



COLOMBIA MINING FOR LIFE

DECEMBER 2023

#MineríaParaLaVida

MINING SECTOR INSTITUTIONAL FRAMEWORK IN COLOMBIA



MINISTRY OF MINES AND
ENERGY

Responsible for the
National Mining
Policy

VICE MINISTRY OF MINES



Mining Authority and
Mining Resources Manager



Geological Knowledge
and Monitoring of
Geological Threats



Sectoral Planning and
Market Monitoring



MINING IN COLOMBIA



ABOUT THE NATIONAL MINING AGENCY

Main functions

Article 4 Decree 4134 / 2011

- **Management** of national mineral resources.
- **Hold, manage** and audit concession and mining rights for exploration and development of minerals.
- **Management** of the national mining registry.
- **Calculate, collect, manage and transfer** royalties and compensations.
- **Promote and encourage** development of mining.

Regional presence



MINING IN COLOMBIA



- + 6th country in LATAM and the Caribbean in the Fraser Institute's Investment Attractiveness Index and Best Practices Mineral Potential Index 2022*
- + 3rd country in LATAM with a mineral resources and reserves standard
- + 4th most competitive economy in LATAM- IMD World Competitiveness Center
- + 75/100 points in the 2021 Resource Governance Index (RGI) - Natural Resource Governance Institute
- + 4th destiny in LATAM Doing Business (DB) in 2020
- + USD 188 million in social investment reported in mining titles by 2022^{Pr}
- + Exporter in LATAM N°:
1st of coal and emeralds
4th of ferronickel
5th of gold
6th of copper

Natural Resource Governance Institute 2022
 *Fraser Institute Annual Survey of Mining Companies 2022
 IMD World Competitiveness Center's World Competitiveness Yearbook 2022
 GDP, exports and employment. Source: DANE 02/03/2023
 FDI. Source: Central Bank of Colombia 01/12/2023
 Royalties' preliminary data. Source: NMA report Mapa Regalias, DNP as of 31/10/2023
 Exploration budget NFM. Source: Cochilco based on S&P Global 2023
 2022^{Pr}: preliminary consolidated data in basic mining annual format - FBM 2022

2022



1.2%
Of Colombia's GDP



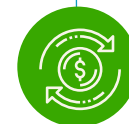
29%
Of exports



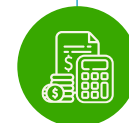
282k
Direct employees



USD1,885.46M
In royalties

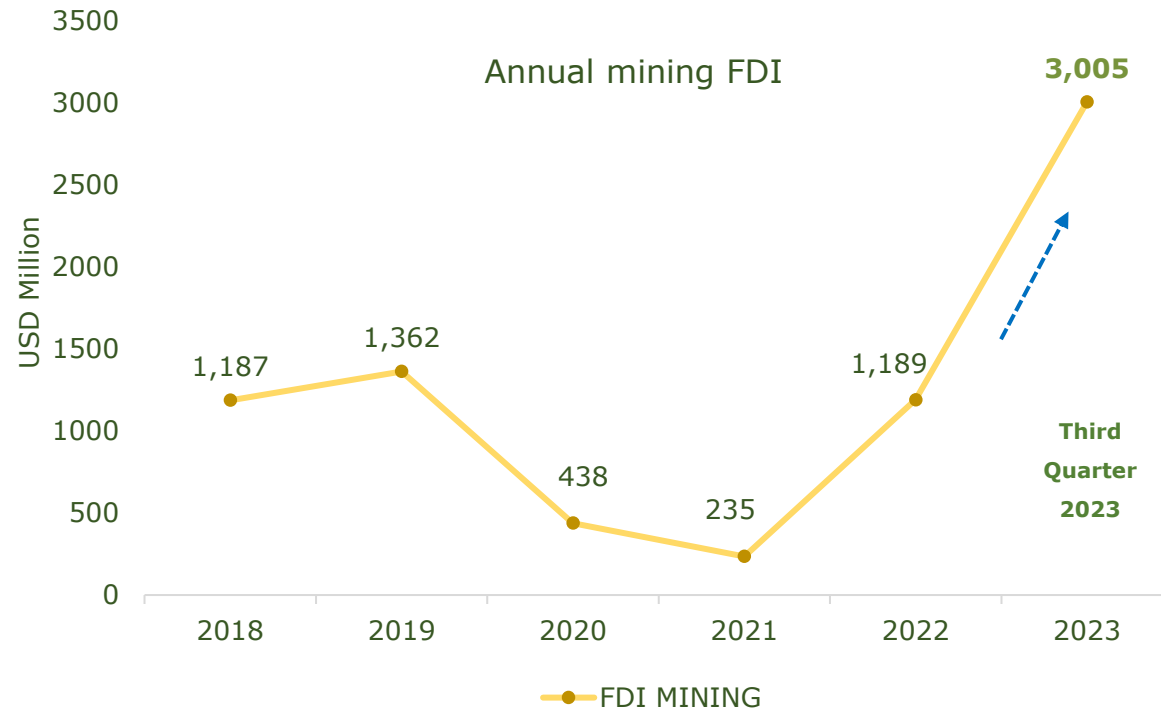


6.9%
Of the Foreign Direct Investment



4% Of LATAM's non-ferrous metals exploration budget

Foreign direct investment in mining



As of the third quarter of 2023^P, FDI in the mining sector represented **23.5%** of total FDI in the country, with

USD 3,005 Million

Global Nonferrous Exploration Budget 2022
USD 13.01 billion

25.1% LATAM
with more than USD 3.26 billion

40.2% of Budget
destined to gold exploration

36.8% of Budget
destined to copper exploration

In 2022, Colombia accounted for 4% or about USD 131.6 million of LATAM's nonferrous exploration budget

MINERAL POTENTIAL



Knowledge of subsoil



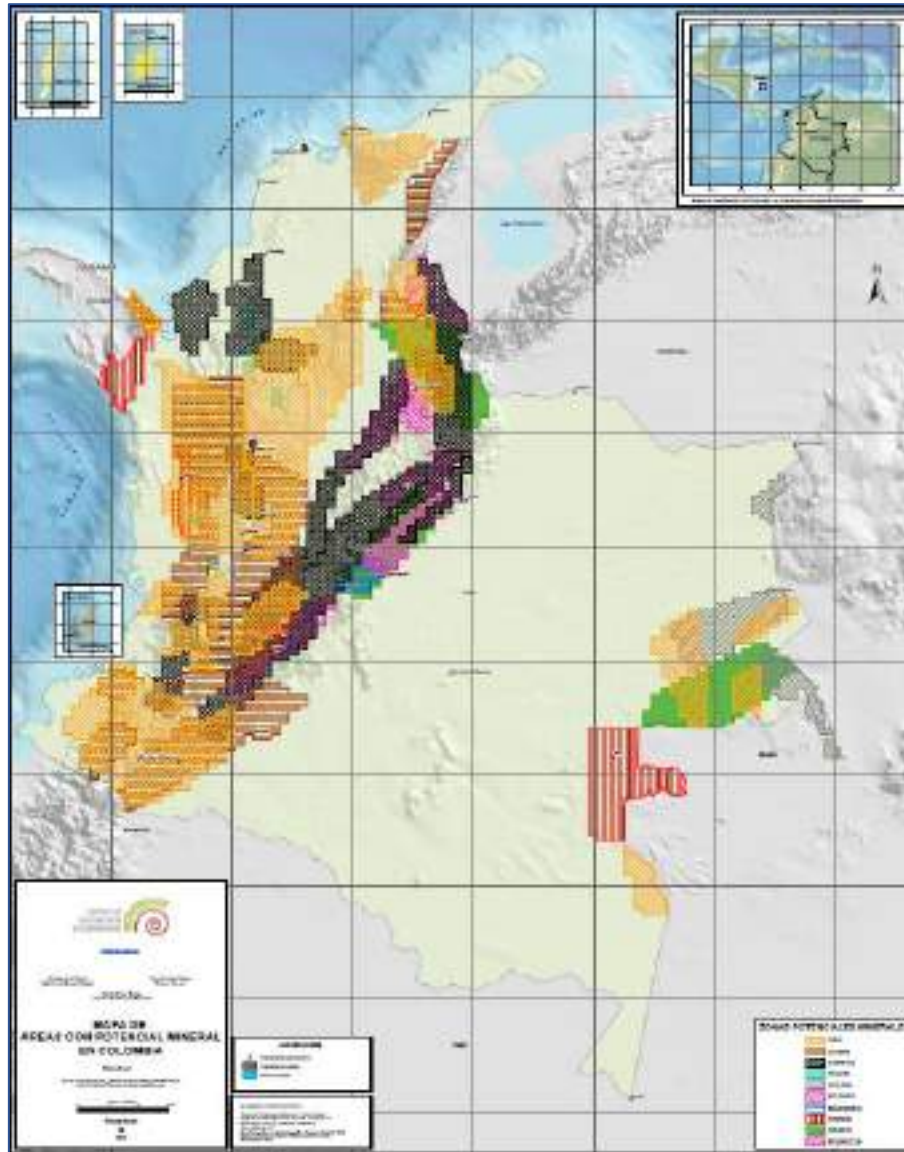
73%
GEOLOGICAL
Scale: 1:100.000



75%
GEOPHYSICAL



42%
GEOCHEMICAL



Strategic Minerals



Gold
Copper
Coal (Metallurgical)
Nickel

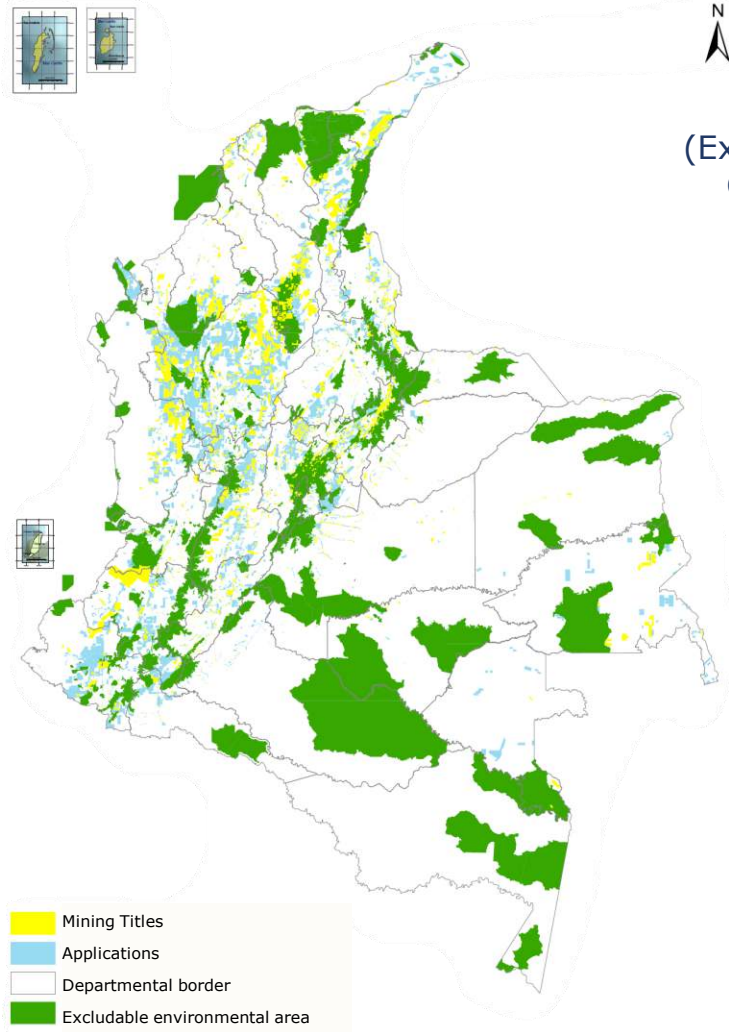


Magnesium
Iron
Phosphates
Unexplored Potential

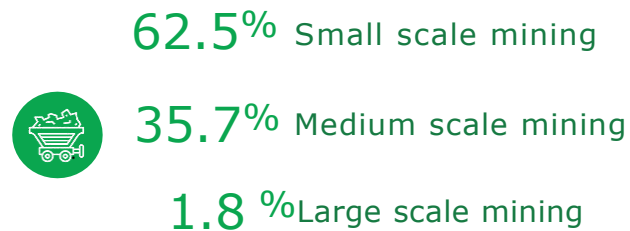
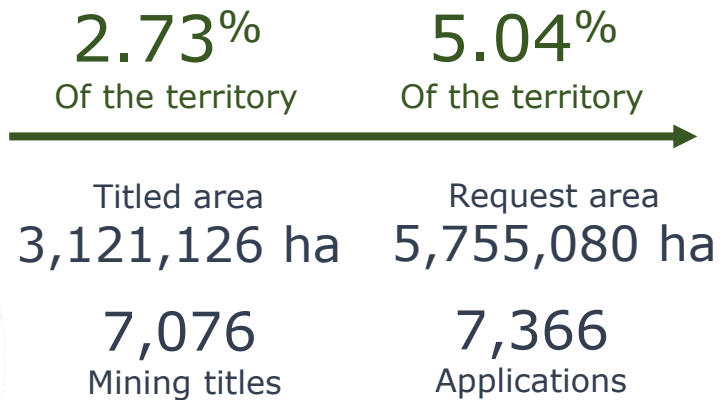
- Zinc
- Gypsum
- Limestone
- Chromium
- Manganese
- Emeralds
- Bauxite (Aluminum)
- Silica sands (silicon)
- Platinum Group Metals
- Construction Materials (sands, gravels and clays)

