

Research Article

The Cuban Nickel Industry Between Extractivism and Descarbonization: A Sector with Great Challenges

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Abstract

The exploitation of mineral resources occupies a significant role in the current debate on sustainable development for any country. In underdeveloped countries such as Cuba, the extraction and export of nickel is one of the activities that has played an important role in the national economy. Introduction: From 1990 onwards, this sector underwent a restructuring process that marked a starting point for its resizing. A joint venture was created with Sherritt International and one of the production plants was integrated into the global mining value chains. Nevertheless, an extractivist model persists in this activity, characterised by the export of primary products with low added value, high environmental impact at the territorial level and the prevalence of an enclave conception that limits the articulation and productive linkage with the national market. Objective: The aim of this article is to reflect on the transition of the Cuban nickel industry towards another development model that goes beyond extractivist practices. Methodology: From a critical perspective, it analyses the theoretical debate surrounding the sustainable development of mining and extractivism. Results: It is argued that policies to overcome extractivism should prioritise three directions: the promotion of strategies that encourage Foreign Direct Investment, the articulation of the territory to these strategies and the urgent generation of productive chains as the main concluding idea. Conclusion: Overcoming extractivism is assumed to be a sustainable development strategy that integrates several dimensions; it is considered a process deliberately conceived and managed by society to compensate for the damage caused to the environment. General study area: (Social Sciences). Specific study area: (Extractivism).

Keywords

Extractivism, Sustainable Development, Nickel Industry, Mining Exploitation, Production Chain

1. Introduction

The exploitation of mineral resources is a controversial issue in the debate on sustainable development. The analysis for these non-renewable natural resources becomes complex in the materialization of the purpose of harmonizing the interests between the economy, nature and society. The competitive and profitability criteria imposed by the new

socioeconomic schemes in the current international context constitute a challenge to achieve this balance, as they condition new perspectives in the development of mining activity in the world.

This debate is particularly acute in South America, where the discussion revolves around the role of the so-called ex-

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tractivist sectors such as mining and hydrocarbons. On the one hand, they become key sectors for the economic growth of countries with large endowments of these types of resources. On the other hand, they generate diverse social and environmental impacts at the territorial level, so their contribution to national development is debated.

Nickel mining in Cuba has been one of the activities that has had a significant role in the exportable sector of the country. From the triumph of the Revolution a nickel industry is consolidated constituted by three producing factories and an agglomeration of service companies, settled in the northeastern territory of Holguin province.

In the 1990s, this industry underwent a restructuring process aimed at bringing it into line with international competitive parameters. As part of this process, one of the plants was associated with foreign capital, which made its insertion into a Global Value Chain (GVC) of the mining industry feasible. This transformation makes it possible to improve the productive and organizational indicators in the mixed-ownership plant and nickel becomes one of the items with the highest percentage participation in Cuban exports of goods.

However, since its emergence, the development model of this industry has been based on the intensive exploitation of mineral resources. This has led to weak productive linkages with the domestic market and the export of low value-added products. The industry's insertion in global mining chains continues to be at the lowest level, and its production levels are conditioned by the instability of mineral prices in the international market.

These and other evidences indicate that the development policy of the Cuban nickel industry responds to an extractivist model that accentuates the subordinate role of the country in the world economy and leads to the reprimarization of the export sector.

This article examines the peculiarities of extractivism in the Cuban nickel industry, within the framework of the debate on the problems of development and the search for alternatives to overcome a pattern based on the intensive extraction of natural resources in Latin America. Taking this debate into consideration, it is shown that there are differences in the extractivist model applied in Cuba in which there has been a projection, on the part of the State, towards industrialization.

Based on the above elements, the objective of this paper is to offer some reflections on the ways of transition of the Cuban nickel industry towards another development model that overcomes the extractivist practice. These reflections constitute preliminary criteria to guide the sustainable development of the industry in the current national and international scenario, which should incorporate the territory in the formulation of solutions.

2. Methodology

The result presented is part of the analyses that emerge

from the studies leading to the doctorate of the main author, Martin [1] to which other more recent studies and assessments are added. Qualitative methodology techniques are used such as: interviews to specialists, non-participant observation and content analysis given the possibilities that these provide to analyze the general and essential of the object of study and to interpret the social relations of production deployed in the international, national and territorial context of the Cuban Nickel Industry. Although the qualitative methodology constitutes the fundamental methodological basis, specific instruments are also used, such as the mapping of productive chains, which allow to go deeper into the intersectorial relations established by the industry with the internal and external market.

