www.bircu-journal.com/index.php/birci
Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
Budapest Institute

Nickel Hilirization as Added Value in Strengthening Indonesia's Economy

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Abstract

Indonesia is one of the countries that has the largest nickel reserves in the world. In addition to nickel being used for export, currently the government has made it mandatory to downstream nickel domestically. Besides that, the potential for nickel in Indonesia also plays a role in increasing investment for state revenue, through smelter investments. Through the nickel export ban policy, the continuity of the supply of crude nickel in the long term for the needs of domestic smelters is maintained. But there are issues in society due to the export ban affecting the selling price of nickel, especially impacting business activities. This paper discusses the extent of the downstream nickel policy, the ban on nickel ore exports, the added value obtained and the obstacles faced. The research method used is explorative and descriptive method, Data collection for analysis purposes, among others, was obtained from various literature, regulations and laws and regulations, media coverage and various other relevant secondary data sources.The findings show that nickel downstream actually creates added value and pushes nickel prices in a positive direction, thus encouraging investors to come to Indonesia thereby strengthening the Indonesian economy in a better direction.

Keywords
downstream; added value; Indonesian economy

I. Introduction

Indonesia's abundant natural resources can be an opportunity for Indonesia to market it on the world market. In the world market, the commodities that are usually traded are products from agriculture, mining, forestry, and the timber industry. One of Indonesia's mining products that has a large export value and is a driving force for increasing the country's foreign exchange is nickel. In facilitating international trade, Indonesia joined the World Trade Organization (WTO) since January 1, 1994. Countries that join the WTO must comply with the provisions of the General Agreement on Tariffs and Trade (GATT) which have been ratified by Law Number 7 Year 1994 concerning the Agreement to Establish the World Trade Organization. In addition to joining as a member of the WTO, Indonesia has also agreed to trade agreements with other countries, both bilateral, regional and multilateral trade agreements. One of the bilateral agreements in the European Region that was approved by Indonesia is the Indonesia-European Free Trade Association Comprehensive Economic Partnership Agreement (IE-CEPA).

By agreeing to the IE-CEPA agreement, it is an opportunity for Indonesia to easily export its commodities without any obstacles. The Indonesian commodity that is highly coveted by countries in the European Region is Nickel. In line with nickel being a commodity coveted by countries in the European Region, it could have an impact on increasing demand for Indonesian nickel. The increase in demand for Indonesian nickel led to a decrease in Indonesia's nickel reserves, so that Indonesia took action in an effort to

DOI: *https://doi.org/10.33258/birci.v6i2.7647*

prevent nickel from running out quickly. One of the actions taken by Indonesia was in the form of an export ban on nickel commodities. The implications of the stipulated ban caused the European Union to file a lawsuit against Indonesia at the WTO.

International trade is one of the driving engines that can increase growth as well as solve the country's economic problems. There are various advantages to be gained from international trading activities such as the fulfillment of the country's need for certain material commodities. In the mining sector, Indonesia is one of the countries with the highest mineral reserves in the world. This is proven by the record of Indonesia's contribution in various world mining commodities such as gold, tin, copper and nickel. This is what makes Indonesia one of the top 10 largest exporters of mining products in the world. One of the mining commodities that contributes the most to Indonesia's export balance is nickel. “Master the nickel, rule the world”, this is the parable that is often used when Indonesia's role in the world nickel market is being discussed. The January 2020 edition of the Trade and Industry Brief explains the position of nickel reserves, exports of raw nickel and exports of processed nickel on the international stage. Based on the released data, Indonesia is currently the highest ranked country that has nickel reserves and is an exporter of nickel ores and concentrates in the world.

However, unfortunately Indonesia is still unable to take advantage of this natural wealth and great potential due to the absence of a downstream nickel process. Not only that, the government's inconsistency in implementing crude nickel export policies also exacerbated the situation. In fact, if Indonesia succeeds in carrying out the downstream process, the country will certainly get a much bigger profit considering that the price of processed nickel is 200 times higher than nickel which is still in the form of ore. Indonesia is the world's largest nickel producer. In 2020, it is estimated that 30% of nickel production in the world or the equivalent of 800,000 tons will come from Indonesia with total reserves reaching 174 tons. This is what causes Indonesia to be ranked first as a country that produces the largest nickel ore in the world. The second rank was occupied by the Philippines with 420,000 tons (16%), Russia with 270,000 tons (10%), New Caledonia with 220,000 tons (8%) and the remaining 36% was a combination of other countries or the equivalent of 958,000 tons. 3 Figure 1 World Nickel Production in 2019 (source: Director General of Mineral and Coal) Even so, Indonesia's nickel export figures continued to rise and fall at certain times. Export activities are influenced by several factors such as export prices, domestic prices, real exchange rates, production capacity that can be supported by investment activities, imports of raw materials, as well as policies and regulations. Director General of Mineral and Coal) Even so, Indonesia's nickel export figures continue to experience ups and downs at certain times. Export activities are influenced by several factors such as export prices, domestic prices, real exchange rates, production capacity that can be supported by investment activities, imports of raw materials, as well as policies and regulations. Director General of Mineral and Coal) Even so, Indonesia's nickel export figures continue to experience ups and downs at certain times. Export activities are influenced by several factors such as export prices, domestic prices, real exchange rates, production capacity that can be supported by investment activities, imports of raw materials, as well as policies and regulations.

