

MULTINATIONAL CORPORATIONS AND NICKEL DOWNSTREAMING IN INDONESIA

ARIANTO SANGADJI & PIUS GINTING



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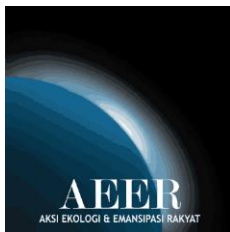
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RINGKASAN EKSEKUTIF

Perusahaan-perusahaan Multinasional dan Hilirisasi Nikel di Indonesia menjabarkan kesuksesan Indonesia sebagai pusat global industri nikel. Pada 2022, Indonesia memiliki 21% cadangan nikel dunia dan menguasai 48% produksi bijih nikel global. Dengan fasilitas pengolahan dan pemurnian bijih nikel (smelter), Indonesia kini menjadi pemasok utama *nickel pig iron* (NPI). Selain itu, negara ini telah berhasil meningkatkan produksi baja nirkarat, dan tengah memperluas produksi *nickel matte* dan *mixed hydroxide precipitate* (MHP) sebagai bahan baku kunci dalam pembuatan baterai kendaraan listrik. Pencapaian-pencapaian tersebut didorong oleh industri hilirisasi nikel di berbagai kawasan industri dimana peran penting perusahaan-perusahaan asing tidak dapat dielakkan.

Investasi asing, terutama dari Tiongkok, menjadi pendorong utama di balik perkembangan perusahaan pertambangan dan industri nikel di Indonesia, baik sebagai pengelola kawasan industri atau operator dalam sektor pertambangan dan smelter. Perusahaan-perusahaan multinasional tersebut menyebar di empat kawasan industri utama, yaitu Indonesia Morowali Industrial Park (IMIP), Indonesia Weda Bay Industrial Park (IWIP), Virtue Dragon Nickel Industrial Park (VDNIP), dan Stardust Estate Industry/Gunbuster Nickel Industry (SEI/GNI). Meskipun pengembangan kawasan-kawasan industri memberikan nilai tambah bagi komoditas bijih nikel, perubahan ini juga memberikan dampak negatif pada ekonomi, sosial, dan lingkungan di tingkat daerah.

Setelah menerbitkan laporan *Rantai Pasok Nikel Baterai di Indonesia dan Persoalan Sosial Ekologi* pada Desember 2020, **Aksi Ekologi dan Emansipasi Rakyat (AEER)** kini menyajikan informasi terbaru mengenai keberhasilan dan dampak hilirisasi nikel di Indonesia melalui *Perusahaan-perusahaan Multinasional dan Hilirisasi Nikel di Indonesia*. Fakta-fakta yang terungkap dalam laporan ini menggambarkan betapa besarnya keterlibatan asing memengaruhi pertumbuhan industri nikel di negara kita dan betapa rumitnya masalah-masalah yang mengiringi pertumbuhan tersebut.



EXECUTIVE SUMMARY

Multinational Corporations and Nickel Downstreaming in Indonesia highlights Indonesia's remarkable success as a global hub for the nickel industry. In 2022, Indonesia boasted a substantial 21% share of the world's nickel reserves and exercised control over an impressive 48% of global nickel ore production. Thanks to its nickel ore processing and refining facilities, commonly referred to as smelters, Indonesia has emerged as a prominent supplier of nickel pig iron (NPI). Moreover, the nation has effectively successfully escalated its stainless steel production and is actively expanding the manufacturing of nickel matte and mixed hydroxide precipitate (MHP), both pivotal raw materials for electric vehicle battery production. These accomplishments are primarily propelled by the flourishing nickel downstreaming industry across various industrial zones where the significant role of foreign companies cannot be overlooked.

Foreign investments, notably from China, has played a pivotal role in propelling the growth of mining and nickel industry enterprises in Indonesia, whether in the capacity of industrial zone administrators or as operators within the mining and smelting sectors. These multinational corporations are strategically dispersed across four key industrial zones: Indonesia Morowali Industrial Park (IMIP), Indonesia Weda Bay Industrial Park (IWIP), Virtue Dragon Nickel Industrial Park (VDNIP), and Stardust Estate Industry/Gunbuster Nickel Industry (SEI/GNI). While the establishment and expansion of these industrial zones contribute value to nickel ore commodities, these transformations have also yielded adverse repercussions on the regional economy, society, and the environment.

Following the release of the report *Nickel Battery Supply Chain in Indonesia and Socio-Ecological Issues* in December 2020, **Action for Ecology and People's Emancipation (Aksi Ekologi dan Emansipasi Rakyat)** is proud to present updated insights into the achievements and repercussions of nickel downstreaming in Indonesia, as documented in *Multinational Corporations and Nickel Downstreaming in Indonesia*. The revelations within this report vividly illustrate the substantial foreign involvement that shapes the trajectory of our nation's nickel industry growth and underscores the intricate challenges accompanying that progression.



KEY TAKEAWAYS

1. Downstreaming has put Indonesia in the center of the global nickel trade. In 2022, having the reserve of 21% world nickel, Indonesia produces 48% of the world nickel ores. Indonesia contributes 47.71% of 3060 kt of the global nickel primary output; *Nickel Pig Iron* (NPI) contributes 50% of the world's total primary nickel production with 1145 kt, Indonesia dominates 74% of the global NPI production; Indonesia becomes the main producer of *Mixed Hydroxide Precipitate* (MHP) with 89 kt production; Indonesia also produces 226 kt of nickel matte and nearly 49% of this is sourced from conversion from NPI to nickel matte. MHP and nickel matte is the main feedstock for nickel sulfate, the key material for electric vehicle battery.
2. The quick development of nickel processing facility had driven the achievements of downstreaming. Currently Indonesia has at least 158-lines of RKEF (rotary-kiln electric furnace): among these, 149-lines have an annual production capacity of 1336 kt NPI, 4-lines with annual production capacity of 27 kt ferronickel, and 4-lines with annual production capacity of 70 kt nickel matte. Indonesia also has several processing facilities with different technologies: 1-line Blast Furnace (BF) with production capacity of 20 kt NPI, 4-lines *Oxygen-Enriched Side-Blown Furnace* (OECBF) with an annual production capacity of 37 kt ferronickel, and 7-lines *High-Pressure Acid Leaching* (HPAL) with annual production capacity of 127 kt MHP.
3. Indonesia has successfully achieved downstreaming in producing stainless steel with NPI as its main material. Indonesia has successfully become the location of the world's largest integrated NPI-stainless steel production. In 2022, Indonesia is projected to produce 5.7 million tonnes of stainless steel, increasing by 14% from the previous year. Indonesia have become one of the world's main stainless steel producers.

4. The integrated industrial zones for “nickel ore mining–nickel smelting–stainless steel manufacturing” has become one of the key factors to nickel downstreaming success in Indonesia. Indonesia Morowali Industrial Park (IMIP), Virtue Dragon Nickel Industrial Park (VDNIP), and Indonesia Weda Bay Industrial Park (IWIP) are established in regions with rich nickel reserves had produced nickel-based metal products with cheaper costs, and therefore can be sold at a competitive price at the international market. The production cost of semi-finished nickel and stainless steel in Indonesia is the lowest in the world because of its integrated chain.
5. Foreign Direct Investment (FDI) accelerated the fast growth of nickel processing industry in Indonesia. The nickel producing provinces had become the main target of FDI in Indonesia since the last decade. Between 2015–2022, FDI realizations had reached US\$18.6 billion in Central Sulawesi, US\$11.9 billion in North Maluku, and US\$6.6 billion in Southeast Sulawesi. FDI funded the construction of RKEF and HPAL production facilities, stainless steel manufacturers, and other supporting infrastructures, especially the captive power Coal Power Plant. The basic metal industry (RKEF, HPAL, and stainless steel projects) absorbed 86.47% of the total FDI value in Southeast Sulawesi, 80.80% in North Maluku, and 74.62% in Central Sulawesi. As a matter of fact, the FDI in the basic metal industry had made the regions producing processed nickels as the main hosts for FDI in Indonesia. From the US\$44.1 billion total FDI value in Indonesia in 2022, Central Sulawesi received 16.8% of it, which ranked the province as the top FDI recipient in Indonesia.
6. Multinational corporations became the factor that drove FDI massive development in the nickel processing industry and its derivatives in Indonesia. Corporations such as Tsingshan Holding Group, Delong Nickel Industry Co Ltd, Huayou Cobalt Co Ltd, Green Eco Manufacture (GEM) Co Ltd, Lygend Resources Technology Co Ltd, Contemporary Ampere Technology Co Ltd, CNGR Advanced Material Co Ltd from China had successfully invested capitals in both the nickel-based industrial sites and non-industrial zones in Indonesia. Indonesia Morowali Industrial Park is the most prominent example; Tsingshan through its various subsidiaries had successfully invested in nickel processing industries, stainless steel production, and industrial zone management.
7. Considering FDI in the nickel processing industries and its derivative industry is done by a small number of the world’s leading multinational corporations, these corporations became the industry controller and thus the main beneficiaries.
 - a. Tsingshan Group and Delong Group are the groups that benefit the most from the growth of nickel processing and stainless steel industries. Not only do these groups control the NPI productions, they also control the Indonesian stainless steel production. Due to their investment in Indonesia, Tsingshan Group is the number one producer while Delong Group is the number two producer of primary nickel in the world.

- b. Huayou Cobalt, Lygend Resources & Technology, CNGR Advanced Material, Contemporary Amperex Technology, and Tsingshan Group are business entities that benefit the most in the value chain in the production of the main material for electric vehicles' battery. Because these corporations had controlled the productions of MHP and nickel matte, two processed nickel products that are feedstocks for nickel sulfate.
8. The rapid growth of the nickel processing industry has changed the economic structure of nickel producing regions in Indonesia. In the case of Central Sulawesi, the manufacturing sector contributed to 67.31% of the Gross Regional Domestic Product (GRDP) of Morowali District in 2022, a sharp spike from 11% in 2012. At the provincial level, the processing industry contributed 32.78% to the Central Sulawesi GRDP in the same year, a sharp increase from 6.09% in 2012. In 2022, the export value of processed nickel and its derivative products reached US\$16.2 million (Rp243 trillion) or about 86% of the total export value of Central Sulawesi.
9. Policies of the Indonesian and Chinese governments were the decisive points for nickel downstreaming success. Nickel export prohibition, the tax incentive for nickel processing and its derivative industries, the appointment of national strategic projects are the policies of Indonesian government that enables the success of downstreaming. The "Belt and Road Initiative" program of the Chinese government ensured the acceleration of nickel downstreaming in Indonesia. It also includes the financing of various nickel processing by commercial banks owned by the Chinese government.

However, the success of downstreaming is also going in-line with the widening of social gaps and natural destruction.

10. Mining and processing of semi-finished nickel in Indonesia creates a very dense carbon footprint: fossil fuel consumption is the backbone of nickel laterite mining and transportation. Based on 9000 MW Coal-fueled Steam Electric-Power Plant (PLTU) captive power, the nickel processing industry and its derivative industries are consuming massive fossil energy. The Indonesian nickel industry is the main source of hydrocarbon emission in the global value chain of the nickel-based industry. The multinational corporations operating in the industrial zones are emitters

With 44% of the installed capacity of Coal-fueled Steam Electric Power Plant (PLTU) in the nickel processing industry in Indonesia Morowali Industrial Park becomes the industrial zone that produces the largest hydrocarbon emission in this industry. The industrial zone is developing into one of the production centers of electric vehicle battery main material. By becoming a host for nickel matte NPI conversion and MHP projects, Indonesia Morowali Industrial Park produced 3,3 million tonnes of CO₂ in the electric vehicle battery value chain. It is contradictory how fossil fuel is used for the transition toward clean energy.

11. The degree of economic exploitation is extreme in Morowali and North Morowali, the two main nickel-producing districts in Indonesia. In 2022, 95.65% of Morowali District GRDP and 84.11% of North Morowali District GRDP were siphoned out of the region. Morowali residents only received 4.53% and North Morowali only absorbed 15.89% of their districts' respective GRDP.
12. Poverty in Morowali and North Morowali Districts is categorically high. In 2022, the poverty level in Morowali is at 12.58% and North Morowali at 12.97%, both above the average of Central Sulawesi at 12.33%.
13. Communities who live surrounding the area of nickel mining and processing industry deal with environmental and social impacts that are unavoidable like flood and land disputes caused by industry activities.
14. As the backbone of the massive growth of the nickel processing industry, the workers became the ones who were and are most disadvantaged. The bad standards of work health and safety had turned Morowali and North Morowali no less than a killing field. Work-related deaths and cases of suicide within the rank of Chinese workers depicted the darkest sides of nickel mainstreaming in Indonesia.





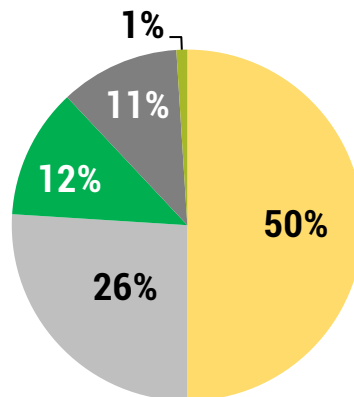
PART ONE NICKEL PRODUCTION VALUE CHAIN

Nickel deposit is divided into two categories: sulfide and laterite. Laterite has two types: limonite and saprolite. In 2022, the estimated world nickel deposits were 100 million tonnes of metal contents with laterite and that contributed 60% and 40% respectively. Indonesia and Australia each contributed to 21% of the total world nickel reserve.¹

The nickel production value chain begins at the mining in its downstream part. Laterite ore mining is mainly done in Indonesia, New Caledonia, and the Philippines. Sulfide ores mining is mainly done in Russia, Australia, and Canada. In 2022, the global nickel mining produced 3.3 tonnes of nickel, with a growth of 20.87% y-o-y. As the main producer of the world's nickel ore, Indonesia experienced extreme growth, which was 53.84% y-o-y. Indonesia mined 48.48% of the total output of world nickel mining in 2022, an increase from 38% in 2021.²

FIGURE 1.
World Primary Nickel Production
Based on 2022 Production

- Nickel Pig Iron (NPI)
- Nickel
- Nickel compounds
- Ferronickel
- Nickel oxide



Source: Nornickel 2023

¹ Gavin M Mudd. 2009. *Nickel Sulfide Versus Laterite: The Hard Sustainability Challenge Remains*. Proc. "48th Annual Conference of Metallurgists", Canadian Metallurgical Society, Sudbury, Ontario, Canada, August; USGS. 2023. "Nickel Statistics and Information."

² USGS

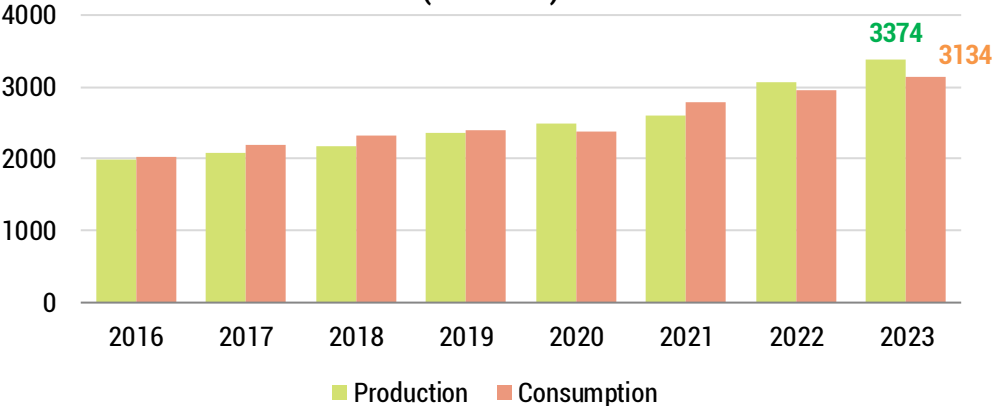
There are two routes of nickel extraction processes. The pyrometallurgical route is to extract nickel from sulfide and laterite ores. The sulfide ore extraction technology uses smelting process. Laterite ores are smelted in rotary kiln-electric furnace (RKEF). The hydrometallurgical route extracts low-grade limonite ores, especially using the high-pressure acid leaching (HPAL) technology.

Both of these extraction routes produce primary nickel in two big groups. Class-1 nickel (>99% Ni that includes products such as nickel cathode, bricket, pellet, and powder. Class-1 nickel is generally processed from sulfide ores, but it can also be processed from laterite ores. Class-2 nickel (<99% Ni) that includes products such as (nickel pig iron <14% Ni), ferronickel (20-40% Ni), nickel matte (70-80% Ni), Mixed Sulfide Precipitate (MSP 55% Ni) and Mixed Hydroxide Precipitate (MHP 30-40% Ni).

Class-2 nickel dominates the world's primary nickel production. In 2022, class-2 nickel contributes to 64.51% of the world's primary nickel production. NPI contributes to half of the entire global primary nickel production. Only the People Republic of China (PRC) and Indonesia produce NPIs.

Currently, primary nickel products are inundating the market. INSG (International Nickel Study Group) recorded the primary nickel production of 3,060 kt ton in 2022, a spike of 17,24% from the previous year. This year is seeing a growth projection of 10.26%. Despite the consumption in 2022 increased by 6.33% y-o-y, but since the supply number is beyond the absorption, primary nickel products had a surplus of 105 kt in 2022, after being in a deficit of 169 kt in the previous year. In 2023, it is estimated that the world primary nickel market will have a surplus of 235 kt.³ Production spikes of NPI, nickel matte, and MHP in Indonesia had caused this surplus.

FIGURE 2 Primary Nickel Production and Consumption (kilotonne)



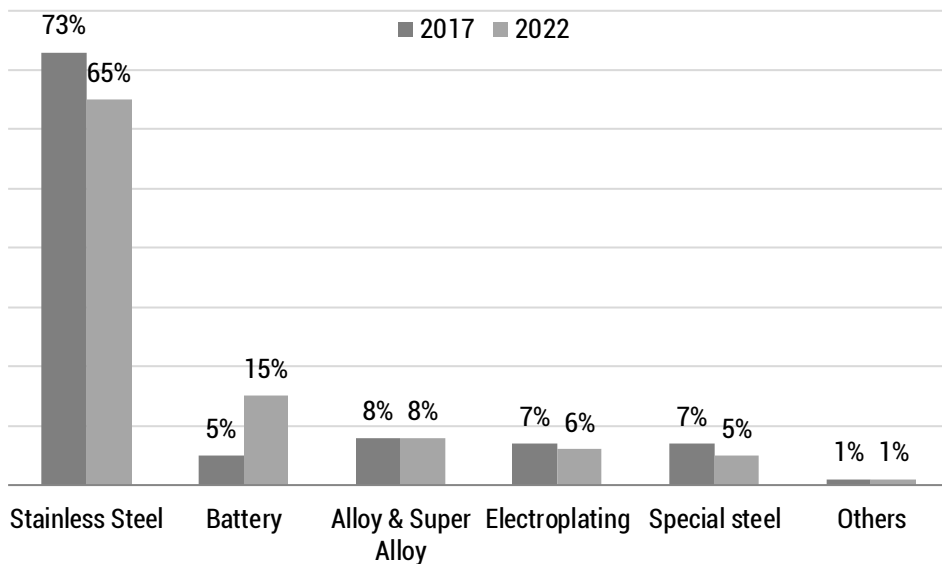
Source: INSG 2023.

³ INSG (International Nickel Study Group). 2023. "Nickel Market Observation for 2023." *Press Release* 26 April.

A small number of multinational corporations are controlling the primary nickel production. In 2022, Tsingshan Holding Group (China), contributed 20% of the total world primary nickel production. Followed by Delong Group (China) 8%, Jinchuan Group (China) 6%, Nornickel (Russia) 6%, and Vale S.A. (Brasil) 5%.⁴ Except for Nornickel, the four nickel titans own nickel processing facilities in Indonesia.

Stainless steel is still the primary absorber of primary nickel products (FIGURE 3). This industry uses nearly all primary nickel products as feedstock. Because the quality of the nickel used influences the product quality, stainless steel industry prefers low grade primary nickel products, especially NPI, ferronickel, and nickel oxide.⁵ Stainless steel products with nickel contents are the 300-series (6-25% Ni) and 200-series (1-5.5% Ni). In 2021, the global stainless steel production reached 58.9 tonnes. 57% of the production was 300-series products, and 21% was 200-series products.⁶

FIGURE 3. Processed Nickel First Usage by Industry



Source: Processed from Nornickel (2022; 2018)

⁴ Nornickel 2023. *Annual Report 2022*. Nornickel.

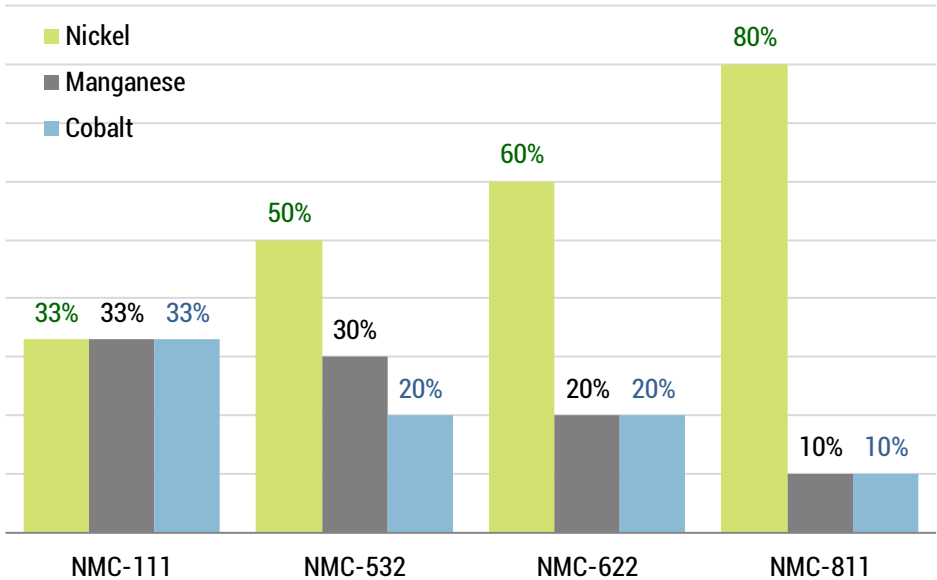
⁵ Nickel Institute. "About Nickel" [online] <https://nickelinstitute.org/en/about-nickel-and-its-applications/>; Marcelo Azevedo, Nicolas Goffaux, and Ken Hoffman. 2020. "How clean can the nickel industry become?" McKinsey & Company. Polly Yam. "China nickel importers strike term deals with eye on Indonesia ore ban" Reuters <https://www.reuters.com/article/china-nickel-idUSL4N0JKOSV20131205>; Stainless Steel World Publisher. 2017. INSG: the Nickel Market to be in Deficit for Another Year in 2017. <https://stainless-steel-world.net/insg-the-nickel-market-to-be-in-deficit-for-another-year-in-2017/>. INSG, *The World Nickel Factbook 2021*

⁶ INSG, *The World Nickel Factbook 2021*; Nornickel AR 2021.

