

# 2019 - 2025 Mining Sectorial Plan



"We are committed to continuing in this direction regarding the social, political aspects, with a full democracy, growing stronger, participatory and focused. Regarding the economic aspect, a project to give a new model that is productive, diversified and modern, in order to achieve an economy at the people's service and not the service of minorities."

Hugo R. Chávez F.

Meeting with entrepreneurs in Great Britain. Canning House, London, 15 May 2006.

---

"Venezuela is a mining power, and we're going to develop it within an Ecologic concept. A concept of the Venezuelan power."

Nicolás Maduro Moros.

President of the Bolivarian Republic of Venezuela  
Ciudad Guayana, 5 December 2017.

---

"We want to leave the biggest social impact and the lowest environmental impact".

"The Bolivarian Government's priorities are humans and the environment. We cannot hide our mining history, nor can we tell the OMA's communities not to do mining because there is a great culture in that territory. What we must do, as a single Government, is to implement strict plans and controls so that the mining done there does not cause devastation or destruction, in order to have the smallest impact in the ecosystem."

Víctor Cano.

Ministry of People's Power for the Ecologic Mining Development. Caracas, July 2018.



# 2019 - 2025 Mining Sectorial Plan

---

Urbanización Las Mercedes, Av.Veracruz con calle Cali. Edificio Pawa. Baruta municipality, Miranda State, Venezuela. Zip Code 1060.  
RIF: G-20012136-0

#### 2019-2025 Mining Sectorial Plan Strategic Vision:

**Hugo Rafael Chávez Frías**

Eternal Commander of the Bolivarian Revolution

**Nicolás Maduro Moros**

President of the Bolivarian Republic of Venezuela

**Víctor Hugo Cano Pacheco**

Minister of People's Power for Ecologic Mining Development

**Franklin Ramírez Araque**

Vice-Minister of Eco-Mining Exploration and Investment

**Jorge Alejandro Medina Murillo**

Vice-Minister of Eco-Mining Monitoring and Control Development

#### Constructor Team for the 2019-2025 Mining Sectorial Plan:

**Danny Rubén Tovar Osorio**

Eco-mining Planning and Development General Director

**Luisa Deyanira Barroso Zamora**

Assistant

Eco-mining Planning and Development General Directorate

**Jesús Alberto Gutiérrez Rudas**

Planning Coordinator

Eco-mining Planning and Development General Directorate

**Daniel Lisandro Paz Gil**

Professional I

Eco-mining Planning and Development General Directorate

**Rigoberto Rafael Rosales Salazar**

Professional

Eco-mining Planning and Development General Directorate

**Rosy Anahyle Torres Valdez**

Professional I

Vice-Minister's Office for Eco-Mining Monitoring and Control Development

**Georlexandra Gabriela del Valle Díaz**

General Director

Planning and Budget Office

**Brut Linares**

Processes Planning and Optimization line Director

Planning and Budget Office

**Sandino Gabriel Marcano Mujica**

General Director

Territorial Coordination Office

**Khatrine Joksirigma Marin Modesto**

General Director

Money Laundering Control and Prevention Office

---

Workers of the Ministry of People's Power for Ecologic Mining Development, its appointed entities that participated in the work meetings for the 2017 Sectorial Plan

---



# Index

## Content

<b>Presentation</b> .....	<b>9</b>
<b>Introduction</b> .....	<b>10</b>
<b>Reach</b> .....	<b>12</b>
<b>1. Sectorial Framework</b> .....	<b>15</b>
1.1 Mining Culture in Venezuela.....	16
1.2 Mining basic notions.....	20
1.3 Mineral Potential in Venezuela .....	29
1.4 Ecologic Mining National Systems .....	44
1.5 Mining sector diagnosis .....	46
<b>II. Strategic Framework</b> .....	<b>61</b>
II.1 2019-2025 Homeland's Plan Link .....	62
II. 2 2015-2030 Sustainable Development Goals Link .....	66
II.3 Mining sector legal framework .....	68
II.4 Ecologic Mining Development .....	74
II.5 Action Vertexes and Strategic Goals .....	74
II.6 Linked Strategic Plans .....	76
<b>III. Operative Framework</b> .....	<b>79</b>
III.1 2019-2025 Policies, programs and macro projects .....	80
III.2 Annual and long-term projects .....	86
III.3 2025 Goals .....	87
• Social inclusion and human rights .....	87
• Sovereignty and security .....	88
• Mining economy .....	88
<b>IV. Sectorial Organization Framework</b> .....	<b>93</b>
IV.1 Inter-ministerial management .....	94
IV.2 Private Sector joint management .....	96
IV.3 Mining people's power joint management.....	97

<b>V. Monitoring and Management Framework .....</b>	<b>99</b>
V.1 Inter-ministerial management .....	100
V.2 Control and monitoring mechanisms .....	101

## Figures

<b>Figure n° 1.</b> Identification stages for mineral exploitation	<b>20</b>
<b>Figure n° 2.</b> Mining activity life cycle	<b>22</b>
<b>Figure n° 3.</b> Productive chain of the mining activity in Venezuela	<b>23</b>
<b>Figure n° 4.</b> Value chain of the mining activity	<b>24</b>
<b>Figure n° 5.</b> Activity scales of the mining activity in Venezuela	<b>24</b>
<b>Figure n° 6.</b> Small mining location in Venezuela	<b>27</b>
<b>Figure n° 7.</b> Medium-sized and large mining location in Venezuela	<b>28</b>
<b>Figure n° 8.</b> Venezuela's geologic map	<b>29</b>
<b>Figure n° 9.</b> Venezuela's map of metallic minerals	<b>31</b>
<b>Figure n° 10.</b> Venezuela's map of non-metallic minerals	<b>32</b>
<b>Figure n° 11.</b> Strategic Development Zone " <i>Arco Minero del Orinoco</i> " (Orinoco Mining Arc)	<b>33</b>
<b>Figure n° 12.</b> Ecologic Mining National System Graphic	<b>44</b>
<b>Figure n° 13.</b> Estimation of the gold price behavior	<b>49</b>
<b>Figure n° 14.</b> Estimation of the iron price behavior	<b>49</b>
<b>Figure n° 15.</b> Estimation of the nickel price behavior	<b>49</b>
<b>Figure n° 16.</b> Estimation of the coal price behavior	<b>50</b>
<b>Figure n° 17.</b> Estimation of the phosphate price behavior	<b>50</b>
<b>Figure n° 18.</b> Mining activity contribution to the Gross Domestic Product	<b>52</b>
<b>Figure n° 19.</b> Gold production graphic chart	<b>52</b>

<b>Figure n° 20.</b> Iron production graphic chart	<b>52</b>
<b>Figure n° 21.</b> Nickel production graphic chart	<b>53</b>
<b>Figure n° 22.</b> Diamond production graphic chart	<b>53</b>
<b>Figure n° 23.</b> Bauxite production graphic chart	<b>53</b>
<b>Figure n° 24.</b> Coal production graphic chart	<b>54</b>
<b>Figure n° 25.</b> Phosphate production graphic chart	<b>55</b>
<b>Figure n° 26.</b> Feldspar production graphic chart	<b>55</b>
<b>Figure n° 27.</b> Decentralized minerals production sub-system (I)	<b>56</b>
<b>Figure n° 28.</b> Decentralized minerals production sub-system (II)	<b>56</b>
<b>Figure n° 29.</b> Vertexes graphic of the mining sector action	<b>75</b>
<b>Figure n° 30.</b> Mining sector development policies	<b>80</b>
<b>Figure n° 31.</b> Monitoring and controlling levels within the EMNS	<b>101</b>
<b>Figure n° 32.</b> EMNS interaction between the monitoring and control levels	<b>102</b>

## Boxes

<b>Box n° 1.</b> Small mining location in Venezuela	<b>26</b>
<b>Box n° 2.</b> Iron, bauxite and coal activity category scales	<b>26</b>
<b>Box n° 3.</b> Metallic and non-metallic minerals activity category scales	<b>27</b>
<b>Box n° 4.</b> Mining contribution to the productive sector	<b>34</b>
<b>Box n° 5.</b> Mineral resources and reserves base	<b>28</b>
<b>Box n° 6.</b> Mining Sectorial Plan baseline	<b>59</b>
<b>Box n° 7.</b> Link to the specific goals of the 2019-2025 Homeland's Plan	<b>64</b>
<b>Box n° 8.</b> Link to the 2015-2030 Sustainable Development Goals	<b>67</b>
<b>Box n° 9.</b> Volume projection of mineral production (2019-2025 centralized mining sub-system)	<b>89</b>
<b>Box n° 10.</b> Area to be explored within the <i>Arco Minero del Orinoco</i> (Orinoco Mining Arc) (2019-2025 centralized mining sub-system)	<b>90</b>

<b>Box n° 11.</b> EMNS required inter-ministerial interaction	<b>94</b>
<b>Box n° 12.</b> Mining sector required investment matrix (centralized mining sub-system)	<b>100</b>

## Attachments

<b>Attachment n° 1.</b> Construction Route for the 2019-2025 Mining Sectorial Plan (June 2016 – July 2018)	<b>103</b>
<b>Attachment n° 2.</b> Interaction of the Ecologic Mining National System with the 2019-2025 Mining Sectorial Plan (September – November 2018)	<b>104</b>



## Presentation

The Mining Sectorial Plan is the strategic document that will guide the Venezuelan State's policy regarding the mining sector, aimed at consolidating the achievements made and continuing to advance until overcoming the challenges that the National Executive has proposed himself, in order to guarantee sovereignty in the management of the mineral resources.

The plan described in this document contemplates, among other elements, the action lines to be implemented in the sector, which allow the configuration of a valid alternative to generate economic growth through the production increase, and the creation of a new mining culture that guarantees additional income to the Republic and serves to leverage social development. All this under the principles of an efficient administration and the mining resources rational exploitation respecting the environment.

As a starting point, the first chapter of the document presents the characteristics of the mining culture in the country, which has almost 200 years of history, establishing the mining activity basic notions, which are specific to the particularities of the culture; the mining potentialities that are in the national territory are presented, the Ecologic Mining National System is defined and characterized for the first time, and

finally a diagnosis of the mining situation in 2018 is developed.

The second chapter presents the link between the strategic vision of the sector and the Second Socialist Plan for the Nation's Economic and Social Development – 2019-2025 Homeland's Plan, with the 2015-2030 Sustainable Development Goals and the characterization of the legal framework that governs the mining activity, then it is presented the vision of the Ecologic mining development and the action vortex that accompany it along with its strategic objectives, to finally end with the definition of the specific strategic plans that derive from this sectorial plan.

The third chapter establishes the operational framework that will develop the policies, programs and macro projects, as well as the goals of the mining sector together with the mineral production estimated for the 2018 – 2025 period.

The fourth chapter presents the essential interaction elements that must be developed between the different actors that are part of the Ecologic Mining National System, and finally the fifth chapter defines the investment requirements for the sector development, as well as the monitoring and control mechanisms for the execution and progress of the sectorial plan.

## Introduction

The Bolivarian Republic of Venezuela possesses a great variety of minerals distributed throughout its territorial extension, for that reason, the strategic vision of the commander Hugo Chávez, that is transferred like a torch to President Nicolás Maduro Moros, in the conformation of the 15 productive engines of the Bolivarian Economic Agenda and the establishment of mining as the eighth engine, in which the opportunity presented for the generation of resources for the country through mining activity has been recognized, as well as presenting a vision for the transformation of these natural resources, so that they contribute to national development, beyond the exchange value offered by their commercialization as raw material.

All these proposals are reflected in the historic objective of "converting Venezuela into a socially and economically powerful country", as established by Hugo

Chávez in the First Socialist Plan for the Nation's Economic and Social Development - 2013-2019 Homeland's Plan and remains in the Second Socialist Plan for the Nation's Economic and Social Development - 2019-2025 Homeland's Plan established by Nicolás Maduro.

The development of the mining activity in the national territory and the economic-productive diversification that emerges from it through the promotion of new work sources, productive undertakings, generation of added value and the socialization of the means of production, will allow to sit the bases for the recovery of the national economy and the transformation of the oil rentier model towards a new productive map with value chains, empowered social actors and a technological optimized productive apparatus that contributes to the independence in the international and national financial circuits.

The Mining Sectorial Plan prioritizes the following dimensions: social, security, economic and Ecologic, through mining programs and projects in the short, medium and long term, that guide the production of prioritized mineral items such as: gold, diamond, iron, coal, nickel, coltan (columbite - tantalite), phosphate, feldspar, bauxite, marble, granite and limestone.

The establishment of the Ecologic Mining National System, based on this plan, will make it possible to direct all the actors that comprise it to reorder the activity in the artisan, small, medium and large scale scales, and with it, the production recovery of the main mineral items, optimize the management models of the operating companies, exploration projects development, new technologies implementation, ensure the ecosystems preservation, territorial integrity and sovereignty.

## Reach

The Mining Sectorial Plan is regarded within the Second Socialist Plan for the Nation's Economic and Social Development - 2019-2025 Homeland's Plan. In this way, it is generated as an instrument with a long-term vision, which motivates medium and short-term decisions, determines the sector policies, its strategies and management model to guide the national mining development, making it possible to align public management, the mixed, private and people's economy at the service of productive diversification.

Regarding area, it contemplates all the mining activities that take place in the territory of the Bolivarian Republic of Venezuela, allowed by the Constitution



and the laws in force for the sovereign use of metallic and non-metallic minerals, fostering geological research, prospecting, exploration and rational exploitation of mineral resources with low environmental impact, to potentiate their use and use at the national level in coordination with the competent institutions.

Regarding mining operations, it establishes the lines for the development of mining in its artisan, small, medium and large scales.

Regarding time, the plan will be developed from 2019 to 2025, with a programmatic vision of two cycles:

- From 2019 to 2020 it focuses on the recovery of productive capacities.
- From 2021 to 2025 it focuses on the increase of productive capacities.

These cycles will allow establishing a solid platform, so that in the following period (2025-2031), the following aspects can be developed from the mining sector:

- Material and financial conditions of the productive expansion with a new social base.
- Mineral value chains as a new source for generating foreign currency.







## Chapter I

# Sectorial framework

---

## 1.1 Mining Culture in Venezuela

Mining is the primary activity that is based on the selective obtaining of minerals and other materials from the earth's crust. It is one of the oldest activities of mankind, since it was used thanks to the carving of rocks to make tools. In Venezuela, the mining activity has almost 200 years of history, which shows that in our country there is a mining culture.

### Pre-colonial time:

The original inhabitants of the South American continent already worked the non-metallic minerals to support themselves in the satisfaction of their basic needs, according to anthropological studies, approximately around the year 1000 BC. There are proofs of the manufacture of ceramics, as well as polished lithic instruments. On the other hand, in the Andean mountains there is evidence of the construction of ditches as a system for irrigation of crops, for which rocks were used in the construction of tunnels, walls and bridges as part of the system.

Later, when Christopher Columbus made his trip through the eastern Venezuelan coasts and the Orinoco River in 1498, he recounts the wide use of gold by the aborigines.

In the same way, Fray Pedro de Aguado reveals the use of gold jewelry by the Indians of Cumaná and Cubagua, the trade with salt, the use of garments and objects of gold and precious stones, by the aboriginal peoples of the Venezuelan Andes as a symbol of status and power. He also points out that the houses were made of adobe and tiles, among other materials. These facts allow inferring the practice of mining by these peoples but there is no information about methods and / or extraction techniques.

### Colonial period:

In the colonial era, mining was scarce, and due to the need for housing and population centers, non-metallic minerals (soil materials and stones) were used intensively. In the year 1528, Alfonso Alfinger, governor of the province of Coro, discovered the mines where indigenous peoples extracted gold. In 1551 other mines were discovered in San Felipe de Buria, in la quebrada de Cocorote, and in San Juan de los Reyes, which gave impetus to the Spanish conquest of the indigenous territories in search of "El Dorado". Then, in 1724, small quantities of iron ore began to be extracted to feed Catalan forges of Capuchin friars.





### Republican period:

With the conformation of the Republic in 1829, Simón Bolívar enacts the decree of legal recognition in matter of mining in which it was exposed that the mines were property of the Republic.

The interest in the search and exploration of gold in Guayana begins in 1824, when in the mission of Tupuquén (a hamlet located 129 kilometers east of El Callao and north of the Yuruari River), the Indians of the Caratas Mountains and Caratal found pure unprocessed gold. In 1850 a recognition of large volumes of gold was made in the Guayanesa area (now Bolívar state), through a leaf signed by several inhabitants of Ciudad Bolívar, which attested to the existence of a large gold mine located in the vicinity of San Felix de Cantalicio de Tupuquén, on the banks of the Yuruari River. This situation generated the mobilization during later years of Venezuelan and foreign settlers to the region to extract the mineral, making use of rudimentary tools, the subsequent gold rush in 1853 attracted the adventurers of England, the United States, France and the Caribbean islands.

In 1854, the first Mining Code was enacted in which the concessions regime was established, granting the following:

- In 1882 first coal concession.
- In 1882 first gold concession.
- In 1883 first concession for iron ore.

Likewise, from 1868 to 1870 the crushing mills began to be installed in the mines: Nacupay, El Callao, Panama, Mocupia and Potosí, through the modality of mining claims.

At the beginning of 1926 the process of cyanidation and concentration by flotation were installed in Venezuela. These processes enhanced production and allowed to extract more efficiently the gold from the beneficiated mineral in El Callao's areas.

During the decades between 1930 and 1989, the discovery and exploitation of new manifestations and deposits of minerals is recorded, which are detailed below:

- The first diamond exploitation of begins.
- Deposits of the following minerals are discovered: asbestos,

magnesite, lead, zinc, manganese, gypsum, phosphate, bauxite, other aluminum and cinnabar ores.

- The so-called "golden age of Venezuelan gold mining" was lived, a period between the final years of the Gomecista dictatorship and the last years of the Perez Jimenista dictatorship, since production rose considerably compared to previous years and profits for entrepreneurs, smugglers and miners were quite kind.

- Nickel was discovered.

- Large-scale production of iron ore begins by North American companies.

- A deposit of thorium and other rare minerals is discovered.

- El Callao's mines are redesigned by the Corporación Venezolana de Guayana (CVG) and the General Mining Company of Venezuela (Minervén).

- Gypsum exploitation begins.

- Bauxite exploitation begins.

- The concessions regime begins for a group of non-metallic minerals where it has highlighted the production of granites for ornamental purposes and "slate".

## Bolivarian Republic of Venezuela:

Bolivarian Republic of Venezuela: The twenty-first century comes to Venezuela with changes in its political model, when in 1999, Hugo Rafael Chávez Frías took office, who opened the gaps of a different direction to the economy of the country, based on the nationalist character, taking advantage of this by the restriction of the presence of foreign companies in the case of gold mining, carrying out the following actions:

- In 1999, the Mining Law was enacted, where the term "small-scale mining" appears for the first time.
- In 1999, the National Institute of Geology and Mining (Ingeomín) was created.
- In 2005, the Misión Piar Foundation was created to promote the organization of small-scale miners for work, production, preservation of the environment and habitat.
- In 2011, Chávez's administration nationalized gold mining in Venezuela, and

Minervén became the only company authorized to produce gold in the country.

- In 2013, the Venezuelan Mining Corporation S.A. (CVM) was created.
- In 2014 the 15 productive engines of the Bolivarian Economic Agenda were established, being the eighth one the Mining Engine.
- In 2015, Nicolás Maduro Moros' administration dictates Decree 2165 with the rank, value and force of the Organic Law that reserves to the State the Activities of Exploration and Exploitation of Gold and Other Strategic Minerals.
- In 2016, the Ministry of People's Power for Ecologic Mining Development was created, and the Orinoco Mining Arc National Strategic Development Zone was established.
- In 2017, the decree was signed declaring 23 new areas for mining use and eco-socialist development (Aumde) located in the Orinoco Mining Arc, as a mechanism for promoting "national strategic development".

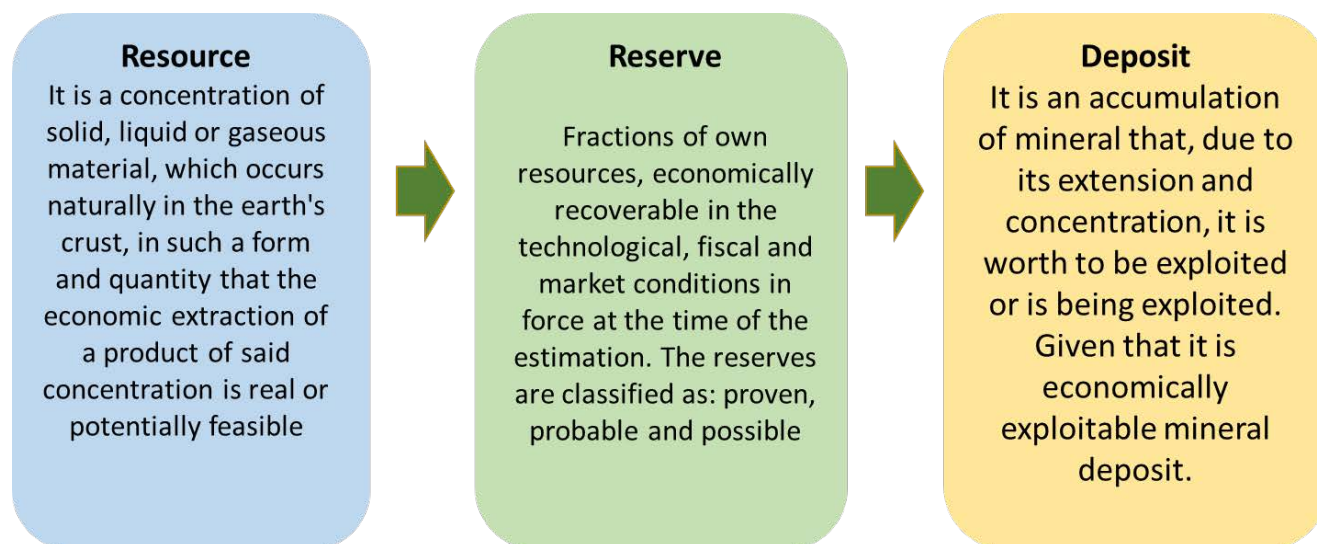




## 1.2 Basic Notions of Mining

In order to address the mining sector in Venezuela, it is necessary to establish some basic notions that determine the components of mining activity, as well as its relevance for productive economic development.

**Figure n° 1**  
**Identification phases for mineral exploitation**



Source: Statistical yearbooks of the Ministries of People's Power with competence in mining matters (2005-2012).

The first is to know the phases of identification of mineral resources and reserves that guide its viability as an economic activity that can generate sustainability and return on investment. The first two phases each have different certainty levels that allow establishing the economic possibility to reach the determination of a reservoir, according to the JORC code (Australasian Code for Reporting Mineral Resources and Ore Reserves), one of the international codes for the certification of exploration prospectuses, resources and mining reserves that are endorsed by the

Crisco Commission (Committee of International Standards for Reports of Combined Reserves), certainty levels for resource and reserves identification can be established in the following way:

- **Identified resources:** these are resources whose location, grade, quality and quantity are known or have been estimated from specific geological evidence. These resources include the economic and sub-economic components.



To reflect the different degrees of geologic certainty, these economic divisions can be subdivided into inferred, indicated and measured resources.