II. Review of Literature

Nickel is one of the most abundant elements, but most of it is located in the Earth's core, more than 1,800 miles below the Earth's surface. Nickel is a silver-white metal that is widely used to make stainless steel. This metal is also often used to mix with other materials to make it stronger to withstand extreme temperatures and corrosive environments. This metal is at No. 28 in the periodic table among the elements cobalt and copper with the symbol Ni. Although many nickel alloys, including stainless steel, do not cause health problems, the metal itself is known to be carcinogenic (accumulating in soil, air, or food and water supplies, also posing a risk of poisoning if too much enters the human body).

2.1 Nickel Type

Although there are several other sources that contain nickel, currently there are two types of sedimentary ores that are being mined to meet the world's supply of nickel: Magmatic Sulfide DepositsNickel mines of this type are found in Norilsk, Russia; Sudbury, Ontario, Canada; and Kambalda, Australia. Magmatic sulphide deposits resource about 40 percent of global nickel and are currently the main source for more than half of the world's nickel supply. Nickel deposits can develop when magma containing low amounts of silica and high amounts of magnesium is absorbed in sulfur, usually by reaction with rocks in the Earth's crust. A sulfur-rich liquid separates from the magma, then nickel ions and some other elements move into it. Because sulfur-rich fluids are denser than magma, they sink and accumulate along the bottom of magma chambers, intrusions, or lava flows, where nickel-containing sulphide minerals can then crystallize.

The Sudbury Igneous Complexis the main source of nickel in Canada and the second largest source of nickel sulfide in the world. This area is considered unique because it was formed when a space object (possibly an asteroid or comet) hit the earth about 1,850 million years ago. The impact caused part of the Earth's crust to melt and form a large layer of magma in the resulting crater. Nickel-containing sulphide fluids collect along the bottom of the magma layer, and nickel- and copper-containing sulphide minerals crystallize from them.

2.2 Laterite Deposits

Nickel mines of this type are found in Cuba, New Caledonia and Indonesia.

Laterite deposits are the main resource for about 60 percent of the world's nickel. These deposits form in warm, humid, tropical or subtropical environments when igneous rocks with low amounts of silica and high amounts of magnesium are broken down by chemical weathering. Weathering removes some of the original components from the rock and creates residual deposits in which elements such as nickel are concentrated.

2.3 Nickel Benefits

Only a few items are made of pure nickel. In contrast, nickel tends to play a supporting and stabilizing role in industrial materials. Due to its corrosion resistance and ability to withstand extreme temperatures, it is usually combined with other metals to produce products that are stronger, shinier and more durable. Nickel is usually used as a protective coating for softer metals.

Here are some examples of using nickel alloys:

- The manufacture of equipment and parts made from nickel alloys is often used in harsh environments, such as in chemical plants, petroleum refineries, jet engines, power generation facilities and offshore installations.
- Medical equipment, cookware and cutlery are also often made of metal that is nickel-plated because it is easy to clean and sterilize.
- Nickel alloys are used in the manufacture of rechargeable batteries for portable computers, power tools, and hybrid and electric vehicles.
- Nickel is also used to coat items to reduce corrosion and provide an attractive finish, such as in bathroom fixtures.
- Mostly used as an admixture in the manufacture of stainless steel.
- Copper-nickel alloys are typically used in desalination plants, which turn seawater into fresh water.
- Used in ship propeller shafts and turbine blades.

Nickel is a metal whose resistance to heat and corrosion makes it very useful for developing a wide variety of objects, from wires to coins to military equipment.

III. Research Method

Studies related to energy security which is a source of strengthening the national economy which includes downstream nickel which is an added value from a process that continues to develop, the research method used is an exploratory and descriptive method. An exploratory approach is taken by collecting various secondary data related to the development of downstream nickel as an energy source to meet the needs of national energy security. By analyzing this data, using a descriptive approach the author tries to explain and conclude matters related to the prospects and constraints/obstacles for nickel downstream development, government support through policies and their implementation, as well as the gap between government policy support and the constraints for energy development.

IV. Result and Discussion

Nickel is Indonesia's strategic mineral commodity where Indonesia is included in the top 10 Nickel producing countries in the world with total reserves of 5.74% of the world's total reserves. US Geological Survey data states that out of 80 million metric tons of world Nickel reserves, nearly 4 million metric tons are stored in Indonesia, so that Indonesia is ranked 6th in the world with the largest Nickel deposit in the world. Based on data from the Ministry of Energy and Mineral Resources in 2020, the resilience of Nickel reserves in Indonesia reaches 2.6 billion tons of reserves with a reserve life of up to 27 years. Global Nickel demand is estimated will reach 4.6% in 2025, and continue to increase until the next 2030. Nickel in Indonesia is generally found in the form of lateritic nickel deposits (Fe & Co),