Mining titling

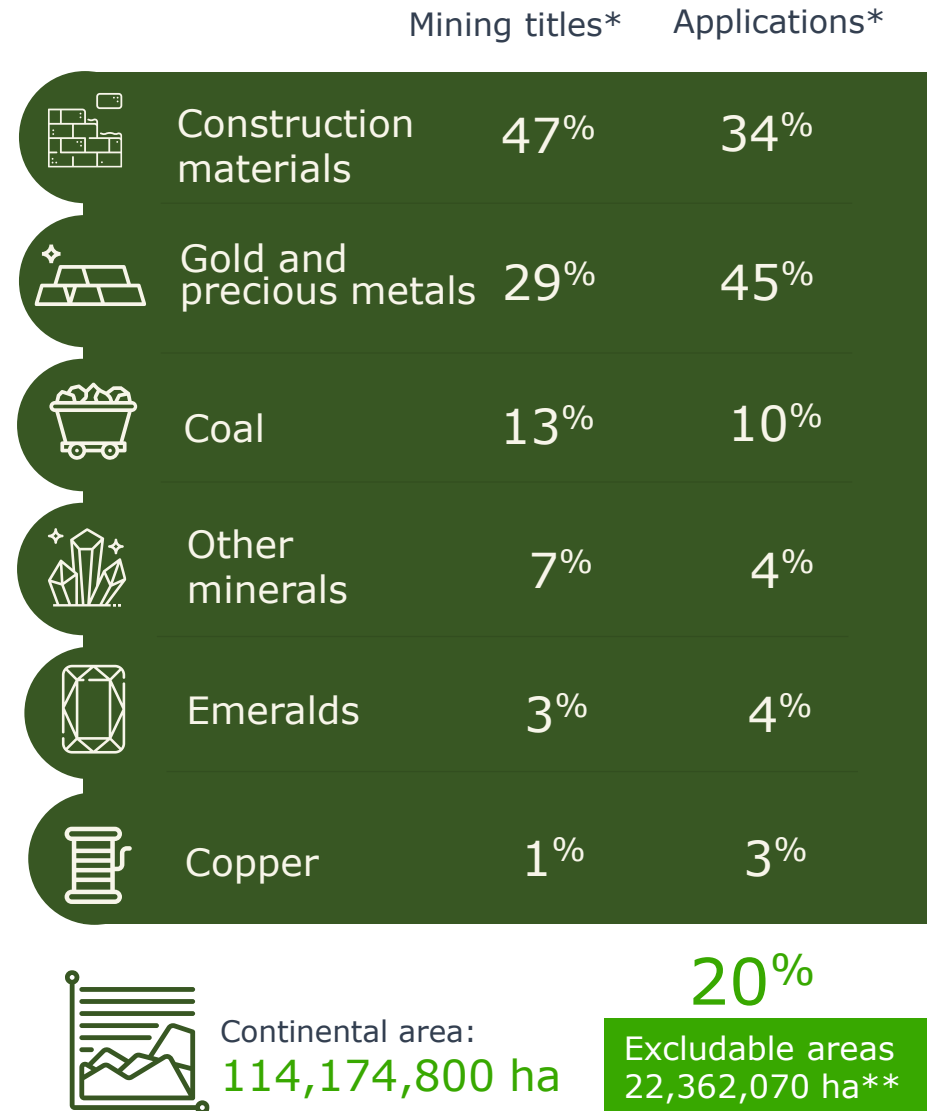
“Construction materials predominate, with close to 3,400 mining titles in force”



By contractual stage:
(Exploitation: 81.09%, Exploration: 14.87%, Construction and assembly: 4.03% and Advance technical evaluation 0.01%)



Source: NMA – AnnA Minería 30/11/2023. *Classification of titles and applications by main ore. **Area without overlapping within the different coverages: 16,551,620 ha (19/12/2023).



GOLD

AND PRECIOUS METALS
MINING ACTIVITY

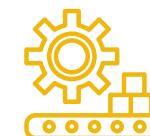
Gold and precious metals production



1,996 Titles
1.64% of national territory
(1,875,386 ha)



3.222 Applications
3.59% of national territory
(4,096,180 ha)



Production

(Associated with royalty payments)

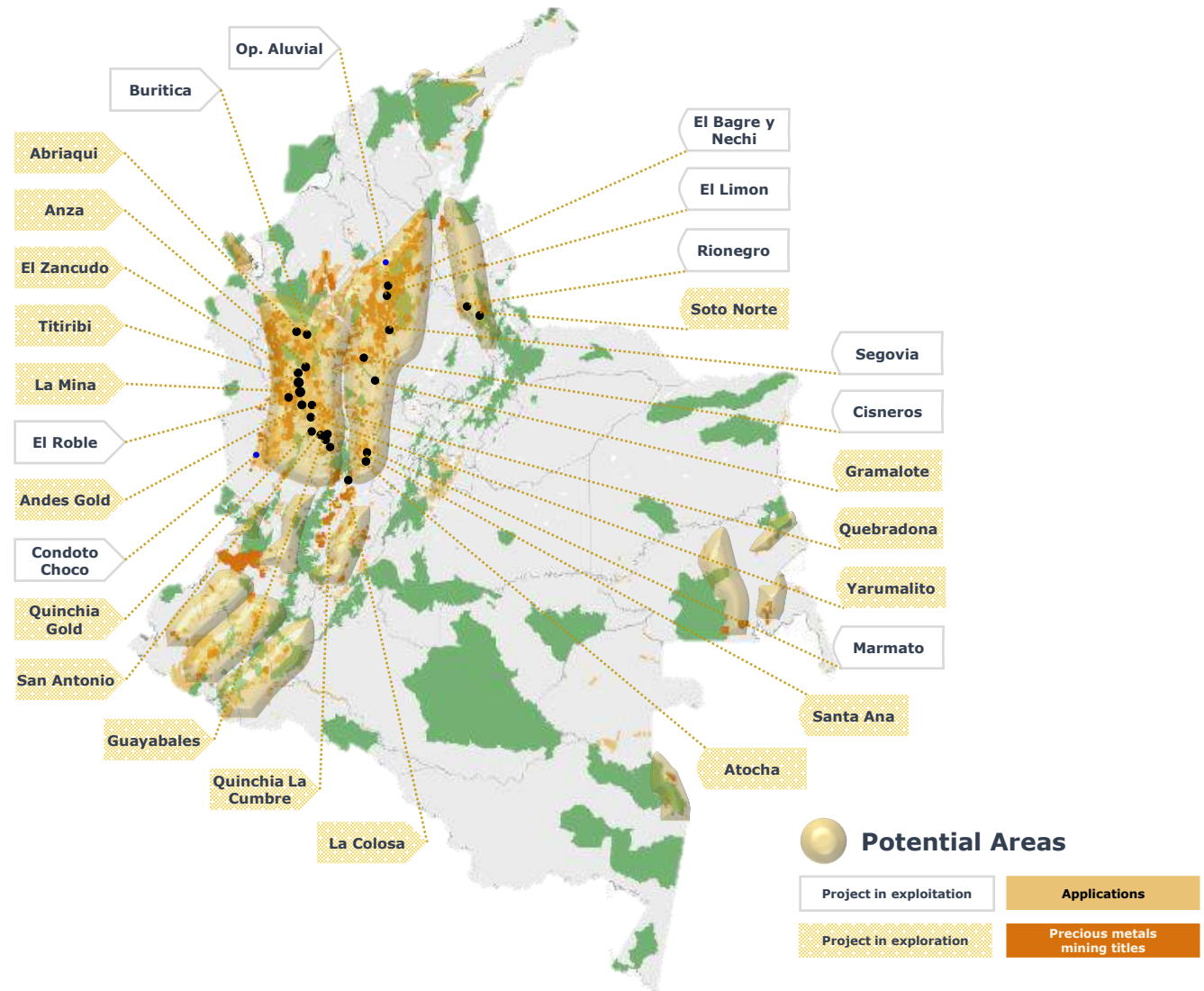
	2020	2021	2022 ^{Pr}
Gold			
	48.56 Ton	55.32 Ton	51.36 Ton
Silver			
	19.95 Ton	26.70 Ton	35.84 Ton
Platinum			
	413.99 Kg	617.87 Kg	501.13 Kg

Four new gold projects began production in 2018/2020

Gold deposits are clustered in districts associated with metallogenic belts in the provinces of **Antioquia, Santander, Tolima, Huila, Caldas, Nariño, Cauca and Bolivar**. Deposits are also found along the Pacific coast, which are formed by the erosion of the western branches of the Andes mountain chain. With an average grade between **1.78 g/t y 12.00 g/t Au** in proven reserves.

Silver in Colombia is linked to gold mining, both in terms of exploitation and beneficiation.

Much of Colombia's platinum comes from alluvial deposits, which are mostly located in the province of Choco.