Primary nickel demand is increasing as the main material of electric vehicle battery. Semi-finished nickel products such as nickel matte, MHP, dan MSP (mixed sulfide precipitate) are the products to create nickel sulfate (NiSO4). Nickel sulfate is the feedstock for electric vehicle battery cathode precursor production. Currently, among semi-finished nickel products, MPH became a choice among nickel sulfate producers.⁷

Because nickel has a big capacity to store energy, electric vehicle lithium-ion battery market has a demand for cathode material rich in nickel. There are two types of electric vehicles lithium ion batteries with nickel content. NMC battery with nickel-manganese-cobalt cathode. The NMC cathode compositions are different based on types (FIGURE 4). Even batteries with nickel content more than 80% (e.g. NMC9 generation) can make the vehicle reach more mileage per charge and shorter charger period. NCA battery with nickel-cobalt-aluminium cathode. The NCA cathode composition consists of 80% nickel, 15% cobalt, and 5% aluminium.⁸

FIGURE 4 Cathode Composition NMC Four Generations

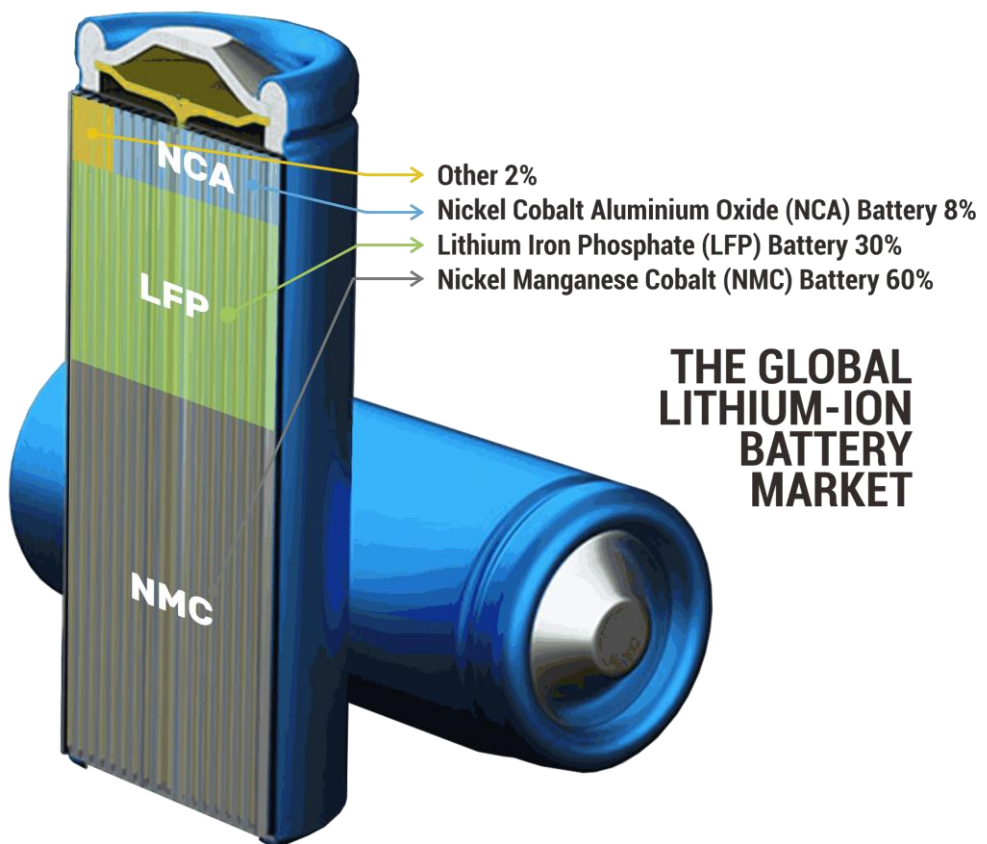


⁷ Yingchi Yang and Callum Perry. 2022. "MHP emerges as preferred route to sulfate for international nickel market". Faskmarket August 9. <https://www.fastmarkets.com/insights/mhp-emerges-as-preferred-route-to-sulfate-for-international-nickel-market#:~:text=Typically%2C%20MHP%20holds%20a%20nickel.content%20of%201%2D10%25>.

⁸ International Nickel Study Group. 2021. Gert Berckmans et al. 2017. "Cost Projection of State of the Art Lithium-Ion Batteries for Electric Vehicles Up to 2030." *Energies* 10 (1314): 1-20. David Merriman. 2019. "The EV Revolution: Impacts on critical raw material supply chains." <https://www.minersoc.org/wp-content/uploads/2019/05/3ICM-Merriman.pdf>.

Lithium batteries with nickel contents still dominate the electric vehicle lithium-ion battery market. NMC controls the electric vehicle battery and PHEVs (plug-in hybrid electric vehicles) market since the battery was commercially introduced at the beginning of the 2000s. In 2022, the global lithium-ion battery market is controlled by NMC 60%; LFP (lithium-iron-phosphate) 30% and; NCA 8%.⁹

Processed nickel products are also used in production of alloys and super alloys, due to its anti-corrosive properties. The aviation industry is the main consumer of nickel based super alloys. Nickel based super alloys are also used in producing turbine blades and critical parts of jet plane and land-based combustion turbines such as power plants.



⁹ International Energy Agency. 2023. *Global EV Outlook 2023: Catching up with climate ambitions*. IEA, www.iea.org; International Energy Agency. 2022. *The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions*. IEA. www.iea.org.



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TELAS
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KISS



PART TWO NICKEL DOWNSTREAMING IN SULAWESI & HALMAHERA ISLANDS

HAVING a rich nickel deposit has put Indonesia as the center of attention of international mining investment for a long time. “K Besar” Island (Sulawesi) and “K Kecil” Island (Halmahera) have rich nickel deposits. Nickel reserve areas are spread out in the provinces of Southeast Sulawesi, Central Sulawesi, South Sulawesi (K Besar Island) and North Maluku (K Kecil Island). Gag Island in West Papua also has nickel reserve area in its territory. A limited mining effort of nickel ore for export had been done with Dutch investments since the end of the 1930s.¹⁰ Integrate mining and processing of semi-finished nickel received its momentum since the New Order era. Government policies since Soeharto’s regime had attracted foreign investments in this sector. Nickel mining and processing industry especially had been going massive ever since the arrival of Chinese investments in mid 2010s.



¹⁰ (Sangadji 2021a:267-8)

A. Legacy of the New Order

1. PT Vale Indonesia



One of the important legacies of Soeharto's regime in the mining industry is the presence of a nickel giant Inco Limited (Canada) in Sulawesi. PT Inco Indonesia (a subsidiary of Inco Limited), established in 1968, had mined and processed nickel in Sorowako, Luwu Timur District, South Sulawesi since 1978. After being taken over by Vale S.A. at mid-2000's, Inco Indonesia changed its name into PT Vale Indonesia in 2011.

For over 50 years Vale Indonesia mines nickel ore and processes it into nickel matte in Sorowako. The company mines nickel ore in a 70,556 hectare contract of work (Kontrak Karya/KK) area in the Sorowako Block as the main material for nickel matte (78% Ni). In 2022, Vale Indonesia mined 11.5 million tonnes of nickel ore and processed it to 60.09 kt of nickel matte. In accordance with the long term contract, Vale Indonesia sold 80% of the nickel matte production to Vale Canada Limited (Canada) and 20% to Mitsubishi Metal Mining Co.Ltd. (Japan).

The majority of Vale Indonesia's stock shares are controlled by foreign investors. Per 31 December 2022, Vale Canada Limited controls 43.79% shares, Sumitomo metal Metal Mining Co Ltd holds 15% shares, and Vale Japan Limited holds 0.54% shares. Since 2020, PT Indonesia Asahan Aluminium (Inalum), a state owned enterprise (SOE), controls 20% of the shares. As many as 100 shares of Inalum are controlled by MIND ID, a holding SOE of Indonesian mining industry. About the left over 20.64% of Vale Indonesia stock shares are being traded in the Indonesian Stock Market (Bursa Efek Indonesia/BEI) Vale Canada Limited and Sumitomo Metal Mining Co Ltd is facing pressure of shares divestment so national ownership over Vale Indonesia shares is at 51%.¹¹

¹¹ Article 112 of Law No. 3 of 2020 on Amendment to Law No. 4 of 2009 regarding Minerals and Coal.

2. PT Aneka Tambang (Antam)



Since the 1970s, PT Aneka Tambang (Antam) Tbk is the government's spearhead in nickel ore mining and processing. PT Antam's nickel business is spread at the Provinces Southeast Sulawesi, North Maluku, and West Papua. In 2017, the government diverted the series B shares owned by the State Republic of Indonesia to PT Inalum, making the SOE the holder of 65% of Antam shares. As many as 35% of Antam shares are traded in BEI.

Antam has several units of nickel business. The Kolaka Nickel Mining Business Unit (Unit Bisnis Pertambangan/UBP) produces nickel ores in Kolaka and ferronickel in Pomalaa. North Maluku Nickel UBPs manage nickel mines in East Halmahera. Konawe Nickel UBPs manage nickel mines in Konawe. Meanwhile PT Gag Nickel manages nickel mines in Gag Island.

Antam processes nickel ores into ferronickel (80% Fe and 20% Ni) in Pomalaa, Kolaka District, and Southeast Sulawesi since the 1970's. Antam's FeNi I Smelter began production in 1976. The company began to operate FeNi II smelter in 1995, FeNi III smelter in 2007, and FeNi IV smelter in 2015. Antam has 4-lines RKEF with an annual production capacity of 27 kt ferronickel. The company claims to be a ferronickel producer with the lowest production cost in the world, at US\$3.36 per Ni pound. Antam also owns a smelter project in East Halmahera, North Maluku. The project with 13.5 kt ferronickel capacity is scheduled to start operation at the second semester of 2023.

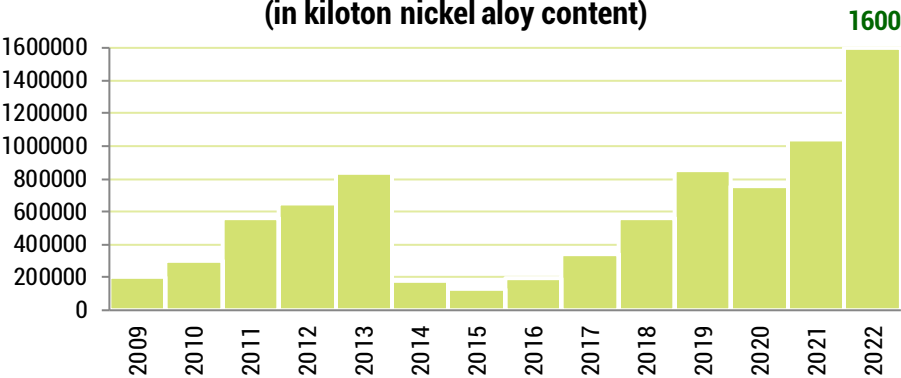
In 2022, Antam sold 24.2 kt FeNi at Rp6.8 trillion. The company also sold 8.62 million metric tonnes of nickel ore at Rp5.1 trillion. Nickel sales contributed to 26% of the company's total clean sales profit. Antam business unit contributes quite a lot to the state's earnings. In 2022, Antam paid royalty of Rp334.7 billion for nickel ores and Rp183.3 billion for ferronickel. Antam paid a dividend of Rp605,06 billion to the government and MIND.ID.

B. Chinese Investments Entryway

1. Before export prohibition

Domestic nickel ore mining separated from nickel processing for export had taken place since the end of the 2000's. This was especially after the government issued Law No. 4 of 2009 on Minerals and Coal. This law superseded Law No. 11 of 1967 on Basic Provisions of Mining. With the spirit of decentralization and local autonomy, Law No 4/2009 (before it was amended in 2020) gave authority to the local government (district/municipality and province) to issue mining permit (Izin Usaha Pertambangan/IUP).

**FIGURE 5. Indonesia Nickel Mining Production 2009-2022
(in kiloton nickel alloy content)**



Source: Processed from USGS

The government issued thousands of IUPs across Indonesia especially after Law No.4/2009 was issued. Hundreds of nickel IUP was made in Central Sulawesi, Southeast Sulawesi, and North Maluku. The bad governance caused many of those IUPs (especially in Central Sulawesi and Southeast Sulawesi) overlapped with one another, even within the KK area of PT Vale Indonesia. In 2010, Indonesia mined 235 kt of nickel, which soared into 834.2 kt of nickel in 2013.

Indonesian nickel ore were especially exported to China. Indonesia shipped out nickel ores to China as many as 143 million tonnes (2010); 36.1 million tonnes (2011); and 43.09 million tonnes (2012). In 2013, Indonesia contributed to 54.11% of Chinese total nickel ore imports, growing from 39.77% in 2011. Since 2007, the nickel processing industry in China received its nickel ore feed from Indonesia and the Philippines.¹²

¹² (Resources Edisi 10, November 2013); Lennon 2014:10)

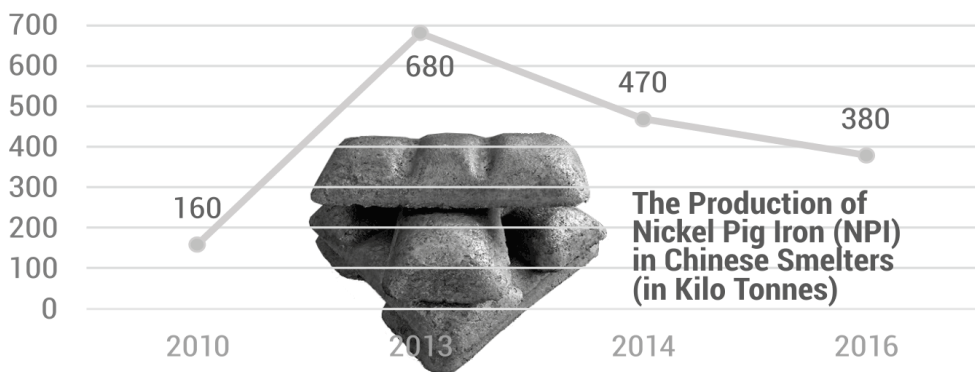
2. Export prohibition effects.

Law No.4/2009 requires companies with Mining Permit (Izin Usaha Pertambangan / IUP) and Special Mining Permit (Izin Usaha Pertambangan Khusus / IUPK) to have a domestic processing facility. The government interpreted this requirement by imposing raw mineral export prohibition. The government prohibits the nickel ore export since 12 January 2014 and only allows export of processed nickel products with certain grades. The prohibition greatly hit Indonesian miners who had no domestic nickel processing facility that is vertically integrated.

The nickel ore export prohibition also hit the nickel processing industry in China. Especially the processing industry that consumed nickel ore imported from Indonesia as their NPI feedstock. Procuring its nickel ore feed from Indonesia and the Philippine, the Chinese smelters produced approximately 160 kt NPI in 2010. In 2013, about 69-71% of the 680 kt processed nickel in China is NPI. Because of the Indonesian export prohibition, Chinese NPI production dropped from 470 kt in 2014 to 380 kt in 2016 ¹³

The Indonesian government once allowed a limited export of nickel ore. In 2017, the export permit was only given to several companies who had the plan to build smelters. The government stated that the export prohibition will resume in 2021. But in 2019, the government stated that the export prohibition will be effective since January 2020.

However, the export prohibition had affected the nickel processing and nickel derivative industries in China. To prevent adverse impacts, the Chinese metal companies leveraged the nickel ore export prohibition policy by building manufacturing facilities in Indonesia. By doing so, the smelter companies have access to the abundant supply of nickel ore. In its chain effect, these smelters can convert nickel ores to semi-finished nickel products with lower production cost. The export prohibition became a blessing in disguise for the Chinese corporations.



¹³ Polly Yam. 2013. "China nickel importers strike term deals with eye on Indonesia ore ban" <https://jp.reuters.com/article/china-nickel-idUSL4N0JK0SV20131205>; Stainless Steel World Publisher. 2017. INSG: the Nickel Market to be in Deficit for Another Year in 2017. <https://stainless-steel-world.net/insg-the-nickel-market-to-be-in-deficit-for-another-year-in-2017/>.

3. Government support

The Indonesian government made a series of attractive policies for companies that built nickel processing facilities in Indonesia. The government issued Presidential Regulation (Peraturan Presiden / Perpres) regarding the Accelerated Implementation of National Strategic Projects (Percepatan Pelaksanaan Proyek Strategis Nasional / PSN) in 2016 and then revised it three times. These Perpres included the constructions of industrial zones for nickel smelters and stainless steel manufacturers as part of the national strategic projects. These Perpres were then interpreted through the Coordinating Minister for Economic Affairs Regulation No. 7 of 2021 on National Strategic Project Lists Amendment that was later amended through the Coordinating Minister for Economic Affairs Regulation No. 9 of 2022.¹⁴

The government also provided special tax incentive for investors who built nickel smelters and its derivative industry. Aside from exemption from import duties for imports of capital goods, one of the most important incentives is the provision of tax holiday. The Minister of Finance Regulation (Peraturan Menteri Keuangan / PMK) Number 159/2015 that was later amended with PMK Number 103/2016 provides 10-100% income tax reduction for investment in pioneer industries with a minimum investment value of Rp1 trillion. The tax deduction period is 5-15 years and could be extended to 20 years. The basic metal industries, including nickel processing industry and its derivative industry, are categorized as pioneer industries. Therefore, these industries could receive the facility of income tax relief.¹⁵

This PMK had gone through several amendments. The Minister of Finance through PMK Number 35/2018 and later PMK Number 130/2020 provides a 100% tax holiday for capital investments in pioneer industries such as the nickel processing smelter projects and stainless steel industry. The duration of tax holiday depends on the investment value: 5 years for Rp500 billion–Rp1 trillion investment; 7 years for Rp1–5 trillion investment; 10 years for Rp5–15 trillion investment; 15 years for Rp15–30 trillion investment, and; 20 years for investment of more than Rp30 trillion.¹⁶

¹⁴ Presidential Regulation No. 3 of 2016 on Accelerated Implementation Of National Strategic Projects; Perpres No. 58 of 2017 on Amendment on Presidential Regulation Number 3 of 2016; Perpres Number 56 of 2018 on Second Amendment on Presidential Regulation Number 3 of 2016; Perpres Number 109 of 2020 on Third Amendment on Presidential Regulation Number 3 of 2016.

¹⁵ Minister of Finance Regulation Number 159/PMK.010/2015 on Provision of Corporate Income Tax Reduction Facilities; Minister of Finance Regulation Number 103/PMK.010/2016 on Amendment on Minister of Finance Regulation Number 159/PMK.010/2015 on Provision of Corporate Income Tax Reduction Facilities

¹⁶ Minister of Finance Regulation Number 35/PMK.010/2018 on Provision of Corporate Income Tax Reduction Facilities; Minister of Finance Regulation Number No.130/PMK.010/2020 on Provision of Corporate Income Tax Reduction Facilities.

Government of Indonesia also provided convenience for infrastructure construction and development. The main convenience is regarding power utility infrastructure. In 2015, the government issued a Governmental Regulation (Peraturan Pemerintah / PP) No. 142 on Industrial Zone. Article 42 paragraph (1) of the Governmental Regulation provides convenience for companies in the industrial zone to construct and manage power utility for own needs and industry in industrial areas (captive power). As energy intensive industry, this policy greatly helps investors who were going to build nickel smelter facilities that are integrated with power utility infrastructure.

The Chinese government supported the private and state investment to build smelters and industrial zones in Indonesia. This support was part of the Chinese government's scheme since the "*Belt and Road Initiative*" (BRI) was introduced in 2013.¹⁷ BRI is a Chinese international economy collaborative initiative with various countries, especially because of excess industrial production capacity and the growing interests of Chinese financial capital.¹⁸

The Chinese Government support was marked by the visit of President Xi Jinping to Indonesia in the framework of "Maritime Silk Road" at early October 2013. The previous month, President Xi visited Kazakhstan in the framework of "Silk Road Economic Belt".¹⁹ President Xi visit marked a new era of the Indonesian and Chinese nickel industry. President Xi and President Susilo Bambang Yudhoyono witnessed two cooperation agreements between Tsingshan Holding Group Co Ltd (China) and Grup Bintang Delapan (Indonesia). Xiang Guangda (Tsingshan) and Halim Mina (Bintang Delapan) signed the agreement that gave birth to PT Sulawesi Mining Investment to build nickel smelters in Morowali. The second agreement was to build Indonesia Morowali Industrial Park. This industrial zone is a joint venture among Shanghai Decent Investment Co Ltd, PT Bintang Delapan Investama, and Sulawesi Mining Investment. Tsingshan Group is the parent company of Shanghai Decent Investment. Bintang Delapan Investama is part of the Bintangdelapn Group. Shanghai Decent Investment holds 49.69% shares, Bintang Delapan Investama holds 25.31%, and Sulawesi Mining Investment holds 25% of Indonesia Morowali Industrial Park shares.²⁰

¹⁷ BRI is an initiative on "inclusive globalization" by introducing new economic cooperation between China and various countries that are hosts for Chinese investments. Liu and Dunford 2016

¹⁸ Wong et al stated that BRI as an ambitious spatial-capitalistic expansion by China. Wong et al (2017)

¹⁹ Lauren A. Johnston. 2019. "The Belt and Road Initiative: What is in it for China?". *Asia and the Pacific Policy Studies*. 6:40–58

²⁰ (Sangadji 2021b)

The most important part in the Belt and Road Initiative is the financing support for smelter projects in Indonesia by government-owned big commercial banking such as Bank of China, China Development Bank, Industrial and Commercial Bank of China (ICBC), etc.²¹ Since 2013, China banks had funded the construction of nickel smelters, Coal-fueled Steam Electric Power Plant (PLTU), stainless steel manufacturers, etc. Until 2017 alone, China Development Bank had disbursed a loan of US\$1.16 billion to fund various Belt and Road Initiative projects in Indonesia Morowali Industrial Park, the first nickel-based industrial zone in Indonesia.²²

4. Downstreaming achievements

a. NPI projects

In 2013, Sulawesi Mining Investment began to build pyro-metallurgy processing facilities with RKEF (rotary-kiln electric furnace) technology in Fatufia village, Bahodopi Sub-district, Morowali District. The smelter has an annual production capacity of 300 kt NPI. 29 May 2015, President Joko Widodo inaugurated the operation of the first NPI producing smelter in Indonesia and the first smelter in the Indonesian nickel industrial zone. The Sulawesi Mining Investment smelter was also the first NPI RKEF facility outside of China. NPI production with RKEF technology was still relatively limited to China. Before 2013, only two main NPI producers operated RKEF smelters in China. At that time, the blast furnace (BF) and submerged arc furnace (SAF) technologies dominated Chinese NPI productions.²³

Starting from Sulawesi Mining Investment in Morowali, Chinese investors are competing to produce NPI in Indonesia. As a result, Indonesian NPI production soared in just a few years (see FIGURE 6). This soaring number put Indonesia and China as the centers of the global NPI production. Since 2020, Indonesia even surpassed China as the global NPI main producer. In 2022, Indonesia contributed 75% of the total NPI world production. In 2015, when Tiongkok still dominated the NPI production, Indonesia only contributed 7% of the global total NPI output.

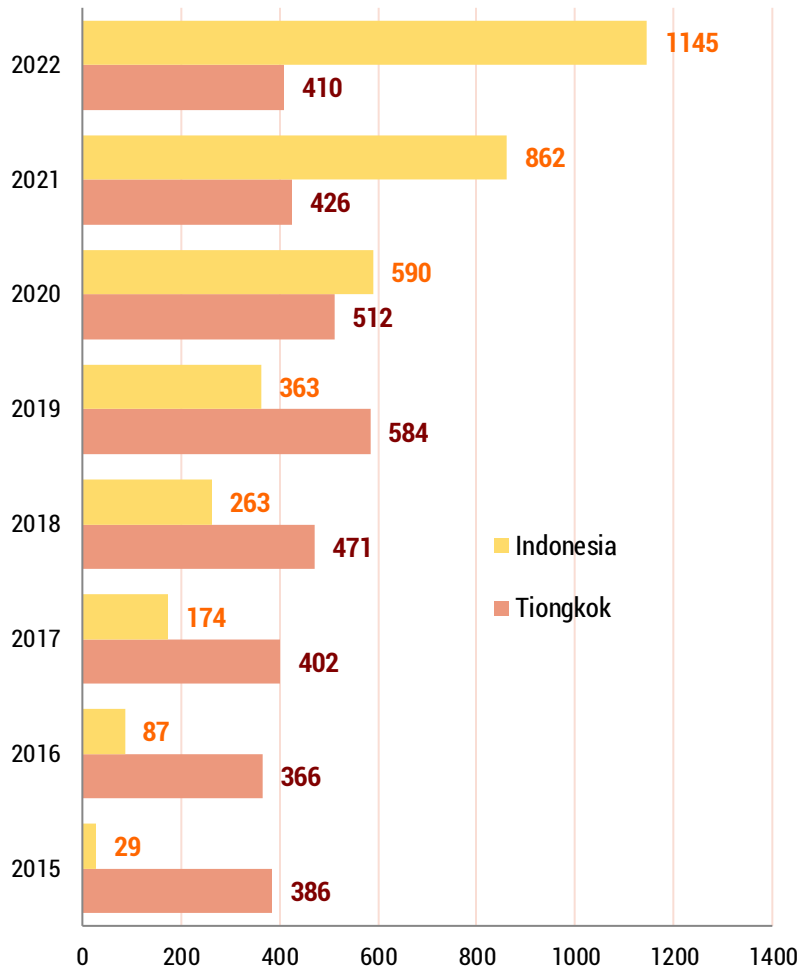
²¹ ICBC, Bank of China, and China Development Bank, respectively the 3rd, 14th, and 1714th rank in "Forbes 2000", as the world's largest companies.

²² Aiddata. "CDB provides \$1.168 billion loan for various projects in Morowali Industrial Park of Indonesia". <https://china.aiddata.org/projects/61986/>. HSBC. "Tsingshan's Indonesia Morowali Industrial Park: Build, and They Will Come". <https://www.business.hsbc.com.cn/en-gb/campaigns/belt-and-road/story-5>.

²³ Hong Kong Means Business 2018; Mingjun Rao et al. 2013. "Carbothermic Reduction of Nickeliferous Laterite Ores for Nickel Pig Iron Production in China: A Review." *JOM*, 65(11): 1575-83.

The driving force behind NPI production surge was the installed RKEF capacity increase. Up to April 2023, 149-lines RKEF are in operation, having 20-lines more than 2019.²⁴ The additions to the production lines are still ongoing. Aside of using RKEF technology, the Chinese investors also produce NPI with BF technology smelters. In the Indonesian Morowali Industrial Park, the smelter has the annual production capacity of 500 kt.