4.1 Characteristics of Nickel Laterite

In lateritic nickel ore there are several raw materials that can be obtained from nickel mining, including:

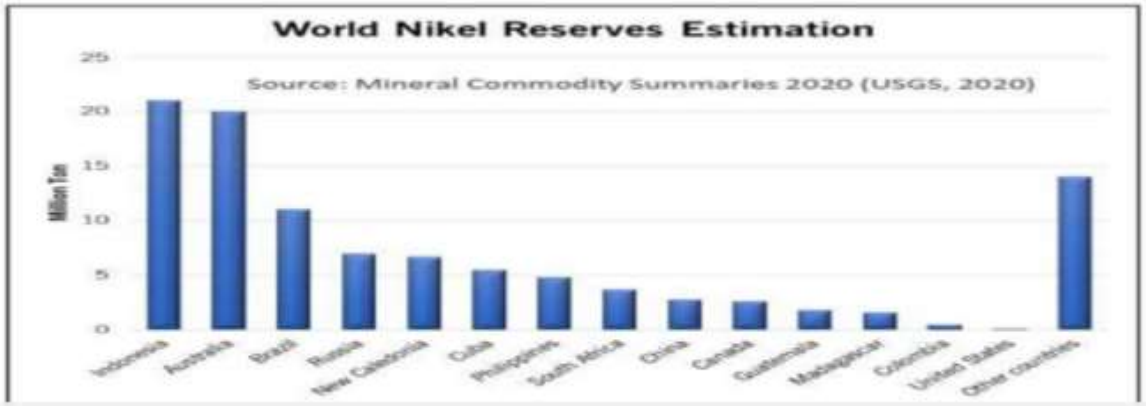
a. HPAL Raw Materials (Hydrometallurgical Process)

- Ni Extraction Technology from Laterite ore by Hydrometallurgical Pathway
- Caron Process—Piro-hydro Combination.
- Pressure/High Pressure Acid Leaching (PAL/HPAL)

- Enhanced Pressure Acid Leaching (EPAL)
- Atmospheric Agitation Leaching
- Heap Leaching

b. RKEF raw material (Pyrometallurgical Process)

Limonite type ore with low Ni content, which cannot be utilized in Pyrometallurgy technology, is actually the main raw material for HPAL (Hydrommetalurgy).



4.2 Nickel Ore Export Prohibition

The main driver is the use of batteries in electric vehicles. The Ministry of Energy and Mineral Resources has decided that starting January 1, 2020, a ban will be imposed on the export of Nickel ore with a grade below 1.7%. The decision was made in order to maintain Nickel reserves by considering the continuity of the supply of raw materials from existing smelters. The export ban also aims to support the government's program to accelerate the electric car program. The electric car industry is very dependent on nickel as a raw material for making electric car batteries. The program is contained in Presidential Regulation no. 55 of 2019 concerning the Acceleration of the Battery-based Electric Motorized Vehicle Program for Road Transportation.

4.3 Utilization of Nickel Ore

The use of Nickel ore for the Electric Car industry invites many companies that want to secure the availability of their raw materials by controlling Indonesia's Nickel natural resource reserves. Therefore, Indonesia needs to respond to strategic steps by increasing Nickel value through downstream. Downstream mining is part of the industrialization process that drives the transformation process from a country with a high level of dependence on its natural resources to become an independent country from an economic standpoint for the prosperity of the people. The success of downstream mining itself is largely determined by policies and technical regulations in its implementation by considering the supply of materials raw materials, land, labor, energy, infrastructure, technology, operational and maintenance activities, licensing systems.

4.4 Nickel Ore Downstreaming and Processing

Efforts to increase the added value of minerals, especially Nickel, are in the form of smelters. Smelter development needs to be accompanied by infrastructure development. The government needs to provide support for infrastructure development, especially energy generators, smelter land, import duty and tax incentives for a certain period of time, as well as legal certainty over the mining production period as a guarantee for smelter raw

materials to support the industry in realizing downstream towards industrialization. Nickel processing factories in the world and Indonesia, generally use pyrometallurgy and hydrometallurgy technology. Number of nickel smelters already in operation: 13 units. The plan is to add 17, so that a total of 30 smelters will operate in 2024 (should be 2023). Specifically for nickel ore,

4.5 Value Added Downstream Nickel

1. Increased added value
2. Development of the downstream mineral industry
3. Gross Domestic Product (GDP). and Gross Regional Domestic Product (GRDP)
4. Employment Opportunity
5. Increasing technology and HR capabilities
6. Export of minerals
7. Back linkage and forward linkage
8. Supports triple bottom line
9. Growing the national economy
10. National defence

Challenge

- The investment value for a nickel processing plant is very expensive. To process nickel with ore input of 1 million WMT per year with RKEF technology, a Capex fee of around USD 100-150 million is required.
- The investment value for the hydrometallurgy process is relatively expensive (>US$ 3.5 billion) requiring very detailed technical and economic studies.
- In Indonesia and the world, processing plants generally use smelting technology whose input is nickel saprolite. Meanwhile, a hydrometallurgical processing plant that uses limonite ore feed has not been developed much. As a result, nickel limonite has not been utilized much.
- The nickel and cobalt industrial trees in Indonesia have not been fully filled. Almost all nickel processing products in Indonesia are exported abroad as vital and strategic industrial raw materials with high economic value.
- Indonesia is not yet independent in nickel downstream technology. Processing and refining technology is still controlled by foreigners, especially China, Japan, etc.
- There are still many licenses and the process is long, permit simplification is needed

