OSCAR JAIME RESTREPO BAENA
(School of Mines, Universidad Nacional de Colombia, Medellin, Colombia)

Mining Industry in Colombia - General Overview

Abstract. An overview of the Colombian economy is presented, with the greatest stress on mining sector position between 2000 and 2016. The most important aspects of Colombian mining industry are presented, and the sector is characterized in terms of mining and environmental issues.

Historical evolution of the mining sector in terms of production and prices is discussed. Overall picture of the mining industry income, employment generation, reserves of the most important minerals, as well as direct foreign investment in the sector are given. Finally, data on exports of the most important minerals produced in Colombia are presented.

Keywords: Colombia, mining production, minerals, coal, gold, nickel.

1. Colombian Context: the Colombian economy between 2000 and 2012

The performance of the Colombian economy during the last five decades has allowed it to be distinguished in the Latin American context as one of the region's most stable economies (Ocampo, 2001a). It showed rather favorable results during the 1980s debt crisis experienced by several nations in Latin America (Perry, 2012). Structural reforms of the 1990s increased the productive capacities (Echavarría, 2001; Ramírez & Núñez, 1999) and encouraged penetration into international market (Ocampo, 2001b). Besides, the financial and economic crisis of 2008 also produced favorable effects (Banco de la República, 2009). In fact, current macroeconomic management, for example, opening the door for entering groups such as the OCDE, generates expectations of good economic performance for Colombia (Cuéllar, 2013).

This was due to the growth of the economically active population (EAP) by more than four million people between 2001 and 2012. This good economic performance resulted in considerable drop in the unemployment rate, from 15% in 2001 to 10.4% in 2012. Within this generation of employment, the non-renewable resource extraction sector (mines and hydrocarbons production) provided about 1% of the total employment generated in Colombia between 2001 and 2012, with about 200,000 people employed.

Similar to the GDP trend, the Colombian mining industry demonstrated growth especially during the first part of the last decade. On the whole, the mining sector showed the growth rates higher than the total GDP (Fig. 1), with particularly high growth rates in 2001 and 2003, and increasing its share in the total GDP from 1.82% in 2000 to 2.32% in 2012. Within this sector, coal production played an important role. Its share in the whole mining sector production amounted to about 60% of the total and grew during the period.

The sector also generated growing taxes for local and national authorities. As for royalties, for example, its collection increased more than tenfold, from 144 billion Colombian pesos in 2000 to 1.6 billion in 2011. However, this increase, as well as the administration of these funds, were discussed at the national level not only among academics and financial control bodies, but also at the legislative level, resulting in changing the royalty administration (Legislative act 05 of 2011).

The growing production volume in the mining sector was accompanied by considerable increasing mineral exports, especially for coal and gold (in monetary terms), from about US$1.5 billion FOB in 2001 and 2002 to more than USD12 billion FOB in 2012. This was encouraged by growing world prices on the main commodities in the latest decade, providing continuing the production and exports growth despite weakening of the international economy since 2008 (Fig. 2).

Along with the increase in the mineral exports, Colombia also showed considerable increase in exports of other economy sector products in the latest decade. This exports increase was partly due to the greater access to international markets because of a number of trade agreements signed by Colombia mainly with countries of the American continent.