Similarly, analysis and synthesis are used in the review of multiple sources of information, including statistics from international and national databases of the Economic Commission for Latin America and the Caribbean (ECLAC), the United Nations Conference on Trade and Development (UNCTD), the National Statistics and Information Office (NSIO), the Directorate of Statistics and the Municipal Government of Moa, as well as the National Institute of Economic Research (NIER) and the Center for the Study of the Cuban Economy (CSCE). In addition to the above, ad hoc information provided by the CUBANIQUEL Business Group was accessed.

As a methodological research procedure, triangulation is used to synthesize the information obtained from the application of methods, techniques, instruments and selected sources that make it possible to obtain qualitative generalizations.

3. Results

3.1. Classic Extractivism and Neo-extractivism Reflections for Action

Within the framework of neoliberal globalization, Latin America has deepened its dependence on the commodity export sector. A key component in explaining the reprimarization in these countries is found in the so-called "extractive" sectors, which include mining and hydrocarbons. It is recognized that in these sectors large volumes of natural resources are extracted, which do not receive additional processing, or are processed in a limited way, to be exported to global markets, according to Gudynas [2]. This as other researchers, Acosta [3] consider that it is possible to distinguish at present two types of extractivism. A first model called conventional that grants primacy to private companies, almost always transnational, while the State is limited to the role of subsidiary. In this perspective, the underlying conception of development assumes that growth from the economic point of view is sufficient to achieve social benefits.

A second model has been associated with progressive

governments, and has been called “progressive neo-extractivism”, Gudynas [2]. In this case, the intensive exploitation of natural resources for export persists, through productive enclaves, with high social and environmental impacts. However, the State plays a greater role through the application of stricter environmental controls, higher levels of taxation and the participation of state-owned companies in the different projects.

In short, beyond the differences between the different types of extractivism, there are also coincidences on how development is understood. In this regard, it has been emphasized that extractivism, whatever its version, is nothing more than a set of activities of massive extraction of primary resources for export that responds to the pattern of accumulation of capitalism today. It is in essence predatory, as is capitalism, according to Acosta [3].

Currently there is a positioning, in the societies of countries with natural resources, towards extractivist practices. That is, there is a perceived inability to face the challenge of building alternatives to the primary-export accumulation that accentuates the capitalist system, which perpetuates underdevelopment. In this sense, it can be asserted that there are no recipes for the governance of natural resources; the performance of each country in this regard is linked to its historical trajectory of international insertion and to the structures of ownership and distribution of its resources.

The analysis stresses that the growing demand for raw materials in developed countries and the technological differences between these economies and underdeveloped countries stabilize the general pattern of unequal specialization that prevails today. In the latter group of nations, unequal specialization hinders productive linkages between the different economic sectors at the national level. In addition, it promotes productive sectors based on the intensive exploitation of natural resources. In practice, the pattern of development based on the export of raw materials is accentuated and finds its clearest expression in extractivism, which is more closely related to the first model referred to. All this leads to reflect and rethink about other alternative developments in the sectors based on the exploitation of natural resources.

Nevertheless, significant policies have been deployed in the mining industry in different countries, which make it possible to visualize the promotion of productive complexes and the industrial development of the country based on the mining sectors. In Canada, these policies have generated service activities associated with the extraction of minerals, making the country one of the leaders in this branch at the international level. In Australia, a knowledge-intensive sector has been promoted, which has developed a technological services industry for mining. More than 60% of the software used by the world's mining industry is supplied by Australian companies. Finland also boosted a high-tech services sector for mining, turning companies such as Metso and Outotec into technology leaders for the mining, forestry and energy sec-

tors.

In the search for opportunities for national industrialization, several countries with natural resources have enacted regulatory measures to regulate the extractive activities of international capital. Starting in 2022 in countries such as Mexico, Zimbabwe and Chile, the state assumed a greater role in the lithium industry. These measures range from the nationalization of the lithium industry to a ban on the export of unprocessed lithium.

