	Medical devices, industrial, EV (Tesla)
NMC (Nickel-Manganese-Cobalt)	Graphite, Silicon	120-140	800-2,000	The e-bike, EVs, and industrial

*LTO: lithium-titanate oxide

Source: Irina (2015), Asian Development Bank, Battery University, Maybank IBG Research

Before lithium-ion, the common battery type was nickel-cadmium (Ni-Cd) and nickel-metal hydride (Ni-Mh). Each battery technology has its own strengths and weaknesses, and it's a trade-off on the engineering and financial side.

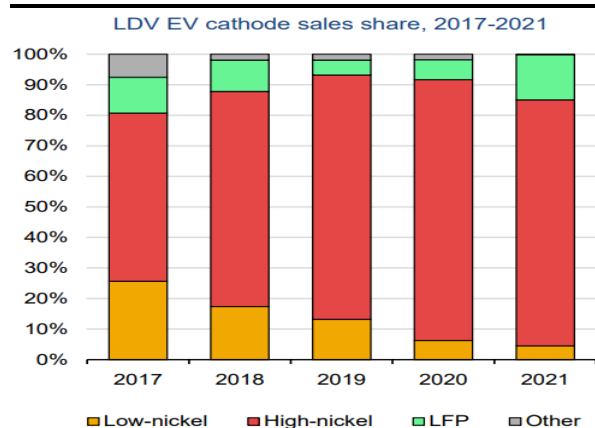
Fig 25: Comparison of battery anode and cathode

Battery type	NiCd (Nickel Cadmium)	NiMH (Nickel-metal Hydride)	Li-ion (Lithium Ion)	Li-ion Polymer	LFP	Sodium ion
Commercial use	1950	1990	1991	1999	1996	2021
Cell voltage (V)	1.25	1.25	3.6	3.6	3.3	2.3-2.5
Cycle life	1,500	300-500	500-1,000	300-500	2000+	n.a
Energy Density (Wh/kg)	45-80	60-120	110-160	100-130	90-120	160
Self-discharge/month	20%	30%	10%	10%	n.a	n.a

Sources: Batteryuniversity.com, Maybank IBG Research

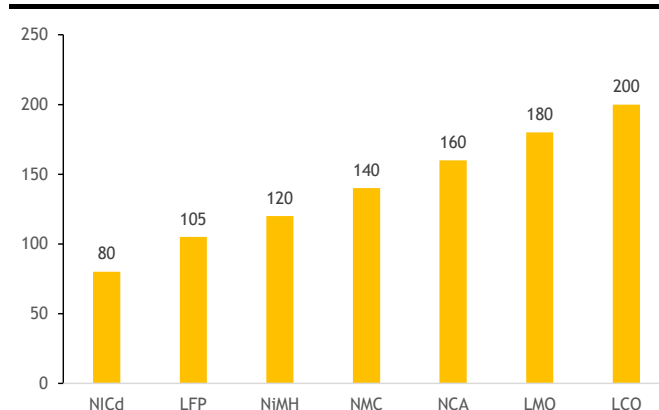
Today, the most common battery type is nickel-based battery, as it has higher energy density. Recently, however, LFP battery adoption has been gaining traction in the market, as the market is seeking cheaper alternatives.

Fig 26: EV battery type market share



Source: Wood Mackenzie, Maybank IBG Research

Fig 27: Energy density comparison (Wh/kg)



Source: IEA, Maybank IBG Research

2.2 LFP is becoming more common in EV cars; cheaper

Experts believe that LFP battery is more suitable for the Energy Storage System (ESS) due to its lower energy density per kg and higher cycle. The adoption of the LFP battery is becoming more common in EVs. To reduce EV prices, auto manufacturers can either reduce the battery pack (kWh) or select a cheaper material; LFP offers a shorter range but can be offset with ultra-fast charging.

According to Bloomberg, LFP battery is roughly 30% cheaper compared to Li-ion battery at USD132/kWh. However, battery prices can be volatile subject to the cost of raw materials.

Fig 28: Comparison of battery technology in EVs

EV Car model	Batt kWh	Batt Cell	Batt. Conf	Price (USD)	Charging Port	Nominal Voltage	Battery Type
Wuling Mini Air	17	N.A	No Data	15,387	No Data	115	LFP
Tesla - Model S Plaid	100	7,920	110s/72p	144,612	Type-2/CCS	407	NCA
Tesla - Model 3 Performance	82	4,416	96s/46p	69,163	Type-2/CCS	360	NMC
Tesla - Model Y	82	4,416	96s/46p	62,400	Type-2/CCS	360	LFP
Hyundai Kona 39kWh	42	N.A	No Data	37,878	Type-2/CCS	327	Li-ion
Hyundai Ioniq 5 (Standard Range, 2WD)	58	288	144s/2p	45,682	Type-2/CCS	523	Li-ion
Hyundai Ioniq 5 (Long Range, AWD)	77	384	192s/2p	61,604	Type-2/CCS	697	Li-ion
MG - ZS (Long Range)	73	N.A	No Data	39,532	Type-2/CCS	N.A	NCM
BYD Atto 3	60	N.A	No Data	39,543	Type-2/CCS	N.A	BYD Blade (LFP)
Toyota - BZ 4X - FWD	75	96	96S/1P	49,418	Type-2/CCS	355	Li-ion
Seres 3	53	N.A	No Data	36,421	No Data	N.A	Ternary Lithium
Renault Megane E-tech EV40	40	192	96s/2p	43,705	Type-2/CCS	N.A	NCM
Honda e-advance	36	192	No Data	33,788	No Data	355	Li-ion
Polestar 2 - Long Range Single Motor	78	324	108s/3p	53,065	Type-2/CCS	400	NCM
Volkswagen ID.3 Pro S-4 Seats	82	288	96s/3p	45,329	Type-2/CCS	350	NCM 712
Nissan Ariya 63 kWh	66	N.A	No Data	49,418	Type-2/CCS	N.A	NCM
Lexus UX 300e	54	288	96s/3p	49,481	Type-2/CHAdemo	355	Li-ion
KIA EV6 Long-range 2WD	77	384	192s/2p	53,060	Type-2/CCS	697	Li-ion
KIA EV6 Long-range AWD	77	384	192s/2p	57,212	Type-2/CCS	697	Li-ion
BMW iX1 x Drive 30	68	N.A	No Data	57,233	Type-2/CCS	400	Li-ion
Ford Mustang Mach-E SR RWD	76	288	96s/3p	65,454	Type-2/CCS	N.A	Li-ion
Mercedes eVito Tourer Long 60kWh	66	192	96s/2p	63,142	Type-2/CCS	352	Li-ion
Dacia Spring Electric	27	72	72S/1P	23,466	Type-2/CCS	240	Li-ion
JAC iEV7s	44	96	No Data	31,114*	Type-2/CCS	365	NCA
Fiat 500e Hatchback 42kWh	42	192	96s/2p	36,411	Type-2/CCS	355	Li-ion
Fiat 500e Hatchback 24kWh	24	108	108s/1p	32,248	Type-2/CCS	400	Lithium-ion
Nissan Leaf	40	192	96s/2P	34,756	Type-2/CHAdemo	350	NCM 523
Nissan Leaf e+	62	288	96s/3p	42,769	Type-2/CHAdemo	350	NCM 524
Peugeot e-208	50	216	108S/2P	36,785	Type-2/CCS	400	Li-ion
Mazda MX-30	36	N.A	No Data	37,451	Type-2/CCS	N.A	Lithium-ion
Porche Taycan	79	336	168s/2p	91,988	Type-2/CCS	615	NCM 712

Source: ev-database.org, Maybank IBG Research

2.3 Moving towards higher nickel content

While LFP has been gaining popularity in EV battery due to its affordability, we expect nickel-based battery to remain dominant as it offers higher energy density and driving range. The current dominant cathode in the auto

sector is NMC (nickel-manganese-cobalt), and the nickel content in NMC is getting higher in the battery production from 1:1:1 to 8:1:1.

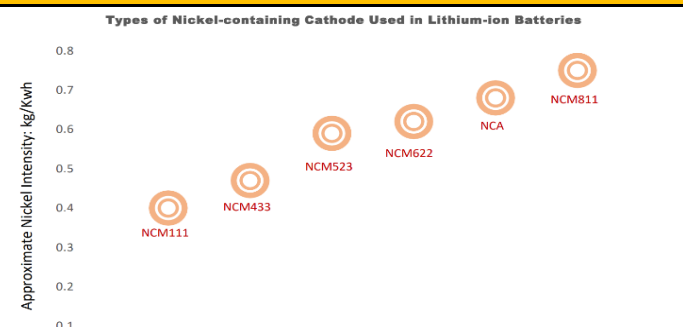
Over the years, battery makers have been moving towards higher nickel content to achieve higher energy density and lower cost (cobalt is the most expensive constituent per kg of Li-ion battery). In addition, concerns about human rights abuse and child labour related to cobalt mining in the Democratic Republic of Congo also adds motivation to reduce use of cobalt. IBC is targeting to produce batteries with a 9:0.5:0.5 ratio. Reuters also reported that LG Energy Solution (373220 KS, CP KRW485,500) is supplying Tesla with a 90% nickel ratio.

Fig 29: Material intensity comparison in cathode

	Lithium	Nickel	Cobalt	Manganese
NCA	0.10	0.67	0.13	0.00
NMC111	0.15	0.40	0.40	0.37
NMC622	0.13	0.61	0.19	0.20
NMC811	0.11	0.75	0.09	0.09
LFP	0.10	-	-	-

Source: Global EV Outlook 2018, Maybank IBG Research

Nickel intensity (kg/kWh) by types

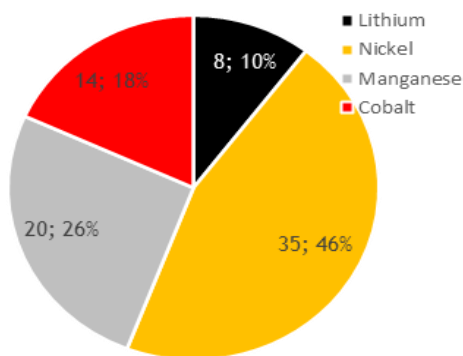


Sources: World Nickel Factbook 2021, Maybank IBG Research

It is estimated that nickel component in batteries ranges from 400-750 grams/kWh while lithium component is within 100-150 grams/kWh. Based on our EV sampling, battery capacity ranges from 17-100 kWh, with the median at 62 kWh. Hence, we estimate the median nickel consumption per car is roughly 46.5kg (NMC811).

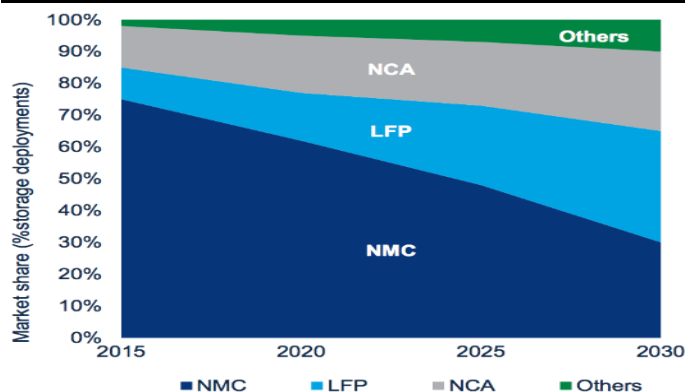
Argonne National Laboratory research also concluded that a single Li-ion car battery using NMC 532, contains around 8kg of lithium, 35kg of nickel, 20kg of manganese and 14kg of cobalt.

Fig 30: Minerals ratio in a single car using NMC 532 (kg, %)



Source: Wood Mackenzie, Maybank IBG Research

Fig 31: Share of EV batteries by type



Source: IEA, Maybank IBG Research

2.4 Quest for new battery materials: cheap, high-energy density, and nickel & cobalt free

We expect demand for batteries will continue to increase in line with the rising adoption of EVs. However, material resources and manufacturing might not be sufficient to meet demand, especially in the US where they lack mineral resources to produce batteries.

Fig 32: Comparison of US mineral reserves and the world

Element	US reserves (1000 mt)	World Reserves (1000 mt)	% World	US Manufacturing Capacity (GWh)	World Manufacturing Capacity (GWh)
Lithium	750	21,000	3.6%	7470	209,163
Cobalt	53	7,100	0.7%	703	94,164
Nickel	100	94,000	0.1%	167	156,510
Manganese	230,000	3,271,693	7.0%	3,271,693	18,492,176

Source: National Blueprint for Lithium Batteries 2021-2030, Maybank IBG Research

To remain competitive in the EV-based automotive industries, the US needs to find new materials. The US stated three long-term goals in battery technology: 1) less than USD60/kWh; 2) an energy density of 500 Wh/kg; and 3) cobalt and nickel-free.

Fig 33: Overview of next-generation battery technologies

	Conventional Li-Ion	Si Anode/Hi-Ni Cathode	Solid State Battery (SSB)	Lithium-sulphur/air
Usage	EV and stationary energy storage	Light-EV, fast charging	Eliminate battery fire, moderate performance improvement	Revolutionary technology
Cathode Material	NMC 532, NMC 662, NCA or LFP	NMC 811 or NCA 90	NMC 811, NCA 90, LNMO (High voltage)	Li-metal
Anode Material	Graphite	Graphite with SiOx or pure Si	Graphite with a large amount of pure Si or Li-metal	Sulphur or Oxygen/Air
Electrolyte	Carbonate-based liquid organic solvents	Carbonate-based liquid organic solvents	Ceramic, polymer, or sulphur based solid electrolyte	Solid-state
Separator	Polymer thin films	Polymer thin films	As part of the solid-state electrolyte Cu and Al foil	As part of the solid-state electrolyte
Current collector	Cu and Al foil	Cu and Al foil		Porous carbonaceous material, noble metal, noble metal catalyst, and Cu foil

Source: S&Pglobal.com, Maybank IBG Research

Sodium-ion as an alternative for lithium-ion

Alchemists and scientists are developing new materials for batteries and trying different materials, including Sodium-ion (Na⁺). Contemporary Amperex Technology Co., Ltd. (300750 CH, CP CNY420, Not Rated) - announced its first generation of sodium-ion batteries.

Sodium-ion has a lower energy density (160 Wh/kg), supports fast charging up to 80% in 15 minutes, has excellent thermal stability (vs. lithium), is great at low temperatures (retains more than 90% of energy at -20^o C), and efficiency can reach 80%.

Sodium-ion technology is still on a brownfield, as the number of patents is relatively low compared to the extensive research in the lithium space. Hence, there is still upside for sodium-ion, with CATL targeting the second generation to have an energy density of 200 Wh/kg.

Fig 34: CATL’s first natrium-ion battery



Source: CATL.com, Maybank IBG Research

Fig 35: Sodium-ion vs. LFP battery



Source: CATL.com, Maybank IBG Research

2.5 New technology: longer mileage, less expensive materials

We believe battery technology will continue to advance in the future. Now, new start-ups are aiming to make a breakthrough with different approaches. One of them is Our Next Energy (ONE), which can increase the mileage using its proprietary technology.

With ONE’s Gemini technology, it can increase the energy density to 1,007 Wh/L (vs. LFP of 350 Wh/l). ONE’s technology reduces nickel usage by 75% and fully eliminates cobalt. It is using lithium, phosphate, iron and manganese.

Fig 36: ONE’s Gemini 1007 Wh/L Anode Free Cell



Source: One.ai, Maybank IBG Research

Fig 37: ONE’s USD1.6b cell factory with 20GWh capacity



Source: One.ai Maybank IBG Research

ONE’s Gemini pairs more standardized LFP and anode-free chemistries into one battery pack, enabled by the company’s proprietary DC-DC converter; LFP for daily driving, and anode-free to extend the range for long distances - with expected lifecycle of more than 250,000 miles.

Its 240-Ah prismatic anode-free cell has a 600-mile range, with expected production cost of USD50/kWh at scale and expected to reach volume production by 2026.

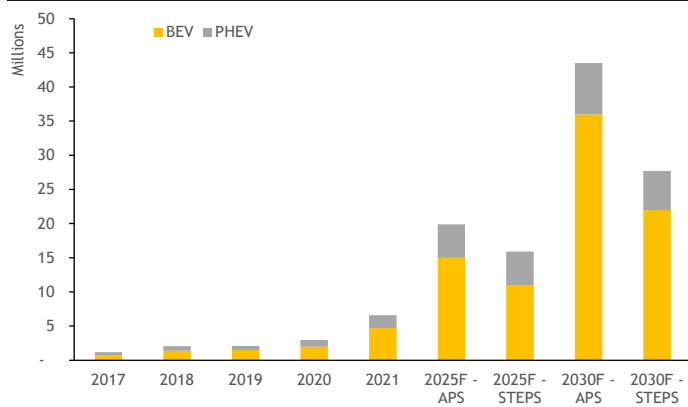
We believe this is a positive development for the EV industries, as it can reduce the production cost for EVs, hence EVs will become more affordable. Thus, we think demand for nickel can be offset by higher volume of EVs.

2.6 IEA forecasts global EV sales to rise to 22-36m units by 2030

The International Energy Agency (IEA) forecasts battery EV (BEV) car sales to increase from 2.0m units in 2020 to 22m-36m by 2030, or up by 27-34% CAGR from 2020-30E. Meanwhile, plug-in hybrid (PHEV) car sales is forecasted to go up from 980,000 units in 2020 to 5.7m to 7.5m, or up by 19-23% CAGR from 2020-30E.

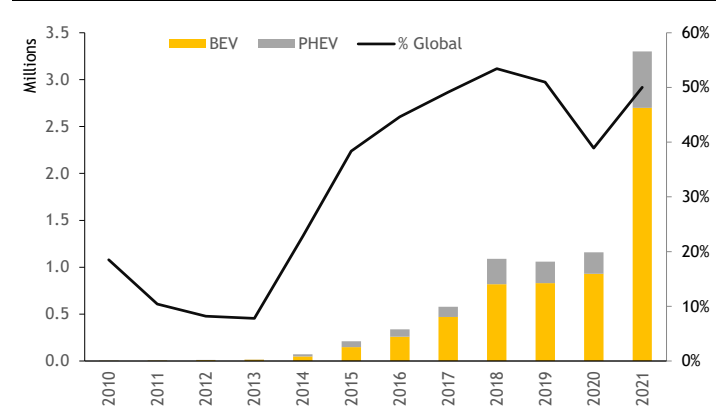
China is currently the largest EV market, with 3.3m EVs sold in 2021 of which 2.7m are in the form of BEVs (82% of the EVs). China’s EV market started to gain traction in 2015 as sales increased from 150,000 BEVs in 2015 to 2.7m BEVs in 2021.

Fig 38: IEA global EV sales forecast



Source: IEA, Maybank IBG Research

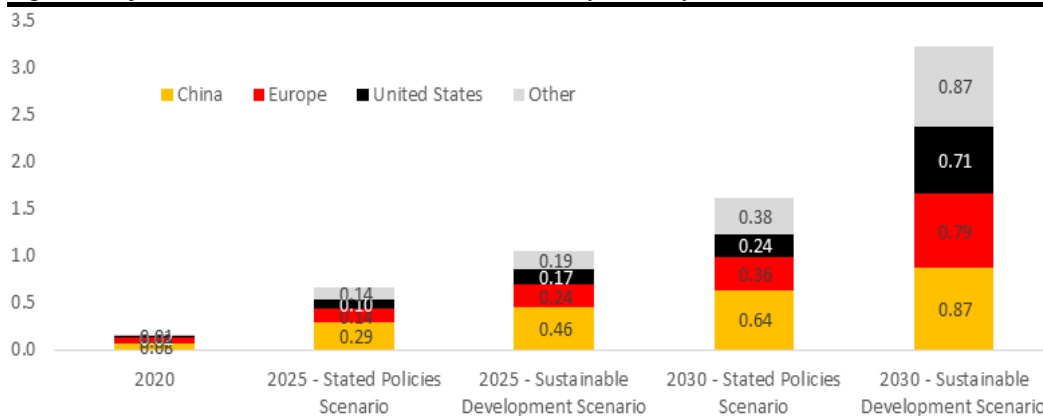
Fig 39: China is the largest EV market in the world



Source: IEA, Maybank IBG Research

Going forward, passenger EVs will be the main source of lithium-ion battery demand. The International Energy Agency is projecting annual demand for EV batteries can reach 3.23 TWh by 2030.

Fig 40: Projection of annual demand for batteries by country 2025E/30E



Source: IEA, Maybank IBG Research

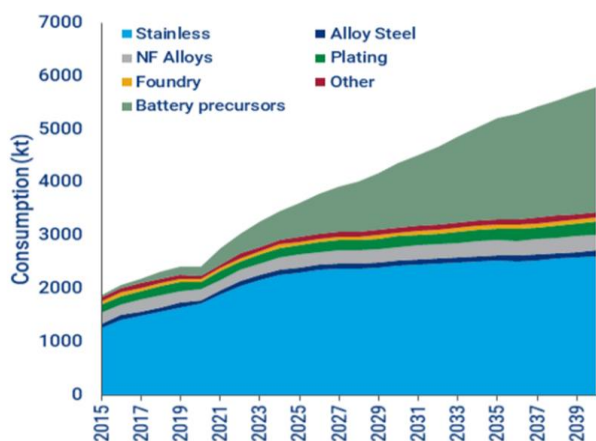
3. Nickel demand outlook

3.1 EVs - new structural demand growth for nickel

Nickel is used in a wide range of applications, with batteries being the most prominent, particularly for use in EVs. Beyond batteries, nickel is mostly used by the stainless-steel industries, which had been the most important nickel-consuming sector. Nickel is also widely used in alloys due to its resistance to corrosion and ability to withstand extreme temperatures. As of now, 69% of nickel demand is consumed for stainless steel while 21% is used for alloys and plating. China currently accounts for 56% of global nickel consumption.

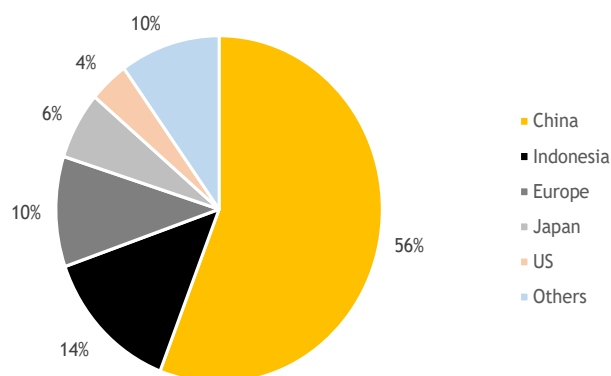
However, as EV adoption continues, these legacy markets will increasingly represent a smaller portion of the overall pie. Wood Mackenzie expects nickel demand for batteries to reach 2,337kt by 2040, up by 7x fold from 319kt in 2021. This should drive powerful growth for nickel demand, which is expected to reach 5,700kt by 2040, or a CAGR of 4%. It is expected that batteries will make up 41% of nickel consumption by 2040, up from 7% currently.

Fig 41: Nickel consumption by industry



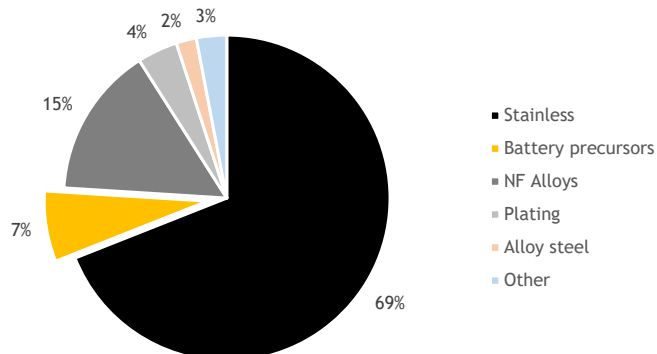
Source: Wood Mackenzie, Maybank IBG Research

Fig 42: Global nickel consumption by country



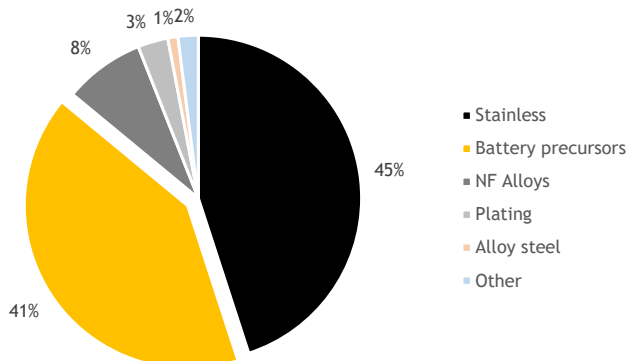
Source: Wood Mackenzie, Maybank IBG Research

Fig 43: FY21 nickel consumption by industry



Source: Wood Mackenzie, Maybank IBG Research

Fig 44: FY40E nickel consumption by industry



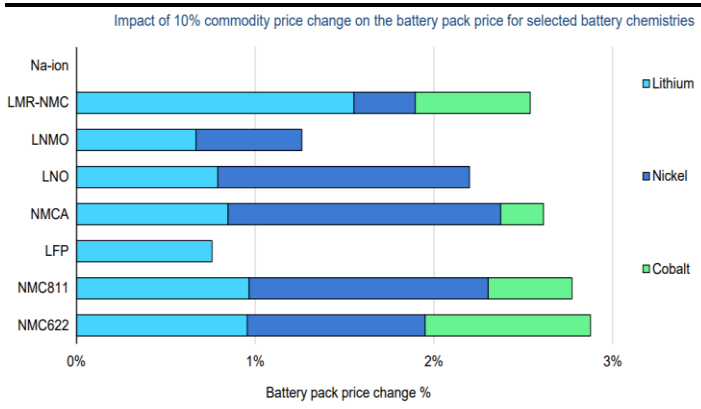
Source: Wood Mackenzie, Maybank IBG Research

3.2 Development of EV battery technology could shift demand dynamics for nickel

Lithium-ion (Li-ion) battery is known due to its characteristics of being lightweight, rechargeable and lower cost. Nickel-based batteries (NMC and NCA) have been increasingly dominant as they offer high energy density due to higher nickel content. However, in recent years, LFP has been gaining momentum in the market, mainly driven by the increased take up of EV cars in China, due to improved affordability.