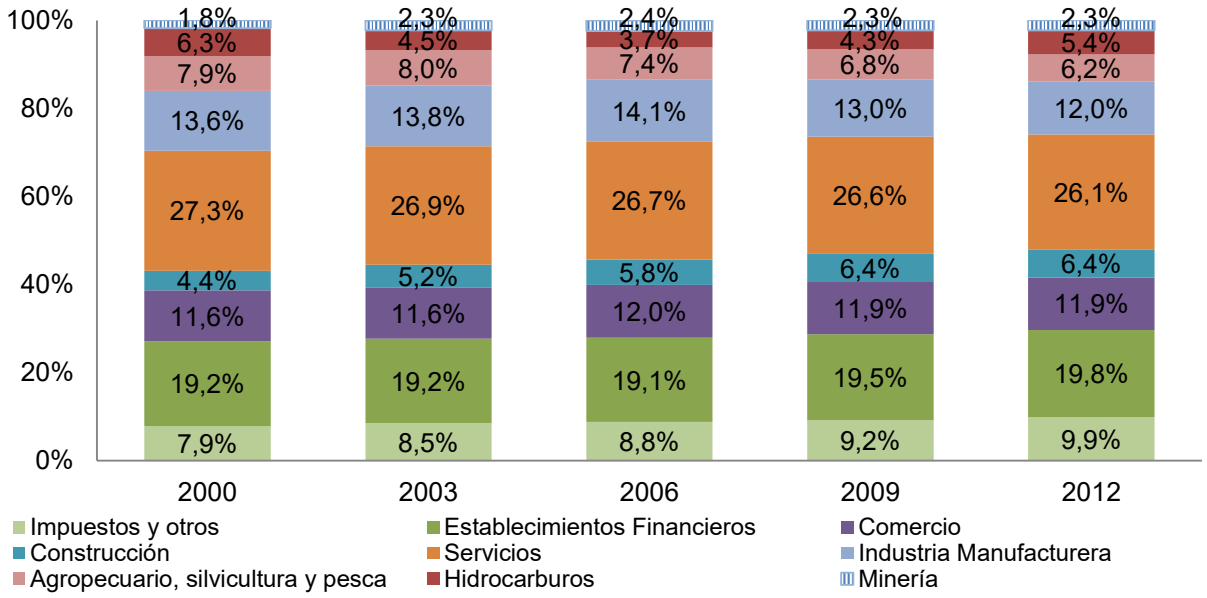

Fig. 1. GDP composición in Colombia
Source: DANE database.

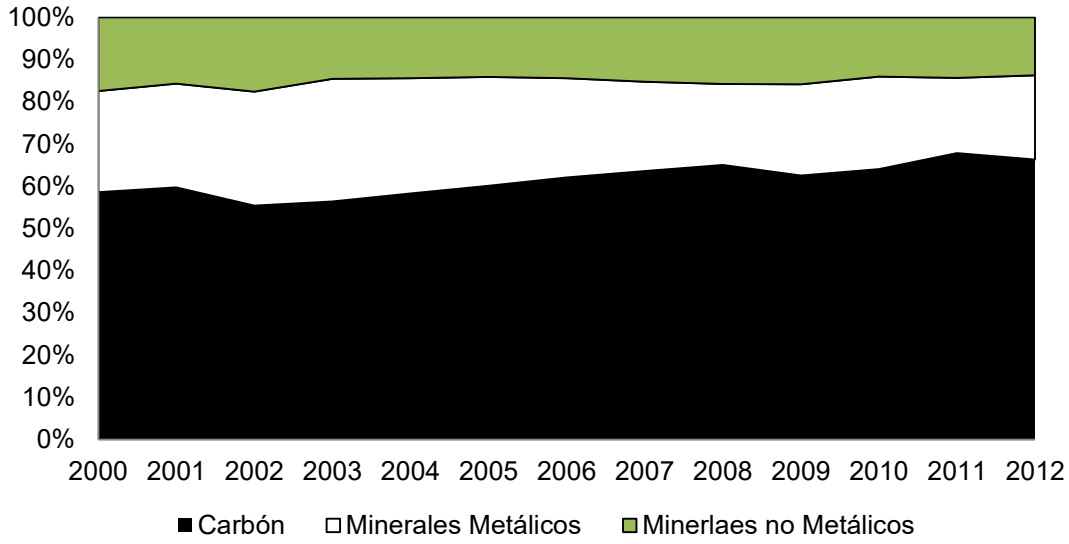

Fig. 2. Mining production in Colombia.
Source: DANE database.

As for foreign direct investment (FDI), the investment into the mining sector played an important role since 2004, particularly in 2009, when the investment exceeded US$3 billion. This investment flow was mainly aimed at exploration and extraction projects for coal, ferronickel and gold. The investment flow was stimulated by increasing the prices on mineral resources providing high ROS, favorable conditions in terms of security in the country, as well as attractive contractual and fiscal conditions offered to the investors (Garavito, et al. 2012). Nevertheless, despite its large share in the world production of such minerals as emerald, nickel, and coal (Martinez & Aguilar, 2012), Colombia was not one of the most attractive countries for international investors in mining sector (ECLAC, 2013).