**a. Inferred resources:** these are those in which the estimation is based on a continuity assumed beyond the measured and / or indicated resources for which there is geological evidence. The estimated resources may or may not be supported by samples or measurements.

**b. Indicated resources:** these are those in which the quantity, grade and / or quality, have been calculated from information similar to the one used for the measured resources, but the inspection, sampling and measurement areas are more separated or less properly spaced. The degree of certainty, although inferior to that of the measured resources, is high enough to assume the continuity between the observation points.

**c. Measured resources:** these are those in which the quantity is calculated from dimensions manifested in outcrops, trenches, exploitations or drillings. The grade and / or quality are calculated from the detailed sampling results. The inspection, sampling and measurement areas are spaced so closely and the

geological character is so well defined that the resource size, shape, depth and mineral content are well established.

**Base or basic reserve:** it is a portion of the identified resources, on which reserves are calculated.

**Identified reserves:** They include inferred, indicated and measured reserves.

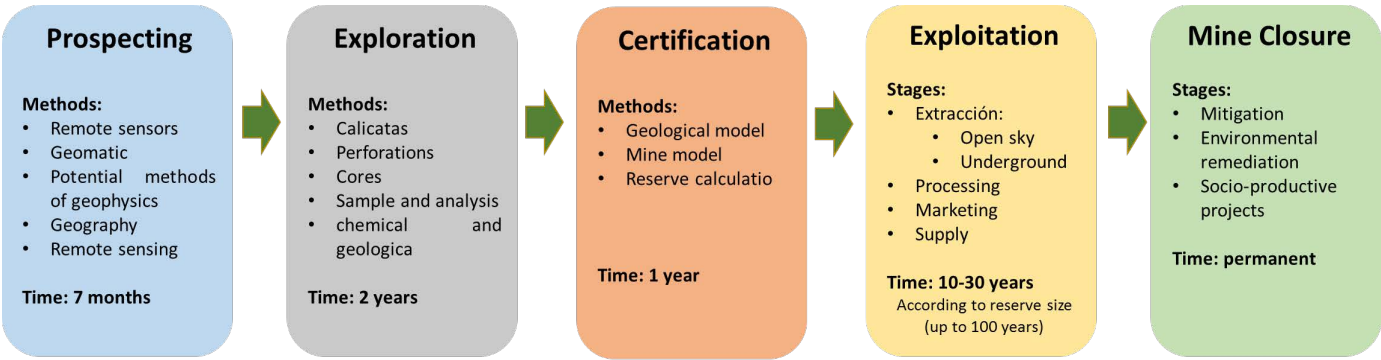
**d. Inferred reserves:** they are those that are derived from geoscientific data and are not determined with a reasonable level of reliability.

**e. Indicated reserves:** they are those whose quality and quantity are derived from known geoscientific data with a reasonable level of reliability (by drilling, trial pits and trenches at widely spaced distances to ensure continuity of mineralization).

**f. Measured reserved:** they are those that are derived from a considerable amount of real data, in interpretation and evaluation that leads to a clear determination of shapes, sizes, density and tenors (mineral intersected and tested by drilling or other type of sampling, in closely spaced points to confirm continuity with known and reliable data).

**Proved reserves:** they are those to which the form, size, volume, density and tenors have been delimited with "reasonable certainty" in accordance to the available geological and technological information, under prevailing operational, economic and governmental regulations..

**Figure n° 2**  
**Life cycle of mining activity**



Source: Statistical yearbooks of the Ministries of People’s Power with competence in mining matters (2005-2012).

The second step is to know the life cycle of the mining activity in which the lapses are established for the development of the different activities that allow to determine the resources and reserves, as well as the exploitation of the mineral deposits, without forgetting the positive interaction with the environment by establishing permanent mechanisms for mitigating the damage generated by the activity:

**1. Prospecting/Exploratory Drilling:** The goal of this stage is the recognition of the mineral deposit with economic interest and to delimit the area to be investigated at approximately 50 km<sup>2</sup> for an upcoming exploration campaign, it will be applied in large areas of land with a large spacing between the samples.

In this stage, precise geochemical and geophysical methods to be used in each of the cases will be applied.

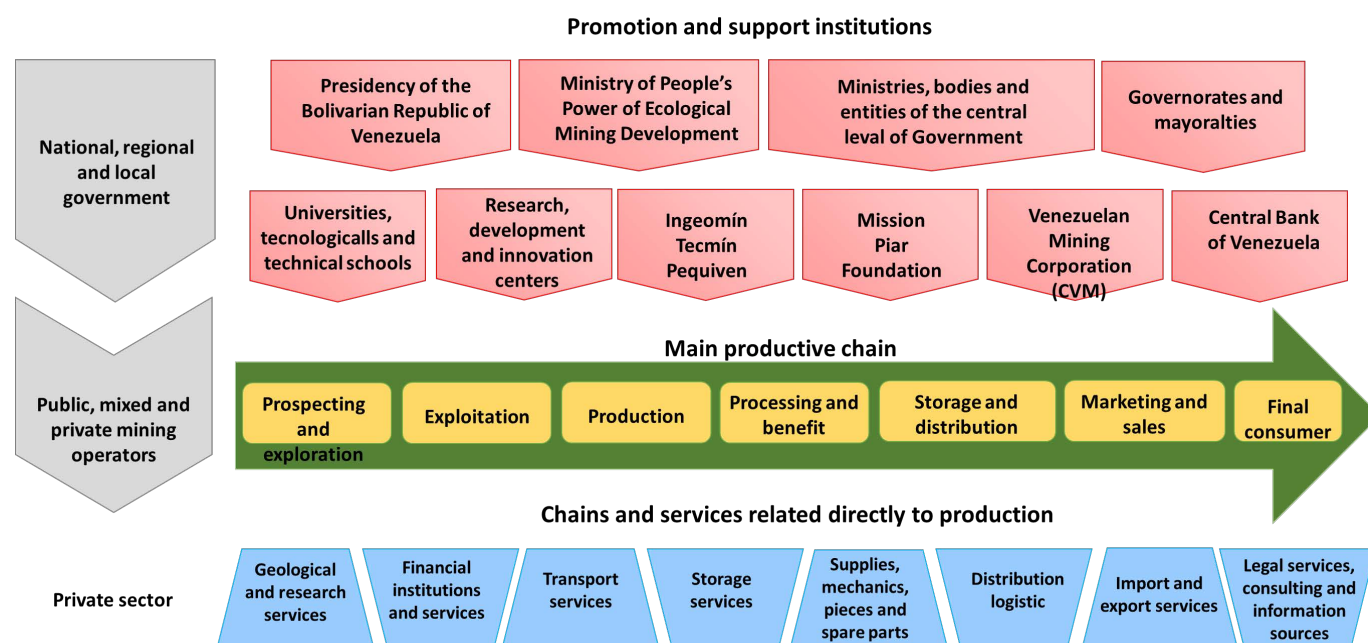
**2. Exploration:** unlike prospecting, the exploration stage seeks to delineate the mineral deposit for a future economic evaluation, in this stage data such as laws and their distribution, size, geometry, density, among others are obtained. In this stage, the direct geological method will be applied, which will help obtain the aforementioned data, and then be interpreted with the help of mining software.

**3. Reserve certification:** they are field works carried out by technicians of a specialized geological service, which support the confirmation of information and exploration works carried out to certify the volume of proved and probable reserves existing in a deposit, previously located by individuals.

**4. Exploitation:** it is considered initiated when starting with infrastructure works for mining production. There are different methods of exploitation and its application depends on the physical state of the mineral (coherent or incoherent solid, liquid, gas, or soluble or fusible solid), its depth and shape (open or underground), and other characteristics. This stage includes the marketing and sale of the mineral.

**5. Mine closure:** The mine closure plan is an environmental management instrument made up of technical, economic and legal actions carried out by the owners of mining activities. It is intended to adopt the necessary measures before, during and after the operation closing with the purpose of eliminating, mitigating and controlling the adverse effects to the used or disturbed area by the mining activity, so that it reaches ecosystem characteristics compatible with a healthy, suitable environment for biological development and landscape preservation.

**Figure n° 3**  
**Mining activity life cycle**

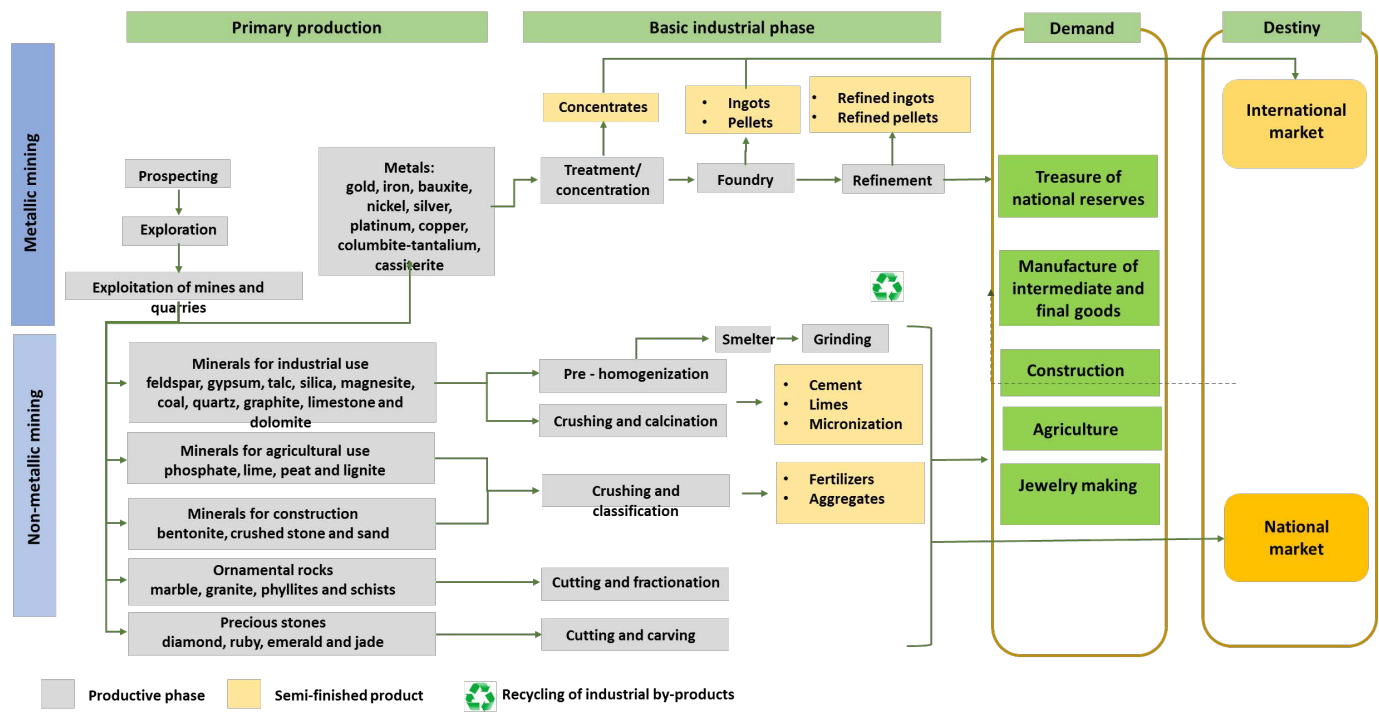


Source: Ministry of People's Power of Ecologic Mining Development (2018)

The transformation of minerals follows a sequence of stages that varies according to the mineral, but generally begins at the exploration stage and culminates with the marketing and sale stage.

The productive chain of the mining sector involves all those activities carried out by individuals, companies or establishments, whose production processes use inputs of mineral origin as well as the commercialization and distribution of the finished products.

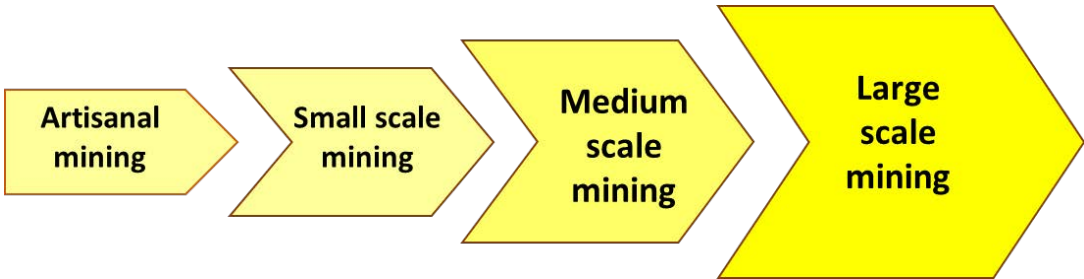
**Figure n° 4**  
**Mining activity value chain**



Source: Ministry of People's Power for Ecologic Mining Development (2018)

Mining activity basically includes two phases: one based on the search and extraction of minerals with economic value and another one of transformation of extracted resources. After the transformation stage, various metallic and non-metallic products are obtained, which are essential inputs of a huge variety of manufacturing industries of intermediate goods that are finally destined to different manufacturing, service and hoarding sectors.

**Figure n° 5**  
**Mining activity scales in Venezuela**



**Artisanal mining:** it is the mining activity production scale performed by a natural person or group, who are usually engaged in the exploitation and / or direct benefit of minerals, within an area established for mining use and under current legal regulations , only and exclusively with the use of basic tools for the mining primary tasks, besides using little investment.

**Small mining:** it is the mining activity production scale performed by a natural person, a group of natural persons, legal entities, mining cooperatives or mining brigades that are usually engaged in the exploration, exploitation and / or direct benefit of minerals, within an area established for mining use and under current legal regulation, solely and exclusively with the use of machines and tools for extractive work. The facilities that they own may be mobile or fixed whenever the productive scaling is considered. Restricted only and exclusively to the primary activity of extraction, drying, crushing and grinding. Ore and foundry separation and concentration plants are excluded.

**Medium-sized mining:** it is the mining activity production scale performed by a natural person, a group of natural persons, legal entities, mining cooperatives or mining brigades that are usually engaged in the exploration, exploitation and / or direct benefit of minerals, within an area established for mining use and under current legal regulation, solely and exclusively with the use of machines and tools for extractive work, processing and mineral benefit. The facilities they own may be mobile or fixed, with a volume of investment, technology and production higher than that generated by small mining.

**Large mining:** it is the mining activity production scale performed by a natural person, a group of natural persons, legal persons, mining cooperatives or mining brigades under productive chain, who are usually engaged in the exploration, exploitation and / or direct benefit of minerals, within an area established for mining use and under current legal regulation, solely and exclusively with the use of machines and tools for extractive work, processing and mineral benefit, with a volume of investment, technology and production higher to that generated by the medium-sized mining.

Each of these scales has a quantitative definition that specifies the levels or indicators that are applied for the exploitation of the different minerals:

- Gold and diamond.
- Iron, bauxite and coal
- Metallic and non-metallic minerals mentioned below: silver, copper, coltan (columbite-tantalite), nickel, uranium, titanium, feldspar, phosphate, quartz, peat, ferruginous laterite, graphite, thorium, precious stones, kaolin, talc, gypsum, salt, barite, bentonite, dolomite, limestone, magnesite, silica, clays, marble, granite, phyllites and shales, sands and gravels for construction.

### Box n° 1.

#### Location of small mining in Venezuela

Mining activity scale	Number of mining workers	Maximum production capacity. Tons per day. Raw material	Maximum processing capacity of tons per year.
Artisanal Mining	1 - 09	-	-
Small Mining	10 - 49	Less than 350	Less than 130,000
Medium-sized Mining	50 - 249	Between 350 and 4,400	Between 130,000 and 370,000
Large mining	250 and more	More than 4,400	More than 370,000

Source: Ministry of People's Power for Ecologic Mining Development (2018)

### Box n° 2.

#### Mining activity scale category Iron, bauxite and coal

Mining activity scale	Number of mining workers	Maximum production capacity. Tons per day. Raw material	Maximum processing capacity of tons per year.
Medium-sized mining	50 - 249	Between 350 and 11,000	Between 1,000,000 and 4,000,000
Large mining	250 and more	Higher than 11,000	Higher than 4,000,000

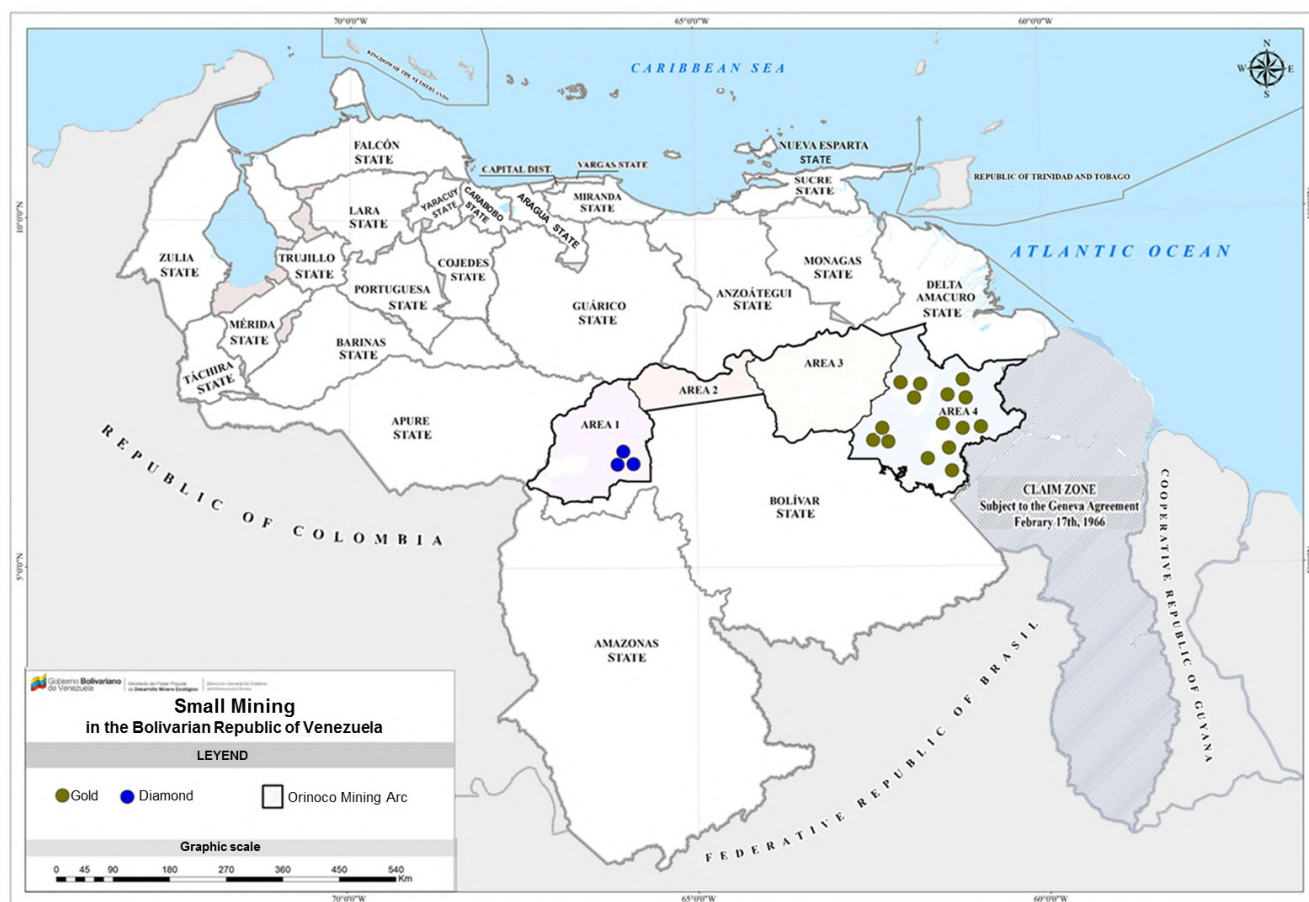
Source: Ministry of People's Power for Ecologic Mining Development (2018)



**Box n° 3.**  
**Mining activity scale category**  
**metallic and non-metallic minerals**

Mining activity scale	Number of mining workers	Maximum production capacity. Tons per day. Raw material	Maximum processing capacity of tons per year.
Medium-sized Mining	50 - 249	Between 350 and 4,400	Between 130,000 and 370,000
Large mining	250 and more	More than 4,400	More than 370,000

**Figure n° 6.**  
**Small mining location in Venezuela**

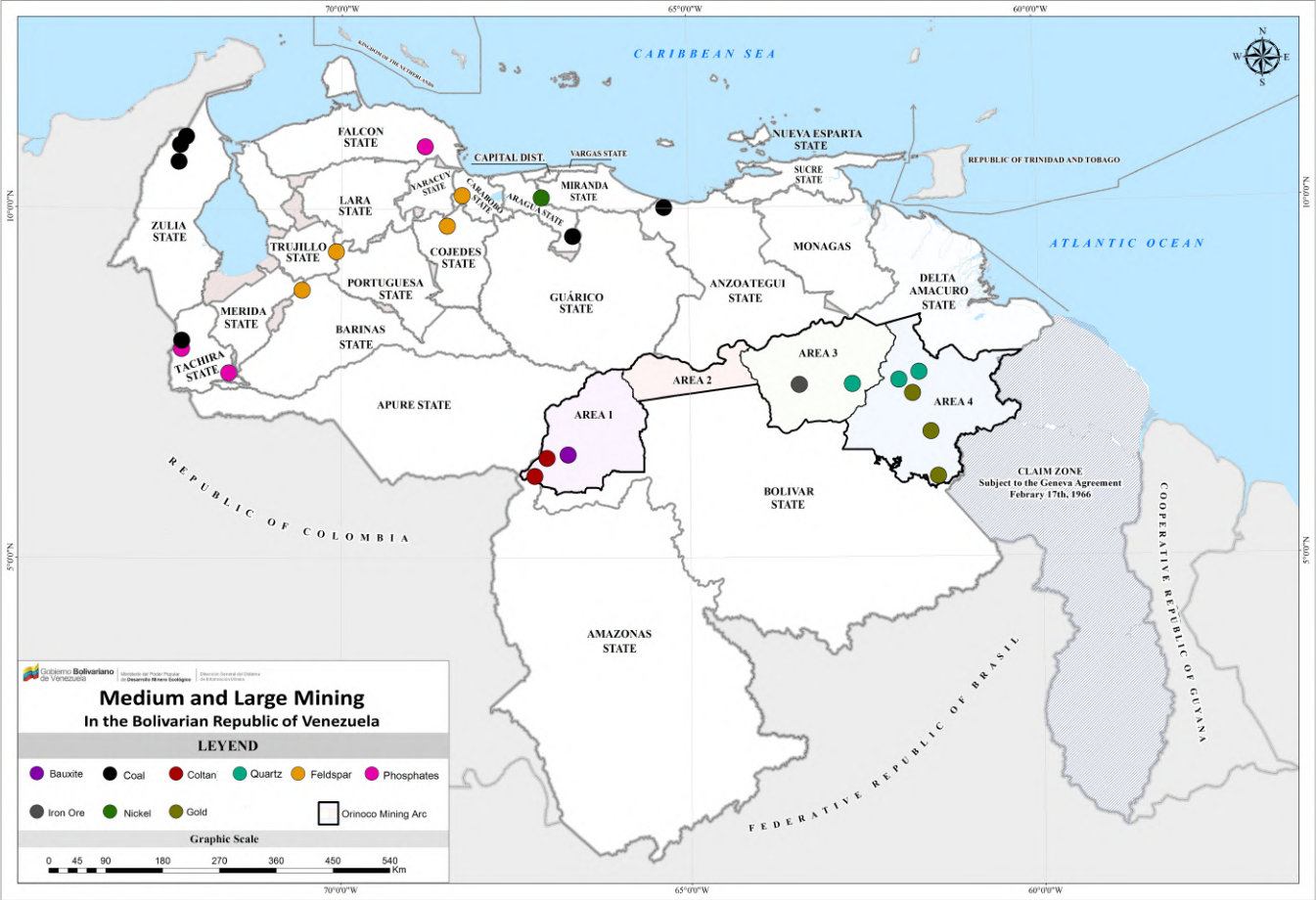


Source: Ministry of People's Power for Ecologic Mining Development (2018) – Mining Information System



The small mining of gold and diamond is an economic activity that comes continuously from the first decades of the 19th century. In Venezuela, it is carried out exclusively in the states of Amazonas and Bolívar, including in this territory a political administrative unit belonging to the state of Delta Amacuro (municipality of Yocoima).