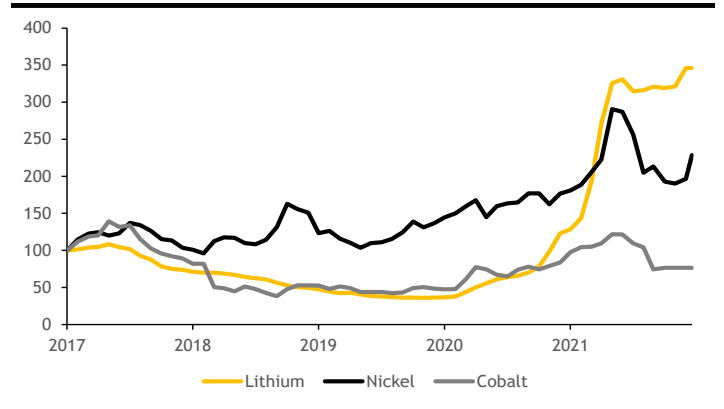
Due to higher mineral content, NMC and NCA batteries have higher sensitivity to commodity price change as compared to LFP batteries. The IEA estimates that every 10% change in commodity prices will affect nickel-based batteries by 2-3% and less than 1% for LFP batteries. With the recent nickel price surge, LFP adoption should increase.

Fig 45: EV batteries sensitivity to commodity prices



Source: Wood Mackenzie, Maybank IBG Research

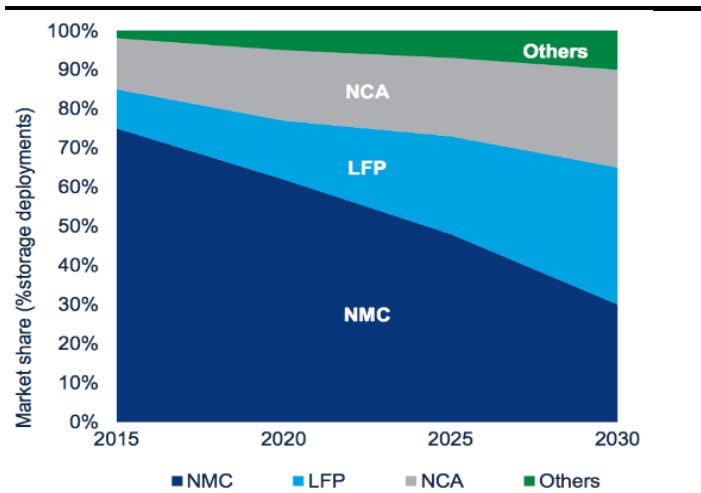
Fig 46: Global commodity price for battery materials



Source: Wood Mackenzie, Maybank IBG Research

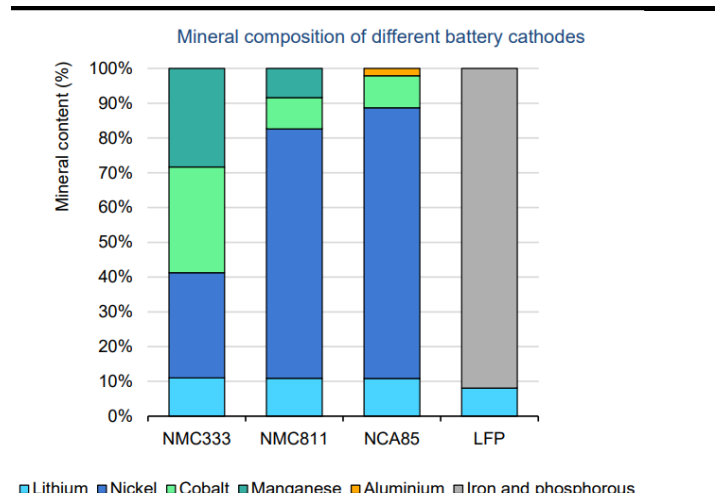
Despite rising adoption of LFP, it is expected that nickel-based batteries will continue to dominate EV batteries due to their high energy density and driving range. Not to mention, battery makers are moving towards higher nickel content to reduce use of cobalt (which is more expensive and due to concerns about child abuse in mines). This trend should bode well for future demand growth for nickel. Nonetheless, shift in development of new EV battery technology could also change demand dynamics for nickel, which might provide opportunities as well as risks for nickel demand.

Fig 47: Share of EV batteries by type



Source: Wood Mackenzie, Maybank IBG Research

Fig 48: Mineral composition by EV batteries type

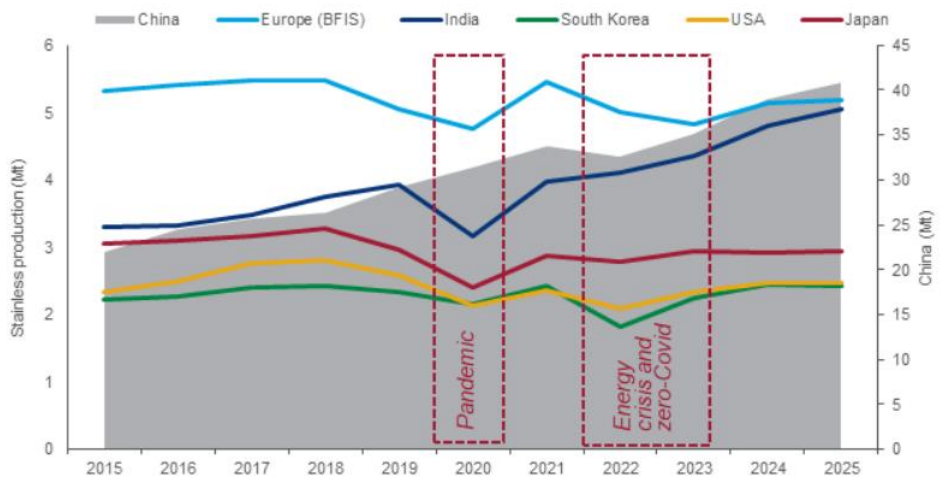


Source: IEA, Maybank IBG Research

3.3 China's reopening should provide tailwind for stainless steel demand

While long-term demand for nickel is driven by EVs and batteries, stainless steel dominates current demand for nickel. China's zero-Covid policy and its sluggish property market as well as energy shortages in Europe have led to weakness in stainless steel demand in 2022, which accounts for 69% of global nickel consumption.

Fig 49: Global stainless steel demand by country



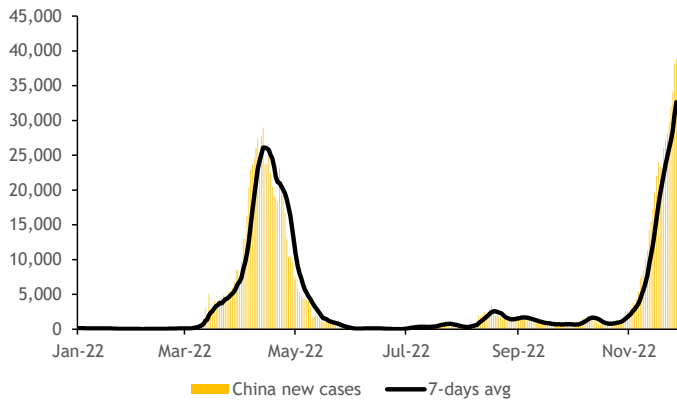
Source: Wood Mackenzie, Maybank IBG Research

China is currently facing yet another wave of Covid outbreak with new recorded cases surging to an all-time high in Dec-22. As China focuses on containing transmission through its zero-Covid policy, the vast majority of the population in China has never been exposed to the virus, leaving its people without natural immunity. This has forced China to restrict movements through lockdowns. This sows confusion, fear and anger among its citizens.

Despite the recent resurgence of Covid, we still expect China to gradually lift its zero-Covid policy in 2023, although this is likely to be gradual rather than a rapid reopening. Improving immunity through a more effective and aggressive vaccine should be the main objective of the government in reopening its economy. China recently approved BioNTech's mRNA vaccines for foreigners and it's currently working on a new vaccination plan to improve the country's vaccination rate.

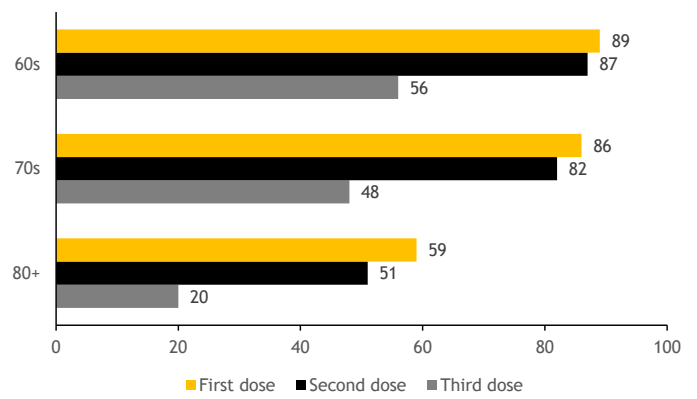
We believe China's decision on its zero-Covid policy will be investors' focus in the near term as it might provide the direction for commodity prices. Nonetheless, in the short term, we might see continuous fluctuations until a more substantive easing of the zero-Covid policy prevails.

Fig 50: China's daily new Covid cases



Source: Bloomberg, Maybank IBG Research

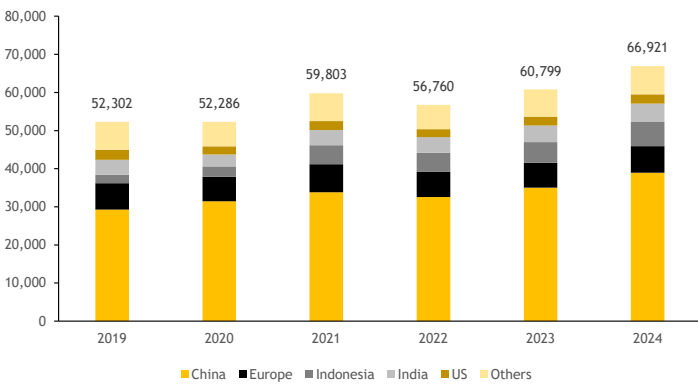
Fig 51: China's vaccination rates for elderly as of Apr-22



Source: CNHC, Maybank IBG Research

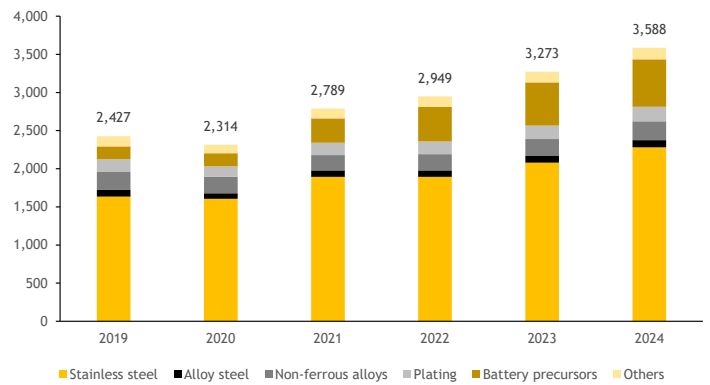
China's gradual easing of its zero-Covid policy should drive global demand for stainless steel, estimated by Wood Mackenzie to rebound by 7.1%/10.1% YoY in FY23E/24E (vs -5.1% YoY in FY22E), led by China's recovery. Paired with continuous growth in EVs and battery demand, nickel consumption is expected by Wood Mackenzie to grow by 11.0%/9.6% YoY in FY23E/24E, after pedestrian growth of 5.7% YoY in FY22E.

Fig 52: Stainless steel production by country



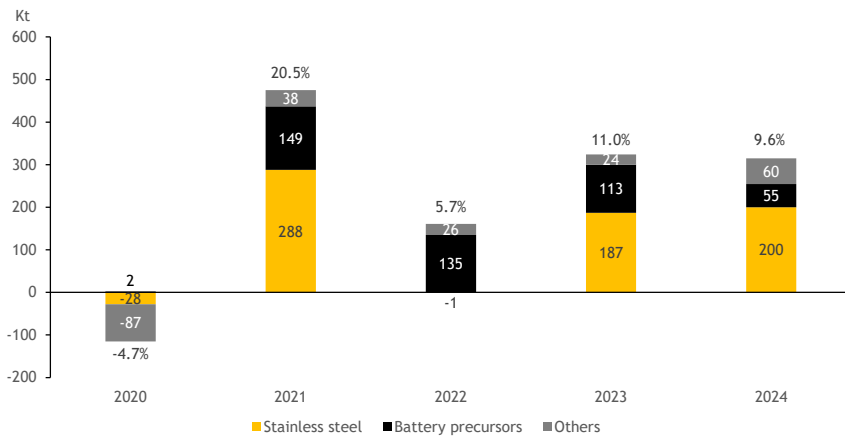
Source: Wood Mackenzie, Maybank IBG Research

Fig 53: Global nickel demand by industry



Source: Wood Mackenzie, Maybank IBG Research

Fig 54: Changes in world nickel consumption YoY (Kt)



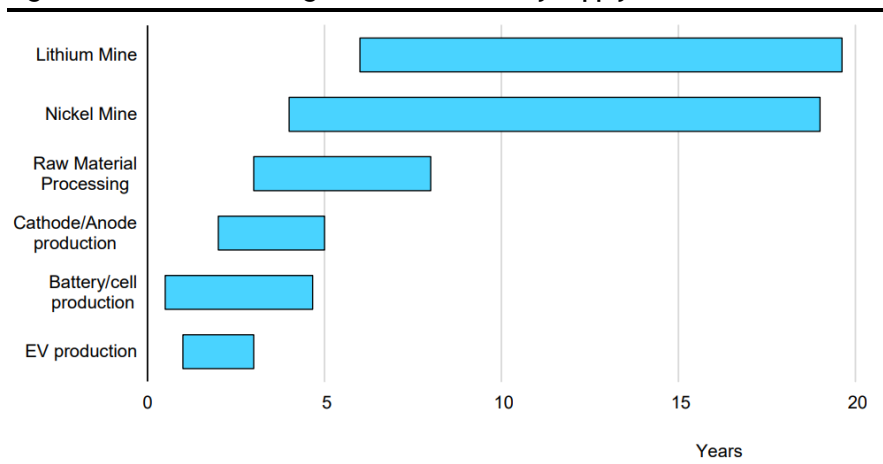
Source: Wood Mackenzie, Maybank IBG Research

4. Nickel supply and price outlook

4.1 Supply chain needs to catch up with the demand

With growth expected to continue at a rapid pace, the supply chain will need to expand to meet the demands of projected EV deployment. As observed in 2021, demand for EVs can increase very rapidly, though scaling up supply requires time as mines and factories cannot be built overnight. While commissioning of cathode and battery cell production could be delivered in 2-3 years, the extraction of raw materials requires longer time due to exploration, feasibility studies and securing finance & permits, which could take from 4-20 years.

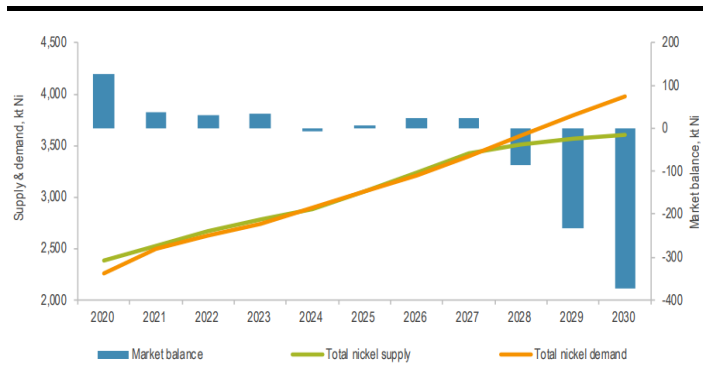
Fig 55: Lead commissioning times for EV battery supply chain



Source: IEA, Maybank IBG Research

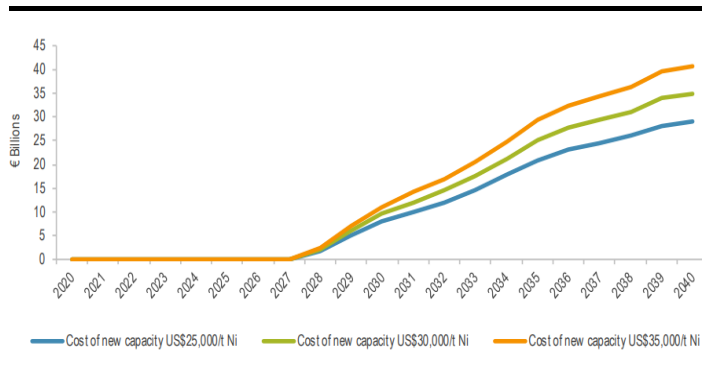
Although the current nickel market balance remains positive due to the global economic slowdown and rapid expansion of smelters in Indonesia, the nickel market is expected by Roskill to turn to deficit in FY28E and beyond due to continued increase in demand and lack of visibility on projects far ahead. Hence, adequate investments, especially in upstream mineral extraction, are required to avoid bottlenecks in EV battery supply.

Fig 56: Outlook for primary nickel market balance



Source: Roskill, Maybank IBG Research

Fig 57: Global cumulative investment for new nickel capacity



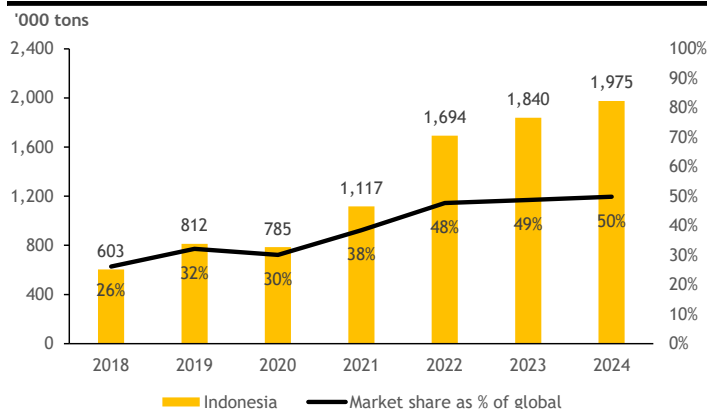
Source: Roskill, Maybank IBG Research

4.2 Indonesia to lead nickel supply expansion

Indonesia has been the major nickel supplier in the past three years, growing its nickel mine output from 603kt in 2018 to 1,117kt in 2021, cementing Indonesia’s position as the largest nickel producer in the world with 38% market share (vs 26% in FY18). Its nickel smelter production

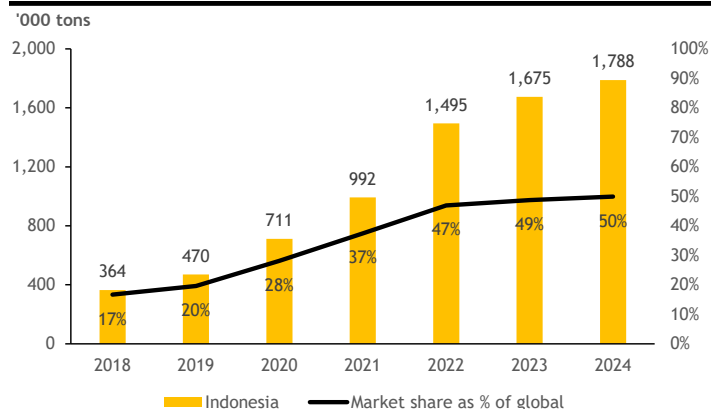
capacity also grew to 992kt in 2021, a 40% CAGR from 2018-21. These were mainly driven by Indonesia’s nickel ore export ban in 2020, which prompted many Chinese players to invest in Indonesia and forced local nickel players to build smelters for ore processing.

Fig 58: Indonesia nickel mine production and market share



Source: Wood Mackenzie, Maybank IBG Research

Fig 59: Indonesia nickel smelters production capacity

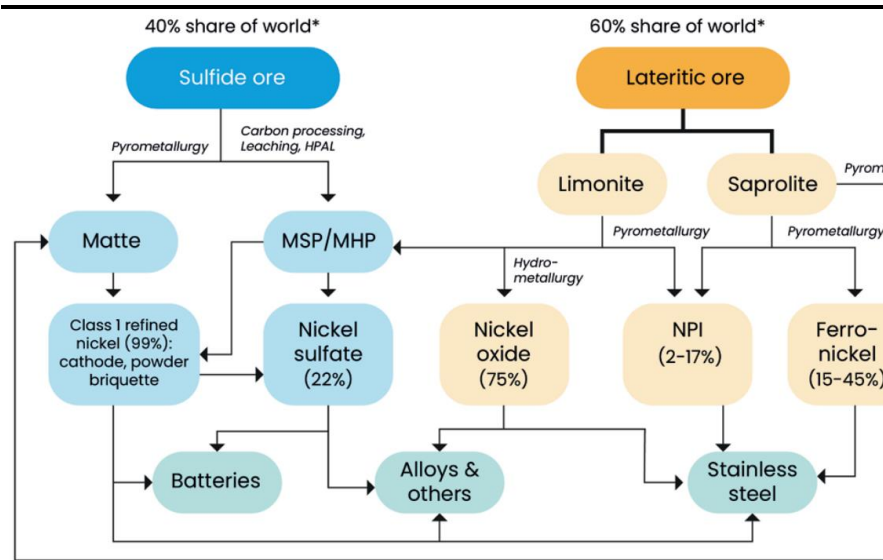


Source: Wood Mackenzie, Maybank IBG Research

Most of Indonesia’s nickel output is currently dominated by class-2 nickel used for stainless steel making, by utilizing its high-grade saprolite ore to produce NPI and ferronickel. In order for the country to become a key player in EVs and the battery supply chain, the government is determined to transform its nickel industry to meet rising demand for class-1 nickel, a crucial component for EVs and batteries.

On several occasions, the government mentioned it will limit more investment in nickel pig iron (NPI) and ferronickel smelters. One possible approach is through higher royalty taxes for low-grade nickel products, such as NPI and ferronickel.

Fig 60: Nickel processing flowchart

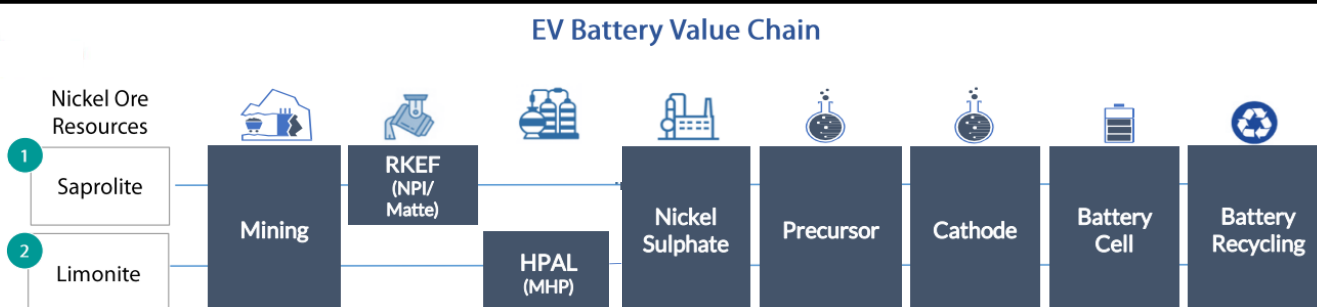


Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

Going forward, Indonesia will focus more on EVs and the battery supply chain by processing its: 1) limonite ores through high pressure acid leaching (HPAL) to produce mixed hydroxide precipitate (MHP); and 2) saprolite ore through rotary kiln electric furnace (RKEF) to produce NPI-Ni matte conversion. Through these technologies, Indonesia will be able to utilise its low-grade laterite ore resources as a material for manufacturing batteries.

The technology of converting high-grade NPI to high-grade nickel matte, which can be used to produce nickel sulfate for use in the EV battery sector, was first developed by Tsingshan in 2021. According to Sumitomo Metal Mining, the cost to produce NPI is about USD9,000/t, while the cost of converting NPI to Ni matte is USD1,000/t and the cost to produce nickel sulfate from Ni matte is USD4,000. Hence, the cost for NPI-Ni matte-Ni sulfate is about USD14,000/t.

Fig 61: EV battery value chain



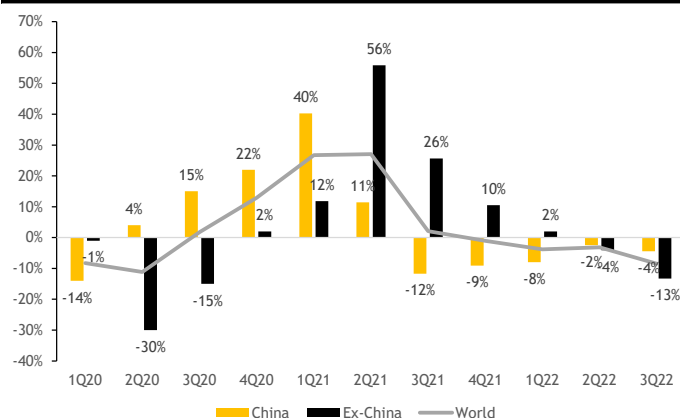
Source: Ministry of Energy and Mineral Resources, Maybank IBG Research

4.3 Global nickel balance set to improve; Nickel price will remain elevated

After the lockdowns in 2020, global demand for stainless steel rebounded strongly in 2021, but growth started to peak in 2Q21. China’s zero-Covid policy and its sluggish property market, as well as energy shortage in Europe led to weakness in stainless steel demand in 1H22.