FIGURE 6. Indonesian and China NPI Production 2015-2022 (in kilotonne)



Source: Processed from Nornickel

²⁴ (Resources Edisi 30, November 2022); Lennon 2014:10)

b. MHP and Nickel Sulfate Projects

The increased demand for electric vehicle battery main material had encouraged investors to compete in building hydrometallurgy processing facilities with *high-pressure acid leach* (HPAL) technology in Indonesia. The facilities processes low grade nickel ore into Mixed Hydroxide Precipitate (MHP).

Several HPAL projects are already in operation. PT Halmahera Persada Lygend became the first MHP producer in Indonesia when HPAL facility with US\$1.5 billion in Obi Island (North Maluku) in production since 23 June 2021. Starting the production trial in late November 2021, PT Huayue Nickel Cobalt, with HPAL investment of US\$1.2 billion, successfully shipped out their MPH initial export on 7 February 2022. Lastly, since 26 September 2022, PT QMB New Energy Material has operated an HPAL project with US\$998 million worth of investment.²⁵

MHP production made Indonesia a new center in the supply chain for electric vehicle battery material. Having 7-lines HPAL with annual production capacity of 127 kt MHP, Indonesia is estimated to have produced 89 kt MHP in 2022. In 2023, the MHP production is projected to reach 162 kt. With the new hydrometallurgy projects, Indonesia would possibly produce 245 kt MHP in 2024 and 900 kt in 2027.²⁶

In fact, Indonesia would become the new center of nickel sulfate production. Because, the factory processing MHP into nickel sulfate begins operation in Obi Island in 2023 with annual production capacity of 240 kt. QMB New Energy Materials also plan to produce nickel sulfate.²⁷

²⁵ Reuters. 2021. "China's Huayou says Indonesia nickel project to cost less than planned". Reuters June 23. <https://www.reuters.com/article/us-huayou-cobalt-indonesia-metals-idUSKCN2DZ0JC>.

²⁶ Arianto Sangadji. 2019. Road to ruin: How sustainable is nickel production for electric cars?; Angela Durrant 2022. "The Rise and Rise of Indonesian HPAL – But Can It Continue?". [online] <https://www.theassay.com/articles/analysis/the-rise-and-rise-of-indonesian-hpal-but-can-it-continue/>. Nornickel May 2023.; Reuters Staff. 2023. "Indonesia's Halmahera Persada Lygend inaugurates nickel sulphate plant". June 1. <https://www.reuters.com/article/indonesia-harita-idINL4N37TOS5>.

²⁷ Reuters Staff. 2023. "Indonesia's Halmahera Persada Lygend inaugurates nickel sulphate plant". June 1. <https://www.reuters.com/article/indonesia-harita-idINL4N37TOS5>.

c. Nickel matte projects

The increased global demands for electric vehicle battery material also have triggered Chinese companies to create nickel matte projects in Indonesia. These companies adopt *oxygen-enriched side-blown furnace* (OESBF) technology in nickel matte production. The technology had been successfully applied in copper and zinc production in China. Since 25 October 2022, PT Zhongtsing New Energy began operation of their OESBF facility in the Indonesia Morowali Industrial Park, which marked the first commercial application of the technology for laterite nickel processing in the world. This technology application also shows a new route in the supply chain of electric vehicle battery material.²⁸

Currently, a 4-lines OESBF with annual production capacity of 37 kt nickel matte has begun operation. Companies are expanding their production lines and planning new projects.²⁹

At March 1st, 2021, Tsingshan announced a purchase contract with Huayou Cobalt Co Ltd and CNGR Advanced Material Co Ltd to supply 100 kt of nickel matte converted from NPI. The announcement created an uproar in the market since Tsingshan was successful with their "NPI-to-nickel matte" conversion trial in Morowali. The uproar was because RKEF-based conversion project became one of the alternatives for HPAL. Keep using RKEF by adding sulphur element to the NPI in the converter; the NPI-to-nickel matte conversion requires an RKEF modification that costs about US\$1 million per line. From being only a feedstock of stainless steel, NPI has become the new main material in electric vehicle battery value chain.

²⁸ Yuan Shenggao. 2022. "CNGR helps boost Indonesia's new energy materials industry". China Daily, November 11. .
<http://epaper.chinadaily.com.cn/a/202211/15/WS6372dac9a31009d7c3da4f75.html>. Pioneer. 2022. "OESBF High-Grade Nickel Matte Production Line of a Smelter in Indonesia Officially Put into Production." News/Information November 11. <https://www.vpsatech.com/OESBF-High-Grade-Nickel-Matte-Production-Line-of-a-Smelter-in-Indonesia-Officially-Put-into-Production.html>. CNGR. 2023. "Year End Review: Ten Significant Events of CNGR in 2022." Company New, January 3. <http://www.cngrf.com.cn/en-US/gsxw/1014.html>.

²⁹ Yuan Shenggao. 2022. "CNGR helps boost Indonesia's new energy materials industry". China Daily, November 11. .
<http://epaper.chinadaily.com.cn/a/202211/15/WS6372dac9a31009d7c3da4f75.html>. Nornickel May 2023.

Tsingshan Group had upgraded the NPI-to-nickel matte conversion facilities at the Indonesia Morowali Industrial Park and Indonesia Weda Bay Industrial Park. As a result, these conversion projects produced 129 kt nickel in 2022. Nickel matte converted from NPI is estimated to reach 250 kt production in 2023 and 300 kt production in 2024.³⁰

	Technology	Production capacity kilotonnes / annually (products)	Production capacity kilotonnes / annually (stainless steel)	Installed capacity PLTU (MW)	Number of workers
IMIP	RKEF	490 (NPI)	3700	4000	89448
	OESBF	37 (Nickel Matte)			
	HPAL	90 (MHP)			
IWIP	RKEF OESBF	500 (NPI)		1000	36000
VDNI	RKEF	192 (NPI)	3000	2350	40000
SEI/GNI	RKEF	164 (NPI)		1115	12115
PT HPL	HPAL	55 (MHP)		210	



³⁰ Nornickel May 2023; SMM. 2022. "Global Nickel Demand-Supply Balance and Price Forecast 2015-2025E". February 10. [https://news.metal.com/newscontent/101745834/\[SMM-Report\]-Global-Nickel-Demand-Supply-Balance-and-Price-Forecast-2015-2025E/](https://news.metal.com/newscontent/101745834/[SMM-Report]-Global-Nickel-Demand-Supply-Balance-and-Price-Forecast-2015-2025E/).

d. Stainless steel projects

Downstreaming also influenced the construction of stainless steel factories. AOD (argon oxygen decarburization) furnaces that produce stainless steel are built at the Indonesia Morowali Industrial Park and at the Virtue Dragon Nickel Industrial Park. The two industrial zones that became the main NPI producer in Indonesia.

Considering that NPI is the raw material of stainless steel, the clustering of "RKEF-AOD" facilities at the Indonesia Morowali Industrial Park and Virtue Dragon Nickel Industrial Park made Indonesia the largest host for integrated "NPI-stainless steel" production located outside of China. In 2022, Indonesia is estimated to have produced 5 million tonnes of series-300 stainless steel by consumin 382 kt NPI. Within the same year, estimated stainless steel production of Indonesia reached 5.7 million tonnes or about 9.19% of the global stainless steel output. The number increased from 5 million tonnes, about 8.47% of the global stainless steel output in 2021. Indonesia has become one of the main stainless steel producers in the world.³¹



³¹ KISI. 2022. Indonesia Nickel: Crucial Metal for low-carbon future. Jakarta: KISI. Nornickel Annual Report 2021, Nornickel Nov 2022; "Resource advantage promotes the rise of stainless Steel Industry in Indonesia." <https://news.metal.com/newscontent/101760127/resource-advantage-promotes-the-rise-of-stainless-steel-industry-in-indonesia>

e. Industrial zones

The indicator of successful mineral downstreaming in Indonesia is the fast growth of nickel-based industrial zones since mid-2010s. No other industrial zones experienced such swift growth other than the nickel-based industrial zones in Central Sulawesi, North Maluku, and Southeast Sulawesi. The success of these industrial zones is because they are established in areas that are rich in nickel reserves, thus shortening geographical distances of nickel mining at the upstream to the nickel processing at the downstream. The integration of various production, logistics, transportation, and supporting infrastructure facilities is the key of success for these industrial zones. The success was also contributed by the easy access to abundance of labor.

Indonesia Morowali Industrial Park is a perfect example. In less than 10 years, the 4000 hectares industrial area has the RKEF, BF, HPAL, OESBF, *electric arc furnace* (EAF) and ferrosilicon facilities, factories processing manganese, coke, semi-coke, limestone, and manufacturers of stainless steel and carbon steel. The key advantages of the industrial zone are the presence of 46-lines RKEF integrated into the stainless factories. Indonesia Morowali Industrial Park has 4000MW coal-fueled steam electric power plant (PLTU) captive power, seaport, airport, four star hotels, etc. The investment estimation in the industrial zone is up to US\$18 billion (Rp270 trillion) until 2022. Employing 81.500 workers (10.690 are Chinese passport holders), Indonesia Morowali Industrial Park becomes the largest upstream-downstream integrated nickel processing industrial zone in the world.³²

Indonesia Weda Bay Industrial Park in Central Halmahera is another example of success. Established since 2018, the 2600 hectares industrial zone has 49-lines RKEF with annual production capacity of 500 kt nickel, 1000MW Coal-fueled Steam Electric-Power Plant (PLTU) captive power, and various other supportive infrastructure. Investment estimation in the Indonesia Weda Bay Industrial Park has reached US\$11 billion (Rp165 trillion). Employing approximately 36,000 workers, the industrial zone becomes one of the largest nickel processing industry centers in the world.

³² Eko Listiyorini. 2022. "Export ban triples nickel investment in Indonesia's Morowali." Bloomberg, September 29 <https://www.bloomberg.com/news/articles/2022-09-29/export-ban-triples-nickel-investment-in-indonesia-s-morowali#xj4y7vzkg>.

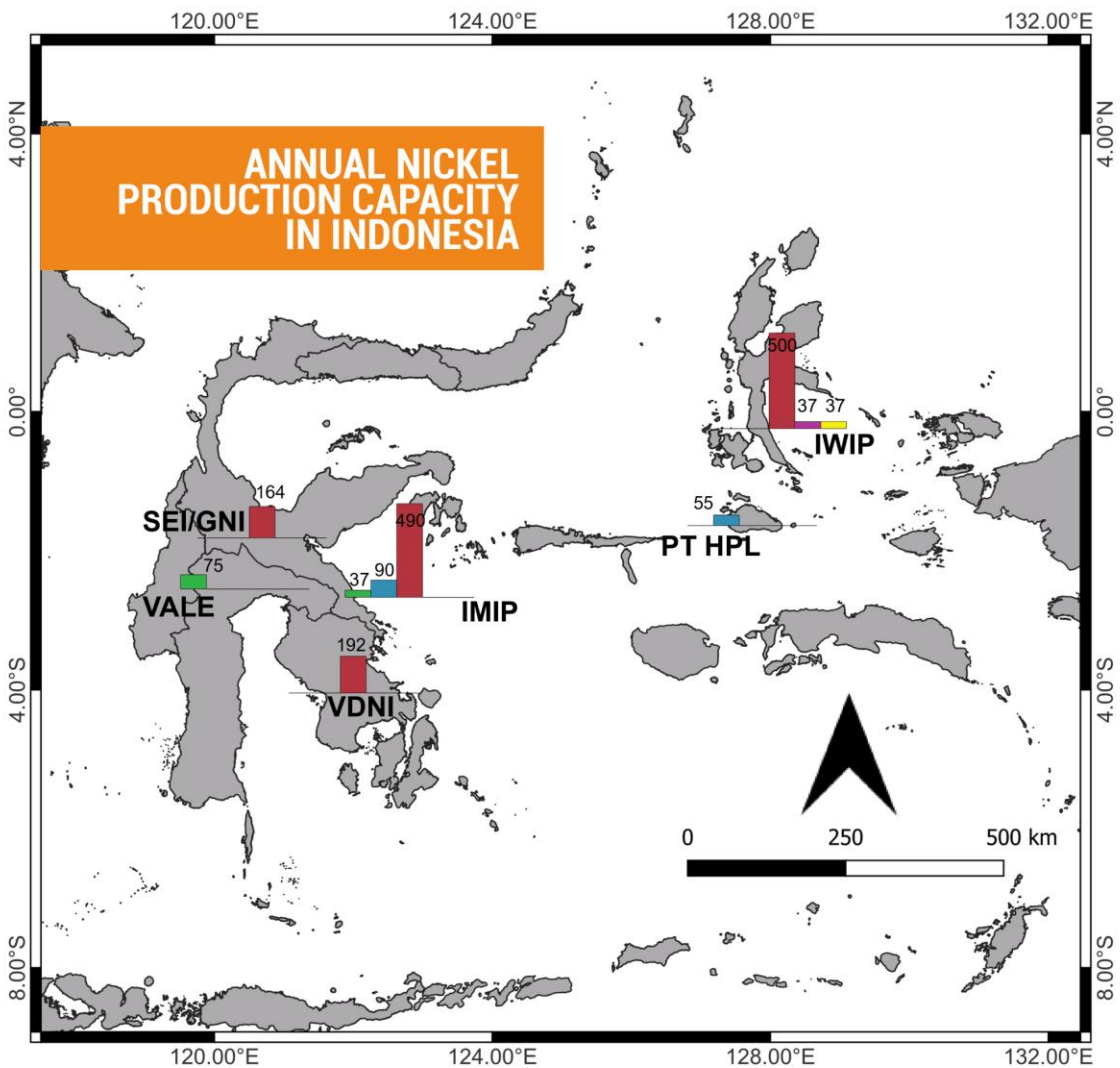
Virtue Dragon Nickel Industrial Park in Konawe District of Southeast Sulawesi also experienced fast growth. Established since 2014, the 2200 hectares area became an NPI-stainless steel integrated industrial zone. The industrial zone was targeted to have smelters with annual production capacity of 3 million tonnes NPI and 2.5 million tonnes stainless steel. To date, the operating RKEF smelters had reached 32-lines with nominal capacity of 192 kt nickel. The industrial zone has coal-fueled PLTU captive power with 2350MW installed capacity. Employing about 40,000 workers (24.540 are domestic workers and the rest are migrants), Virtue Dragon Nickel Industrial Park became a prominent NPI-stainless steel integrated industrial zone in the world.³³

Stardust Estate Industry/Gunbuster Nickel Industry was established since 2019 on 1900 hectares area. The industrial zone operates 22-lines RKEF with annual production capacity of 164 kt nickel. The area has a coal-fueled PLTU captive power with 1115MW installed capacity. Employing 12,300 workers (10% are Chinese workers), the industrial zone becomes a main NPI producer in Indonesia.³⁴



³³ SMM, "SMM Nickel Journey to Jiangsu-- the sixth Station Jiangsu Delong Nickel Co., Ltd." Kompas (Advertorial). 2022. "Investor China di Indonesia Berkontribusi Mendanai Pembangunan Jembatan Longyue di Kabupaten Morowali Utara". Kompas, 12 September. <https://biz.kompas.com/read/2022/09/12/191307628/investor-china-di-indonesia-berkontribusi-mendanai-pembangunan-jembatan-longyue>.

³⁴ Sangadji 2022; Nornickel May 2023. https://www.gem.wiki/Delong_Nickel_Phase_III_power_station. 2021. "Indonesia GNI produces the first batch of nickel-containing pig iron". SMM, December 16. <https://news.metal.com/newscontent/101695208/Indonesia-GNI-produces-the-first-batch-of-nickel-containing-pig-iron/>.



Datum : World Geodetic System 1984

Source : Basemap: Humanitarian data exchange - OCHA
Data : various sources

LEGEND

- Matte
- MHP
- NPI
- Ferronickel
- Ferroalloy

Unit : kilotonnes per annum
Data was log10 - transformed



Made by :
**Action for Ecology and
People Emansipation**
2023

5. Downstreaming and low production costs

The success of nickel downstreaming in less than 10 years rely on the back of low production costs Chinese investors leveraged the advantages of NPI production in Indonesia by building pyrometallurgy projects. Export prohibition caused abundant supply of domestic nickel ores. Such smelters can consume nickel ore with cheaper price. The short geographical distance between mining and smelting reduced the NPI raw material cost. Low cost of labor and the flexible environmental regulations made NPI production costs in Indonesia a lot cheaper.

Shanghai Metal Market estimated the NPI production costs in Indonesia are lower than in China. In 2017, the NPI production cost with RKEF technology in Indonesia was US\$5300–7100 per tonne. In China, the same technology requires a production cost of US\$7380–9660 per tonne. NPI producers in China became inferior because they also imported laterite ore from the Philippines with lower grade. On the contrary, NPI producers in Indonesia are more superior because they consume higher grade domestic laterite ores.³⁵

As stainless steel feedstock, low production cost of NPI greatly reduces the cost of stainless steel production in Indonesia. Integration of nickel processing facilities and stainless steel production facilities in the same location further reduces stainless steel production costs in Indonesia. Especially the NPI and stainless steel producer are homogenous companies that are vertically integrated under the control of a few of big business group. It is estimated, the stainless steel production cost in Indonesia is CNY12000 (US\$1654) per tonne, lower than the CNY18000 (US\$2482) per tonne in China.³⁶

³⁵ SMM.2017. "NPI Production Costs in Indonesia, You Can't Miss It, SMM Exclusive." July 10 <https://news.metal.com/newscontent/100745156/npi-production-costs-in-indonesia-you-can%E2%80%99t-miss-it-smm-exclusive>; SMM. 2023. "Key Takeaway from SMM 2023 Indonesia Nickel and Cobalt Industry Chain Conference: Global Nickel and Stainless Steel Market Outlook 2023–2027 and Indonesia's Critical Role in Attracting Chinese Investment". <https://news.metal.com/newscontent/102236924/Key-Takeaway-from-SMM-2023-Indonesia-Nickel-and-Cobalt-Industry-Chain-Conference:-Global-Nickel-and-Stainless-Steel-Market-Outlook-2023-2027-and-Indonesia%E2%80%99s-Critical-Role-in-Attracting-Chinese-Investment%C2%A0/>.

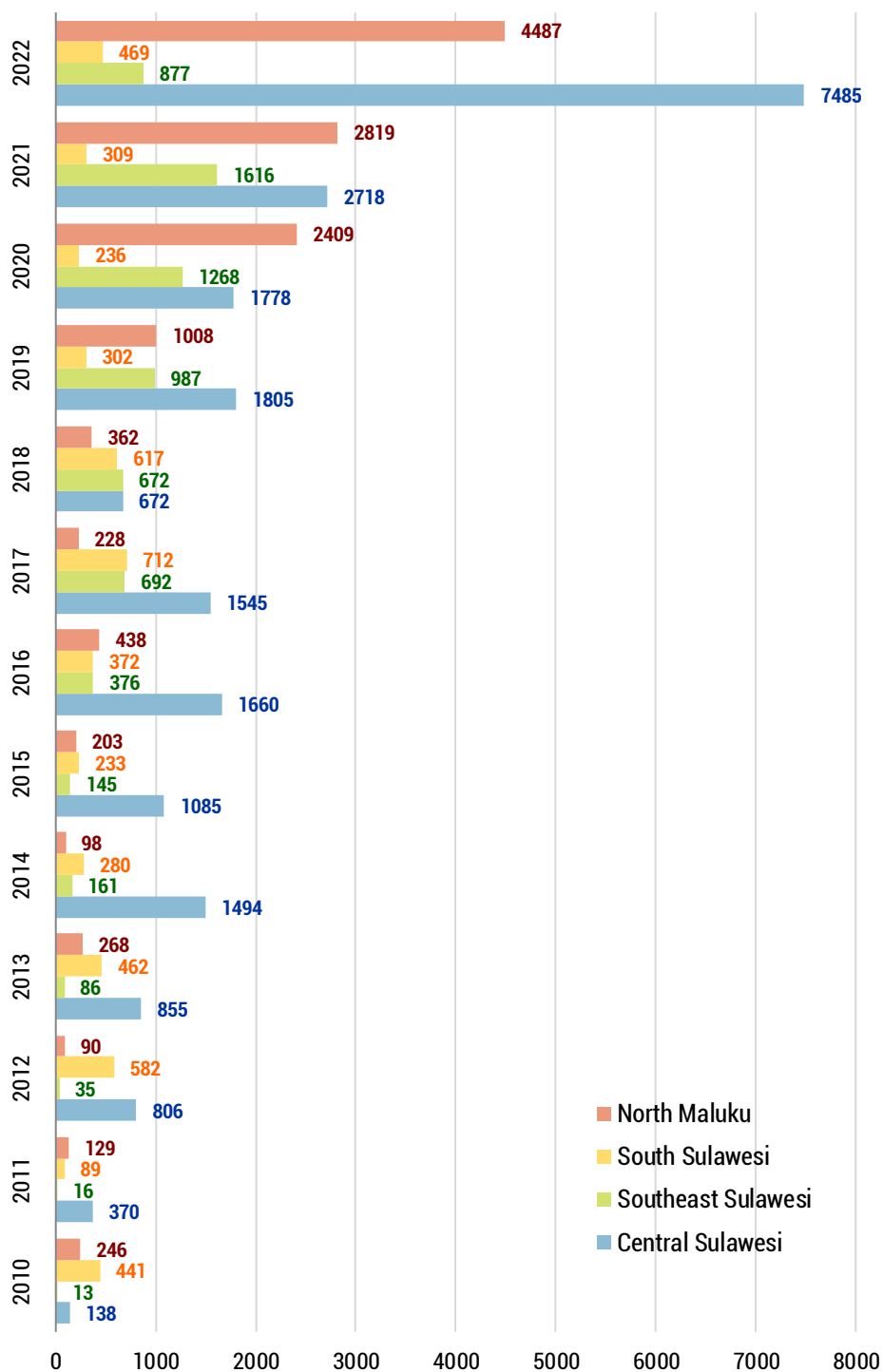
³⁶ SMM. 2022. "Resource advantage promotes the rise of stainless Steel Industry in Indonesia." <https://news.metal.com/newscontent/101760127/resource-advantage-promotes-the-rise-of-stainless-steel-industry-in-indonesia>; SMM. 2023. "Key Takeaway from SMM 2023 Indonesia Nickel and Cobalt Industry Chain Conference: Global Nickel and Stainless Steel Market Outlook 2023–2027 and Indonesia's Critical Role in Attracting Chinese Investment". <https://news.metal.com/newscontent/102236924/Key-Takeaway-from-SMM-2023-Indonesia-Nickel-and-Cobalt-Industry-Chain-Conference:-Global-Nickel-and-Stainless-Steel-Market-Outlook-2023-2027-and-Indonesia%E2%80%99s-Critical-Role-in-Attracting-Chinese-Investment%C2%A0/>

6. Foreign Direct Investment

Foreign Direct Investment (FDI) accelerated the fast growth of nickel processing industry in Indonesia. Prior to downstreaming, the current three nickel producing provinces that are Central Sulawesi, Southeast Sulawesi, and North Maluku, are peripheral areas in the FDI inflow map. Within two decades (1990-2009), the total FDI realization in Central Sulawesi was US\$623, or only about 0.30% of the total FDI realization value in Indonesia. But that FDI value already put Central Sulawesi at the number 13 rank among the FDI destination provinces. With investment realization of US\$20.6 and US\$7.3 million respectively, Southeast Sulawesi and North Maluku even ranked in number 30 and 31 among 31 FDI recipients in that period.



FIGURE 5. Foreign Direct Investment Inflow to Nickel Producer Provinces in Indonesia 2010–2022 (USD Million)



Source: Processed from the BKPM (Investment Coordinating Board)

Nickel downstreaming changed the FDI map in areas that are rich in nickel deposits. The expansion of mining and mining processing industry investment marked a golden era of FDI in those areas. In 2010–2014, FDI especially flowed to Central Sulawesi. FDI realization to the province reached US\$6 billion. Chemical and pharmaceutical industry absorbed nearly 82% of the investment value. This was because the Donggi-Senoro LNG (DSLNG) investment, a liquefied natural gas processing plant FDI with export orientation in Banggai District, fronted by Mitsubishi Corporation dan Korea Gas Corporation (KOGAS).³⁷ The second biggest FDI flowed into the basic metal industry, after the construction of nickel smelter in Morowali began. This industry FDI value reached US\$510 million.

