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The Development of Nickel-Based Smelter in the Central Sulawesi Region Case Study in Morowali District

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Abstract

Indonesia is a country that has large nickel reserves in the world. In addition to nickel being used for export, currently the government has made it mandatory to downstream nickel domestically. In addition, the potential for nickel in Indonesia also plays a role in increasing investment for state revenue, through smelter investments. Through the policy of banning the export of nickel ore, the continuity of the supply of crude nickel in the long term for the needs of domestic smelters is maintained.In the mineral mining industry, smelters are part of the production process, minerals mined from nature are usually still mixed with other materials, requiring further processing. The research method used is a qualitative research method with a descriptive approach. The case studies raised in this research are nickel mining companies in South Sulawesi, especially in Morowali Regency, which have integrated smelter processing facilities to produce matte nickel, which have many impacts on stakeholders, especially for the environment. The benefits generated by nickel processing smelter activities to stakeholders, namely the company, government, community and the surrounding environment.the future of the Indonesian nickel smelter industry depends on precise regulations and real implementation from the government to build a highly competitive domestic smelter industry so that independence in the national energy sector can be realized.

Keywords
nickel mining; smelter construction; downstream

I. Introduction

Mineral resources in Indonesia have quite a lot of potential and are spread almost all over the archipelago. Indonesia, which is rich in mineral resources, generates substantial income for the state through taxes and royalties each year. According to the United States Geological Survey (USGS), Indonesia's nickel reserves are number one in the world. Out of 2.67 million tons of nickel production worldwide, Indonesia has produced 800 thousand tons, far surpassing the Philippines (420 thousand tons of Ni), Russia (270 tons Ni), and New Caledonia (220 thousand tons of Ni). 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. Based on the Geological Agency's mapping in July 2020, Indonesia has 11 nickel ore resources. 887 million tonnes (inferred 5,094 million tonnes, indicated 5,094 million tonnes, measured 2,626 tonnes, hypothetical 228 million tonnes) and ore reserves of 4,346 million tonnes (proven 3,360 million tonnes and probable 986 million tonnes). Meanwhile, the total metal resources reached 174 million tons and 68 million tons of metal reserves.

The data shows that nickel natural resources in Indonesia are very supportive to improve the economy, from exports, investment, etc. Investment is one of the ways used to develop assets productively owned. Investments can be made in the Capital Market in the

form of shares which have an important role in economic activity. The factors taken into consideration by investors in investing their capital include: Natural Resources, Human Resources, Political and Economic Stability Factors, Government Policy Factors, and Ease of Licensing Factors. Investment realization in the mineral and coal sub-sector itself had only reached US$3.5 billion until December 10, 2021, or 81.3 percent of the target of US$4.3 billion.

In supporting the development of an integrated nickel industry, the Government will increase domestic downstream nickel, one of which is by increasing the number of smelters. The government is targeting the construction of 53 smelters by 2024, of which in 2021 there will be 19 smelters already established with an additional 4 smelters targeted for completion by the end of the year. The four smelters are owned by PT Aneka Tambang Tbk. with progress of 97.7 percent, PT Smelter Nickel Indonesia (100 percent), PT Cahaya Modern Metal Industri (100 percent), and PT Kapuas Prima Citra with progress reaching 99.87 percent in the Minister of Energy and Mineral Resources Regulation Number 11 of 2019 concerning the Second Amendment According to Minister of Energy and Mineral Resources Regulation Number 25 of 2018 concerning Mineral and Coal Mining Business, namely as of January 2020, nickel ore with grades below 1.7 percent cannot be shipped/exported abroad. This decision was made in an effort to maintain nickel reserves by taking into account the continuity of the supply of raw materials from existing smelters. One of the reasons the government imposed a ban on the export of nickel ore is that nickel can be used as a raw material for electric car components.