**Figure n° 7.**  
**Location of medium-sized and large mining in Venezuela**



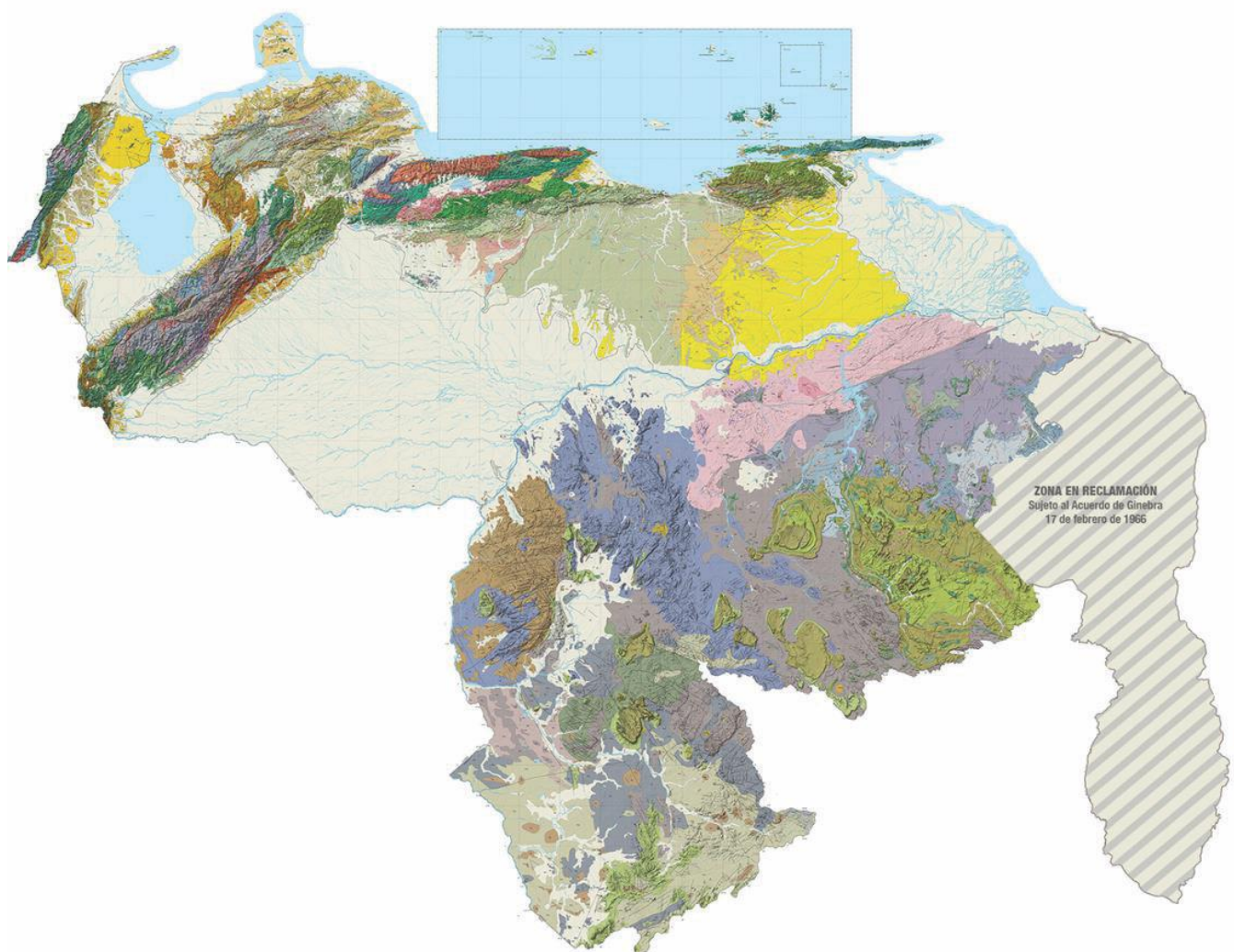
Source: Ministry of People’s Power for Ecologic Mining Development (2018) – Mining Information System

The medium and large mining sector has gained strength since the mid-twentieth century and has focused on the exploitation of minerals: gold, iron, coal, feldspar, nickel, phosphoric rock, bauxite and quartz. It is distributed between Perijá Range, Andes Range, Coastal Range and in the Strategic Development Zone Orinoco Mining Arc.

## 1.3 Mineral Potential in Venezuela

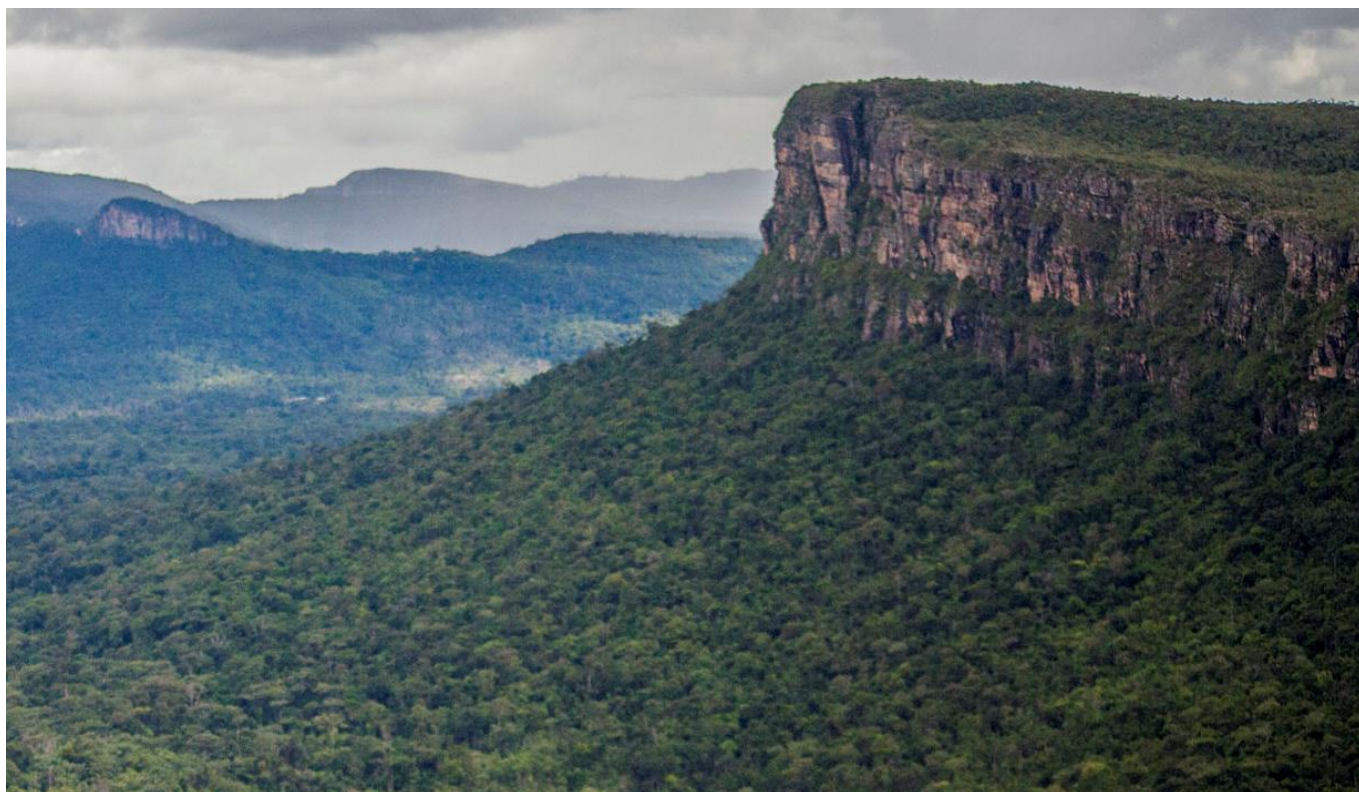
The continental territory of Venezuela is located in the northern part of South America. Its southern limit is very close to the terrestrial equator; therefore it is part of the tropical zone. Its geographical limits are: Caribbean Sea (North), Colombia and Brazil (South), Guyana (East) and Colombia (West). In addition, its patrimonial sea makes it possible to grant borders with the territorial seas of: Dominican Republic, the Netherlands Antilles, Puerto Rico, the British and American Virgin Islands, Martinique, Guadeloupe and Trinidad and Tobago.

**Figure n° 8.**  
**Venezuela geological map**



Source: Ministry of People's Power for Ecologic Mining Development (2018) - Mining Information System





In Venezuela there are three major forms of relief that are in nature: massifs and plateaus of very old formation, in Guyana, south of the Orinoco River. The Venezuelan plains that constitute extensive sedimentary plains that are almost entirely part of the Orinoco Basin to the north of this river and the recently formed mountain ranges (from the Tertiary) that form several extensions of Andes Range and that are located in the northern part of the country.

From the geological point of view, it is a country with very old lands that have undergone metamorphisms, powerful and abundant fractures that have favored the formation of mineral resources.

**A. Guyana region:** it is composed by Bolívar and Amazonas states. There are mineral manifestations of iron, manganese, kaolin, gold, quartz, diamond, bauxite, marble, carbonates and chlorites, uranium, thorium and coltan (columbite-tantalite).

**B. Coastal Range:** it is composed by Cojedes, Carabobo, Yaracuy, Aragua, Caracas, Miranda, Vargas, Anzoátegui and Sucre states; there are mineral manifestations of phosphate, coal, gypsum and salt.

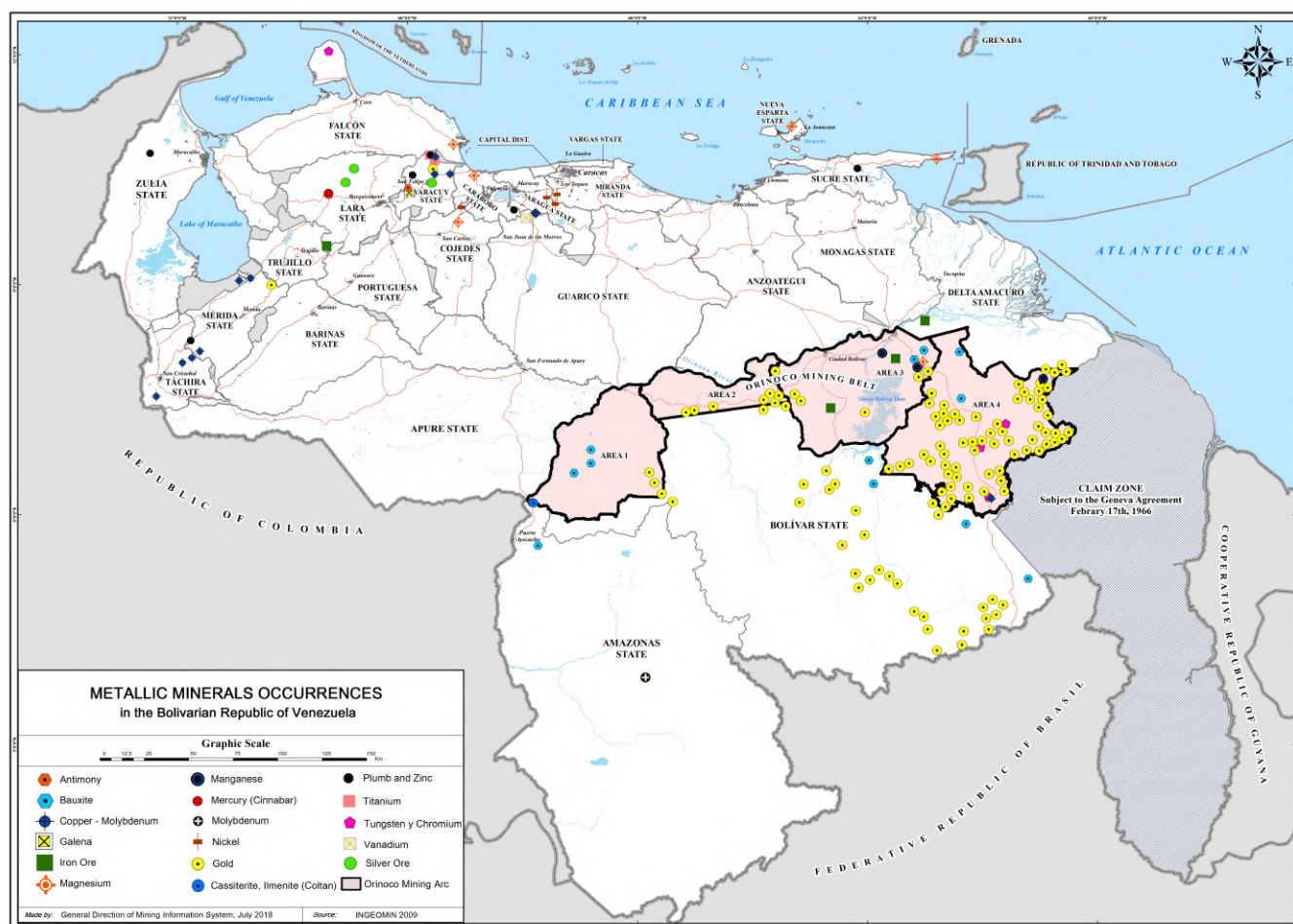
**C. Andes Coastal:** it is made by Táchira, Mérida and Trujillo states; however, it also covers some parts of Apure, Barinas and Portuguesa states and an important part of Lara.

There are mineral manifestations of coal, gypsum, mica, copper and sulfur. The metallic minerals present in the national territory are: antimony, bauxite, copper - molybdenum, galena, iron, magnesium, manganese, mercury (cinnabar), molybdenum, nickel,

gold, silver, lead - zinc, titanium, tungsten - chromium and vanadium.

**D.** The Sierra de Perijá and the Falcón-Lara formation are made by Zulia and Falcón states. There are mineral manifestations of coal and feldspar.

**Figure n° 9.**  
**Venezuela's map of metallic minerals**

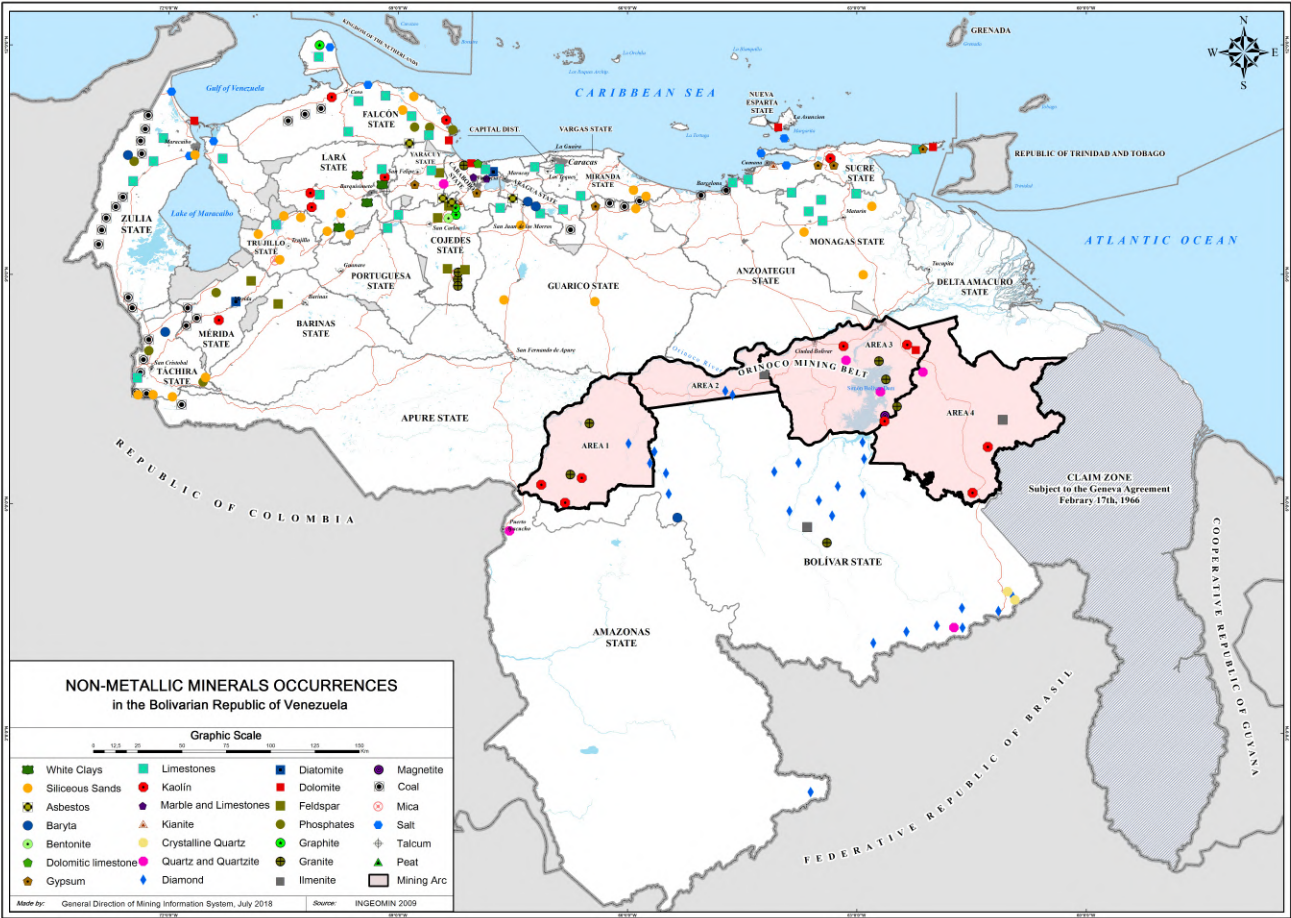


Source: Ministry of People's Power for Ecologic Mining Development (2018) - Mining Information System

The metallic minerals present in the national territory are: antimony, bauxite, copper, molybdenum, galena, iron, magnesium, manganese, mercury (cinnabar), molybdenum, nickel, gold, silver, lead, zinc, titanium, tungsten, chromium and vanadium.



Figure n° 10.  
Venezuela's map of non-metallic minerals



Source: Ministry of People’s Power for Ecologic Mining Development (2018) - Mining Information System

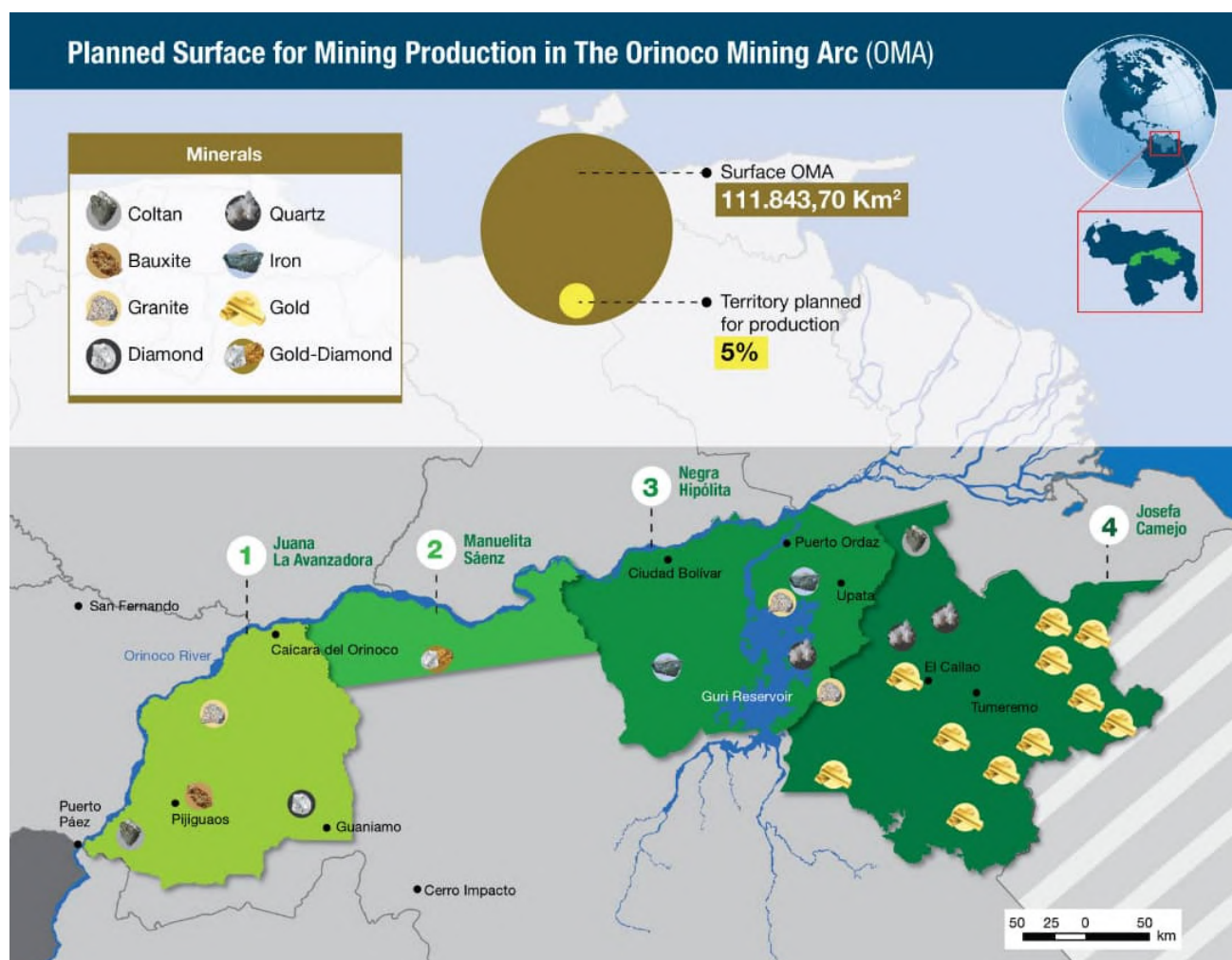
The non-metallic minerals present in the national territory are: white clays, siliceous sands, asbestos, barite, bentonite, dolomitic limestone, gypsum, limestone, kaolin, coal, cyanite, crystalline quartz, quartz and quartzite, diamond, diatomite, dolomite, feldspar, phosphates, graphite, granite, ilmenite, magnesite, marble and limestone, mica, salt, talc, peat.