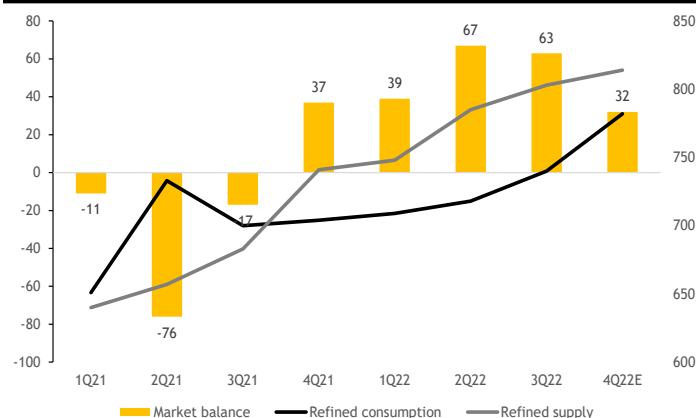
While demand slows down, global nickel supply continues to ramp-up, mainly coming from Indonesia’s NPI/FeNi newly installed capacity, resulting in a continued build-up of inventory of class-2 supply, while class-1 supply remains scarce.

Fig 62: Quarterly global stainless steel production growth



Source: Wood Mackenzie, Maybank IBG Research

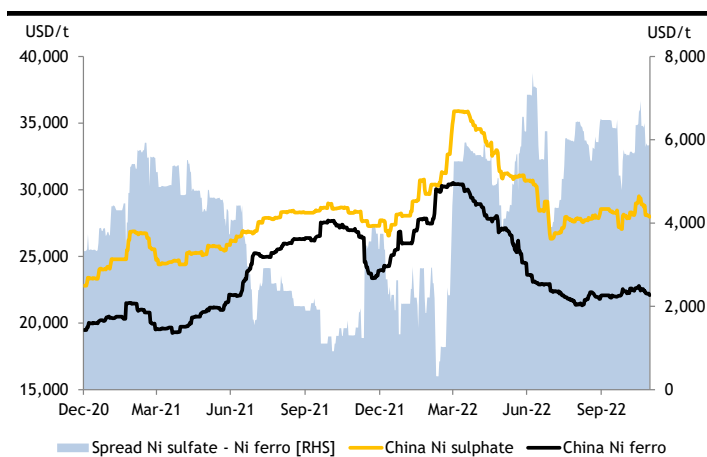
Fig 63: Quarterly global nickel market balance



Source: Wood Mackenzie, Maybank IBG Research

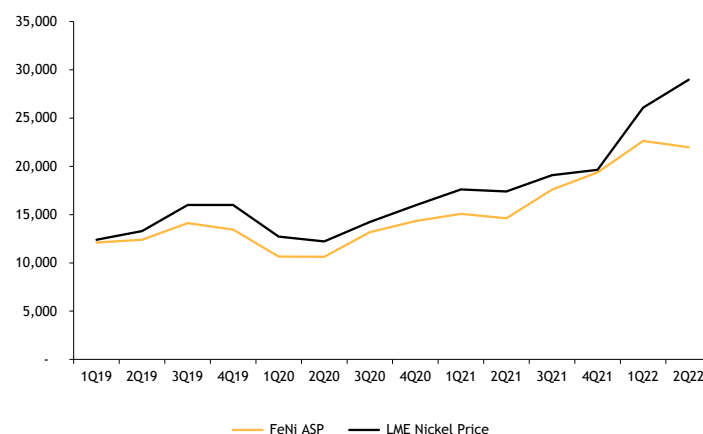
Due to growing oversupply of class-2 products, NPI/FeNi prices are at a discount to LME nickel price. The spread price between China’s FeNi and Ni sulfate has widened in 2022. Aneka Tambang’s (ANTM IJ, BUY, CP IDR1,920, TP IDR2,400) latest results saw its FeNi ASP decouple from the LME nickel price as well.

Fig 64: China's FeNi price discount to Ni sulfate widened



Source: Bloomberg, Maybank IBG Research

Fig 65: ANTM's FeNi price discount to LME nickel price widening

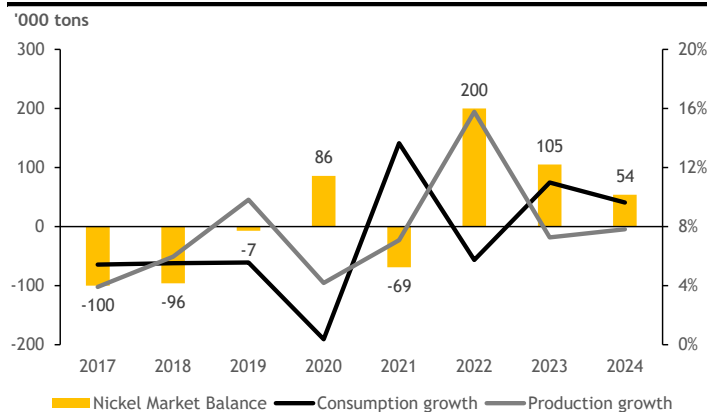


Source: Company, Maybank IBG Research

We expect this trend to persist as the world is oversupplied with class-2 products. Nonetheless, as China gradually reopens its borders and consumption of stainless steel is set to improve, this should absorb some of the excess supply from growing NPI and FeNi output from Indonesia.

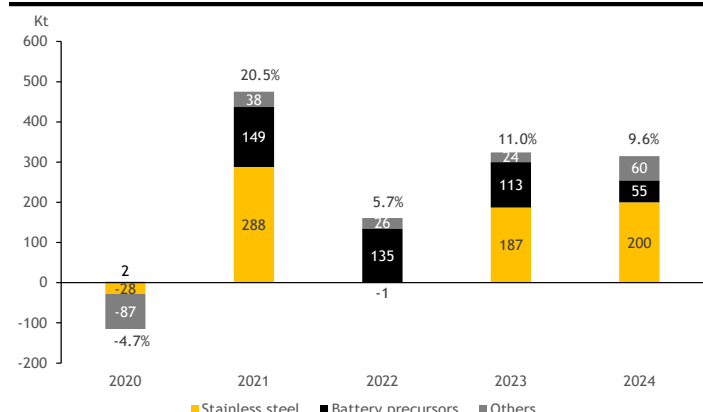
Recovery in stainless steel consumption, paired with continuous growth in EV and battery demand, means nickel consumption is expected by Wood Mackenzie to grow by 11.0%/9.6% YoY in FY23E/24E, outpacing supply growth at 7.3%/7.8% YoY, respectively. However, nickel market balance will remain in surplus in the near term, although the balance will improve from 200kt surplus in FY22E to 54kt surplus in FY24E.

Fig 66: Global nickel market balance



Source: Wood Mackenzie, Maybank IBG Research

Fig 67: Net change in global nickel consumption YoY (in kt)



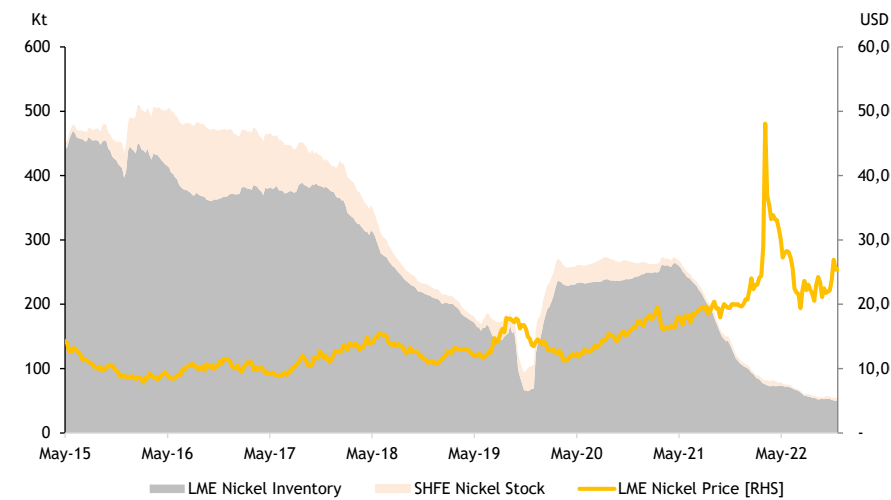
Source: Wood Mackenzie, Maybank IBG Research

We think nickel prices will remain above levels traditionally expected, given that even despite the current ballooning surplus prices have gone no lower than USD22,000/t. This is because this year the excess supply is largely class-2 nickel supply from rising NPI and ferronickel output from Indonesia, yet class-1 supply remains scarce, as shown by low inventory on the LME.

However, as more HPAL and Ni matte plants begin operation in the next few years, this should increase supply of class-1 nickel, which might exert downward pressure on LME nickel prices. On top of that, energy prices (coal) have started to fall, reducing cash cost curves, which eventually pushes prices down as well.

Wood Mckenzie forecasts nickel prices to decline to USD21,330/21,513 in FY23E/24E from USD24,785/t in FY22E. Conservatively, we assume a USD25,000/USD21,000/20,000 per tonne in FY22E/23E/24E with our long-term price set at USD18,000 per tonne.

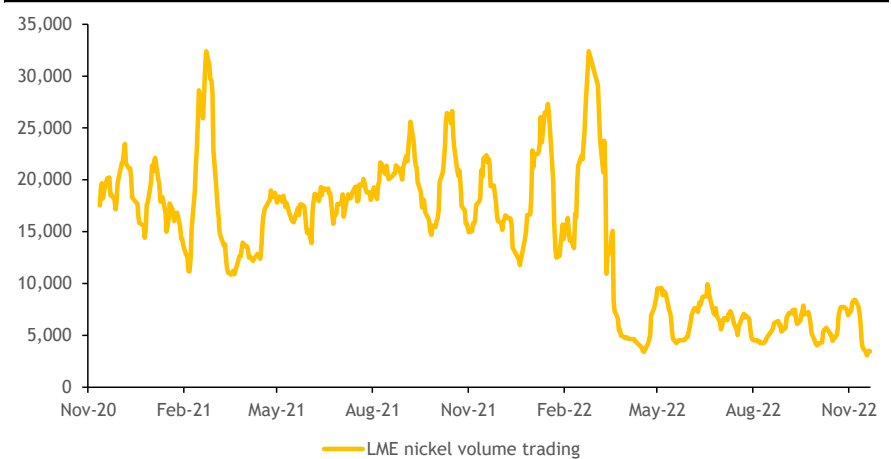
Fig 68: Nickel price will remain elevated due to low supply and stock



Source: Bloomberg, Maybank IBG Research

Meanwhile, in the near term, we might continue to see big price swings and volatility in LME nickel prices, led by lower trading volume on the LME, which saw volume decline by ~70% since Mar-22.

Fig 69: LME nickel volume trading has declined since Mar-22

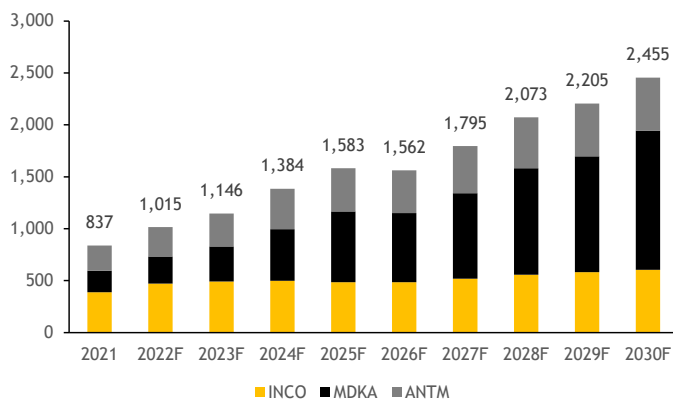


Source: Bloomberg, Maybank IBG Research

5. Financial analysis

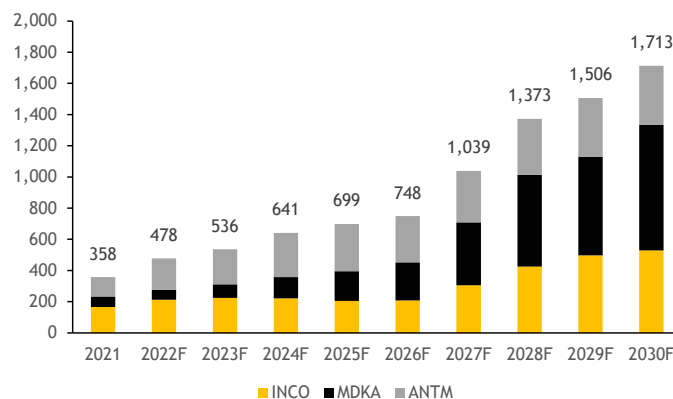
We forecast the sector offers attractive long-term EBITDA and NPAT growth of 13%/19% FY21-30E CAGR. This will be driven by organic expansion due to higher demand for critical minerals (nickel and copper), and inorganic expansion as new growth projects come on line. Our long-term nickel price assumption is USD18,000/t, 25% below the current spot price.

Fig 70: Sector aggregate EBITDA (FY21-30E)



Source: Company, Maybank IBG Research

Fig 71: Sector aggregate NPAT (FY21-30E)



Source: Company, Maybank IBG Research

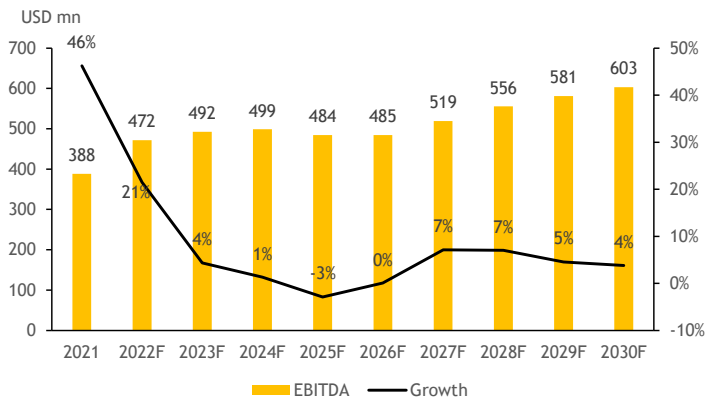
We expect earnings growth to significantly rise from FY25E onwards as new growth projects start to come on line. In terms of earnings profile, we forecast: 1) MDKA to have highest profit growth of 32% CAGR for FY21-30E, driven by its multi-asset portfolio (TB copper, AIM and Pani); followed by 2) INCO at 14% CAGR, driven by its HPAL and RKEF projects; and 3) ANTM at 13% CAGR from monetization of ore sales and expansion of FeNi.

Fig 72: Mineral processing projects of companies under our coverage

Company	Projects	Nameplate capacity	Product	Operation schedule	Ownership/ partners
INCO	Sorowako - Ni Matte	75kt	Ni Matte	Operating	INCO: 100%
	Pomalaa - HPAL project	120 kt	MHP	2025	INCO: 30%, Huayou: 53%, Ford: 17%
	Bahadopi - RKEF project	73kt	FeNi	2025	INCO: 49%, Tisco & Xinhai: 51%
	Sorowako - HPAL project	60kt	MHP	2027	INCO: 30%, Huayou: 70%
MDKA	Tujuh Bukit Oxide Gold	120koz	Gold & Silver	Operating	MDKA: 100%
	Wetar Copper mine	22kt	Copper	Operating	MDKA: 100%
	RKEF smelters - CSI & BSI	38kt	NPI	Operating	MDKA: 50.1%, Tsingshan: 49.9%
	RKEF smelters - Zhao Hui (ZHN)	50kt	NPI	2023	MDKA: 50.1%, Tsingshan: 49.9%
	Acid Iron Metal (AIM) project	1.2mt	Acid & Steam	2023	MDKA: 80%, Tsingshan: 20%
	Pani gold project	250koz	Gold	2025	MDKA: 70%, LSA: 30%
	Tujuh Bukit Copper Project	90kt copper 360koz gold	Copper & Gold	2027	MDKA: 100%
ANTM	Pomalaa - Ferronickel plant	27kt	FeNi	Operating	ANTM: 100%
	North Maluku - Ferronickel plant	13.5kt	FeNi	2023	ANTM: 100%
	Mempawah Smelter Grade Alumina	1mt	Alumina	2024	ANTM: 40%, Inalum: 60%
	Nickel downstream partnership - CNGR	10mn wmt	Nickel ore	2025	ANTM: 100%
	EV battery development project	TBA	MHP & Ni Matte	TBA	TBA

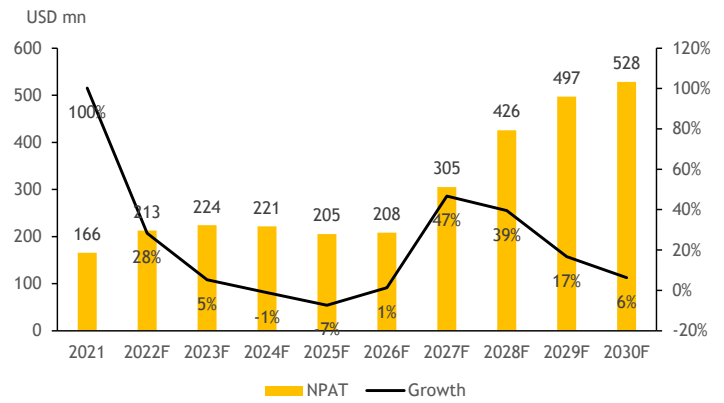
Source: Company, Maybank IBG Research

Fig 73: INCO's EBITDA (FY21-30E)



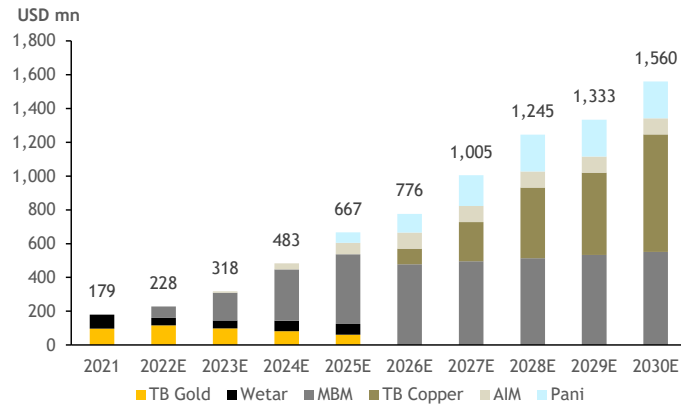
Source: Company, Maybank IBG Research

Fig 74: INCO's NPAT (FY21-30E)



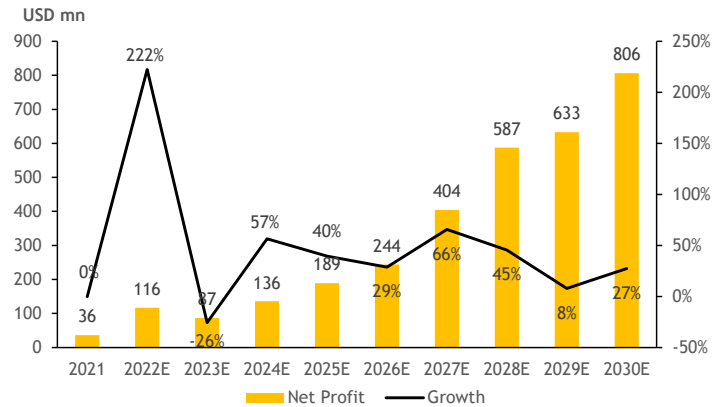
Source: Company, Maybank IBG Research

Fig 75: MDKA's EBITDA (FY21-30E)



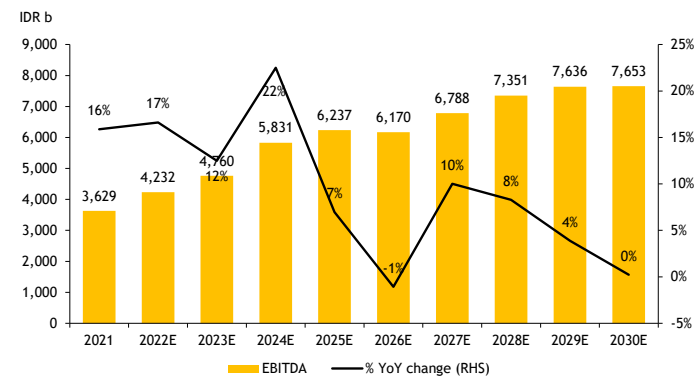
Source: Company, Maybank IBG Research

Fig 76: MDKA's NPAT (FY21-30E)



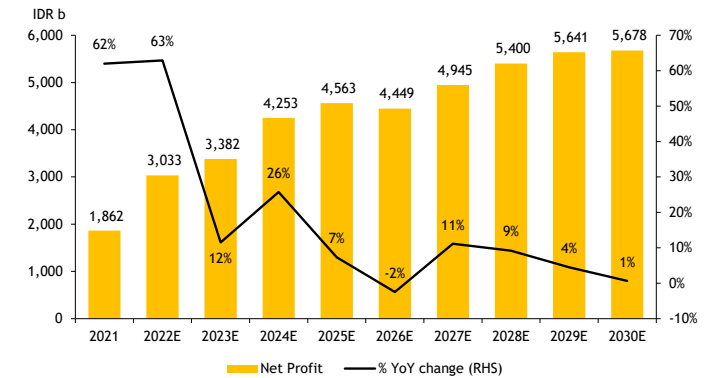
Source: Company, Maybank IBG Research

Fig 77: ANTM's EBITDA (FY21-30E)



Source: Company, Maybank IBG Research

Fig 78: ANTM's NPAT (FY21-30E)



Source: Company, Maybank IBG Research

6. Initiate with POSITIVE view; INCO and MDKA as Top Picks

We initiate coverage of the metal sector with a POSITIVE view. Our bullish view is mainly driven by significant increase in demand for critical minerals as the world transitions towards clean energy. IEA estimates mineral demand for use in EVs and batteries to grow by at least 30x to 2040. We believe Indonesia is well-positioned to benefit from the world's shift towards net-zero emission, given its abundant nickel and copper deposits.

As the world shifts to EVs, miners as well as EV and battery makers are racing to compete for nickel assets to secure key battery metal supplies. This should bode well for metal companies under our coverage (INCO, MDKA, ANTM) as they are set to benefit from multiple new growth project opportunities, which provide attractive long-term earnings growth outlook (19% CAGR for FY21-30E).

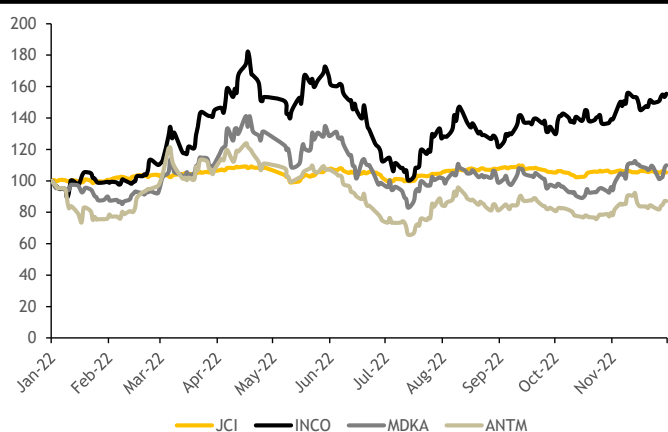
Our Top Picks in the sector are INCO and MDKA. Key reasons are: 1) strong earnings growth outlook from future projects; 2) INCO is the better proxy for class-1 products as price is pegged to the LME and it has the closest start date to class-1 HPAL products; and 3) for MDKA, vertically integrated EV battery supply chain and diversified multi-assets.

Fig 79: Metal sector - peer comparisons

Name	Ticker	Rating	Target Price (IDR)	PE (x)		EV/EBITDA (x)		ROE (%)		FY21-30E EPS growth (%)
				FY23E	FY24E	FY23E	FY24E	FY23E	FY24E	
Vale Indonesia	INCO	BUY	8,700	21.9	22.1	10.0	9.8	9.0	8.2	13.7%
Merdeka Copper Gold	MDKA	BUY	5,300	82.4	52.6	22.7	15.4	7.5	10.7	31.6%
Aneka Tambang	ANTM	BUY	2,400	14.6	11.6	10.1	7.8	13.2	14.9	13.2%

Source: Company, Maybank IBG Research

Fig 80: Share price performance vs JCI YTD



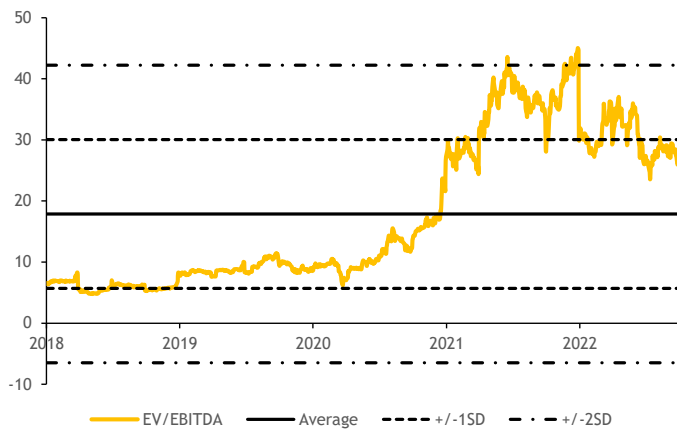
Source: Company, Maybank IBG Research

Fig 81: INCO EV/EBITDA band



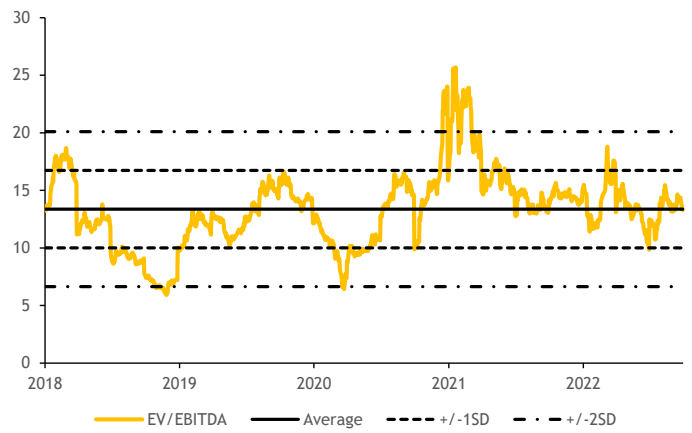
Source: Company, Maybank IBG Research

Fig 82: MDKA EV/EBITDA band



Source: Company, Maybank IBG Research

Fig 83: ANTM EV/EBITDA band



Source: Company, Maybank IBG Research

7. Risks

7.1 Operational risks

Metal companies under our coverage (INCO, MDKA and ANTM) are operating large-scale projects. They also undergo multiple significant investments in new growth projects (Fig 72). Longer-than-expected construction and inability to secure materials and energy sources might delay commencement of the new operations, potentially causing our earnings forecasts to be missed.