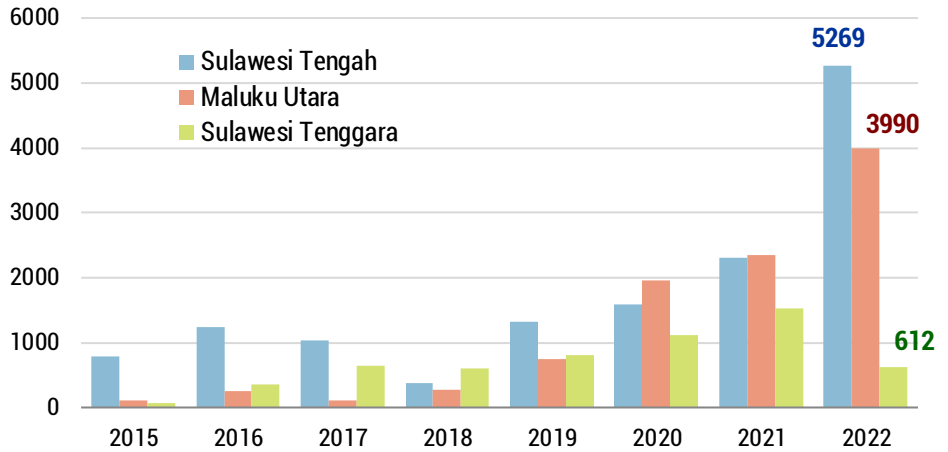
FDI in the basic metal industry flowed massively since the second half of the 2010's. Between 2015 and 2022, FDI realization in the three nickel producing provinces leapt sharply. FDI realization reached US\$18.6 billion in Central Sulawesi, US\$11.9 billion in North Maluku, and US\$6.6 billion in Southeast Sulawesi. The majority of these FDIs were to fund the construction of nickel processing smelters, stainless steel manufacturers, and supporting facilities. The basic metal industry absorbed 86.47% of the total FDI value in Southeast Sulawesi, 80.80% in North Maluku, and 74.62% in Central Sulawesi.

The FDI in the huge basic metal industry had made the regions producing processed nickel as main hosts for FDI in Indonesia. In 2022, from the total FDI of US\$44.1 billions in the archipelago, Central Sulawesi absorbed 16.8%. With investment value of US\$7.4 billion, Central Sulawesi is ranked first among all FDI destination provinces in Indonesia. The runner up to Central Sulawesi is West Java with FDI value of US\$6.5 billion. Basic metal industry contributed to the 70.39% of total FDI value to Central Sulawesi. North Maluku with US\$4.4 billion FDI realization is in the third position, above the US\$3.7 billion in Special Capital Region and the US\$3.4 billion in Banten. In 2022, the basic metal industry contributed to the 87.58% of total FDI value in North Maluku.³⁸

³⁷ DSLNG project is a collaboration between the Sulawesi LNG development Ltd with PT Pertamina Hulu Energi (PHE) and PT Medco Energy Indonesia. 75% of the Sulawesi LNG Development Ltd shares is controlled by Mitsubishi Corporation, while 25% of the shares is under Korea Gas Corporation (KOGAS). In the DSLNG project, Sulawesi LNG Development controls 59.9% of the shares. Meanwhile, PHE holds 29% shares and Medco Energi holds 11.1%. PT Donggi-Senoro LNG. ND. *Creating Opportunities Through LNG*. Jakarta: PT Donggi-Senoro LNG.

³⁸ BKMP. 2023. "Peringkat Realisasi Investasi Berdasarkan Lokasi Tahun 2022." Online https://nswi.bkpm.go.id/data_statistik. Accessed at 19 March 2023.

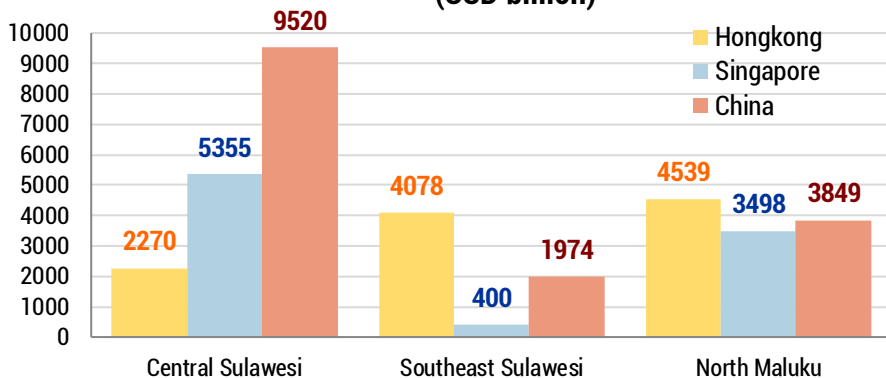
FIGURE 6. FDI inflow in the Basic Metal Industry in Three Processed Nickel Producer Provinces, 2015–2022 (USD million)



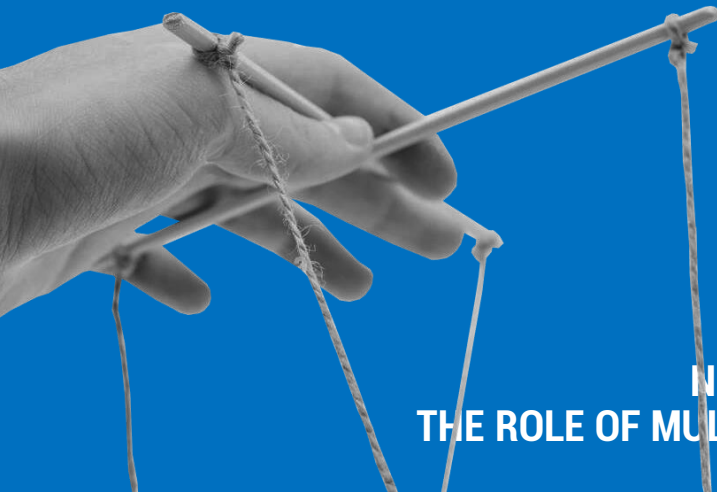
Source: Processed from the BKPM (Investment Coordinating Board)

Chinese Investment is the drive behind the FDI inflow to nickel producer provinces in Indonesia. From the combined FDI realization of US\$37.2 billion (Rp559.3 trillion) in Central Sulawesi, Southeast Sulawesi, and North Maluku within the 2015–2022 period, the People's Republic of China is the main territory of FDI source that contributed 40%, followed by Hongkong with 29.35% and Singapore with 16.54%. Upon careful examinations, in fact the inflow of FDI from Hongkong and Singapore are backed with capitals from mainland China. Chinese corporations make investments through subsidiaries that are listed as companies established in Hongkong and Singapore.

FIGURE 7. FDI realization in Three Nickel Producer Provinces by Territory of Capital Source 2015–2022 (USD billion)







PART THREE

NICKEL DOWNSTREAMING AND THE ROLE OF MULTINATIONAL CORPORATIONS

The key behind the nickel downstreaming achievement is the multinational corporations, especially the ones from mainland China, which actively made investments in Indonesia. Among them are world giant corporations that control the nickel based industry value chain, both the ones related to stainless steel and the ones related to electric vehicle battery. Without the role of those multinational corporations, Indonesia would not be successful in downstreaming nickel in less than 10 years.

1. Tsingshan Holding Group

Tsingshan Holding Group is the world's largest stainless steel and processed nickel company. Their track record began in 1988 as a car door manufacturing company. In 1993 Fengye Group was established in Zhejiang Province, which then became one of the pioneering private companies in stainless steel production in China. Still in Zhejiang, Tsingshan Special Steel Co Ltd was also established in 1998 and became one of the largest private businesses in stainless steel production in China. In 2003, Tsingshan Holding Group was established to manage different business segments with stainless steel as its core business. Tsingshan is famous for pioneering the building of the first integrated RKEF-AOD production facility in the world. The innovation that could save energy consumption up to 50% and reduce stainless steel production cost down to 20%. In Fujian Province, since 2009, a Tsingshan subsidiary business, Tsingtuo Nickel Industries Co Ltd, operated RKEF with annual production capacity of 1 million tonne NPI and since 2013 it operates a stainless steel manufacturer with annual production capacity of 3.5 million tonnes.³⁹



³⁹ Equal Ocean. 2023. "King of Nickel, Tsingshan Holdings' Journey to the World". July, 5. <https://equalocean.com/analysis/2023070519850>.; SMM. 2013. "China's NPI Producer Fujian

Tsingshan also has metal processing facilities abroad. In Pittsburgh, United States, Tsingshan established A&T Stainless Steel, a joint venture with Allegheny Technology. A&T Stainless Steel imports stainless steel slab products from Indonesia to manufacture stainless steel sheet products. In Zimbabwe, Tsingshan owns a subsidiary, Afrochine Smelting Plc, which has the largest production and smelter facility for high-grade ferrochrome carbon (4–8% carbon content) in the country, located near Harare. Aside from already having coking coal production facilities, Tsingshan is building stainless steel factory with US\$1 billion investment value in the country. At the end of last year, Tsingshan had entered into agreement with the Zimbabwe Government for lithium mining and building lithium smelter facilities there. Included in the agreement was Tsingshan's plan to increase the annual production of stainless steel and coking coal, each at 5 million tonnes.⁴⁰

Tsingshan's most massive and fast-growing foreign investment is the one in Indonesia. In 2014, from Fatufia Village in Morowali, Tsingshan pioneered the construction of smelters for NPI and derivative products in Indonesia. In Moro, Tsingshan adopted an integrated NPI-stainless steel production from China. To become a player in the new energy value chain, Tsingshan pioneered the development of HPAL facilities that produce MHP and introduced NPI-to-nicke matte conversion project (see in PART IV) Tsingshan had turned Indonesia Morowali Industrial Park into the largest upstream-downstream integrated nickel processing industrial zone in the world. After the success in Morowali, since 2018 Tsingshan built the Indonesia Weda Bay Industrial Park, located in Lelilef Village, Weda Subdistrict, Central Halmahera, North Maluku.

The successful investment in Indonesia catapulted Tsingshan up in the list of the richest corporations in the world. In 2022, *Fortune* estimated that Tsingshan's asset was US\$18.1 billion, US\$54.5 billion revenue value, and a net profit of US\$2.3 billion. Last year, among the world's 500 giant corporations according to *Fortune*, Tsingshan is ranked 238, a leap from their previous position of 361 when Tsingshan first made into the "Fortune 500" list back in 2019. This achievement was made only within 3 years after Tsingshan's successful big investment in Morowali.⁴¹

Dingxin Expands Downstream". July, 1. <https://news.metal.com/newscontent/100050551/chinas-npi-producer-fujian-dingxin-expands-downstream>.

- ⁴⁰ Katie Olsen. 2022. "Stainless MMI: Tariff exclusion could lead to more capacity". January 10. <https://agmetalmminer.com/2022/01/10/stainless-mmi-tariff-exclusion-could-lead-to-more-capacity/>; Metal Industry News. 2020. "ATI Idling A&T Stainless JV", Mar 31. <https://www.metalcenternews.com/editorial/metal-industry-news/ati-idling-at-stainless-jv/43921>. Taurai Mangudhla 2021. "Afrochine makes US\$1,5bn fresh move". May 18 <https://www.newsday.co.zw/slider/article/31574/afrochine-makes-us15bn-fresh-move>. Reuters 2019. "China's Tsingshan expands plans for Zimbabwe steel plant". April 24. <https://www.reuters.com/article/uk-zimbabwe-china-steel-idUSKCN1RZ2CI>. Reuters. 2022. "Zimbabwe says China's Tsingshan to set up lithium operations". November 29. <https://www.reuters.com/article/zimbabwe-mining-tsingshan-idUKL1N32P2D8>.
- ⁴¹ Fortune 2022. "Global 500: Tsingshan Holding Group." <https://fortune.com/company/tsingshan-holding-group/global500/>.

TABLE 1. Tsingshan Group: Wealth accumulation, 2019–2022

Year	Revenue (US\$ Billion)	Net Profit (US\$ Billion)	Ranking of the World's 500 Largest Companies
2022	54.5	2.3	238
2021	42.4	1.1	279
2020	38.0	0.8	329
2019	34.2	0.5	361

Source: *Fortune*

The key figure behind Tsingshan is Xiang Guangda. Xiang is a member of the “transnational capitalist class” considering that the networks of his businesses had crossed national boundaries. Before establishing Tsingshan, Xiang started out as a mechanic and a worker in a state-owned enterprise. Xiang was sacked from state-owned enterprises along with millions of others when Deng Xiaoping introduced the economic reform, a project to transform China toward a “socialist market economy”. He ventured into the business world at the end of the 1980’s as car doors and windows manufacturer, supplying for state-owned car factories. He turned to the stainless steel business in order to reduce China’s dependence on metal imports.

Right now in mainland China, Chairman Xiang is one of the richest big-shots of the country. “Hurun Report” that investigated China’s richest people stated in their report that Xiang Guangda’s wealth estimated value was US\$6.1 billion in 2022. This put him in number 114 of the richest individual in the country. According to *Forbes*, Xiang Guangda’s wealth was around US\$1.2 billion in 2021. He was ranked 2378 in the world’s richest people list. Xiang was known in China as the Big Shot, the most influential man in the world-wide metal industry. The mainstream media labeled him as the “Steve Jobs” of the metal world.⁴²

Tsingshan has an important local partner, PT Bintang Delapan Grup. Its key figure is Halim Mina, the group owner. Halim controlled the company through PT Panca Metta and PT Meltapratama Perkasa. Panca Metta and Meltapratama Perkasa each controls 35% shares of the PT Bintangdelapan Mineral (BDM), a subsidiary of Bintang Delapan Grup. Meanwhile, Halim Mina himself holds 20% shares and Hamid Mina 10%. Halim owns both Panca Metta and Meltapratama Perkasa. He controls 70% shares of Panca Metta, and 99.99% shares of Meltapratama Perkasa.

⁴² (Li 2008:64); Jane Lewis, “Xiang Guangda: the “Big Shot” who broke the nickel market.”; *Fortune* 2022. “Global 500: Tsingshan Holding Group.” <https://fortune.com/company/tsingshan-holding-group/global500/>. ; *Hurun* 2022. “Hurun China Rich List”. <https://www.hurun.net/en-US/Rank/HsRankDetails?pagetype=rich>. ; *Forbes* 2021.

The CEO of BDM is Hamid Mina.⁴³

Halim was not a big player in the Indonesian business map before the Reform era. Halim worked as an employee of PT Dover Chemical, an FDI established in 1980. The company is affiliated to Dovechem Group, which operates in petrochemical sector. Dover Chemical employs 10,000 workers. Halim established Bintang Delapan Grup in 1994, mainly operated in the fertilizer trading sector. The company survived the economic crises at the end of the 1990's. Bintang Delapan even developed into urea fertilizer exporter for Vietnam. In 2001, Halim took over a big amount of Dover Chemical shares. The company grew rapidly with operational area coverage not only Indonesia, but also Singapore, Malaysia, and China.⁴⁴

Leveraging the momentum of local regional autonomy in 2004, Halim saw a chance to enter the mining business. He established Bintang Delapan Mineral as a subsidiary for Bintang Delapan Grup. After carrying out an exploration in 2007, Bintang Delapan Mineral received IUP for nickel for thousands of hectares area in Morowali. Since 2019, Halim began to making pathways for cooperation with Tsingshan Group. Currently Bintangdelapan Group that Halim built has at least nine business branches. Its business activities cover a broad area including nickel trading and investment, nickel concessions and production, investment, coal trade, limestone trade, copper ingot fabrication, chemical trade, property, media, chemical industry, coal mining and concessions, and oil and gas services.⁴⁵



**BINTANG
DELAPAN
GROUP**



⁴³ Tirto. 2018. "Benarkah PT Bintang 8 Mineral Milik Prabowo & Mayoritas Pakai TKA?". Tirto, 9 May. <https://tirto.id/benarkah-pt-bintang-8-mineral-milik-prabowo-mayoritas-pakai-tka-cJ8c>.

⁴⁴ Enterprise Asia. 2015. "Outstanding Category Halim Muna". <https://enterpriseasia.org/apea/indonesia/awards/id-2015/halim-muna/> ; Dovechem Group 2016. Dovechem Group. 2016. "Company Profile." <http://dovechem.co.id/en/company-profile>.

⁴⁵ Enterprise Asia, "Outstanding Category Halim Mina"; Bintangdelapan Group. <https://bintangdelapan.com/>.

2. Zhejiang Huayou Cobalt Co Ltd

Zhejiang Huayou Cobalt Co Ltd (Huayou Cobalt) is a joint stock company. Established in 2022, the company is listed in Shanghai stock exchange since 2015. Great Mountain Enterprise Pte Ltd controls 50.10% shares and Tongxian Huayou Investment Co Ltd owns 29.29% shares of Huayou Cobalt. Eight other business entities hold between <4% to 4% of the remaining shares. The corporation has dozens of subsidiary businesses in various countries, including in Indonesia. Huayou Cobalt is one of the largest multinational corporations in the world. In 2023, *Forbes* put the 2002 established corporation in number 1377 in "the Global 2000" list of world's giant corporations. Employing nearly 30,000 workers in various countries, the media stated that Huayou Cobalt owns assets value of US\$17.4 billion, US\$9.9 billion in sales, US\$543 million in profit, and a market value of US\$12.03 billion.⁴⁶



Huayou Cobalt's business focus is lithium-ion battery industry value chain. The company holds a global reputation in critical mineral businesses in cobalt, lithium, and nickel. Huayou Cobalt is one of the largest global cobalt producers. Huayou Cobalt owns cobalt refining facilities in the world's largest cobalt producer, the Republic of Congo, via their subsidiary Congo Dongfang International Mining SARL. Its products are shipped to China for further processing. In April 2022, the company purchased from the Australian company Prospect Resources, the Arcadia lithium mining area. It is located near Zimbabwe's Capital City of Harare. The approximately US\$422 million purchase value made Huayou Cobalt the owner of 90% shares. Huayou Cobalt had built a US\$300 million worth of processing facility. Since early July 2023, the facility with annual production capacity of 450 kt concentrated lithium began its operation.⁴⁷

⁴⁶ Huayou Cobalt Co Ltd. 2023. Articles of Association of Zhejiang Huayou Cobalt Co., Ltd.; Huayou Cobalt. 2023. Financial Statements for the years ended December 31, 2022. Andrea Murphy and Hank Tucker. 2023. "The Global 2000". *Forbes*, June 8. <https://www.forbes.com/lists/global2000/?sh=6ff18dba5ac0>.

⁴⁷ Asia Financial. 2022. "China's Huayou Cobalt Buys Zimbabwe Lithium Project". May 25. [online] <https://www.asiafinancial.com/chinas-huayou-cobalt-buys-zimbabwe-lithium-project>. Financial Review. 2023. "How China is winning the race for Africa's lithium". April 4. [online]. <https://www.afr.com/companies/energy/how-china-is-winning-the-race-for-africa-s-lithium-20230404-p5cxyk>. Financial Times. 2020. "China's top cobalt producer halts buying from Congo miners". May 28. [online]. <https://www.ft.com/content/ce9af944-fb70-4576-88d0-dc76821facfd>. Huayou Cobalt's Arcadia Lithium Mine in Zimbabwe Begins Trial Production!. <https://en.huayou.com/news/708.html>. Nyasha Chingono. 2023. "China's Huayou commissions \$300 million Zimbabwe lithium plant". *Reuter* July 5. <https://www.reuters.com/markets/commodities/chinas-huayou-commissions-300-mln-zimbabwe-lithium-plant-2023-07-05/>.

Through research, development, and production of lithium-ion battery materials, Huayou Cobalt ships their products to battery manufacturers such as LG Chem (South Korea) and CATL (Contemporary Amperex Technology Co Ltd, [China]), and car producers such as BYD (China) and Volkswagen (German). Last year Huayou Cobalt made a deal with Tesla to supply the new energy automobile company with ternary precursors for three and a half years. To strengthen the battery material supply chain, LG Chem and Huayou established a joint venture to build a battery precursor factory in Saemangeum (North Korea). Last April, both companies agreed on the KRW1.2 trillion (US\$921.9 million) investment.

Huayou Cobalt became the most aggressive investor in nickel processing industry in Indonesia. Cooperating with Tsingshan and several other companies, Huayou Cobalt began its business in the Indonesia Morowali Industrial Park. Supplying for the global demands for lithium-ion battery material, Huayou had operated the hydrometallurgy facility in the industrial zone through one of its subsidiaries, PT Huayue Nickel Cobalt (see Part IV).

Huayou Cobalt investment then flowed into Indonesia Weda Bay Nickel Industrial Park, where Huayou Cobalt owns 20% shares. Via PT Huake Nickel Indonesia, the corporation manages pyrometallurgy projects in Indonesia: Weda Bay Industrial Park with annual production capacity of 45 kt nickel matte. Huayou Cobalt owns 70% shares and Tsingshan holds 30% shares of Huake Nickel Indonesia. The second nickel matte project in Indonesia Weda Bay Industrial Industrial Park related to Huayou Cobalt was run through Huawei Nickel. The project has an annual production capacity of 34 kt nickel matte with investment value of US\$407 million. PT Youshan Nickel Indonesia shares are controlled by Chengtun Mining Group Co Ltd (35.8%), Tsingshan Group (35%), Huayou Cobalt 29.3%.⁴⁸

In Indonesia Weda Bay Industrial Park, Huayou Cobalt owns the hydrometallurgy project through PT Huafei Nickel Cobalt. The company constructed the hydrometallurgy facility with the annual production capacity of 120 kt nickel and 15 kt cobalt. The project investment value reached US\$2.08 billion. Middle of this year, Huafei Nickel Cobalt had begun the production facility operation. The project is a joint venture, with Huayou Cobalt as the main share holder: Huayou Cobalt directly owns 20% shares, and indirectly holds 31% shares through its subsidiary, Huayou International Cobalt. The remaining shares are shared among Eve Battery 17%, Glaucous International 30%, and Lindo Investment 2%.⁴⁹

Huayou Cobalt also wishes to build a second HPAL project in Indonesia Weda Bay Industrial Park with annual production capacity of 123 kt nickel, 15.7 kt cobalt, and by-products of 500 kt chrome concentrate. The project will be operated through PT

⁴⁸ Nornickel November 2022. "The first nickel matte electric furnace of Indonesia Huake Nickel launched first tapping successfully". <https://en.huayou.com/news/628.html>.

⁴⁹ Huayou Cobalt. 2023. Financial Statement for the year ended December 31, 2022.

Huashan Nickel Cobalt with Huayou Cobalt holding 68% shares through its subsidiary Huatuo International, while Glaucon controls 32% shares. The corporation is designing the project and the construction is estimated to take three years to complete. Huayou Cobalt is attempting to amass CNY2.2 billion (US\$1.6 billion) of financing.⁵⁰

Huayou Cobalt is also cooperating with PT Vale Indonesia and Ford Motor Company in the HPAL project in Pomalaa. The three corporations plan to construct a production facility with annual production capacity of 120 kt nickel and 15 kt cobalt. Vale Indonesia will supply nickel ore from the KK area of 20,286 hectares in Pomalaa Block and the 4,466 hectares in Sua Sua Block. Meanwhile, Huayou Cobalt will develop the HPAL processing factory. Ford Motor joins this collaboration of factory construction and is projected to buy the nickel products. The project absorbs US\$4.29 billion investment and is targeted to start production in 2026. The Pomalaa project is ran under PT Kolaka Nickel Indonesia, where Huayou Cobalt holds 53% shares, Vale 30%, and Ford 17%.⁵¹

Huayou Cobalt and PT Vale Indonesia also plan to build another HPAL project in Sorowako. The two corporations have head of agreement (HoA) signed in September 2022. This project will convert limonite ores into 60 kt MHP annually. The project value is estimated to be US\$1.8 billion.⁵²

Huayou Cobalt is also building the Indonesia Pomalaa Industry Park in Pomalaa. The 11,800 hectares of industrial area became an integrated lithium-ion battery industrial chain zone. IPIP will accommodate facilities of HPAL, RKEF, refining, and precursor factories, cathode and anode materials, electrolytes, separators and ternary lithium batteries. The corporation claims that the entire production facilities will be powered by clean and green power plants. In 2025, Indonesia Pomalaan

⁵⁰ Mining Technology. 2021. "China's Zhejiang Huayou to form JV for \$2.1bn Indonesia nickel project." Mining Technology, May 25. <https://www.mining-technology.com/news/zhejiang-huayou-indonesia-nickel-project/>. Fransiska Nangoy. 2023. "UPDATE 1 -Huayou Cobalt to add at least 500,000 T of nickel capacity in Indonesia." Reuters May 31. <https://www.reuters.com/article/huayou-cobalt-indonesia-nickel-idUSL1N37SORJ>; <https://huayouipip.com/about-huayou-indonesia/> Tang Shihua. 2022. "Huayou Cobalt to Raise Up to US\$2.6 Billion for Indonesia Nickel Project". June 2022. [https://www.yicai.com/news/huayou-cobalt-to-raise-up-to-US\\$26-billion-for-indonesia-nickel-project](https://www.yicai.com/news/huayou-cobalt-to-raise-up-to-US$26-billion-for-indonesia-nickel-project).