The acceleration of the export ban aims to support the government's program to accelerate the electric car program. The electric car industry is highly 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. Indonesia also has the technology to process low-grade nickel which can be converted into cobalt and lithium as raw materials for making batteries for electric vehicles, of which the electric vehicle manufacturing program. Nickel is the most profitable commodity because it is the main material for making lithium batteries, especially considering the demand for production for electric vehicles which has been getting higher lately. Currently there are several types of nickel

processed products in Indonesia, namely nickel pig iron (NPI), ferronickel (FeNi), Ni-matte, mixed hydroxide precipitate (MHP), mixed sulphide precipitate (MSP), and stainless steel.

In 2022 and 2023, Indonesia will enter the era of downstream natural resources. Talking about downstream minerals, it is appropriate to know in advance what the main activities in the mineral are and coal (minerba) business. First, mining activities, then smelting, and finally refining. Of the three main activities, those in the upstream sector in the coal mineral business are mining activities, while the other two (smelting and refining) are included in downstream activities. Thus, downstream is interpreted as all processes of smelting and refining mining products. This was marked by the cessation of nickel exports abroad as a raw material. On the other hand, nickel will be processed first in Indonesia before the results will be exported. The current downstream challenges include that almost all of the products resulting from nickel processing in Indonesia are exported abroad as vital and strategic industrial raw materials with high economic value and processing and refining technology is still lacking controlled by foreigners, especially China, Japan, etc.

In addition, there are several obstacles in developing downstream smelters in Indonesia, including limited mineral reserves and the distribution of mineral reserves so that there is no guaranteed supply of raw materials; the limited area of land in the Mining Business Permit (IUP) which is issued simultaneously, several IUPs must merge so that sufficient raw materials are available to build one smelter unit; the unavailability of adequate and economical energy supply at the location or that can be accessed at the mine site; and the synergy between industries has not yet been built; lack of infrastructure for transporting raw materials and factory products; and the still small absorption of products by the domestic downstream industry, even though the export market is quite saturated. Minister of Energy and Mineral Resources Regulation 11/2020 concerning the Third Amendment to Regulation of the Minister of Energy and Mineral Resources Number 07 of 2017 concerning Procedures for Setting Benchmark Prices for Sales of Metal Minerals and Coal stipulates that Smelters are Mandatory to Buy Nickel Ore at the Mineral Benchmark Price. The increase in nickel royalties will also encourage an increase in nickel added value through downstream activities.

This is because the value of nickel royalties has indeed increased to 10%. However, nickel royalty conditions that have been processed into ferronickel have actually decreased from 4% to 2%. In its development for the energy and mineral natural resources sector, the government has issued Regulation of the Minister of Energy and Mineral Resources (Permen ESDM) Number 11 of 2019 which requires companies to establish smelters (refining), this of course can make nickel ore processing have value sell better but also have cost constraints in the construction and industrial development of the smelter. Based on the above, the authors would like to discuss the effectiveness of Minister of Energy and Mineral Resources Regulation Number 11 of 2019 on nickel selling prices in increasing investment in Indonesia.

In this case, the construction of a smelter is a mandate of the Minerals Lawand Coal No. 4 of 2009 which was enforced in Indonesia on January 12, 2014. This law indicates that all mineral raw materials such as gold, nickel, bauxite, iron ore, copper and coal undergo a value-added process before being exported. This regulation obliges business owners to build a smelter, a mining product processing facility whose function is to increase metal content such as tin, nickel, copper, gold and silver to a level that meets standards. Increasing the added value of minerals and coal is an obligation for every mining company according to the mandate contained in Law Number 4 of 2009 concerning Mineral and Coal Mining, which is described in Government Regulation Number 23 of

2010 concerning Implementation of Mineral and Coal Mining Business Activities. The meaning of added value is the result of the techno-economic transformation from the initial conditions of mineral and commodity resources to conditions with greater economic value, utilization and use than before, then these new conditions will contribute to a positive impact on the economy, social and culture at global, regional, national and local levels (Hill in Ukar, 2013).

In order to secure the implementation of the mandate of the Law, especially related to the obligation to process and refine minerals in the country, Minister of Energy and Mineral Resources Regulation No. 8 of 2015. This Ministerial Regulation was issued because until now there has not been reflected in a comprehensive plan from mineral IUP holders to implement the intended law, especially in the construction of processing and refining facilities, and/or forms of cooperation in processing and refining minerals in the country. Nickel as one of the main metals listed in Permen no. 7 of 2012 are currently produced by various companies in Indonesia in the form of matte nickel, ferro-nickel and nickel metal (Ukar, 2013).