On the whole, Colombia was considered to have stable economy, but with great challenges to be solved in the future, seeking social and economic consolidation. Among the main challenges were non-resolved internal conflict, which required high costs (Kalmanovitz, 2012) and prevented allocating funds for education and infrastructure to boost the country's human and

productive capital. The problems were aggravated by high rates of inequality in the distribution of income in Colombia both at the city level and between regions (Bonelli, 2011; Galvis & Meisel, 2011). The latter was of particular importance taking into account the potential benefits that adequate development of the mining industry in the country would bring.

2. Characterization of the Colombian mining industry

In Colombia, mining industry comprises two major sectors: hydrocarbons (oil and gas) and minerals. The first one with more uniform techniques, sizes and producers, while the second one sector is much more diverse in products, techniques, and processes (underground, open-pit mining, development of placers, heap leaching, etc.), as well as in size of the operations.

2.1 Mineral mining sector

The Colombian mineral mining sector is characterized by its diversity, because it developed in different parts of the country and produced a number of products such as thermal and metallurgical coal, nickel, precious metals (gold, silver, platinum), emeralds, and a wide range of nonmetallic mineral resources. However, to date no estimation and classification of the involved companies/facilities by size of production/capacity were implemented until 2015-2016, when Single Regulatory Decree of the Administrative Sector of Mines and Energy #1073 of 2015 (related to mine classification), and Decree #1666 of October 21, 2016 came into force. In the country, previously several versions of the classification regarding the size of mine or segmentation of producers or companies were proposed (to date, all rejected), starting from the Mining Code of 1988 and up to Law #1382 of 2010. Finally, this problem was solved in the National Development Plan (Law #1753 of 2015, Chapter V. "Mining sector development by region"), advancing "strategies and differentiated regulation for different types of mining activities". The new classification (based on the size of production, group of minerals, mining methods, etc.) was recently adopted by the National Government through the aforementioned Decree (2016).

2.1 Characterization of environmental issues in the Colombian mining industry

Mining activities in the country must comply with the current environmental regulations. These regulations establish the responsibilities and obligations of the concessionaires in relation to natural and social environment. They are indicated in corresponding environmental permits and licensing of mining projects and monitored by the Ministry of Environment and Sustainable Development (MADS) through the National Environmental Licensing Authority (ANLA) and regional autonomous agencies (CAR) (see http://www.anla.gov.co/funciones-anlaFunciones y competencias). Additionally, the law provides for that, for non-licensed activities in subsoil use (for non-renewable natural resources), the corresponding environmental permit, authorization, or environmental concession must be obtained from the competent environmental authority.

3. Evolution of the mineral mining sector

3.1. Historical mining data in Colombia

Currently the Colombian economy ranks the fourth in volume in Latin America. The country's economic growth was due to, among other things, the growth of the mineral mining sector, particularly in the latest decade. This industry comprises the production of coal, gold, silver, iron, ferronickel, and building materials. The production trends of each of these minerals were different, for the most part, due to factors of the international context and in some cases to internal factors.

3.2 Production and prices

Coal production in Colombia grew steadily in the latest two decades. In fact, the production in 2013 was four times as great as in 1990 (Figure 3). This growth was mainly due to activity of the mines located in northern Colombia. The growth was accompanied by active exports of the coal satisfying energy demand of emerging economies

such as Brazil, Chile, China, and Turkey, as well as developed economies such as the United States and Netherlands. The high international demand for coal was reflected in raising the coal prices.

Figure 4 demonstrates the country's production of gold from 1990 to 2013. The gold production growth took place amid growing international demand for this metal, as it is one of the main assets being a refuge during financial crisis. The bulk of thee production volume belonged to two companies: Gran Colombia Gold Corp. and Mineros SA. Like other commodities, the price for gold rose sharply and quadrupled for the latest 10 years, from less than 400 USD/Oz in the first half of 2000s to more than 1600 U$/Oz in 2012.