7.2 Lower-than-expected long-term nickel price

Most of the earnings under our coverage (INCO, MDKA and ANTM) are driven by nickel prices. Our current base-case assumption for long-term nickel price is USD18,000/t, -25% below the current spot price. Nickel price is highly cyclical and there could be downside risk to nickel price from: 1) slower-than-expected global growth; 2) China extends its zero-Covid policy; and 3) new technology advancement of EV battery, shifting nickel demand dynamics. If nickel price falls below our assumption, there might be risks to our earnings forecasts and target prices.

7.3 Regulatory risks

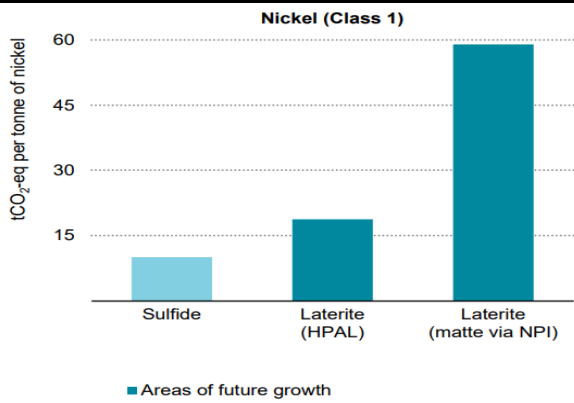
Indonesia's government is highly committed to transforming Indonesia into a global EV hub due to its abundant nickel resources. However, current investments are mostly for class-2 smelters for NPI and FeNi, which raises concerns that the country's nickel reserves will be utilized for low-value products. There have been many discussions within the government to increase royalty or export tax on these class-2 products to limit expansion of class-2 smelters. Higher royalty or export tax would impact companies under our coverage.

7.4 Environmental risks

Although nickel extraction is important to support the global shift towards clean energy, emissions associated with mining and processing is considerably high as well. The processes to transform nickel into a material suited for EV batteries in Indonesia is energy intensive and damaging to the environment. This is because producing class-1 nickel from Indonesia's laterite ore resources releases two to six times more emissions than producing from sulfide deposits. In addition, Indonesia's energy source is still highly dependent on fossil fuels from coal (~60% of electricity capacity).

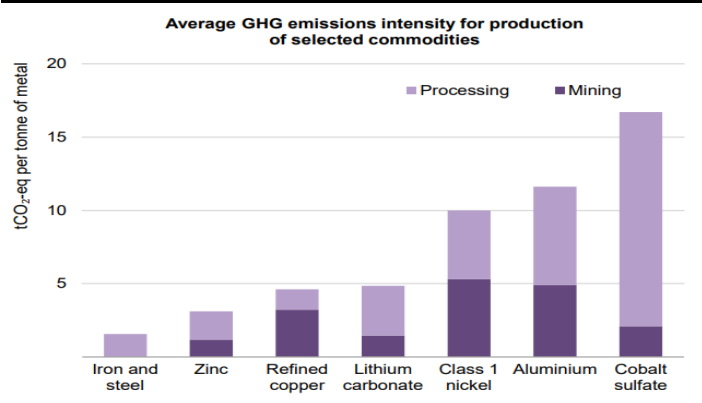
The HPAL technology to process limonite ore produces toxic waste that is difficult to manage in the tailing management. Tsingshan's recent technology to convert class-2 NPI to Ni-matte to nickel-sulfate has raised even greater concerns due to the higher emission emitted. Inability to well-manage its tailing and emission could have long-term consequences on Indonesia's efforts to become the global EV hub. It might result in EV makers finding new battery technology, such as LFP, that does not rely on nickel as the raw material.

Fig 84: GHG emissions intensity for class-1 nickel processing



Source: IEA, Maybank IBG Research

Fig 85: GHG emissions intensity for several commodities



Source: IEA, Maybank IBG Research

Vale Indonesia (INCO IJ)

Entering new era of growth

BUY

Share Price IDR 7,100
12m Price Target IDR 8,700 (+23%)

Initiate with BUY and SOTP-based TP of IDR8,700

We initiate coverage on INCO with a BUY and SOTP-based target price of IDR8,700. Its investment in new growth projects (HPAL & RKEF) to monetise its vast reserves should support long-term earnings growth from FY25E onwards. Key risks to our call are: 1) volatility in nickel prices; 2) delays in project development; and 3) lower production volumes.

Best proxy to class-1 LME price

INCO is best positioned to capture growing demand for class-1 nickel, as it produces Ni-matte (78% Ni, 2% Co, 20% S), an intermediary nickel product that can be refined to nickel sulfate for EV batteries. INCO produces ~72kt of nickel matte per annum, accounting for ~5% of Indonesia's 2022 nickel output. It sells its matte product under long-term agreement with Vale Canada and Sumitomo Metal Mining at a price pegged to 78% of the LME nickel price, unaffected by the widening price gap with class-2 supply.

New growth projects to drive long-term earnings

INCO is growing to become one of the largest nickel producers in Indonesia as its production capacity will increase by more than four-fold to 328kt in FY26E (from 75kt in FY22), driven by: 1) its existing 75kt Ni-matte production in Sorowako; 2) 120kt + 60kt new HPAL plants in Pomalaa and Sorowako; and 3) 73kt new FeNi RKEF plant in Bahodopi. In aggregate, we forecast NPAT could grow to USD528m in FY30E from USD166m in FY21, a 14% CAGR, as we expect earnings contribution from the new projects to reach USD342m per annum once all plants commence in FY30E.

Expecting Ni-matte volume rebound by 17% in FY23E

We expect Ni-matte volume to rebound by 17% to 72kt in FY23E, after a 5% production drop in FY22E as rebuilding of the electric-furnace was completed in Jun-22. With 17% volume growth and energy prices (coal + oil) likely to moderate in FY23E, we expect cash cost to decline by 9% YoY, which should help offset our expectation of lower ASP. We forecast FY23/24 NPAT of USD224m/222m (from USD213m), respectively.

FYE Dec (USD m)	FY20A	FY21A	FY22E	FY23E	FY24E
Revenue	765	953	1,189	1,199	1,129
EBITDA	266	388	472	491	497
Core net profit	83	166	213	224	222
Core EPS (cts)	0.8	1.7	2.1	2.3	2.2
Core EPS growth (%)	44.2	100.2	28.3	5.2	(0.7)
Net DPS (cts)	0.0	0.0	0.0	0.0	0.0
Core P/E (x)	43.6	19.7	21.3	20.2	20.4
P/BV (x)	1.8	1.5	1.9	1.7	1.6
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
ROAE (%)	4.2	7.9	9.4	9.0	8.2
ROAA (%)	3.6	6.9	8.2	7.9	7.0
EV/EBITDA (x)	12.1	7.1	8.1	8.3	9.3
Net gearing (%) (incl perps)	net cash	net cash	net cash	net cash	2.5
Consensus net profit	-	-	229	213	261
MKE vs. Consensus (%)	-	-	(7.3)	5.3	(14.9)

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Company Description

INCO is a subsidiary of Vale SA, which produces nickel in matte. It's building RKEF and HPAL plants.

Statistics

52w high/low (IDR)	8,675/4,250
3m avg turnover (USDm)	5.3
Free float (%)	21.2
Issued shares (m)	9,936
Market capitalisation	IDR70.5T USD4.5B

Major shareholders:

Vale Canada Limited	43.8%
Indonesia Asahan Aluminium (Inalum)	20.0%
Sumitomo Metal Mining	15.0%

Price Performance



— Vale - (LHS, IDR) — Vale / Jakarta Composite Index - (RHS, %)

	-1M	-3M	-12M
Absolute (%)	(4)	11	52
Relative to index (%)	(0)	14	46

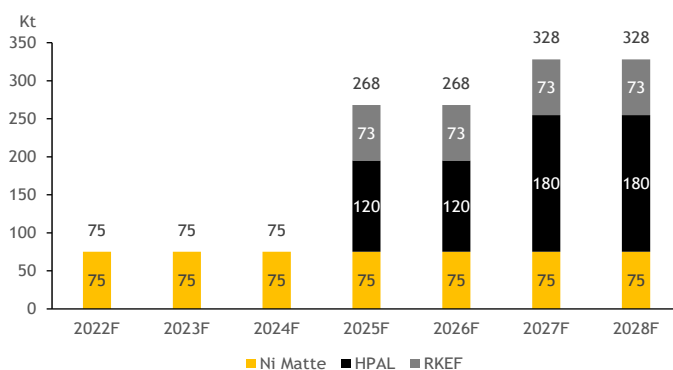
Source: FactSet

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Tear Sheet Insert

Value Proposition

- INCO is a subsidiary of Vale of Brazil and it produces nickel in matte with annual production capacity of 75kt.
- Cost efficiency has been INCO's strength. Despite soaring energy prices, strong cost discipline has consistently provided the company with positive margins.
- INCO is growing to become one of Indonesia's largest nickel producers as its production capacity will increase more than four-fold as it constructs new HPAL and RKEF plants.

INCO's nickel production capacity

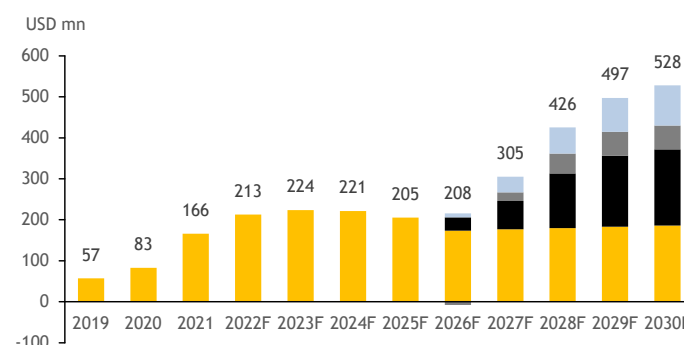


Source: Company

Financial Metrics

- Forecast 14% NPAT CAGR over FY21-30E, driven by new growth projects.
- Forecast ROE to gradually improve to 12% from 8% in FY20 as contributions from new projects start to kick in.
- Strong cash position and balance sheet to finance the company's growth projects.

Forecast INCO's NPAT to grow by 14% CAGR



Source: Company, Maybank IBG Research

Price Drivers

Historical share price trend



Source: Company, Maybank IBG Research

1. The government relaxed a regulation on mineral-ore exports.
2. Global economic slowdown due to COVID-19 outbreak.
3. Easing concerns about COVID-19 and increasing demand for nickel for batteries.
4. LME nickel price soars to its highest level due to short-sell squeeze by Tsingshan Group.
5. INCO announced new HPAL projects with Huayou (603799 CH, CNY65.26, Not Rated) and RKEF projects with Tisco & Xinhai.

Swing Factors

Upside

- Higher nickel price from increasing batteries demand and lower supply due to Russia's ban on metal exports.
- Successful monetization of Pomalaa and Bahadopi growth projects.
- China faster reopening of its economy, which would increase demand for stainless steel and nickel.

Downside

- Lower nickel price due to slower-than-expected global economic growth.
- Delays in construction and production of the new growth projects.
- Unexpected major maintenance, which resulted in lower production volume.

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Risk Rating & Score ¹	High risk (31.5)
Score Momentum ²	-5.6
Last Updated	23 Jun 2022
Controversy Score ³ (Updated: 01 Dec 2021)	0

Business Model & Industry Issues

- Global shift towards net-zero and clean energy will have a far-reaching impact on mineral demand over the next 20 years. This has generally created a positive image of the metal industry from an ESG perspective. This structural shift is positive for nickel demand over the long term and stock valuation.
- INCO has been conducting rigorous mining best practices based on the International Council on Mining and Metals framework principles and benchmarks set up by its parent company (Vale SA). It produces Ni-matte with 75kt capacity per annum. In addition, it plans to build HPAL plants to process its limonite ore for raw materials used in EV batteries.
- INCO plans to build a RKEF plant to produce NPI. While RKEF is generally associated with high GHG emissions, the company will utilize LNG as the energy source, making it one of the lowest carbon emission intensity FeNi plants in Indonesia.

Material E issues

- INCO is committed to adhering to legal provisions on environmental management. In 2021, environmental costs accounted for 1.4% of net profit and environmental projects accounted for 17.1% of total capex.
- Hydroelectric power, INCO’s largest source of energy supply, accounts for c.29% of total energy consumption.
- The company has established a commitment to engage in carbon off-setting programme towards achieving following goals: 1) 33% reduction in GHG emission intensity by 2030; and 2) reach net-zero emissions by 2050.
- In 2021 INCO was awarded the Green PROPER rating on environmental management and community empowerment from the Ministry of Environment and Forestry. It is the second highest award and indicates INCO’s practices have exceeded compliance.

Material S issues

- INCO’s Code of Ethics and Conduct covers health and safety, human rights, employee relationships, competition, business ethics, and corruption.
- As of 2021, c.91% of employees were male, 9% female. The ratio is similar compared to 2020.
- Lost Time Injury Frequency Rate, which measures the number of work accidents resulting in the loss of workdays per 1m working hours, was 0.70, higher than 0.51 in 2020 and 0.53 in 2019.
- INCO uses Mining Safety Management Standards for management of Occupational Safety and Health and recorded no fatal accidents in 2017-21.

Key G metrics and issues

- General meeting of shareholders is the company’s body with the highest authority.
- Board of Directors (BoD) run daily operations of the company. Based on INCO’s Articles of Association, it consists of at least three members but not more than 10. It consists of four members; one of them (25%) is female.
- The Board of Commissioners (BoC) supervises the BoD’s activities and consists of 10 members (20% are female). Three of them (30%) are independent commissioners. There is no BoD member on the BoC and vice versa. The BoC holds a meeting at least once every two months.
- The BoC and their family, the BoD and their family do not have any shares of the company.
- In 2019, total remuneration for the BoD was c. 3.2% of net profit, which consisted of salaries, short-term employee benefits and post-employment benefits. No percentage details on the breakdown of each component.
- The newly passed mining law gives the central government more authority to both set mining policies and issue mining licences. We believe this will lower the probability of “regulatory conflict” between the central and regional governments.
- INCO did not do any M&A in the past. It did not have any material related-party transactions either that were negative to minority interests.
- PwC has been the auditor of the company for more than 15 years.

¹**Risk Rating & Score** - derived by Sustainalytics and assesses the company’s exposure to unmanaged ESG risks. Scores range from 0 - 50 in order of increasing severity with low/high scores & ratings representing negligible/significant risk to the company’s enterprise value, respectively, from ESG-driven financial impacts. ²**Score Momentum** - indicates changes to the company’s score since the last update - a **negative** integer indicates a company’s improving risk score; a **positive** integer indicates a deterioration. ³**Controversy Score** - reported periodically by Sustainalytics in the event of material ESG-related incident(s), with the impact severity scores of these events ranging from Category 0-5 (0 - no reports; 1 - negligible risks; ...; 5 - poses serious risks & indicative of potential structural deficiencies at the company).

8. Investment thesis

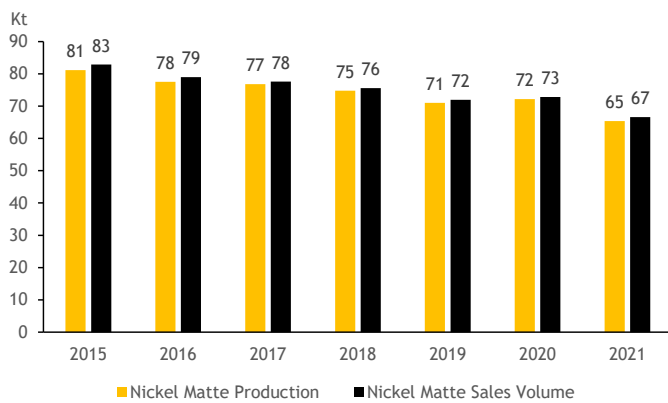
8.1 Best proxy to class-1 supply and LME nickel price

INCO is best positioned to capture growing demand for class-1 nickel, as it produces Ni-matte (78% Ni, 2% Co, 20% S), an intermediary nickel product that can be refined into nickel sulfate, which is used as raw material for EVs and battery. INCO produces ~72kt of nickel matte per annum, accounting for ~5% of Indonesia’s 2022 nickel output.

As we have seen a massive ramp-up in Indonesia’s smelters since 2020, mainly class 2 supply such as NPI and FeNi, we believe the class-2 market is oversupplied. This resulted in pricing divergence between LME and class-2 products, such as NPI and FeNi. However, we believe INCO benefits the most as all of its volume are pegged to the LME price.

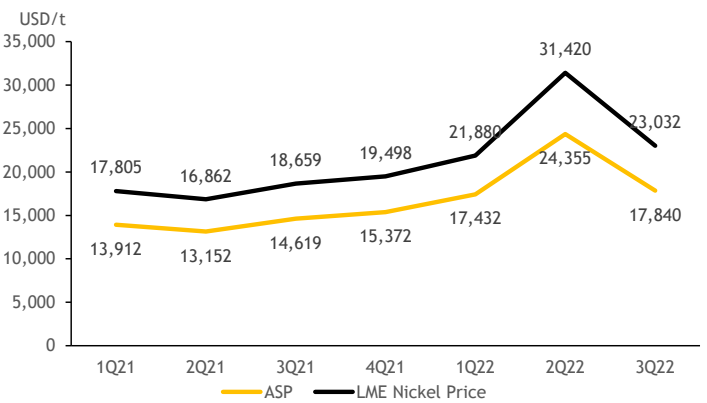
INCO sells all its matte products under long-term agreements with Vale Canada Limited (80%) and Sumitomo Metal Mining (20%) with the price pegged to 78% of the previous month’s average LME nickel price. Hence, we expect continued earnings outperformance from INCO compared to its peers that produce class-2 nickel. In addition, INCO plans to build 180kt HPAL plants in FY25E-27E, adding class-1 products to its portfolio, making it the best proxy to class-1 supply in Indonesia.

Fig 86: INCO’s Ni-matte production and volume



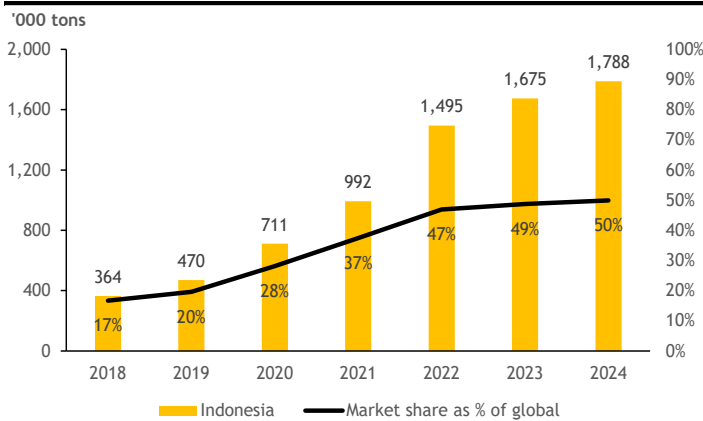
Source: Company, Maybank IBG Research

Fig 87: INCO’s realized ASP and LME nickel price



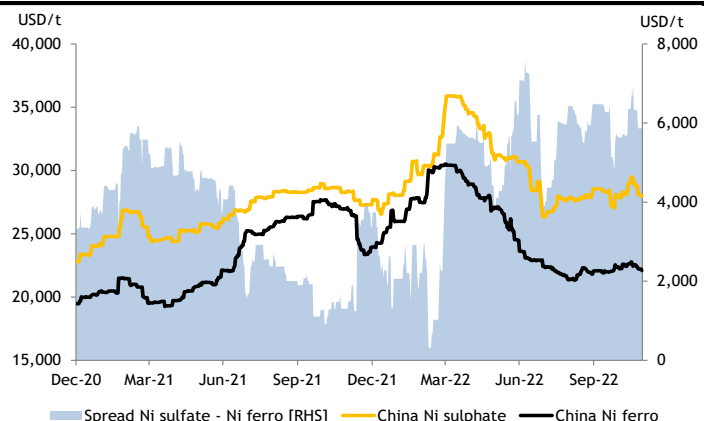
Source: Bloomberg, Maybank IBG Research

Fig 88: Indonesia’s nickel smelter capacity and market share



Source: Wood Mackenzie, Maybank IBG Research

Fig 89: China’s FeNi price spread to Ni sulfate widening



Source: Bloomberg, Maybank IBG Research

8.2 New growth projects pipeline; capacity 4x in FY26E

We expect INCO to become one of the largest nickel producers in Indonesia with a total production capacity of 328kt in FY26E, driven by: 1) its existing 75kt Ni-matte production in Sorowako; 2) 120kt + 60kt new HPAL plant in Pomalaa and Sorowako; and 3) 73kt new FeNi RKEF plant in Bahadopi.

Fig 90: INCO's new growth projects

Project	Type	Capacity (t)	Ownership	Capex (USD mn)	Est. operation	Partners
Pomalaa	HPAL	120,000	30%	3,500	End of 2025	Huayou & Ford
Sorowako	HPAL	60,000	30%	1,800	2027-2028	Huayou
Bahadopi	RKEF	73,000	49%	2,100	End of 2025	Tisco & Xinhai

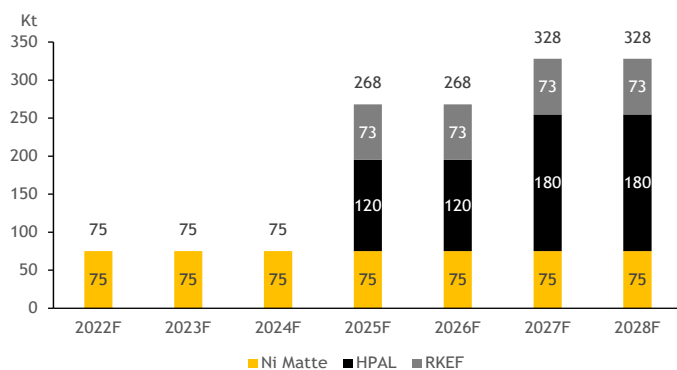
Source: Company, Maybank IBG Research

INCO has partnered with Zhejiang Huayou Cobalt (603799 CH, CNY65.26, Not Rated), a Chinese supplier of raw minerals for EV batteries, to build 2 HPAL plants with a total capacity of 180kt in Pomalaa and Sorowako. Both parties had signed the agreement and performed ground-breaking for the 120kt HPAL plant in Pomalaa in Nov-22. Construction will take three years, and the operation is targeted to start at the end of FY25. Meanwhile, construction of the 60kt HPAL plant in Sorowako will begin in FY23-24 and the operation is targeted to start in FY27-28.

Under the agreement, Huayou will develop and build the HPAL project and INCO will have participating rights to acquire up to a 30% stake in the project post completion. We believe this should benefit INCO as risk will be minimised should the projects face hurdles.

Other than HPAL projects, INCO also partnered with Tisco and Xinhai to build RKEF projects to produce FeNi in Bahadopi mines, to utilize its saprolite ore resources. Construction will begin in early FY23 with the operation expected to start at the end of FY25. The RKEF projects will use LNG as an energy source to significantly reduce emissions.

Fig 91: INCO's future installed nickel capacity



Source: Company, Maybank IBG Research

Fig 92: INCO will develop all of its three existing mines



Source: Company, Maybank IBG Research

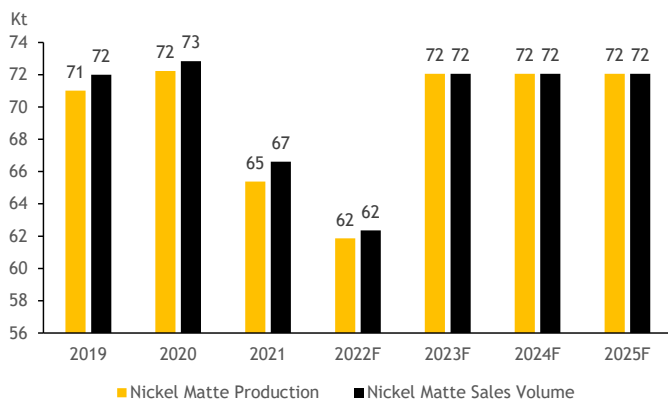
Aside from earnings contribution from the HPAL and RKEF projects, INCO will supply ore for the plants. However, as the Pomalaa and Bahadopi mines are still being developed, the company estimates it will spend USD1b/400m to develop Pomalaa/Bahadopi infrastructure to support ore consumptions for the projects. We expect the new projects will consume 28m wmt of ores per annum in FY28E.

8.3 Production to ramp-up post electric-furnace rebuild

After production dropped by 5% in FY22E as the electric-furnace needed to be rebuilt in 1H22, we expect Ni-matte volume to rebound by 17% YoY in FY23 as output will return to 72kt per annum in FY23-25E. Management highlights it does not have any major maintenance scheduled for the near term, so we expect Ni-matte output to return to near its full capacity in the years ahead.

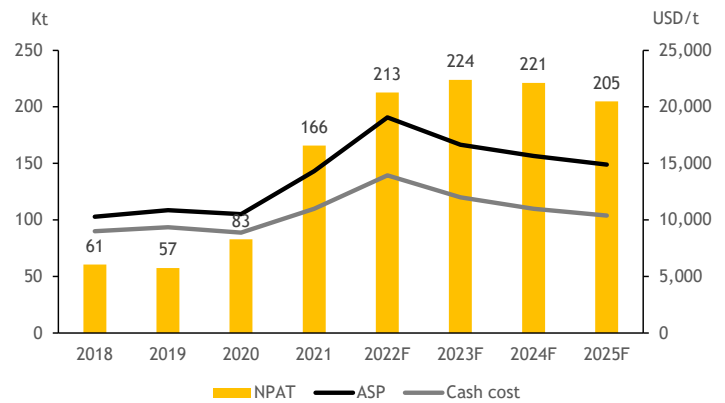
As we expect volume to grow by 17% YoY and energy prices (coal + oil) to moderate in FY23E, we expect cash cost to decline by 9% YoY, which should help offset our expectation of lower ASP. We forecast INCO to record FY23/24 NPAT of USD224m/221m respectively.