Gold production

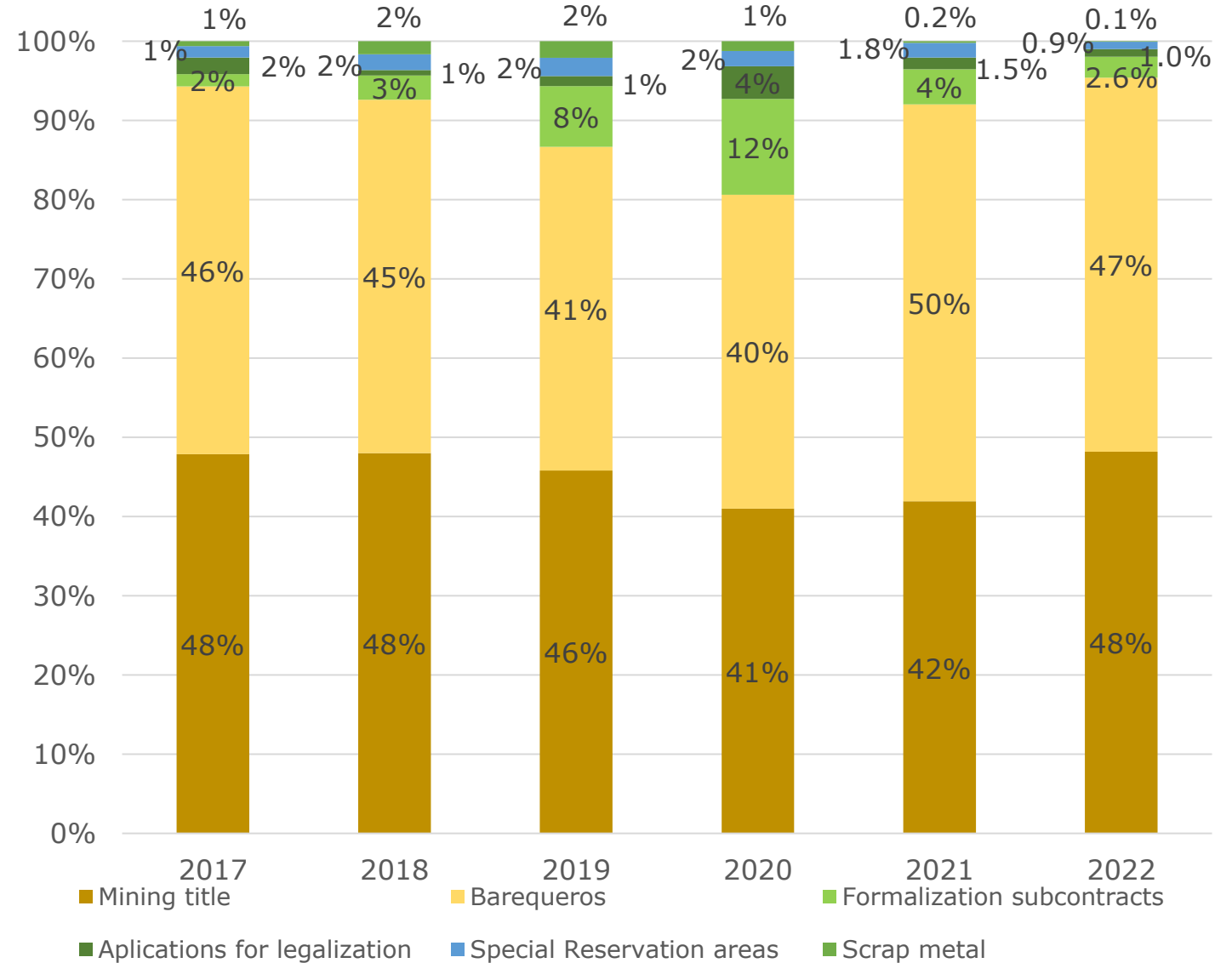
by type of authorized mine operator



48%
Mining title



52%
of Colombia's gold production comes from other authorized miners

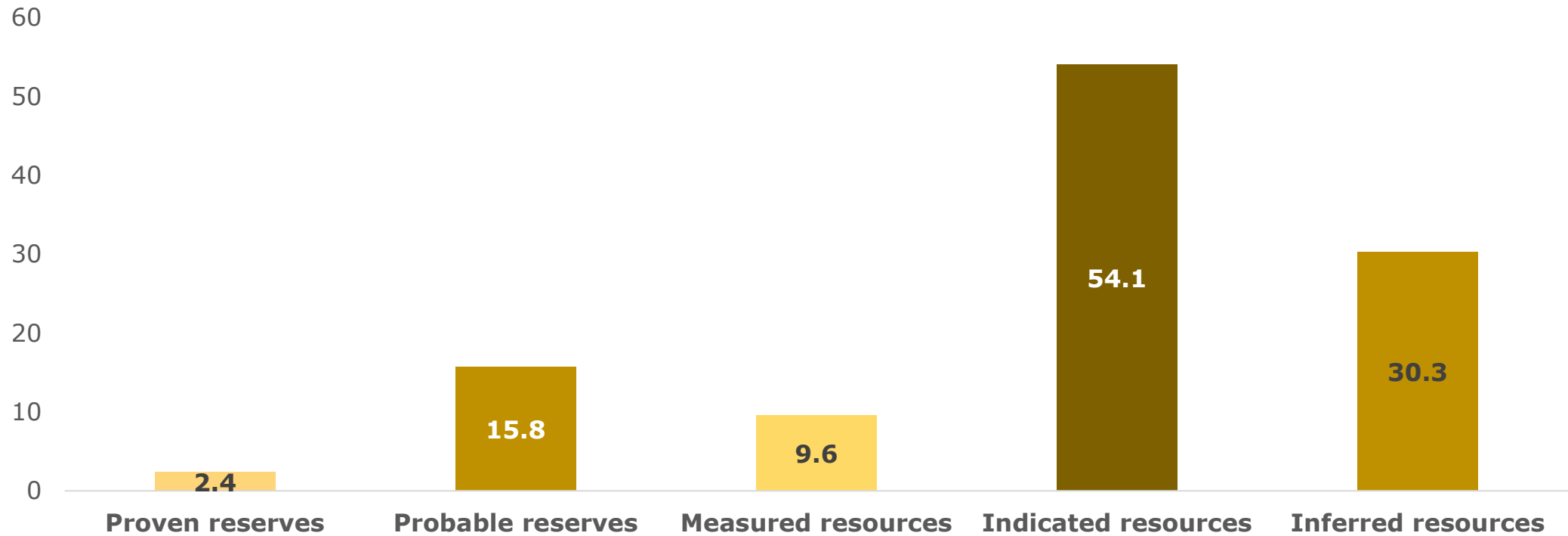




Gold

Mineral resources and reserves

Mineral resources and reserves in **17 main gold projects** according to International Information Standards (**Moz**)



Source: Resources and reserves projects reports including Buritica, Cisneros, El Roble, Gramalote, La Colosa, La Mina, Marmato, Alluvial Nechi, El Bagre y Nechi, Quebradona, La Cumbre, Quinchia Gold, San Matias, Segovia, Soto Norte, Titiribi and Yarumalito projects. Calculation NMA January 2023.

COPPER

MINING ACTIVITY



COPPER

and base metals



MINISTERIO DE MINAS Y ENERGÍA



NATIONAL MINING AGENCY



In Colombia, deposits with an average grade of up to **3.05% Cu** in Proven Reserves are explored and exploited



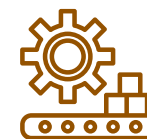
962 Titles

0.81% of national territory
(930,095 ha)



1,370 Applications

1.94% of national territory
(2,219,140 ha)



Production

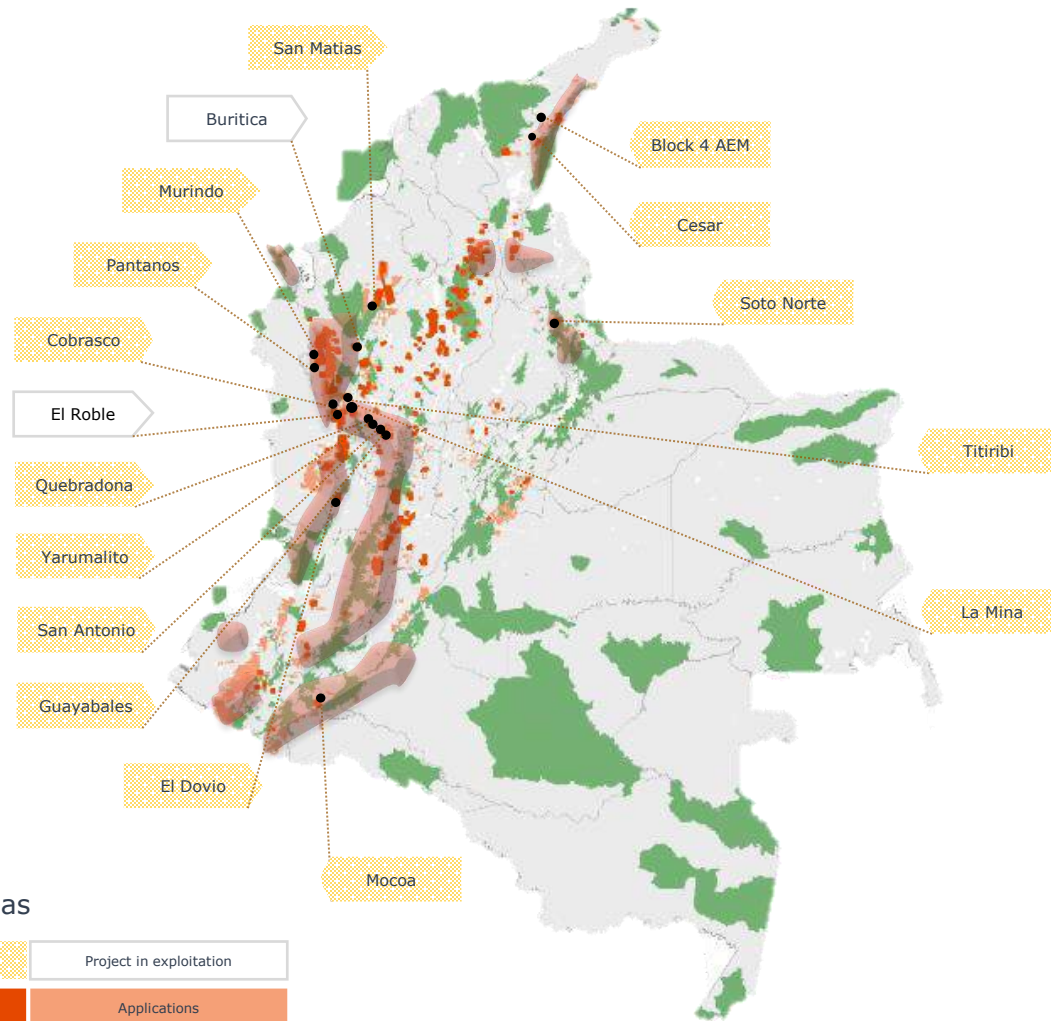
(Ton)

(Associated with royalty payments)

	2020	2021	2022 ^{Pr}
Copper*			
	9,372	9,194	6,918
Nickel			
	36,094	38,300	41,815
Iron			
	787,121	750,095	497,481

Colombia has three (3)

copper belts where important prospects can be found:

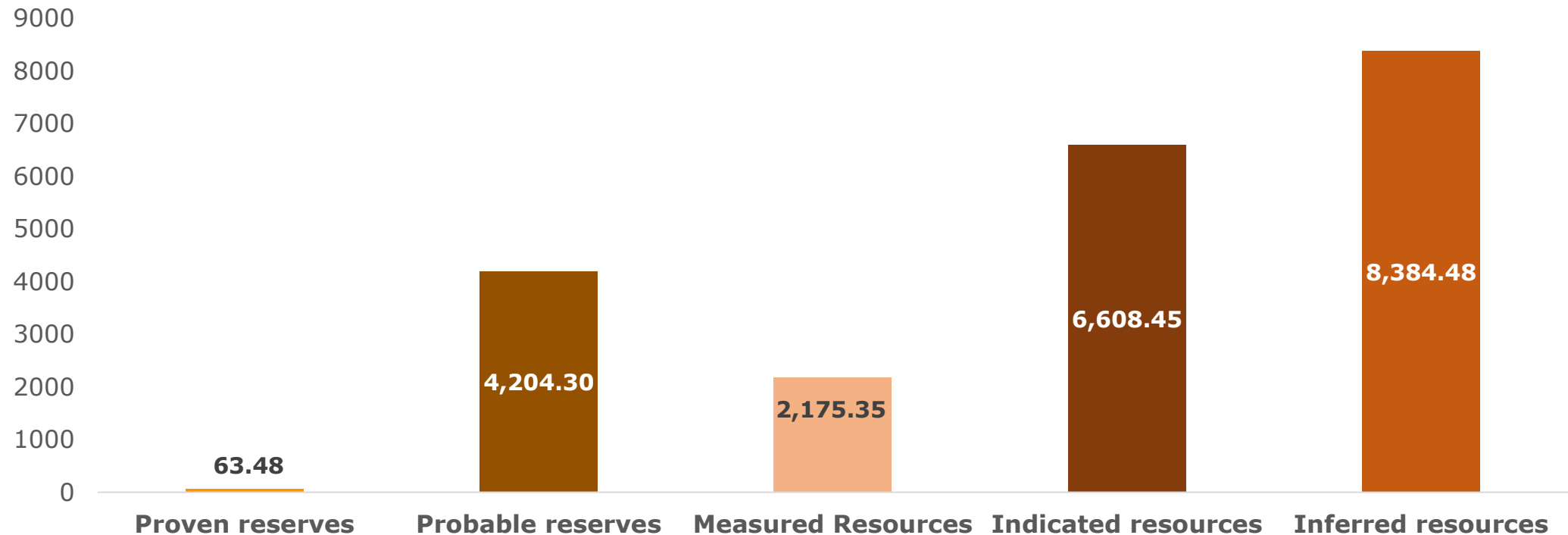


- Central
Quebradona, El Pisco, Piedrasentada-Dominical and Mazamorra
- Western
Acandi, Murindo, Pantanos-Pegadorcito, Andagueda and Piedrancha
- Eastern
Andes, Infierno-Chili, Dolores y Mocoa

COPPER

Mineral resources and reserves

Mineral resources and reserves in **8 main copper projects** according to International Information Standards (Mlbs)



Rail, road and port infrastructure



Source: <https://www.ani.gov.co/> 31/07/2023.