On February 24, in Official Gazette No. 40855, the Presidency of the Bolivarian Republic of Venezuela, through Decree No. 2248, formalized the creation of the National Strategic Development Zone Orinoco Mining Arc, which has 111,843.60 square kilometers of land, southeast of the country and is organized internally in four areas, for the purposes of development and administrative organization:

- Area 1 called *Juana La Avanzadora* with predominance of bauxite, coltan, rare soil and diamond.

- Area 2 called *Manuela Sáenz* with predominance of iron and gold.
- Area 3 called *Negra Hipólita* with predominance of bauxite, copper, kaolin and dolomite.
- Area 4 named *Josefa Camejo* with predominance of gold, bauxite, copper, kaolin and dolomite.

**Figure n° 11.**  
**Strategic Development Zone “Arco Minero del Orinoco (AMO)”**  
**(Orinoco Mining Arc – OMA)**



Source: Ministry of People's Power for Ecologic Mining Development (2018)

Under State regulation and control State, this special area has the purpose of stimulating sectorial activities associated to the exploitation of mineral resources, with the private, public and mixed companies', as well as small-mining participation, under criteria of sovereignty and environmental responsibility.

In Venezuela there are 48 minerals that have a direct application in the productive sectors as input of raw material for the generation and aggregation of value in goods that diversify the economic-productive dynamics. These minerals are: white clay, red clay, clays, sands, sulfur, barium, barium, barite, bauxite, bentonite, limestone, kaolin, kaolinite, coal, cassiterite, cobalt, copper, coltan (columbite-tantalite), chrome, quartz, diamond, diatomite, dolomite, tin, feldspar, phosphate, granite, iron, ilmenite, lignite, magnesite, marble, mica, nickel, gold, silver, lead, potassium, salt, silica, silicon, talc, tantalum, thorium, peat, uranium, gypsum and zinc.

#### Box n° 4.

#### Mineral contribution to the productive sector

Productive sectors	Contribution to the productive sector	Associated minerals
Agro alimentary	They are used as raw material for the sowing and cultivation process as fertilizers for human consumption.	Phosphate, dolomite, diatomite, bentonite, salt, talc, limestone, kaolin, silica, peat, lignite, gypsum and magnesite.
Forestry	It is used as raw material for the growing process as fertilizers	Magnesite, barite, nickel, kaolin, silica, ilmenite, iron, tantalum.
Pharmaceutical	They provide raw material for the preparation of medicines, supplies for home, cosmetic products and personal hygiene.	Tantalum, ilmenite, kaolin, salt, limestone, barium, barium, bentonite, diatomite, cobalt, silica, quartz, gypsum and barite.
Petrochemical	They provide raw material to obtain chemical products derived from aromatic hydrocarbons.	Feldspar, salt, potassium, gypsum, barite, lead, white clay, silica, silicon, cobalt, kaolin, chromium, bentonite, sulfur, quartz, limestone, tantalum and ilmenite.
Hydrocarbons	They provide raw material for the construction of required parts and machinery for the extraction and processing of hydrocarbons.	Magnesite, silica, silicon, barite, gypsum, quartz, limestone, kaolin, bentonite, lead, kaolinite, tin, tantalum and sands.
Industrial	They provide raw material for the production of intermediate or final goods, generating added value to minerals.	Chromium, cobalt, ilmenite, barium, barite, iron, mica, silver, silica, gypsum, bauxite, magnesite, copper, tantalum, limestone, nickel, lead, uranium, tin, cassiterite, diamond, diatomite and zinc.



Productive sectors	Contribution to the productive sector	Associated minerals
Telecommunications and Computing	They provide raw material for the development of components, parts and circuits that are part of the hardware of telecommunications and computer equipment.	Coltan (columbite-tantalite), gold, silver, quartz, zinc, silica, silicon, nickel, tin, cassiterite, ilmenite and cobalt.
Building	They provide raw materials and aggregates for the construction of infrastructures and homes.	Dolomite, bentonite, magnesite, limestone, silica, quartz, iron, granite, feldspar, ilmenite, gypsum, red clay, marble and diatomite.
Energetic	They are used as raw material for the production of electric energy, fuel for transportation and heating of homes and offices.	Coal, lignite, thorium, uranium, oil and natural gas.
Banking and finances	They contribute to increase the financial reserves of the country.	Gold, diamond, silver and nickel.
Ornamental	They are used for the beautification of residential, commercial and tourist infrastructures.	Chromium, granite, marble, silica, limestone, tantalum, limestone, nickel, ilmenite, clays and sands.



For the 2019-2025 period, it is proposed to promote the mining activity associated to the exploitation, transformation and aggregation of value in 13 minerals that contribute to export strengthening and the development of the national intermediate and final goods industry:

Minerals prioritized for the generation of foreign currency export product are:

**Gold:** In Venezuela, the primary deposits of gold are associated to a hypothermal mineralization type Au-Fe-W that affected a large part of the central region of the Guayana Shield, in the Bolívar state, mainly to the Pastora Group and in this to El Callao formation. As a consequence of the great extension of this metallogenic zone, secondary deposits of gold in alluvium and are abundant throughout the eastern and central regions of the shield.

**Mineral main uses:**

- Deposit of value and international means of exchange.
- Gold coins and bullion manufacturing.
- Jewelry, industry and electronics.
- Manufacture of essential parts of the engines of spacecraft and aircraft with jet propulsion.



**Diamond:** In Venezuela, the diamond-bearing zones are traditionally related to the Roraima formation, when this lies higher the Cuchivero formation. As a result, the vast majority of diamond mining activities are carried out in the Roraima formation, which is characterized by being an extensive Precambrian sedimentary unit made up of conglomerates, sandstones, shales, which occupy a large part of the southern region of the country. Towards the west of the Bolívar state, in the region of Guaniamo, geographically located in Cuchivero, the diamond mining operations are carried out in alluvial deposits and in weathered kimberlitic dams and sills.

#### **Mineral main uses:**

- In drills for geological drilling.
- Cutting and polishing tools.
- Precision engraving on all types of metals.
- In computer science they are used in semiconductors and microchips
- Speaker domes, which improve the quality and clarity with which the sounds are emitted in a remarkable way.
- In jewelry, as a precious stone.

**Iron:** From the genetic point of view, deposits of iron ore in Venezuela are associated to a large amount of minerals, being able to extract from some such as hematite, magnetite, goethite and limonite. Although it is rare in its native form, its metallic form is not found in nature, given the ease with which it is oxidized, this element is only found in grains in basalts. The iron ore mines of the high tenor of the Piar iron district originated from the ferruginous quartzites of Imataca for supergene enrichment.

#### **Mineral main uses:**

- In the steel industry in alloys with other metals to obtain steel and derivatives.
- Cast iron, slab and steel.
- In the construction industry (buildings, bridges).
- Household items.
- Automotive section.

**Coal:** The coals of Venezuela are located in the following areas: coal basin of the Zulia, northwestern Guárico carboniferous belt, southern Aragua coal zone,

Naricual coal basin in Anzoátegui, coal zones of Táchira (Lobatera and Rubio area), carboniferous region of Santo Domingo, carboniferous zones of Falcón. The main coal deposits in Venezuela are located in the west of the country, in the Guasare coal basin, located in the northwest region of Zulia, which represents 83.1% of the total carbon resources in Venezuela.

#### **Mineral main uses:**

- In the steel industry for the manufacture of steel.
- As fuel (coke), as a combustible mineral.
- It can be burned to produce caloric energy for industrial or domestic uses.
- In heating
- Manufacture of cement, paper, glass, textiles, insecticides, paints, perfumes, explosives, fertilizers, gasoline.

**Nickel:** The main reservoirs are located between Miranda and Aragua, as well as possible deposits in the Cojedes. Nickel deposits are associated to serpentinized ultrabasic rocks of the Coastal Range. All the reservoirs and manifestations studied are of the lateritic type.

#### **Mineral main uses:**

- Coin making.
- In alloys used in industrial applications such as: automotive and aeronautical industry, maritime transport, electrical and electronic equipment, food and chemical industry.

**Coltan (columbite-tantalite):** In Venezuela the manifestations of tin, niobium, tantalum, titanium and iron constitute the classic mineralization associated to granitic and pegmatitic complexes, and are located in the northeast zone of Amazonas and the southwestern region of Cedeño municipality, Bolívar state.

#### **Mineral main uses:**

- Raw material for the manufacture of electronic devices in the computer and telecommunications sector.
- Key input for the manufacture of various electronic capacitors.
- Super alloys used in the construction of machines and gas pipelines, jet aircraft turbines, automobile exhaust pipes, electronic ceramics and photographic objects.





**Silica:** The main deposits of siliceous sands, both for their reserves and for their age, are located in the northeastern region of Falcón, southwestern region of Lara, central region of Monagas, Sucre, Trujillo and the southern region of Táchira. Guárico has one of the most important reserves of siliceous ores in the country, with large deposits of silica of high purity with a degree, according to laboratory analysis, of 99.2% and with a potential of more than 5,400 million cubic meters.

**Mineral main uses:**

- It is used in the manufacture of artificial glass, ceramics and cement.
- Mixed with other minerals, it can make chips for telephones, photovoltaic cells for solar panels, it can be used as a component for thermal insulation fabrics, and as a component to make optical fiber.

Minerals prioritized to boost the productive diversification of the national industry:

**Phosphate:** Venezuela has important phosphate deposits of late Cretaceous or Tertiary age. Commercial deposits of phosphates have been located in



Falcón, Zulia and Táchira, and demonstrations in Lara, Mérida and Trujillo. An extensive strip that goes from *Lizardo* to *Santa Cruz de Bucaral* in Falcón, which includes the *Sanare-Yaracuy* and *Riecito* region.

#### **Mineral main uses:**

- Fertilizers.
- Monazite [(Ce, La, Y, Th) P<sub>04</sub>] is another phosphate that is the main ore of thorium (Th), a radioactive element that is used to obtain atomic energy.
- They are used in balanced foods and beverages.
- Ceramics, water softeners, cleaning products, soaps, detergents and insecticides.

**Feldspar:** The main deposits are located in Barinas, Cojedes, Mérida and Yaracuy. In Mérida, it is associated to pegmatites and aplites present in the banded gneiss of La Mitisús. In Yaracuy, feldspathic gneiss has been exploited, but large-scale mining has not been viable due to physical-chemical restrictions. However, it refers that there are sequences of feldspathic gneisses little contaminated with biotite, associated to the Las Brisas formation.



In Cojedes, feldspar deposits are associated to white micropegmatites present throughout the granite complex. The rock is constituted by microcline crystals with large quartz inclusions that may have formed by recrystallization of the micropegmatite.

**Mineral main uses:**

- For the manufacture of glass and ceramics. Its main applications are earthenware for walls, sanitary ware, porcelain, polishes and enamels.

**Bauxite:** The main bauxite reservoirs in Venezuela are located in Bolívar and Delta Amacuro, the most important of which is Los Pijiguaos (Bolívar) reservoir. The bauxite reservoirs and aluminum laterites in Venezuela are all associated to granitic rock laterization levels and basic character in Bolívar, especially gabbros and diabases. Five areas that have been studied are: Upata, Nuia, Santa Elena, Los Guaicas and Los Pijiguaos, which each present accumulation of bauxite and aluminum laterites.

**Mineral main uses:**

- As raw material to obtain aluminum, with which aluminum foil, airplanes, sheets and roof, household utensils, armored glass are manufactured.



**Marble:** The marble exploitation in Venezuela takes place in the central states and the deposits belong to the metamorphic series of the Coastal Range. In our country, white marble deposits are located only in Puerto Cabello and on the Margarita island, although the Antillean formation commercially presents a carbonated zone, in which the dolomitic levels are included by a thick crystallized, dense, homogeneous dolomitic limestone, solid, varying between white and very light gray. The layer is stratigraphically located between schistose zones. In Southeast Falcon there is an important reserve of brown marbles, currently exploited by the private industrial sector.

#### **Mineral main uses:**

- As ornamental rock in cemeteries (tombstones), in churches, in floors, sculptures.
- Being polished or sculpted is what makes its great use in construction, decoration and beautiful sculptures.
- Also used for cements, ceramic materials, obtaining lime, for loading, *portland* cement manufacturing, in the chemical industry, as flux in metal mines, in the optical industry, among others.

**Granite:** In the southern part of the country there are the main granite commercial deposits, so there are at least 19 mining rights granted by the Bolivar state government, through the Autonomous Institute of Mines of Bolívar (Iamib). Although there are also manifestations of this rock in Carabobo and Cojedes, it is in Bolívar where there is more information about its exploitation.

#### **Mineral main uses:**

- In construction, thanks to the tenacity of the material and its resistance to erosion, compared to other types of rock.
- For decorative purposes that take advantage of their characteristic drawings, for this, it is usually used cut into plates a few centimeters thick, which are polished and used as a coating.
- As a coating for extenders in public buildings and monuments. Polished granite is very popular in kitchen countertops due to its high durability and aesthetic qualities.

**Limestone:** The limestone deposits of Venezuela are associated to different stratigraphic levels; however, it was during the Cretaceous and Miocene that the deposition became intense.

This is evidenced by the huge commercial deposits associated to the Cogollo group in the west and the El Cantil formation in the east of the country. In relation to the Miocene, enormous deposits of limestone of excellent quality appear widely throughout northern and eastern Falcon.

#### **Mineral main uses:**

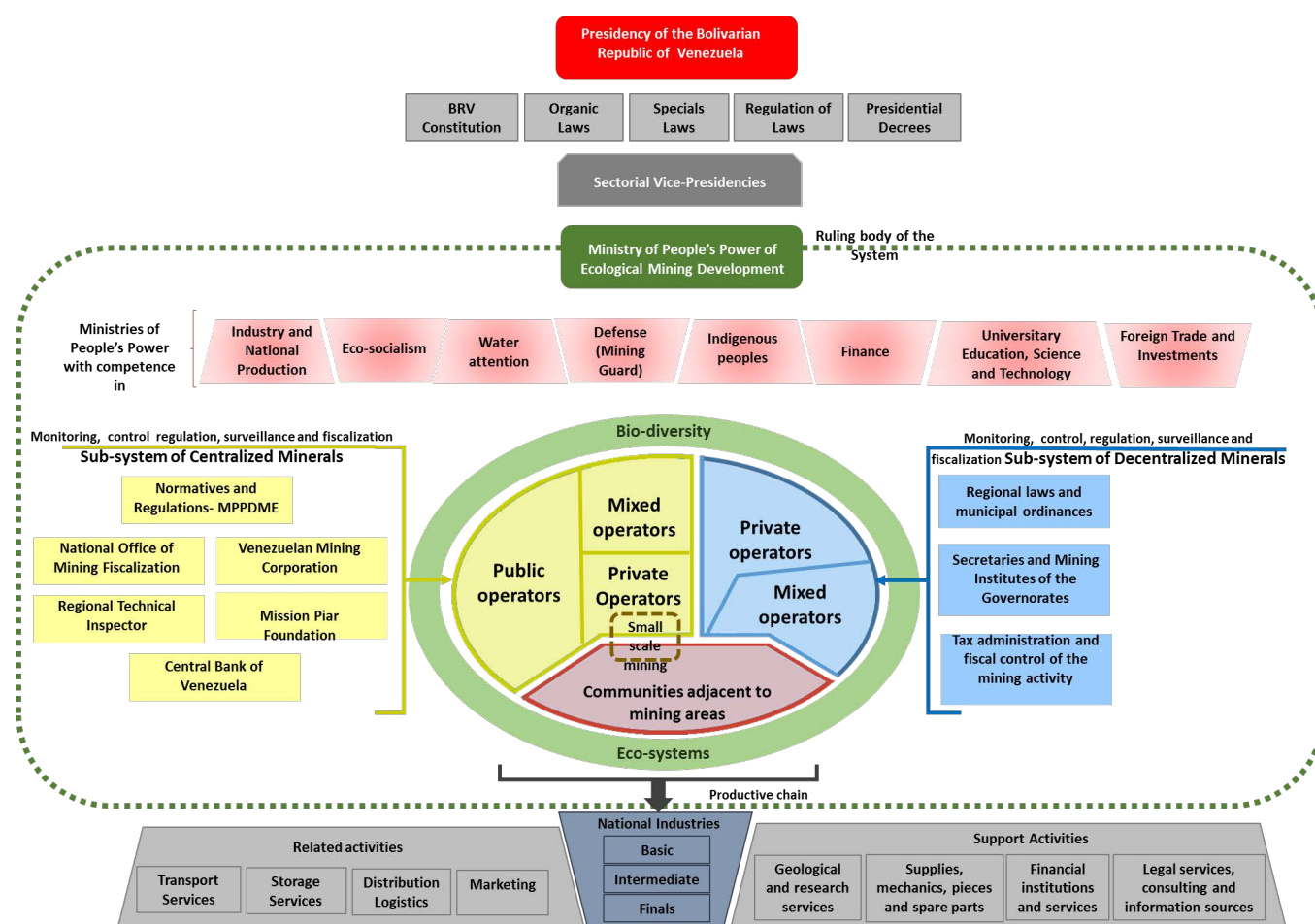
- It is used in the manufacture of cement.
- As construction material.
- As gravel on the construction of roads and railroad tracks.
- As a stone in the manufacture of lime.
- As a flux in the steel industry.
- From the point of view of its use as an agricultural input, the element calcium (Ca) is particularly important in limestone, since it is a macronutrient for plants and animals and a corrector for humic clay complexes in soils.





## 1.4 Ecologic Mining National System (EMNS)

Figure n° 12.  
Ecologic Mining National System Graphic



Source: Ministry of People's Power for Ecologic Mining Development (2018)

A mining system is constituted by a network of operators and institutions of the public and private sector, whose activities establish, execute, control, produce, transform and commercialize the mineral resources even in their pure state, after the aggregation of value and transformation into intermediate and final goods.

It is then a set of interrelated agents, institutions and practices that constitute, execute and participate in the mining activity processes. In the case of the Ecologic Mining National System, this is characterized by the incorporation of the vision of Ecologic mining. This statement derives from the proposed economic model to be developed by the Bolivarian Revolution,



This raises “the need to build an ecosocialist economic model, based on a harmonious relationship between the human being and nature”, for which it is necessary “to ratify the defense of the sovereignty of the Venezuelan State over vital resources”

Mining is not an activity exempt from the impact on the environment, ecosystems and biodiversity, on the contrary, when evaluating, designing or executing a mining project, these impacts are mainly considered. That is, priority is given to minimizing the environmental impact of mining activities, remediation of environmental liabilities is assumed, priority is given to the development and use of low-impact technologies, and natural and energetic resources matrix burden is evaluated when planning new mining projects.

That is why the Ecologic Mining National System considers its core:

- mining operators,
- Communities adjacent to mining areas and
- The environment composed of ecosystems and biodiversity.

Ecologic Mining National System (EMNS) description:

- The complete Ecologic Mining National System's presidency is under the Ministry of People's Power for Ecologic Mining Development direction, in accordance to the legal framework that regulates this matter.

- At the top level, other ministries and their bodies, decentralized entities and services are located, which have direct competence in the management of the activities developed by the mining operators or in their interaction with the communities, the ecosystem and biodiversity.

- The core of the Ecologic Mining National System comprises the total set of public and private actors that are responsible for the direct processes, and support for the development of mining activity in the national territory. Based on the difference between the central level of the national government and the decentralized level of the state government, there is the coexistence of two subsystems:

- The Centralized Mineral Sub-System: minerals under direct administration of the national Executive are in this section, through the Ministry of People's Power with competence in mining matters, its bodies and appointed entities, as well as the strategic and reserve minerals such as: gold, silver, copper, diamond, coltan (columbite-tantalite) nickel, bauxite, iron, titanium, coal, lignite, feldspar, phosphate, peat, barite, quartz, ferruginous laterite, graphite, uranium and thorium..

- The Decentralized Minerals Sub-system: the minerals under the direction of the national Executive are in this section, through the Ministry of People's Power with competition in mining matter, but administered directly by the Governorates in each state, some of these minerals are: kaolin , talc, plaster, salt, bentonite, dolomite, limestone, magnesite, silica, clay, sands for construction, marble, granite, phyllites and shales.
- Side to each sub-system is the total set of public actors of management, monitoring and control, depending on the level of administration.
- At the base of the system, we have the private actors that are responsible for the related activities, and the support processes for the development of the mining activity in the national territory.
- Finally, the link of productive linkage to the basic, intermediate and final industries is located, where the processes of aggregation of value, benefit and transformation of mineral resources happen.

## 1.5 Mining sector diagnosis

### 1.5.1 World market trend.

The world market for minerals or commodities does not have a single entity of reference, as is the case of hydrocarbons with OPEC (Organization of Petroleum Exporting Countries); for this reason there are different companies and organizations that are dedicated to the international analysis of the behavior of prices and the demand of minerals, as well as to the prospective study of the scenarios that can

be developed in the different economies and thereby affect the economic indicators.

The Union of South Nations (UNASUR) has developed a 2025 South American Prospective Study, which defines three global mega trends that can affect the economic behavior of mineral resources, and these are:

- First, world population increment: according to the United Nations, the world population has doubled in less than 50 years, reaching more than 7,200 million people in 2014. If the trend continues, it is expected that in 2025 the world population will reach 8100 million people, and by 2050, 9600 million.
- Second, growth of global consumption parameters: basically as a consequence of the emergence of a global middle class. This unprecedented economic growth leads to significant changes in the production processes and consumption parameters of these countries. While in 1990, 22% of the world population lived in middle-income countries; in 2011 this percentage had risen to 72%. This emergence of a "global middle class" is recognized as a trend of planetary extension. This enormous global growth means that by 2035, the global GDP per capita will be 75% higher than the current one.
- Third, relative to climate change: with its present consequences, those that are in process and those identified for their happening in the immediate future.

The average level of the seas is expected to increase from 15 to 20 centimeters by 2030 and 50 centimeters by year 2100. This will cause a vast loss of land by flood, strongly attacking the food security levels of several regions, many of the that currently have a precarious situation in the matter. The private company CSIRO - Chile promotes collaboration between Chile and Australia to deliver world class applied research in mining, coastal marine, water management and beyond. According to this institution for the year 2025, they project the scenario called the Asian Century, in which they establish that Asia will be the most important region for mining, not only in terms of demand, but also of supply and investment, in accordance to the following criteria:



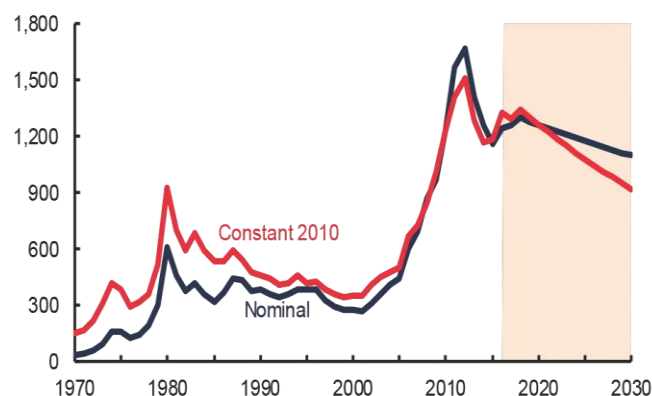
- By 2025, four of the world's ten largest economies will be in Asia (China, Japan, India and Indonesia) and that region will account for more than half of the world's economic output.
- China is already the world's largest consumer of steel, aluminum and copper at around 40% each. By 2025, China will account for more than 50% of the world's copper demand.
- India's copper demand is forecast to grow at 9% per year until 2025.