There are 3 companies in Indonesia that have built smelters in an effort to process raw nickel into semi-finished goods obtained from mining run by each company. Most mining and mineral processing activities simultaneously affect the community because most communities rely on mining and smelters for their livelihoods, either directly or indirectly (Neelawala et al, 2013). further so that it does not become an externality that is detrimental to the affected party. Externalities arising from the exploitation process are often not included as a cost component. This condition of excessive depletion of natural resources can ultimately disrupt the sustainability and sustainability of the environment. Environmentally sound development is a development orientation in the present and in the future and is the vision and mission of development as stipulated in Law no. 32 of 2009 concerning Environmental Protection and Management.

The purpose of this study is to determine the mining process and the construction of nickel-based smelters owned by several companies in South Sulawesi, especially in Morowali Regency which have an impact on the environment and surrounding communities, identify externalities from nickel processing smelter activities to environmental management carried out by these companies. the company and examine the benefits of the existence of a smelter for the environment and society in terms of economic value.

II. Review of Literature

2.1 Development Concept

The concept of development is usually attached in the context of studying a change, development here is defined as a form of planned change; every person or group of people will certainly expect a change that has a better, even more perfect form than the previous situation; to realize this hope of course must require a plan. Planning development is felt more as a more rational and orderly effort for the development of a society that has not yet developed or has just developed. (Subandi: 2011: 9-11) As for development according to some experts, namely: development according to Rogers (Rochajat, et al: 2011: 3) is a useful change towards a social and economic system that is decided as the will of a nation. Furthermore, according to WW Rostow (Abdul: 2004: 89) development is a process that moves in a straight line, namely from underdeveloped societies to developed country societies. Development was originally used in the sense of economic growth. A community is considered successful in carrying out development, if the community's economic growth is high enough.

2.2 Definition of Mining

Mining is part or all of the stages of activities in the context of research, processing and exploitation of minerals or coal which includes general investigation, exploration, construction feasibility studies, mining, processing and refining, transportation and sales, as well as post-mining activities. In the Big Indonesian Dictionary, what is meant by mining is digging (taking) minerals from the ground. Then, Abrar Saleng stated that the mining business is essentially an attempt to extract minerals from the earth. From the definitions of mining above, it can be seen that mining is an attempt to extract and utilize mineral materials. In essence, the development of the mining and energy sector seeks a process of developing mineral and energy resources that have the potential to be used sparingly and optimally for the greatest prosperity of the people. Mineral resources are non-renewable resources.

2.3 Nickel Mining

Nickel was first discovered by Crostedt in 1751. The earth's core contains about 3% nickel while the earth's crust is 0.003%. The term Laterite itself is taken from the Latin "later" which means red brick, which was put forward by Buchanan Hamilton (1807). The term "laterite" can be interpreted as a deposit that is rich in iron-oxide, poor in silicate elements and is found intensively in weathered deposits in tropical climates (Eggleton, 2001). There are also those who interpret nickel laterite as weathered deposits that contain nickel and can be economically mined (Gleeson et al, 2003). To mine nickel minerals requires sufficient knowledge of mineral deposits, mining technology, processing methods and costs required.

2.4 Management and Refining (Smelter)

A smelter is an industrial facility used to process raw materials into semi-finished or final products. Smelters are often used in the metal industry, such as processing iron, copper, zinc, and others. In the smelting process, raw materials are heated at high temperatures to separate the desired metal from gangue or other impurities. The smelting process is very important to the metal industry because it allows the production of high quality and clean metal. In addition, smelters also play an important role in maintaining the supply of metals needed for various applications, such as manufacturing electronic equipment, vehicles, buildings, and many more.