⁵¹ PT Vale Indonesia, *Laporan Tahunan 2022*; Huayou Cobalt. 2023. "Huayou Cobalt, PT Vale, and Ford Motor jointly create a new energy Li-ion battery industry chain!". [online] <https://en.huayou.com/news/712.html>. Reuters. 2023. "Nickel miner Vale Indonesia signs HPAL deal with China's Huayou" <https://www.reuters.com/article/indonesia-nickel-idUSKBN2QE1C6>; Ford Media Center. 2023. "PT Vale Indonesia And Huayou Sign Nickel Agreement With Ford Motor Co. Supporting Growth Of The Global Sustainable EV Industry". March 30. [online] <https://media.ford.com/content/fordmedia/fna/us/en/news/2023/03/30/pt-vale-indonesia-and-huayou-sign-nickel-agreement-with-ford-mot.html>

⁵² PT Vale Indonesia, *Annual Report 2022*; NS Energy. 2022. "Vale, Huayou to build new HPAL processing plant in Indonesia" September 14 [online] <https://www.nsenergybusiness.com/news/vale-huayou-to-build-hpal-processing-plant/>.

Industry Park will have a 1000MW installed capacity Gas Power Plant (PLTG). In 2027 the power plant installed capacity will reach 2700MW (PLTG 2000MW, PLTS 300MW, and PLTA 400MW). With the additional PLTS capacity of 400MW and PLTA capacity of 700 MW, the industrial zone will have 3100MW captive power in 2029. IPIP infrastructure is planned to gain US\$300 million investment, while tenants are projected to invest about US\$10 million.⁵³

In March 2022, Huayou Cobalt, Tsingshan Group, and Volkswagen Group (China) built a strategic partnership to strengthen the electric vehicle battery value chain. The three formed a joint venture to produce electric vehicle battery main material. They plan to have the upstream project in Indonesia with semi-finished nickel production capacity that can supply to the 160 GWh of battery demands. Huayou Cobalt and Volkswagen also agreed to form a joint venture to produce nickel sulfate and cobalt sulfate, precursors, and cathode materials in Guangxi.⁵⁴



⁵³ PT Indonesia Pomalaa Industry Park. Company Profile.

⁵⁴ Volkswagen Group China. 2022. "Volkswagen Group China intends strategic partnerships for battery raw material supply chain". <https://volkswagengroupchina.com.cn/en/news/Detail?ArticleID=705E75C6C4484A959C116B0A95196585>.

3. Contemporary Amperex Technology Co Ltd

CATL was founded in 2011 and has been a public company trading shares on the Shenzhen Stock Exchange since 2018. Headquartered in Ningde, CATL employs 80,000 workers, and has 13 production locations in various parts of the world. As a giant among multinational corporations, last year CATL ranked 6th among the 500 largest companies in China and ranked 69th among the world's 500 largest companies according to the "Hurun Global 500". In 2023, *Forbes* ranked CATL at 121 in its "the Global 2000" list of largest companies, with US\$93.2 billion assets value, US\$53.6 billion sales, US\$5.7 billion profit, and a market value of US\$143.9 billion.⁵⁵



CATL is a major world-class business in new energy technology innovation. The company's core business includes research and development, manufacturing and sales of electric vehicle lithium-ion batteries, and energy storage systems. The company became the biggest electric vehicle lithium-ion battery producer in the world. SNE Research (a South Korean research institute) stated that CATL supplies 30% of the world's 518 GWh of electric vehicle battery consumption in 2022. Currently, one in three electric vehicles uses a lithium-ion battery made by CATL. The company supplies electric vehicle batteries to automotive companies such as Tesla, Mercedes Benz, BMW and Volkswagen.⁵⁶

To guarantee the supply of lithium-ion battery raw materials, CATL actively expands its upstream business for critical minerals in several countries. In April 2021, CATL purchased CMOC's 25% shares in Kisanfu copper-cobalt mine (KFM) in Congo, the world's largest cobalt producing country; CATL is also expanding into lithium projects. In 2020, CATL spent CAD8.85 million to become a shareholder in Neo Lithium (Canada) for the Tres Quebradas lithium project, a high-grade lithium project in Argentina. In 2021, Suzhou Tianhua Times New Energy Industry Investment Co Ltd (a subsidiary of CATL) spent US\$240 million to obtain 24% shares in the Manono (Australia) lithium project, operated by AVZ Mining Company.

⁵⁵ Hurun China 500, 2022. <https://www.hurun.net/en-US/Rank/HsRankDetails?pagetype=ctop500>. Hurun Global 500, 2022. <https://www.hurun.net/en-US/Rank/HsRankDetails?pagetype=gtop500>; Andrea Murphy and Hank Tucker, "The Global 2000".

⁵⁶ https://www.catl-career.com/?locale=en_US. SNE Research. 2023. "Global EV battery usage in 2022 is 517.9GWh, up 71.8% from the previous year". *Press Release*; Investor's Business Daily. 2023. "Tesla Battery Supplier CATL Sees Profits Surge Amid Global EV Boom". [online]. <https://www.investors.com/news/china-ev-stocks-tesla-battery-supplier-catl-sees-profits-surge-global-ev-boom/>; Keith Bradsher and Michael Forsythe 2021. "Why Chinese Company Dominates Electric Car Batteries?". *New York Times*, December 22 [online]; Henry Sanderson. 2022. "China's Electric Vehicle Battery King". *Time*, September 29. <https://time.com/6217992/china-electric-vehicle-catl/>.

January 2023, CATL entered into a cooperation agreement with Yacimientos del Litio Bolivianos (a Bolivian state-owned company) to build two lithium factories with an annual production capacity of 25 kt lithium carbonate. CATL has a committed investment of US\$1.4 billion in the project.⁵⁷

CATL has also entered the nickel business in Indonesia. The corporation has invested in the Indonesia Morowali Industrial Park via PT QMB in a hydrometallurgical project. From Morowali, CATL expanded its business to East Halmahera District (North Maluku). Through one of its subsidiary businesses, CBL (Ningbo Contemporary Brunp Lygend Co Ltd), CATL built a collaboration with PT Antam and PT Industri Baterai Indonesia in the mining and production of raw materials for electric vehicle batteries. In April 2022, the three parties entered into a Framework Agreement regarding the electric vehicle battery industrial chain projects that included nickel mining, RKEF and HPAL facilities, battery material processing, battery factory, and battery recycle. The production facilities with construction period of 2022-2026 will cost US\$5 billion.⁵⁸ In September 2022, Antam will spin-off part of the nickel business segment in East Halmahera into PT Sumber Daya Arindo. Antam controls 99.99% shares of this company. In January 2023, a conditional share sale and purchase agreement took place between Antam and Hong Kong CBL Limited (a subsidiary of CBL) for parts of Antam's shares in PT Sumber Daya Arindo.⁵⁹

Headquartered in Ningde, CATL employs 80,000 workers, and has 13 production locations in various parts of the world. As a giant among multinational corporations, last year CATL ranked 6th among the 500 largest companies in China and ranked 69th among the world's 500 largest companies according to the "Hurun Global 500". In 2023, Forbes ranks CATL at number 121 in its "the Global 2000" list of the world's largest companies with assets of US\$93.2 billion, US\$53.6 billion in sales, US\$5.7 billion profits, and a market value of US\$143.9 billion.⁶⁰

⁵⁷ SMM. 2021. "CATL Acquired a Canadian Mining Company and Became a Shareholder of the World's Largest Lithium Ore Project". <https://news.metal.com/newscontent/101611240/CATL-Acquired-a-Canadian-Mining-Company-and-Became-a-Shareholder-of-the-World%E2%80%99s-Largest-Lithium-Ore-Project/>. Mining Technology. 2021. "CATL to acquire stake in DRC's Kisanfu copper-cobalt mine in \$137m deal". Mining Technology, April 11. <https://www.mining-technology.com/news/catl-acquire-stake-drcs-kisanfu-copper-cobalt-mine-137m-deal/>. BBC. 2023. "Chinese firm Catl to develop huge Bolivian lithium deposit."BBC, January 23. <https://www.bbc.com/news/world-latin-america-64355970>.

⁵⁸ CBL. 2022. "CBL signed a framework agreement with ANTAM and IBI." <http://www.cbl.com.cn/en/NewsDetail/3310912.html>. CBL. Nd. "Electric Vehicle Battery Industry Chain Project in Indonesia". <http://www.cbl.com.cn/en/Content/2117540.html>.

⁵⁹ Antam. 2023. Annual Report 2022.

⁶⁰ Hurun China 500, 2022. <https://www.hurun.net/en-US/Rank/HsRankDetails?pagetype=ctop500>. Hurun Global 500.2022. <https://www.hurun.net/en-US/Rank/HsRankDetails?pagetype=gtop500>; Andrea Murphy and Hank Tucker, "The Global 2000".

4. LG Energy Solution Ltd



LG Energy Solution Ltd was established in 2020, after LG Chem Ltd split-off its battery business unit into a separate business entity. LG Chem controls 81.84% shares of LG Energy Solution.

The corporation is the world's second largest electric vehicle lithium-ion battery manufacturer, operating in various countries through 16 subsidiaries.⁶¹ The company has battery manufacturing plants in Ochang (South Korea), Nanjing (China), Wroclaw (Poland), Michigan and Arizona (United States). LG Energy Solution also collaborates with automotive companies in the United States, such as General Motors (Ohio, Tennessee and Michigan), Honda (Ohio), Hyundai Motor Group (Georgia), as well as in Canada with Stellantis (Ontario) and in Indonesia with Hyundai Motor Group (Karawang) for electric vehicle batteries manufactures.⁶²

LG Energy Solution is racing against its competitors in producing types of high nickel lithium batteries. When one of its competitors, SK On (South Korea) produced an NCM-9 battery generation with nickel content of 90%, LG Energy responded by introducing NCMA type batteries with a nickel content of 85%.⁶³

The competition to produce high nickel lithium-ion batteries drives LG Energy Solution to ensure their own nickel supplies. In August 2021, LG Energy Solution announced that Australian Mine Limited would supply them with MHP (71 kt nickel and 7 kt cobalt) for 6 years, starting from 2024. The purchase contract is enough to produce enough batteries to power 1.5 million electric vehicles.⁶⁴

To ensure their raw materials supply, LG Energy Solution has even begun to actively involve itself in upstream projects (mining and processing) of critical minerals. Mid April 2022, LG Energy Solution lead a consortium (LG Energy, LG Chem Ltd, LX International Corp, POSCO Holdings, and Huayou Cobalt), to cooperate with PT Antam and Indonesia Battery Corp in developing the value chain of electric vehicle battery. The consortium handles a US\$9 billion project that includes nickel smelting and refining, manufacturing precursors, cathode materials and battery

⁶¹ LG Energy Solution. 2023. LG Energy Solution and its subsidiaries.

⁶² LG Energy Solution, LG Energy Solution and its subsidiaries

⁶³ Il-Gue Kim. 2021. "Race to produce high-nickel batteries accelerates". *The Korea Economic Daily*, October 18. <https://www.kedglobal.com/ev-batteries/newsView/ked202110170001>.

⁶⁴ LG Energy Solution. 2023. "LG Energy Solution to have 6-year access to nickel, cobalt from Australian Mines amid heated competition over raw materials." Press Release, August 16. <https://news.lgensol.com/company-news/press-releases/864/>.

cells.⁶⁵ In June 2022, LG Energy Solution laid the groundbreaking for a processing plant with an annual production capacity of 150 kt nickel sulfate. This US\$3.5 billion project is located in Batang, Central Java. In the same location, the corporation also plans to build a derivative production facility with US\$2.4 billion investment value. The facility will have an annual production capacity of 220 kt precursors and 42 kt cathode.⁶⁶

A year earlier, in a joint venture with Hyundai Motor Co, LG Energy Solution began building an NCMA (Nickel-Cobalt-Manganese-Aluminum) lithium-ion battery cell factory in Karawang, West Java. This US\$1.1 billion project has a capacity of 10 GWh of battery cells, enough for 150,000 electric vehicles. This capacity can be increased to 30 GWh if necessary. The factory will supply Hyundai for its electric vehicles production. The factory location is near the Hyundai car factory. President Jokowi attended the groundbreaking ceremony for the project. As of October 2022, the project progress has reached 40 percent.⁶⁷



⁶⁵ Hyung-Kyu Kim. 2022. "LG Energy-led group to set up \$9 bn Indonesia battery value chain". The Korea Economic Daily , April 18. <https://www.kedglobal.com/batteries/newsView/ked202204180014>.

⁶⁶ Bernadette Christina and Gayatri Suroyo.2022. "S.Korea's LG Energy Solution launches nickel processing plants in Indonesia", Reuters June 8. <https://www.reuters.com/breakingviews/skoreas-lg-energy-solution-launches-nickel-processing-plants-indonesia-2022-06-08/>.

⁶⁷ Hyung-Kyu Kim. 2021. "Hyundai, LG Energy break ground on \$1.1 bn Indonesia battery plant" . The Korea Economic Daily September 15. <https://www.kedglobal.com/batteries/newsView/ked202109150012>. Yonhap News Agency. 2022.

"Hyundai, LG secure US\$710 mln financing for Indonesia battery cell plant." August 22. <https://en.yna.co.kr/view/AEN20220822005300320?section=business/industry>. Kontan. 2021.

"Hyundai Motor Group & LG Energy Solution Mulai Pembangunan Pabrik Sel Baterai Kendaraan Listrik di Indonesia". Kontan, 15 September. <https://pressrelease.kontan.co.id/release/hyundai-motor-group-lg-energy-solution-mulai-pembangunan-pabrik-sel-baterai-kendaraan-listrik-di-ind?page=all>.

Nyoman Ary Wahyudi. 2022. "Bos IBC Ungkap Progres Pabrik Baterai EV LG -Hyundai di Karawang". Bisnis.com, 11 October. <https://ekonomi.bisnis.com/read/20221011/44/1586445/bos-ibc-ungkap-progres-pabrik-baterai-ev-lg-hyundai-di-karawang>.

5. CNGR Advanced Material Co Ltd



CNGR Advanced Material Co Ltd was established in 2014 and listed on the Shenzhen Stock Exchange in 2020. The

company became a world-class manufacturer of electric vehicle battery cathode precursors. Among its key products are lithium-ion battery cathode precursors, NCM and NCA. Tesla is one of CNGR costumers. In 31 July 2022, CNGR entered into an agreement with Tesla to supply the automotive company with ternary precursors starting from January 2023 to December 2025. The deal's value is up to RMB10 billion (US\$1.3 billion). The same agreement had previously been made for January 2020–December 2022 period.⁶⁸

CNGR is one of important investors in the nickel processing industry in Indonesia. October 2022 was a historic event for CNGR, as it was its first overseas investment in the industrial sector. The event took place in Morowali, when CNGR's first investment based on OESBF technology successfully produced nickel matte. After the success of the Morowali project with Rigqueza International, CNGR and its business partners plan to build three other nickel processing smelters in Indonesia Weda Bay Industrial Park with a total investment of US\$ 1.3 billion. With an investment of US\$ 420 million in each facility, each smelter will have annual production capacity of 40 kt nickel matte. CNGR controls 70% of the shares through three different subsidiaries in Hong Kong and Rigqueza holds 30% of the shares.⁶⁹

CNGR also collaborates with Antam on a different project. In November 2022, CNGR and Antam entered into an agreement regarding plans to build and develop an industrial area for electric vehicle battery raw materials. PT Kawasan Industri Antam Timur (subsidiary of Antam) constructed and manages the industrial sites in Antam's IUP area in Pomalaa, Southeast Sulawesi, while PT Pomalaa New Energy Material (subsidiary of CNGR) developed a facility to process laterite ore into nickel

⁶⁸ CNGR. 2021. 2021 Environmental, Social, and Governance (ESG) Report. Tongren: CNGR. Energy Trend, "CNGR Advanced Material and Huayou Cobalt Have Secured Orders for Ternary Precursors from Tesla".

⁶⁹ CNGR. 2023. "Year End Review: Ten Significants of CNGR in 2022." [online] <http://www.cngrgf.com.cn/en-US/gsxw/1014.html>; China Daily. 2022. "CNGR helps boost Indonesia's new energy materials industry". November 15. [online] <http://epaper.chinadaily.com.cn/a/202211/15/WS6372dac9a31009d7c3da4f75.html>. Tom Daly. 2021. "China's CNGR to make nickel matte in Indonesia as battery demand grows". Reuters April 9. [online]. <https://www.reuters.com/article/us-nickel-indonesia-cngr-idUSKBN2BV2MR>. "CNGR, Rigqueza Invest US\$1.3 Billion to Hike Nickel Ore Processing Capacity in Indonesia." [https://www.yicai.com/news/cngr-rigqueza-invest-US\\$13-billion-to-hike-nickel-ore-processing-capacity-in-indonesia](https://www.yicai.com/news/cngr-rigqueza-invest-US$13-billion-to-hike-nickel-ore-processing-capacity-in-indonesia).

matte. The project with an annual production capacity of 80 kt tonnes nickel matte applies the OESBF technology.⁷⁰

CNGR itself has nickel sulfate production facilities. Since April 2022, the corporation operates a facility processing nickel matte to nickel sulfate in the city of Qinzhou (China). Therefore, OESBF projects in Indonesia could supply the raw material for that nickel sulfate production. To control the value chain of global electric vehicle battery, CNGR carried out a swift expansion. Together with POSCO Holding Inc, the company has agreed to invest US\$ 1.2 billion in Pohang (South Korea). The two parties formed a joint venture in nickel refining with an annual production capacity of 50 kt tons of nickel sulfate. CNGR also collaborates with POSCO Future M Co (a subsidiary of POSCO Holding) to build a high nickel cathode factory. Planned to begin its operation in 2026, the project will have an annual production capacity of 110 kt precursors. It will be able to meet the demand for 1.2 million electric vehicles.⁷¹



⁷⁰ Antam, *Annual Report 2022*; CNGR. 2023. "Year End Review: Ten Significants of CNGR in 2022." [online] <http://www.cngrf.com.cn/en-US/gsxw/1014.html>; China Daily. 2022. "CNGR helps boost Indonesia's new energy materials industry". November 15. [online]. <http://epaper.chinadaily.com.cn/a/202211/15/WS6372dac9a31009d7c3da4f75.html>.

⁷¹ Jae-Fu Kim and Hyung-Kyu Kim. 2023. "POSCO, CNGR to build \$1.2 bn battery materials plants in Korea". *The Korea Economic Daily*, June 21. [online]. <https://www.kedglobal.com/batteries/newsView/ked202306210022>.

6. China Molybdenum Co Ltd



China Molybdenum Co Ltd (CMOC) was founded in 1969 and its shares are traded on the Hong Kong Stock Exchange and Shanghai Stock Exchange. The Shanghai based corporation is engaged in mining, processing

and trading of metals. Employing 12,000 workers in Asia, Africa, South America, and Oceania, CMOC became the main producer of cobalt, copper, molybdenum, niobium, phosphate, nickel, etc. As one of the world-class giant companies, Forbes ranked CMOC at number 841 on the "Forbes 2000" list in 2023. The company has assets value of US\$23.7 billion, US\$25.1 billion in sales, and US\$678.8 million in profits.

CMOC is the second largest cobalt producer in the world. Owning a well-known concession in Congo, the Tenke Fungurume Mine (TFM), the company explores, mines, extracts, and processes and sells cobalt and copper. In 2022, TFM produced 20.2 kt cobalt, an increase of 9.64% from the previous year. December 2020, CMOC acquired Kisanfu Cobalt-Copper Mine (KFM) for US\$550 million. That year, KFM started operations with an annual production capacity of 30 kt cobalt. April 2021, CMOC sold 25% of KFM shares to Ningbo Brunp CATL New Energy (a subsidiary of CATL) for US\$137 million. CMOC remains the controller with 70% of the shares. The Congolese government holds a 5% shares.

This corporation has a track record of investment in the nickel processing industry in Indonesia. In Morowali, CMOC participated in the hydrometallurgical project producing MHP via Huayue Nickel Cobalt by controlling 30% shares in the company since 2019.



7. Green Eco Manufacture Co Ltd



Green Eco Manufacture (GEM) Co Ltd was established in 2001, it opened IPO (initial public offering) on the Shenzhen Stock Exchange

in January 2010. GEM is one of the leading corporations in China. GEM ranks at 425 in Fortune China's list of top 500 companies trading on the stock exchange. In 2022, the corporation earned CNY 29392 billion in revenue and CNY 1296 billion in profit.⁷²

GEM is renowned as a corporation in the industry of low-carbon and recycled metal products such as cobalt, nickel, copper, gold, silver, rare earths, etc. The corporation has advantages in hydrometallurgical technology and owns battery material manufacturing facilities in Jingmen, Taixing, Wuxi, Ningde and has the largest battery recycling plant in China. GEM supplies high grade nickel materials to important consumers such as Samsung, LGChem, CATK, EcoPro, XTC, and Ronbay.

In Indonesia, the corporation had established itself in Morowali. Through PT QMB New Energy Materials, GEM is the controlling shareholder in the company that operates HPAL facility in Indonesia Morowali Industrial Park.

GEM seems eager to expand new energy projects in Indonesia. In November 2022, GEM, SK On, and EcoPro signed a joint agreement regarding the construction of another HPAL project in Indonesia Morowali Industrial Park. The project is targeted to operate in the third quarter of 2024 and can have an annual production of 30 kt nickel in MHP. It will be able to meet the demand for 600.000 million electric vehicles. The three corporations also considered building a nickel sulfate production facility in South Korea.⁷³ May 2023, GEM announced plans for another project in Indonesia's Morowali Industrial Park. With capital of US\$500 million, the company will build a production facility with an annual production capacity of 20 kt nickel matte. As a joint venture, GEM (Wuxi) Materials Co Ltd (a subsidiary of GEM) controls 51% of the shares, Cahaya Jaya Investment Pte Ltd (Singapore) holds 26% of the shares and Weiming International Holding Ltd (Hong Kong) controls 18% of the shares. GEM wants to expand the scope of downstream activities such as producing battery precursors and cathodes.⁷⁴

⁷² Gem. N.D. Prifle. <https://en.gem.com.cn/About/index.aspx>.

⁷³ Jung Min-hee. 2022. "SK On, EcoPro and GEM to Set up Nickel Supply Chain in Indonesia". Business Korea, November 28. <http://www.businesskorea.co.kr/news/articleView.html?idxno=104892>.

⁷⁴ Tang Shihua. 2023. "China's GEM, Partners to Build Second Indonesian Nickel Project for US\$500 Million." Yicai, May 12. <https://www.yicai.com/news/20230512-09-chinas-gem-weiling-to-build-second-lithium-ion-battery-material-jv-plant-in-indonesia>. Reuters. 2023. "China's GEM to

8. Nickel Industries Limited



Nickel Industries Limited (formerly Nickel Mines Limited) was established in 2007 and is a public company trading shares since 2018 on the Australian Securities Exchange. As of 31 December 2022, its six largest shareholders include HSBC Custody

Nominees (Australia) Limited (21.74%), Decent Investment International Private Limited (10.66%), JP Morgan Nominees Australia Pty Limited (8.88%), Citicorp Nominees Pty Limited (7.22%), PT Harum Energy Tbk (6.41%), and Shanghai Decent Investment (Group) Co Limited (5.92%).

Nickel Industries Limited is a prominent FDI company in the Indonesian nickel processing industry. Founded in 2007 and headquartered in Sydney, Australia, the corporation entered nickel mining in Morowali by controlling shares in PT Hengjaya Mineralindo. The corporation mined nickel ore for export before the raw mineral export prohibition was effective in 2014. In 2015, the company returned to mining after signing an agreement with Tsingshan to supply nickel ore to Indonesia Morowali Industrial Park. Nickel Industries has collaborations with Tsingshan on RKEF projects in Indonesia Morowali Industrial Park, Morowali and Indonesia Weda Bay Nickel Industrial Park, Central Halmahera.

It has three other subsidiaries in Morowali; Hengjaya Nickel Industry, PT Ranger Nickel Industry, and PT Oracle Nickel Industry. In fact, the collaboration with Tsingshan also takes place in the Indonesia Weda Bay Industrial Park, where the share composition of Nickel Industries and Tsingshan is 80% and 20% respectively. PT Angel Nickel Industry operates a 4-lines RKEF with an annual production capacity of 36 kt. The corporation also owns a coal-fueled PLTU with 380 MW installed capacity of 380 MW. In 2022, the total NPI production from the Nickel Industries and Tsingshan Group collaboration reached 473.11 kt with an average nickel content of 13.8%, or 65.33 kt nickel in NPI. Several RKEF facilities from Nickel Industries have produced nickel matte from NPI conversion.