The company Deloitte (Deloitte Touche Tohmatsu Limited) has conducted a study on the main trends that will define mining and establishes in the case of gold ore that by 2016 the amount of gold discovered decreased by 85%. This situation allows us to make the projection that for the years 2020-2021, the industry will face a dramatic shortage of supplies until the production of the new mines in the process of development begins.

The company Global Market Insights evaluates the so-called electric car revolution and estimates an increasing demand for nickel ore for the next few years, motivated by the fact that the home battery market will reach 35 billion dollars in 2030, while the fleet of Electric vehicles and plug-in hybrids will go from two million in 2016 to nine million in 2020 and 60 million in 2030. In this situation, an increase of 186% in demand is estimated for 2020 and of more than 800% by 2025.

On the other hand, the World Bank has carried out a study on the behavior of commodity markets (Commodity Markets Outlook) in which trends in mineral prices for the coming years are defined.

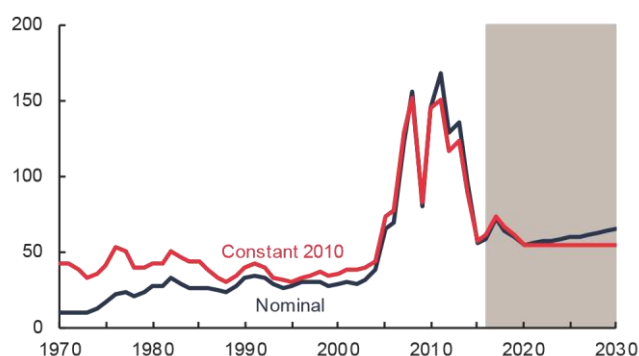
**Figure n° 13.**  
**Estimation of the gold price behavior**



Source: World Bank - Commodity Markets Outlook (2018)

In the case of gold, it can be seen that the increase in prices is expected to continue above 1200 dollars per troy ounce, and from 2021 to 2030 a consecutive fall, reaching the price between 900 and 1000 dollars per troy ounce.

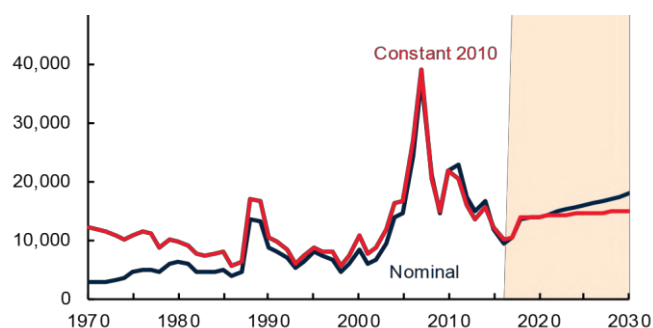
**Figure n° 14.**  
**Estimation of the iron price behavior**



Source: World Bank - Commodity Markets Outlook (2018)

It can be seen that for iron, it is expected that the fall in mineral prices will continue, reaching over 50 dollars per metric ton for the year 2020; however, from 2021 to 2030 the value stabilizes and maintains constant levels.

**Figure n° 15.**  
**Estimation of the nickel price behavior**



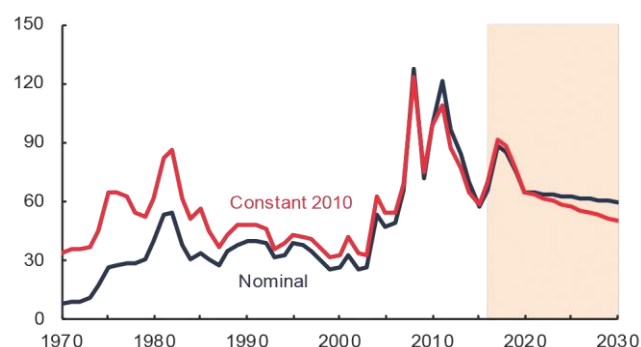
Source: World Bank - Commodity Markets Outlook (2018)

Regarding nickel, it can be seen that the price rise is projected, reaching over 12,000 dollars per metric ton for 2019; however, from 2020 to 2030, it stabilizes and maintains a moderate growth in the value at constant levels.





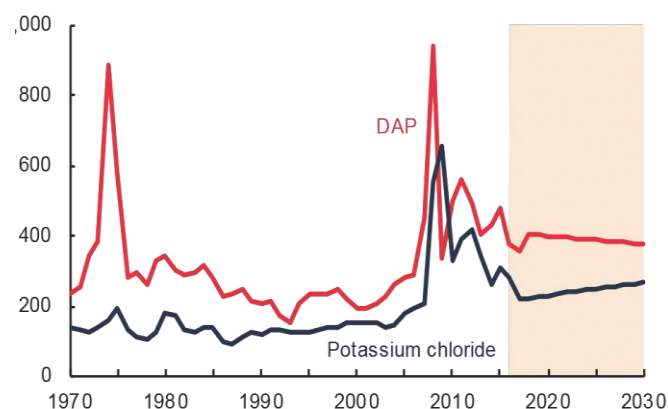
**Figure n° 16.**  
**Estimation of the coal price behavior**



Source: World Bank - Commodity Markets Outlook (2018)

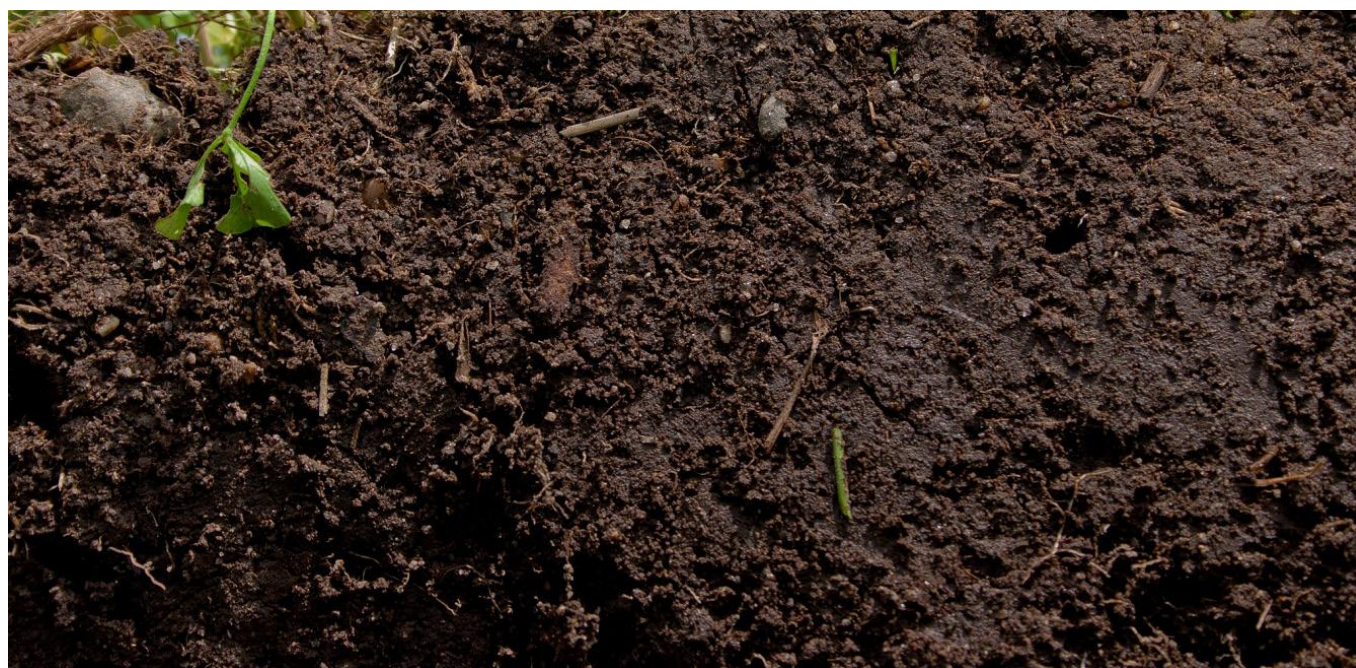
Coal is expected to maintain the rise in prices, reaching over 90 dollars per metric ton for the year 2019; however, there is an abrupt fall for 2020, reaching close to 60 dollars per metric ton, with a later moderate decrease until 2030 in the value at constant levels.

**Figure n° 17.**  
**Estimation of the phosphate price behavior**



Source: World Bank - Commodity Markets Outlook (2018)

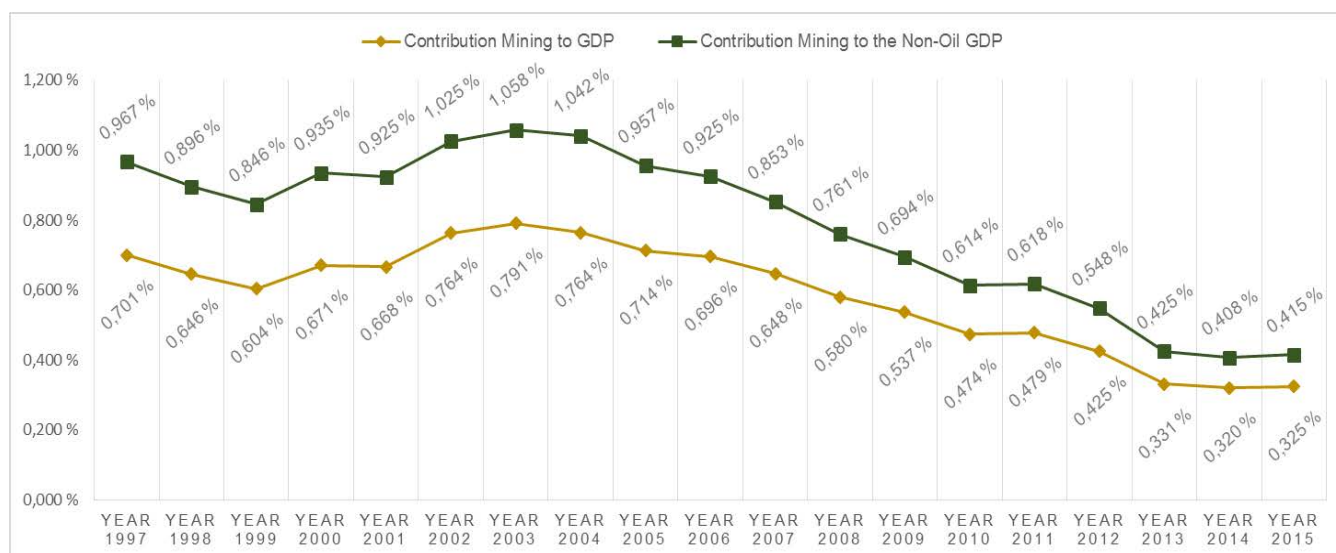
In the case of phosphate, used as fertilizer (DAP), it can be seen that the fall in mineral prices is expected to continue to be above 350 dollars per metric ton for the year 2019; however, by 2020 and until 2030 moderate growth is maintained.



## 1.5.2 Characterization of the Venezuelan Mining Sector

The main macroeconomic indicator showing the impact of mining activity is the Gross Domestic Product (GDP), because it considers the total monetary value of the country's current production of goods and services.

**Figure n° 18.**  
**Mining activity contribution to the Gross Domestic Product**



Source: World Bank - Commodity Markets Outlook (2018)

It can be seen that in the 2002-2004 period, the historical peak was reached in terms of the contribution of mining activity in relation to non-oil GDP and total national GDP; however, it is in 2007 that the largest amount of monetary resources generated by the mining activity is produced, reaching the ceiling of 360.15 million *bolívars fuertes*, which represented approximately 57.2 MMUSD (3.60 thousand millions *bolívars soberanos*). Likewise, since 2005 there has been a constant decrease in the contribution of mining activity, which has worsened since 2008, reaching the lowest levels in the production history in 2015, with a contribution of 134.38 billion *bolívars fuertes* which represented approximately 20.7 MMUSD (1.34 billion *bolívars soberanos*).

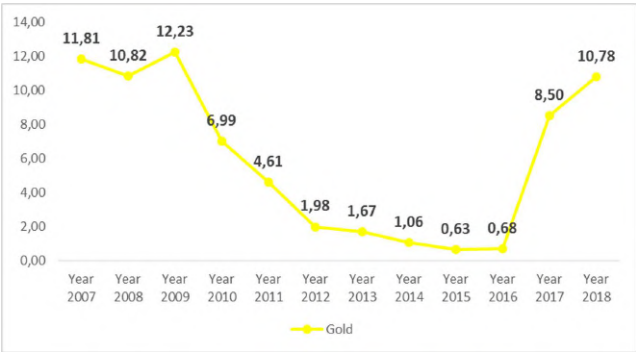
The situation presented in the GDP for the year 2015 has been maintained until the end of 2017, motivated in general to a production deficit

regarding the installed capacity in the companies dedicated to the mineral extraction that are part of the centralized mineral sub-system, while in some cases the production levels within the decentralized mineral sub-system have been kept constant.

### A. Production decrease of mining companies:

Figure n° 19.

Gold production graphic chart

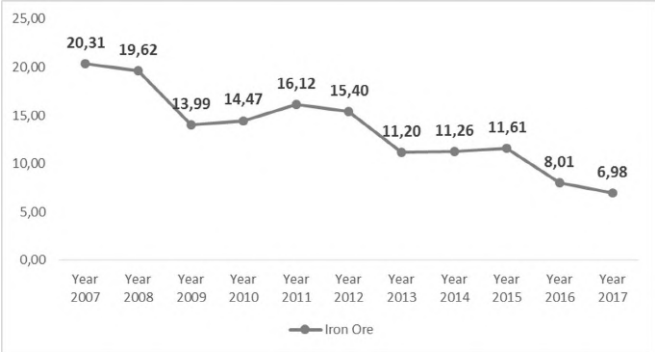


Source: World Bank - Commodity Markets Outlook (2018)

In the previous chart, it can be seen that the production milestone was made in 2009 with a production of 12.23 tons. Subsequently, from 2010 to 2015 there was a dizzying fall in production due to the decrease in the capabilities of the General Mining Company of Venezuela (Minervén) and the completion of the exploration and subsequent exploitation concessions that had been granted to foreign companies. Later in 2016 and 2017 there is a rebound in production motivated to the process of interaction, organization and control of the small mining activity within the Orinoco Mining Arc.

Figure n° 20.

Iron production graphic chart

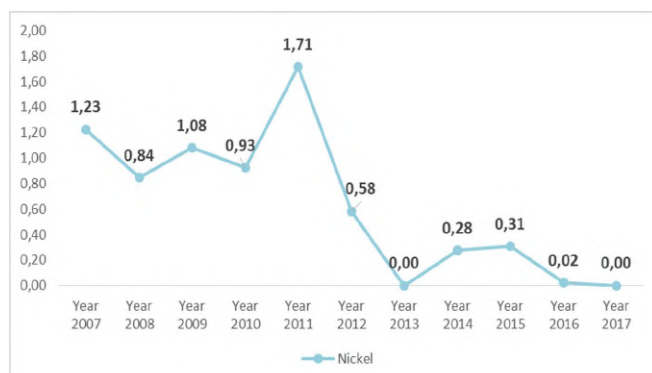


Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in millions of tons

The exploitation of iron is reserved for the Republic and is carried out through the company CVG - Ferrominera del Orinoco, CA. It can be seen that the historical production milestone was in 2007 with 20.31 million tons. As of 2008, there is a constant fall until 2017. This situation is mainly due to the depletion of Cerro Bolívar reservoir, the technological obsolescence in the production process and the lack of investment to optimize it.



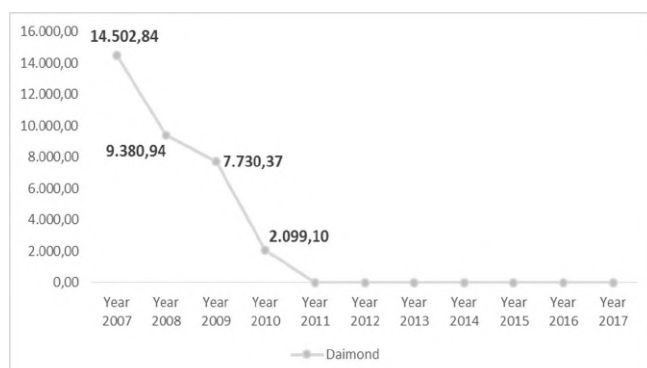
**Figure n.º 21.**  
**Nickel production graphic chart**



Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in millions of tons

The historic nickel production milestone for 2011 reached 1.71 million tons; however, it was in that year that the foreign company that had the concession ceases the investment and development process of the mine in *Lomas de Níquel*, which brought as consequence the decrease of the production capacity from 2012 to 2015, due to technological obsolescence and structural damage in the production lines.

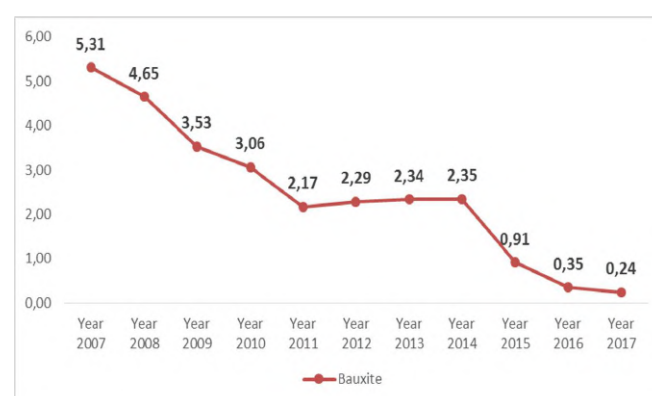
**Figure n.º 22.**  
**Diamond production graphic chart**



Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in carats

The diamond reached the historic production hit in 2007 with 14,502.84 carats; however, from 2008 there's a fall in the production, until 2010 when the mining authorization granted to small-scale mining ends. In addition, since 2009, the process of adapting to the conditions of the Kimberley Process Certification System (SCPK) has begun in order to guarantee the guarantee for the export of the mineral.

**Figure n.º 23.**  
**Bauxite production graphic chart**

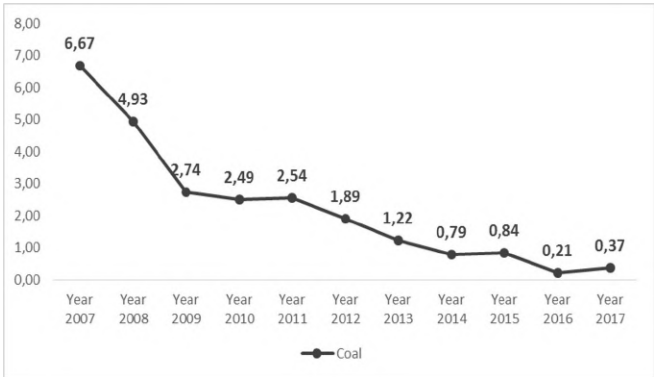


Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in millions of tons

The exploitation of bauxite is carried out by the company CVG - Bauxilum, CA. It can be seen that the historical production milestone was in 2007 with 5.31 million tons. As of 2008, there is a constant fall until 2017. This situation is mainly due to the technological obsolescence of the productive process and the lack of investment for its optimization.



Figure n° 24.  
Coal production graphic  
chart



Source: Ministry of People’s Power for Ecologic Mining Development (2018) - production in millions of tons

In the case of coal, the production milestone was registered in 2007 with 6.67 million tons; however, since 2008 there has been a fall in production until 2012, when the concession of exploration and subsequent exploitation granted to a transnational company expires, motivated by the lack of investment to optimize the production process and the non-compliance with production quotas, later granted to the company *Carbones del Zulia, SA (Carbozulia)*. Nevertheless, production has maintained its decline due to the inherited lack of development of new mining projects and the imminent exhaustion of the open pit mining method. In addition to the *Carbozulia* company, other exploration projects for this resource have been developed in the Táchira and Anzoátegui, by the *Carbones del Suroeste* companies (*Carbosuroeste*) and *EPS Minera Nacional, SA*, but the processes have not yet begun exploitation.



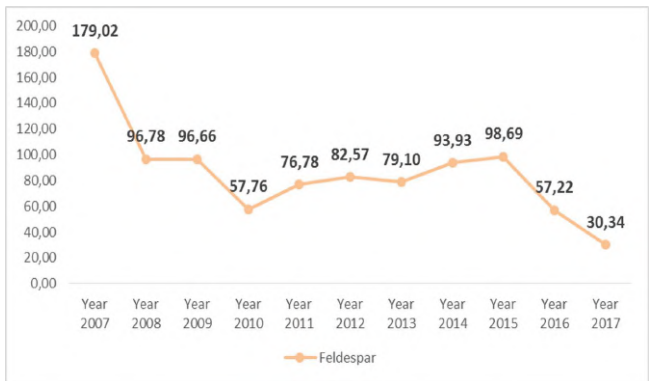
Figure n° 25.  
Phosphate production  
graphic chart



Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in millions of tons

The historical milestone of phosphate production is recorded in 2007 with 371 thousand tons, from 2009 to 2017 a process of production peaks was evidenced, motivated by the depletion of Riecito reservoir located in Falcón. Additionally, the production cycle is linked to the demand for inputs from the national company *Petroquímica de Venezuela, S.A (Pequivén)* for the required fertilizers production by the national agricultural sector.

Figure n° 26.  
Feldspar production graphic  
chart

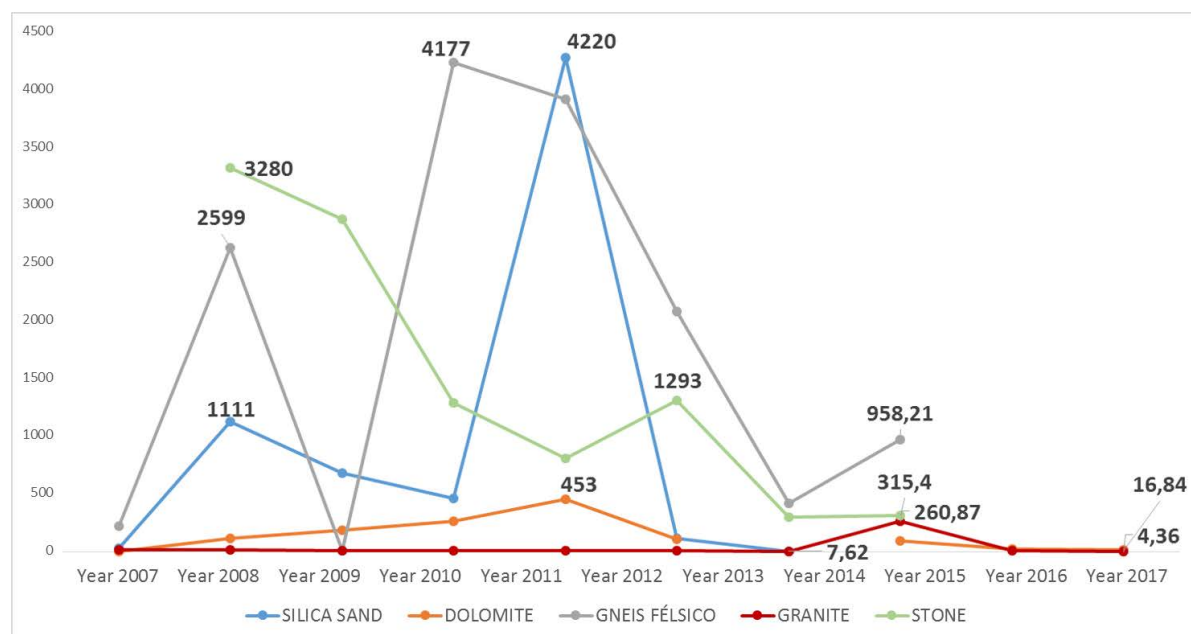


Source: Ministry of People's Power for Ecologic Mining Development (2018) - production in millions of tons

The exploitation of feldspar has been carried out through exploration concessions and subsequent exploitation granted to national private companies. The historical production milestone was recorded in 2007 with 179 thousand tons; however, since 2008 there has been a constant decrease in production, due to the lack of new developments in mines, the technological obsolescence of the production lines and the investment to optimize the production process.