Government claim that the crude nickel export ban program, which took effect in January 2021, was successful due to an increase in mining investment and exports of nickel derivative products. However, this claim is still premature because there is no transparency of relevant data to support the government's argument. The Indonesian government has long wanted high domestic added value through downstream mining products, especially nickel. Nickel is the dominant component in electric batteries. Currently, batteries are becoming increasingly important items with the emergence of various gadgets to electric cars, which require this energy storage device.

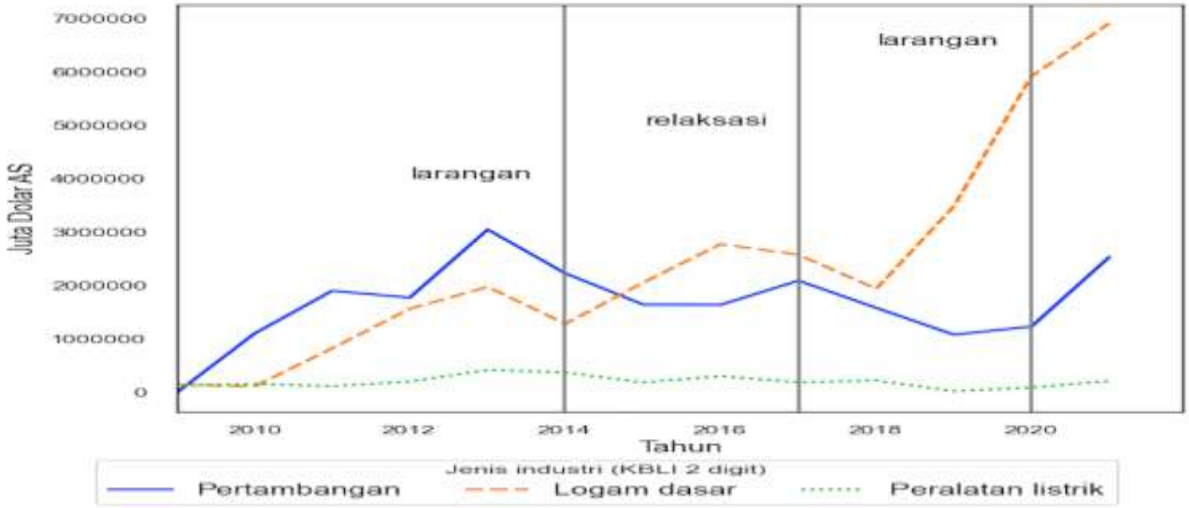
Asproducers and owners of nickel ore reserveslargest in the world, Indonesia has an important role in the nickel trade. Indonesiaproducing 1 million metric tons of nickel, or 37% of total world nickel production, which is around 2.7 metric tons. To take advantage of this advantage, the government bans exports of raw goods to add value to domestic nickel products. economy. In addition, the nickel export ban disrupts global nickel supplies and can lead to trade conflicts. As a result of the nickel export ban, the European Unionfile a lawsuitof Indonesia's policy to the World Trade Organization (WTO). Indonesia is

currently facing a lawsuit. This raises the question, is it true that the export ban policy has a positive impact on the downstream development of nickel products?

Mining ban: soaring investment and export of derivative goods

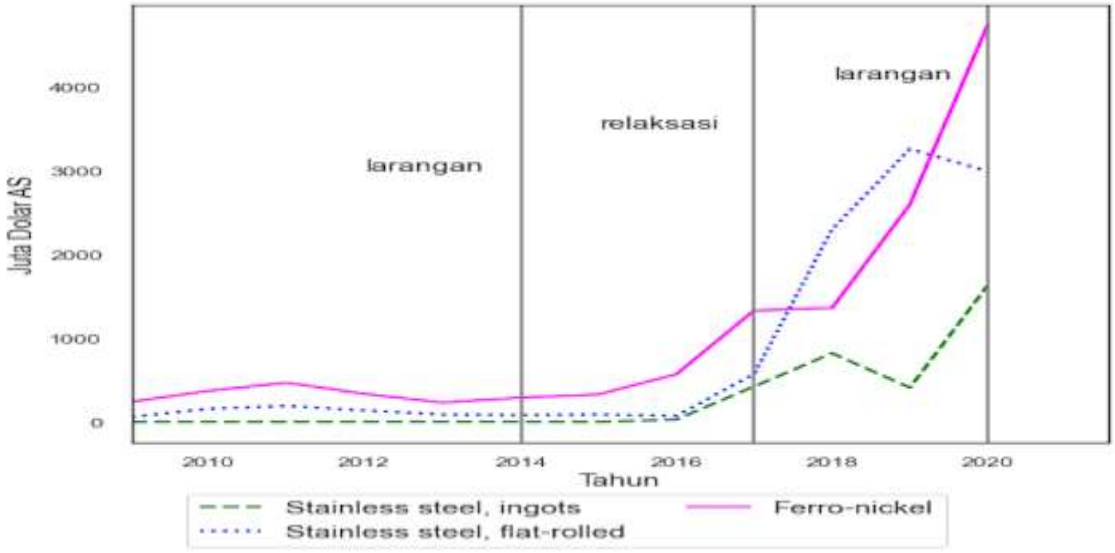
The process of implementing the export ban policy cannot be said to have gone smoothly. The government has actually banned the export of mining productsin 2014. However, the government lifted this ban in 2017 due to decreased nickel production, slow construction of smelters, and a trade balance deficit.low grade nickel orein 2020. The government claims that the ban on the export of nickel oresuccess in increasing investment in the base metal industry, especially onnickel smelters. Data fromCapital Investment Coordinating Board(BPKM) confirmed this (see picture).