The collaborative projects of Nickel Industries and Tsingshan Group are examples of the advantages of different but vertically integrated corporations. Not only has the corporation controlled the commodity production at the upstream and downstream, but also in the trade of those commodities in the global value chain. Singaporean consumer for Hengjaya Nickel Industry's nickel matte is Golden Harbour, a business entity under the Tsingshan Group. NPI products from Hengjaya Nickel Industry and Ranger Nickel Industry are sold to ITSS – a subsidiary of

build a \$500 mln joint nickel project in Indonesia". Reuters, May 11.
<https://www.reuters.com/article/china-gem-nickel-indonesia-idUKL1N3780PR>.

Tsingshan – in Indonesia Morowali Industrial Park for stainless steel manufacturing. Hengjaya Nickel Industry and Ranger Nickel Industry both purchase saprolite nickel ore from Hengjaya Mineralindo. Hengjaya Mineralindo's limonite ores are sold to Huayue Nickel Cobalt and PT QMB, two companies in which Tsingshan also has shares in. Meanwhile, NPI products from PT Angel Nickel Industry in Halmahera are sold to China, with the offtaker being Shanghai Decent, a business unit of the Tsingshan Group.

9. Eramet Group



Eramet Group (France) was established in 1880 and has been a public company trading shares on the Shenzhen Stock Exchange since 1994. The company claims as the largest global producer of high-grade mangan ore and manganese, owning the world's largest nickel mine, and as the biggest European company in large-scale lithium production. Employing more than 9,000 workers, Eramet operates in the United States, Argentina, France, Norway, Gabon, Cameroon, Senegal, New Caledonia, and Indonesia.⁷⁵

Eramet has been operating in Indonesia for more than 20 years. Eramet operates in North Maluku through PT Weda Bay Nickel, a joint venture. Strand Minerals Pte Ltd controls 90 shares of Weda Bay Nickel and Antam controls 10%. In Strand Minerals Pte Ltd, Tsingshan Group controls 57% of the shares and Eramet controls 43% of the shares. Weda Bay Nickel has a Production IUP area of more than 45,000 hectares in Halmahera Tengah and Halmahera Timur Districts. Weda Bay Nickel has RKEF smelter facilities in the Indonesia Weda Bay Industrial Park. In operation since 2020, the corporation produced 40 kt ferronickel in 2022.

Eramet is opening cooperation with BASF by forming the joint venture Sonic Bay. Eramet controls 51% and BASF controls 49% of Sonic Bay shares. It is an HPAL project that will produce 67 kt nickel and 7 kt cobalt in MHP. The US\$2.59 billion project is expected to start production in 2026. Further decisions on the project have not yet been made.⁷⁶

⁷⁵ Eramet. 2023. 2022 Integrated Report.

⁷⁶ Reuters. 2023. "Indonesia says BASF, Eramet near \$2.6 bln deal to process nickel for EV batteries." Reuters, January 19. <https://www.reuters.com/markets/deals/basf-eramet-finalise-partnership-indonesia-nickel-smelter-indonesia-2023-01-18/>; BASF. 2020. "BASF and Eramet partner to assess the development of a nickel-cobalt refining complex to supply growing electric vehicle market." News Release, December 15. <https://www.basf.com/global/en/media/news-releases/2020/12/p-20-388.html>.

10. Zhenshi Holding Group Co Ltd



Zhenshi Holding Group Co Ltd is located in Zhejiang Province. The corporation's trackrecord started out from Zhejiang Tongxiang Zhenshi

Co Ltd that was established in 1989 and later changed to Zhenshi Holding Group Co Ltd in 2008. Having a wide business scope including mining and metal processing, the corporation operates in China, the United States, Spain, Turkey, Egypt and Indonesia. It mainly produces various stainless steel products.⁷⁷

In Indonesia the corporation operates in the Indonesia Weda Bay Industrial Park through PT Yashi Indonesia Investment, a joint venture with Tsingshan. Established in 2018, the company has 4-lines RKEF with an annual production capacity of 35 kt nickel in NPI since 2020. It also operates a coal-fueled PLTU with 250MW installed capacity. Zhenshi Group's stainless steel manufacturing factories in China use the NPI shipped by Yashi Indonesia Investment as raw material. In 2021, the NPI export value from Yashi Indonesia Investment to China reached US\$270 million.

Apart from collaborating with Tsingshan and Huayou Cobalt as managers of the Indonesia Weda Bay Industrial Park, Zhenshi Holding Group is building the Indonesia Huabao Industrial Park in Topogaro Village, Bungku Barat Subdistrict, Morowali. The 20,000 hectare industrial area began construction in March 2022 and is expected to be operational by the end of this year.⁷⁸



⁷⁷ Zhenshi Group. "About Zhenshi". <https://en.zhenshigroup.com/company1.html>.

China Daily, December 5. http://ningbo.chinadaily.com.cn/2022-12/05/c_836408.htm. 2023. "Jiaxing's 1st provincial overseas economic, trade cooperation zone approved". May 25 http://zhejiang.chinadaily.com.cn/jiaxing/2023-05/25/c_889770.htm

11. Lygend Resources & Technology Co Ltd



Lygend Resources & Technology Co Ltd was established in 2009 and entered Hong Kong Stock Exchange with IPO on 1 December 2022. Headquartered in Ningbo, the corporation runs nickel industry

chain business. Setting out with nickel ore trading, Lygend then started to develop pyrometallurgical and hydrometallurgical facilities. Lygend products are mainly used by downstream electric vehicle and stainless steel industries. In 2022, the corporation had assets of YNC20.8 billion (US\$2.9 billion), earned YNC18.2 billion (US\$2.5 billion) in revenue, and a gross profit of YNC4.4 billion (US\$615.3 million)

Lygend Resources & Technology Lygend became the first producer of MHP in Indonesia when it first operated the HPAL smelter on Obi Island, North Maluku on June 23 2021. The company has 6-lines HPAL with annual production capacity of 120 kt nickel-cobalt metal (including 14.25 kt of cobalt). Lygend's Phase I hydrometallurgy project has operated 2-lines HPAL with annual production capacity of 37 kt nickel-cobalt metal (including 4.5 kt of cobalt). Phase II project with 1-line HPAL also began operation in 2022, with annual production capacity of 18 kt nickel-cobalt metal (including 2.25 kt of cobalt). It appears that the hydrometallurgical project on Obi Island has contributed RMB7.2 billion (US\$1.01 billion) or 39.56% to Lygend's total revenue in 2022.⁷⁹

Phase III project with 3-lines HPAL with annual production capacity of 65 kt nickel-cobalt metal (including 7.5 kt of cobalt) will begin operation in the 4th quarter of 2023. The Phase III project includes the development of nickel sulfate and cobalt sulfate production lines. At the end of May 2023, Lygend announced that it had successfully obtained financing support from a Chinese banking syndicate. The syndicate provided a loan of US\$780 million for the Phase III HPAL project operated by Obi Nickel Cobalt. The syndication consists of Agricultural Bank of China (Ningbo Branch), Bank of China (Ningbo Branch), China CITIC Bank (Ningbo Branch), Shanghai Pudong Development Bank (Ningbo Branch), Industrial Bank (Ningbo Branch) and China Guangfa Bank (Ningbo Branch).⁸⁰

⁷⁹ Lygend Resources & Technology Co Ltd, 2022 Annual Report.

⁸⁰ Lygend Resources & Technology Co Ltd, 2022 Annual Report. Lygend Resources & Technology Co Ltd. 2023. Voluntary Announcement Syndicated Loan for Phase III (ONC) of the HPAL Project of the Obi Projects.

Production from Lygend HPAL project in North Maluku appeared to be shipped to GEM Co Ltd. In early September 2020 in Obi Island, Lygend together with PT Halmahera Persada Lygend (a subsidiary of Lygend) signed a strategic agreement with GEM regarding the sale and purchase of MHP, nickel sulfate and cobalt sulfate products for the manufacture of cathode precursors for electric vehicle batteries. Halmahera Persada Lygend will supply GEM cumulatively 74.4 kt–176.5 kt nickel and 9.2 kt–22.3 kt cobalt for 8 years, starting from 2021.

Lygend Resources & Technology also has RKEF projects on Obi Island. The company plans to build 20-lines RKEF with an annual production capacity of 280 kt nickel in ferronickel. Lygend targeted to have their 8-lines RKEF with annual production capacity of 95 kt nickel to begin operation this year. The other 12-lines RKEF is expected to operate with an annual production capacity of 185 kt nickel in ferronickel in 2024.⁸¹

The Obi Island projects are collaboration between Lygend Resources & Technology and PT Harita Group. Lygend controls 54.9% shares in Halmahera Persada Lygend which operates Phase I and Phase II hydrometallurgical projects. Harita Group controls the remaining 45.1% shares. Lygend (via Lygend New Power) controls 60% shares in PT Obi Nickel Cobalt that operates the Phase III hydrometallurgical project. Harita Group holds 10% shares and Li Yuen Pte Limited controls the remaining 30% shares. In the RKEF project operated by PT Halmahera Jaya Feronikel, Lygend holds 36.9% of the shares and Harita controls 63.1% of the shares. Harita controls the HPAL and RKEF projects through its subsidiary PT Trimegah Bangun Persada (NCKL) Tbk. Harita controls 81.18% of NCKL shares and the remaining is for public trade.⁸²

Lygend Resources & Technology has plans to expand the scope of integrated downstream production projects in Indonesia. On Obi Island, Lygend plans to develop other production facilities. This includes Lygend's desire to build a stainless steel project with a production capacity of 3 million tonnes and the construction of a new industrial area with supporting infrastructure such as ports, airports, logistics, etc. Included in this initiative is a CATL-Antam collaboration project through Contemporary Brunp Lygend Co Ltd. Lygend Resources & Technology controls 30% shares in Contemporary Brunp Lygend.⁸³

⁸¹ Lygend Resources & Technology Co., Ltd. 2023. "ANNUAL RESULTS ANNOUNCEMENT FOR THE YEAR ENDED 31 DECEMBER 2022" <https://ir.lygend.com/uploads/iis/202303/10664656-0.PDF>.

⁸² Lygend Resources & Technology Co., Ltd. 2022. History, Development, and Company Structure Samuel Sukuritas Indonesia. 2023. "Trimegah Bangun Persada". https://samuel.co.id/wp-content/uploads/2023/03/NCKL_IPO_16032023_EN.pdf.

⁸³ Lygend Resources & Technology Co Ltd, 2022 Annual Report

12. Jinchuan Group Co Ltd



Jinchuan is a government-owned company established in 1958. The Gansu Provincial Government controls 66.03% of the company shares. Several state-owned companies also hold shares in Jinchuan such as China Development Bank (13.53%), Baowu (4.87%), Tisco (4.87%), China-Africa Development Fund (1.40%). Other shareholders hold the

remaining 9.30%. The company is headquartered in the city of Jinchang, renowned as the "Nickel Capital of China".

Jinchuan is the world's main manufacturing company in the field of non-ferrous metals that does business in mining, mineral processing, and metal smelting. As of 2022, the company is the world's third largest producer of primary nickel and the world's fourth largest producer of cobalt. That year, the company produced 230 kt Nickel, 17 kt cobalt, and 1,100 kt copper. Apart from China, Jinchuan also operates in Tibet, Zambia, Congo, South Africa, Mexico and Indonesia.⁸⁴

With revenues of US\$46 billion and profits of US\$2.6 billion in 2022, Jinchuan is one of the top companies in China and the world. In 2022, it ranked 339 in the world's 500 largest companies according to the "Fortune Global 500". It ranked 100th out of 500 companies in China. Jinchuan ranked 59th among China's 100 biggest multinational companies. And it is on number 35 in the list of 100 biggest manufacturers in China. Jinchuan's revenue reached US\$46 billion with US\$2.6 billion profit.

Jinchuan has been in Indonesia since last decade. In operation on Obi Island since 2016, Jinchuan controls 60% of the shares in PT Wanatiara Persada (PT WP) and 40% of the shares in PT Rimba Kurnia Alam. The control was gained through acquisition of shares from local businesses. To facilitate the US\$57.13 million acquisition, China Development Bank disbursed a US\$34 million loan to Jinchuan. The value of the Jinchuan nickel project in North Maluku reaches US\$658 million, which includes a nickel mine, smelter and 3x50MW power plant in Kawasi Village, Obi Island, South Halmahera District. The Jinchuan smelter project has an annual production capacity of 200 kt ferronickel, or the equivalent of 30 kt Ni. All of its production lines are already in operation since 30 October 2019.⁸⁵

⁸⁴ Jinchuan Group International Resources Co Ltd. 2022. *1H Result Presentation*.

⁸⁵ CDB provides \$34 million loan for WP&RKA Laterite Nickel Mine Project (Linked to Project ID#71809) <https://china.aiddata.org/projects/67801/>. SMM. 2018. "Jinchuan WP Company of Indonesia exceeded the production and management tasks ahead of schedule. What are the specific details?". SMM December 11. [https://news.metal.com/newscontent/100912256/\[smm-analysis\]-jinchuan-wp-company-of-indonesia-exceeded-the-production-and-management-tasks-ahead-of-schedule-what-](https://news.metal.com/newscontent/100912256/[smm-analysis]-jinchuan-wp-company-of-indonesia-exceeded-the-production-and-management-tasks-ahead-of-schedule-what-)

13. Jiangsu Delong Nickel Co Ltd



Jiangsu Delong Nickel Co Ltd was founded in 2010 with its headquarter in Jiangsu Province. Delong Nickel is a leading iron and steel company in the province. August 2014, after obtaining an approval from the National Development and Reform Commission and the Ministry of Trade, Delong invested in the construction of a nickel processing and stainless steel manufacturing project in Indonesia. The Delong Nickel project is the focus of Jiangsu Province's "Belt and Road" cooperation.⁸⁶

The company built the Virtue Dragon Nickel Industrial Park in Morosi, Konawe District, Southeast Sulawesi. Cooperating with China First Heavy Industry Group, Delong (through its subsidiary PT Virtue Dragon Nickel Industry) built smelters in the industrial zone with an investment of US\$927 million. February 2019, Minister of Industry Airlangga Hartarto inaugurated the processing factories in the location. The company operates a factory with 15-lines RKEF with annual production capacity of 120 kt nickel in NPI. Virtue Dragon Nickel Industry has coal-duced PLTU captive power with with an 530 MW installed capacity.⁸⁷

Delong Nickel also has a subsidiary, PT Obsidian Stainless Steel, which operates in the industrial area. Delong Nickel cooperates with Xiamen Xiangyu Co Ltd in Obsidian Stainless Steel. Delong controls 49% of the shares and Xiamen Xiangyu controls 51%. Xiamen Xiangyu is a Chinese government-owned company that ranked 1439th on the "Forbes 2000" in 2022 (assets US\$15 billion; revenue US\$71.6 billion; profit US\$ 335 million). Xiamen has metal, mineral, energy and chemical materials businesses.

[are-the-specific-details/](http://en.jnmc.com/2022-06/25/c_784240.htm); Jinchuan. 2022. "PT Wanatiara Persada." http://en.jnmc.com/2022-06/25/c_784240.htm.

⁸⁶ SMM. 2021. "SMM Nickel Journey to Jiangsu-- the sixth Station Jiangsu Delong Nickel Co., Ltd." SMM July 16. <https://news.metal.com/newscontent/101536262/smm-nickel-journey-to-jiangsu---the-sixth-station-jiangsu-delong-nickel-co-ltd>.

⁸⁷ SMM, "SMM Nickel Journey to Jiangsu-- the sixth Station Jiangsu Delong Nickel Co., Ltd." SMM. 2021 "Acquisition landing! CFHI indirectly owns 23% of Delong Nickel in Indonesia". SMM June 29. <https://news.metal.com/newscontent/101518723/acquisition-landing-cfhi-indirectly-owns-23-of-delong-nickel-in-indonesia>.

PT Obsidian Stainless Steel handles integrated nickel and stainless steel businesses with an investment of US\$2 billion. The company operates 17-lines RKEF with annual NPI production capacity of 144 kt nickel. The company targeted to have 32-lines production. Obsidian Stainless Steel has also operated 16 AOD furnaces producing stainless steel with an annual production capacity of 3.5 million tonnes since 2020.⁸⁸

In 2021, Bank of China (Xiamen Branch) led a banking syndicate to finance the Obsidian Stainless Steel project. The syndicate includes 11 banks including Bank of China, China Development Bank, China Construction Bank, ICBC, Agricultural Bank of China, CITIC bank, China Merchants Bank, and Terra Firma Bank providing commercial loans of US\$1.05 billion. Chinese state-owned insurance company Citic Insurance is the project's commercial guarantor.

Delong Nickel has also expanded to Central Sulawesi. PT Gunbuster Nickel Industry (a subsidiary of Delong) has nickel processing facilities in Bunta Village, East Petasia Subdistrict, North Morowali. The company planned to have 24-lines RKEF with annual production capacity of 1.8 million tonnes NPI. The total investment reached IDR2.7 billion. The GNI project was inaugurated by President Joko Widodo at the end of December 2021. Several Chinese financial institutions are estimated to have financed the project, especially the coal-fueled PLTU project with 2295MW installed capacity.



⁸⁸ SMM, "SMM Nickel Journey to Jiangsu-- the sixth Station Jiangsu Delong Nickel Co., Ltd." SMM. 2021. "Acquisition landing! CFHI indirectly owns 23% of Delong Nickel in Indonesia" SMM, June 29. <https://news.metal.com/newscontent/101518723/acquisition-landing-cfhi-indirectly-owns-23-of-delong-nickel-in-indonesia>; Asian Metal. 2020. "Indonesia Delong Phase II Stainless Steel Integrated Smelting Project Officially Put into Operation". *Asian Metal*, April 30. <https://www.asianmetal.com/news/data/1555238/16/Indonesia%20Delong%20phase%20II%20stainless%20steel%20integrated%20smelting%20project%20officially%20put%20into%20operation>.

14. Other corporations

PT Wanxiang Nickel Indonesia was founded in 2014. The company built a nickel processing production facility in Bahumotefe Village, East Bungku Subdistrict, Morowali. Having their own industrial zone, Wanxiang already has 2X65MW captive power and has operated 2-lines RKEF (from the targeted 4-lines) since September 2022. Wanxiang targets to have an annual production of 600 kt ferronickel. Wanxiang shares are owned by Feng Xiang Bao 1%, Vansun Group Private Ltd 89%, Wang Sing International Resources Ltd 10%.

Other foreign investors are Shandong Xinhai Technology Co Ltd and Baowu Steel Group Corporation (through its subsidiary Taiyuan Iron & Steel, TISCO). These Chinese companies collaborated with Vale Indonesia to invest US\$2.6 billion in the ferronickel smelter project in Morowali. Building 8-lines RKEF with annual production capacity of 73 kt ferronickel, the project is targeted to begin operation in 2025. The project is supported by a steam gas power plant (PLTGU) captive power with 600MW installed capacity. Built in Sambalagi village, Bungku Pesisir Subdistrict, PT Bahodopi Nickel Smelting Indonesia carries out the project. Vale Indonesia holds a 49% shares and Xinhai and Baowu control a 51% shares in Bahodopi Nickel Smelting Indonesia. Baowu Steel Group is the world's largest government-owned steel company. In 2022, Baowu ranked 44th among Fortune's 500 global giant companies.

Vale Indonesia, which has a KK area of 22,699 hectares in the Bahodopi Block (Morowali), will supply nickel ore. Nickel mining in Bahodopi will begin in 2024. Nickel ore will be shipped to Sambalagi from Bahumotefe Village.⁸⁹

POSCO Holding INC also has a plan to build nickel smelter in Indonesia to be further involved in the value chain of electric vehicle battery. POSCO Holdings, the world's leading steel company, announced investment plans of US\$440 million last May. Indonesia Weda Bay Nickel Industry would be built, the project is targeted to produce 52 kt nickel matte annually. Planning to begin construction this year, POSCO has an operational target in 2025. In March 2023, POSCO Holdings also entered into an agreement with Ningbo Richin Industry & Trade Co Ltd (China) for an HPAL project in Sulawesi. The project will produce 120 kt nickel in MHP annually. The first phase of the project produced 60 kt nickel in MHP. The company began construction this year and will be operational in 2025.

⁸⁹ PT Vale Indonesia, *Annual Report 2022*; NS Energy. 2023. "Vale Indonesia, Huayou sign \$4.5bn deal with Ford for EV battery material plant". <https://www.nsenerybusiness.com/news/pt-vale-indonesia-huayou-agreement-ford/>.





A. Tsingshan's Entry Points

Central Sulawesi is rich with nickel deposits. Ever since obtaining KK in Sulawesi at the beginning of the New Order era, Inco or Vale had never utilized its KK area in this province. Based on the KK, which was extended in 1996, of the total KK area of 218,528 hectares in South Sulawesi, Southeast Sulawesi and Central Sulawesi, the company has an area of 32,123 hectares in the Bahodopi block (now Morowali) and 4,152 hectares in the Kolonodale block (now North Morowali).⁹⁰ After the Vale KK area in Sulawesi was reduced to 118,017 hectares, the Bahodopi Block in Central Sulawesi was reduced to 22,699 hectares. The corporation also released the Kolonodale block.⁹¹

Since the late 2000s, nickel ore mining has occurred in Central Sulawesi, especially in Morowali District. Mining was done with export orientation and the main target was China. In 2013, nickel ore exports from Morowali reached 8.3 million tonnes or 12.80% of Indonesia's total nickel ore exports. This figure increased from 8.06 million tonnes with a value of US\$253 million (2012) and 6.07 million tonnes with a value of US\$214 million (2011).⁹² The miners are IUP holders, which are Indonesian business entities.

Nickel ore mining completely halted after the government prohibition on raw mineral exports was effective in January 2014. The prohibition had taken down many IUP holders in Morowali who had no capacity to build any smelter facility. Not long after the nickel ore export prohibition, the nickel processing industry began to grow in Morowali. Realizing their lack of capability to build a smelter, PT Bintang Empat Mineral collaborated with Tsingshan Group to build smelters. This collaboration allows BDM to re-exploit nickel ore, without having to export it. For Tsingshan, the cooperation ensures its access to rich deposit reserves in Morowali for processing into semi-finished nickel.

⁹⁰ Vale Indonesia, 2022 Annual Report.

⁹¹ *Ibid*

⁹² Raw data from the Central Sulawesi Department of Trade

The fruits of this cooperation were unprecedented. Smelters were developed rapidly. Control over access to financing, technology, and markets has enabled Tsingshan to quickly transform Morowali into one of the largest nickel processing industry centers in the world. However, a vertically integrated nickel industry structure was born. All upstream and downstream activities take place under the control of Tsingshan Group. Tsingshan controls the production and trade of refined nickel and stainless steel through its involvement in various business clusters growing within Indonesia Morowali Industrial Park.

B. The Three Clusters of Tsingshan's Monstrous Expansion

1. NPI and stainless steel cluster

The earliest NPI and stainless steel clusters developed in Indonesia Morowali Industrial Park. Until April 2023, the cluster already has 46-lines RKEF, increased two-fold from the 20-lines RKEF in 2017. There was also a 1-line BF. Around eight more NPI smelters are still under construction. It is estimated that the industrial area will produce 490 kt nickel NPI in 2021, an increase from 146 kt nickel in 2017. Another product in this cluster is stainless steel. The main stainless steel product is the 300 series with an annual production capacity of 3 million tonnes.

a. PT Sulawesi Mining Investment



Tsingshan Group through its subsidiary Shanghai Decent Investment (Group) Co Ltd controls 46.55% of the shares in Sulawesi Mining Investment; PT Bintang Empat Investama holds 25.65% shares; Reed International Limited controls 24% and; Fujian Dingxin Industry Co Ltd holds 3.8%. Reed International is a special company based on China-ASEAN cooperation fund.

Establishment of this agency was under the approval of the Chinese government and Exim Bank of China as an initiator, with various financial institutions in China in order to take part in financing developments in Southeast Asia.

Sulawesi Mining Investment's production facilities began construction in July 2013. The construction of 4-lines RKEF with annual production capacity of 300 kt NPU and coal-fueled PLTU with 2x65 MW installed capacity cost US\$628 million. In February 2014, China Development Bank (Xiamen Branch, Fujian) signed an agreement with Tsingshan Holding Group for project financing. The Chinese state-owned bank provided a loan of US\$384 million.

Jokowi inaugurated the project in June 2015. Two years after the inauguration, Sulawesi Mining Investment has produced 32 kt nickel in NPI. The company also operates a stainless steel factory with an annual production capacity of 1 million tonnes.

b. PT Indonesia Guang Ching Nickel and Stainless Steel Industry.



Established in 2014, Indonesia Guang Chiang Nickel and Stainless Steel is a joint venture company. Tsingshan (via its subsidiary Guangdong J-Eray Technology Group Co Ltd) controls 35% of the company's shares; Guangdong Guangxin Holdings Group Ltd (the parent company of the Guangdong Province government) holds 25% of the shares; Tsingshan (through PT Indonesia Morowali Industrial Park) controls 25% of the shares; Luck Scenery International Limited (a Hong Kong-based financial investor) and Hanwa Co Ltd (a Japanese trading company) each holds 5% shares.