Roads

Fourth Generation (4G) public-private partnership infrastructure program have an estimated period of 25 years.

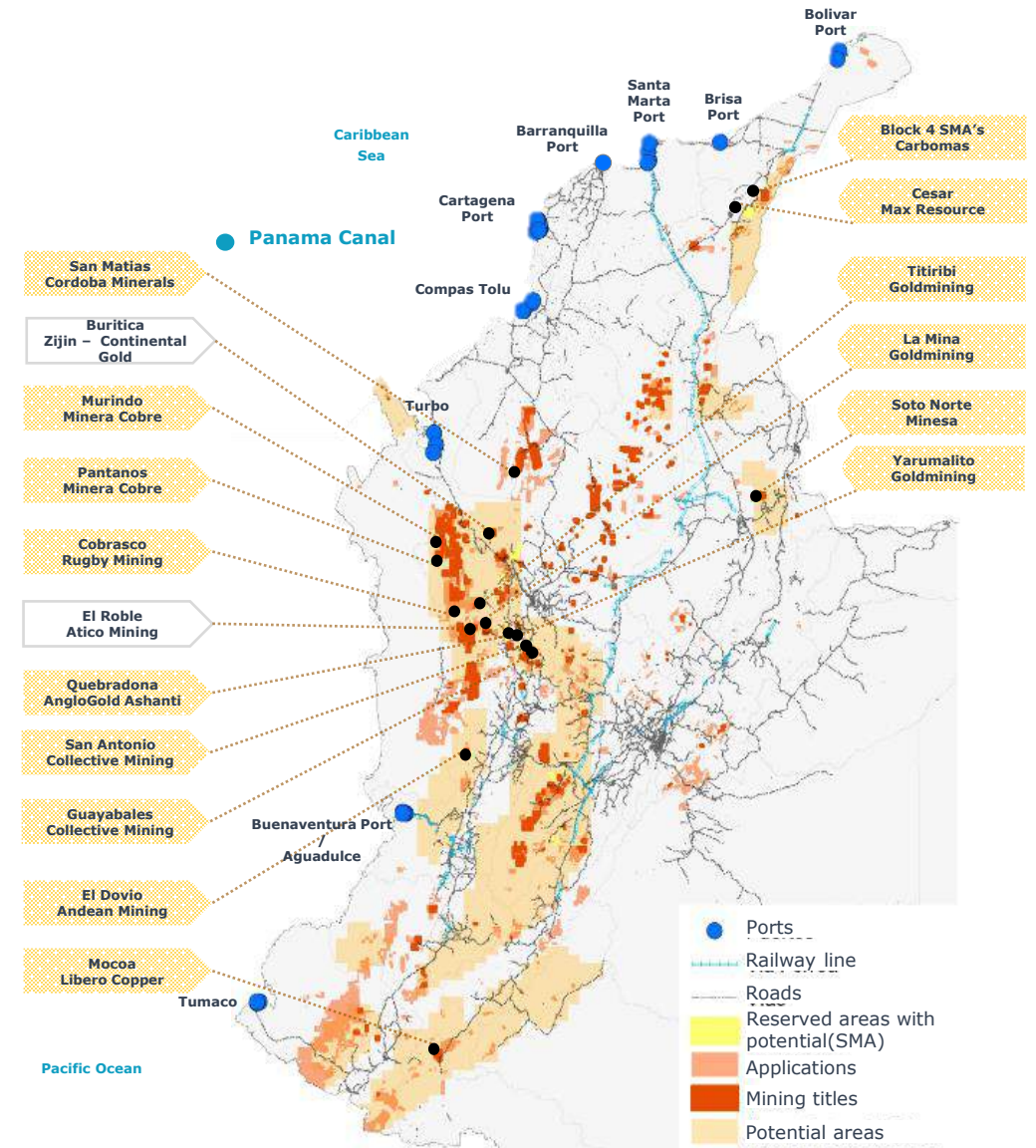
The 4G program estimates USD 17 billion investment to build over 4,400 miles of new roads, 141 tunnels, and 1,300 viaducts.

Most of the road projects were designed to expand the country's transport system and include more than 30 primary road improvements and construction projects.

As of July 2023, the 4G road projects are 76.77% complete.

Many planned concession projects will link main ports with major cities to augment the current state of cargo transportation and lower the relatively high costs of shipping goods over land.

The 5G road projects, focused on social sustainability, are also advancing.



Installed capacity in Colombia



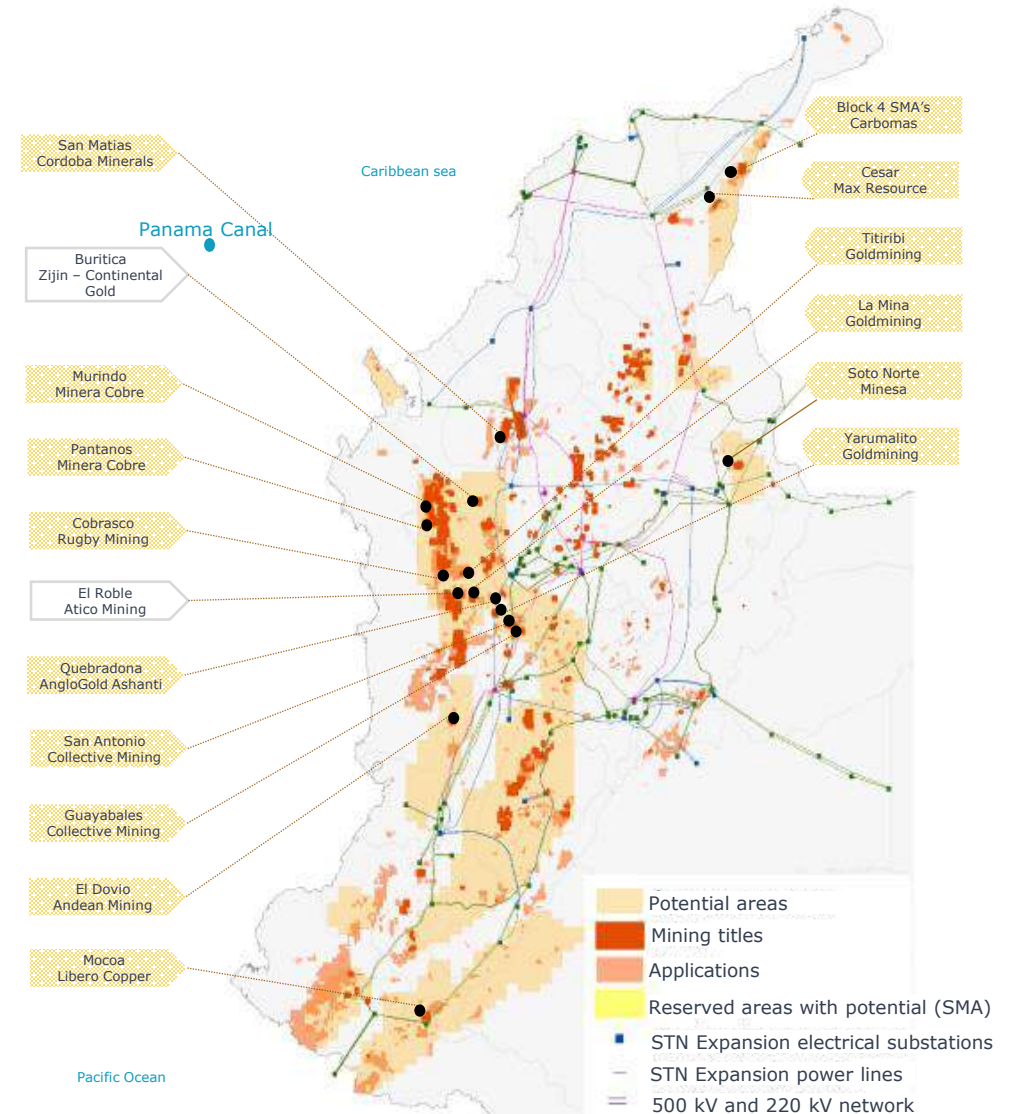
TODAY
17,771 MW



116.61 MW Solar (0.1%)	150.80 MW Co-generator (0.9%)	18.42 MW Wind power (0.1%)
-------------------------------------	--	---

11,942.11 MW Hydraulic (68.3%)	5,543.24 MW Thermal (31.7%)
---	--

- *"Colombia's electricity generation matrix is one of the cleanest in the world, with about 69% of installed capacity related to renewable energy sources."*





EMERALD

MINING ACTIVITY



Hydrothermal sedimentary origin of the **Colombian emeralds** is unique in the world

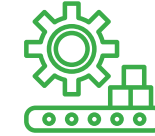
Colombian emerald exploitation is carried out by underground operations



937 Titles
(0.51% of national territory)
(579,128 ha)



482 Applications
(0.22% of national territory)
(252,262 ha)



Production
(Carats)

(Associated with royalty payments)

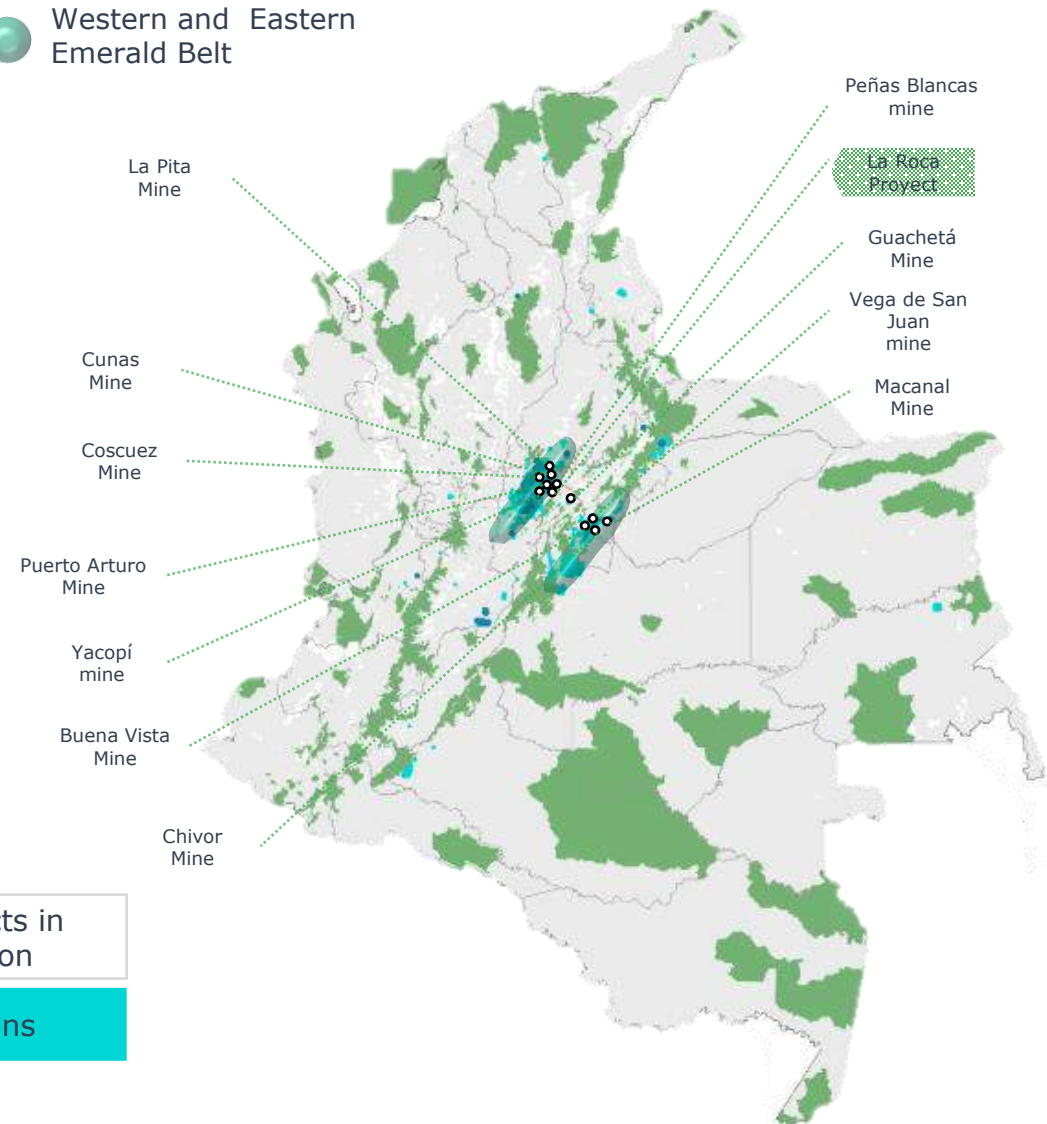
2020	2021	2022 ^{Pr}
Unpolished		
1,555,470	863,991	914,323
Set		
10	0	0
Carved		
47,744	633,225	168,674
Unspecified		
		160,843
Other		
3,117,799	2,226	9,010