Gambar 1. Realisasi investasi di industri pertambangan, logam dasar, dan peralatan listrik (BKPM)



The mining industry's investment value declined in 2014 when the government first banned the export of nickel ore. Reduced investment in mines is a consequence of reduced incentives in the sector because they are unable to export abroad. However, the 2021 figures show that investment in the mining industry has increased again compared to 2020, which shows that the export ban has not hampered the flow of investment because the existing supply is still being absorbed by domestic needs. The government also claims that mining derivative goods have been exported, in particularnickel, such as stainless steel or stainless steel.

Gambar 2. Ekspor produk turunan bijih nikel, 2009-2020 (UN Comtrade)



Along with increased investment in the base metal industry, production of nickel-derived goods has also accelerated. As can be seen in the image above, the increase and decrease in additional production capacity for nickel-derived goods follows the ban in 2014, relaxation in 2017, and the re-establishment of the ban on crude nickel exports in 2020. These two indicators, namely increased investment and exports of the downstream mining industry, have convinced the government to expand the mineral export ban tootherproducts, such as tin and copper. However, is it true that investment and exports can be the right indicators to conclude the success of the export ban strategy?

4.6 Calculating the dynamics of added value

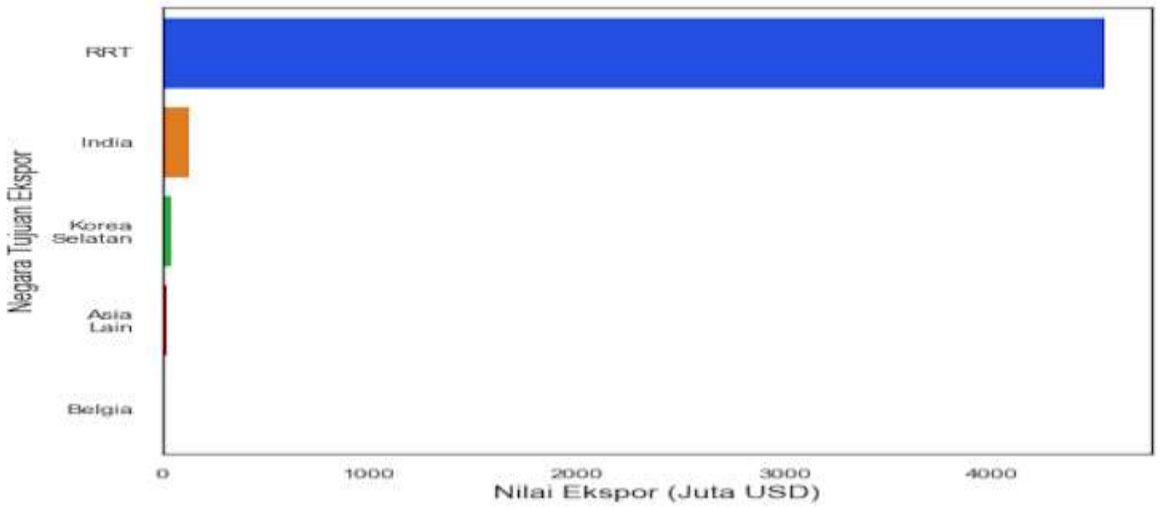
It is true that exports of nickel derivative products are much higher thanlost nickel ore exports. However, if the government's goal is to increase added value in the country, then measuring using the export value of derivative products is not quite right. The calculation of value chain displacement needs to be done in more detail, especially if it involves interventionist policies or state interference such as export bans.

- The first problem is the potential for lost taxes.
  Prohibiting nickel exports means being prepared to lose revenue from nickel mining corporate taxes as well as export duties for this commodity. Therefore, state revenue from the nickel downstream industry must be able to cover this loss. However, inviting smelter investors requires not only a ban on nickel exports, but alsoincentivetax. Smelter companies get a tax holiday or reduction to income tax exemption. In addition, the products produced also get relief in the form of export duty free.
- The second problem is the transfer of added value from miners to smelters.
  The export ban forces miners to sell nickel ore to domestic smelters. Miners have to accept a fair pricewell below market priceglobally, especially amid the high price of nickel on the world market today. This means that there is value lost from the mining sector due to the ban on nickel ore exports. Processdetermination of the purchase price of domestic nickelnordetermination of nickel contentwhich are still problematic have exacerbated this condition.
- The third problem is labor.