The growth of building material extractions, specifically limestone (Fig. 5), was mainly due to the corresponding boom in the building sector in the latest decade, share of which in Colombian GDP increased from 4.4% in 2000 to more than 6.5% in recent years.

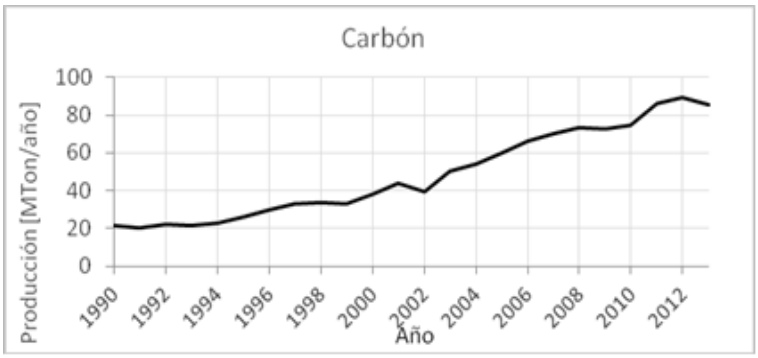

Fig. 3. Coal production in Colombia, 1990 - 2013
Source: SIMCO database

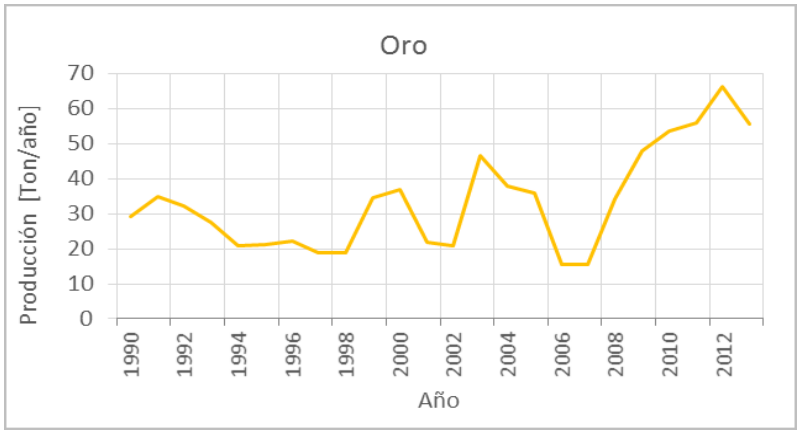

Fig. 4. Gold production in Colombia, 1990 - 2013
Source: SIMCO database

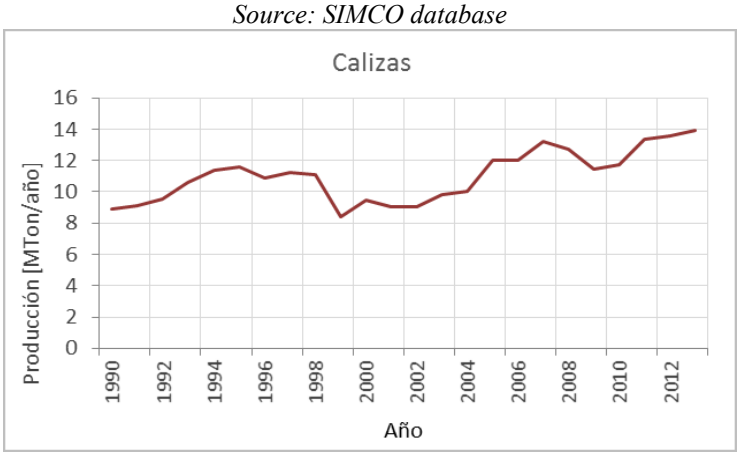

Fig. 5. Limestone production, 1990 - 2013
Source: SIMCO database

3.3 Mining income

Same to the production and prices of the main minerals, the royalties paid by the mining companies to the Colombian government also increased in the latest two decades. A clear example is the amount of royalties for coal production, which grew rapidly between 1990 and 2009. However, between 2011 and 2012 they decreased by more than 50%. This was due to decreasing the prices for the resource, connected, in turn, with the substitution of coal with other energy resources, for instance, gas shale. Many companies, nevertheless, increased their production of coal independently of the current prices, since they had corresponding contractual obligations.

