



2014 Minerals Yearbook

NEW CALEDONIA

THE MINERAL INDUSTRY OF NEW CALEDONIA

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New Caledonia, a special collectivity of France, is an island in the southwestern Pacific Ocean, east of Australia. The mining industry of New Caledonia was dominated by the production of chromium, cobalt, and, especially, nickel. About one-third of the land surface of New Caledonia's main island, Grande Terre, consists of massifs containing peridotite. The country's nickel resources account for about 25% of the world's total. As of 2014, about two-thirds of the mineralized zones were conceded to mine operators and one-half of them had been subject to indepth research. More than 1,700 mining titles were owned by approximately 50 holders. The nickel reserves in New Caledonia accounted for 15% of the world's nickel reserves, and the mine output accounted for 7% of the world's nickel production (SMSPP Group, 2014, p. 10; Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015d; Kuck, 2015).

Minerals in the National Economy

In 2014, New Caledonia's real gross domestic product (GDP) increased to \$11.1 billion, or by 2.8% compared with that of 2013. The service, industry, and agriculture sectors contributed 71.8%, 26.8%, and 1.4%, respectively, to the total GDP. The country's economy remained heavily dependent upon nickel and byproduct cobalt production. In 2014, the total value of exports of nickel (including nickel, ferroalloys, nickel ore and concentrate, nickel matte, nickel oxide sinters, and other intermediate products) was \$1.4 billion, which was about 10% of the GDP. As of the end of 2014, total employment in nickel mining and smelting was 6,308, of which 2,541 people were employed in mining, 1,595 were employed as mining contractors, and 2,172 were employed in nickel smelting (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a, g; United Nations, 2015; U.S. Central Intelligence Agency, 2015).

Government Policies and Programs

The Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie [Department of Industry, Mines and Energy of New Caledonia] (DIMENC) was the Government agency responsible for the sustainable industrial development of New Caledonia, as well as development and enforcement of a regulatory framework for industrial activities likely to harm the environment. Order No. 2006-4613/GNC of November 16, 2006, defined a broad mission for the DIMENC, including participating in the direction and implementation of energy policy and securing supplies of energy at competitive prices while managing energy consumption; promoting, organizing, and coordinating the valuation of mineral resources while ensuring the smooth integration of mining activities in social, economic, and physical environments; regulating industrial activities that might affect the environment

or the health and safety of people; and ensuring a better understanding of the terrestrial and marine geologic structures of New Caledonia (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015e, f).

The governing law for the mining sector is law No. 2009-6 (The Mining Code of New Caledonia), which was adopted by the Congress on April 16, 2009. The mining code took effect on April 30, 2009, together with Order No. 2009-2205/GNC of April 28, 2009, which established the regulatory component of the Mining Code. The Mining Code was supplemented by Resolution No. 20 of November 9, 2009, on the sale of nickel ores, chrome, and cobalt, which provides detailed regulations on the issuance of authorizations for ore transfer between local miners and international metallurgical operators (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015c, d).

A public administrative Nickel Fund was established by Decision No. 467 of March 18, 2009. The purpose of the fund is to ensure the development and consolidation of the mining and metallurgical industry in New Caledonia in the event of a crisis in the sector as well as to ensure the proper rehabilitation of areas degraded by previous mining activity for the benefit of future generations. The fund supports municipalities and the mining and metallurgical sector by promoting the continuation or conversion of jobs in a crisis or when a mining operation is closed; financing of multiyear programs and rehabilitation of areas affected by mining activity; providing public subsidies for the repair of damage caused by previous mining activities on public lands; subsidizing, within the limits of available funding, organizations pursuing an objective of general interest; and participating in the financing of shares or investments made for the benefit of future generations of New Caledonia. Initial funding was about \$19 million (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015b).

Production

In 2014, New Caledonia produced about 13.1 million metric tons (Mt) of crude nickel ores, including about 8.8 Mt of saprolite ore and about 4.3 Mt of laterite ore. Total nickel content was 178,080 metric tons (t), including 141,223 t from saprolites and 36,856 t from laterites. The gross weight and nickel content of the nickel ores increased by 9.3% and 8.3%, respectively, compared with those of 2013. The increase was attributed to the increase in production at the Koniambo site and to strong demand from Japan, as well as mild weather throughout the year (table 1; Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a).

In 2014, New Caledonia produced 54,683 t of ferronickel (nickel content), representing a 35% increase from that of 2013. The production increase was owing to an increase in production at metallurgical plants (table 1; Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a).

Nickel matte (nickel content) production decreased by 38% to 8,241 t. Cobalt content in the crude ore was estimated to be about 8,000 t, and about 4,400 t was recovered. Cement production decreased by 10% in 2014 compared with that of 2013 (table 1; Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a, g).