Indonesia Guang Chiang Nickel and Stainless Steel has an integrated NPI-Stainless Steel (RKEF-AOD) production facility. RKEF technology produces NPI hot metal that is transferred directly to the AOD furnace for stainless steel melting. The company has 8-lines RKEF with annual production capacity of 600 kt NPI, 1-line stainless steel production with annual production capacity of 1 million tonne, and 1-line rolling production with annual production capacity of 2 million tonnes, as well as coal-fueled PLTU with 2x150 MW installed capacity. The company also has a limestone factory and a gas factory. It has begun production since 2016.

China's state-owned commercial banks financed most of the project with an investment of US\$1,028 million. In 2015, Guangdong Guangxin Holdings Group Ltd signed a US\$700 million loan agreement from a syndicate consisting of several banks in Guangdong Province to finance the project. The syndicate includes China Eximbank (Guangdong branch), Industrial and Commercial Bank of China (Guangdong branch), and Bank of China (Guangdong branch). Guangxin Holdings provided the company with a guarantee of 50% of the loan value. The members of the joint venture provided the remaining US\$328 million in financing.⁹³

⁹³ AIDData.n.d. "Project ID: 66207 China Eximbank, ICBC, and BOC provide \$700 million syndicated loan for Phase 2 of Sulawesi Mining Power Station Project in Morowali Industrial Park (Linked to Project ID#61986, #66200, #66216, #69488, #85817)". [online]. <https://china.aiddata.org/projects/66207/>.

c. PT Indonesia Tsingshan Stainless Steel.



Founded in 2014, the company is a joint venture with shares controlled by Tsingshan Holding Group (51%), Ruipu Technology Group Co Ltd (19%), Tsingtuo Co Ltd (10%), Indonesia Morowali Industrial Park (10%), and Hanwa Co Ltd (10%).

Indonesia Tsingshan Stainless Steel has an integrated (RKEF-AOD) production facilities for NPI-stainless steel, silicon manganese, and coal-fueled PLTU with 2x350MW capacity. The production line construction began in July 2015 and operation began with 8-lines RKEF, 1-line stainless steel factory, and 1-line rolling production in September 2017. In the following year, the company was able to produce 72 kt nickels in NPI and 882 kt stainless steel slabs. The company's sales value reached US\$1.8 billion and profit before tax was US\$209 million in 2018.

Two Chinese state-owned banks provided loans for the Indonesia Tsingshan Stainless Steel project. In 2015, the company signed a loan from a syndicate consisting of China Development Bank and Bank of China. In the agreement, China Development Bank provided US\$559 million, while Bank of China (Jakarta Branch) provided US\$15 million. The loan was used to finance the construction of a stainless steel factory and NPI smelter, as well as a coal-fueled power plant with 2x350 MW installed capacity.

d. PT Indonesia Ruipu Nickel and Chrome Alloy.

Established in 2016, this company's shares are controlled by Tsingshan Holding Group (70%), Ruipu Technology Group Co Ltd (20%), and Indonesia Morowali Industrial Park (10%).



The company has been operating within the industrial area since 2017. The company has RKEF facilities with an annual production capacity of 300 kt NPI, ferrochrome smelter with an annual production capacity of 600 kt and a stainless steel factory with an annual production capacity of 700 million tonnes of stainless steel slabs.

"Understand Aoyama Holdings in one article".

<https://news.metal.com/newscontent/101770568/understand-aoyama-holdings-in-one-article>.

China's state-owned bank is also financing the Indonesian Ruipu Nickel and Chrome Alloy project. At the end of February 2017, China Eximbank (Zhejiang Branch and Shanghai Branch) signed a loan agreement of US\$320 million with Indonesia Ruipu Nickel and Chrome Alloy to finance the construction of a ferrochrome plant with an annual production capacity of 600 kt ferrochrome and a stainless steel plant with a capacity of annual production 700 kt stainless steel. The total project cost reaches US\$460 million.⁹⁴

e. PT Tsingshan Steel Indonesia.

Established in 2016, Tsingshan Steel Indonesia is a collaboration between Shanghai Decent Investment (Group) Co Ltd, a subsidiary of Tsingshan, and Indonesia Morowali Industrial Park. Decent Investment controls 80% and Indonesia Morowali Industrial Park holds 20 shares in Tsingshan Steel Indonesia.



With an investment of US\$ 119 million, the company uses BF technology with an annual production capacity of 500 kt NPI. The hot product will be sent to the stainless steel production facility in the industrial area to produce 200 series stainless steel.

f. Nickel Industries Limited

The corporation controls several nickel producing companies in Indonesia Morowali Industrial Park. Among others, by controlling 80% of the shares of PT Hengjaya Nickel Industry. Having 2-lines RKEF with an annual production capacity of 150 kt, Hengjaya Nickel Industry successfully produced more than 19 kt of nickel in NPI in 2022; Nickel Industries also controls 80% of PT Ranger Nickel Industry shares. The company owns 2-lines RKEF with annual production capacity of 150 kt NPI. The corporation produced more than 20 kt nickel in NPI in 2022; Nickel Industries controls 70% shares of PT Oracle Nickel Industry that operates a 4-lines RKEF with annual production capacity of 36 kt NPI and coal-fueled PLTU with 380MW installed capacity. Nickel Industries collaborates with Tsingshan in all three companies, where Tsingshan Group owns 20% of Hengjaya Nickel Industry shares, 20% of Ranger Nickel Industry shares, and 30% of Oracle Nickel Industry shares.



⁹⁴ AidData. "Project ID: 85817 China Eximbank syndicate provides \$320 million in overseas investment loan for Phase 4 of Sulawesi Mining Power Station Project in Morowali Industrial Park". <https://china.aiddata.org/projects/85817/>.

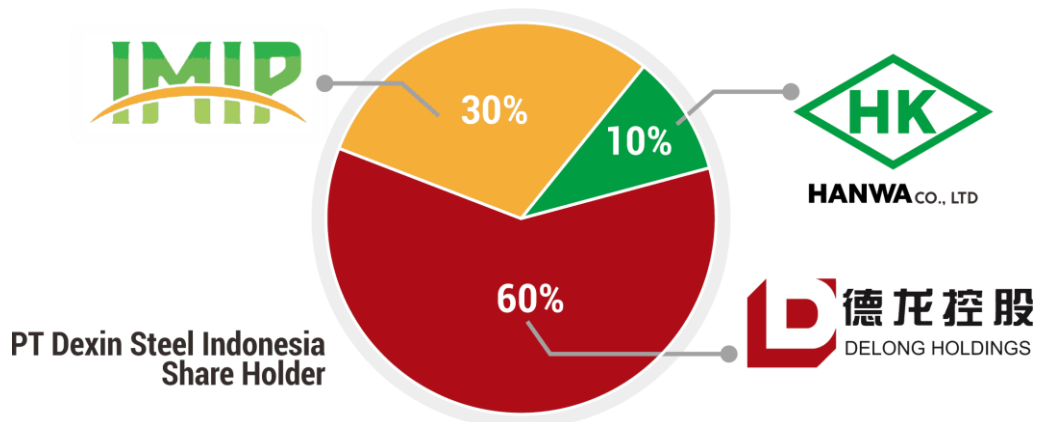
2. Carbon steel cluster



In the carbon steel cluster, there is only PT Dexin Steel Indonesia. Established in 2017, Dexin Steel Indonesia is a joint project. Delong Steel Group (via its subsidiary Delong Steel Singapore Projects Pte Ltd) controls 60% of Dexin Steel Indonesia's shares. Tsingshan Group (through Shanghai Decent and PT Indonesia Morowali Industrial Park) controls 30% of the shares and Hanwa Co Ltd holds 10% of the shares.

The carbon steel factory began operations in March 2020. Currently, its annual production capacity reaches 4 million tonnes of carbon steel. Dexin Steel Indonesia is carrying out phase I expansion to produce 3 million tons of carbon steel, so that its annual production capacity reaches 7 million tonnes. The company wants to increase the annual production capacity to 20 million tonnes carbon steel and 10 million tonnes coking coal in the future. So far, by employing 6,000 workers, the company has invested US\$4 billion in capital in the industrial area.

Delong Steel Group is a world-class giant steel company. Headquartered in Shanghai, the company operates in 27 countries in Asia, Africa, Europe and America, and employes 7,000 workers overseas. In 2022, Fortune ranked Delong Steel Group at number 469 among the world's 500 largest companies in its "Global 500" list. The company has assets of US\$19.5 billion, revenues of US\$30.3 billion, and profits of US\$787 billion.⁹⁵



⁹⁵ Zheng Yiran, "China shares steelmaking wisdom via BRI". Fortune. 2022. "Shanghai Delong Steel Group." Fortune, August 3. <https://fortune.com/company/shanghai-delong-steel-group/global500/>.

3. Electric vehicle battery cathode cluster

a. PT Huayue Nickel Cobalt



Huayue Nickel Cobalt is a joint venture between Huayou Cobalt (57%), Tsingshan Group (10%), CMOG (30%), Huaqing Hualong Consulting (2%) and Long Sincere (1%).

Huayue Nickel Cobalt began building the HPAL facility in 2019 with an investment of US\$1.28 billion. Currently the company has operated 2-lines HPAL with annual production capacity of 60 kt nickel and 7.8 kt of cobalt in MHP. In mid-February 2022, for the first time the company shipped 9.5 kt MHP from the Indonesian port of Morowali Industrial Park to Ningbo in China. In 2022, the company is reported to produce 66 kt nickel, or 10% above annual production capacity.

b. PT QMB New Energy Materials



QMB New Energy Materials is a joint venture of several giant companies. GEM Co Ltd controls 63% of QMB shares. GEM's control is carried out through several

of its subsidiaries; (Jingmen GEM New Materials Co Ltd (36%), New Horison International Holding Limited (21%), and GEM Hong Kong International Logistics Co Ltd (6%)); CATL (via its Hong Kong subsidiary Brunp Recycling Technology) controls 10% of the shares; Tsingshan Group (through PT Indonesia Morowali Industrial Park) holds 10% of QMB shares; EcoPro Co Ltd (via EcoPro Global Co Ltd) and Hanwa own 9% and 8% of QMB shares respectively.

Construction of HPAL facilities began in 2019, with US\$1.6 billion investment. Building production facilities with an annual production capacity of 50 kt Ni-in-MHP, QMB New Energy's production in 2022 will reach 5 kt Ni-in-MHP since it started production at the end of the year. In the first quarter of 2023, QMB New Energy produced 4.5 kt of nickel with a sales value of US\$83.3 million. This year's production is targeted to reach 26 kt nickel-in-MHP. The second phase of the project is currently underway and is expected to be completed by the end of 2023, so that the company can have an annual production capacity of 73 kt of nickel. In 2026, QMB targets to have an annual production of 150 kt nickel and 12 kt cobalt.

c. PT Zhongtsing New Energy



The company is a subsidiary of CNGR Advanced Material Co Ltd. CNGR controls 70% of the company's shares. Rigqueza International, a company based in Singapore, controls the remaining 30% shares. It is unclear whether Rigqueza is still related to Tsingshan or not.⁹⁶

The Zhongtsing project is targeted to produce 30 kt nickel matte annually. 25 October 2022, smelters with OESBF technology with an investment of US\$243 million successfully converted laterite ore into matte nickel. The resulting matte nickel will be further processed as nickel sulfate.⁹⁷

d. Hengjaya Nickel Industry



Hengjaya Nickel Industry is an NPI producer in Indonesia's Morowali Industrial Park. To anticipate an increase of demands for processed nickel supplies as raw material for electric vehicle batteries, Hengjaya Nickel Industry continues to produce NPI, but then converts it into nickel matte.

In 2022, after 2-lines RKEF is used for NPI-to-nickel matte conversion project, the company successfully produced 5.10 kt of nickel matte with low grade nickel, which later would be converted into 4.74 kt of high grade nickel (60-75% Ni) nickel matte.

⁹⁶ CNGR. 2023. "Year End Review: Ten Significants of CNGR in 2022." [online] <http://www.cngrgf.com.cn/en-US/gsxw/1014.html>; China Daily. 2022. "CNGR helps boost Indonesia's new energy materials industry". November 15. [online]. <http://epaper.chinadaily.com.cn/a/202211/15/WS6372dac9a31009d7c3da4f75.html>. Tom Daly. 2021. "China's CNGR to make nickel matte in Indonesia as battery demand grows". Reuters April 9. [online]. <https://www.reuters.com/article/us-nickel-indonesia-cngr-idUSKBN2BV2MR>.

⁹⁷ Tang Shihua. 2022. "CNGR, Rigqueza Invest US\$1.3 Billion to Hike Nickel Ore Processing Capacity in Indonesia." Yicai, May 19. [https://www.yicaiglobal.com/news/cngr-rigqueza-invest-US\\$13-billion-to-hike-nickel-ore-processing-capacity-in-indonesia](https://www.yicaiglobal.com/news/cngr-rigqueza-invest-US$13-billion-to-hike-nickel-ore-processing-capacity-in-indonesia).



Downstreaming has fundamentally changed the regional economic structure. The manufacturing sector contribution to the gross regional domestic product (GRDP) and exports has increased rapidly thanks to the rapid growth of the nickel processing industry and its derivative industries. Behind the success of downstreaming there are various economic disparities, natural destruction, and endless disputes of farmers and labors.

A. Growth Indicators

1. Gross Regional Domestic Product

The nickel processing industry has fundamentally changed the economic structure of Morowali District. The contribution of the processing or manufacturing industry to GRDP has increased sharply in the last 10 years (see FIGURE 8). The sector contributed to 67.31% of Morowali's GRDP in 2022, a sharp increase from the 10.88% in 2012. The combination of manufacturing and mining contributed to 88.43% of Morowali's GRDP in 2022.

The nickel processing industry boosted Morowali's GRDP, from IDR 20.09 trillion in 2016 to IDR 70.5 trillion in 2022. Morowali's GRDP is the highest among all districts and municipalities in Central Sulawesi (see FIGURE 9).

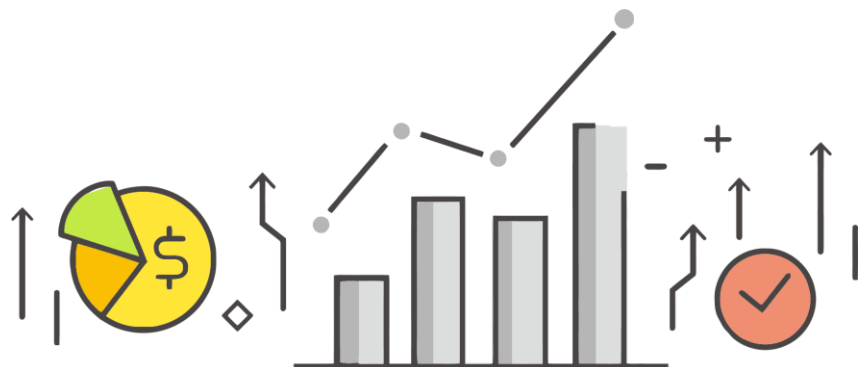
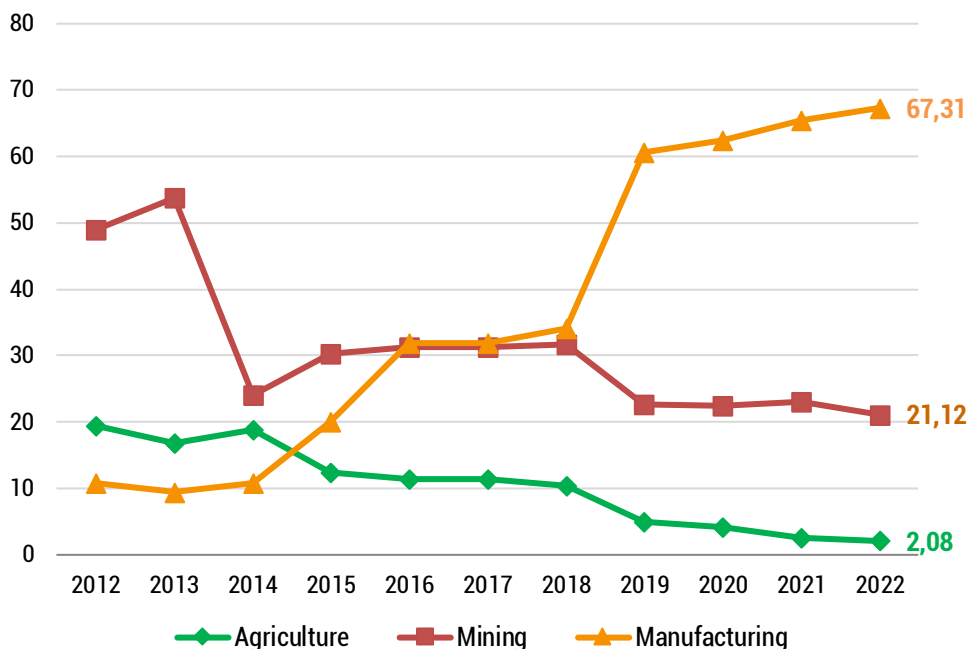


FIGURE 8. Morowali: GRDP by Select Economy Sector per Constant Price 2010, 2012-2022 (%)



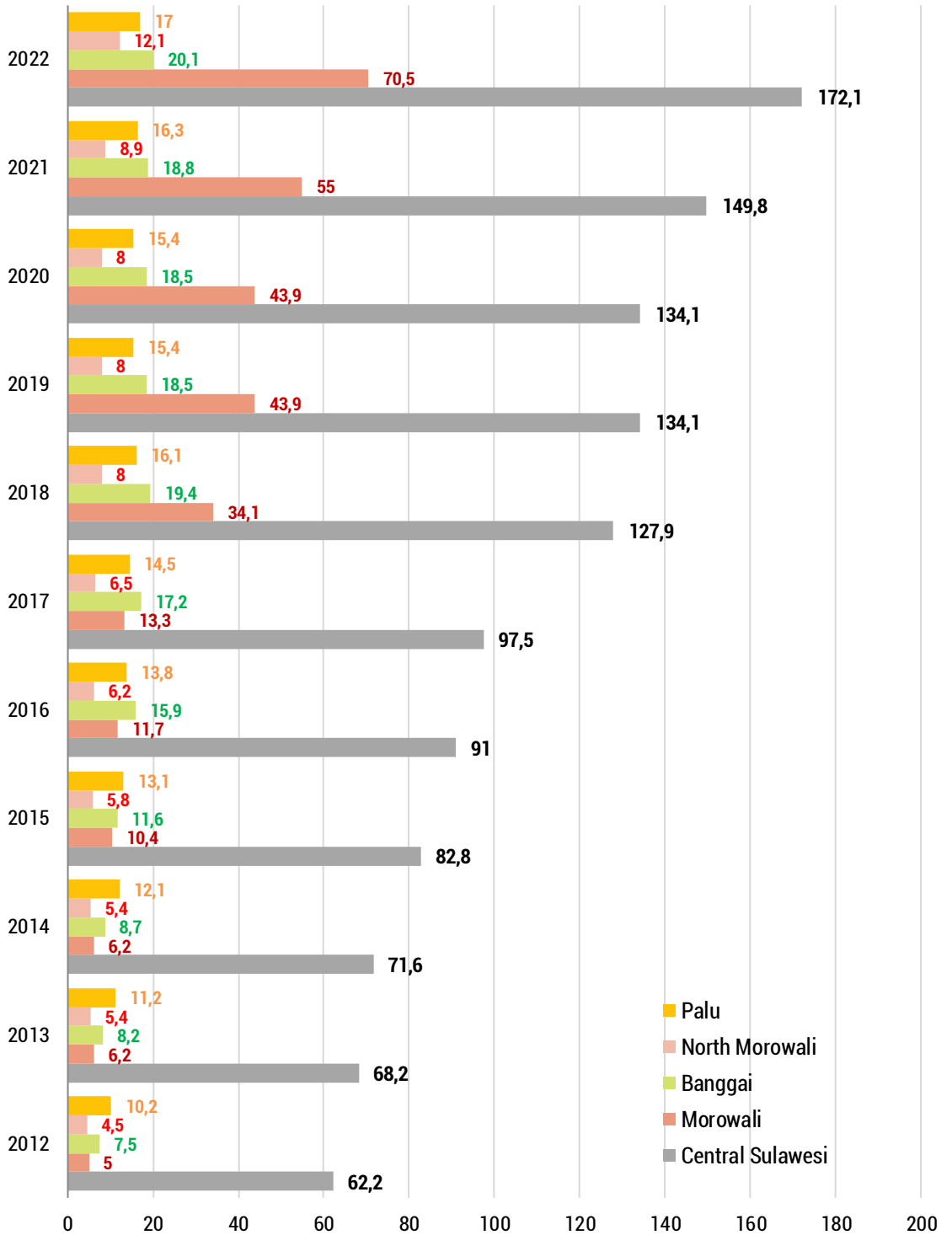
Source: Processed from the Indonesian Statistics data

The massive growth of the mining and processing industry sectors in Morowali and North Morowali also affected the GRDP structure of Central Sulawesi. The processing industry undermines the agricultural sector domination in GRDP. The agricultural sector's 18.33% contribution to GRDP in 2022 was a sharp decrease from the 35.22% in 2012. On the contrary, the processing industry contributed 32.78% to the Central Sulawesi GRDP value in 2022, a sharp increase from the 12.04% in 2016.

Basic metal industry, which is the nickel and stainless steel processing, becomes the driving force behind the manufacturing industry in Central Sulawesi. The basic metal industry contributed to 83.55% of the processing sector total added value in 2022, a sharp increase from the 28.31% in 2016. In the last couple of years, the basic metal industry growth rate reached 34.62% (2022) and 25.61% (2021). It even reached 37.00% (2020) at the peak of the Covid-19 pandemic.

The mining and quarrying sector contributed to 17.30% of Central Sulawesi's GRDP in 2022, an increase from 13.63% in 2016. The metal ore mining subsector, namely nickel ore mining, contributed to 71.34% of the mining and quarrying sector added value in 2022, a leap from the 40.91% in 2016.

FIGURE 9. GRDP Rupiah Value Southeast Sulawesi and Select District/Municipality by Constant Price 2010, 2012-2022 (IDR trillion)



Source: Processed from the Indonesian Statistics data

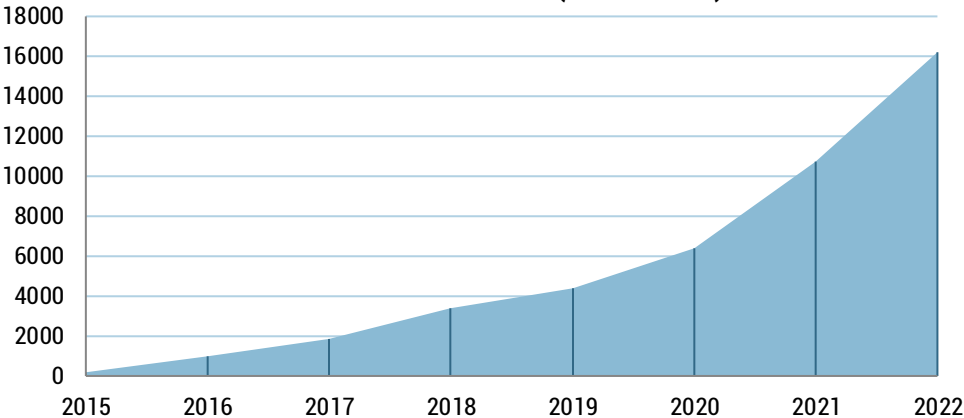
2. Export

Nickel ore has been the backbone of Central Sulawesi's exports since the early 2010s. It dominated exports before the nickel export prohibition took effect in January 2014. In 2013, the export value of "metal ore, crust, and ash" reached US\$220.91 million (Rp2.06 trillion) or 74.34% of the total export value of Central Sulawesi.

The nickel processing industry and its derivative industries had changed the export structure of Central Sulawesi Province. "Iron and steel" components – namely processed nickel and stainless steel – have dominated Central Sulawesi exports since 2016, one year after the first RKEF smelter began operation in Morowali. In 2022, the export value of processed nickel and stainless steel reached US\$16.2 billion (Rp243 trillion), or 85 percent of Central Sulawesi's total export value. This export value increased sharply from US\$722.7 million (Rp9.61 trillion) or 49.15% of the total export value in 2016.

Kolonodale port has become the busiest main port in Central Sulawesi due to the growth of the nickel processing industry in Morowali and North Morowali. Two other main ports that are loading ports for export purposes are Pantoloan port and Luwuk port. Because of the iron and steel exports, the export value of Kolonodale port reached US\$16.5 billion in 2022 or 87% of the total export value of all loading ports in Central Sulawesi, an drastic increase from 49.45% in 2016. 12 years earlier, Pantoloan port contributed 78% of the total export value of all ports in Central Sulawesi with US\$412 million (Rp3.8 trillion). However, since nickel ore domination of Central Sulawesi's exports, Kolonodale port contributed to 76% of the total export value of main ports in Central Sulawesi in 2013.