Currently, paying the royalties (in percents) is regulated by Law #756 of 2002. The percentages established by the Law are shown below in Table 1. However, some companies have special supply contracts, and the royalty percentages are agreed individually with the government. This type of contracts provides about 80% of the whole royalties for coal.

Table 1

Royalty percentages in accordance with Law #756 of 2002

Mineral	Royalty, %
Coal (more than 3 million tons per year)	10
Coal (less than 3 million tons per year)	5
Nickel	12
Iron and Cooper	5
Gold and Silver	4
Alluvial gold	6
Platinum	5
Salt	12
Limestone, Gypsum, Clay, and Sand	1
Radioactive Minerals	10
Metallic Minerals	5
Non-Metallic Minerals	3
Building Materials	1

Source: Congreso de la República de Colombia, 2002

3.4 Other information

3.4.1 Job creation

Figure 6 shows the number of jobs generated by the mineral mining sector in Colombia and the sector share of total national employment. It is seen that this percentage slightly fluctuated during the latest decade, between 1% and 1.2%, whereas total number of employees in the sector increased by about 60% for the period. Most of these jobs was created in coal, ferronickel, and gold subsectors.

3.4.2 Reserves

Currently, information on historical evolution of mineral reserves in the country is limited. The data on coal reserves are available for some years, as shown in Fig. 7, which show the coal reserves growth between 1979 and 1999 with following approximate stabilization between 1999 and 2011. Table 2 presents the data on reserves of different minerals for some years in Colombia, based on the reports of Colombian mining companies.

3.4.3 Foreign direct investment

Foreign direct investment into the mineral mining sector, as mentioned above played an important role in the latest 10 years, particularly in 2009, where the investment exceeded USD3 billion (Fig. 8). The bulk of the investment belonged to the production of coal, ferronickel, and gold.

Fig. 6. Employment in mineral mining sector in Colombia, 2001-2012
Source: DIAN database

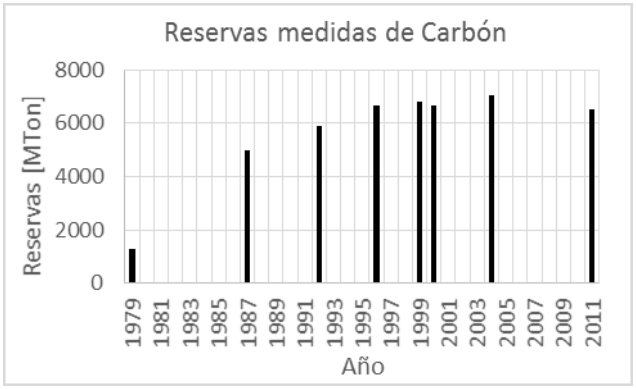

Fig. 7. Reserves of coal, 1979-2011
Source: MME & INGEOMINAS, 2004; UPME, 2012

Table 2

Reserves of Different Minerals

Mineral	UoM	1987	1993	1998	2013 (Inferred)
Gold	t	930.93			1854.70
Silver	t				3830.39
Platinum	t	5.03		4.39	
Iron	Mt	195.00			
Copper	Mt	10.20			0.74
Uranium	kt		40.00		
Phosphate Minerals	Mt	12.81			
Magnesium Minerals	kt	54.00			
Salt	Mt	141.00			
Gypsum	Mt	2.47			
Limestone	Mt	994.03			
Clays	Mt	3.50			

Source: Anglogold Ashanti, 2011; ATICO MINING, 2013; ECO ORO, 2011; Gran Colombia Gold, 2014; INGEOMINAS, 1987; MINATURA, 2014; SEAFIELD RESOURCES, 2014; Wacaster, 2012