Fig 93: Ni-matte production and volume



Source: Company, Maybank IBG Research

Fig 94: NPAT, ASP and cash cost estimate



Source: Bloomberg, Maybank IBG Research

9. Financial analysis

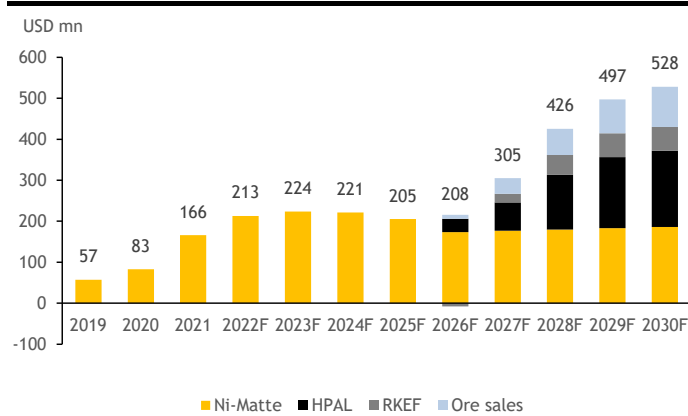
We expect earnings contribution from the new projects to kick in beginning FY26E once operation fully commences. We expect it will take 2-3 years for the new plants to reach their full utilization rate and ramp up production. We forecast INCO's FY30 earnings will grow to USD527m once all plants reach full capacity, or by a 14% CAGR in FY21-30F.

Fig 95: Key assumptions for INCO

Details	Unit	2020	2021	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F	2031F
Capacity	Kt Ni	75	75	75	75	75	268	268	328	328	328	328	328
Ni-matte production	Kt Ni	72	65	62	72	72	72	72	72	72	72	72	72
MHP production	Kt Ni							60	102	138	162	171	171
FeNi production	Kt Ni							37	55	62	69	69	69
LME Nickel price	USD/t	13,782	18,457	25,000	21,000	20,000	19,000	18,000	18,000	18,000	18,000	18,000	18,000
Cash cost for Ni-matte	USD/t	8,865	10,978	13,948	11,993	10,973	10,388	10,214	10,204	10,192	10,177	10,159	10,139
Cash cost for HPAL	USD/t							12,500	12,000	11,000	11,000	11,000	11,000
Cash cost for RKEF	USD/t							13,000	12,000	11,000	11,000	11,000	11,000
NPAT from Ni-matte	USD mn	83	166	213	224	221	205	173	177	180	183	186	190
NPAT contribution from new projects	USD mn							35	128	246	314	342	342
Total NPAT	USD mn	83	166	213	224	221	205	208	305	426	497	528	533

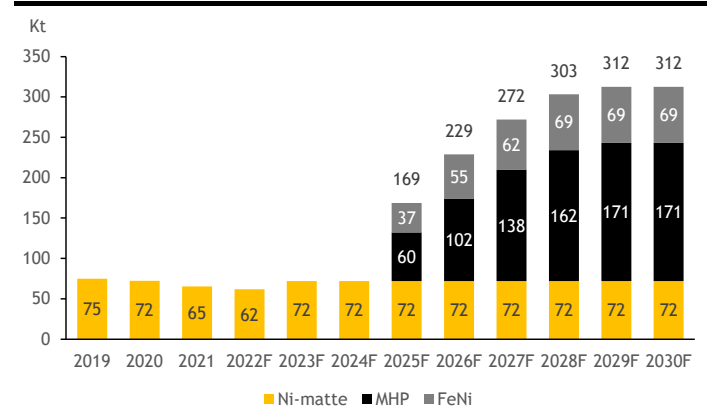
Source: Company, Maybank IBG Research

Fig 96: INCO NPAT estimate



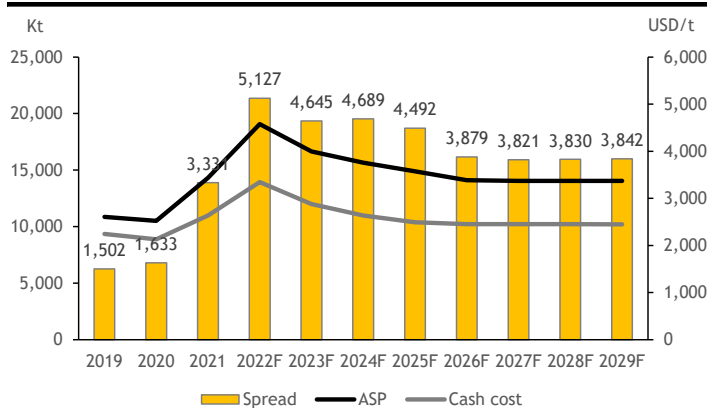
Source: Company, Maybank IBG Research

Fig 97: INCO production estimate



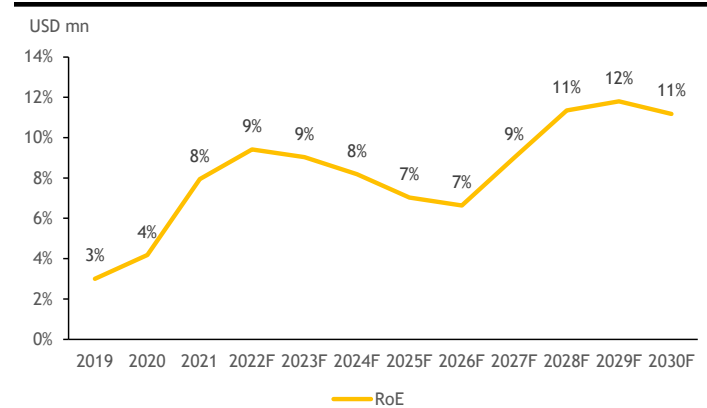
Source: Bloomberg, Maybank IBG Research

Fig 98: INCO Ni-matte ASP vs cash cost margin spread



Source: Company, Maybank IBG Research

Fig 99: INCO RoE forecast



Source: Bloomberg, Maybank IBG Research

10. Valuation

We initiate coverage on INCO with BUY and target price of IDR8,700. We value INCO using SOTP to capture value for each of INCO's future growth projects, using DCF approach. About 50% of our SOTP is driven by the new projects.

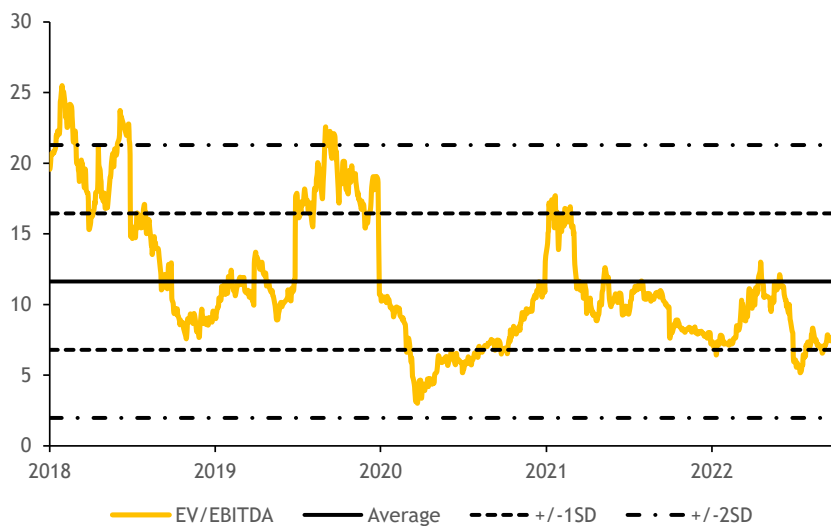
We believe INCO is the best proxy to growing class 1 demand as: 1) its Ni-matte ASP is pegged to LME's nickel price; and 2) HPAL projects will come on line in FY26-27. Risks to our call are: 1) delayed execution of the new projects; and 2) worse-than-expected global economic slowdown, which would result in lower-than-expected copper and nickel price.

Fig 100: SOTP valuation

Projects	EV (USD m)	Methodology	SOTP (%)
Sorowako - Ni Matte	2,611	DCF (LTG: 0%, WACC: 11.2%)	51%
Pomalaa - HPAL (30%)	998	DCF (LTG: 0%, WACC: 7.1%)	20%
Sorowako - HPAL (30%)	497	DCF (LTG: 0%, WACC: 7.1%)	10%
Bahodopi - RKEF (49%)	413	DCF (LTG: 0%, WACC: 7.1%)	8%
Bahodopi + Pomalaa ore mine sales	576	DCF (LTG: 0%, WACC: 7.1%)	11%
Total	5,094		100%
Net Cash/(Debt)	583		
Shareholder Value	5,677		
No. of shares	9,936		
Share price (US\$)	0.57		
Share price (Rp)	8,700		

Source: Company, Maybank IBG Research

Fig 101: INCO EV/EBITDA band



Source: Bloomberg, Maybank IBG Research

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Metrics					
P/E (reported) (x)	28.3	21.1	21.3	20.2	20.4
Core P/E (x)	43.6	19.7	21.3	20.2	20.4
P/BV (x)	1.8	1.5	1.9	1.7	1.6
P/NTA (x)	2.4	2.1	3.1	2.7	1.9
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
FCF yield (%)	3.8	4.5	4.4	0.3	nm
EV/EBITDA (x)	12.1	7.1	8.1	8.3	9.3
EV/EBIT (x)	27.5	11.9	12.3	12.8	14.2
INCOME STATEMENT (USD m)					
Revenue	764.7	953.2	1,189.4	1,199.1	1,128.9
EBITDA	265.6	388.5	471.8	491.4	496.8
Depreciation	(148.7)	(157.3)	(163.2)	(173.3)	(173.7)
Amortisation	0.0	0.0	0.0	1.0	2.0
EBIT	116.9	231.2	308.6	319.1	325.1
Net interest income / (exp)	4.5	(2.4)	2.0	2.1	(7.4)
Associates & JV	0.0	0.0	0.0	0.0	0.0
Exceptionals	0.0	0.0	0.0	0.0	0.0
Other pretax income	(16.8)	(8.1)	(13.0)	(8.0)	(8.0)
Pretax profit	104.6	220.6	297.6	313.2	309.7
Income tax	(21.8)	(54.8)	(84.8)	(89.3)	(88.3)
Minorities	0.0	0.0	0.0	0.0	1.0
Discontinued operations	0.0	0.0	0.0	0.0	0.0
Reported net profit	82.8	165.8	212.8	223.9	222.4
Core net profit	82.8	165.8	212.8	223.9	222.4
BALANCE SHEET (USD m)					
Cash & Short Term Investments	388.7	508.3	721.0	444.0	230.7
Accounts receivable	60.0	102.0	127.3	128.3	120.8
Inventory	144.5	162.0	194.7	195.1	178.5
Reinsurance assets	0.0	0.0	0.0	0.0	0.0
Property, Plant & Equip (net)	1,478.1	1,517.9	1,484.6	1,681.4	2,427.7
Intangible assets	0.0	0.0	0.0	0.0	0.0
Investment in Associates & JVs	0.0	0.0	0.0	0.0	0.0
Other assets	243.4	182.6	182.6	485.7	485.7
Total assets	2,314.7	2,472.8	2,710.3	2,934.5	3,443.4
ST interest bearing debt	0.0	0.0	0.0	0.0	0.0
Accounts payable	113.1	122.2	146.9	147.2	134.6
Insurance contract liabilities	0.0	0.0	0.0	0.0	0.0
LT interest bearing debt	0.0	0.0	0.0	0.0	300.0
Other liabilities	181.0	196.0	196.0	196.0	196.0
Total Liabilities	294.3	318.4	343.0	343.3	630.8
Shareholders Equity	2,020.4	2,154.5	2,367.3	2,591.2	2,812.6
Minority Interest	0.0	0.0	0.0	0.0	0.0
Total shareholder equity	2,020.4	2,154.5	2,367.3	2,591.2	2,812.6
Total liabilities and equity	2,314.7	2,472.8	2,710.3	2,934.5	3,443.4
CASH FLOW (USD m)					
Pretax profit	104.6	220.6	297.6	313.2	309.7
Depreciation & amortisation	148.7	157.3	163.2	172.3	171.7
Adj net interest (income)/exp	(4.5)	2.4	(2.0)	(2.1)	7.4
Change in working capital	7.9	(28.7)	(82.7)	(1.6)	36.6
Cash taxes paid	(42.2)	(67.7)	(84.8)	(89.3)	(88.3)
Other operating cash flow	0.0	0.0	0.0	0.0	0.0
Cash flow from operations	287.9	326.8	330.5	383.8	390.4
Capex	(152.1)	(180.7)	(130.0)	(370.0)	(920.0)
Free cash flow	135.8	146.2	200.5	13.8	(529.6)
Dividends paid	0.0	(33.1)	0.0	0.0	0.0
Equity raised / (purchased)	0.0	0.0	0.0	0.0	0.0
Change in Debt	0.0	0.0	0.0	0.0	300.0
Other invest/financing cash flow	2.5	6.2	12.2	12.3	16.3
Effect of exch rate changes	0.0	0.0	0.0	0.0	0.0
Net cash flow	138.3	119.2	212.7	26.1	(213.3)

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Ratios					
Growth ratios (%)					
Revenue growth	(2.2)	24.6	24.8	0.8	(5.9)
EBITDA growth	12.4	46.3	21.5	4.1	1.1
EBIT growth	12.4	97.7	33.5	3.4	1.9
Pretax growth	17.4	110.9	34.9	5.2	(1.1)
Reported net profit growth	44.3	100.2	28.3	5.2	(0.7)
Core net profit growth	44.3	100.2	28.3	5.2	(0.7)
Profitability ratios (%)					
EBITDA margin	34.7	40.8	39.7	41.0	44.0
EBIT margin	15.3	24.3	25.9	26.6	28.8
Pretax profit margin	13.7	23.1	25.0	26.1	27.4
Payout ratio	0.0	0.0	0.0	0.0	0.0
DuPont analysis					
Net profit margin (%)	10.8	17.4	17.9	18.7	19.7
Revenue/Assets (x)	0.3	0.4	0.4	0.4	0.3
Assets/Equity (x)	1.1	1.1	1.1	1.1	1.2
ROAE (%)	4.2	7.9	9.4	9.0	8.2
ROAA (%)	3.6	6.9	8.2	7.9	7.0
Liquidity & Efficiency					
Cash conversion cycle	62.4	48.4	53.0	58.3	60.6
Days receivable outstanding	39.4	30.6	34.7	38.4	39.7
Days inventory outstanding	82.2	76.9	74.4	81.2	85.0
Days payables outstanding	59.2	59.0	56.2	61.2	64.2
Dividend cover (x)	nm	nm	nm	nm	nm
Current ratio (x)	4.3	5.0	5.7	4.3	3.3
Leverage & Expense Analysis					
Asset/Liability (x)	7.9	7.8	7.9	8.5	5.5
Net gearing (%) (incl perps)	net cash	net cash	net cash	net cash	2.5
Net gearing (%) (excl. perps)	net cash	net cash	net cash	net cash	2.5
Net interest cover (x)	na	97.2	na	na	43.9
Debt/EBITDA (x)	0.0	0.0	0.0	0.0	0.6
Capex/revenue (%)	19.9	19.0	10.9	30.9	81.5
Net debt/ (net cash)	(388.7)	(508.3)	(721.0)	(444.0)	69.3

Source: Company; Maybank IBG Research

Merdeka Copper (MDKA IJ)

Unlocking value through monetisation

Initiate with BUY and SOTP-based TP of IDR5,300

We initiate our coverage on MDKA with a BUY and SOTP-based target price of IDR5,300. Its diversified multi-assets with multiple operation and long-term growth projects should support long-term earnings growth from FY25E onwards. Key risks to our call are: 1) volatility in nickel and copper price; 2) delays in project development; and 3) lower production volumes.

Monetisation of vast nickel resources

Supported by its vast resources (1.1b dmt of ore at 1.22% Ni containing 13.8Mt nickel) and strategically located near Indonesia's Morowali Industrial Park, MDKA plans to sell 3mt/8mt wmt of saprolite/limonite ores per annum to nearby smelters, aside from feeding its own smelters. MDKA operates two rotary kiln electric furnace (RKEF) smelters (38ktpa) and one RKEF smelter is under construction (50ktpa). Together, we forecast nickel segment revenue/EBITDA to register a 33%/63% CAGR in FY21-26E to USD1.3b/478m.

Prized asset: TB copper project

MDKA's main growth driver is its Tujuh Bukit (TB) copper project as it has one of the world's largest copper and gold resources, with inferred resources of 1.78bt containing 8.2Mt of copper and 28.6Moz of gold. The company aims to complete its pre-feasibility studies (PFS) in 1Q23 and targets initial production to start in 2026 for the Upper High-Grade Zone (UHGZ) projects, with production capacity of 70Kt-90Kt of copper and 200Koz-300Koz of gold per annum. We forecast UHGZ to yield USD928m/USD696m of revenue/EBITDA per annum.

Forecast 27%/32% EBITDA/NPAT CAGR over FY21/30E

We forecast EBITDA/NPAT to post a 27%/32% CAGR over FY21-30E to USD1.6b/806m, once all assets fully operate. Earnings growth will come in stages as new projects come on line, driven by: 1) nickel [FY22E-26E]; 2) AIM project [FY22E-26E]; 3) Pani gold project [FY25E-28E]; and 4) TB copper gold project (FY26E-30E). In FY30E, we expect revenue to be driven by nickel (51%), gold (24%), copper (22%) and others (3%).

FYE Dec (USD m)	FY20A	FY21A	FY22E	FY23E	FY24E
Revenue	322	381	864	1,114	1,676
EBITDA	130	184	304	335	496
Core net profit	56	59	73	87	136
Core FDEPS (cts)	0.3	0.3	0.3	0.4	0.6
Core FDEPS growth(%)	(30.6)	0.2	18.5	18.3	56.6
Net DPS (cts)	0.0	0.0	0.0	0.0	0.0
Core FD P/E (x)	65.9	nm	87.1	73.6	47.0
P/BV (x)	6.9	8.1	5.7	5.3	4.8
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
ROAA (%)	6.0	5.3	3.2	2.6	3.8
EV/EBITDA (x)	29.4	33.4	25.2	23.1	16.2
Net gearing (%) (incl perps)	23.5	19.0	28.6	23.6	30.5
Consensus net profit	-	-	130	139	272
MKE vs. Consensus (%)	-	-	(10.4)	(37.6)	(50.1)

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BUY

Share Price IDR 4,120
12m Price Target IDR 5,300 (+29%)

Company Description

PT Merdeka Copper Gold Tbk operates as a holding company, which engages in the mining, exploration, and production of gold, silver, copper and nickel.

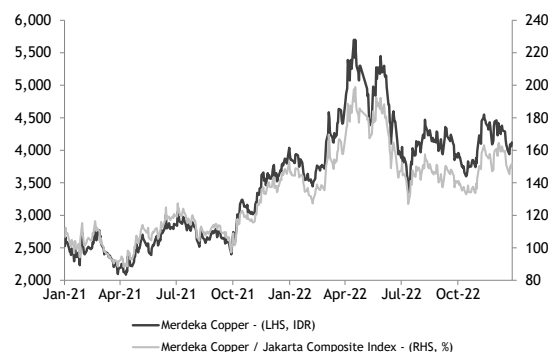
Statistics

52w high/low (IDR)	5,700/3,350
3m avg turnover (USDm)	9.9
Free float (%)	51.4
Issued shares (m)	24,111
Market capitalisation	IDR99.3T
	USD6.4B

Major shareholders:

Saratoga Investama Sedaya	18.3%
Mitra Daya Mustika	12.1%
Garibaldi Thohir	7.4%

Price Performance



	-1M	-3M	-12M
Absolute (%)	(1)	5	9
Relative to index (%)	3	7	4

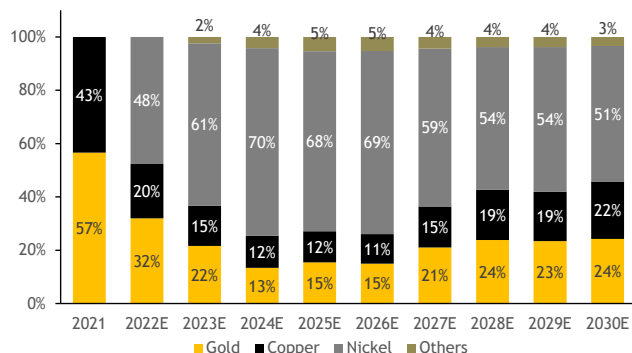
Source: FactSet

ESG@MAYBANK IGB
Tear Sheet Insert

Value Proposition

- MDKA is a diversified multi-asset mining group with multiple operations and long-term growth projects. Key commodities exposure: nickel, copper and gold.
- MDKA is backed by strong key shareholders and business partners to drive growth.
- MDKA's main driver is the TB Copper project, which is one of Indonesia's largest copper resources with inferred resources of 1.78bt containing 8.2Mt of copper and 28.6Moz of gold.

MDKA's revenue segment by commodities type

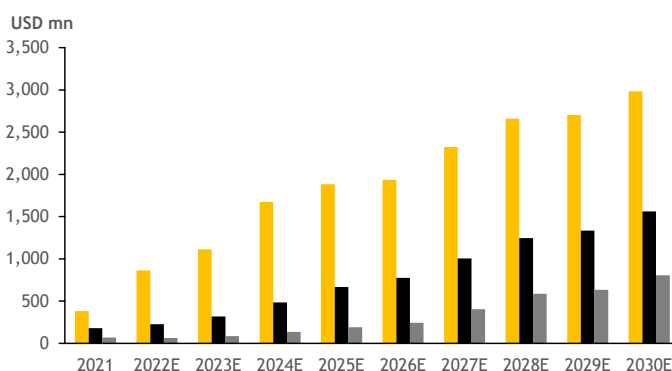


Source: Company

Financial Metrics

- We forecast 27%/32% EBITDA/NPAT CAGR over FY21/30E to USD1.6b/806m.
- We expect revenue to be driven by nickel (51%), gold (24%), copper (22%) and others (3%).
- Strong balance sheet and operational cash flow generation from existing portfolio to drive new growth projects.

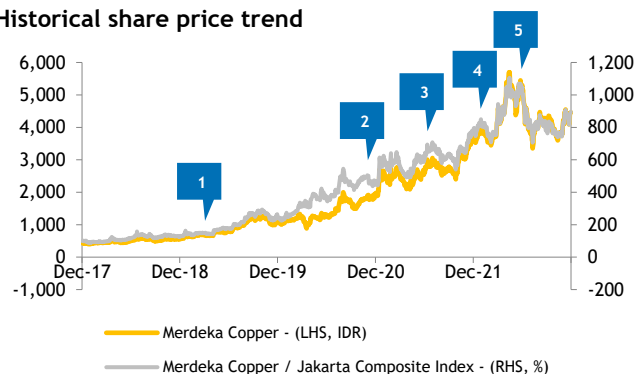
MDKA - financial forecasts



Source: Company, Maybank IBG Research

Price Drivers

Historical share price trend



Source: Company, Maybank IBG Research

- MDKA acquired 67% of the Wetar copper project.
- Inclusion to the MSCI index.
- MDKA acquired controlling stake in Pani gold project.
- Company announced investment in Merdeka Battery Material, one of Indonesia's largest undeveloped nickel assets with two operating smelters.
- LME nickel price soars to its highest level due to short-sell squeeze by Tsingshan Group.

Swing Factors

Upside

- Higher metal prices from rising critical mineral demand and lower supply due to Russia's metal export ban.
- Successful monetization of TB copper and other growth projects (Pani, AIM and MBM).
- China faster reopening of its economy, driving higher demand for copper and nickel.

Downside

- Lower metal price from slower-than-expected global economic growth.
- Delays in construction and production of the new growth projects.
- Higher-than-expected interest rates, posing unfavourable environment for financing the company's projects and expansion.

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Risk Rating & Score ¹	High risk (45.8)
Score Momentum ²	-0.0
Last Updated	13 Oct 2022
Controversy Score ³ (Updated: 27 Nov 2019)	0

Business Model & Industry Issues

- Global shift towards net-zero and clean energy will have a far-reaching impact on mineral demand over the next 20 years. This has generally created a positive image of the metal industry from an ESG perspective. This structural shift is positive for copper and nickel demand over the long term and stock valuation.
- MDKA is a diversified multi-asset mining group with multiple operations and long-term growth projects. It has three producing assets: Tujuh Bukit Gold (TB gold) mine, Wetar copper mine and Merdeka Battery Materials (MBM); and three developing assets: Tujuh Bukit Copper (TB copper) Project, Pani gold project and Acid Iron Metal (AIM) project.
- While there is growing concerns of high emissions for nickel processing, MDKA has fully committed to engage in carbon off-setting programme to achieving the following goals: 1) 29% reduction in GHG emission intensity by 2030; and 2) reach net-zero emissions by 2050.

Material E issues

- MDKA's revenue is well-diversified and it's driven by 48% from nickel, 20% from copper and 32% from gold.
- The company has established a commitment to engage in carbon off-setting programme towards achieving the following goals: 1) 29% reduction in GHG emission intensity by 2030; and 2) reach net-zero emissions by 2050.
- The company is accredited with ISO 45001 (Occupational Health and Safety Management), ISO 14001 (Environmental Management) and ISO 9001 (Quality Management) certifications.
- MDKA set environmental policy goals to reduce GHG, improve energy efficiency, reduce water consumption, prevent pollution and implement site reclamation to the highest level to protect biodiversity.