FIGURE 10. Export Value of Processed Nickel and Its Derivative Products Central Sulawesi 2015-2022 (USD Million)



Source: Processed from the Indonesian Statistics data

Iron and steel exports from Central Sulawesi target several countries in Asia and Europe. Iron and steel exports to China reached US\$5.6 billion (Rp84 trillion), or around 45.61% of the total value of Central Sulawesi's iron and steel exports in 2022. The value of Central Sulawesi's iron and steel exports to China increased 14.28% from the previous year. Taiwan is the second largest recipient of iron and steel exports from Central Sulawesi. The export value of these products reached US\$2.1 billion (Rp31.5 trillion) in 2022, or 17.14% of Central Sulawesi's total iron and steel export value. Lastly, the third export destination country for iron and steel is India with US\$970 million (Rp14.5 trillion), or 7.77% of the total value of Central Sulawesi's iron and steel exports.

B. Nickel irony

There are many issues behind the success of downstreaming. The stark economic disparities characterized by high levels of poverty and exploitation in Morowali and North Morowali, natural destruction with various consequences, and endless disputes of farmers and labors.

1. Economic disparities

The massive growth of the nickel processing industry in Morowali and North Morowali does not necessarily mean that the local population is reaping big benefits. Communities in both districts only received tiny crumbs from the huge GRDP currency value. Using an index of exploitation degree,⁹⁸ it is clear that most of the GRDP of Morowali and North Morowali flow out of the two regions. In 2022, 95.65% of Morowali's GRDP and 84.11% of North Morowali's GRDP evaporated out of the region. Communities in Morowali only received 4.35% of the district's GRDP value and North Morowali communities only received 15.89% of the district's GRDP value. The degree of exploitation was even worse than then it was in 2013 (see TABLE 3).

⁹⁸ This index was introduced by Mubyarto by the following formulation: Degree of Exploitation= $1 - \frac{\text{Consumption per capita}}{\text{GRDP per capita}} \times 100$. See Mubyarto 2005. *Ekonomi Terjajah*. Yogyakarta: Puspeta UGM

TABLE 2 Economic Exploitation and Poverty in Central Sulawesi Province

District / Municipality / Province	Number of population	GRDP percapita (million) 2013	Expenses percapita (million) 2013	GRDP percapita (million) 2022	Expenses percapita (million) 2022	Exploitation Degree (%) 2013	Exploitation Degree (%) 2022	Poverty level (%) 2022	IPM (2022)
Morowali	176,244	57.0	9.9	400.1	17.4	83	96	12.58	72.55
North Morowali	124,006	48.6	8.2	98.2	15.6	83	84	12.97	68.97
Poso	25,650	19.7	7.7	26.7	14.9	61	44	15.18	71.93
Tojo Unauna	169,478	9.6	6.9	23.6	11.7	28	50	16.12	65.54
Banggai	370,971	9.2	8.6	55.1	13.5	7	75	7.33	71.08
Banggai Laut	71,345	17.4	7.2	24.4	11.4	59	53	13.17	66.22
Banggai Kepulauan	123,576	16.9	6.9	23.2	9.7	59	58	13.44	66.08
Donggala	305,890	22.4	7.1	29.0	10.2	68	65	16.30	66.25
Parigi Moutong	446,712	20.0	8.8	26.9	11.8	56	56	14.63	66.26
Sigi	266,812	20.0	7.1	25.0	11.6	65	54	12.30	69.05
Buol	148,246	21.8	7.3	28.1	10.4	67	63	12.85	68.72
Tolitoli	228,641	19.0	6.8	26.1	11.1	64	58	12.74	66.76
Kota Palu	381,572	31.5	14.2	43.4	17.3	55	60	6.63	82.02
Central Sulawesi	3,066,143	24.4	8.5	56.2	13.0	65	77	12.33	70.28

Source: Processed from the Indonesian Statistics data

Nickel downstreaming also does not significantly reduce poverty levels in Morowali and North Morowali. The percentage of poor population is still relatively high, higher than the poverty average for Central Sulawesi. The poverty rate in Morowali reached 12.58% (2022), a decrease from 15.80% (2015); in North Morowali it reached 12.97% (2022), a decrease from 16.91% (2015); in Central Sulawesi it reached 12.33% (2022), a decrease from 14.66% (2015). In fact, compared to Sigi District that did not experience industrialization, Sigi poverty rate is actually lower with 12.30% (2022), decreasing slightly from 12.75% (2015). Morowali and North Morowali are two of the seven districts prioritized for extreme poverty reduction in Central Sulawesi by 2024.

2. Land disputes

The presence of nickel mining before downstreaming happened had already triggered many land disputes in Morowali and North Morowali. These disputes were related to overlapping land claims, especially between farmers and mining companies. Downstreaming encourages nickel ore mining to become more widespread. Thus, land disputes occurrences also increases. Some of the disputes were resolved through court, compensation mechanisms, and some are still ongoing.

One of the ongoing disputes is taking place near Gunbuster Nickel Industry. The dispute occurred between PT Bukit Makmur Istindo Nikeltama and hundreds of residents of Bungintimbe Village in North Morowali District. PT Bukit Makmur Istindo Nikeltama is a major supplier of nickel ore for Gunbuster Nickel Industry. Having a Mining License (Izin Usaha Pertambangan/IUP) for 4778 hectares, the company carries out mining activities in IUP areas that are also on the lands owned by the villagers. The community claimed rights to the 1500 hectares of land distributed by the Morowali District Government to the Kopermas Hutbun Suka Maju Farmers Group, Bungintimbe Village in 2004. Each person of the farmer group 750 members got 2 hectares of land. In accordance with the regulation, IUP holder must pay compensation if they mine on lands that are owned by the people. Because negotiations did not reach an agreement, the community then blocked road access to the stockpile and controlled 70,000 tons of nickel ore.⁹⁹

⁹⁹ Interview with Amerullah, SH (legal representative of the community), Palu 25 May 2023.

Land disputes also occurred on community owned land near the Indonesia Morowali Industrial Park. The dispute involves CV Sentosa Abadi (a Star Eight Mineral mining contractor) and ex-transmigration residents who own certified land in Bahumakmur Village, Bahodopi Subdistrict. The community accused Sentosa Abadi of taking up land by building a heavy equipment workshop, employee mess, villas and offices on the said land. They also accused the contractor of intimidating residents. Vice versa, the company reported the land owner to the Central Sulawesi Regional Police with charges of threats, extortion, and defamation. The company sued residents who were deemed to have harmed the company with a claim for compensation of IDR50 billion. Following this dispute, the Head of Morowali District, Taslim, visited the location on 22 February and asked the company to leave the community owned land. However, the problem has not yet been resolved.¹⁰⁰

C. Natural destruction

1. Deforestation

Open-pit mining requires roads building, land clearing, the removal of surface soil layers, and nickel ore extraction. Taking place in forested areas, these activities require a reduction in forest cover. The Komiu Foundation noted that by 2021, the forest area that cannot be restored due to nickel mining in Central Sulawesi will reach 36,000 hectares. Of these deforested area, 19% was caused by miners without Borrow-to-Use Forestry Permit. Meanwhile, illegal mining activities in forest areas reached 1861 hectares, 28.64% of which were in protected forest areas and 1.36% in nature reserve areas.¹⁰¹

Deforestation has caused flooding. As has happened repeatedly, floods destroyed residential areas, agricultural land, and livestock in Morowali.¹⁰² The villages most frequently affected by flooding since nickel ore mining industry are established are the villages around the Indonesia Morowali Industrial Park. Since the beginning of this decade, three flood disaster have occurred in these villages: On 27 June 2022, floods submerged around 500 residents' houses, roads and public facilities in Bahumakmur, Fatufia, Keurea and Bahodopi Villages; 6 July 2022, another floods submerged residents' houses in Bahumakmur Village; 12 October 2022 muddy floods inundated 200 residents' houses; 25 April 2023, another flood hit the villages with water levels as high as 50 centimeters at some areas. It inundated the houses in hamlet 4 and hamlet 5 of Bahumakmur Village. This time, the flood also hit Labota Village, located not far from the industrial zone.

¹⁰⁰ Interview with Amerullah, SH (legal representative of the community), 28 May 2023.

¹⁰¹ Tempo 6 February 2022.

¹⁰² Sangadji et al, 2019; MBM Tempo 2022; MBM Tempo 8–14 May 2023

2. Carbon emission

Laterite nickel mining and processing are energy intensive processes. Fossil energy consumption to power heavy vehicles is central to the mining and transportation of nickel ore. The greater the volume of nickel ore being dredged and the higher the transportation activity, the greater the carbon dioxide being released into the atmosphere. Production of Semi-finished nickel production, whether it applies RKEF or HPAL technology, requires high energy input. Relying on the 4000 MW captive power coal-fueled PLTU, Indonesia Morowali Industrial Park is the most hydrocarbon emission-intensive nickel processing industrial area in Indonesia. Multinational corporations are the main emitters of the nickel processing industry in Indonesia Morowali Industrial Park.

For the sake of the transition to clean energy, Indonesia Morowali Industrial Park is developing into a production center for raw materials for electric vehicle batteries. Companies in in the industrial zone are converting NPI-to-nickel matte and producing MHP as nickel sulfate feedstock. The main criticism to the NPI-to-nickel matte conversion is its high carbon emissions. Emissions from the production of 1 ton of nickel matte from NPI conversion reach 59 tons of CO₂, while emissions from producing 1 tonne of MHP through HPAL technology produced 19 tons of CO₂. In 2022, the 34.7 kt NPI-to-nickel matte conversion is expected to produce 2 million tonnes of CO₂ at the Indonesia Morowali Industrial Park. For comparison, Vale Indonesia's production of 60.09 kt nickel matte produced 1.6 million tonnes of CO₂. Combined with MHP production via HPAL in Indonesia Morowali Industrial Park, it produces 1.3 million tons of CO₂ in 2022. The industrial area is a contradictory example: the transition to clean energy relies on dirty technology.¹⁰³

3. Labor

Success in downstreaming is a burden on the back of the workers. Fatal work accidents and worker suicides reveals the worst side of exploitation. Exploitation has ignited workers' movements since the 2010s.¹⁰⁴

¹⁰³ IEA. 2021. "GHG emissions intensity for class 1 nickel by resource type and processing route.". May 5. <https://www.iea.org/data-and-statistics/charts/ghg-emissions-intensity-for-class-1-nickel-by-resource-type-and-processing-route>. PT Vale Indonesia. 2023. 2022 Continuous Report. Jakarta: 2023.

¹⁰⁴ Sangadji et al 2019

a. Death due to work accident

The nickel processing industry is likened to a killing field. Cases of work accidents that killed workers occurred quite often amidst the success of nickel downstreaming. Since factories began operating in the Indonesia Morowali Industrial Park, fatal work accidents have frequently occurred.¹⁰⁵ In the last three years, cases of work accidents involving fatalities have frequently occurred. On 16 August 2020, Asfadin (23 years old), a worker at CV Mega Krisindo Pratama (Dexin Steel Indonesia contractor) died after falling from 30 meters height while working on a stainless steel warehouse roofing; 23 January 2022, Jery Makmur (29 years) a worker of Indonesia Tsingshan Stainless Steel, died in the Indonesia Morowali Industrial Park area. The victim was crushed to death by a runaway loader that backed up while parking; 27 April 2023, Arief and Masriadi, workers at Guang Ching Nickel and Stainless Industry, were killed by a landslide in the processed nickel waste disposal area along with the dump truck they were driving.

Fatality due to work accidents also occur repeatedly in the Gunbuster Nickel Industry/Stardust Estate Industry area. 30 September 2020, a Gunbuster Nickel Industry worker with the initial M (20 years old) was killed by a dump truck in the company's workshop area; 24 June 2022, Yaser (41 years), a worker in the Gunbuster Nickel Industry area, died along with a bulldozer after being dragged by a landslide into the sea 26 meters deep while operating heavy equipment at night. Yaser was reported to be working at night without lighting; 6 July 2022, Ali Farhan (21 years old), a worker at furnace 6 of smelter 1 was found dead, having fallen near the hydraulic machine controls and allegedly fell into the slag disposal area; 22 December 2022, Nirwana Selle (20 years old), a female worker (crane operator) and intern I Made Defri Hari Jonathan were burned to death following an explosion at smelter 2 furnace 17 which caused a fire. They could not escape fire that quickly spread around the furnace; On 29 January 2023, Nelgi Rukka (27 yro), a dumptruck driver, passed away at the Bukit Makmur Istindo Nikeltama Bumanik IUP area. The victim had an accident while transporting Gunbuster Nickel Industry's nickel waste (slag). Rukka reportedly jumped from the dump truck when the heavy vehicle he was driving swerved and hit a road divider.

¹⁰⁵ Sangadji "Petabumi Masalah-Masalah Perburuhan di Morowali dan Morowali Utara" Sangadji et al "Road to Ruin: Challenging the Sustainability of Nickel-based Production for Electric Vehicle Batteries."

b. Workers depression and suicide

Cases of worker deaths due to depression that triggered suspicions of suicide often affect workers from China. 1 May 2020, a 54 year old worker was found dead in the workers accomodation room. The victim was an engineering graduate who worked as a contractor for Dexin Steel Indonesia. This happened at the peak of the Covid-19 pandemic. The company stated the deceased passed away not because of Covid-19. It was caused by depression that triggered a heart attack; 21 July 2020, a heavy equipment mechanic operator in Indonesia Morowali Industrial Park, Yu Zhang (30 years old), was found dead in the cooler channel of a coal-fueled PLTU. The company claimed that the victim was a worker who was laid off due to mental disorders. Central Sulawesi Department of Manpower and Transmigration Office speculated that the deceased was under stress and jumped into the canal, because he had not yet obtained work leave permission to return to China; 23 May 2022, a 56 year old worker hung himself in the Gunbuster Nickel Industry PLTU area. The victim was found at 06.00 by another worker. The post-mortem results from the Morowali District General Hospital (RSUD) stated that the victim died due to suspected suicide; 15 June 2022, another suicide was reported, the victim was a 51 year old reported to have committed suicide around the Gunbuster Nickel Industry PLTU. The post-mortem results from Kolonodale District General Hospital stated that the victim died in suicide by hanging.¹⁰⁶



¹⁰⁶ *Ibid*

c. Labor disputes

Labor disputes in Morowali and North Morowali are rife, especially on issues of unilateral termination of employment, occupational safety and health, work leave, long working hours, salary cuts. Central Sulawesi Department of Manpower and Transmigration Office (Nakertrans) recorded 28 labor dispute cases handled in 2022 in the two districts. Meanwhile, until May 2023, the Department of Manpower and Transmigration Office had handled 9 labor dispute cases. Almost all of these cases were related to the mining and nickel processing industry in the two districts. Many dispute cases were not reported nor included in government statistics because there were no complaints.

The labor protests collectively depicted the situation of labor disputes in Morowali and North Morowali. Collective protests have been happening in a widespread since the middle of the last decade. Many of these protests ended with the workers loss and defeat.¹⁰⁷

Since 2020, several collective protests highlighted labor disputes in Morowali and North Morowali and attracted widespread attention, the events are as follows:

5 August 2020, hundreds of workers affiliated to the United Labor and People's Alliance (Aliansi Buruh dan Rakyat Bersatu/ABRB) organized by the Morowali Industrial Workers Union (Serikat Pekerja Industri Morowali/SPIM), the National Workers Union (Serikat Pekerja Nasional/SPN), and the Indonesian Prosperous Workers Union (Serikat Pekerja Nasional/SBSI) staged a protest in front of the Indonesia Morowali Industrial Park office in Fatufia Village. They put forward demands related to job security, welfare, health, and work safety. The workers also demanded the implementation of the 3 July 2020 agreement between the labor unions, local government, and company management. This agreement is stated in the Morowali Head of District's letter number 560/0713/TND/VII/2020 regarding the Reemployment of Workers after Leave and Layoff.¹⁰⁸

¹⁰⁷ *Ibid*

¹⁰⁸ In the 5 August protest, the workers put forward demands, among others (1) re-employ the laid off workers; (2) grant workers their leave rights; (3) stop discriminating foreign workers to local workers; (4) rejection of company regulations that will harm workers; (5) stop unilateral job mutations; (6) abolish unwritten rules; (7) remove the 3 shifts 3 teams system; (8) increase employee entry and exit routes to minimize traffic jams and accidents; (9) improve the quality of health services and adjust SKS dates. Meanwhile, the Morowali Head of District's letter contained two substances. The company must reemploy workers who will return to work after their leave and those who have been laid off, based on the Covid-19 protocol. Employers can grant leave rights to workers while still adhering to health protocols for handling Covid-19.

As a result of this rally, on 14 August 2020, three union leaders (SPIM, SBSI and SPN) received unilateral termination of employment (Pemutusan Hubungan Kerja/PHK) from the management of the Indonesia Morowali Industrial Park. The three were Afdal Amin (General Chair of SPIM), Sahlun Sahidi (Chair of DPC SBSI Morowali District) and Aguslim (Chair of DPC FSPNI Morowali District). Workers also received sanctions for being absent from work and taking part in the 5 August action. The company claimed the layoffs were carried out because labor leaders refused mediation and provoked workers to rally a protest. Afdal rejected these layoffs and sent a letter of protest to Indonesia Tsingshan Stainless Steel, where he worked.

Responding to the company management's reaction to the action on 5 August 2020, SPIM and SBSI rallied another protest and strike at the Indonesia Morowali Industrial Park in Fatufia Village on 22 August 2020. As many as 7000 workers took part in this rally, under the banner of the United Labor and People's Alliance (Aliansi Buruh dan Rakyat Bersatu/ABRB). Aside from the various normative demands, they urged the company to reemploy the fired union leaders. The protest and strike ended after an agreement was reached between workers and management of the Indonesia Morowali Industrial Park on 25 August 2020. The Morowali Head of District mediated this agreement. Among the agreed points, company management would lift sanctions for absenteeism against workers who were involved in the protest on 5 August 2020. However, in the case of dismissal of labor union leaders following the protest on 5 August, it was agreed that an industrial relations settlement mechanism would be applied.¹⁰⁹

Collective protest actions at Gunbuster Nickel Industry began to mount up in 2022. On 22 September, the National Workers' Union (SPN) organized a protest at the North Morowali Head of District Office, as well as starting their work strike until September 24. The action was triggered by the company's response by not extending the work contracts of three SPN administrators, after they legally formed a workers' union. Gunbuster Nickel Industri also rejected SPN's request to hold a bipartisan meeting regarding the fate of those three labor union leaders. During the strike, workers put forward various demands such as the implementation of work health and safety procedures (WHS), provision of complete personal protective equipment (PPE), establishment of company regulations, stopping wage cuts, re-employing SPN members whose contract periods have ended, and halting stop Temporary Employment Contract (Perjanjian Kerja Waktu Tertentu/PKWT). They also urged the company to install air circulation facility in each warehouse or smelter to prevent dust. Lastly, the workers demanded the

¹⁰⁹ Sangadji "Peta bumi Masalah-Masalah Perburuhan di Morowali dan Morowali Utara".

company to clarify the rights of the families of the late workers who are victims of the furnace explosion.¹¹⁰

In mid-January, another protest action ended in violence that killed two workers at Gunbuster Nickel Industry. Since the morning of 14 January 2023, around 300 Gunbuster Nickel Industry and Stardust Estate Industry workers have been protesting and striking. The action took place at Post 4 and Post 5 at the company entrance. The protest was triggered by the failure to reach an agreement with SPN in Gunbuster Nickel Industry, Morowali Department of Manpower and Transmigration Office, and the management of Gunbuster Nickel Industry and Stardust Estate Industry regarding the eight worker demands in the September 24 protest action. The company reportedly agreed to seven of the workers' eight demands. Meanwhile, the pressure to re-employ workers who were fired due to previous protests and strikes cannot be carried out, because they are still waiting for the Department of Manpower and Transmigration Office to mediate on 16 January 2023.

The heartbreaking event occurred on 14 January 2023 at Gunbuster Nickel Industry. In the afternoon around 500 workers gathered at Post 4, the company entrance. They were stopped from entering the company area. The situation was escalated into a clash between the workers and the company's internal security forces. The escalation of violence resulted in the death of a Chinese worker and an Indonesian worker. Several workers were injured and several vehicles (loaders and cranes) were damaged. In the aftermath of this incident, dozens of workers were detained by security forces. 15 of them were charged for abuse at the Poso District Court (PN). In mid-June 2022, the Poso District Court Panel of Judges sentenced the workers to physical confinement for one year and four months.¹¹¹

¹¹⁰ There were eight demands made by the North Morowali GNI SPN: (1) Demanded that the company be obliged to implement WHS (Work Health and Safety) procedures in accordance with applicable laws; (2) Demanded that the company be obliged to provide complete PPE to workers in accordance with the standard of the type of work or work risks at the work location; (3) Demanded that the company would immediately set up company regulations; (4) To stop unclear wage deductions; (5) To stop Temporary Employment Contract (Perjanjian Kerja Waktu Tertentu/PKWT) for permanent works; (6) Demanded the company to re-employ employees (SPN members) whose contracts were terminated as a result of involvement in previous strike; (7) Demanded the company to install air circulation facility in each warehouse or smelter to filter dust; (8) Demanded the company to clarify the rights of the families of the late Made and the late Nirwana Selle in accordance with applicable laws and regulations.

¹¹¹ Sangadji "Petabumi Masalah-Masalah Perburuhan di Morowali dan Morowali Utara; Permata Adinda. 2023. "Kematian, Kecelakaan Kerja, Pemberangusan Serikat, Kriminalisasi: Nasib Pekerja Indonesia dan Tiongkok di Industri Smelter Nikel PT GNI". *Project Multituli*, 26 Mei. <https://projectmultituli.org/kematian-kecelakaan-kerja-pemberangusan-serikat-kriminalisasi-nasib-pekerja-indonesia-dan-tiongkok-di-industri-smelter-nikel-pt-gni/>.

The events of January 14 was not a stand alone event, it is related to previous unresolved labor disputes. Violence could have been prevented if Gunbuster Nickel Industry management and the North Morowali Department of Manpower and Transmigration Office responded quickly to the workers' demands regarding the 22 September 2022 protest action. Because it went on unresolved, the workers who were members of SPN planned to go on strike from 11–14 January 2023. This strike action was prevented because security forces facilitated a meeting between the labor union and company management on January 10. Gunbuster management did not attend and asked for the meeting to be rescheduled. The rescheduled meeting took place on January 13 afternoon, but the company management refused to come into an agreement with the labor union. The reason is that the company has not recognized the presence of a labor union within the Gunbuster Nickel Industry. Seeing that the company had no desire to accommodate their demands, the workers agreed to go on strike on January 14.

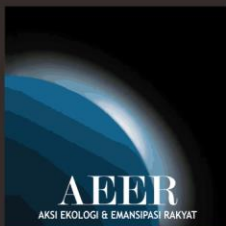




Multinational Corporations and Nickel Downstreaming in Indonesia highlights Indonesia's remarkable success as a global hub for the nickel industry. In 2022, Indonesia boasted a substantial 21% share of the world's nickel reserves and exercised control over an impressive 48% of global nickel ore production. Thanks to its nickel ore processing and refining facilities, commonly referred to as smelters, Indonesia has emerged as a prominent supplier of nickel pig iron (NPI). Moreover, the nation has effectively successfully escalated its stainless steel production and is actively expanding the manufacturing of nickel matte and mixed hydroxide precipitate (MHP), both pivotal raw materials for electric vehicle battery production. These accomplishments are primarily propelled by the flourishing nickel downstreaming industry across various industrial zones where the significant role of foreign companies cannot be overlooked.

Foreign investments, notably from China, has played a pivotal role in propelling the growth of mining and nickel industry enterprises in Indonesia, whether in the capacity of industrial zone administrators or as operators within the mining and smelting sectors. These multinational corporations are strategically dispersed across four key industrial zones: Indonesia Morowali Industrial Park (IMIP), Indonesia Weda Bay Industrial Park (IWIP), Virtue Dragon Nickel Industrial Park (VDNIP), and Stardust Estate Industry/Gunbuster Nickel Industry (SEI/GNI). While the establishment and expansion of these industrial zones contribute value to nickel ore commodities, these transformations have also yielded adverse repercussions on the regional economy, society, and the environment.

Following the release of the report *Nickel Battery Supply Chain in Indonesia and Socio-Ecological Issues* in December 2020, **Action for Ecology and People's Emancipation (Aksi Ekologi dan Emansipasi Rakyat)** is proud to present updated insights into the achievements and repercussions of nickel downstreaming in Indonesia, as documented in *Multinational Corporations and Nickel Downstreaming in Indonesia*. The revelations within this report vividly illustrate the substantial foreign involvement that shapes the trajectory of our nation's nickel industry growth and underscores the intricate challenges accompanying that progression.



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