The government argues that high added value will increase the demand for Indonesian workers. Of course, apart from increasing the number of workers in the smelter sector, the government must also calculate the possibility of a reduction in the number of workers in the mining sector due to nickel export restrictions. Unfortunately,mining sector employment datastill hard to find. Meanwhile,the proportion of workers in the basic metal industry sectorhaven't seen an increase.

The three things above show that it is difficult to calculate the increase in added value based on prohibitions and tax incentives. The government also needs to question the suitability of the vision of this export ban program for parties who enjoy the transfer of value. For example, foreign companies based in China choose to invest in Indonesia in order to get a tax holiday and access to cheap nickel in Indonesia, then export the results back to their country. The figure below illustrates this for ferronickel product, an intermediate commodity derived from smelting nickel oxide ore.

gambar 3. Negara tujuan ekspor ferro-nickel Indonesia, 2020 (UN Comtrade)



4.7 The government needs careful consideration

*tax holidays*and the guarantee of cheap nickel ore distorts the calculation of the smelter's economic value. It is questionable whether smelters will still be economical if the government revokes tax incentives and imposes export duties on nickel derivative products in order to increase state revenue. This does not take into account other problems such asmaladministrationpermits increaseenergy needs, Andenvironmental issuessuch as water contamination which is increasingly important for global investors. It is estimated that nickel smelter operations can absorb this4.8 gigawattselectricity per year. This collided with Indonesia's passion forreduce carbon emissions.

Indonesia's nickel export ban also invites the European Union to submitlawsuit to the WTO)Indonesia is hosting the G20 meeting this year. StartG20 presidencywith the WTO lawsuit is certainly not an ideal thing. In addition, if many countries support this lawsuit, Indonesia has the risk of trade retaliation and difficulties accessing the global export market for nickel derivative products. Withoutglobal market access, Indonesia's attractiveness as a center for battery production will decrease.

On the other hand, Indonesia also lost the momentum to gain from rising nickel prices, which hadsoared almost fivefoldin February and early March. This price increase is the result of the Russia-Ukraine conflict as two countries which are also world nickel suppliers. I see that the data used by the government to support claims for the success of

the nickel export ban program is not strong enough to prove the success of this policy. The potential loss of tax revenue, the possibility of trade retaliation from importing countries, to the reduced income of miners because they have to sell to domestic smelters at low prices are barriers to calculating added value from downstream nickel based on an export ban.

Related to this, the government needs to seriously calculate the added value of this downstream program rather than just using export data. The government should integrate these calculations with the desired downstream roadmap to construct a picture of long-term success. If accompanied by data transparency, this program has the potential to become one of the successes of the government's program. With the current scheme, it's good for us to remain skeptical about the benefits of export ban-based downstream nickel products.

Indonesia is currently boosting nickel downstream domestically. For this purpose, the government has not hesitated to ban exports of nickel ore since early 2020. Even though the ban on nickel ore exports was only implemented in 2020, the downstream nickel program in the country can be said to be a success. This is because Indonesia has reaped double added value since the nickel sold is already in the form of metal or the result of domestic processing. Indonesia has managed to reap added value from nickel of US$ 33 billion or around Rp. 514 trillion in 2022. The success of RI's downstream nickel is also recognized by the Indonesian Nickel Miners Association (APNI). APNI Secretary General Meidy Katrin Lengkey said the nickel commodity downstream or refining program had shown great success. In fact,

According to him, the success of downstream nickel is proven by the number of nickel processing plants that have sprung up. It is estimated that there will be 43 nickel processing plants by 2023. In fact, this number is expected to increase even more. By 2025, it is estimated that there will be 136 nickel processing plants operating in Indonesia. factories. The success of nickel downstream is also proven by domestic consumption of nickel ore which will continue to increase. This year, consumption of nickel ore in Indonesia is estimated to reach 145 million tons of nickel ore. It will not stop there, even until 2025,

That way, nickel entrepreneurs really and will continue to support the government's program in downstreaming nickel commodities. As is well known, Indonesia has benefited enormously from nickel downstream since 2020. It has been proven that in 2022 the added value of the nickel 'treasure' has skyrocketed significantly. This is also considered to be able to help Indonesia in facing the threat of a global recession which is predicted to occur in 2023. "As entrepreneurs, especially Indonesian citizens, we of course support how about the nickel downstream program. This alone has helped Indonesia in dealing with the world's global recession," he said. In fact, according to him, Indonesia's dream of becoming the "king" of world electric vehicle batteries is not impossible." Moreover, Indonesia's goal is to become number 1 in the battery industry in the future. We will probably build a giga battery factory in Indonesia, the biggest EV factory in Indonesia. That is Indonesia's dream in 2045. So indirectly, downstream nickel has been very, very successful.