Material S issues

- As of 2021, c.91% of employees were male and 9% female. The female figure increased from 6% in 2019.
- One out of eight (12.5%) of the BoD members are female. Meanwhile, all six of the BoC are male.
- Lost Time Injury Frequency Rate, which measures the number of work accidents resulting in the loss of workdays per 1m working hours, was 0.66, higher than 0.43 in 2020 and 0.34 in 2019.
- MDKA prioritized community development by employing from the local community. 71% of total employee are local, higher than 70% in 2020.

Key G metrics and issues

- The board of directors (BoD) manages the company while the board of commissioners (BoC) supervises the performance of company management.
- In performing their duties, the board of commissioners is assisted by supporting elements, namely the audit committee, and the nomination and remuneration committee; while the board of directors is assisted by the corporate secretary and internal audit unit.
- The BoC consists of six members, and two of them (33%) are independent commissioners. The BoD consists of eight members (1 female). Four members of the BoC and BoD are related to the main shareholders (Saratoga, Provident and Garibaldi Thohir).
- Shares of the BoC and BoD members account for 9.53% of total outstanding shares.
- In FY21 total remuneration of the BoC and BoD and its consolidated subsidiaries were c.6.5% of core profit.
- The company frequently engages in related-party transactions, particularly for rental, lease liabilities and providing loans. As of FY21, transactions with related parties amounted to 6.27% of total assets, liabilities and revenue.
- The company recently provided a USD225m loan to Merdeka Battery Material (MBM), to refinance its loans from original lenders.

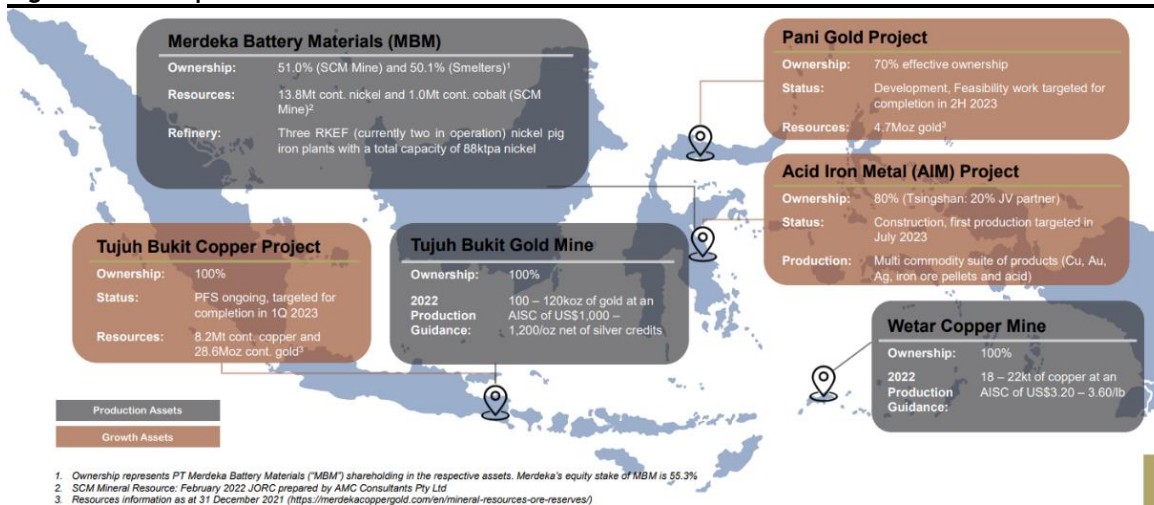
¹**Risk Rating & Score** - derived by Sustainalytics and assesses the company's exposure to unmanaged ESG risks. Scores range between 0 - 50 in order of increasing severity with low/high scores & ratings representing negligible/significant risk to the company's enterprise value, respectively, from ESG-driven financial impacts. ²**Score Momentum** - indicates changes to the company's score since the last update - a **negative** integer indicates a company's improving risk score; a **positive** integer indicates a deterioration. ³**Controversy Score** - reported periodically by Sustainalytics in the event of material ESG-related incident(s), with the impact severity scores of these events ranging from Category 0-5 (0 - no reports; 1 - negligible risks; ...; 5 - poses serious risks & indicative of potential structural deficiencies at the company).

1. Investment thesis

1.1 Diversified multi-asset with multiple operation and growth projects

Supported by its vast resources and strong operational excellence, MDKA has grown rapidly as a well-known diversified multi-asset mining group with multiple operations and long-term growth projects. MDKA currently has three producing assets: Tujuh Bukit Gold (TB gold) mine, Wetar copper mine and Merdeka Battery Materials (MBM); and three developing assets: Tujuh Bukit Copper (TB copper) project, Pani gold project and Acid Iron Metal (AIM) project.

Fig 102: MDKA's portfolio overview

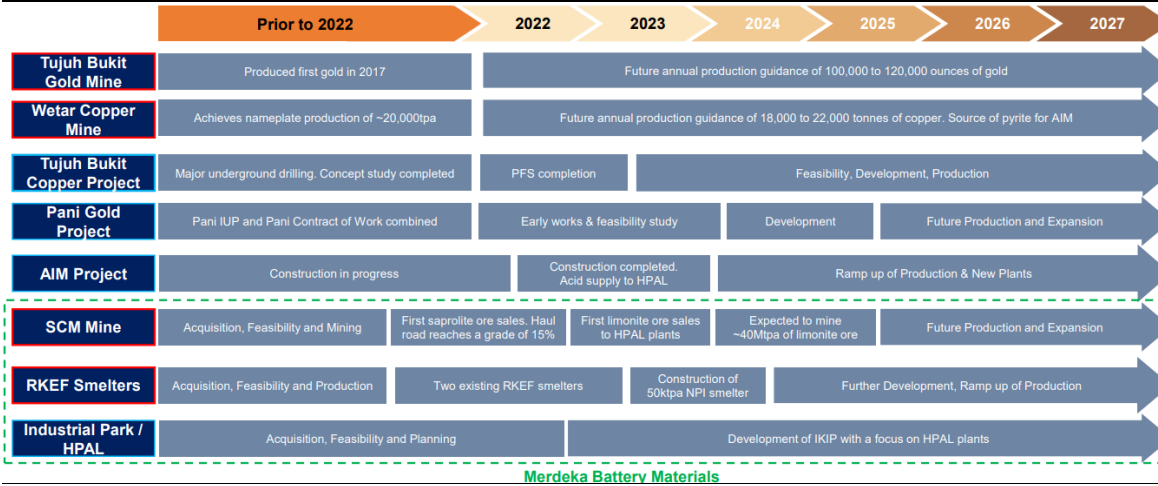


Source: Company, Maybank IBG Research

MDKA's main growth driver is its TB copper project as it has one of the world's largest copper and gold resources, with inferred resources of 1.78bt containing 8.2Mt of copper and 28.6Moz of gold. It accounts for 55% of our SOTP valuation. We expect the Upper High Grade Zone (UHGZ) to begin operation in 2026, generating USD696m in EBITDA per annum by FY30E, more than tripled FY21 EBITDA. Meanwhile, AIM and Pani projects is scheduled to start operation in FY23E/FY25E, generating USD95m/USD218m EBITDA per annum respectively.

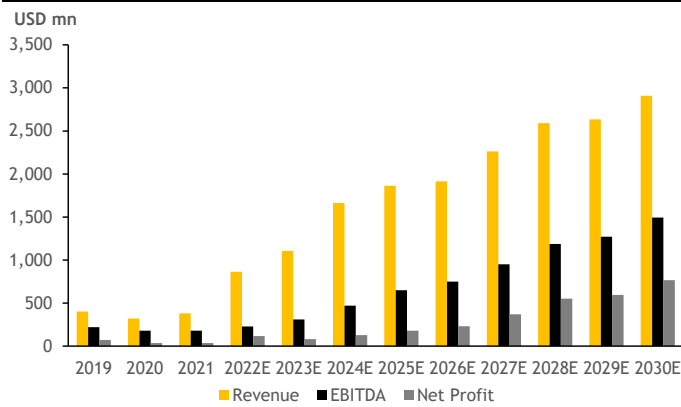
Until the TB copper project commences, the bulk of MDKA's earnings will be led by its existing nickel, gold and copper projects. MBM owns one of the largest nickel resources (1.1bn dmt containing 13.8Mt nickel) and three NPI smelters with total capacity of 88Kt per annum. As we expect nickel prices to remain high, paired with continued ramp-up in NPI output, we forecast MBM's FY25E EBITDA to grow to USD412m, a 83% FY22E-25E CAGR. Meanwhile, due to depleting reserves, TB gold oxide and Wetar will maintain production at 100-120koz/18-22kt until 2025E.

Fig 103: MDKA projects development timeline



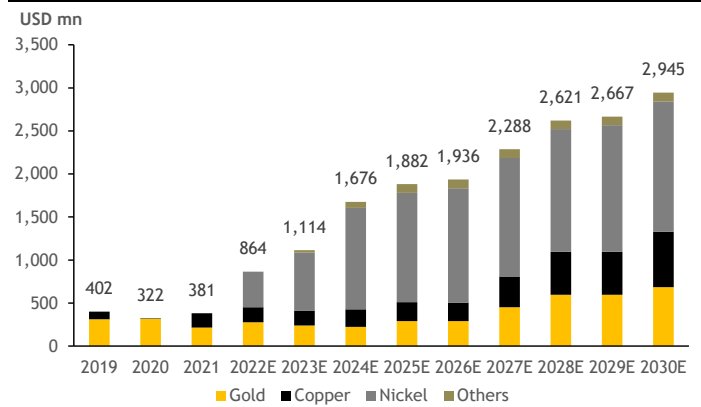
Source: Company, Maybank IBG Research

Fig 104: MDKA revenue, EBITDA and NPAT forecast



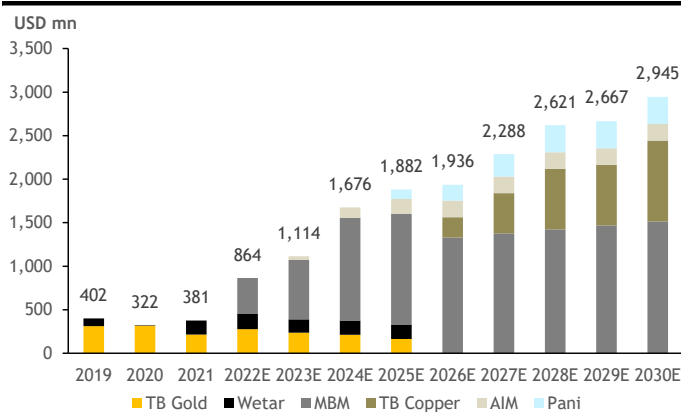
Source: Company, Maybank IBG Research

Fig 105: MDKA revenue breakdown by segments



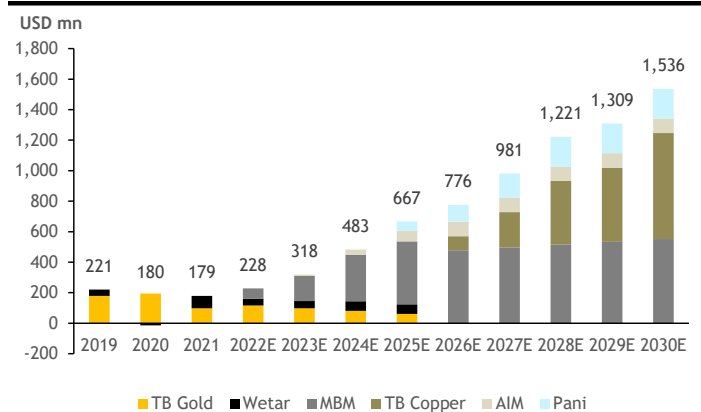
Source: Bloomberg, Maybank IBG Research

Fig 106: MDKA revenue breakdown by projects



Source: Company, Maybank IBG Research

Fig 107: MDKA EBITDA breakdown by projects



Source: Bloomberg, Maybank IBG Research

1.2 Strategic nickel asset with extensive room for growth

MDKA acquired Merdeka Battery Materials (MBM) in Mar-22. MBM is a vertically integrated nickel player with large undeveloped nickel resources under Sulawesi Cahaya Mineral (SCM), two operating NPI smelters with a combined capacity of 38Ktpa and one NPI smelter under construction with a capacity of 50Ktpa, targeted for completion in Jul-23. It will also develop a 3,600-ha nickel industrial park within its facilities (IKIP) with Tsingshan to utilize its vast limonite resources for EVs and battery supply chain.

SCM mine is one of the world’s largest pre-production nickel resources with 1.1bn dmt of ore at 1.22% Ni containing 13.8Mt nickel and 0.08% Co containing 1.0Mt of cobalt. Unlike typical nickel mines, SCM’s resources are dominated by limonite (69% of total resources), suitable to support the EVs and battery supply chain. In addition, it is primely located in Southwest Sulawesi, 50km away from Indonesia’s Morowali Industrial Park (IMIP).

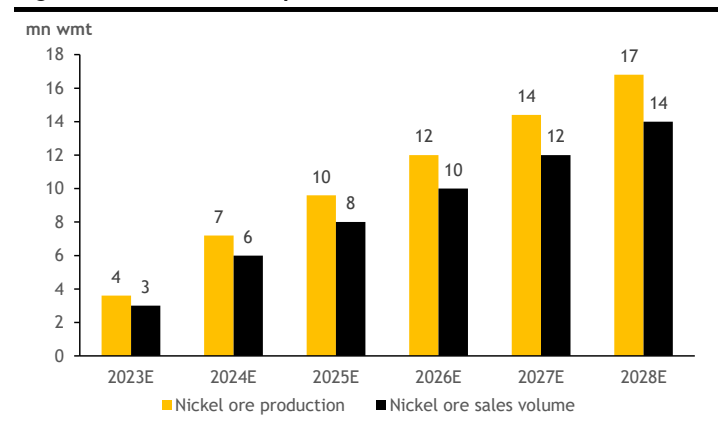
SCM will utilize some of its saprolite ore resources to support its existing three smelters. Meanwhile, it also targets to sell its limonite ore to HPAL plants located in IMIP and IKIP. MBM plans to sell 3Mtpa of saprolite ore to IMIP and 8Mtpa of limonite ore to the Huayou HPAL plant in IMIP, starting in mid-23. Conservatively, we forecast SCM’s ore sales to grow from 3m wmt in FY23E to 14m wmt in FY27E.

Fig 108: SCM mines primely located near IMIP



Source: Company, Maybank IBG Research

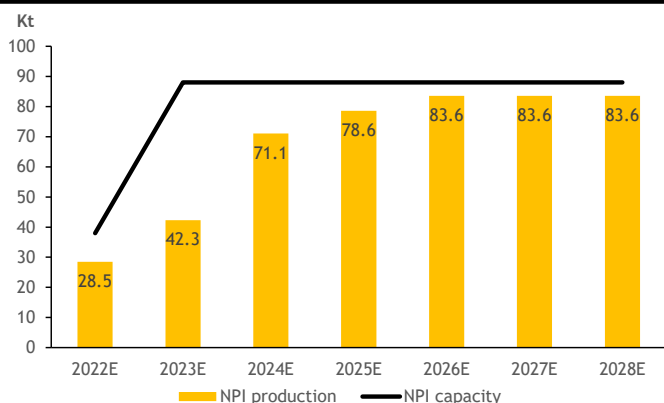
Fig 109: SCM mines ore production and sales volume



Source: Company, Maybank IBG Research

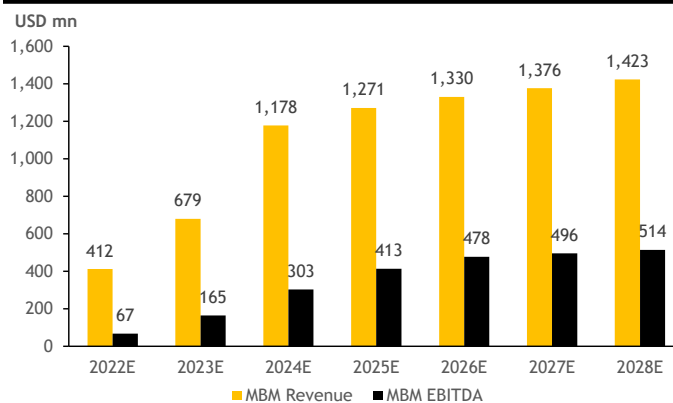
Meanwhile, with the third smelter scheduled to operate in 3Q22, we expect NPI sales volume will continue to grow by 31% FY22E-26E CAGR as we assume all three smelters will run at full capacity by 2026. This should bring MBM’s FY26E revenue/EBITDA to USD1.3b/478m, registering a 33%/63% CAGR respectively.

Fig 110: MBM's NPI output



Source: Company, Maybank IBG Research

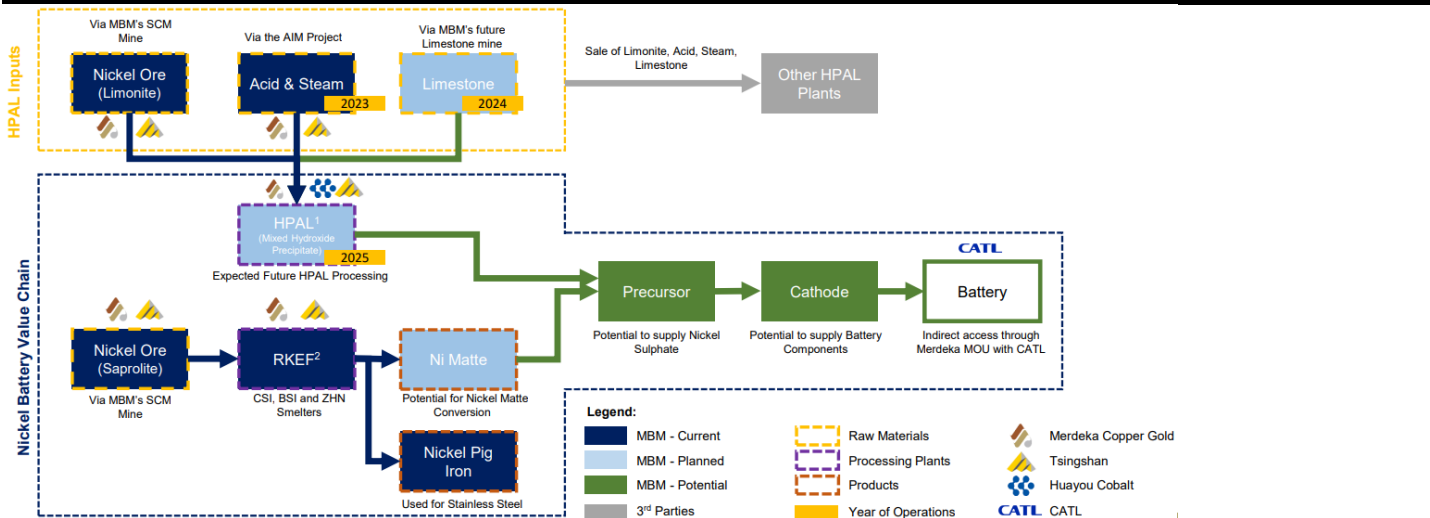
Fig 111: MBM's revenue and EBITDA projection



Source: Bloomberg, Maybank IBG Research

While the current MBM nickel operation focuses on class-2 products for stainless steel making, management mentioned its focus to move toward EVs and the battery supply chain. In addition, the company is well positioned to capture the potential in EVs and the battery supply chain due to its vast limonite resources and supporting projects (AIM). The company plans to build an HPAL plant and undertake NPI-Ni matte conversion for battery raw materials, but we have not factored this into our forecasts, pending details.

Fig 112: MDKA projects development timeline

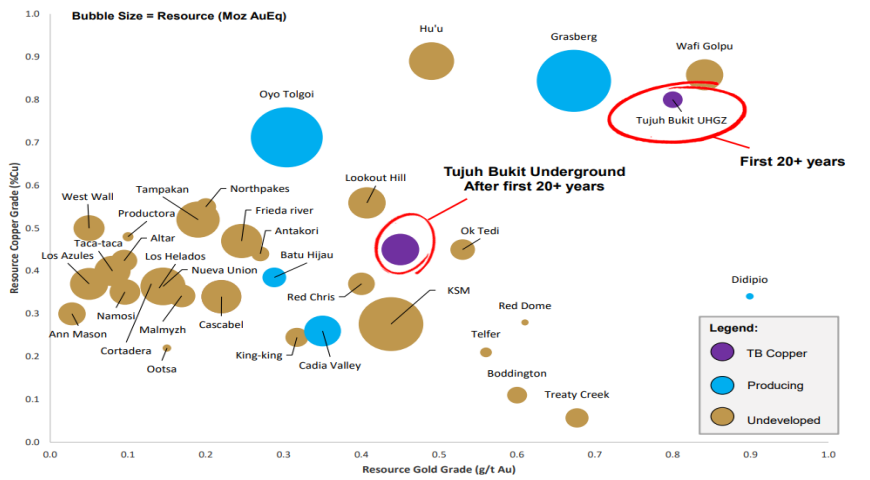


Source: Company, Maybank IBG Research

1.3 Unlocking value of TB copper and gold project

The undeveloped TB copper project deposit contains inferred mineral resources of 1.78Bt of ore at 0.46% Cu and 0.50 Au g/t, translating to 8.2Mt of copper and 28.6Moz of gold. It is located underneath the existing TB oxide gold mine and has been undergoing pre-feasibility studies (PFS) since 2018. The company has invested USD131m to date on detailed feasibility studies to allow for higher conversion of inferred resources to indicated resources.

Fig 113: TB copper resources

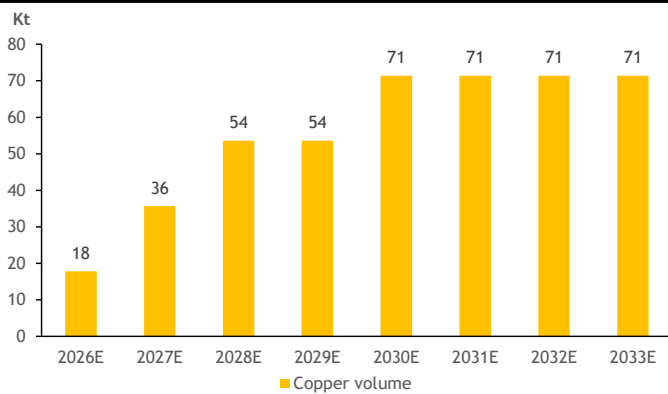


Source: Company, Maybank IBG Research

The company aims to complete its pre-feasibility studies (PFS) in 1Q23 and targets initial production to start in 2026 for the UHGZ project. The UHGZ project has an indicated resource of 372Mt at 0.61% Cu and 0.68 Au g/t. The UHGZ has production potential of 70Kt-90Kt of copper and 200Koz-300Koz of gold per annum for 30+ years.

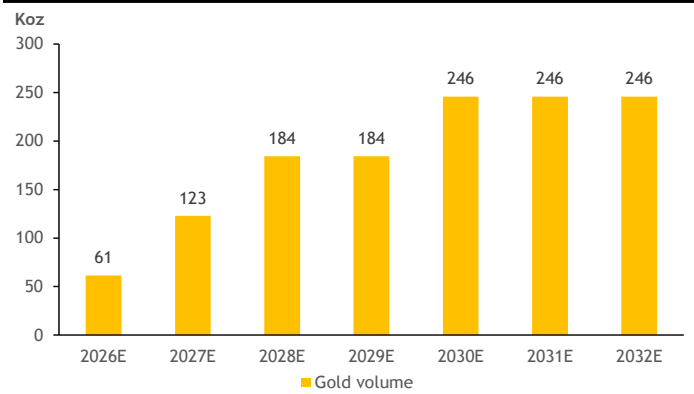
We expect production to begin in 2026E, starting with 3Mtpa of ore to produce 18Kt of copper and 61Koz of gold prior to ramping up in 2030E to produce 71Kt of copper and 246Koz of gold. We forecast TB UHGZ to yield USD928m/USD696m of revenue/EBITDA per annum.