III. Research Methods

Methodology essentially provides guidelines for the ways in which a scientist studies, analyzes and understands the environments he faces. in tThis paper was compiled using qualitative research methods, namely the data source approach in the form of secondary data from literature and analysis in the form of descriptive. Through this method is expected to be able to dissect the phenomenon under study. This qualitative research is only describing and describing findings in the field without requiring a hypothesis. This method also raises facts, circumstances, variables, and phenomena that occur when the research takes place and presents data as it is. This paper is also accompanied by the writing of case studies that occurred in South Sulawesi Province, especially Morowali Regency through several stages, namely literature study, problem observation, and analysis involving elaboration of the literature and problems that occur. Until case studies can be used to achieve multiple goals, such as to provide a description, test theory, or generate a theory. The descriptive approach is manifested by the presence of complexly arranged

descriptions and word for word analysis of the referenced literature to construct research results. The descriptive nature of qualitative research means that research will attempt to make a systematic, accurate, and factual overview of facts, characteristics, and relationships between the phenomena studied.

IV. Results and Discussion

The smelter itself is a mining product processing facility that is useful for increasing metal content such as tin, nickel, copper, gold and silver to meet standards as raw materials for final products. The process must include cleaning metal minerals from impurities and undergoing purification. For all mining companies in Indonesia, whether large or small, the construction of a smelter is mandatory. According to data compiled from the Minister of Energy and Mineral Resources and at the time this article was written, there are around 70 companies currently constructing smelters. And these 70 companies are part of the 250 companies holding mining business permits (IUP).

Of the 70 companies that have committed, there are around 25 companies that are in the final stages of the smelter construction process. It was recorded that 15 companies were carrying out ground construction and 10 companies were in the middle of construction. The remaining 16 companies have just applied for environmental impact analysis permits. There are also 112 companies that are still in the feasibility study process. The rest of the company hasn't done anything yet.In the mining industry, smelters are part of a production process, the minerals mined are usually still mixed with unwanted inherent materials. With the Smelter, the innate material is cleaned and purified. The smelter itself is a mining product processing facility whose function is to increase metal content such as tin, nickel, copper, gold and silver to a level that meets standards as final raw materials.

4.1 Development of Smelter Industry-Based Nickel Downstreaming in the IMIP Area

Nickel is one of the main ingredients in the manufacture of stainless steel, steel alloys, automotive frames, anti-rust coatings, electronics and construction. On the other hand, nickel is often used to manufacture secondary batteries. Some of the most commonly used types of batteries are Nickel Metal Hydride (NiMH) and Lithium-ion (Li-ion) Nickel-Cadmium (Ni-Cd). This battery is a nickel base material for the energy needs of electronic equipment. In order to support the implementation of the Master Plan for the Acceleration and Expansion of Indonesian Economic Development (MP3EI) 2011-2025, one of the main strategies used is to develop economic corridors through the construction of growth centers on each islands by developing industrial clusters based on natural resources.

Southeast Sulawesi Province is an economic area that is the focus for development, especially nickel mining resources and reserves owned by Sulawesi Province apart from North Maluku with considerable potential. On the one hand, the presence of a nickel smelter industry in the Southeast Sulawesi region, especially Morowali Regency, will open up opportunities for increasing local revenue (PAD) and employment through the construction of a nickel refining plant. But on the other hand, seriousness is needed for the procurement of infrastructure and feasibility in supporting the sustainability process going forward. The nickel mineral wealth in Southeast Sulawesi Province is expected to be a driving force for future economic development. On the other hand, Southeast Sulawesi Province through Special Economic Zones (KEK) is an important part in the development of a country, province, district/city to face the current competition, where changes need to consider various aspects of the resources they have including internal, social, and environmental aspects economic growth.

A smelter is a factory for processing or refining mining products into finished products. Based on the Ministry of Energy and Mineral Resources report for 2020, Indonesia is a country with the largest nickel reserves in the world with a total of 72 million or almost 52% of the world's total. Some of these nickel reserves are spread over nearly 90% in the regions of Southeast Sulawesi, Central, South and North Maluku and 70% of nickel needs are used to manufacture stainless steel in Indonesia. on the other hand, Stainless steel is an end product that contributes around 60% of world nickel demand. One of the nickel smelter areas in Indonesia is PT. Indonesia Morowali Industrial Park (IMIP) which is located in Morowali, Central Sulawesi. IMIP manages a nickel-based industrial area with the longest industrial chain in the world which has main products in the form of nickel, stainless steel and carbon steel. In addition, the supporting industries include coal power plants, manganese, silicon, chrome, lime, coke factories, ports and airports.