Emerald

Mining activity

Colombian emeralds are number one in the world for quality, due to their hydrothermal sedimentary origin that gives them a brightness, transparency, color, play of lights and optimal hardness.

Western and Eastern Emerald Belt



Project in exploration
Emerald mining titles

Main Projects in exploitation
Applications



PHOSPHATE ROCK MINING ACTIVITY



Phosphate rock

Mining activity

“The production of Phosphate Rock or Phosphoric Rock is carried out in the departments of **Boyaca, Huila and Norte de Santander**, with more than 99% destined for domestic consumption”



722 Titles

0.48% of national territory
(553,646 ha)



188 Applications

(0.13% of national territory
(148,124 ha))



Production

(Associated with royalty payments)

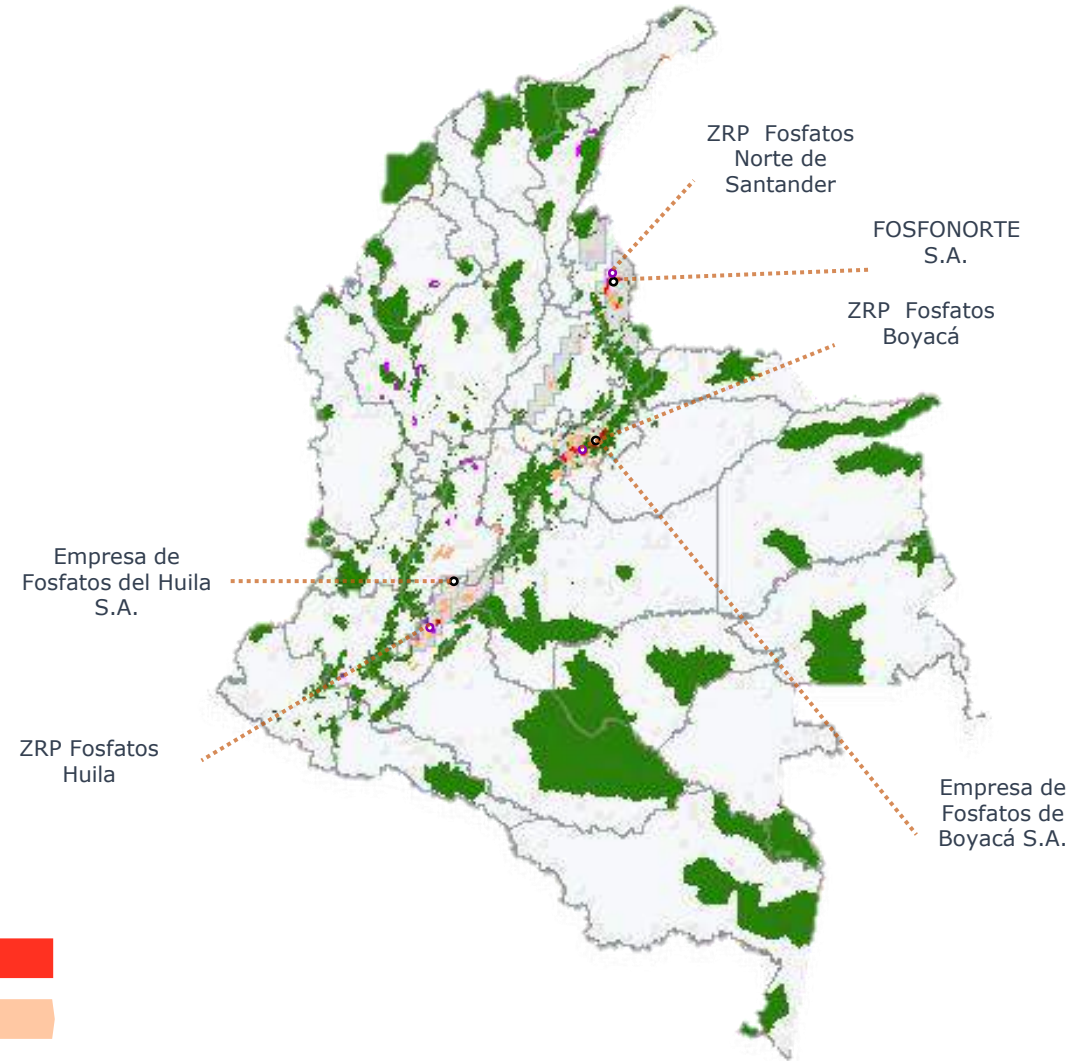
	2020	2021	2022 ^{Pr}
	57,878 Ton	51,834 Ton	41,467 Ton

Phosphate rock

Mining activity

Phosphorite deposits come from phosphoric sandstones contained in marine origin of Cretaceous age, belonging to the Ermitaño and La Luna Formations, and the Olini and Guadalupe Groups

The P₂O₅ (phosphorus oxide) content of these sandstones varies between 20% and 30%



Potential Areas

Main Projects in exploitation

Reserved Areas with Potential

Phosphate rock mining titles

Applications



COAL

MINING ACTIVITY

“Coal with low ash content and low sulfur dioxide emissions”



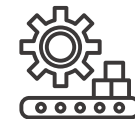
94%
Includes
Metallurgical Coal

1,621 Titles
0.88% of national territory
(1,008,776 ha)



967 Applications
0.51% of national territory
(579,402 ha)

“Colombian coal production represents 82.1% of Latin American production”



Production
(Mton)

2020
56.1

2021
62.2

2022^{Pr}
64.2

(Associated with royalty payments)

“Colombia produces high quality thermal coal due to its high calorific value: about 14,161 BTU”

Thermal
89%

Metallurgical
11%

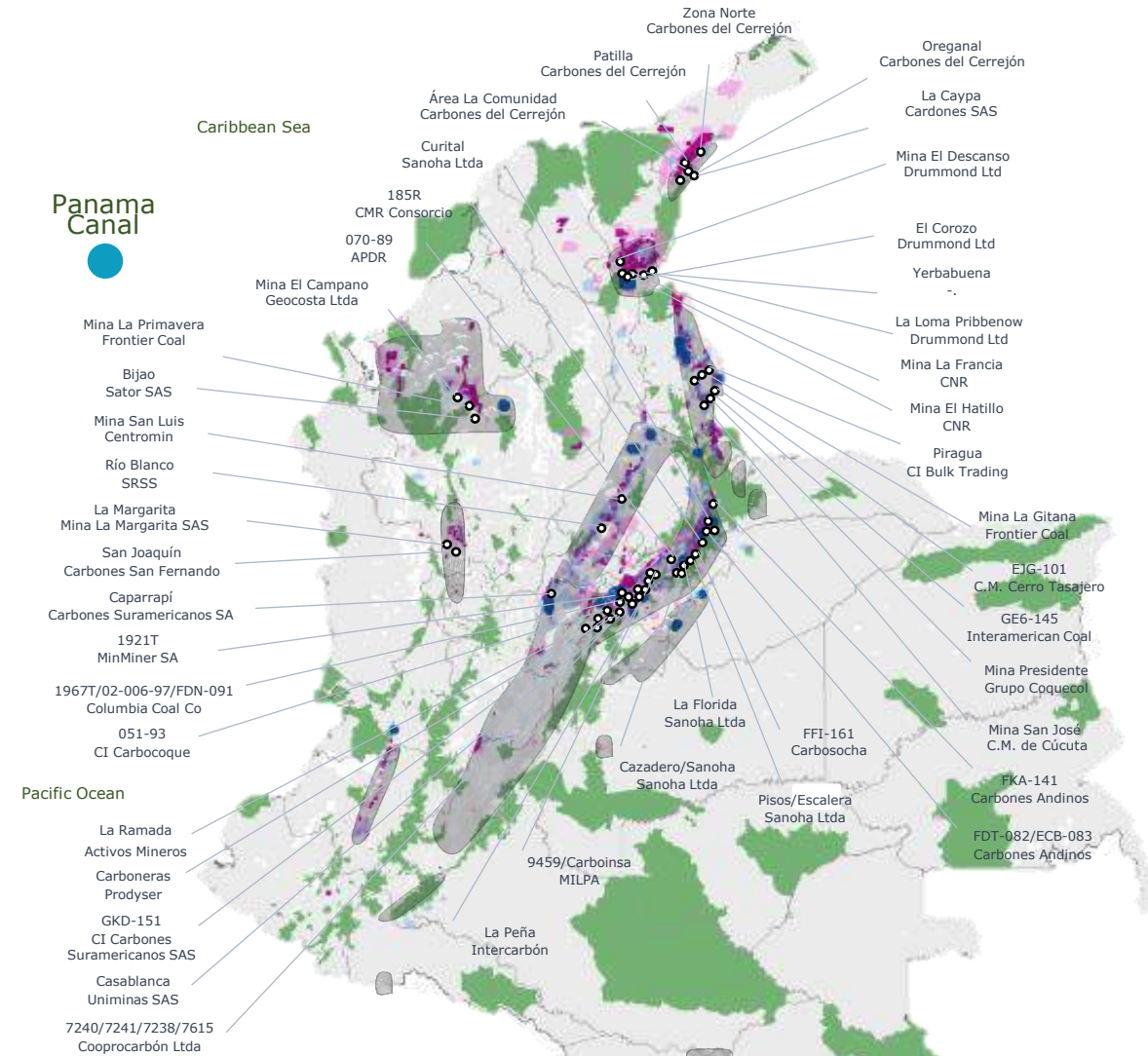
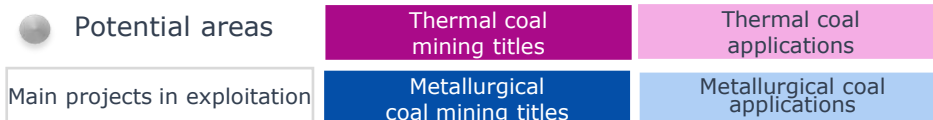
Open pit
88%

Underground
12%

Coal Mining activity

Colombia is the world's third largest coke exporter.

Colombia is the world's sixth largest coal exporter, with one of the largest coal proved reserves of anthracitic and bituminous coal in Latin America with a 46.6% share (4,554 million tons)*



Source: * Bp Statistical Review of World Energy Data 2022, www.trademap.org/.