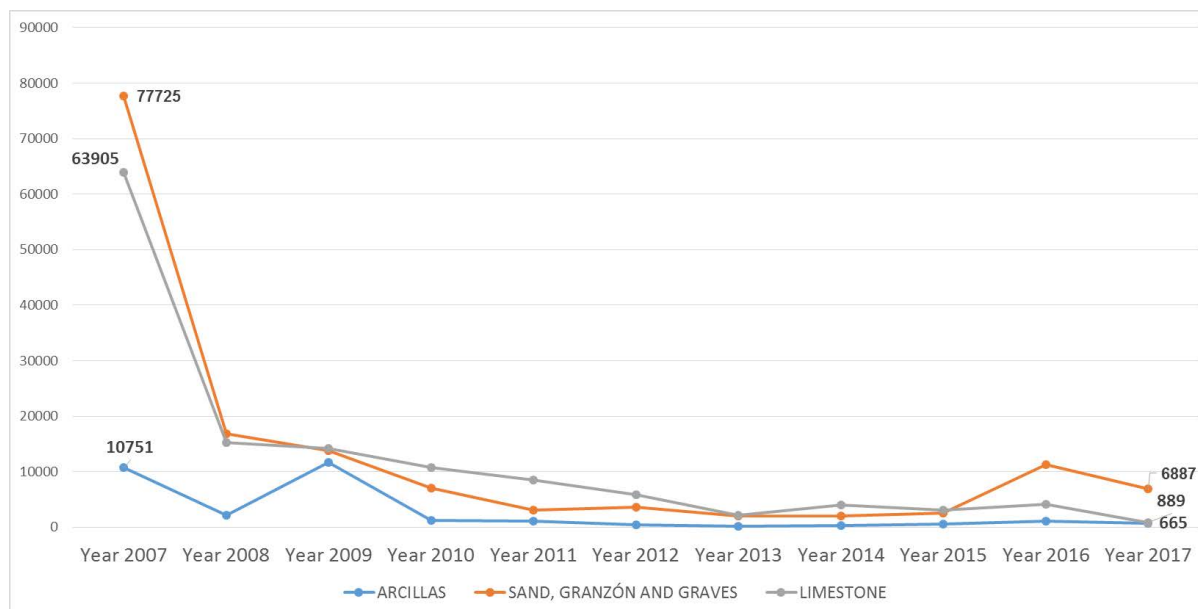


**Figure n° 27.**  
**Decentralized minerals production sub-system (I)**



Source: Statistical yearbooks of the Ministries of People's Power with competence in mining matters (2003-2014). Central Bank of Venezuela (2016-2017) - production in thousands of tons

**Figure n° 28.**  
**Decentralized minerals production sub-system (II)**



Source: Statistical yearbooks of the Ministries of People's Power with competence in mining matters (2003-2014). Central Bank of Venezuela (2016-2017) - production in thousands of tons



In the Figures no. 27 and no. 28, it can be seen that the mineral production under decentralized administration has also suffered a decline since 2007, with the exception of siliceous and gnesfésic sands. This production decrease is due to factors such as the depletion of the reservoir, lack of machinery and equipment, lack of production lines maintenance, and lack of investment resources.

In general, there is a clear production decrease levels throughout the Ecologic Mining National System, which is motivated by the following causes:

- Loss of productive capacities and technological obsolescence as a result of the lack of investment of the own resources generated by the companies.
- Decrease in the logistics sector and the infrastructure that works as a support to the productive mining activity.
- Insufficient financial resources, which means that the development needs of the mining, steel and transport sector for export cannot be met.
- Fragmentation of the productive chains and the lack of coordination at the level of the basic companies, which has prevented the rational and integrated use of the mineral resources of the entire productive chain.
- Lack of long-term planning on the part of the mining operators, which affects the development of the exploitation of mineral resources.
- Exchange rate parity not favorable to international trade competitiveness.

## **B. Little availability of geological information from mining areas:**

Regarding prospective activity, we have information on a limited amount of resources and reserves at national level, which has been provided directly by the main mining operators, as follows:



## Box n° 5.

### Mineral resources and reserves base

Mineral	Quantity	Type	Source
Gold	611.74 tons	Resource	<i>Minerven</i> - 2015
	1,623.94 tons	Resource	<i>Siembra Minera</i> - 2018
Bauxite	321,350,000.00 tons	Resource	<i>CVG - Bauxilum</i> - 2016
Coal	212,000,000.00 tons	Resource	<i>Carbozulia</i> - 2017
Iron	14,605,000,000.00 tons	Resource	<i>CVG – Ferrominera</i> - 2017
Nickel	28,927,980.00 tons	Certified Reserve	<i>CVM - Lomas de Níquel</i> - 2017
Phosphate	7,400,000.00 tons	Resource	<i>Pequiven</i> - 2013
Feldspar	4,770,629.00 tons	Resource	Operating companies 2009
Diamond	1,020,000,000 carats	Resource	<i>Ingeomin</i> - 2015

Source: Ministry of People's Power for Ecologic Mining Development (2018)

It is evident the lack of complete geological information, of the mining resources existing in the country (mining geological map), and therefore, the inventory of certified reserves of a large part of the minerals prioritized for export or for the national development of the industries basic, intermediate and final. The lack of knowledge about the existence of minerals, the volume of reserves and the characteristics of minerals in such reserves, hinders the possibility of growth of the mining sector and the incorporation of private companies and investments, also weakening the execution of monitoring and control by the State.

## C. Social, safety and Ecologic aspects:

Currently, in the mining sector, especially in the small mining area, the precariousness of the miners and communities' living conditions surrounding the exercise of this activity, including the indigenous peoples, still predominates. Additionally, the sector is characterized by an important impact on the environment, health, housing and the aggravation of problems such as the increase in crime and the existence of hyperinflationary local micro-economies. In terms of security, it is important to mention the little organized exercise and certain illegal aspects of mining that exist in several areas of Bolívar, as well as the activities of benefit of gold and marketing are characterized by tax evasion, mineral, food and supplies smuggling, and speculation strengthening, usury and the illegal commercialization of fuels and chemicals.

Regarding environment, the main threat comes from the use of polluting substances, such as mercury and the use of obsolete and rudimentary techniques and technologies, which damage watersheds and groundwater, also causing serious soil contamination. This situation has expanded to such a level that today it even affects our national parks.

## D. 2018-2025 baseline

A baseline study goal is to provide information to monitor and evaluate the strategies, actions and projects progress and effectiveness contained in this sectorial plan, in order to be able to evaluate the results and scope during its implementation and after it has been completed. The indicators that make up the baseline of the sectorial plan have been grouped according to the social, economic and environmental dimension:

### Box n° 6.

#### Mining Sectorial Plan baseline

Indicator	2018 value	2025 Expected change
Surface recovered by remediation (ha)	250	1,050

Indicator	2018 value	2025 Expected change
Participation of the mining sector in total GDP	0.28%	0.58%
Total production capacity	25%	100%
Metallic and non-metallic mineral volume production (Tn)	7,168,684	31,617,368
Diamond production volume (Carat)	0	1,360,500
Strategic alliances formed with small mining	500	2.100
Strategic alliances formed with Medium and Large mining	10	20

Indicator	2018 value	2025 Expected change
Mineworkers cared for	11,600	32,400

Source: Ministry of People's Power for Ecologic Mining Development (2018)







## Chapter II

# Strategic Framework

---



## II.1 Link to 2019-2025 Homeland's Plan

The second Socialist Plan for Economic and Social Development of the Nation - 2019-2025 Homeland's Plan, is defined as the road map to liberate the people, to build socialism. In the understanding that is written by a whole country, convened by President Maduro, under the lines established by the commander Hugo Chávez.

2019-2025 Homeland's Plan establishes a set of goals that allow advancing step by step on the route for the construction of socialism. In this sense, the disaggregation levels of these goals are: historical, national, strategic, general, and specific goals.

And in the particular case of the mining sector, this has a direct link with:

- 4 historical goals
- 6 national goals
- 12 strategic goals
- 20 general goals
- 63 specific goals

The historical goals linked to the sectorial plan are:

1. To defend, expand and consolidate the most precious asset that we have reconquered after 200 years: national independence.
3. To make Venezuela a powerful country regarding the social, economic and political aspects, within the great emerging power of Latin America and the Caribbean, this guarantees the creation of a zone of peace in our America.
4. Contribute to the development of a new international geopolitics in which the multicenter and pluripolar world takes shape, which allows achieving the balance of the universe and guaranteeing planetary peace.
5. Contribute to the preservation of life on the planet and the salvation of the human species.

The national goals linked to the sectorial plan are:

1.2. Consolidate the defense and sovereignty in the preservation and use of strategic natural resources, with special emphasis on hydrocarbons, miners and aquifers, among others.

1.3. Guarantee the sovereign management of the Republic's income and the reinvestment of national surpluses, both public and private, in order to guarantee the social principles of equity and national development.

3.1. Develop economic power based on the optimal use of the potential offered by our resources, through the construction of a new productive, logistical and distribution system, price logic and capital metabolism, as well as maximize the development and integration of national and regional productive chains under the premise of interdependence and creation of value.

3.2. Deepening the construction of a new national geopolitics using as structuring elements the systemic, geohistorical and functional regionalization, the regional urban system and infrastructure, services and mobility in the development of the spatial dimension of socialism.

4.3. Continue promoting the development of a metacentric and pluripolar world, without imperial domination and with respecting peoples' self-determination.

5.2. Protect and defend the permanent sovereignty of the State over its heritage and natural resources for the supreme benefit of our people, which will be its main guarantor, as well as a contribution to life on the planet.

In the case of general and specific objectives, axes of action are defined that frame this goal group:

## Box n° 7.

### Link to the general and specific goals of the 2019-2025 Homeland's Plan

Axes of action	2019-2025 Homeland's Plan specific and general goals
Policies and systems implementation	<ul style="list-style-type: none"><li>• Generate industrial policies for machinery, equipment and supplies for mining production.</li><li>• Implement a mineral purchase price policy.</li><li>• Develop a training policy and social protection for the miner.</li><li>• Develop an effective monitoring system for metallic and non-metallic strategic mineral products commercialization.</li><li>• Generate information, control and registration systems of mineral production, which improves the control and collection processes by the State.</li></ul>
Regulations and rules making	<ul style="list-style-type: none"><li>• Regulate the development and national generation schemes of mineral value chains.</li><li>• Regulate investment promotion processes, which guarantee full sovereignty over the country's natural resources.</li><li>• Development of clear regulatory frameworks that ensure the exploitation and development of mining potential, under the premise of minimum impact on the environment.</li><li>• Develop a regulatory framework that shields the State against the violation of contracts or the manipulation of production data.</li><li>• Create an institutional framework that regulates mining activity in a profit scheme that is beneficial.</li><li>• Regulate and supervise the collection of royalty fees applicable to the liquidation.</li><li>• Establish a regulatory framework that ensures the minimization and amortization of mining environmental liabilities.</li></ul>
Prospecting, Quantification and Certification	<ul style="list-style-type: none"><li>• Increase the level of geological surveys to increase the certification of mineral reserves.</li><li>• Explore new mineral deposits in Guayana, Caribbean mountainous system, Andes Mountain Range and Sierra of Perijá, with the geological prospecting.</li><li>• Increase the bauxite, iron, coltan (niobium and tantalite), nickel, phosphate, rock, feldspar, and coal reserves, with the reservoir certification.</li></ul>

Gold and diamond crypto active	<ul style="list-style-type: none"> <li>• Progress in the development of collateralized crypto actives with high value physical assets.</li> <li>• Increase the gold and diamond reserves with the reservoir certification located in Guayana.</li> <li>• Organize small mining focused in gold and diamond exploitation in production units.</li> </ul>
Management of Mixed enterprises and strategic alliances	<ul style="list-style-type: none"> <li>• To constitute mixed enterprises for bauxite, iron, coltan (niobium and tantalite), nickel, phosphoric rock, feldspar and coal exploitation and processing.</li> </ul>
Mining investment and industrialization	<ul style="list-style-type: none"> <li>• The impacts of the investments that are produced, with a sovereign development vision, as well as, with the Regional and Sub-regional Development Plan.</li> <li>• Guarantee the maximum national interest and sovereignty in the resolution of controversies in the constitutional framework.</li> <li>• Guarantee, in the framework of investment promotion, the technological transfer and generation of value chains within the national territory.</li> <li>• Promote the mining development based on the endogenous industrial demand as a driving force</li> <li>• Promote a revolutionary reengineering and strengthening process to reach a powerful state mining company.</li> </ul>
Mining technology research, development and innovation	<ul style="list-style-type: none"> <li>• Generate alliances for the joint development of efficient technologies with low environmental impact.</li> <li>• Strengthen the productive and technological capacities of the state company, in order to maximize its operational capabilities.</li> <li>• Develop training in the use of new ecosocialist technologies for mining production.</li> <li>• Promote mining technologies development to reduce the environmental impact, residual material volumes and surface processing of useful material.</li> <li>• Generate research and development lines linked to ecosocialist technologies and practices.</li> <li>• Develop research, training and innovation aspects linked to ecosocialist productive techniques development.</li> </ul>



Mineral commercialization and prices	<ul style="list-style-type: none"> <li>• Identify minerals that can be exported and traded by allied countries.</li> <li>• Identify alliance strategies for price stabilization and maximization.</li> <li>• Establish mechanisms to defend the mineral prices.</li> <li>• Create a central commission for the mineral commercialization, which centralizes sales processes and favorable prices for the Republic.</li> <li>• Create mechanisms for referential price parameters setting based on technical and market criteria.</li> <li>• Guarantee sovereign trading mechanisms for the resource catchment product of mining activity.</li> </ul>
Mining funds management	<ul style="list-style-type: none"> <li>• Study the creation of financial funds based on mining resources exploitation.</li> <li>• Create the Mining Social Development Fund with financial contributions from the mining activity.</li> </ul>
Monitoring, control and security	<ul style="list-style-type: none"> <li>• Strengthen the mining sector institutionalization and monitoring and control capacities.</li> <li>• Strengthen the monitoring and environmental control mechanisms, in order to guarantee the environmental patrimony, biodiversity and security and defense of the Orinoco Mining Arc.</li> <li>• Strengthen the mechanisms of State security and fight against smuggling.</li> </ul>

Source: Ministry of People's Power for Ecologic Mining Development (2018)

## II.2 Link to the 2015-2030 Sustainable Development Goals

In September 2015, the 193 member states of the United Nations passed the document entitled "Transforming our world: the 2030 Agenda for Sustainable Development", which included a series of Sustainable Development Goals (SDGs) for the 2015-2030 period. On the SDGs, the President of the Bolivarian Republic of Venezuela, Nicolás Maduro Moros, highlighted the 17 SDGs 2015-2030 presented at the 70th General Assembly of the UN, stating that it is necessary to incorporate the SDGs set by the countries belonging to the UN in the Homeland's Plan in order to generate greater welfare for the population.

## Box n° 8.

### Link to the 2015-2030 Sustainable Development Goals

Action vertexes	2015-2030 sustainable development goals	Link to the mining sector
Social and Human Rights	1 goal: Put an end to impoverishment in all its forms and around the world	The mining activity generates a considerable volume of income through the payment of taxes, royalties and dividends, which from the Bolivarian Government's vision are reinvested in economic and social development.
	10 goal: Reduce inequity between and among countries	Mining operators can adopt an inclusive approach through collaboration with communities and increase special groups, participation and influence, including women, in order to ensure the reduction of inequalities, instead of accentuating them, thanks to the economic opportunities that a mine can offer.
	16 goal: Promote peaceful and inclusive societies for sustainable development, ease access to justice for all and build at all levels effective and inclusive institutions that are accountable	Mining activity by adopting the vision of the rule of law can contribute to conflict prevention and resolution between companies and communities, respect for human and indigenous peoples' rights.
Mining economy: building and development	8 goal: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Mining activity can generate new economic opportunities for citizens and members of local communities, the corresponding service providers and the new local economies linked to the mine.
	9 goal: Build resilient infrastructures, promote inclusive and sustainable industrialization and encourage innovation	Mining activity can help boost diversification and economic development, through its direct and indirect economic benefits and the promotion of the construction of new transport, communication, water and energy supply infrastructures.

	12 goal. Ensure sustainable consumption and production patterns	Mining activity provides essential materials for renewable technologies, as well as an opportunity for companies to collaborate throughout the supply chain in order to minimize waste and encourage reuse and recycling.
Ecology: ecosystems protection and preservation	6 goal. Ensure water and sanitation availability and sustainable management for all	Proper planning of the mine development project will avoid the excessive burden on the natural resources matrix, and the actions of environmental remediation and waste treatment.
	7 goal. Guarantee access to affordable, reliable, sustainable and modern energy for all	Mining activity requires a large amount of energy and generates a large amount of emissions, thus offering the opportunity to increase efficiency and expand access to the energy matrix for nearby communities.

Source: Ministry of People's Power for Ecologic Mining Development (2018)

## II.3 Mining Sector legal framework

Mining activity in Venezuela is governed by the Bolivarian Republic of Venezuela's Constitution, which in its article 12 states that: "the mineral and hydrocarbon reservoirs, whatever their nature, that are in the national territory, under the bed of the territorial sea, in the exclusive economic zone and on the continental shelf, belong to the Republic, and are assets of public domain and, therefore, inalienable and imprescriptible. The marine coasts are assets of public domain". Likewise, the Constitution establishes in article 156, paragraph 12: that it is within the competence of the National Public Power, "the creation, organization, collection, administration and control of income tax, inheritance, donations and other related branches, capital, production, added value, hydrocarbons and mines..." Below the Constitution, there is a set of legal instruments and rules that regulate the sector and its activity:

## Organic Laws

- Organic Law of Administrative Procedures. Extraordinary Official Gazette no. 2818 dated July 1, 1981. The National Public Administration and the Decentralized Public Administration, integrated in the set forth way in their respective Organic Laws, will adjust their activity to the prescriptions of said Law.
- Organic Law for the Organization of the Territory, published in Extraordinary Official Gazette no. 3238 dated August 11, 1983. The purpose of this regulation is to regulate the process of distribution of the uses of the territorial space according to the capacities, vocation and / or tradition of the territory, with the policies adopted in the Homeland's Plan, in order to achieve a spatial physical development in harmony with the population's well-being, exploitation and use of natural resources and protection of the environment.
- Organic Law of Indigenous Peoples and Communities. Official Gazette no. 38344 dated December 27, 2005, in which it is mentioned that any activity likely to directly or indirectly affect indigenous peoples and communities should be consulted with the indigenous peoples and communities involved.
- Environment Organic Law, published in Extraordinary Official Gazette no. 5833 dated December 22, 2006, which aims to establish the provisions and guiding principles for the environment management within the sustainable development framework and the guarantees and constitutional rights of a safe, healthy and ecologically balanced environment.
- Organic Law against Organized Crime and Financing of Terrorism (*LOCDOFT*), published in Official Gazette no. 39912 dated April 30, 2012. The purpose of this regulation is to prevent, investigate, prosecute, criminalize and punish crimes related to organized crime and financing of terrorism, in accordance to the provisions of the National Constitution and International Treaties on terrorism. The FANB is empowered to act as the competent criminal investigation body. Likewise, it regulates the obliged subjects (individuals and legal entities) whose economic activity is the trade of metals and precious stones.
- Organic Tax Code. Official Gazette no. 6152 dated November 18, 2014. It establishes the applicable rules to national taxes and legal relationships derived from these taxes.



- Decree with Rank, Value and Force of Organic Law of Customs, published in Official Gazette no. 6155 dated November 19, 2014 and its General Regulations. This regulation regulates customs duties and obligations and the legal relationships derived from it; as well as the regulations of a customs nature contained in the international treaties and conventions in force, with the purpose of intervening, facilitating and controlling the entry, stay and departure of the national territory of goods subjected to international traffic.
- Decree with Rank, Value and Force of Law for the Reform of the Organic Law of Security of the Nation, published in Extraordinary Official Gazette no. 6156 dated November 19, 2014. Its purpose is to regulate the activity of the State and society in matters of security and integral defense, in accordance to the guidelines, principles and constitutional purposes. The State will guarantee internal order in the spaces that, due to their strategic importance, are subjected to special regulations.
- Decree 2165 dated December 30, 2015 published in Extraordinary Official Gazette no. 6210 with Rank, Value and Force of Organic Law that reserves to the State the Activities of Gold and other Strategic Minerals Exploration and Extraction.

## Constitutional Laws

- Constitutional Law on Foreign Productive Investment, sanctioned by the National Constituent Assembly, published in Official Gazette no. 41310 dated December 29, 2017.

## Special Laws

- Decree with Rank and Force of Law of Mines. Presidential Decree no. 295 of 9/5/1999, published in Extraordinary Official Gazette Extraordinary no. 5382 dated 9/28/1999. Mining Law General Regulation, Presidential Decree no. 1234 of 03/06/2001, published in Official Gazette no. 37155 dated 9/3/2001. Special regulatory instrument that regulates the modalities for the granting of mining, inspection and control rights, as well as the tax regime and regulation of mining primary and related or auxiliary activities.
- Law on Management of Biological Diversity. Extraordinary Official Gazette no. 5468 of May 24, 2000. Its purpose is to establish the provisions for the management of biological diversity in its various components, including natural or manipulated genomes.
- Law on Hazardous Materials and Waste, Official Gazette no. 5554 of November 13

2019-2025 Sectorial Plan 71 of 2001, which regulates the generation, use, collection, storage, transport, treatment and final disposal of hazardous substances, materials and wastes, as well as any other operation that involves them, in order to protect health and environment.

- Law on Demarcation and Guarantee of Habitat and Lands of Indigenous Peoples. Official Gazette no. 37118 dated January 12, 2001. Its goal is to regulate policies and plans formulation, coordination and execution related to the demarcation of the habitat and lands of indigenous peoples and communities, in order to guarantee the right to collective property of their lands.
- Decree with Rank and Force of Law of the Central Bank (BCV), published in the Official Gazette no. 37296 dated October 3, 2001.
- Water Law. Official Gazette no. 38595 dated January 2, 2007. It establishes the provisions governing the conservation and integral management of water, as an essential element for the sustainable development of the country.
- Law on the Smuggling Crime, published in Official Gazette no. 6017 dated December 30, 2010. Its purpose is to criminalize and sanction acts

and omissions that constitute criminal or administrative crimes in smuggling matter.

- Criminal Law of the Environment, published in Official Gazette no. 39913 of May 2, 2012. It establishes sanctions for all people who commit environmental illicit acts.
- Partial Reform of the Law of the Central Bank of Venezuela (BCV), published in Extraordinary Official Gazette No. 6155 dated November 19, 2014, authorizing the issuing entity to add the diamonds to its reserves due to that they object to transaction in international financial markets.