IMIP has an area of 2000 hectares and will continue to grow to an area of 4000 hectares with the continued inflow of various investments in the area. Besides that, IMIP is also the only stainless steel producer in Indonesia with a total production of more than 3 million tons or 6.6% of world production. The need for nickel ore laterite in 2018 is 15 million tons, an increase of 21 million in 2019 and in 2023 the need will increase by 27 million tons. On the other hand, pure nickel production in the IMIP area continues to grow every year with a total of 180 thousand tons in 2018 and increased to 272 thousand tons in 2019 and the target is to reach 500 thousand tons in 2023. The production chain from upstream to downstream in the IMIP area is divided into two parts, namely the NI and FE base facilitated by several integrated processing plants including ferronickel, coking, ferrochrome, ferrosilicon, lime, manganese, blast furnace, acid, pyroelectric, stainless steel factories. , hot rolling, HAPL and CRP before becoming the final output in the form of slab, black coil, white coil and 2B coil.

4.2 Future Prospects

In terms of impact, the IMIP region has contributed to an export value of USD 5.85 billion in 2018, USD 6.6 billion in 2019 and the projection for 2023 is USD 11.6 billion. Meanwhile, the tax value contributed USD 276 million in 2018, USD 330 million in 2019 and has a projection of USD 580 million in 2023. The facilities available in the area are sufficient to support the availability of transportation facilities, places of worship, housing/mess, clinics etc. The presence of the nickel smelter industry in Indonesia is processed into derivative products that have more added value and have become a new face for the development of nickel ore processing in Indonesia. The establishment of various nickel industries spread across various regions in Indonesia, especially the Morowali region, is a long-term prospect for Indonesia's economic growth that must receive full attention from the government. Based on World Top Export data, Indonesia is currently ranked 1st in the world above Zimbabwe and the Philippines with total exports of US$1.63 billion in 2020 for nickel-based products such as stainless steel slabs, stainless billets and stainless steel coils.

Dependence on nickel in various industries has caused world nickel prices to have almost quadrupled in the last few weeks. Based on a report by the London Metal Exchange (LME) in recent months world nickel prices have soared to over USD 100 thousand per ton. This is due to the increasing demand for stainless steel, the battery industry, and reduced supply in the world. Today, Russia's invasion of Ukraine has reduced the world's nickel supply chain due to heavy sanctions imposed by western countries on Russia. Even though Russia supplies 10 percent of the world's nickel and Russia's nornickel is the largest supplier of 15-20 percent of battery grade nickel in the world. On the other hand, Ukraine

is the 14th largest steel producer in the world producing 21.4 million metric tons (mm/t) of steel in 2021, of which 80% is exported to various countries.

Russia and Ukraine are the main exporters of semi-finished steel in the form of slabs and billets. The increase in the price of various steel products is expected to soon spread to all countries in the world. On the other hand, this is an opportunity and opportunity for Indonesia to continue to increase production of high-quality nickel derivative products to attract domestic demand and to be exported abroad to meet world demand, plus the opening of export markets for stainless steel and carbon steel to various regions in the world. Southeast Asia, China and countries that have bilateral relations with Indonesia.

Consistency in building a nickel smelter industry in Indonesia is an absolute obligation in realizing economic independence in areas that have special natural resources, such as nickel in Morowali Regency. Besides that, the government needs to pay attention to the feasibility and impact of the presence of the industry. On the other hand, the absorption of local workers must be the main focus in building superior and highly competitive human resources. The transformation of knowledge and expertise from foreign workers (TKA) to local workers must be carried out as soon as possible so that dependence on foreign workers can be reduced, let alone only filling grunt work that can be done by local workers.