Deputy for Coordinating Investment and Mining at the Coordinating Ministry for Maritime Affairs and Investment (Kemenko Marves) Septian Hario Seto stated that in 2023, the added value of nickel downstream domestically could increase again, targeting to reach US$ 38 billion or IDR 592.2 trillion (exchange rate of Rp. 15,585 per US$) in 2023." (This year) around US$ 35-38 billion.

4.8 Downstreaming Nickel for the Added Value of the Indonesian Nation

Downstreaming in the mineral and coal (minerba) sector has been mandated by Law (UU) Number 3 of 2020 concerning Amendments to Law Number 4 of 2009 concerning Mineral and Coal Mining. The downstream obligation attached to the mining industry is none other than to provide added value to mining products. "Indeed the obligation of the mining industry is to build a downstream process, so it is mandatory to build a smelter. It is mandated in Law Number 4/2009 and then also Law Number 3/2020. We do require processing of our mineral resources, it must be further processed so that it can provide value. added," said Minister of Energy and Mineral Resources (ESDM) Arifin Tasrif.

Currently, said Arifin, there are 48 nickel smelter projects which are targeted to be fully operational by 2024, regardless of the constraints experienced by investors due to the Corona Virus Disease 2019 (Covid-19) pandemic and other difficulties. nickel, there are 48 projects that we hope to complete in 2024. Indeed, now there are obstacles that arise due to current conditions and also other difficulties from the mining industry to build smelters," he continued. Therefore, Arifin said, the Ministry of Energy and Mineral Resources continues to work to bridge the needs of these investors to be able to realize the planned smelter project. This is also to realize Indonesia's aspirations in the mineral and coal sector. "Indonesian ideals, later to be able to build a downstream industry from upstream to downstream that provides high added value, also absorbs labor, and other positive things that will be accepted by Indonesia. So the Ministry of Energy and Mineral Resources fully supports the downstream program that we have planned. Hopefully, within the time we have targeted, we can achieve this goal," said Arifin.

4.9 Government Patience

It could be that the government's patience in continuing to delay the downstream program in mining products can no longer be tolerated. Imagine, since the birth of Law no. 4/2009 concerning Mineral and Coal Mining or often referred to as the Minerba Law quite clearly mandates that it is necessary to optimally process added value in the country through downstreaming. What is clear, in my opinion, is that the abundance of natural and mineral resources in Indonesia is a gift that is priceless. And the continued protracted export of raw mining products including nickel, certainly does not provide an opportunity for this country to upgrade. This nation can be trapped as a nation that likes to export land and water. Development of the industrial sector towards downstream for reasons,

The program to substantially downstream the industry and grow it is not an easy matter. Materially, this country must have a strong basic industry as a supporting industry that processes raw materials into raw or auxiliary materials or semi-finished goods or those that produce energy for industrial needs. Thus, downstream needs to be supported by the existence of efficient basic industries. Moreover, directed industrial downstreaming requires the achievement of strategic goals, among others, reducing dependence on imports and strengthening industrial structures. The downstream industry program will only materialize in the long term if the government can develop its policies in two major areas, namely policies on basic industrial development as supporting industries and policies downstream industry itself. In addition, basic industries that grow must be able to operate at an optimal production scale. This means that if the domestic demand has been met, then part of the production must be allowed to be exported. In the midst of various obstacles to the downstream mining industry program, this program cannot be postponed, because this policy is very important and strategic for Indonesia and an opportunity for this country to industrial country.

The existence of a mineral processing and refining plant (smelter) in the country certainly produces a huge multiplier effect for the national economy. These smelters will give birth to various follow-up industries. Investors will flock in to invest and make Indonesia their production base. As a result, state revenue from taxes will increase. Likewise, non-tax state revenue (PNBP). Thus, the APBN has greater capacity to finance development programs. Most of the workforce will be absorbed by mineral processing factories. Unemployment and poverty rates fell significantly. The people will prosper. By doing downstream, Indonesia will also have a strong and highly competitive manufacturing industry.

4.10 Export Prohibition

Judging from the magnitude of the benefits of downstream, all stakeholders must have the same understanding that downstream is a fixed price and cannot be negotiated. It should be grateful, the Jokowi government has a high commitment to run the mineral mining downstream program, even though it often goes back and forth. The government's commitment is shown, among other things, by expediting the ban on the export of nickel ore or nickel with a grade of less than 1.7% by companies holding Mining Business Permits (IUP) Production Operations. Regulation of the Minister of Energy and Mineral Resources Number 25 of 2018 concerning Mineral and Coal Mining Business.

The regulation, which was enacted on 28 August 2019 and took effect from 1 January 2020, is a change from the previous regulation which mandated a ban on nickel exports starting in early January 2022. This means that the government is advancing the export ban by two years more quickly. 2019 also limited bauxite exports. Companies holding Mining Business Permits (IUP) for Production Operations or Special Mining Business Permits (IUPK) for Production Operations may only export washed bauxite with Al2O3 content of more than or equal to 42% if they already have or are building refinery facilities. and pay export duty (BK).