Rail, road and port infrastructure

Seaports

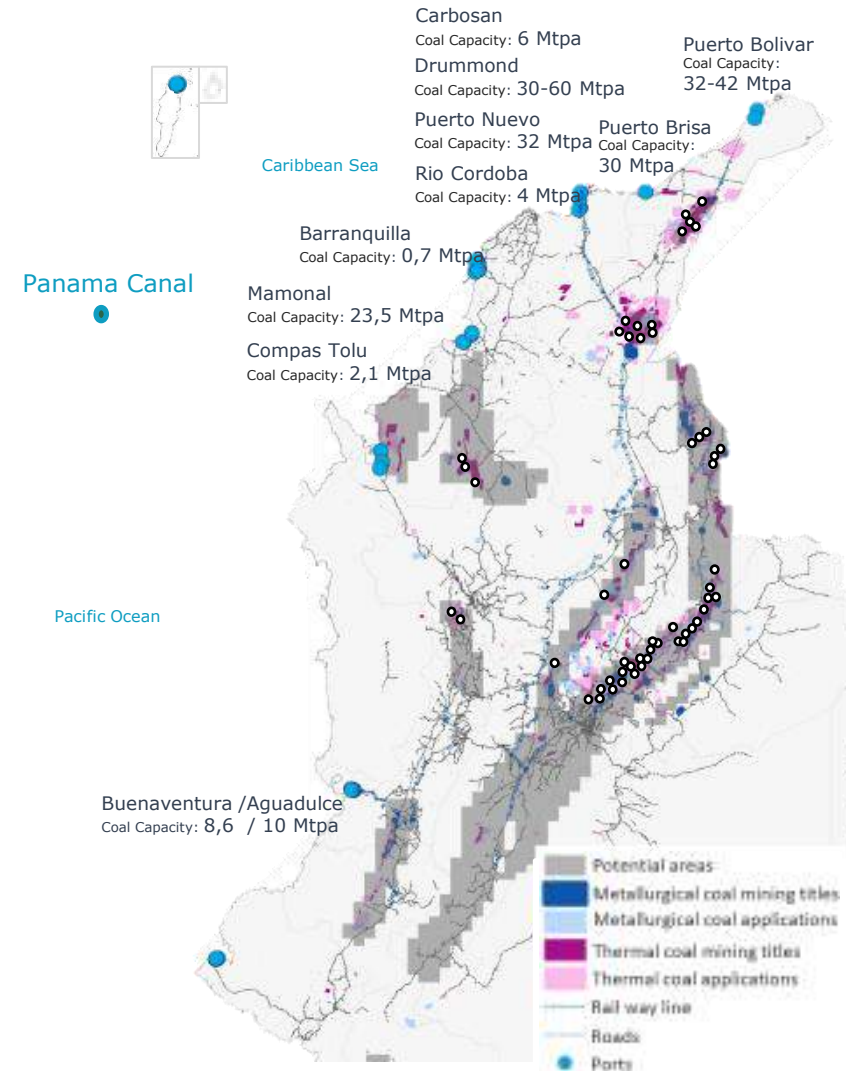
Port's capacity and cargo: **444 million tons** (Coal: 157 Mtpa) in 8 port areas with 61 port concessions.

Port operators in Buenaventura (Pacific), Cartagena, and Santa Marta (Caribbean) made significant investments that have introduced more efficiency and competitiveness.

New terminals in Puerto Bahía (Cartagena), Puerto de Aguadulce (Buenaventura), and Puerto Cayao (Cartagena) began operations in recent years.

Rail

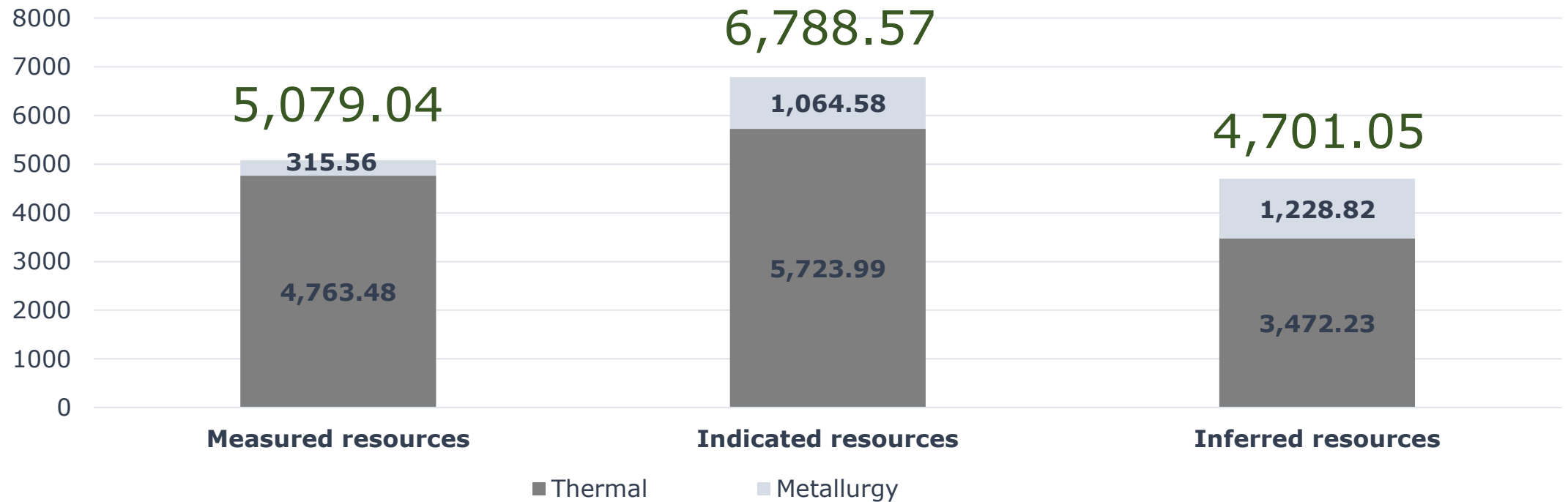
Colombia has 1,500 miles of narrow-gauge railroad, which is divided into four different systems managed either by concessions. Two mining companies own the two standard gauge lines, which are mostly used to transport coal from the mine to the seaport for export.



Coal

Mineral resources and reserves

Mineral resources and reserves included in the Colombia's Coal Potential map 2016 of the Colombian Geological Survey (MTon)



HOW TO GET A **MINING TITLE?**



Three ways to obtain a Mining Title

Mining Contract

30 years → renewable
For 30 additional years



Exploration



Construction and
assembly



Exploitation

- Public agreements with the municipality
 - Public hearing with the community

1

Application Process

First-come - First-served

- Any mineral
- Any available area
- Any natural or legal person, Colombian national or foreigner
- General requirements

2

Negotiation

of an existing title

- Mineral rights can be freely transferred between investors
- Any mineral

3

Strategic Mining Reserve Areas

- Areas awarded under a special exploration and exploitation contract through an objective selection process
- Strategic minerals