4.3 Impact on the Economic Sector

Industrial development in Morowali Regency has had an impact on economic growth in Morowali Regency. This can be seen from the very rapid rate of GRDP growth in certain sectors. Based on the report from the Central Statistics Agency (BPS), it can be seen that the GRDP growth rate is in the range from 2018 to 2022. The GRDP growth rate has increased every year, where the data for 2018 increased by 12.40%, in 2019 it was 14.51%, and in 2020 it is by 28.93%. The highest growth in the economic sector in 2020 was achieved by the manufacturing industry at 35.72%, Mining and Quarrying at 34.40% and Financial Services and Insurance 13.23%. The high growth rate of these sectors was due to the increase in the output of the nickel smelter industry in the IMIP area as well as several nickel smelter industrial companies in Morowali Regency which were able to contribute added value to the economy in the mining and processing industry sectors as well as financial and insurance services. Meanwhile, the agricultural sector experienced low GRDP growth which fell to -2.76% in 2020.

Table 1. Morowali Gross Regional Domestic Product Growth Rate at Constant 2010 Prices by Business Field (percent), 2018─2020

Sektor PDRB [seri 2010]	[seri 2010] Laju Pertumbuhan PDRB Atas Dasar Harga konstan Menurut Lapangan Usaha (Persen)		
	2018	2019	2020
A. Pertanian, Kehutanan, dan Perikanan	0.86	2.85	-2.76
B. Pertambangan dan Penggalian	13.11	17.94	34.40
C. Industri Pengolahan	19.38	17.33	35.72
D. Pengadaan Listrik dan Gas	15.40	1.85	4.47
E. Pengadaan Air, Pengelolaan Sampah, Limbah dan Daur Ulang	8.38	-0.08	0.11
F. Konstruksi	6.27	13.31	-14.62
G. Perdagangan Besar dan Eceran; Reparasi Mobil dan Sepeda Motor	5.81	4.74	-4.98
H. Transportasi dan Pergudangan	5.38	14.85	-28.38
I. Penyediaan Akomodasi dan Makan Minum	10.40	0.28	-10.48
J. Informasi dan Komunikasi	11.42	1.19	7.09
K. Jasa Keuangan dan Asuransi	7.26	7.52	13.23
L. Real Estate	2.12	2.15	0.15
M,N. Jasa Perusahaan	8.73	8.63	-1.17
O. Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	8.71	8.89	1.06
P. Jasa Pendidikan	5.61	4.49	-0.18
Q. Jasa Kesehatan dan Kegiatan Sosial	9.60	9.40	6.91
R,S,T,U. Jasa lainnya	8.09	2.10	-0.44
Produk Domestik Regional Bruto	**12.40**	**14.51**	**28.93**

Source Morowali Central Bureau of Statistics (BPS).

The high growth of the mining and processing sector compared to the agricultural sector is due to the presence of natural resources in the form of nickel which is quite large in the Morowali region, Central Sulawesi, this makes the agricultural sector less competitive and cooperative in competing with these sectors. However, the agricultural sector cannot be abandoned because this sector has an important role in meeting the food needs of the local community. The government has an obligation to continue to maintain the agricultural sector or other sectors to continue to be developed, not only focused and focused on utilizing natural resources that are potential but also non-potential. this is intended if later these natural resources start to run low or decrease in quantity, the government can switch to utilizing other resources to become the advantage of the area so that the wheels of the community's economy continue to run and produce GRDP which continues to grow every year.

4.4 Trading Conditions

The sight of the nickel smelter industry in Indonesia has opened up new opportunities to increase trade and become a sector that needs full attention from the government. Based on the report of The Indonesian Iron and Steel Industry Association (IISIA), in the first semester of 2020 it showed that the national steel trade balance experienced a deficit of USD 884 million, down 63% compared to the same period the previous year which reached USD 2,047 million while in the first semester of 2021 experienced an increase in steel imports which broke the 6.5 million ton mark, an increase of 12.7 percent compared to the same period last year. This is due to the fact that domestic demand for steel has fallen much more than the reduction in imports so that domestic steel producers can only operate at a utilization rate of around 20-40%. This condition also stimulated export activities as reflected in the increase in export volume and value for various types of steel products.