Large investors in the renewable energy and minerals sectors such as China are actively seeking innovative energy solutions for critical mining activities, as is the case with lithium mining in Zimbabwe. The advantage of promoting renewable energy solutions is very clear in terms of its strong technological capability to supply solar power facilities to mines. Achieving electrification and local development benefits; as well as developing effective and coherent redistributive mechanisms.

In the specific case of Indonesia, one of the main nickel producers in the world, with 7% of the world production, it should be noted that the latest policies in its mining sector, related to the prohibition of nickel exports and the requirement to process nickel products in the country, have constituted the central axis of the new trends observed in the take-off of industrial development at the national level. In this country, the State implements a strategic plan based on the following premises: mining constitutes a substantial part of the GDP; nickel is an indispensable input for the national steel industry and half of the country's steel demand comes from abroad. As well as, the promotion of industrial development based on the expansion of battery and electric vehicle production in the country in the short term.

As a result of the implementation of these policies, important trends can be observed in Indonesia. Exports of nickel ore have suddenly declined, while production and exports of nickel-related products, such as ferronickel and stainless steel, have increased significantly.

These trends are the result of China's foreign direct investment in the construction of nickel smelters and processors. Having consolidated its position as a major producer of refined nickel, Indonesia intends to move up the value chain by producing batteries and electric vehicles in the country.

In short, the electric vehicle revolution is driving a new acceleration in demand for Ni. As a result, the battery industry could account for 26% of total nickel consumption by 2030 and 36% by 2040. This rapid increase would be mainly due to demand from the electric vehicle sector, which would account for 95% of nickel consumption in the battery sector in 2040, according to Kyunghoon [4].

Cuba is the country with the fifth largest nickel reserves in the world: 5.5 million metric tons (5.8% of world reserves). Currently in the country's Foreign Investment Opportunities Portfolio there are about 50 mining projects published, most of them related to extraction, and others to derivative services

such as management and transportation, according to SIE [5]. The challenge is, then, to find ways of insertion in Global Chains that are consistent with national and territorial interests.

3.2. The Extractivist Model in the Cuban Nickel Mining Sector

Nickel mining in Cuba has been one of the activities that has played a significant role in the country's export sector. The main known Cuban nickel deposits are located in the eastern part of the Island, the largest being in Moa and Mayar í Holgu í province. Cuba also has other nickel reserves and other minerals disseminated in the metallurgical liquors that are concentrated in the tailings dams and other residues of the productive process of the producing companies.

In this type of deposits, nickel is often accompanied by other minerals such as iron, cobalt and other associated minerals. It is estimated that Cuban nickel reserves amount to approximately 800 million tons, which represents 37.3% of the world reserves of this mineral, Martin [1].

The North American firm Nicaro Nickel Company builds in 1943 a factory in Nicaro, Mayar í municipality. It is established as a war industry for the production of armaments in World War II. In the mid 1950's the company built a second factory, with the most advanced technology of its time, in the Moa area. After the triumph of the Revolution, with the financial and commercial support of the USSR, a third plant was built. A nickel industry is thus consolidated consisting of three producing factories and an agglomeration of service companies located in the northeastern territory of Holgu í province. The collapse of the Socialist Field frustrates the project to build a fourth plant, "Las Camariocas", in spite of being in a level of execution close to 70%.

In 2012, it was decided to close the Nicaro factory, so the industry is now concentrated and located in the municipality of Moa. It has a productive agglomeration structure consisting of two nickel production plants. The company "Commander Pedro Soto Alba: Moa nickel S. A" (PSA), with a production capacity of 24 thousand tons per year and the company "Commander Ernesto Che Guevara" (ECG), with a production capacity of 30 thousand tons per year. The industry has a set of scientific and service facilities, which guarantee 80% of the services, spare parts requirements and industrial maintenance of the plants.

In the 1990s, this industry underwent a restructuring process that allowed the modernization of part of the technological staff and placed Cuba among the main producers at international level. As part of this process, one of the factories was associated with foreign capital, which made its insertion into a global chain of the mining industry feasible. However, more than thirty years after this restructuring, there are signs of weak productive linkages with the domestic market, Cuban

nickel exports continue to be inserted in the lowest link (production of nickel and cobalt sinter) of the Global Value Chain, as well as an increase in negative environmental and social impacts at the territorial level.

Based on these elements, it is considered pertinent to make an valuation, from the extractivist critique, on the evolution of the Cuban nickel industry in the last decades. This incorporates new theoretical and empirical perspectives to the debate on sustainable development in the sectors that exploit natural resources.