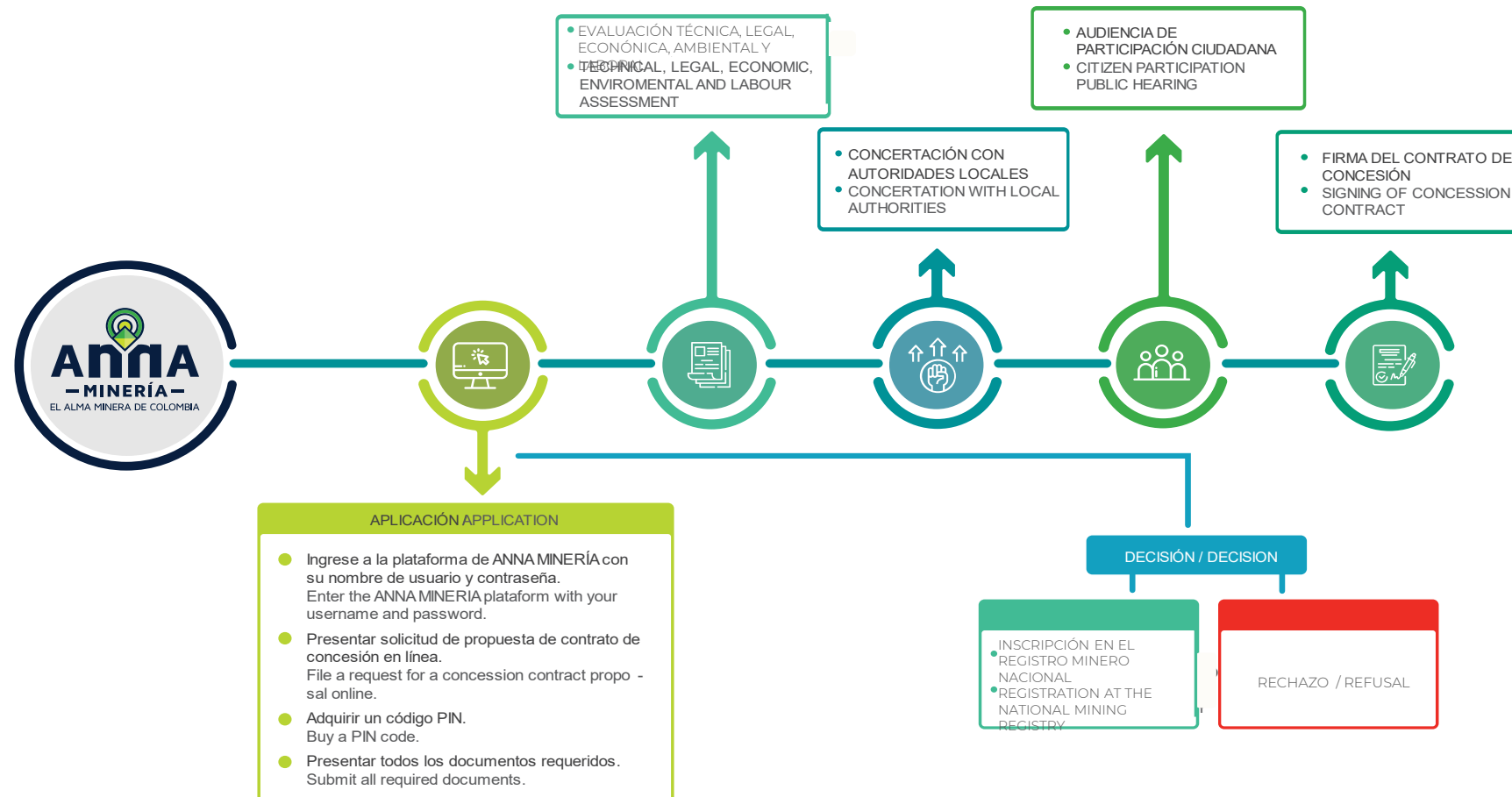


Mining activity is regulated and controlled

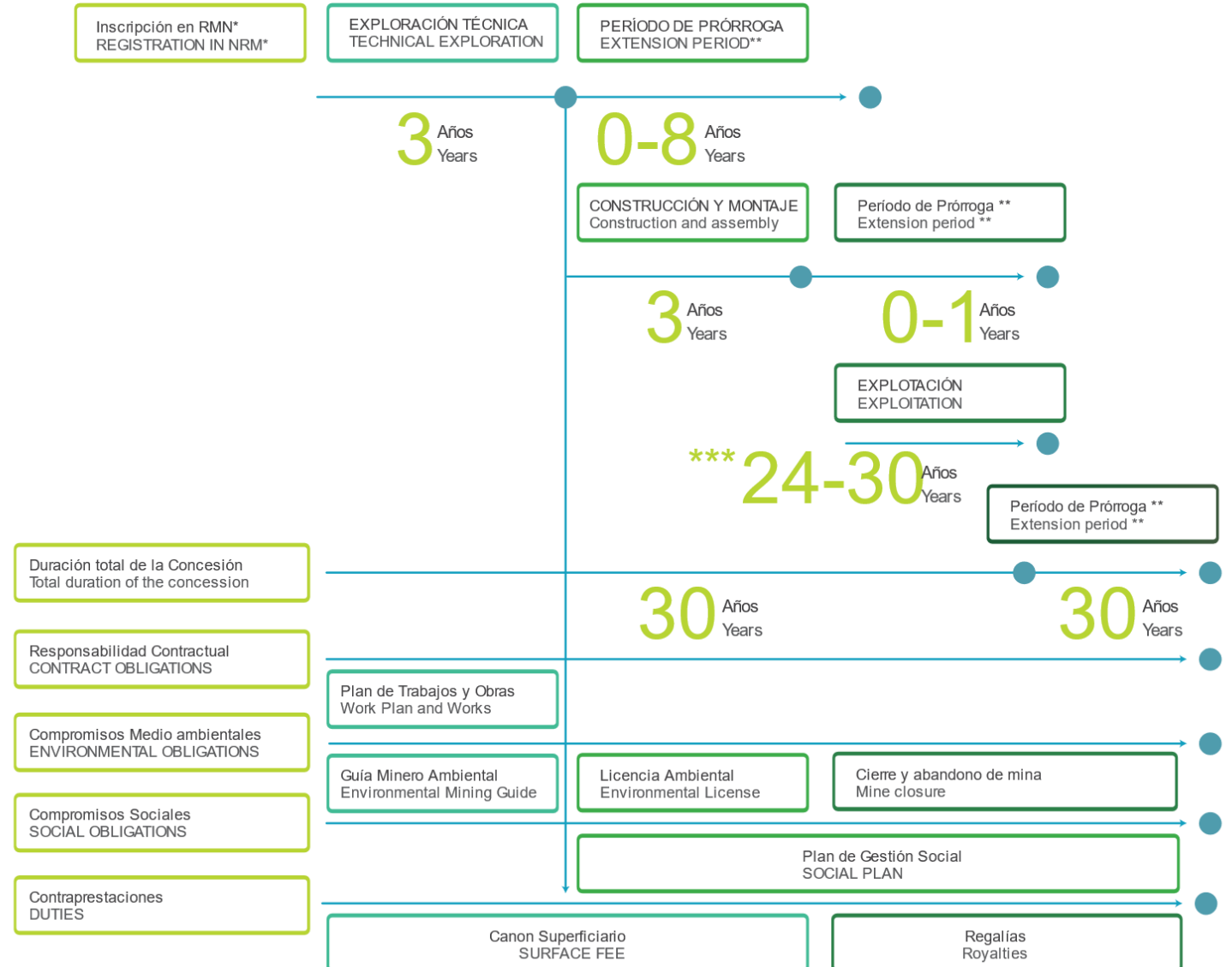
Para aplicar a un contrato de concesión
se adelantan los siguientes pasos

Steps to apply for a concession contract

<https://annamineria.anm.gov.co>



Mining contract duration



*National Mining Registry

**Prior assessment of the request by NMA.

***Shall be shorter if the beneficiary applies for an extension during the Exploration and Construction and Assembly stages.

Financial obligations

Surface Fee

An economic compensation must be paid during the exploration and construction and assembly stages

NUMBER OF HECTARES	0 to 5 Years	More than 5 years up to 8 Years	More than 8 years up to 11 Years
	OMDW/ha		
0-150	0.5	0.75	1
151-5,000	0.75	1.25	2
5,001-10,000	1.0	1.75	2

- OMDW: The official minimum daily wage in Colombia for year 2023 is COP 38,666.67
- Exchange rate USD/COP: 3,932.59 (Central Bank of Colombia 19-12-2023)

Note: for special mining exploration and exploitation contracts in Strategic Mining Reserve Areas, the surface fee is governed by the provisions of the Terms of Reference for each process.



Regalías

Royalties

1-12%

del valor de la producción
of production value



Para explotaciones mayores a 3 millones de toneladas por año
For production volumes over 3 million tons per year

Para explotaciones inferiores a 3 millones de toneladas por año
For production volumes under 3 million tons per year

Sobre el precio FOB menos el 75% de los costos
Percentage of the FOB price minus 75% of costs.



STRATEGIC MINING RESERVE AREAS



Strategic Mining

Reserve Areas - SMA's

The Objective Selection Process began in March 2021.



Areas awarded under special exploration and exploitation contracts through an objective selection process.



Generate additional resources for the Nation and the regions through economic considerations in addition to royalties.



Consolidated scenarios at the social level: SMA's have a process of coordination and concurrence with local authorities and prior consultation certification.



Clear rules and expedited timelines that generate legal certainty for investors.



Instrument that provides competitive contractual conditions to promote mining activities.



Contributes to mineral diversification in Colombia.

Areas offered in 2021/22 mining round La Guajira and Cesar Departments



MINISTERIO DE MINAS Y
ENERGÍA

NATIONAL MINING
AGENCY

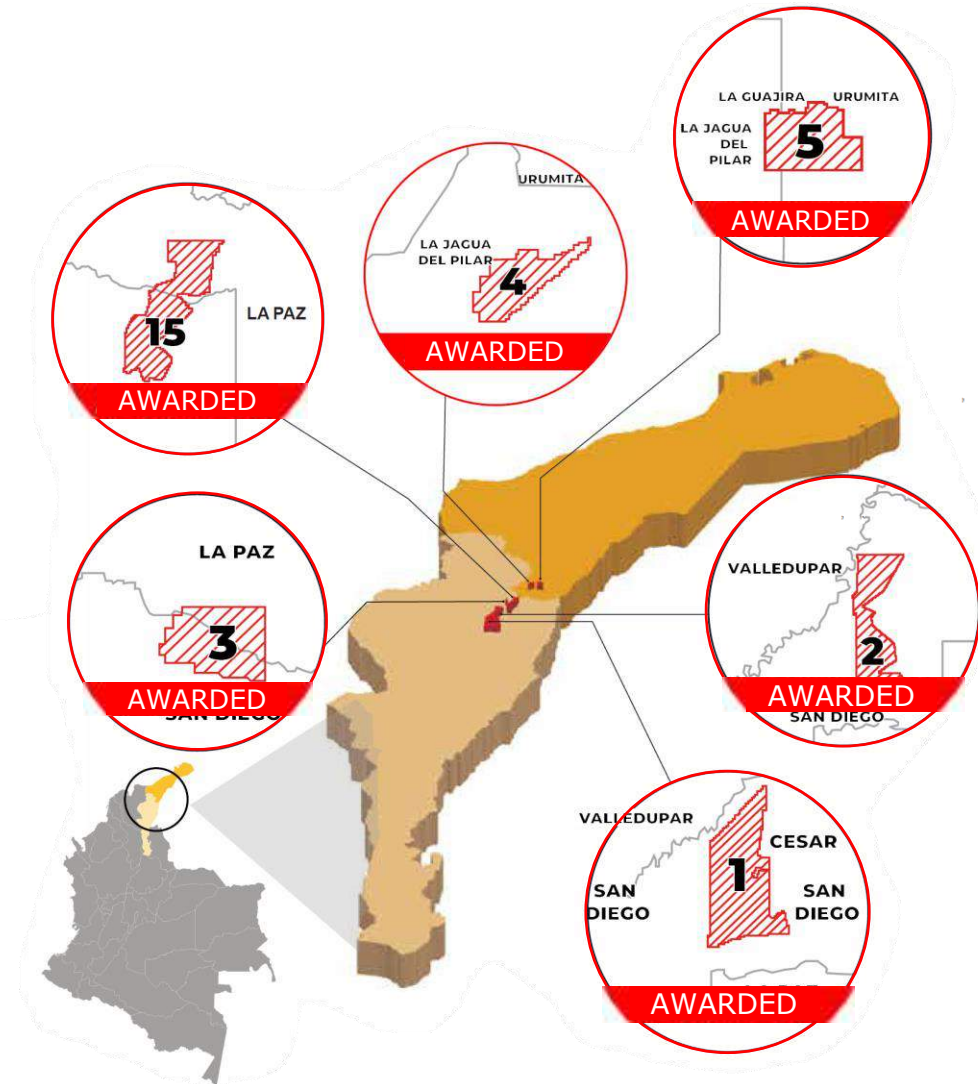
6 areas defined by the Colombian Geological Survey as having high potential for copper minerals



Areas of high mineral potential for copper:

- 4 in the department of Cesar
- 2 in the department of La Guajira

Blocks 1, 2, 3, 4, 5 and 15: AWARDED



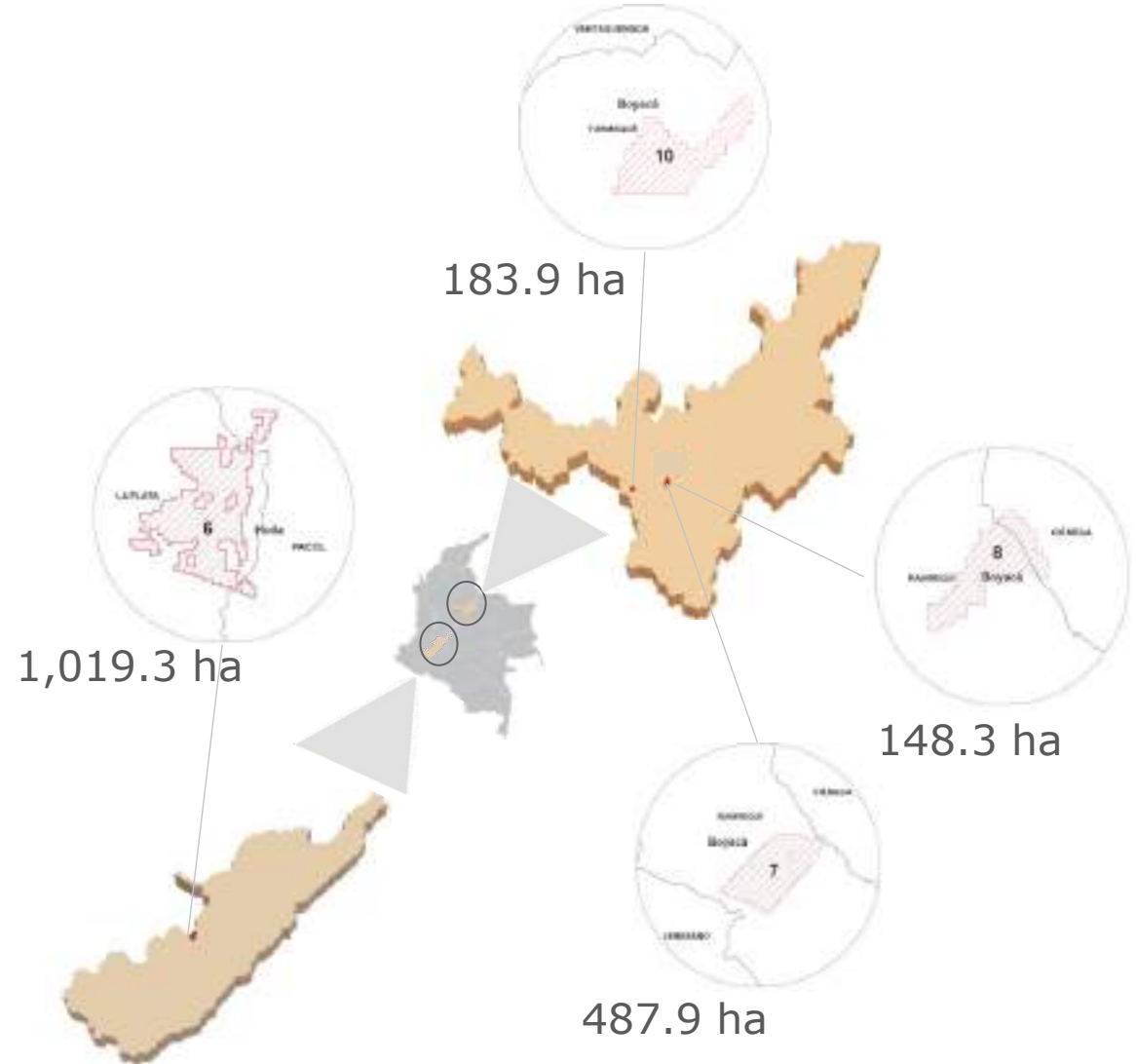
Areas offered in 2021/22 mining round Boyaca and Huila departments

4 Areas defined by the Colombian Geological Service as having high mineral potential for phosphates



Areas of high mineral potential for phosphates:

- 3 in the department of Boyaca
- 1 in the department of Huila





How have we advanced with Strategic Mining Areas (SMA's)?