The high number of imported steel products in the domestic market will not only threaten the sustainability of national steel producers but will hinder the development of the national smelter industry, and will even cause Indonesia to become highly dependent on imported products and not in accordance with efforts to Increase the Use of Domestic Products (P3DN). Weak implementation of the import control rules stipulated in the import trade policy (Import Agreement/PI) can only control steel imports in terms of volume but cannot affect the price structure of incoming imported steel. Therefore, the government needs to develop other solutive policies in favor of local producers such as the implementation of Non-Tariff Measures such as the implementation of the Indonesian National Standard (SNI) and Tariff Measures, namely Anti-Dumping Import Duty (BMAD) as a whole.

The BMAD enforcement policy is an instrument that is widely used by world steel producing countries to protect domestic industries such as the European Union, the People's Republic of China, Japan, India, South Korea and the United States. On the other hand, the mandatory implementation of SNI for all steel products from upstream to downstream can be applied to steel products both domestically produced and imported as stipulated in Article 120 of Law number 3 of 2014 concerning Industry. The imposition of BMAD and SNI is hoped to be an alternative solution in maintaining Indonesia's nickel smelter production so that it continues to grow and be competitive on the national and global level.

The Indonesian government needs to pay attention to investment in the national steel industry through policies that are in favor and mutually integrated and pay attention to PP Number 28 of 2021 concerning the Implementation of the Industrial Sector and PP Number 29 of 2021 concerning the Implementation of the Trade Sector. These policy

instruments can be used as a basis for calculating the need for imported products more evenly by taking into account domestic production capabilities. This is intended so that local producers can increase efficiency and competitiveness against imported products. The future of the Indonesian nickel smelter industry depends on precise regulations and real implementation from the government to build a highly competitive domestic smelter industry so that national steel independence can be realized.

4.5 Downstream Supports Industrial Growth

For decades, mining entrepreneurs from within the country and abroad have been increasingly active in finding mining resources in various parts of Indonesia. As a result, raw materials are exported directly in very large volumes. If this is allowed to drag on, it can trigger a massive increase in the number of exports of mining goods. Even worse, the wealth of natural resources in Indonesia cannot be used for the nation itself. In controlling the export of raw mining materials, the government implemented a regulation banning the export of some unprocessed mining goods (raw materials) in early 2014.

This policy is a mandate from Law Number 4 of 2009 concerning Mineral and Coal Mining (UUMinerba). Through this policy, the development of the mineral mining sector is directed to obtain added value through industrial downstreaming. Downstream industry is the right strategy for countries that have abundant natural resources and can use the materials produced by this sector as inputs for the industrialization process.

The downstream program is not an easy matter. Downstreaming needs to be supported by the existence of an efficient basic industry to process raw materials into raw materials or semi-finished materials. Of course, by downstreaming the mining industry, there are many benefits to be gained, including getting jobs for the community. In addition, the results of mining products can be used to meet domestic and international market demands so that these mining exports can increase the country's income and economic growth. In this era of globalization, every country builds its economy through industrial activities by processing the natural resources in the country. This is done in order to compete with other countries and advance their economy.

The government through the Ministry of Energy and Mineral Resources has prepared a National Industrial Development Master Plan (RIPIN) for 2015-2035 to make Indonesia a resilient industrial country. This vision is supported through the development of a national industry that has a strong structure based on innovation and technology so that it can be highly competitive at the global level. . In order to realize this vision, the strategy pursued by the Ministry of Industry includes developing natural resource-based upstream and intermediate industries, controlling exports of raw materials and energy sources, increasing mastery of technology and the quality of industrial human resources (HR), developing industrial facilities and infrastructure, strategic industrial development to increase the use of domestic products, as well as international cooperation in the industrial sector.

The downstream mining policy is meant to suppress mineral exports, which now tend to be excessive. Even so, this is not a threat to the mining industry, let alone to the extent of damaging the investment climate in the sector. The downstream policy is actually a positive opportunity that mining companies can take advantage of to enter the downstream industry. The increase in the added value of minerals is an effort to increase and optimize as well as guarantee the availability of industrial raw materials, employment, and increase in state revenues. The operation of a nickel smelter factory, PT Sulawesi Mining Investment (SMI) Nickel Pig Iron Factory in Morowali, Central Sulawesi, is an example of the realization of downstream mining that can create added value and also create jobs.