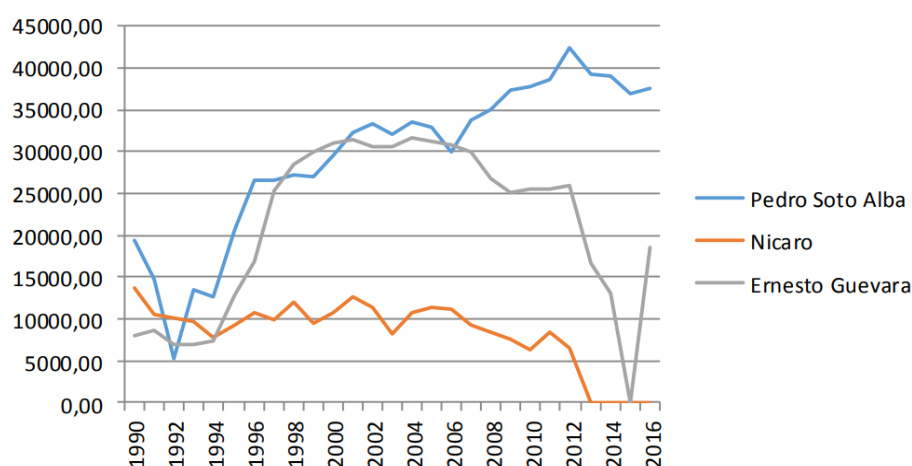
3.2.1. Cuban Nickel Production Process

Research reveals that in the current production process of the Cuban nickel industry, nickel is obtained and in a low proportion, cobalt, according to Martin [1]. This means that the remaining minerals found in the deposits are left as leftovers in the industrial process. In this process, mainly class II and III products are obtained. The nickel sinter stands out, with a nickel content of 90% and the enriched Ni+Co sulfide with 17% nickel and 6% cobalt. The preeminence of nickel sinter (Class II product) in exportable production means that the iron and steel sector in general is the main destination of Cuban nickel and not the production of stainless steel.

The theoretical capacity of nickel production in Cuba, since its emergence, is projected to exceed 70 thousand tons per year. However, the historical average reached during the 1980s was 32 thousand tons, according to Marquetti [6]. In the 1990s, this production was significantly reduced as a result of the disappearance of the industry's main export and supply markets when the Socialist Camp collapsed.

In 1995, Pedro Soto Alba joined the CGV led by Sherritt International, which led to a process of restructuring and economic recovery that improved total production volumes as of 1996 (see figure 1). These results are supported by an appreciable improvement in energy consumption indexes and in the industry's economic efficiency indicators. However, according to Marquetti [6], the production process continues to be based on obtaining class II and III products.

The agreements adopted with Sherritt International allow Cuba to become co-owner of The Cobalt Refinery Co. Inc. refinery, located in Port Saskatchewan, Alberta, Canada. Although the Cuban economy receives the corresponding economic benefits, Cuba is not registered as a producer/exporter of Class I products, due to the principle of territoriality for exports on which the international classification is based. The same applies to cobalt. The nickel sulfide plus cobalt that Cuba delivers to The Cobalt Refinery Co. Inc. allows obtaining cobalt metal at 99.8% purity, categorized as a PREMIUM Class I product. This allows affirming that the Caribbean nation currently produces 15% of the world's cobalt, Martin [1].



Source: Martin [1].

Figure 1. Production of nickel plus cobalt of Cuban factories (1990-2016) (in tons).

3.2.2. Commercialization of Cuban Nickel

Since 2000, international nickel sales have increased their share in Cuba's total exports of goods, with China as an important destination.

However, the net contribution of this industry to the national economy is unstable, due, among other aspects, to the oscillation of prices in world trade. According to Pérez [7], the recovery of international prices of the mineral allows nickel to become the main export item of goods for Cuba in 2008, but in the following years, they depressed again. In 2009, Ni is quoted at less than 10 thousand dollars per ton, while the planned price is 12 thousand dollars, which results in a loss of planned income amounting to some 130 million dollars.

In summary, the nickel industry's export levels vary depending on a number of factors, among them: the technological obsolescence of manufacturing facilities, the high dependence on imported inputs, the limited progress towards higher value-added products and the fluctuation of international ore prices.