Fig 114: TB copper sales volume forecast



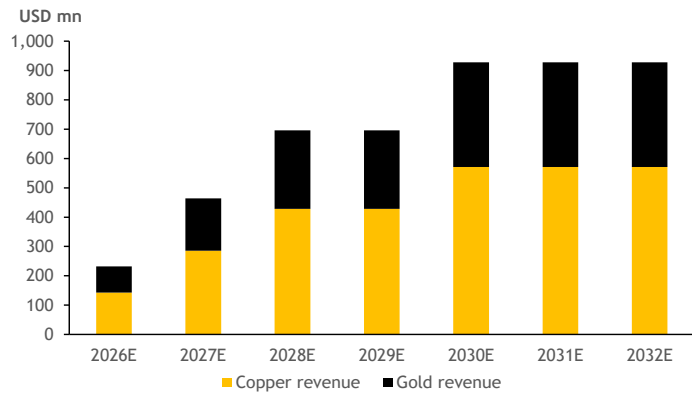
Source: Company, Maybank IBG Research

Fig 115: TB gold sales volume forecast



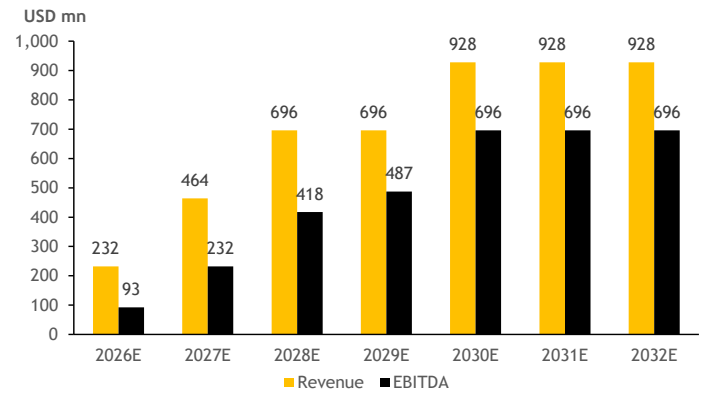
Source: Company, Maybank IBG Research

Fig 116: TB copper and gold revenue mix



Source: Company, Maybank IBG Research

Fig 117: TB revenue and EBITDA forecast

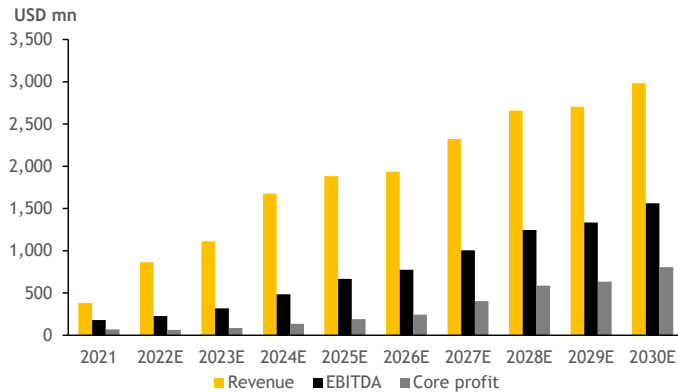


Source: Company, Maybank IBG Research

2. Financial analysis

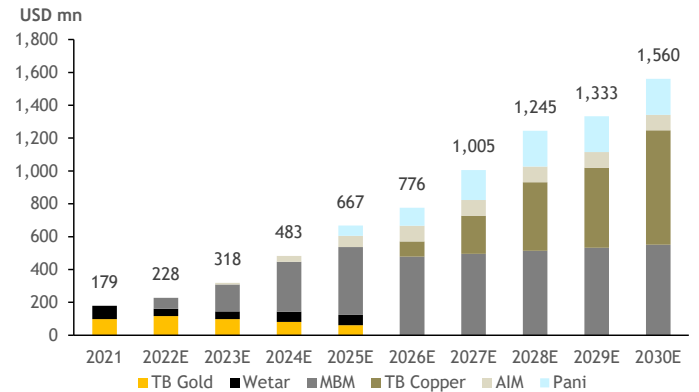
We forecast EBITDA/NPAT to register a 27%/32% CAGR over FY21-30E to USD1.6b/806m, once all assets fully operate. Earnings growth will come in stages as new projects come on line, driven by: 1) nickel [FY22E-26E]; 2) AIM project [FY22E-26E]; 3) Pani gold project [FY25E-28E]; and 4) TB copper gold project [FY26E-30E]. For FY30E, we expect revenue to be driven by nickel (51%), gold (24%), copper (22%) and others (3%).

Fig 118: MDKA's financial forecast



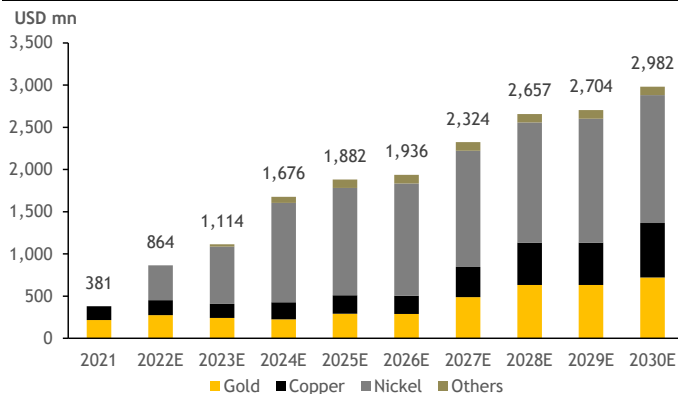
Source: Company, Maybank IBG Research

Fig 119: MDKA's EBITDA breakdown by project



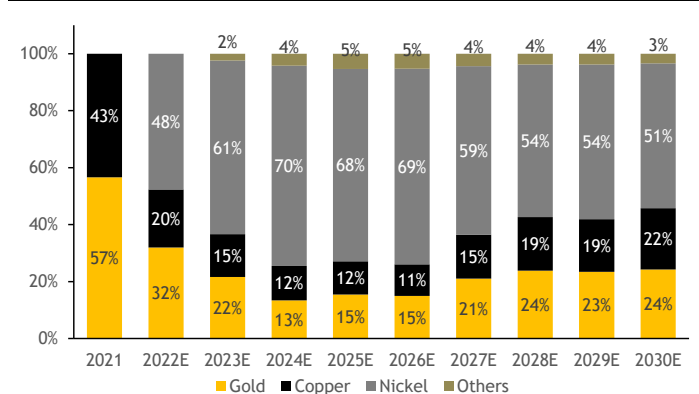
Source: Company, Maybank IBG Research

Fig 120: MDKA's revenue trend by commodity



Source: Company, Maybank IBG Research

Fig 121: MDKA's revenue breakdown by commodity



Source: Company, Maybank IBG Research

Fig 122: MDKA mineral production overview

Details	Unit	2020	2021	2022F	2023F	2024F	2025F	2026F	2027F	2028F	2029F	2030F
Copper production	Kt	5	19	21	22	25	27	27	45	63	63	80
YoY growth		0%	254%	9%	8%	13%	8%	-2%	66%	40%	0%	29%
Gold production	Koz	157	125	144	139	144	196	200	337	437	437	498
YoY growth		0%	-21%	16%	-4%	4%	36%	2%	69%	29%	0%	14%
Nickel production	Kt			29	42	71	79	84	84	84	84	84
YoY growth					48%	68%	11%	6%	0%	0%	0%	0%

Source: Company, Maybank IBG Research

3. Valuation

We initiate coverage on MDKA with BUY and target price of IDR5,300. We value MDKA using SOTP, to capture the NPV of its projects. We use: 1) DCF-based valuation for its producing assets (TB oxide, Wetar and MBM) as well as the assets being developed (Pani, AIM and TB Porphyry UHGZ); and 2) use an EV/resources valuation of USD300/t for the TB Porphyry, excluding UHGZ.

We believe MDKA is the best proxy to capture rising mineral demand from energy transition, led by its vast copper and nickel resources. In addition, MDKA is a vertically integrated HPAL operator, providing better cost efficiency. Risks to our call are: 1) delayed execution of projects; and 2) worse-than-expected global economic slowdown, meaning lower-than-expected copper and nickel price.

Fig 123: SOTP valuation

Projects	EV (USD m)	Methodology	SOTP (%)
Gold			
TB Oxide	237	DCF (LTG: 0%, WACC: 11.2%)	3%
Pani	890	DCF (LTG: 0%, WACC: 7.5%)	10%
Copper			
Wetar	134	DCF (LTG: 0%, WACC: 11.2%)	2%
AIM Project	612	DCF (LTG: 0%, WACC: 7.5%)	7%
TB Porphyry (UHGZ)	3,162	DCF (LTG: 0%, WACC: 8.1%)	36%
TB Porphyry (excl. UHGZ)	1,920	EV/Resources of US\$300/t	22%
Nickel			
Merdeka Battery Materials	1,788	DCF (LTG: 0%, WACC: 7.5%)	20%
Total	8,743		100%
Net Cash/(Debt)	(491)		
Shareholder Value	8,252		
No. of shares	24,111		
Share price (US\$)	0.34		
Share price (Rp)	5,300		

Source: Maybank IBG Research

Fig 124: MDKA EV/EBITDA band



Source: Bloomberg, Maybank IBG Research

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Metrics					
P/E (reported) (x)	61.0	120.2	53.4	73.6	47.0
Core P/E (x)	65.2	101.4	84.9	73.6	47.0
Core FD P/E (x)	65.9	nm	87.1	73.6	47.0
P/BV (x)	6.9	8.1	5.7	5.3	4.8
P/NTA (x)	6.9	8.1	5.7	5.3	4.8
Net dividend yield (%)	0.0	0.0	0.0	0.0	0.0
FCF yield (%)	2.0	0.6	nm	0.7	nm
EV/EBITDA (x)	29.4	33.4	25.2	23.1	16.2
EV/EBIT (x)	51.4	89.9	39.5	42.7	25.0
INCOME STATEMENT (USD m)					
Revenue	321.9	381.0	864.4	1,114.0	1,676.0
EBITDA	129.9	183.6	303.6	335.4	495.8
Depreciation	(42.5)	(74.0)	(101.8)	(146.3)	(162.9)
Amortisation	(13.1)	(41.3)	(8.6)	(7.6)	(10.1)
EBIT	74.3	68.2	193.3	181.4	322.8
Net interest income / (exp)	(18.1)	(11.5)	(13.7)	(35.0)	(32.5)
Associates & JV	0.0	0.0	0.0	0.0	0.0
Exceptionals	0.0	0.0	0.0	0.0	0.0
Other pretax income	0.0	0.0	0.0	0.0	0.0
Pretax profit	56.2	56.7	179.6	146.5	290.3
Income tax	(27.3)	(23.3)	(43.1)	(32.2)	(63.9)
Minorities	7.3	2.8	(20.0)	(27.6)	(90.8)
Discontinued operations	0.0	0.0	0.0	0.0	0.0
Reported net profit	36.2	36.1	116.5	86.6	135.7
Core net profit	56.0	58.8	73.3	86.6	135.7
BALANCE SHEET (USD m)					
Cash & Short Term Investments	51.0	185.5	471.1	473.1	191.0
Accounts receivable	2.1	0.6	110.0	71.3	107.2
Inventory	101.0	131.4	263.7	339.8	511.2
Property, Plant & Equip (net)	296.6	298.2	1,045.3	1,163.9	1,466.0
Intangible assets	0.0	0.0	0.0	0.0	0.0
Investment in Associates & JVs	0.0	0.0	0.0	0.0	0.0
Other assets	478.9	662.9	1,354.3	1,386.7	1,436.6
Total assets	929.6	1,278.6	3,244.3	3,434.8	3,712.0
ST interest bearing debt	59.1	207.5	298.0	278.0	258.0
Accounts payable	20.2	29.6	110.0	256.2	377.0
LT interest bearing debt	124.5	126.3	735.7	685.7	635.7
Other liabilities	162.0	136.0	136.0	136.0	136.0
Total Liabilities	366.0	499.2	1,279.5	1,355.7	1,406.5
Shareholders Equity	535.0	755.6	1,111.0	1,197.6	1,333.3
Minority Interest	28.7	23.8	853.8	881.4	972.2
Total shareholder equity	563.6	779.4	1,964.8	2,079.0	2,305.5
Total liabilities and equity	929.6	1,278.6	3,244.3	3,434.8	3,712.0
CASH FLOW (USD m)					
Pretax profit	56.2	56.7	179.6	146.5	290.3
Depreciation & amortisation	55.6	115.4	110.4	154.0	173.0
Adj net interest (income)/exp	(18.1)	(11.5)	(13.7)	(35.0)	(32.5)
Change in working capital	(19.7)	(19.6)	(161.2)	108.8	(86.6)
Cash taxes paid	(27.3)	(23.3)	(43.1)	(32.2)	(63.9)
Other operating cash flow	0.0	0.0	0.0	0.0	0.0
Cash flow from operations	120.0	132.9	65.6	349.5	222.1
Capex	(45.6)	(98.3)	(1,548.9)	(305.0)	(525.0)
Free cash flow	74.3	34.5	(1,483.2)	44.5	(302.9)
Dividends paid	0.0	0.0	0.0	0.0	0.0
Equity raised / (purchased)	0.0	168.3	238.9	0.0	0.0
Change in Debt	(103.1)	150.2	699.9	(70.0)	(70.0)
Other invest/financing cash flow	29.9	(215.8)	830.0	27.6	90.8
Effect of exch rate changes	0.2	(2.8)	0.0	0.0	0.0
Net cash flow	1.4	134.4	285.6	2.1	(282.2)

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Ratios					
Growth ratios (%)					
Revenue growth	(19.9)	18.4	126.9	28.9	50.5
EBITDA growth	(40.9)	41.4	65.4	10.5	47.8
EBIT growth	(41.6)	(8.1)	183.3	(6.1)	77.9
Pretax growth	(48.2)	0.9	216.6	(18.4)	98.2
Reported net profit growth	(48.9)	(0.2)	222.3	(25.6)	56.6
Core net profit growth	(29.0)	4.8	24.7	18.3	56.6
Profitability ratios (%)					
EBITDA margin	40.3	48.2	35.1	30.1	29.6
EBIT margin	23.1	17.9	22.4	16.3	19.3
Pretax profit margin	17.5	14.9	20.8	13.1	17.3
Payout ratio	0.0	0.0	0.0	0.0	0.0
DuPont analysis					
Net profit margin (%)	11.2	9.5	13.5	7.8	8.1
Revenue/Assets (x)	0.3	0.3	0.3	0.3	0.5
Assets/Equity (x)	1.7	1.7	2.9	2.9	2.8
ROAE (%)	na	na	na	na	na
ROAA (%)	6.0	5.3	3.2	2.6	3.8
Liquidity & Efficiency					
Cash conversion cycle	125.8	127.2	91.4	78.2	49.7
Days receivable outstanding	1.3	1.3	23.0	29.3	19.2
Days inventory outstanding	170.9	160.4	105.7	124.5	119.3
Days payables outstanding	46.4	34.4	37.4	75.5	88.8
Dividend cover (x)	nm	nm	nm	nm	nm
Current ratio (x)	1.0	1.4	2.0	1.6	1.3
Leverage & Expense Analysis					
Asset/Liability (x)	2.5	2.6	2.5	2.5	2.6
Net gearing (%) (incl perps)	23.5	19.0	28.6	23.6	30.5
Net gearing (%) (excl. perps)	23.5	19.0	28.6	23.6	30.5
Net interest cover (x)	4.1	5.9	14.1	5.2	9.9
Debt/EBITDA (x)	1.4	1.8	3.4	2.9	1.8
Capex/revenue (%)	14.2	25.8	179.2	27.4	31.3
Net debt/ (net cash)	132.6	148.3	562.7	490.6	702.8

Source: Company; Maybank IBG Research

Aneka Tambang (ANTM IJ)

In prime position in Indonesia's nickel supply chain

Initiate with BUY and DCF-based TP of IDR2,400

We initiate our coverage on ANTM with BUY and a DCF-based target price of IDR2,400. ANTM's vast resources and its upstream role in Indonesia's EV battery supply chain should drive long-term earnings growth and new projects. Key risks to our call are: 1) volatility in nickel and copper prices; 2) delays in project development; and 3) lower production volumes.

Prime nickel ore supplier; large market potential

Given ANTM's abundant nickel resources (1.4b wmt, containing 24.4mt nickel), the company is in a prime position to capture surging ore demand to support the growing nickel smelters in Indonesia. We forecast ANTM's nickel ore sales to reach 20mt by FY27 at a 25% CAGR from 7mt (FY22E-27E), supported by: 1) strong local ore demand from existing smelters; 2) newly formed partnership with CNGR Hong Kong Material Science & Technology Co. to supply ore to its Ni-matte plant, estimated at 9mt-11mt per annum; and 3) ANTM's upstream role in Indonesia Battery Corporation (IBC)'s ambition to develop Indonesia's EV battery ecosystem.

New FeNi plant to contribute in FY23E

ANTM has built its second FeNi plant in East Halmahera, North Maluku with a total capacity of 13.5Kt, increasing ANTM's total FeNi capacity to 40.5Kt. Construction of the new plant has finished and its operation is scheduled to start in mid-23. The company aims to produce at least 3kt TNi in 2H23, before targeting a full utilization rate in 2025 for the second plant. We forecast ANTM to produce 28Kt of ferronickel in FY23 and slowly ramp up to 38Kt in FY25, a 17% CAGR.

Forecast 15%/25% EBITDA/NPAT CAGR over FY21/25E

We forecast ANTM's EBITDA/NPAT to grow to IDR6.2t/4.6t in FY25E from IDR3.6t/IDR1.9t in FY21, a 15%/25% CAGR, supported by the nickel segment from rising ore sales and ramp-up in volume from the newly installed FeNi capacity. We factor in 13%/10% FY21-25E CAGR for nickel ore/ ferronickel sales volume, reaching 12m wmt and 38kt tonnes in FY25E.

FYE Dec (IDR b)	FY20A	FY21A	FY22E	FY23E	FY24E
Revenue	27,372	38,446	43,687	41,971	42,230
EBITDA	3,132	3,629	4,232	4,760	5,831
Core net profit	1,149	1,862	3,033	3,382	4,253
Core EPS (IDR)	48	77	126	141	177
Core EPS growth (%)	492.9	62.0	62.9	11.5	25.7
Net DPS (IDR)	3	17	27	44	49
Core P/E (x)	40.5	29.0	15.7	14.1	11.2
P/BV (x)	2.4	2.6	2.1	1.9	1.7
Net dividend yield (%)	0.1	0.7	1.4	2.2	2.5
ROAA (%)	3.7	5.8	8.9	9.2	10.7
EV/EBITDA (x)	16.1	15.2	11.7	9.8	7.5
Net gearing (%) (incl perps)	19.8	4.4	7.5	net cash	net cash
Consensus net profit	-	-	3,443	3,600	4,937
MKE vs. Consensus (%)	-	-	(11.9)	(6.1)	(13.9)

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BUY

Share Price IDR 1,985
12m Price Target IDR 2,400 (+22%)

Company Description

PT Aneka Tambang Tbk is a subsidiary of MIND ID with an integrated operation and diversified asset portfolio of nickel, gold and bauxite.

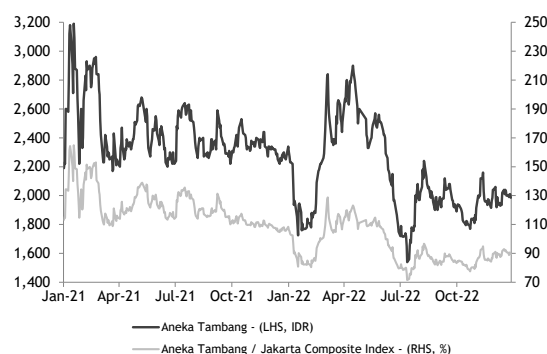
Statistics

52w high/low (IDR)	2,900/1,540
3m avg turnover (USDm)	8.8
Free float (%)	35.0
Issued shares (m)	24,031
Market capitalisation	IDR47.7T USD3.1B

Major shareholders:

Indonesia Asahan Aluminium (Inalum)	65.0%
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Price Performance



	-1M	-3M	-12M
Absolute (%)	0	2	(12)
Relative to index (%)	3	5	(15)

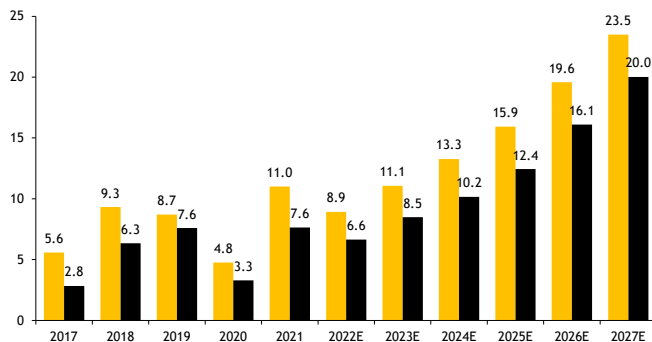
Source: FactSet

ESG@MAYBANK IGB
Tear Sheet Insert

Value Proposition

- ANTM is a subsidiary of MIND ID, Indonesia’s mining holding SOE, which engages in integrated mining and has a diversified portfolio of nickel, gold and bauxite.
- Supported by its vast nickel resources, ANTM is in the prime position to capture rising ore demand from expanding nickel smelters in Indonesia.
- ANTM plays a key upstream role in IBC’s ambitions to develop Indonesia’s EV battery supply chain, which will fuel the company’s growth going forward.

ANTM’s nickel ore sales



Source: Company, Maybank IBG Research

Price Drivers

Historical share price trend



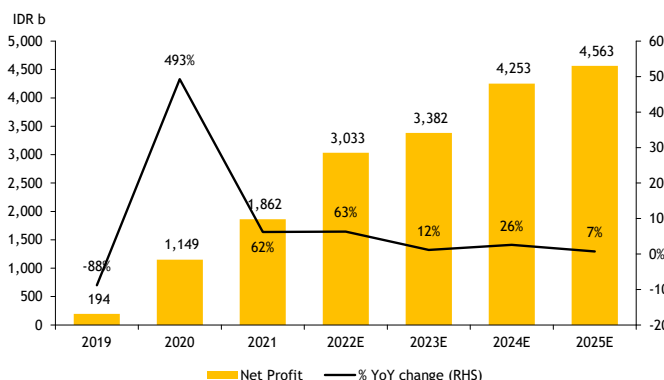
Source: Company, Maybank IBG Research

1. Government relaxed a regulation on mineral-ore exports.
2. Global economic slowdown due to COVID-19 outbreak.
3. Easing concerns about COVID-19 and increasing demand for nickel for EV batteries.
4. LME’s nickel price soared to its highest level due to short-sell squeeze by Tsingshan Group.
5. Widening of discount of class 2 price to LME price due to increasing class 2 supply from Indonesia.

Financial Metrics

- Forecast 15%/28% EBITDA/NPAT CAGR over FY21-25E, driven by rising ore demand and ramping up of volumes from the newly installed FeNi capacity.
- We expect margins to rise, driven by operational leverage from higher volumes and decline in energy prices relative to nickel price.
- Strong cash position and balance sheet supports the company’s growth projects and dividends.

ANTM NPAT forecasts



Source: Company, Maybank IBG Research

Swing Factors

Upside

- Higher nickel price due to increasing battery demand and less supply as a result of Russia’s ban on metal exports.
- Successful discussion with CATL and LGES to form partnership for new growth projects.
- China’s faster reopening of its economy, driving higher demand for stainless steel and nickel.

Downside

- Lower nickel price due to slower-than-expected global economic growth.
- Government imposes royalty or increases export tax on Indonesia’s class-2 products.
- Commencement of operation of the newly installed FeNi capacity delayed.

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Risk Rating & Score ¹	High risk (39.9)
Score Momentum ²	-0.0
Last Updated	28 Feb 2022
Controversy Score ³ (Updated: 21 Jun 2022)	2

Business Model & Industry Issues

- Global shift towards net-zero and clean energy will have a far-reaching impact on mineral demand over the next 20 years. This has generally created a positive image of the metal industry from an ESG perspective. This structural shift is positive for nickel over the long term and stock valuation.
- ANTM is a member of MIND ID, which undertakes all activities from exploration, excavation, processing through to marketing of nickel ore, ferronickel, gold, silver, bauxite and coal.
- While there is growing concerns about high emissions for nickel processing, ANTM has fully committed to engage in carbon off-setting programme to achieving net-zero emissions by 2060.

Material E issues

- ANTM’s revenue is well-diversified and its driven 66%by gold, 29% nickel and 5% bauxite.
- The company has established a commitment to engage in carbon off-setting to achieve net-zero emissions by 2060 through conventional and GHG emission reduction policies.
- ANTAM is committed and responsible for restoring the environment post mining activity. The company has done reclamation program of 1.2m ha and planted 548k trees in 2021.
- The company has distributed IDR102b for environmental expense, or 3% of FY21 net profit.
- The company is ISO 45001 (Occupational Health and Safety Management), ISO 14001 (Environmental Management) and ISO 9001 (Quality Management) certified.

Material S issues

- As of 2021, c.90% of employees were male, 10% female. The female figure has not changed from 10% in 2020.
- One out of five (20%) of the BoD members are female. Meanwhile, all five of the BoC are male.
- Lost Time Injury Frequency Rate, which measures the number of work accidents resulting in the loss of workdays per 1m working hours, was 0.17, higher than 0.05 in 2020 and 0.15 in 2019.
- The company has not recorded any fatalities.

Key G metrics and issues

- The government owns ANTM indirectly (65% of series B shares) via 100%-owned Inalum. Inalum acquired its ANTM stake from the government in 2017 as part of the restructuring of government ownership in SOEs.
- The Board of Directors (BoD) is fully responsible for the company’s management, while the Board of Commissioners (BoC) are assigned to conducting general and/or specific supervision and providing advice to the BoD.
- The BoC consists of five members, three of which (60%) are independent commissioners. The BoD consists of five members (1 female), and none of them are independent directors.
- There are no BoC members sitting on the BoD, and vice versa. No members of the BoC and BoD are related to the main shareholder.
- Shares of the BoC and BoD members account for less than 0.01% of total outstanding shares.
- In FY21, total remuneration of the BoC and BoD and its consolidated subsidiaries were c.3.2% of net profit.
- PwC has been the auditor of the company for more than 15 years.

¹**Risk Rating & Score** - derived by Sustainalytics and assesses the company’s exposure to unmanaged ESG risks. Scores range between 0 - 50 in order of increasing severity with low/high scores & ratings representing negligible/significant risk to the company’s enterprise value, respectively, from ESG-driven financial impacts. ²**Score Momentum** - indicates changes to the company’s score since the last update - a **negative** integer indicates a company’s improving risk score; a **positive** integer indicates a deterioration. ³**Controversy Score** - reported periodically by Sustainalytics in the event of material ESG-related incident(s), with the impact severity scores of these events ranging from Category 0-5 (0 - no reports; 1 - negligible risks; ...; 5 - poses serious risks & indicative of potential structural deficiencies at the company).

4. Investment thesis

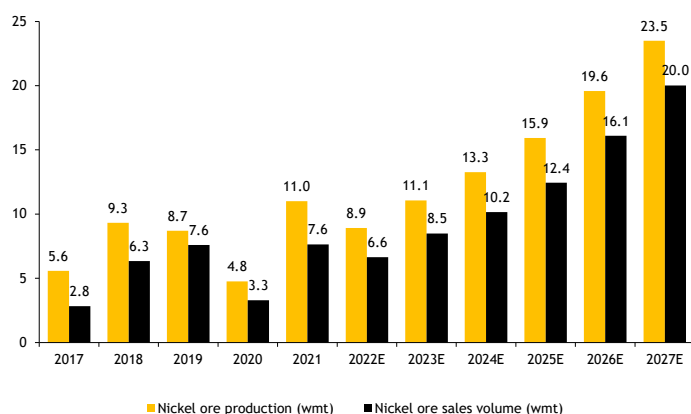
4.1 A prime nickel ore supplier; large market potential from NPI and battery supply chain

Given ANTM’s abundant nickel reserves and resources, the company is in a prime position to capture surging ore demand to support growing NPI/FeNi production as well as future development of the EV battery ecosystem. ANTM has four nickel mines (Pomalaa, North Konawe, North Maluku, Gag Island) with total reserves of 382m wmt and 1.4b wmt of resources.