This smelter is owned by SMI which is a joint venture between Bintang Eight Group and a company from China, Tsingshan Group. This giant project works upstream to downstream industries. Starting from a nickel mine, a smelter was built to produce semi-finished materials in the form of pigiron which will later produce stainless steel. This integrated smelter will encourage the development of stainless steel derivative industries, which are estimated to number 60 new industrial companies. The development of the above industries requires an investment of USDS.61 billion.

In this case, the construction of a smelter is a mandate of the Minerals Lawand Coal No. 4 of 2009 which was enforced in Indonesia on January 12, 2014. This law indicates that all mineral raw materials such as gold, nickel, bauxite, iron ore, copper and coal undergo a value-added process before being exported. This regulation obliges business owners to build a smelter, a mining product processing facility whose function is to increase metal content such as tin, nickel, copper, gold and silver to a level that meets standards. The construction of a smelter certainly has advantages and disadvantages. As for the things that are felt to provide benefits to the mining company itself and the government, among others:

1. Provides advantages to mining companies when compared to building smelters abroad because the costs are much cheaper.
2. Increasing the added value of minerals is carried out through mineral processing, smelting and refining activities.
3. Helping the government in reducing unemployment because people in the smelter area will have more opportunities to get jobs. For companies, accommodating local workers will guarantee more security.
4. Having a smelter close to a mining company will have a positive impacton the performance of the mining industry.

In addition to the advantages that can provide benefits for mining companies and the local government, there are also things that become weaknesses in the construction of smelters, including:

1. Mining companies have very little interest in building smelters. This is because there is no clarity regarding incentives andhigh investment to build a smelter.
2. There is environmental damage. This is due to the massive and illegal export of raw materials, because there is no prior processing through the smelter and is not accompanied by post-mining rehabilitation.
3. There is waste due to mining products. Such as gold which produces mercury waste which can cause cancer.
4. The construction of a smelter cannot be done in a short time, so it takes timeand long preparation

Many communities support developmentSmelters hope to get an impact, namely fair employment, but not a few also reject the construction of a smelter because of the negative impact that can damage the environment if waste is not managed properly, and of course people's fear of unfair employment. This perception will later reflect the attitude of acceptance by the community towards the construction of a smelter.

V. Conclusion

The construction of a Processing and Refining Plant (Smelter) is a step taken by the government regarding downstream policies.The downstream policy is actually a positive opportunity that mining companies can take advantage of to enter the downstream industry. The increase in the added value of minerals is an effort to increase and optimize as well as

guarantee the availability of industrial raw materials, employment, and increase in state revenues.With various kinds of public perceptions, it is hoped that downstream policies, especially the construction of smelters, can have a positive impact on business actors, regional governments, especially local communities.

The construction of a smelter certainly has advantages and disadvantages. As for the things that are felt to provide benefits to the mining company itself and the government,among others :

1. Provides advantages to mining companies when compared to building smelters abroad because the costs are much cheaper.
2. Increasing the added value of minerals is carried out through mineral processing, smelting and refining activities.
3. Helping the government in reducing unemployment because people in the smelter area will have more opportunities to get jobs. For companies, accommodating local workers will guarantee more security.
4. Having a smelter close to a mining company will have a positive impacton the performance of the mining industry.

In addition to the advantages that can provide benefits for mining companies and the local government, there are also things that become weaknesses in the construction of smelters, including:

1. Mining companies have very little interest in building smelters. This is because there is no clarity regarding incentives andhigh investment to build a smelter.
2. There is environmental damage. This is due to the massive and illegal export of raw materials, because there is no prior processing through the smelter and is not accompanied by post-mining rehabilitation.
3. There is waste due to mining products. Such as gold which produces mercury waste which can cause cancer.
4. The construction of a smelter cannot be done in a short time, so it takes timeand long preparation.

The future of the Indonesian nickel smelter industry depends on precise regulations and real implementation from the government to build a highly competitive domestic smelter industry so that independence in the national energy sector can be realized.

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