3.2.3. Structure of the Cuban nickel Production Chain

The Cuban nickel industry positions its products in international markets in two ways: a model I that is based on the insertion of the company Pedro Soto Alba, Moa níquel S. A. (PSA) in a CGV commanded by the Sherritt; and a model II, through which the company Comandante Ernesto Che Guevara (ECG) is inserted in the international nickel market, as expressed by Martin [1].

Model I "International insertion of the nickel industry in the GVC commanded by Sherritt", is related to the formalization of mixed ownership between Sherritt Incorporated and Compañía Cubana General Níquel S. A in 1994. From this point on, three corporations emerge that integrate the processes of extraction, processing, refining and commercialization of nickel and cobalt: Moa Nickel S. A., which includes the

nickel mining and processing operations in the company "Pedro Soto Alba" installed in Moa; The Cobalt Refinery Co. Inc., which includes the facilities of Port Saskatchewan, in Alberta Canada, for the refining of the mineral; and the International Cobalt Company Inc., responsible for the commercialization activities.

In Model I, this industry remains in the primary link of the chain, without diversifying mineral exports. However, the association with Sherritt allowed the company Pedro Soto Alba, Moa Níquel S. A. to begin a sustained process of economic recovery, by increasing production levels to more than 35 thousand tons; acquiring new technologies that place the plant as one of the most efficient. It also places the industry as a leader in Cuba's export sector and allows the Cuban State to channel part of the income generated to the economic and social development of the territory.

Model II "Insertion of the Ernesto Che Guevara company in the international nickel market" is framed in the primary production activities carried out by this company, the productive articulation it deploys towards the interior of the mining cluster and the commercialization process it carries out with the external market, for Martin [1].

Shows that this model of international insertion is based on the concurrence to the foreign market in search of inputs and raw materials necessary for the productive process, as well as the export of products according to demand.

This perspective of insertion based on market relations is used by sectors that do not achieve upgrading processes and have limited spaces for insertion in the international market. Although the Cuban economy should not discard any way of insertion in the external market, the most advisable is to achieve relations in the chain network, which is related to the operating logic of productive activities in the GVC framework and constitutes one of the ways to achieve a competitive dynamic of growth and development.

Unlike model I, the Che Guevara Company is not a direct link in a specific GVC. Its participation is reduced to

commercial exchange with those actors that control the international nickel market and the suppliers of inputs and equipment. This quality obliges it to maintain a constant movement towards the search for suppliers and buyers that provide credits and better prices. In recent years, the Company has changed its market 3 times. In 2016, sales are concentrated in China, but since 2017 the market moves towards Europe, according to Martin [1].

3.2.4. Impacts of the Cuban Nickel Industry at the Territorial Level

In the first place, this industry constitutes the fundamental economic activity of the municipality of Moa. Hence, one of the most significant socioeconomic impacts it generates is related to the 29% of the Economically Active Population (EAP) that is employed in the various service companies and producers of the mining conglomerate.

Second, mining is one of the activities with the greatest potential to generate environmental impacts and affect the environment. During the last three decades, nickel extraction in the territory of Moa has affected extensive hectares of forests and the waters of the bay, causing the disappearance of traditional economic activities such as the timber industry and fishing. The degradation of the agricultural land has caused significant decreases in the quality of life of the inhabitants, who are subject to the high prices of agricultural products. This territory, is the second municipality of Holguín province with land classified as non-agricultural, 71, 0 thousand ha, according to NOSI [8].

Thirdly, because it is open-pit mining, the mineral processing operations cause gas emissions (sulfur dioxide) that generate chemical effluents with high toxicity. In addition, an average of 10 t/day of dust, 17 t/day of SO₂ and 2 t/day of SO₃ are emitted into the atmosphere, Suárez, Molina and Maldonado [9]. This generates high air pollution in the territory and neighboring areas where population centers are located. According to the Statistical Yearbook of Moa, published by the NOSI [8] this municipality leads the official figures from 2010 to 2015 of acute respiratory diseases, with 57% of the reports at the country level.

Several studies conclude that chronic exposure of the population of Moa to concentrations, especially emissions from the two nickel producing companies, increase the risk, compared to the average for Holguín province and the country, of mortality from lung, trachea and bronchial cancer, chronic diseases of the respiratory tract and cardiovascular diseases, according to Suárez, Molina and Maldonado [9].