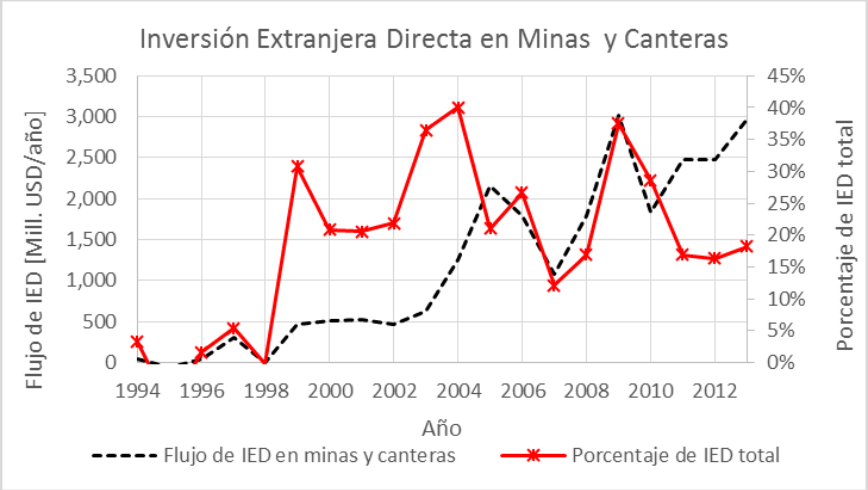

Fig. 8. Foreign direct investment (FDI) in mineral mining, 1994-2013
Source: Banco de la República de Colombia, 2014a

4. Mining production in Colombia

The list of mining products in Colombia comprises more than 30 products. The most important products are coal, gold, and nickel, which demonstrates the highest volumes of production, exports, and royalty paid. Same to the hydrocarbon sector, the mining product exports also decreased in 2015 compared to 2014, by 32.65%, from USD9.496 billion in 2014 to USD6.395 billion in 2015. The key export products all showed the decrease: coal (-33.8%), gold (-31.1%), and ferronickel (-32.9%).

4.1 Coal

Exports of coal represent 11.9% of total Colombian exports, from USD6.427 billion in 2014 to USD4.257 billion in 2015 (minimum historical value corresponding to exports of 72.8 million tons versus 87.1 million tons in 2014).

4.2 Production of nickel

Colombian nickel production represents approximately 1.7% of world nickel production, with the only operating project of Cerro Matoso S.A., providing average annual production of 45 kt (2010-2015). However, the production decreased from 41.221 kt in 2014 to 36.671 kt in 2015 (by 11.04% yoy).

The exporter of this product is Cerro Matoso S.A. (the owner of the only nickel-producing mine in the country located in Montelibano, Cordoba), whose exports represent 1.20% of the total Colombian exports and 6.72% of the Colombian mining sector exports. As reported by DANE, its behavior has maintained since 2013 the same downward trend registered by most mining products and the value of their exports between 2014 and 2015 total an average of USD535 million, with annual decreases in these years of -5.8 and -32.9, respectively. In volume represents 87,121 kt (2014) and 72,791 kt (2015).

4.3 Precious Metals

The Colombian production of gold, silver, and platinum in 2015 was 59 tons, by 3.84% more than in 2014. 84% of the precious metal production belonged to gold. The gold production historical peak was achieved in 2012, with 66 tons of gold, in line with peak prices for gold of USD1,668.50/oz that year. The country's gold production volume is rather uneven, changing in line with the world prices for gold.

The country’s gold exports constituted 3.0% of the total Colombian exports and amounted to 47,962 kg in 2014 and 36,535 kg in 2015 (the decline of 23.8%), equivalent to USD1,582 million and USD1,090 million, respectively.

The Colombian gold production is concentrated mainly in the departments of Antioquia, Choco, Nariño, Cauca, and Bolívar. It should be also noted that the country's gold production includes high informal and illegal component. Notice also that 99% of the total gold exports of the country belonged to Antioquia department. This may be connected with the fact

that the majority of the exporters were international traders.

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Author 1	Name&Surname: **Oscar Jaime Restrepo Baena** Company: **Universidad Nacional de Colombia** Address: **Medellin, Colombia** Contacts: **ojrestre@unal.edu.co**
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