Nickel downstreaming is one of the opportunities to transform the national economy, as well as a ticket to become a developed country. Why? Because, first, Indonesia is a country that has the largest reserves of nickel ore in the world. Around 32.7% of global nickel ore reserves are in Indonesia, which is as much as 21 billion tons. Second, nickel is widely used in various industries, including the defense industry. In addition to stainless steel, nickel is also the main ingredient for lithium batteries, which are the main component of electric cars. Almost all electronic equipment requires batteries. So, it is only natural for Indonesia to have smelters and downstream industries, so that nickel ore can be processed and generate high added value to the national economy, both for export and for the domestic market.

4.11 Must be forced

In order to be successful and achieve optimal results, mineral downstreaming should not be done in halves and back and forth. In fact, the downstream program must be forced on mining companies and other related stakeholders. The government must not be slack, unsure, or even afraid to run a downstream program. The government must be prepared to face resistance from anywhere, both from multinational companies, as well as from countries that feel disadvantaged, including from the European Union which is taking Indonesia to the World Trade Organization (WTO) over the ban on nickel ore exports. Downstreaming in nickel mines should also be implemented in other mining industries, such as gold and copper. Until now, Feeport-McMoRan, which has been operating for 55 years in Timikia, Papua, are still excavating and processing piles of soil and sand

containing minerals in foreign smelters, including Australia and Europe. So far, none of the smelters have been built by the investor from the United States (US). As a result, Indonesia does not get maximum added value. If the copper and gold ore that Freeport produces is processed in a domestic smelter, what products the most influential mining company in the world produces will be discovered. How many million tons of gold, how many million tons of copper, all will be revealed. In fact, the rumors that have been developing so far that Freeport's mine contains uranium, can be proven true or not. So far, none of the smelters have been built by the investor from the United States (US). As a result, Indonesia does not get maximum added value. If the copper and gold ore that Freeport produces is processed in a domestic smelter, what products the most influential mining company in the world produces will be discovered. How many million tons of gold, how many million tons of copper, all will be revealed. In fact, the rumors that have been developing so far that Freeport's mine contains uranium, can be proven true or not. So far, none of the smelters have been built by the investor from the United States (US). As a result, Indonesia does not get maximum added value. If the copper and gold ore that Freeport produces is processed in a domestic smelter, what products the most influential mining company in the world produces will be discovered. How many million tons of gold, how many million tons of copper, all will be revealed. In fact, the rumors that have been developing so far that Freeport's mine contains uranium, can be proven true or not.

4.12 Global Value Chains

In addition, the processing of mining products at domestic smelters will speed up the process of developing the lithium battery industry in three industrial areas, namely Morowali, Konawe and Weda Halmahera. That's because the sulfuric acid produced from the mine can be utilized by the lithium battery industry. If the lithium battery industry is already in production and in 2024 European countries have made it mandatory to use electric-based vehicles, Indonesia will become the main supplier of battery electric vehicles (BEV) in the world. Thus, Indonesia becomes part of the global value chain, which is a process of forming added value to an item that involves three things, namely the process of producing goods in stages, involving two or more countries in providing added value.

Of course this is a tough task. However, if the government really wants to realize economic transformation, improve people's welfare, and push Indonesia to become a developed country, this task must be carried out.

V. Conclusion

The export ban is not aimed at hampering trade, but aims to utilize nickel resources for the prosperity of the nation through the domestic processing chain. The nickel export ban aims to meet the raw material needs of smelters in Indonesia. The prohibition policy cannot be postponed because mineral wealth, especially nickel, is depleted and cannot be renewed. With the issuance of Minister of Energy and Mineral Resources Regulation No. 11 of 2019 certainly raises contraries in its implementation, especially for foreign investors because the selling price of nickel originating from Indonesia automatically becomes more expensive than before.The program to substantially downstream the industry and grow it is not an easy matter. Materially, this country must have a strong basic industry as a supporting industry that processes raw materials into raw or auxiliary materials or semi-finished goods or those that produce energy for industrial needs. Thus, downstream needs to be supported by the existence of an efficient basic industry.

Nickel downstreaming is one of the opportunities to transform the national economy, as well as a ticket to become a developed country. Why? Because, first, Indonesia is a country that has the largest reserves of nickel ore in the world. Around 32.7% of global nickel ore reserves are in Indonesia, which is as much as 21 billion tons. Second, nickel is widely used in various industries, including the defense industry. In addition to stainless steel, nickel is also the main ingredient for lithium batteries, which are the main component of electric cars. Almost all electronic equipment requires batteries. So, it is only natural for Indonesia to have smelters and downstream industries, so that nickel ore can be processed and generate high added value to the national economy, both for export and for the domestic market.

However, the issuance of this regulation will not only hamper the pace of investment in Indonesia. The Indonesian government has also opened up the following opportunities by providing convenience in terms of licensing as I previously described and also facilities (privileges) to investors related to investment, both domestic and foreign. Currently, Indonesia still needs funding related to the construction of smelters (refining), construction of PLTU as the prime mover of nickel processing machines, experts and training of human resources who can operate nickel processing properly which of course requires a lot of funds. In the context of accelerating the economy and development, the government has taken the right steps by obliging all mining companies in Indonesia to process mining products and banning the export of raw materials in order to increase market prices internationally and increase foreign exchange by increasing the use of new and renewable energy in the future.

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