4. The Cuban Extractivist Model in Nickel Mining. Main Features and Contradictions

Researchers such as Gudynas, do not project towards a complete prohibition of activities such as mining, but to

implement alternatives to extractivism. Considered as stages or transitions called by the author “post-extractivism”, which he defines as: “a set of alternatives focused on getting out of extractivist dependence” Gudynas [2], those alternatives are:

Sensible extractivism. This corresponds to undertakings that introduce reforms in their practices to reduce social and environmental impacts, through the use of the best available technologies to reduce damage to ecosystems (effluent treatment, water recycling, capture of polluting emissions), achieve better working conditions (occupational safety and health measures, medical coverage, decent wages), and make progress in the articulation with local communities.

Indispensable extractivism responds to the use of mining resources under other perspectives. It is the final stage, where those ventures that are really necessary will remain and, rather than the prohibition of extractivist activities, they will be resized, slowing down the role of this sector as an exporter, but enhancing its contribution to the national and regional economy. It is also a process that needs political and social support, which must be built from wide margins of democracy. The extractivist model applied in Cuba constitutes a limitation for the achievement of sustainable development of the Cuban nickel industry. It is based on: export of primary products; the productive process is based on a high level of imports of inputs and raw materials; production and export levels are limited by factors such as: technological obsolescence, nickel prices and international market demand; the drag effects on other sectors of the national and territorial economy are limited or almost non-existent. The environmental impact on the territory is considerable and no alternative economic activities are projected in the face of the near depletion of the deposits in exploitation, according to Martin [1]. However, despite the environmental, efficiency and structural damages identified above, the extractivism model applied in the oil and gas industry is considered to have a significant environmental impact.

5. The Above Is Supported by a Set of Features and Results Summarized Below, Martin

First, ownership over the fundamental means of production is in the hands of society as a whole and the subsoil belongs to the nation, so that decisions regarding mining exploitation are not a mandate of Transnational Corporations. Like the rest of the country's economic activities, this sector emphasizes the quality of life of the people, their wellbeing, the satisfaction of their needs, as well as the protection of nature, which is aligned with the goals of sustainable development. The transformation of the current tax policy has resulted, albeit insufficiently, in the spillover of revenues from mining exploitation into the territory.

Secondly, the creation of a joint venture with Sherrit has allowed for the acquisition of manufacturing technologies and

organizational improvements that have increased the industry's efficiency levels, stabilizing production levels at more than 60,000 tons per year since 1996, as well as raising workers' qualifications and salaries.

Third, although nickel and cobalt are significant exportable items of the Cuban economy, the latter does not rely on nickel extraction; the sources of income are diverse and exportable services have progressively come to represent the country's most important income.

The current Cuban economic strategy and the extractivist model of the nickel industry.

In 2017, giving continuity to the process of Updating the Economic and Social Model initiated in 2011, the VII Congress of the Communist Party of Cuba CPC [10], approved three important documents: the Conceptualization of the Cuban Economic and Social Model of Socialist Development, the Program for Economic and Social Development until 2030 and Guidelines for the Economic and Social Policy of the Party and the Revolution for the period 2016-2021.

These documents introduce transformations that provide greater flexibility to the organization and functioning of the Cuban socioeconomic system; which constitutes a favorable framework to overcome the limitations of the extractivist model of the analyzed industry. It is worth highlighting some of notable transcendence for the economic activity analyzed, in the Conceptualization:

- 1) Other forms of ownership and management that had a minority presence are granted complementary status; and it is proposed to promote productive linkages between the different economic actors.
- 2) It recognizes the fundamental contribution that foreign direct investment can make to the development of the country's productive forces and economic growth by facilitating access to capital, technologies, markets and managerial experience.
- 3) It is committed to contribute to the integral and sustainable strengthening of the territories, greater institutional autonomy, as well as the differentiated treatment of fragile ecosystems.

In this sense, a margin of autonomy is promoted for the analyzed industry, which would allow overcoming the obstacles that limit its performance in the development of the territory.