PARALLEL STAGES

Reserve Areas with Potential



Free areas with high potential available to investors.

Deepening geological knowledge and evaluation of mineral potential



Characterization of the territory



Analysis of environmental information and baseline for EIA will facilitate licensing procedures.

Articulation with other policies (agriculture, infrastructure, victims, etc.).

Concertation with mayors



Articulation with local authorities; agreements on the development of mining activity in territories.

Prior Consultation



Certification of the presence of communities and prior consultations as a background for social processes.

Delimitation and declaration of AEM



SMA's objective selection process



Flexible, competitive and transparent process with established timelines.

How can I participate in the Copper & Phosphate Mining Round?



1. Qualify to participate in the selection processes

Investors will be able to qualify, and their registration will be valid for 1 year in order to be able to participate in the processes of desire.



Legal capacity:

- Natural persons.
- National or foreign legal entities with a branch in Colombia.
- Foreign legal entities without a branch in Colombia.
- Plural Structures.



Environmental capacity:

- Certification in adoption and implementation of accredited environmental management.
- May be certified to ISO 14001 or equivalent standards.



Financial capacity

- Financial information.
- Liquidity, indebtedness and interest coverage ratio criteria will be evaluated.
- Restricted qualification (complies with legal and technical capacity but does not meet financial capacity indicators).



Technical capacity (Type A, B and C):

- Participation in mineral exploration projects, handling all phases of exploration.
- Preparation of exploration results and resource estimation reports under any national or international standard.
- Execution of minimum drilling campaigns.



Capacity in Corporate Social Responsibility:

- Certification in the adoption of good practices.
- Goals for economic and social development to achieve sustainable and inclusive development.
- May be certified with ISO 26000 standard

2. Submit a proposal in the selection process

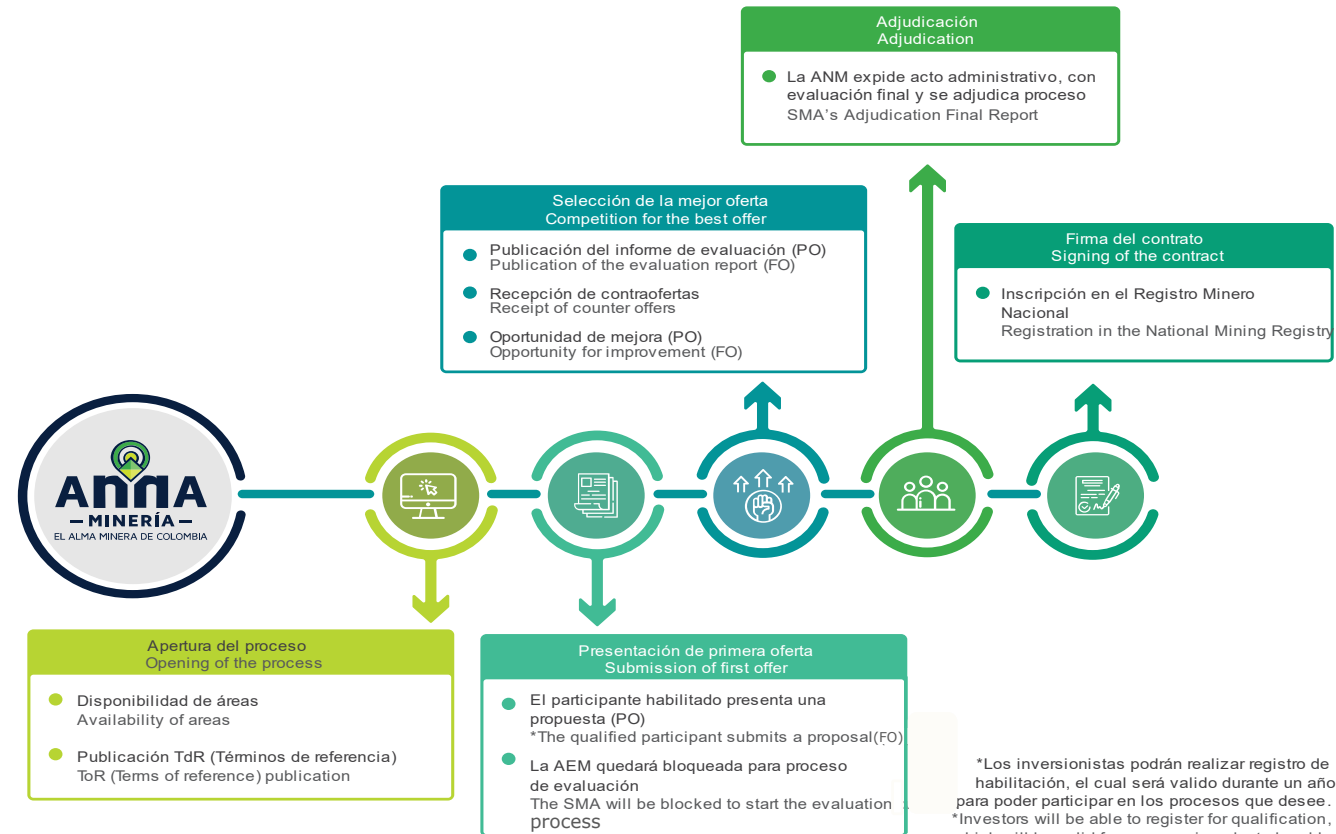
Stages for the selection process



Para aplicar a las Áreas de Reserva Estratégica Minera se adelantan los siguientes pasos

STEPS TO APPLY FOR STRATEGIC MINING RESERVE AREAS

<https://annamineria.anm.gov.co>



*Los inversionistas podrán realizar registro de habilitación, el cual será válido durante un año para poder participar en los procesos que desee.
*Investors will be able to register for qualification, which will be valid for one year in order to be able to participate in the processes they wish.

Información técnica disponible para estudio de los interesados
Technical information available for study

Mining for life

- From extractivism to a productive economy.
- Support of the main economic programs of the National Government.
- Supply of the national economy.
- Equitable distribution of mining benefits.
- Territorial and environmental approach.
- Mining: the basis of the Just Energy Transition.



Guaranteeing the supply

of current or future domestic demand for strategic minerals and redirect them to support the **4 axes of the National Government:**



1. Reindustrialization
2. Energy Transition
3. Agricultural Development
4. Public Infrastructure Development



Enabling factors:

1. Environmental protection
2. Active participation of communities
3. Generation of direct and indirect jobs
4. Productive linkages
5. Knowledge and technology transfer

Strategic Minerals In Colombia

Aimed at achieving a productive mining sector that ensures a **comprehensive use of state-owned mineral resources** for reindustrialization, energy transition, food security and agricultural development, and public infrastructure.



- **Copper (Cu)***
- **Nickel (Ni)***
- **Zinc (Zn)***
- **Platinum Group Metals** [Platinum (Pt), Palladium (Pd), Ruthenium (Ru), Rhodium (Rh), Osmium (Os), and Iridium (Ir)]*
- **Iron (Fe)***
- **Manganese (Mn)***
- **Metallurgical coal**
- **Phosphates** [phosphorite or phosphate rock (P2O5 > 20 %) and phosphate rock (P2O5 < 20 %)] *
- **Magnesium minerals (Mg)***
- **Bauxite and other Aluminum ores***
- **Gold (Au)***
- **Emeralds** and associated minerals
- **Construction materials**, limited only to **sands, gravels and clays**
- **Silica sands, silicon (Si)***
- **Limestone***
- **Gypsum***
- **Chromium ***

* And their associated minerals, derivatives or concentrates.



Resolution number 1006 of November 30, 2023,
**"Whereby the minerals of strategic interest
for the country are determined".**

Single registry of mineral marketers – RUCOM



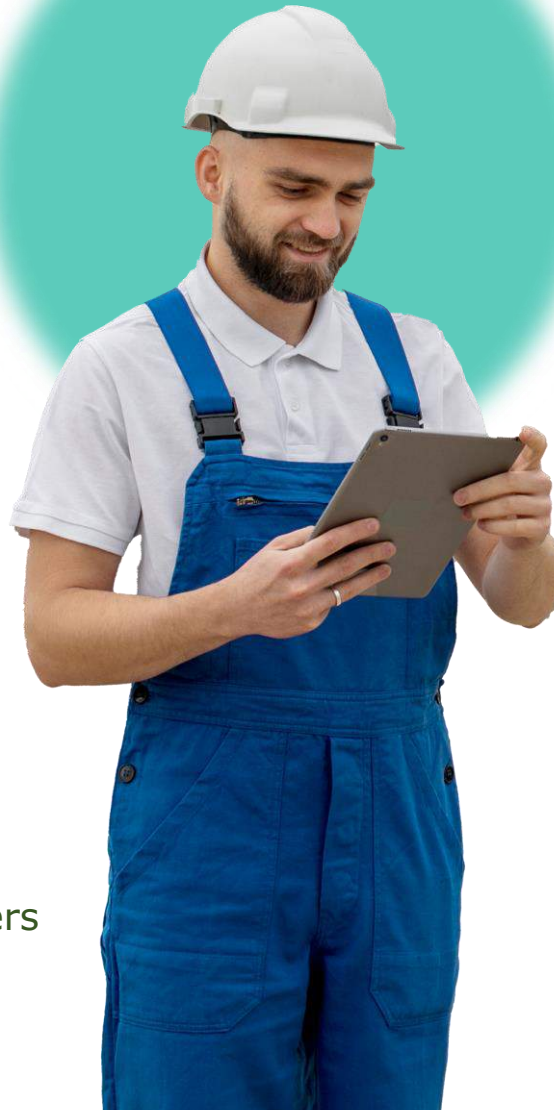
Online registration
and list
consultation



Certificates of origin /
production
declarations to prove
the origin of minerals



Authorized mineral traders



<https://www.anm.gov.co/?q=Rucom>

Consist in a control mechanism
administered by the National Mining
Agency, supported by a technological
platform

Certification for natural or legal
persons that commercialize, consume
or benefit minerals in the national
territory

Provides greater transparency and
competitiveness to the mineral
commercialization activity in Colombia

Integral mining management system - SIGM

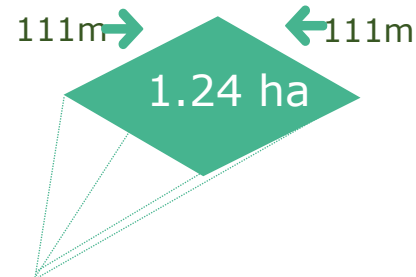


Technological platform with a dynamic and updated geographic database, to settle, follow up and efficiently manage proposals for concession contracts, mining titles and any other process

<https://annamineria.anm.gov.co/>

MINING GRID

Law 1753 of 2015 (National Development Plan 2014-2018) and Res. 504 of 2018 Objective: to organize and divide Colombian territory into grids, direct access to information on the country's mining resources, availability, geographical, environmental and social conditions



Center of the Earth






One cell in the mining grid is roughly equivalent to: $111\text{m} * 111\text{m} = 1.24$ hectares.



A unit of cartographic measurement determined by a regular, predefined and standardized grid or mesh for granting mining rights.



-  Not available
They correspond to: areas excluded from mining, occupied by current titles or applications or special areas with this classification.
-  Available from conditional form
They correspond to restricted mining areas
They have conditional availability
-  Available
Free areas; that is, areas that can be contracted

ECRR – Colombian Standard for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves





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