ANTM’s nickel ore sales have surged from 3.2m wmt in FY20 to 7.6m wmt in FY21, supported by strong local ore demand from nickel smelters. With more nickel smelters scheduled to come online in the next 2-3 years, it should bode well for ANTM. We forecast ANTM’s nickel ore sales to reach 20m tonnes by 2027, growing at 25% CAGR (FY22E-27E).

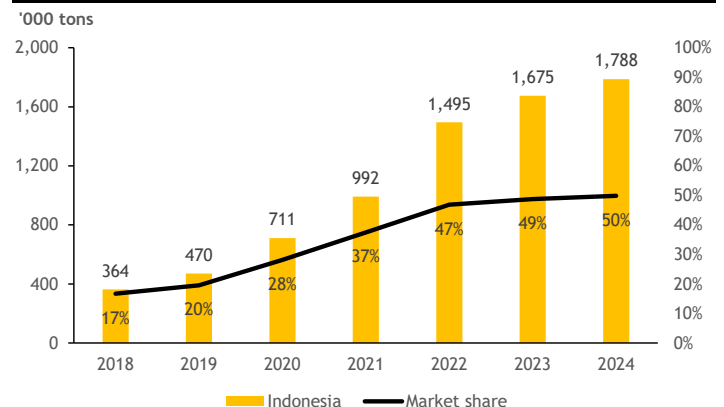
ANTM recently signed a framework agreement with CNGR, one of the leading EV battery manufacturers in Indonesia, to develop and manage the industrial park in one of ANTM’s mining concessions in Pomalaa. CNGR will develop a nickel ore processing facility, using the technology CNGR developed called OESBF (oxygen-enriched side-blown furnace) to produce Ni-matte. Through this synergy, ANTM will supply the nickel ore to this plant, estimated at 9m-11m wmt per annum.

Fig 125: ANTM nickel ore production and sales



Source: Company, Maybank IBG Research

Fig 126: Indonesia refined nickel smelters capacity



Source: Bloomberg, Maybank IBG Research

Aside from growing demand from NPI/FeNi smelters, we expect future nickel ore demand growth to be driven by the EV battery segment, as ANTM has undertaken the upstream role of nickel ore supplier in IBC’s supply chain ecosystem. ANTM is currently in discussions with the two largest EV battery manufacturers, CATL and LG to build an HPAL and RKEF as part of the IBC’s EVs battery value chain. The projects are estimated to consume 32-36mn wmt of nickel ores. We have not yet taken into account these projects, pending more details.

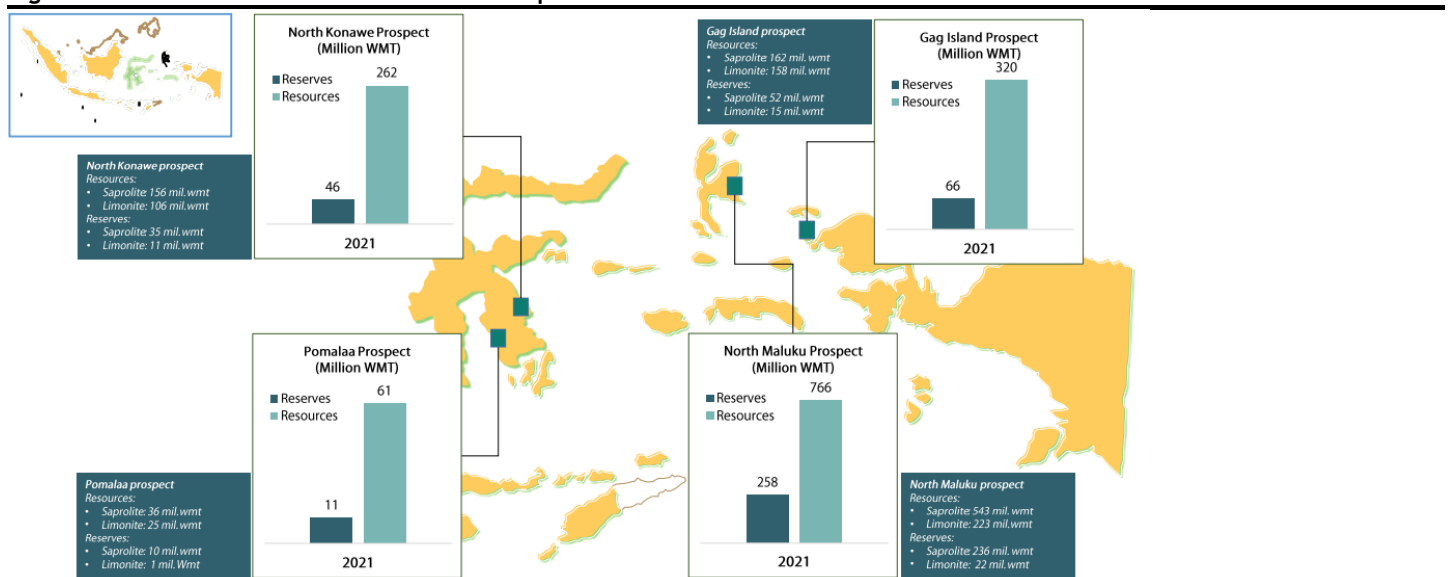
4.2 Upcoming EV battery integrated projects

In mid-22, ANTM and IBC signed two framework agreements to develop an integrated EV battery project with: 1) Ningbo Contemporary Brunn Lygend Co, Ltd (CBL), a subsidiary of CATL; and 2) LG Energy Solution (LGES). Discussions with both parties continued to progress, and preparation for the joint projects is being developed.

In a recent announcement, ANTM said it has successfully spun-off partial assets and liabilities of its mining business PT Nusa Karya Arindo (NKA) and PT Sumberdaya Arindo (SDA), which are located in North Maluku. The objective of the spin-off is to open up opportunities for strategic cooperation and strengthen the supply chain of downstream nickel product.

Following the spin-off, ANTM will divest some of its ownership in NKA and SDA (likely to keep majority) to CBL and LGES. The proceeds from the divestment will then be used to finance the upcoming expansion of CBL and LGES. Together with CBL and LGES, ANTM will form a JV to develop RKEF and HPAL plants (ANTM likely to become the minority owner) to process nickel ore to into MHP to be used as a raw material for the battery precursor. This should be the company’s next growth driver. Currently, we have not yet taken into account these projects, pending more details.

Fig 127: ANTM’s nickel reserves and resources portfolio



Source: Maybank IBG Research

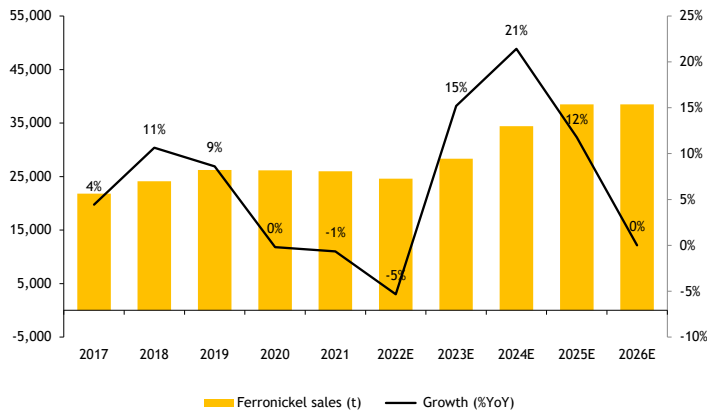
4.3 Additional FeNi capacity to start contribution in 2H23

Aside from selling nickel ore, ANTM also produces FeNi through its smelter in Pomalaa. The company has been maintaining output at ~26Kt per annum, as the smelter has been operating at full utilization rate (capacity at 27Kt) since 2019.

In 2017, ANTM built its second FeNi plant in East Halmahera, North Maluku with a total capacity of 13.5Kt, increasing ANTM’s total FeNi capacity to 40.5Kt. Construction of the new plant was completed in early-22, yet operation for the plant has to be postponed due to unexpected disruption to electricity supply. ANTM has secured the electricity supply with Perusahaan Listrik Negara (PLN), but the power plant is not expected to be completed until mid-23.

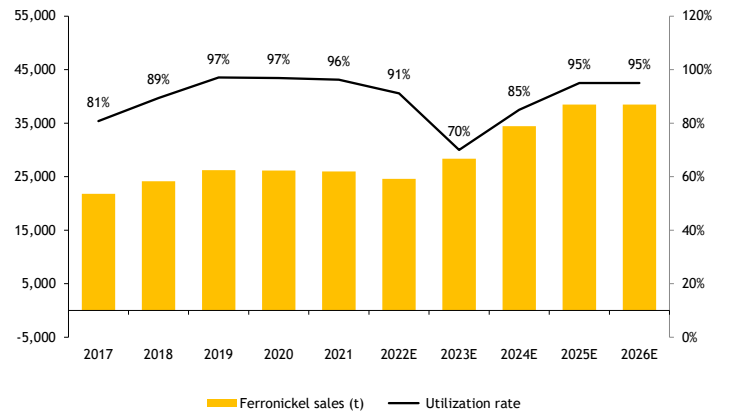
ANTM currently targets the new plant to start operation in 2H23 and ramping up of production will take 1-2 years. The company aims to produce at least 3kt TNi in 2H23, before targeting full utilization rate in 2025 for the second plant. We forecast ANTM to produce 28Kt of FeNi in FY23 and slowly ramp up to 38Kt in FY25, a 17% CAGR.

Fig 128: ANTM's FeNi sales growth



Source: Company, Maybank IBG Research

Fig 129: ANTM's FeNi utilization rate

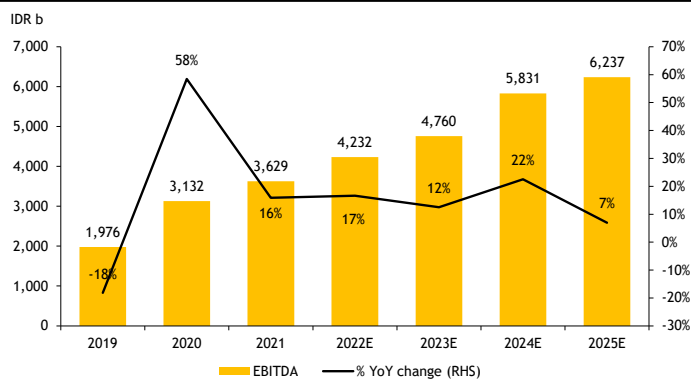


Source: Bloomberg, Maybank IBG Research

5. Financial analysis

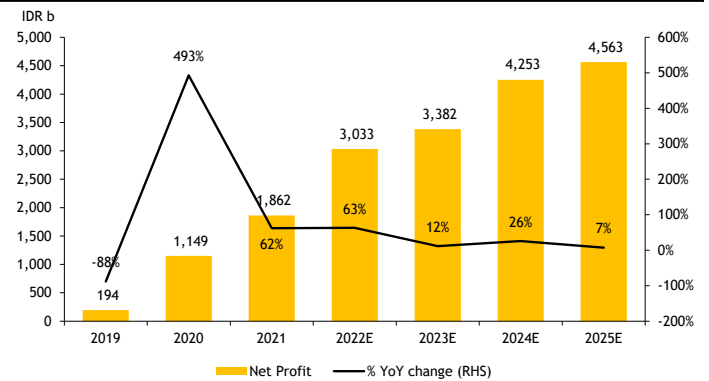
We forecast ANTM's EBITDA/NPAT to grow to IDR6.2t/4.6t in FY25E from IDR3.6t/IDR1.9t in FY21, a 15%/25% CAGR, supported by the nickel segment from rising ore sales and ramp-up in volume from the newly installed FeNi capacity. We factor in 13%/10% FY21-25E CAGR for nickel ore/ferro-nickel sales volume, reaching 12m wmt and 38kt tonne in FY25E, respectively. Profitability wise, we expect margins to improve, driven by operational leverage from higher volumes and as energy prices should moderate in FY23E relative to nickel price.

Fig 130: ANTM's EBITDA to reach IDR6.2t in FY25E



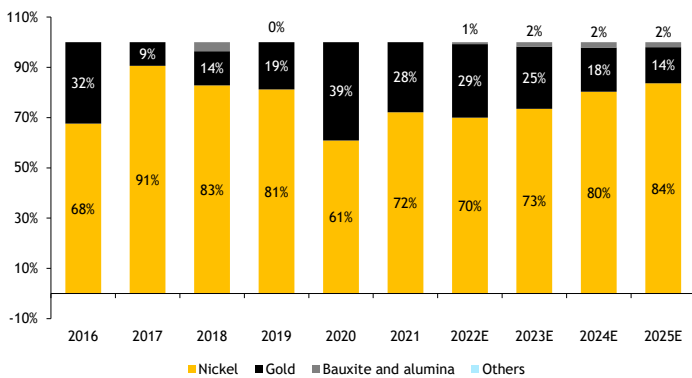
Source: Company, Maybank IBG Research

Fig 131: ANTM's NPAT to reach IDR4.6t in FY25E



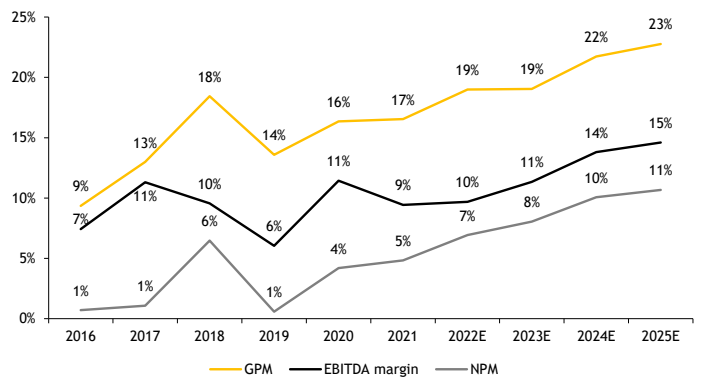
Source: Company, Maybank IBG Research

Fig 132: ANTM's EBIT breakdown by product



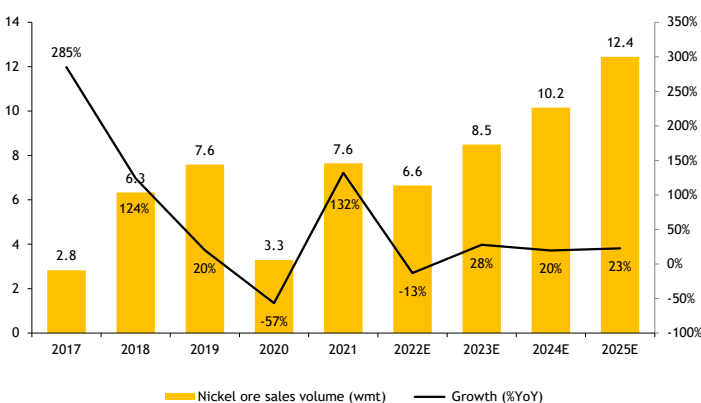
Source: Company, Maybank IBG Research

Fig 133: ANTM's margin forecasts



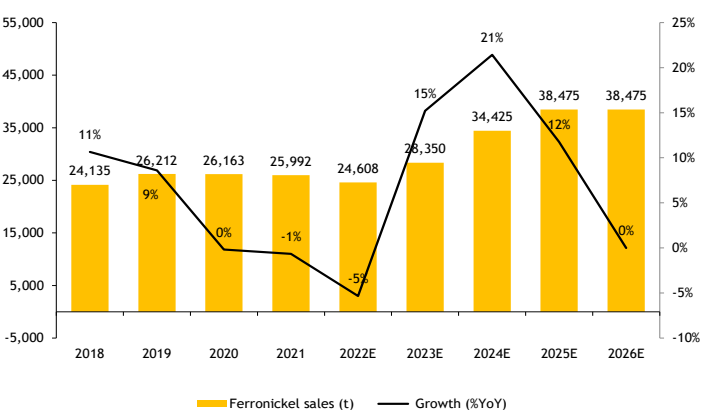
Source: Company, Maybank IBG Research

Fig 134: ANTM's nickel ore sales volume



Source: Company, Maybank IBG Research

Fig 135: ANTM's FeNi sales volume



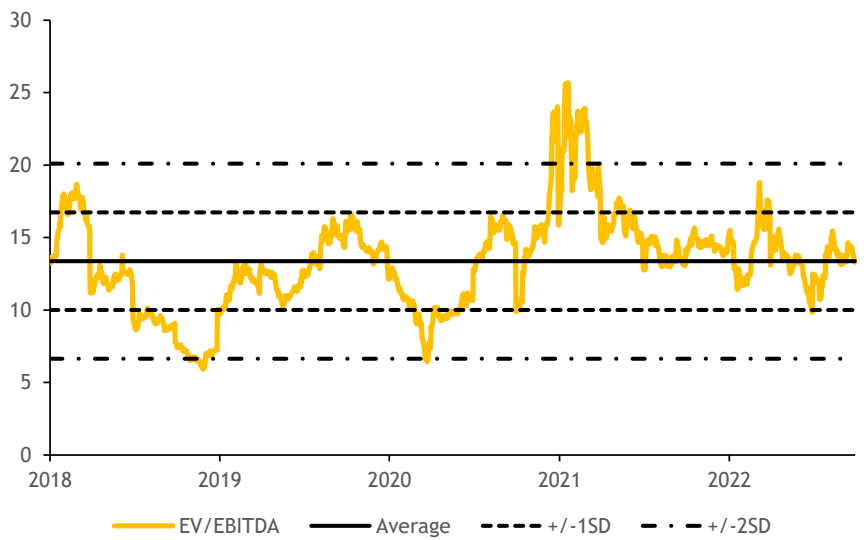
Source: Company, Maybank IBG Research

6. Valuation

We re-initiate coverage on ANTM with BUY and DCF-based TP of IDR2,400. Our valuation is derived using DCF until life-of-mine methodology. Our valuation implies an attractive 10.9x FY23 EV/EBITDA, -1SD from its 5-year average.

We believe ANTM is well positioned to benefit from the government’s focus on developing Indonesia’s battery supply chain through IBC. Announcement and further details of the company’s JV with CATL and LGES will be near-term catalysts for the share price, as it provides more room to grow. Risks to our call include: 1) increase in royalty/export tax rate for class-2 nickel; and 2) global economic slowdown is more severe than predicted, causing copper and nickel prices to be lower than expected.

Fig 136: ANTM’s EV/EBITDA band



Source: Bloomberg, Maybank IBG Research

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Metrics					
P/E (reported) (x)	16.6	31.4	15.7	14.1	11.2
Core P/E (x)	40.5	29.0	15.7	14.1	11.2
P/BV (x)	2.4	2.6	2.1	1.9	1.7
P/NTA (x)	2.4	2.6	2.1	1.9	1.7
Net dividend yield (%)	0.1	0.7	1.4	2.2	2.5
FCF yield (%)	3.5	5.3	5.7	7.2	9.2
EV/EBITDA (x)	16.1	15.2	11.7	9.8	7.5
EV/EBIT (x)	24.7	20.1	14.5	11.9	8.9
INCOME STATEMENT (IDR b)					
Revenue	27,372.5	38,445.6	43,686.6	41,971.5	42,230.2
EBITDA	3,131.6	3,628.7	4,231.7	4,760.0	5,830.7
Depreciation	(1,063.6)	(853.7)	(786.7)	(807.4)	(828.3)
Amortisation	(35.7)	(36.9)	(34.3)	(33.7)	(33.0)
EBIT	2,032.3	2,738.1	3,410.7	3,918.9	4,969.4
Net interest income / (exp)	(455.1)	(269.4)	(121.3)	(138.8)	(100.6)
Associates & JV	128.5	452.6	661.3	555.7	583.4
Exceptionals	0.0	0.0	0.0	0.0	0.0
Other pretax income	(64.6)	122.1	261.7	0.0	0.0
Pretax profit	1,641.2	3,043.5	4,212.4	4,335.9	5,452.3
Income tax	(491.8)	(1,181.8)	(1,179.5)	(953.9)	(1,199.5)
Minorities	(0.0)	0.0	(0.0)	(0.0)	(0.0)
Discontinued operations	0.0	0.0	0.0	0.0	0.0
Reported net profit	1,149.4	1,861.7	3,032.9	3,382.0	4,252.7
Core net profit	1,149.4	1,861.7	3,032.9	3,382.0	4,252.7
BALANCE SHEET (IDR b)					
Cash & Short Term Investments	3,984.4	5,089.2	4,039.1	7,168.6	10,218.4
Accounts receivable	1,344.2	1,447.7	1,645.0	1,580.4	1,590.2
Inventory	2,626.0	3,107.3	3,406.3	3,251.4	3,135.5
Property, Plant & Equip (net)	18,248.1	16,863.7	16,950.8	16,982.9	16,999.2
Intangible assets	68.3	68.3	68.3	68.3	68.3
Investment in Associates & JVs	1,072.0	1,770.4	2,445.6	2,501.2	2,559.5
Other assets	4,386.5	4,569.6	6,880.9	6,306.1	6,799.9
Total assets	31,729.5	32,916.2	35,436.1	37,859.0	41,371.0
ST interest bearing debt	4,277.3	2,227.9	2,033.4	2,141.3	2,291.3
Accounts payable	672.7	1,399.4	1,543.4	1,482.0	1,441.6
LT interest bearing debt	3,475.5	3,787.1	3,749.3	3,949.7	4,228.3
Other liabilities	4,265.0	4,665.0	4,892.0	4,747.0	4,802.0
Total Liabilities	12,690.1	12,079.1	12,217.7	12,320.1	12,763.1
Shareholders Equity	19,039.4	20,837.1	23,218.4	25,538.8	28,607.9
Minority Interest	0.0	0.0	0.0	0.0	0.0
Total shareholder equity	19,039.4	20,837.1	23,218.4	25,538.8	28,607.9
Total liabilities and equity	31,729.5	32,916.2	35,436.1	37,859.0	41,371.0
CASH FLOW (IDR b)					
Pretax profit	1,641.2	3,043.5	4,212.4	4,335.9	5,452.3
Depreciation & amortisation	1,099.3	890.6	821.0	841.1	861.3
Adj net interest (income)/exp	(455.1)	(269.4)	(121.3)	(138.8)	(100.6)
Change in working capital	(161.1)	(414.2)	(239.4)	50.9	114.9
Cash taxes paid	(491.8)	(1,181.8)	(1,179.5)	(953.9)	(1,199.5)
Other operating cash flow	0.0	0.0	0.0	0.0	0.0
Cash flow from operations	2,374.3	3,657.1	3,614.6	4,274.0	5,228.9
Capex	(728.1)	(788.4)	(873.7)	(839.4)	(844.6)
Free cash flow	1,646.2	2,868.7	2,740.9	3,434.5	4,384.3
Dividends paid	(67.8)	(402.3)	(651.6)	(1,061.5)	(1,183.7)
Equity raised / (purchased)	0.0	(0.0)	0.0	0.0	0.0
Change in Debt	(965.5)	(1,720.4)	(232.2)	308.2	428.7
Other invest/financing cash flow	(264.7)	358.8	(2,907.1)	448.3	(579.5)
Effect of exch rate changes	0.0	0.0	0.0	0.0	0.0
Net cash flow	348.1	1,104.8	(1,050.0)	3,129.5	3,049.7

FYE 31 Dec	FY20A	FY21A	FY22E	FY23E	FY24E
Key Ratios					
Growth ratios (%)					
Revenue growth	(16.3)	40.5	13.6	(3.9)	0.6
EBITDA growth	58.5	15.9	16.6	12.5	22.5
EBIT growth	112.7	34.7	24.6	14.9	26.8
Pretax growth	138.9	85.4	38.4	2.9	25.7
Reported net profit growth	492.9	62.0	62.9	11.5	25.7
Core net profit growth	492.9	62.0	62.9	11.5	25.7
Profitability ratios (%)					
EBITDA margin	11.4	9.4	9.7	11.3	13.8
EBIT margin	7.4	7.1	7.8	9.3	11.8
Pretax profit margin	6.0	7.9	9.6	10.3	12.9
Payout ratio	5.9	21.6	21.5	31.4	27.8
DuPont analysis					
Net profit margin (%)	4.2	4.8	6.9	8.1	10.1
Revenue/Assets (x)	0.9	1.2	1.2	1.1	1.0
Assets/Equity (x)	1.7	1.6	1.5	1.5	1.4
ROAE (%)	na	na	na	na	na
ROAA (%)	3.7	5.8	8.9	9.2	10.7
Liquidity & Efficiency					
Cash conversion cycle	39.1	33.6	30.9	33.1	32.4
Days receivable outstanding	15.4	13.1	12.7	13.8	13.5
Days inventory outstanding	34.8	32.2	33.1	35.3	34.8
Days payables outstanding	11.1	11.6	15.0	16.0	15.9
Dividend cover (x)	16.9	4.6	4.7	3.2	3.6
Current ratio (x)	1.2	1.8	1.7	2.1	2.5
Leverage & Expense Analysis					
Asset/Liability (x)	2.5	2.7	2.9	3.1	3.2
Net gearing (%) (incl perps)	19.8	4.4	7.5	net cash	net cash
Net gearing (%) (excl. perps)	19.8	4.4	7.5	net cash	net cash
Net interest cover (x)	4.5	10.2	28.1	28.2	49.4
Debt/EBITDA (x)	2.5	1.7	1.4	1.3	1.1
Capex/revenue (%)	2.7	2.1	2.0	2.0	2.0
Net debt/ (net cash)	3,768.4	925.8	1,743.6	(1,077.7)	(3,698.8)

Source: Company; Maybank IBG Research

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