For its part, The National Economic and Social Development Plan until 2030: Proposed Vision of the Nation, Axes and Strategic Sectors reveals criteria of transcendence for the nickel industry, CPC [11], just to name a few:

- 1) The concentration of efforts on activities with greater intensity in the use of knowledge and advanced technologies, in order to modify the model of specialization and participation in the international economy. Also, the design and implementation of a model of local and community management with an environmental focus that integrates under the authority of territorial governments the protection and rational use of natural resources

and the fight against pollution.

- 2) The "Natural Resources and Environment" axis, as an important potential for the well-being of society, promotes the solution of environmental problems based on a local and community management model that integrates the protection and rational use of natural resources, the social and economic interests of the territories, as well as the articulation of science and technological innovation.
- 3) The Strategic Axis Human potential, science, technology and innovation, advocates the development of highly qualified human potential and guarantees conditions for its protection and stability.

These criteria open space to the potential of the nickel industry with respect to its capacity to generate geological-mining knowledge and innovation.

However, due to the outbreak of the covid-19 pandemic, which has had an extremely negative impact on world trade flows. The IMF estimates that, in 2020, the volume of world trade will fall by more than 10%. In this unfavorable external context, in addition to Cuba's pattern of external insertion based essentially on the export of raw materials -nickel, sugar, some productions of low technological content -rum, twisted tobacco, charcoal- and sun and beach tourism, according to Romero [12]. On the other hand, the matrix of external economic relations concentrated in a few markets and countries, visualizes, in the short term, the accentuation of the extractivist model in the nickel industry.

Authors such Torres [13] refer that Cuban exports of goods respond more to a favorable price situation than to the increase in exported volumes; since special circumstances concur such as: the sales of oil refines from the Cienfuegos refinery, the increase in the quotations of nickel and sugar. For this author, tobacco, rum and nickel have similar characteristics in the sense that exports depend unequivocally on the commercialization network of a foreign company. In this sense, Cuba's export performance, especially of goods, has had an unsatisfactory trajectory.

In the case of nickel, the pandemic situation directly impacted the price of the product, it was favorable -temporarily- an increase in the price of nickel, which from an average of \$18 452 USD/MT in 2021, closed 2022 at about \$25 841 dollars, according to studies conducted by Rodríguez [14]. However, in the first months of 2024, the prices of the mineral in the London Metal Exchange (LME) maintain the downward trend registered from 2022, Indexmundi [15]. This is partly due to the decline in the growth rates of the world's main economies, a situation that led to a contraction in metal consumption.

According to Bullón [16] nickel prices in 2024 are expected to remain under pressure from the global surplus of the metal, which is used, among other purposes, for stainless steel and electric vehicle batteries, Gold.com PriceGold [17]. This makes most cost per tonne forecasts less optimistic, BeatMarket [18].

From the acute economic crisis affecting Cuba since 2019,

accentuated by the emerging international sanitary scenario, changes are observed that suggest a new Cuban economic strategy towards more effective policies for the promotion of exports. In turn, this could not be unrelated to larger transformations in the economic model. The COVID-19 pandemic was a catalyst for accelerating the updating of Cuba's economic strategy and projecting a set of reforms to overcome the crisis.

In August 2020, the private and cooperative sector was authorized access to foreign trade, through the intermediation of state enterprises.

As of January 2021, the government proceeded with the full implementation of the monetary and exchange reform (monetary order). Its implementation implies: the elimination of the CUC from circulation; the unification of the exchange rate between the CUP and the US dollar -as a reference currency-; the devaluation of the Cuban peso towards an exchange rate that better reflects the economic reality of the country; the modification of wholesale and retail prices; the elimination of a substantial part of the subsidies to products; and the complete reform of wages in the public sector, according to Torres [13].

The above should lead to a greater deepening of the transformations in the Cuban economic model to overcome the high external vulnerability that characterizes the country in structural terms. According to Romero [12] these modifications would imply: 1) a radical transformation of the productive flows; 2) the elimination of important macroeconomic distortions; 3) the recognition of the market and the creation of the rules and institutions in which it is reproduced and 4) a redefinition of the interrelation between the different forms of property in the national economy.

According to Triana and Blanco [19], the magnitude of the impact of internal and external, conjunctural and structural factors has led to a deepening of the structural deformations of the Cuban model, such as: the accumulated technological deterioration due to insufficient investment levels; the segmentation of markets generated by the exchange and monetary duality and the increased weakness of a productive apparatus that was never able to adequately satisfy the effective demand. A GDP growth rate in 2020 of -11% illustrates this. For these authors, it has not been possible to find the path of sustained growth in the magnitude required by the development effort.