## Decrees

- Decree 2219. Extraordinary Official Gazette No. 44818 dated April 27, 1992, which dictates the Rules for Regulating the Affectation of Renewable Natural Resources Associated to the Exploration and Extraction of Minerals.
- Decree no. 2214 Extraordinary Official Gazette no. 4418 of April 27, 1992, which dictates the Norms for the Administration of Forestry Activities, in Forest Reserves, Forested Lots, Forested Areas under Protection and Forested Areas in privately owned lands destined to permanent forest production.

- Decree 883 Extraordinary Official Gazette no. 5021 dated December 18, 1995, which enacts the Norms for the classification and quality control of water bodies and discharges or liquid effluents.
- Decree no. 1257. Official Gazette no. 35946 of April 25, 1996, in which the Norms on Environmental Evaluation of Susceptible Activities of Degrading the Environment are enacted.
- Decree 2248 dated February 24, 2016, Official Gazette no. 40855, in which the Orinoco Mining Arc National Strategic Development Zone is created.
- Decree 2412 dated August 5, 2016, published in the Official Gazette no. 40960. It is prohibited Mercury (Hg) use, possession, storage and transportation as a method of for gold and any other metallic and non-metallic mineral obtaining or treating in all stages of the mining activity that take place in the national territory.
- Decree 2413 dated August 5, 2016, Official Gazette no. 40960, which declares Niobium (Nb) and Tantalum (Ta) as strategic elements for exploration and extraction.
- Decree no. 2647 dated December 30, 2016, published in the Extraordinary Official Gazette of the Bolivarian

Republic of Venezuela no. 6281 of the same date. It establishes the sixth amendment of the Harmonized Commodity Description and Coding System, relating to the adjustments in the Customs Tariff made by the Harmonized System Committee (HSC) of the World Customs Organization (WCO), adopted by the WCO Council in Sessions 1230 and 1240 of the aforementioned System, to achieve greater and better identification of foreign trade goods.

- Decree no. 2781. Official Gazette no. 41122 dated March 27, 2017, where the diamond is declared as a strategic element for exploration and exploitation, for which it is subject to the regime set forth in the Decree with the Rank, Value and Force of Organic Law that reserves to the State the Activities of Exploration and Exploitation of Gold and other Strategic Minerals.
- Decree no. 2782. Official Gazette no. 41122 dated March 27, 2017, where copper is declared as a strategic element for exploration and exploitation, for which it is subjected to the regime set forth in the Decree with the Rank, Value and Force of Organic Law that reserves to the State the activities of Exploration and Exploitation of Gold and other Strategic Minerals.

- Decree no. 2783 Official Gazette no. 41122 dated March 27, 2017, where silver is declared as a strategic element for exploration and exploitation of silver, for which it is subjected to the regime set forth in the Decree with the Rank, Value and Force of Organic Law that reserves to the State the Activities of Exploration and Exploitation of Gold and other Strategic Minerals.

- Decree no. 3188. Official Gazette no. 41294 dated December 6, 2017, where it is declared 23 areas for mining and ecosocialist development (Aumde) located in Bolívar.

- Decree no. 3597 dated August 31, 2018 published in Official Gazette no. 41472 dated August 31, 2018, where coal is declared as a strategic mineral for exploration and exploitation, for which it is subjected to the regime set forth in the Decree with the Rank of Value and Force of Organic Law that reserves to the State the activities of exploration and exploitation of gold and other strategic minerals.

## Resolutions

- Resolution issued by the Office of the Executive Vice President no. 051/2014, published in Official Gazette no. 40529 dated October 29, 2014,

which establishes that the special export licenses is the faculty of the Ministry of People's Power for Commerce (MPPC).

- Resolution no. 086 of the Ministry of Economy, Finance and Banking, published in Official Gazette no. 6143 dated September 5, 2014, in which the legal regime applicable to goods subject to exportation is partially modified.

- Resolution no. 04/16/02 that establishes the Norms on the Marketing of the rough Diamond under the System of Certification of the Kimberley Process, published in the Official Gazette no. 40897 dated May 3, 2016.

- Resolution no. 0010 of the Ministry of People's Power for Ecologic Mining Development, published in Official Gazette no. 41393 dated May 14, 2018, in which the Unique Mining Registry (RUM) is implemented, through a computer platform called Integrated Management System for Ecologic Mining Development (SIGD-ME), developed under the simplification procedures principles, which will automatically centralize the data on the registration of natural or legal persons, of public or private nature who exercise primary or auxiliary activities related to the mining industry.



## II.4 Ecologic Mining Development vision

The Ministry of People's Power for Ecologic Mining Development is the governing entity of the mining activity in the country and the Ecologic Mining National System. It is in charge of ensuring compliance with the political guidelines issued by the Bolivarian Government for the use and sovereign, Ecologic and efficient use of mining resources, through the development of productive chains and aggregation of value within the mining sector in the scales of small, medium-sized and large mining, based on an Ecologic mining that allows to overcome the dependence on oil income, generates employment sources and a new stage of sustainable national productive economy without establishing a new mining rentism.

The challenge that is assumed with the formulation and subsequent concretion of this Mining Sectorial Plan is to develop a mining that is capable of promoting and diversifying the economy of the country, but without sacrificing environment and people. That is the challenge! To be able to extract, transform and add value to mineral resources, but under the maxim of rational control, which guarantees that minerals, ecosystems and biodiversity will be there for the use and enjoyment of future generations.

Consequently, this Plan seeks to establish a route that allows

mining be the driving force of the country and the fundamental pillar of Venezuela's economic recovery at three levels:

- **First level:** to achieve a new economic model through mining, which makes a rational use of mineral production and commercialization and that can contribute to the country's economic diversification and development.
- **Second level:** to develop a culture around mining, not as an extractivist country, but as a country that knows how to rationally use its resources for the benefit of the population.
- **Third level:** to protect the environment through the new technologies application that reduce the activity impact and that contribute to the recovery of the affected areas in a historical way.

## II.5 Action vertexes and strategic goals

From the vision of building an Ecologic productive revolution, four vertexes are defined for mining development:

- **First vertex - Social:** Labor rights, protection of family, a fair, healthy, beautiful, happy social life, ending slavery in the mining activity and

for workers have the right to rest, to vacations, to fair remuneration.

• **Second vertex - Safety:** The life, commercial activity protection to defeat the mafias that exploit and enslave the mining towns.

• **Third vertex - Productive-economic:** Increase miners' production, produce for people's wealth and social happiness, everything that is produced will be transformed into wealth that allows to build a fair housing, schools, import medicines, import inputs, invest in the production , import complementary foods for people.

• **Fourth vertex - Ecologic:** The environmental vertex seeks to preserve nature, the miners' health, waters, lands, and replace all destructive, invasive and polluting technologies with new technologies that are respectful to the environment.

**Figure n° 29.**  
**Mining sector action vertexes graphic chart**



For each of the vertexes, a strategic goal is defined to guide the mining sector policies achievement:

**1 goal. Social:** promote social policies that dignify and guarantee the individual and collective human rights contemplated within the Constitution, addressed to the miners, as well as to the communities and / or indigenous populations that cohabit in the areas where the mining activity is carried out, allowing the mining sector comprehensive and sustainable development.

**2 goal. Safety:** guarantee sovereignty over the nation's mineral resources, through the implementation of security plans and safeguarding of the areas where the mining activity takes place.

**3 goal. Economic:** contribute to the national productive economic system sustainable development through the primary mining sector related activities through the investments promotion and raising, project execution that guarantee the productive chain, the generation of foreign currency and the substitution of imports.

**4 goal. Environmental:** mitigate environmental risks through scientific and technological practices incorporation consistent with the mining activity Ecologic development, guaranteeing the biological diversity conservation and ecosystem protection. Also, remediation plans will be implemented in the intervened areas.

## II.6 Linked strategic plans

Mining Sectorial Plan is the strategic plan that establishes the general lines to guide the actions and strategies developed by the actors that make up the Ecologic Mining National System. It establishes the route to be followed by other strategic plans that are associated to specific components in the mining sector, among which are:

**Mining Arc development plan:** its goal is to establish lines and strategies to manage territorial ordering, social attention of communities, area delimitation for resource exploration and exploitation, reserve certification and low environmental impact technologies implementation,

Within the framework of consolidation of the National Strategic Development Zone.

**Small-miners protection comprehensive plan:** its goal is to establish lines and strategies to manage social protection and socio-productive organization of miners who carry out the activity in an artisanal and low-scale way, incorporating them into a productive conglomerate together with medium and large-scale mining.

**Mining activity complementary productive plan:** its goal is to establish lines and strategies for shaping and consolidating the secondary productive chain associated to mining activity, oriented to related and support activities oriented to knowledge, logistics, maintenance, part production, national raw material parts and inputs, as well as, the aggregation of value subsequent to the mineral primary extraction.

**Mining engine specific plans:** its goal is to establish lines and strategies for the economic-productive development of metallic and non-metallic mining within the framework of alliances and partnerships formation with countries of mining tradition in order to promote resources and reserves exploration, certification and exploitation.

**Country's mining potential scientific-technological plan:** its goal is to establish lines and strategies to promote and consolidate mining activity knowledge and technologies research, exchange, transfer, appropriation, development, innovation and application, minimizing the impact on the environment and contributing to the remediation of environmental liabilities.

**Ecosocialist development and mining use areas management plan:** its goal is to establish lines and strategies that will guide the operational plans development in the areas of: sectorial management and evaluation of mining activity, ecosocialist development and environmental protection, protection and permanence of indigenous communities and other human settlements, productive economy, security and defense.









## Chapter III

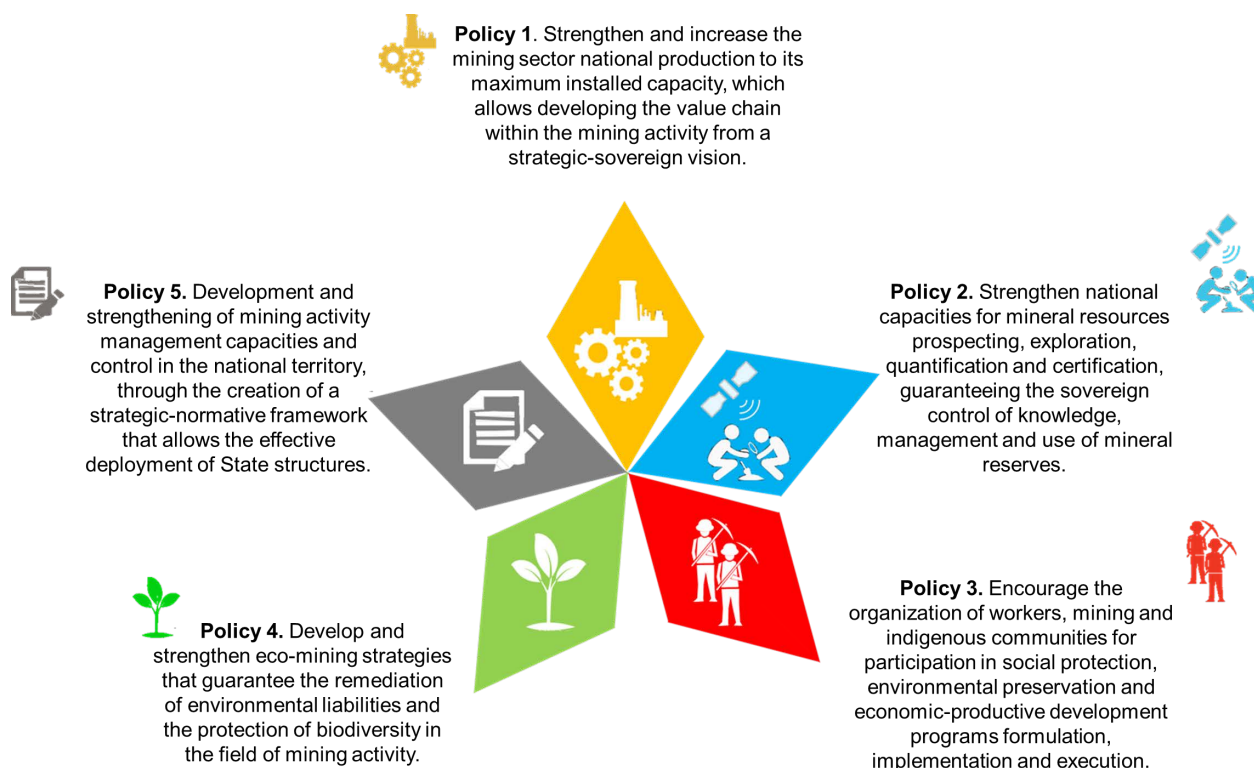
# Operative framework

---

### III.1 Policies, programs, and macro-projects (2019-2025)

To guide and channel the strategic vision for the development of the mining sector, five sectorial policies are defined:

**Figure n° 30.**  
**Mining sector development policies**



Source: Ministry of People's Power for Ecologic Mining Development (2017)

Each of these policies is broken down into programs and macro projects, constituting a set of guidelines and strategies that establish the operational action path for the different actors that make up the Ecologic Mining National System, so that they can contribute directly to the 2019-2025 Homeland's Plan goal achievement.

In total, 14 programs, 36 macro projects and 5 five indicators were defined for the centralized action. Each of them establishes the point of interest to which the mining operators and specialized entities must point in the mining activity for the development of the annual projects and multiannual, either in the centralized mineral sub-system or in the decentralized mineral sub-system.

**Policy 1.** Strengthen and increase the mining sector national production to its maximum installed capacity, which allows developing the value chain within the mining activity from a strategic-sovereign vision.

**Program 1.1** Promotion and recovery of the national mining production.

**Macro projects:**

1.1.1 Mining sector promotion and raising of national and foreign investment.

1.1.2 Recovery of state mining companies by strengthening the management model and technological adaptation of production lines and machinery.

1.1.3 Promote national and foreign associations for the development of mining projects on the mining reserves identified in all the production scales.

**Programs 1.2** Metallic and non-metallic minerals value chain development.

**Macro projects:**

1.2.1 Strengthen the processing activities of minerals that give added value for commercialization.

1.2.2 Identify the minerals with potential for the aggregation of value within the industrial system starting from the endogenous demand.

1.2.3 Promote the development of chains and mining conglomerates in all the scales of the mining activity.

1.2.4 Develop the national and international marketing platform for mineral resources.



**Program 1.3** Promotion of national scientific-technological capacities of low environmental impact within the mining sector.

**Macro projects:**

1.3.1 Develop research and development lines associated to ecosocialist technologies and practices, through the creation of partnerships with research centers and university training for development.

1.3.2 Identify the needs of machinery, equipment and supplies for mining production to promote their national production on an industrial scale.

1.3.3 Strengthen the training programs in required careers and occupations for the mining activities development.

1.3.4 Develop research studies and lines on the natural resources impact on the matrix generated by mining projects and activities.

**Program 1.4** Strengthening inspection, control and sovereign control over the mining sector.

**Macro projects:**

1.4.1 Strengthen the mechanisms of inspection, audit and liquidation of taxes generated by the mining sector.

1.4.2 Develop information and control systems that allow monitoring mineral resources production and commercialization.

1.4.3 Promote financial mechanisms to strengthen the mining sector.

1.4.4 Promote mining areas and activities security and defense to prevent and fight the mineral resources, materials and supplies smuggling.

**Policy 2.** Strengthen national capacities for mineral resources prospecting, exploration, quantification and certification, guaranteeing the sovereign control of knowledge, management and use of mineral reserves.

**Program 2.1** Promoting the prospecting and exploration of mineral resources.

**Macro projects:**

2.1.1 To develop mineral resources prospecting and geological exploration campaigns of in Guayana, the Caribbean mountain system, the Andes mountain range and in Sierra de Perijá.

2.1.2 Develop and update information systems and cadastre of resources and reserves that allow the analysis of mining potential.

**Program 2.2** Mineral reserves quantification and certification.

**Macro projects:**

2.2.1 Promote national and foreign alliances for quantification and certification.

2.2.2 Promote the training of the necessary national human talent for the processes associated to the mineral reserves certification, in accordance to international standards.

2.2.3 Generate technical criteria for international codes implementation for exploration, resources and mining reserves prospects certification in the national territory.

**Program 2.3** Promotion of national scientific-technological capabilities for prospecting, exploration and quantification.

**Macro projects:**

2.3.1 Develop lines of research in prospecting, exploration and quantification technologies, through the formation of partnerships with research centers and university training for development.

2.3.2 To set up the national network of mineral characterization laboratories for physical - chemical analysis.

**Policy 3.** Encourage the organization of workers, mining and indigenous communities for participation in social protection, environmental preservation and economic-productive development programs formulation, implementation and execution.

**Program 3.1** Comprehensive Social Attention

**Macro projects:**

3.1.1 To create care homes for miners in the national territory.

3.1.2 Incorporation of miners in the national system of missions and large missions.

3.1.3 Contribute to the access and strengthening of public services (water, transport, health, education, domestic gas and energy) in mining and / or indigenous communities.

3.1.4 Promote and strengthen the Mining Social Development Fund.

**Program 3.2** Socio-productive Organization

**Macro projects:**

3.2.1 Strengthen the mining people's power presidential council.

3.2.2 Promote the making of workers productive councils.

3.2.3 Promote the creation of Ecologic mining brigades that contribute to the recovery and preservation of biodiversity.

3.2.4 Promote the development of alternative socio-productive projects to the mining activity according to the particularities of each region.

**Policy 4.** Develop and strengthen eco-mining strategies that guarantee the remediation of environmental liabilities and the protection of biodiversity in the field of mining activity.

**Program 4.1** Ecologic mining activity technologies development and transfer.

**Macro projects:**

4.1.1 Promote training for the use of new eco-socialist technologies in the mining sector.

4.1.2 Promote the national development of mining technologies that reduce the volumes of residual material and the area processing of useful material.

4.1.3 Develop lines of research, training and innovation associated to the development of eco-socialist production techniques.

**Program 4.2** Promote affected area recovery by mining activity in order to guarantee environmental heritage and biodiversity.

**Macro projects:**

4.2.1 Ensure compliance with the remediation processes of environmental liabilities generated by mining activity.

4.2.2 Guarantee the fulfillment of the execution of the mine closure plans presented by the mining operators.

4.2.3 Strengthen the monitoring and environmental control mechanisms in the Orinoco Mining Arc.



**Policy 5.** Development and strengthening of mining activity management capacities and control in the national territory, through the creation of a strategic-normative framework that allows the effective deployment of State structures.

**Program 5.1** Design and execution of strategic plans indicators of centralized action.

Centralized Action Indicators:

5.1.1 Development plans formulation and design.

5.1.2 Action plans and Projects evaluation and execution.

**Program 5.2** Centralized action system indicators and policies implementation.

5.2.1 Mining sector specialized policies design and implementation.

5.2.2 Control and information systems production and development.

**Program 5.3** Centralized action indicators regulations making.

5.3.1 Design and enactment of normative instruments.

## III.2 Annual and Long-term Projects

Mining sector diagnosis defines a situational framework so that the different actors that make up the Ecologic Mining National System can develop the annual and long-term projects that come from this sectorial plan, according to the following premises:

- Self-management in the processes of preventive and corrective maintenance of the production lines.
- Joint management in the required machinery and equipment maintenance and recovery processes for mining activities development.
- Specialized and qualified training of the required human talent for plant operations.

- Interaction with companies and production units for the required materials and supplies assurance for mineral resources exploitation.
- Use of technologies for the management of waste generated in the production process.
- Use of low environmental impact mining technologies.
- Remediation processes of environmental liabilities. The actors that will present the specific projects linked to the Mining Sectorial Plan will be:
  - Mining operators.
  - Specialized entities in geology and research.
  - Mining communities.

### III.3 2025 Goals

The goals to be achieved with this sectorial plan execution have been grouped according to the action vertexes:



#### Social and human rights

Goal	Quantity	Measurement Unit
Social attention houses establishment for mining people.	80	Houses
Attended mining workers (social programs, missions and major missions)	32,400	People



## Security and sovereignty

Goal	Quantity	Measurement Unit
Protection and peace spaces for mining people	23	Peace spaces



## Mining economy: building and development

Goal	Quantity	Measurement Unit
Participation of the mining sector in total GDP	0.58%	Percentage
Total production capacity	100%	Percentage
Small-mining strategic alliances	2,100	Alliances
Companies and strategic alliances medium-sized and large mining	20	Enterprises/Alliances
Metallic and non-metallic minerals production volume (Tn)	31,617,368	Tons
Diamond production volume (Carats)	1,360,500	Carats

**Box n.º 9.****Mineral production volume projection (2019-2025 centralized mining –sub-system)**

Mineral		2019	2020	2021	2022
Gold	Tn	25.40	31.00	35.00	43.20
Bauxite	Tn	300,000.00	400,000.00	2,458,000.00	2,765,000.00
Iron	Tn	11,690,000.00	12,040,000.00	12,470,000.00	12,670,000.00
Nickel	Tn	6,916.00	12,236.00	11,761.00	12,087.00
Diamante	Car.	68,500.00	68,500.00	136,750.00	200,000.00
Coltan (Columbite-Tantalite)	Tn	10,000.00	13,500.00	22,800.00	30,000.00
Feldspar	Tn	40,000.00	55,000.00	65,000.00	85,000.00
Coal	Tn	1,441,950.00	2,844,950.00	3,949,950.00	5,149,950.00
Phosphate	Tn	77,000.00	107,000.00	167,000.00	717,000.00
Quartz	Tn	158,000.00	158,000.00	158,000.00	158,000.00

Mineral		2023	2024	2025	2019-2025 Total
Gold	Tn	56.20	67.30	79.40	337.50
Bauxite	Tn	3,600,000.00	4,500,000.00	5,000,000.00	19,023,000.00
Iron	Tn	13,170,000.00	13,570,000.00	14,000,000.00	89,610,000.00
Nickel	Tn	12,009.00	11,786.00	11,786.00	78,581.00
Diamante	Car	628,500.00	860,500.00	1,360,500.00	3,328,250.00
Coltan (Columbite-Tantalite)	Tn	35,000.00	35,000.00	35,000.00	181,300.00
Feldspar	Tn	95,000.00	110,000.00	120,000.00	570,000.00
Coal	Tn	6,279,950.00	7,299,950.00	8,149,950.00	35,116,650.00
Phosphate	Tn	1,347,000.00	2,267,000.00	2,817,000.00	7,499,000.00
Quartz	Tn	158,000.00	158,000.00	158,000.00	1,106,000.00

Source: Ministry of People's Power for Ecologic Mining Development (2018)



**Box n° 10.****Area to be explored within *Arco Minero del Oricono* (Orinoco Mining Arc) (2019-2025 centralized mining sub-system)**

Mineral	Area (ha)
Diamond*	207,826.53
Gold**	470,713.65
Gold-Diamond	157,786.39
Coltan (Columbite-Tantalite)	194,867.22
Bauxite	78,152.93
Granite	109,994.67
Iron	71,121.31
Total	1,290.462.73

Source: Ministry of People's Power for Ecologic Mining Development (2018)  
 Remark 1: \* It includes Diamond blocks located in AUMDE's 8 area (Guaniamo)  
 Remark 2: \*\* It includes Gold 1, 2, 3 blocks located in AUMDE's areas 2, 3 y 4