However, it is considered that the convergence of criteria of all the actors involved, on the urgent need for the structural reform of the Cuban economic model, opens a favorable scenario for the transformation and overcoming of the extractivist pattern in which the Cuban nickel sector is anchored. The moment is particularly propitious, based on the stimulation of exports with the increase of long-term external competitiveness and the promotion of domestic productive linkages.

The ideas presented above show that the implementation of policies to overcome extractivism prioritizes three directions:

- 1) Promotion of deliberate strategies that encourage Foreign Direct Investment and allow insertion in the GVC links. The development strategy for the mining territories does not annul the monopolistic relationship that the transnational companies establish through the GVCs nor its consequences, but it favors upgrading, strengthens the positions of the national states in their relationship with these companies and contributes to the sustainable development of the country as a whole:
- 2) The imperative articulation of the territory to the strategies for overcoming extractivism. It has led, to a greater or lesser extent, to national development and the development of the territory where the natural resource-based activity is based.
- 3) The urgent generation of productive chains. This has been based on the diversification of the product, the generation of new service activities related to the primary activity and also the promotion of technological policies for other sectors.

In other words, articulating these three directions constitutes one of the most complex challenges in overcoming Cuban extractivism. It requires facing the internal contradictions that can result from giving priorities to some territories over others; between accumulation and consumption; as well as in the management of forms of property, among others. It constitutes a problem of long-term development planning, in which the fulfillment of other economic objectives linked to efficiency and international competitiveness must also be inserted, as well as investment policies to comply with environmental and social policies.

6. Alternatives to Overcome the Extractivist Practice in the Cuban Nickel Industry

As previously expressed, more than eliminating extractive activities, overcoming extractivism means the permanence of those necessary enterprises, their resizing, changing the role of this sector as an exporter of raw mineral with the incentive to Foreign Direct Investment, but enhancing its long-term contribution to the national and regional economy.

Overcoming the extractivist practice in this industry requires the identification of strategic alternative activities that should arise for its structural transformation, with a view to creating long-term socio-productive territorial options. Furthermore, it should lead to the development of the country's productive fabric associated with the articulation with branches such as the chemical, mechanical, electronics, recycling and value-added business services industries, which by virtue of an active participation of foreign investment may even generate new exportable items and productive linkages in the future.

Conceiving and implementing a development strategy for this industry that goes beyond extractivism is inseparable from rethinking the role of the territory as an active subject of

development. Moa needs to be the object of a differentiated tax policy that empowers the municipal government economically and empowers it to manage part of the income contributed by the mining companies - foreign and national - located in the territory, to face the environmental damages caused and the infrastructure requirements of the industry. In general, it should be considered the conformation of an industry more open externally to the participation in world trade flows; but more articulated to the internal market as a platform to support its competitiveness, at the same time generating productive chains that propitiate a wider diffusion of economic and technological progress within its productive system, the territory and at a national level.

7. Conclusions

Overcoming extractivism is assumed as a sustainable development strategy, which integrates several dimensions; it is not a stage that occurs naturally and spontaneously, but a process premeditatedly conceived and managed by society where the damage caused to the environment is compensated. In the case of the nickel mining sector in Cuba, overcoming extractivism rests on: the promotion of policies to attract FDI as a way of accessing new technologies, achieving upgrading and scaling up in the global chains of the mining industry. The generation of new environmental services and supply activities that are articulated with the primary activity and allow the dynamization of the territorial market; as well as reducing the environmental and social impacts generated by extractive activities. The promotion of productive linkages at the national level that drive innovation and technological development of the sector and the industrialization of the country.

Abbreviations

ECLAC	Economic Commission for Latin America and the Caribbean
UNCTD	United Nations Conference on Trade and Development
NSIO	National Statistics and Information Office
NIER	National Institute of Economic Research
CSCE	Center for the Study of the Cuban Economy
PSA	Company "Commander Pedro Soto Alba: Moa Nickel S. A"
ECG	Company "Commander Ernesto Che Guevara"
GVC	Global Value Chains
FDI	Foreign Direct Investment

Author Contributions

The authors participate equally in the preparation of the article.

Conflicts of Interest

The authors declare no conflicts of interest.

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