**Ecology: ecosystem protection and preservation**

Goal	2025 Quantity	Measurement unit
Recovered area by remediation (ha)	1,050	Hectares
Native trees planted in environmental remediation programs	35,250	Trees/Seedlings
Mercury kilograms substituted by leaching technology use	14,520	Kg













Chapter VI

## Sectorial Interaction framework

---



## IV.1 Inter-ministerial management

The Ecologic Mining National System requires the interaction of the governing body with the different ministries that have competence for the development of mining support and related activities, as well as the permission granting. To be able to carry out effectively and efficiently this sectorial plan is necessary to develop the following actions:

### Box N° 11.

#### Articulación interministerial requerida por el SNME

Áreas críticas que demandan articulación

Ministry of People's Power for National Industry and Production	<ul style="list-style-type: none"> <li>• Determine the endogenous productive demand of the basic, intermediate and related industries.</li> <li>• Develop the related and support industry required for the mining activity development.</li> <li>• Promote national capacity for the parts, machinery and supplies production.</li> <li>• Implement mining activity value chain.</li> </ul>
Ministry of People's Power for Higher Education, Science and Technology	<ul style="list-style-type: none"> <li>• Initiate specialized training processes for workers in the mining sector.</li> <li>• Create new national training plans associated to the mining sector.</li> <li>• Promote the national technological development of required machinery and equipment for mining activity development.</li> <li>• Strengthen the prospection processes with remote observation technologies use.</li> <li>• Implement technologies, production processes and environmental liabilities associated to the mining sector research lines</li> </ul>
Ministry of People's Power for Ecosocialism	<ul style="list-style-type: none"> <li>• Conduct land use planning studies on the proposed areas for mining use.</li> <li>• Conduct the evaluation studies of natural resources matrix in the mining projects development framework.</li> <li>• Evaluate the permission granting of territorial affectation and occupation.</li> <li>• Implement recovery and environmental protection plans.</li> </ul>

Ministry of People's Power for Water Attention	<ul style="list-style-type: none"> <li>• Carry out evaluation studies of the water resources matrix in the mining projects development framework.</li> <li>• Evaluate the permission granting of permissions of territorial affectation and occupation.</li> </ul>
Ministry of People's Power for Indigenous Peoples	<ul style="list-style-type: none"> <li>• Conduct land-use planning studies of the indigenous communities that are dedicated to mining activities.</li> <li>• Implement social care protection and plans for the indigenous communities that dedicate themselves to mining activities.</li> <li>• Develop socio-productive programs and projects associated to the culture of indigenous peoples</li> </ul>
Ministry of People's Power for Defense	<ul style="list-style-type: none"> <li>• Constitution of peace zones in the Orinoco Mining Arc.</li> <li>• Fight against mining resources smuggling.</li> <li>• Eliminate illegal organizations and mafias surrounding small-scale mining.</li> </ul>
Ministry of People's Power for Finances	<ul style="list-style-type: none"> <li>• Evaluate authorizations for mineral resources commercialization and selling.</li> <li>• Establish and implement the national platform for mineral resources commercialization and exportation.</li> <li>• Implement programs for the hoarding of mineral resources for the national reserves increase.</li> </ul>
Ministry of People's Power for International Trading and Investment	<ul style="list-style-type: none"> <li>• Establish and implement the national platform for mineral resources commercialization and exportation.</li> <li>• Elaborate and update the Mining Sector Foreign Investment Record.</li> <li>• Promote foreign investment in the mining sector.</li> </ul>
Ministry of People's Power for Productive Agriculture and Lands	<ul style="list-style-type: none"> <li>• Determine the endogenous productive demand of the industries that elaborate agricultural inputs (fertilizers).</li> </ul>
Ministry of People's Power for Urban Agriculture	<ul style="list-style-type: none"> <li>• Determine the endogenous productive demand of the industries that elaborate agricultural inputs (fertilizers).</li> </ul>
Ministry of People's Power for Housing	<ul style="list-style-type: none"> <li>• Determine the endogenous productive demand of the industries that elaborate the required cements, bars, sands and other aggregates for house construction.</li> </ul>

- Establish health care programs for miners.
- Incorporate *Barrio Adentro mission* within the mining communities.

Source: Ministry of People's Power for Ecologic Mining Development (2018)

## IV.2 Private sector joint management

Within the dialogue, reconciliation and pacification process framework between the country's different political, economic and social sectors guides the 2019-2025 period vision of economic and productive development, interaction is necessary to promote joint management with the productive private sectors.

It is sought to establish from the base of the mining productive chain an industrial network associated to support and related activities:

- a. Public calls to private companies for required parts, machinery and equipment development for the functioning of mining operators
- b. Establish productive conglomerates that guarantee the required material supply for mining activities development.
- c. Develop productive linkages with industries and companies, for the manufacture of intermediate and final goods that contribute to productive economic diversification.
- d. Form agreements with the private sector to develop mineral resources and reserves certification processes.

## IV.3 Mining people's power joint management

The People's Ecosocialist Mining Council (CPME) is created as the gold workers first instance of participation, in the small-mining scale. This structure is created as a proposal made by the same mining representatives of all the blocks in the Zone of Strategic Development of the Orinoco Mining Arc (OMA), specifically between Roscio, El Callao, and Sifontes municipalities of Bolívar.

The joint management process between the Ministry of People's Power for Ecologic Mining Development as director of the Ecologic Mining National System and the People's Ecosocialist Mining Council as representative of the OMA miners establishes in a real way the building of a participatory democracy that characterizes the Bolivarian Revolution.

It is within the CPME interaction that the following processes are developed:

- Public and people's planning for mining areas and mine development projects development.
- Social Comptroller to monitor, take care of and verify that the projects, works, supports and services that come from this sectorial plan are fulfilled in a timely, effective and efficient fashion.









## Chapter V

# Management and monitoring framework

---

## V.1 Financial requirement matrix

To be able to develop the mining projects in medium and large mining scale requires an estimated investment of 4,624 billion euros. This investment will allow the development of prioritized minerals within the centralized mining sub-system.

### Box n° 12.

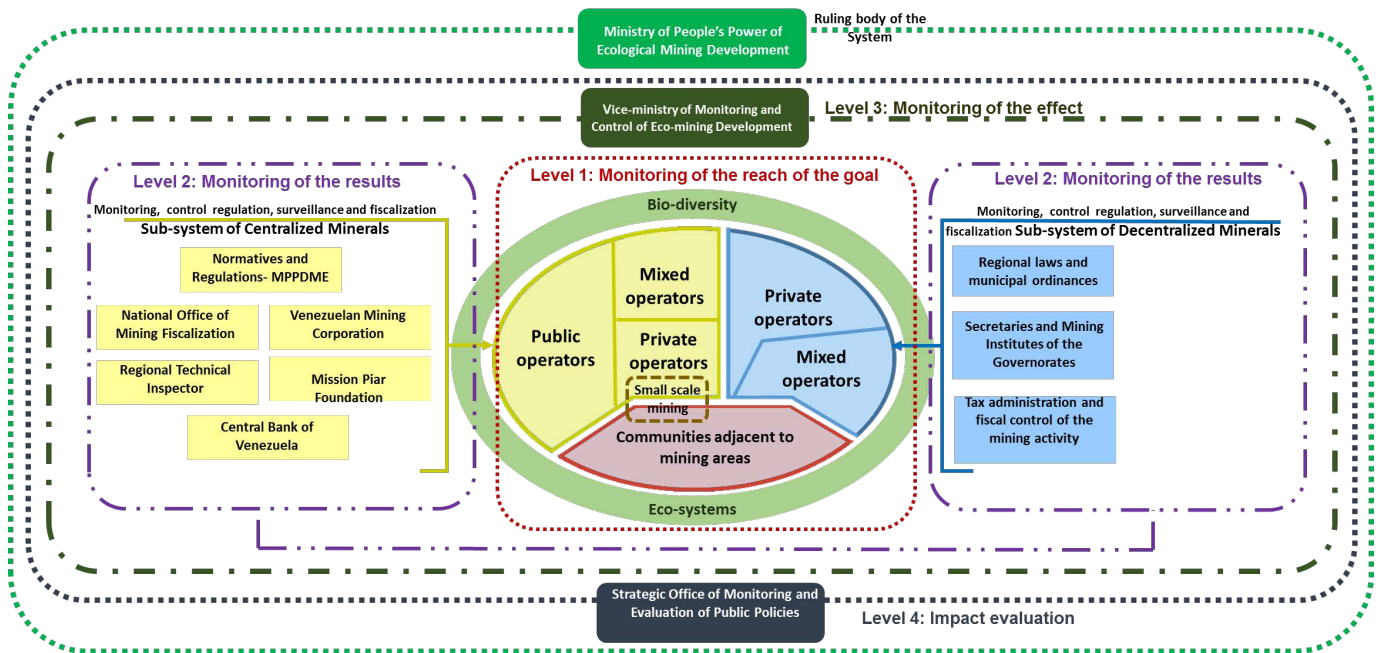
#### Mining sector required investment matrix (centralized mining sub-system)

Mineral	2019	2020	2021	2022	2023	2024	(2018-2023) Total investment
Gold	960	1,179	1,350	2,007	448	79	6,023
<i>Siembra Minera</i> (Sifontes Sur) it includes	15	428	493	750	148	18	1,853
Mixed Enterprise (El Callao Block)	134	34	38	54	15	3	278
Empresa mixta (Sifontes Norte)	42	25	37	62	13	2	181
Mixed Enterprise (Gausipati-El Callao)	275	84	84	111	29	6	589
<i>Corporación Venezolana de Minería</i> (Blocks)	480	590	675	1,004	224	31	3,004
Small-scale Alliance facilities	14	18	23	26	19	19	119
Iron	29	48	34	39	33	9	192
Diamond	14	75	167	109	5	19	389
Nickel	60	41	21	5	3	7	137
Coltan (columbite-tantalite)	19	19	19	35	40	30	162
Coal	66	98	190	63	73	22	511
Bauxite	19	27	38	50	23	8	165
Phosphate	9	24	66	39	13	10	161
Feldspar	5	6	2	1	1	1	16
Total Annual Investment MM (€)	1,180	1,516	1,887	2,346	639	184	7,754

Source: Ministry of People's Power for Ecologic Mining Development (2018)

## V.2 Monitoring and control mechanisms

**Figure n° 31.**  
**Monitoring and controlling levels within the EMNS**



Source: Ministry of People's Power for Ecologic Mining Development (2018)

Monitoring and control of the progress and execution of the sectorial plan must be done permanently in order to generate feedback and evaluate new strategies establishment to achieve the established goals. That is why the control will be carried out on four levels of evaluation:

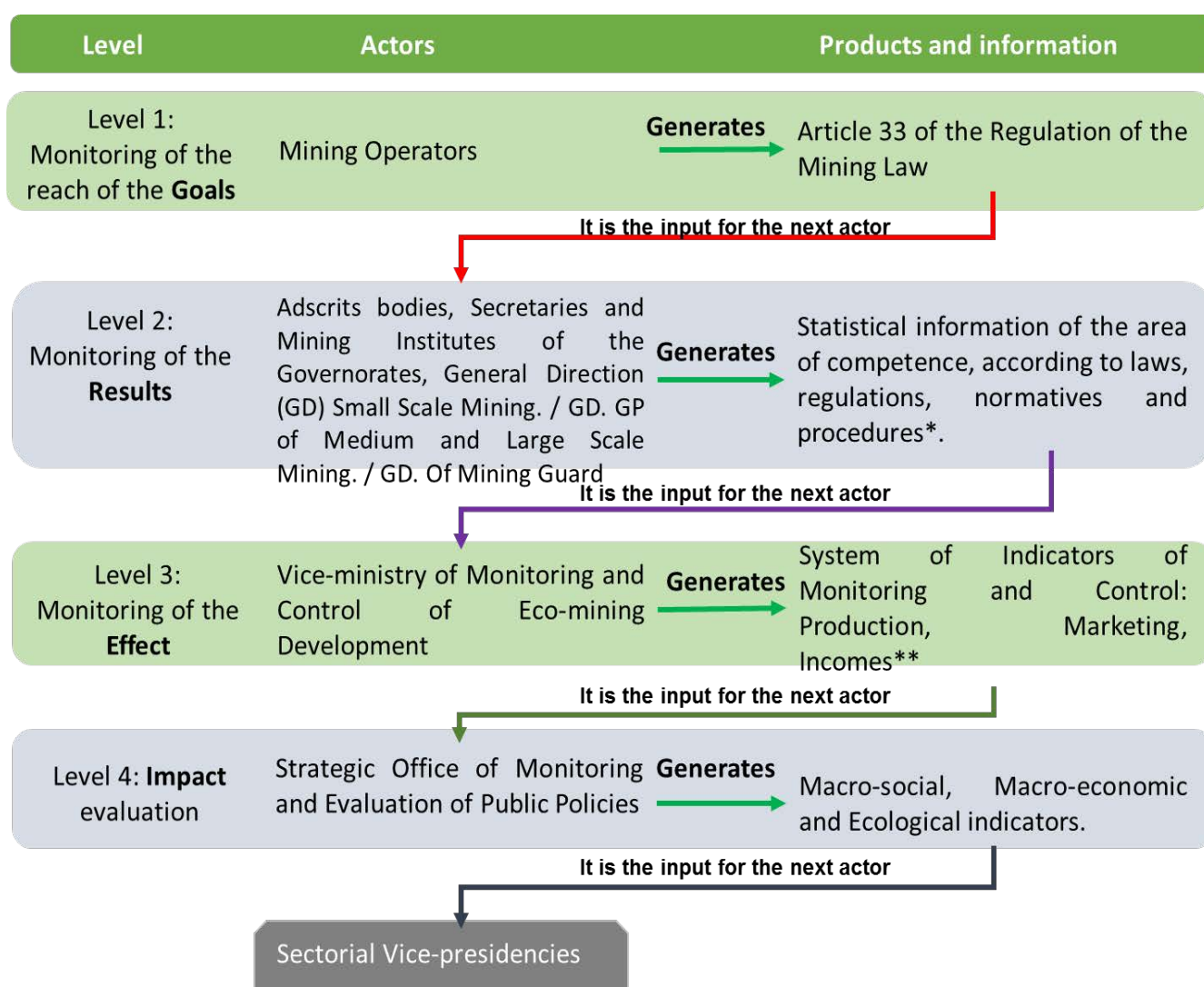
- **Level 1, monitoring of goal achievement:** it refers to the way in which the projection of the general product to be achieved after the project or action is completed. It is associated to the planning systems currently used for the project registration that are part the Annual Operating Plans (AOP), regarding public and mixed enterprises and Exploitation Plans in the case of private companies and other operators..
- **Level 2, result monitoring:** it covers all the products obtained during the project or activity execution developed by an appointed entity, and which is not only limited to the established goal.
- **Level 3, effect monitoring:** it is understood as the use or benefit generated by the products, which are associated to the population of direct or indirect attention.



It allows defining if there is a process, interrelation or people development systems, productive activities, industries or the natural environment improvement.

- Level 4, impact evaluation: it is assumed from the non-variation or zero impact, the positive or negative variation according to the expected effect. For impact measurement, it is necessary to compare the results and effects with an initial measurement, as well as perform several editions in a defined time unit and that is linked to macro social or economic indicators.

**Figure n° 32.**  
**EMNS monitoring and controlling level interaction**

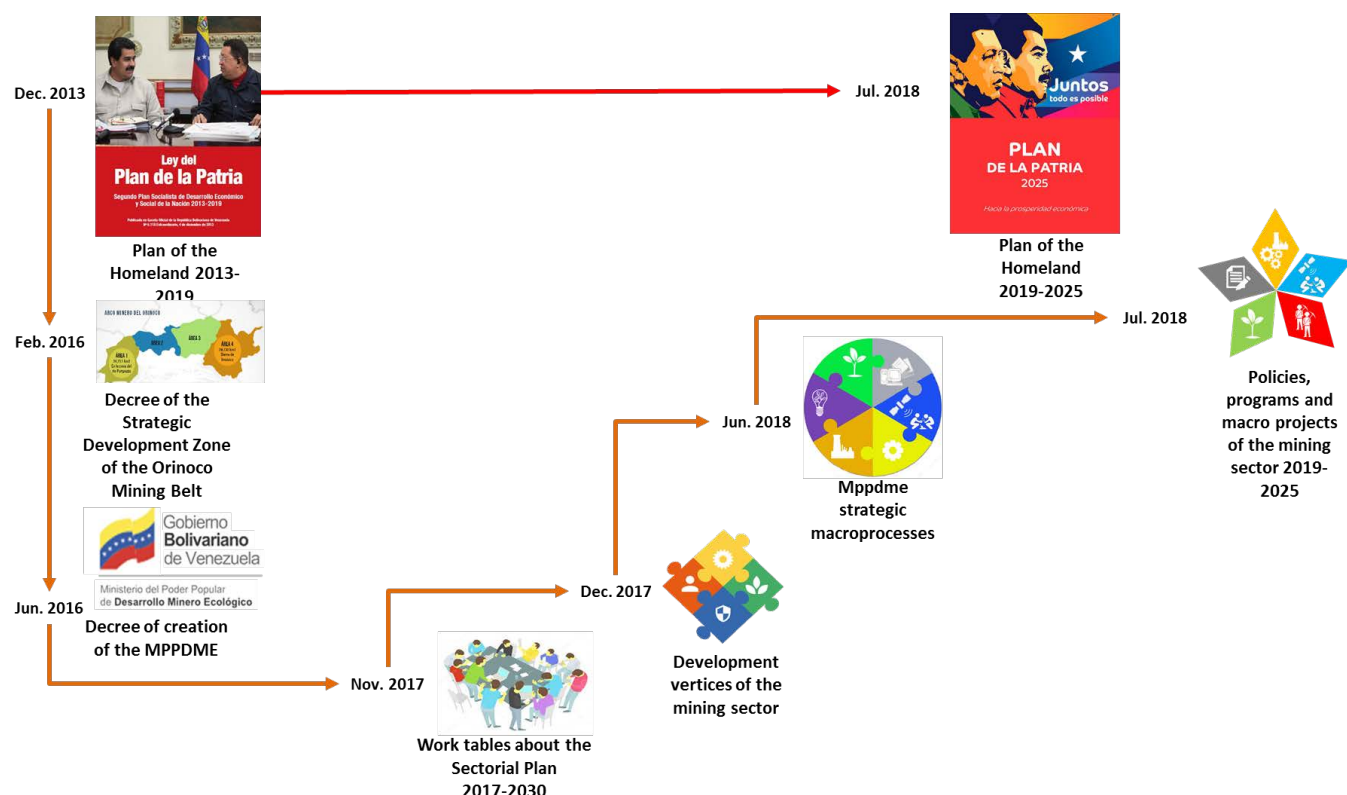


At the monitoring result level, motivated by the fact that the *Mppdme* is in a redefining process of obtaining procedures for pertinent statistical information, the associated variables and indicators are still being formulated. It is expected to end by the end of the 2018 second semester.

At the effect monitoring level, due to the absence of management indicators for the effective monitoring and control of mining exploitation plans and projects, the Office of the Vice-Ministry of Monitoring and Control of Eco-mining Development is designing a Monitoring and Control Indicators System (economic-technical-operational, environmental, security and institutional strengthening, among others), which will strengthen the mining sector institutional framework and control capabilities through the promotion of technical elements and regulatory instruments that regulate the mining activity.

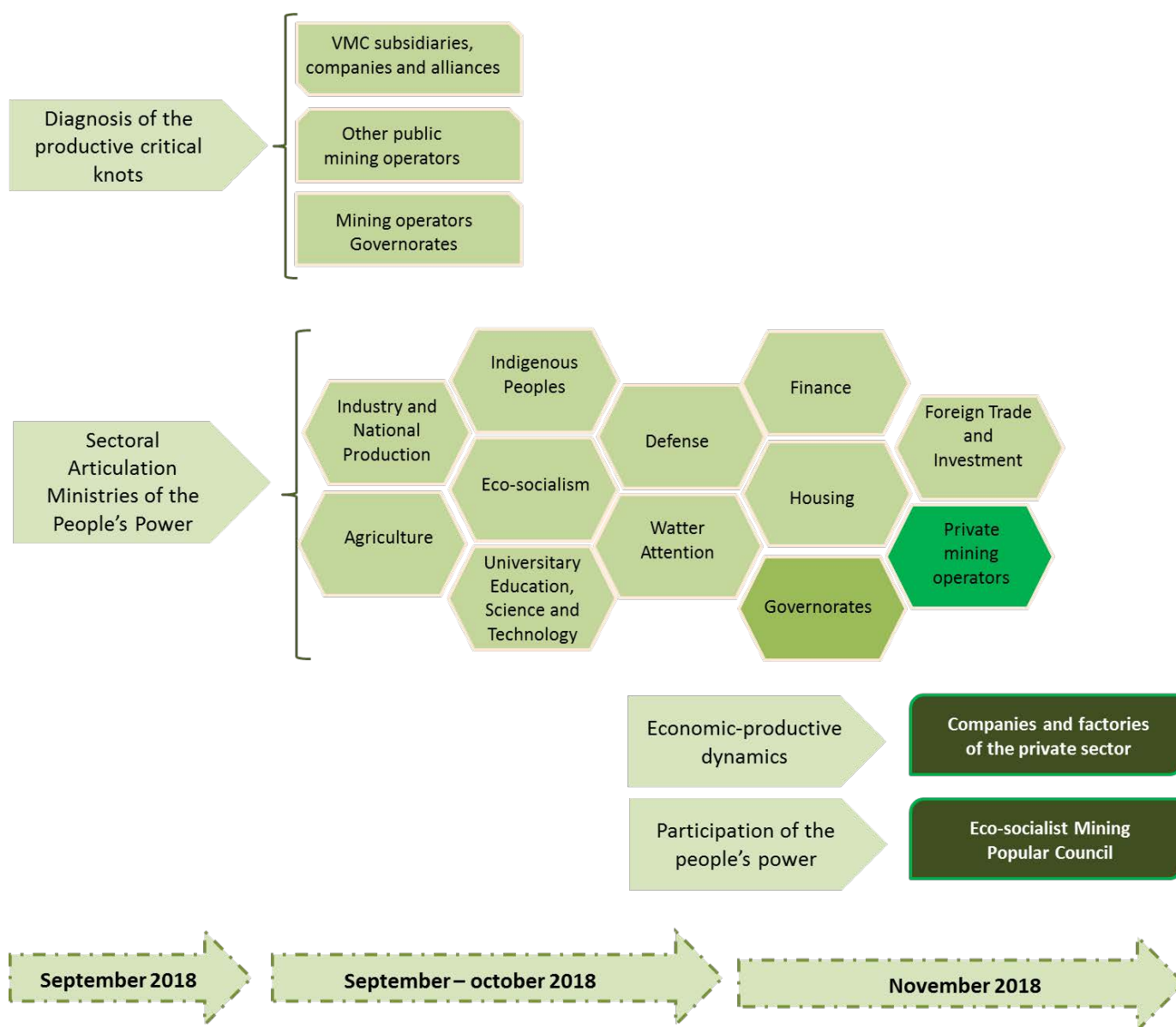
## ATTACHMENT 1

### 2019-2025 Mining Sectorial Plan building route (June 2016-July 2018)



## ATTACHMENT 2

### Mining Ecologic National System interaction with the 2019-2025 Mining Sectorial Plan (September – November 2018)









Ministry of People's Power  
for Ecologic Mining Development



**MOTOR MINERO**