Structure of the Mineral Industry

Major companies actively involved in nickel mining operations in New Caledonia included Société Le Nickel (SLN), Nickel Mining Company SAS (NMC), Vale New Caledonia SAS (VNC), Georges Montagnat Mining Co., and Koniambo Nickel SAS (KNS). Three companies operated the following nickel smelting facilities in New Caledonia: the Doniambo pyrometallurgical plant (SLN), the Koniambo pyrometallurgical plant (KNS), and the Goro hydrometallurgical plant (VNC). The ownership, location, and production capacity of these facilities and others are provided in table 2 (SMSP Group, 2014, p. 10; Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a).

Mineral Trade

In 2014, the total value of commodity exports from New Caledonia increased to \$1.6 billion, or by 31% compared with that of 2013; commodity imports increased to \$3.3 billion, or by 2.4%. The country's major commodity export partners were Japan, France, and China, which received 15.2%, 14.7%, and 14.0%, respectively, of New Caledonia's total exports. The country's major commodity import partners were France, Singapore, and Australia, providing 22.6%, 18.5%, and 9.6%, respectively, of New Caledonia's total imports (United Nations Comtrade and Service Trade, 2015).

The leading export commodities in 2014 were ferroalloys valued at \$853.2 million; nickel ores and concentrates, \$264.8 million; and nickel mattes, nickel oxide sinters, and other intermediate products, \$246.1 million. In 2013, the exports of these three commodities were valued at \$546.0 million, \$195.3 million, and \$259.1 million, respectively. The combined value of these three categories accounted for 84% of the total value of exported commodities (United Nations 2015).

In 2014, 5,414,687 t of nickel ore was exported compared with 4,458,974 t in 2013, including 2,017,985 t of laterites (1.5% nickel content) and 3,396,702 t of saprolites (1.95% nickel content). The nickel metal content of the exported ore amounted to 70,328 t, representing 39.5% of the tonnage of metal produced in 2014. The leading export partner for nickel ore, in terms of tonnage, was Australia, which received 2,017,985 t of ore containing 20,209 t of nickel metal and 100% of New Caledonia's lateritic ore export. Exports to Japan amounted to 1,766,139 t in 2014, representing a 70% increase in tonnage and a 65% increase in metal content compared with those of 2013. Shipments to the Republic of Korea decreased in gross weight to 1,630,563 t by 11.3%, and in metal content to 24,497 t by 12.9% (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a, g).

In 2014, exports of metallurgical products amounted to 300,579 t with 76,500 t of nickel content, representing a 31% increase in volume and a 17% increase in metal content compared with those of 2013. The increases were owing to production increases at the three metallurgical plants. Exports of ferronickel amounted to 214,956 t with 51,794 t of nickel content; nickel mattes, 12,919 t with 8,812 t of nickel content; nickel hydroxide, 66,019 t with 10,660 t of nickel content; and nickel oxide, 6,685 t with 5,234 t of nickel content. Exports of carbonate amounted to 628 t with 245 t of cobalt content (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a, g).

New Caledonia's export commodities were priced in dollars. The increase in the value of the U.S. dollar against the euro helped to mitigate the decrease in the price of nickel on the London Metal Exchange in the second half of 2014 (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a).

Commodity Review

Metals

Nickel and Cobalt.—Eramet Group of France, which was the leading ferronickel producer in the world, operated nickel mines and a metallurgical plant in New Caledonia through its subsidiary SLN. In 2012, SLN initiated a competitiveness plan to restore its profitability, primarily by focusing on reducing production costs. The goal was to reduce the cost of producing nickel by \$1.50 per pound by 2018. In 2014, SLN was ahead of its operating plan for the year and had achieved a cost reduction of \$0.62 per pound compared with the year target of \$0.45 per pound. A major cost reduction plan included the decision in 2014 to build a new plant to increase the use of fuel oil instead of coal, particularly for pre-driers. The facility, which would be designed and built by Eramet Group and SLN, was located in Doniambo. The plant was expected to improve SLN's competitiveness when it begins operations in 2015. In 2014, SLN's Doniambo plant produced 55,012 t of metallurgical products compared with 53,015 t in 2013. As of the end of 2014, SLN had 845 employees at its mining sites and 1,259 employees at its Doniambo plant (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a; Eramet Group, 2015a, p. 9, 11; 2015b).

Société Minière du Sud Pacifique SA (SMSP) operated mining and predominantly metallurgical production facilities in New Caledonia through its subsidiaries KNS and NMC; SMSP held a 51% controlling interest in both. SMSP owned 17% of New Caledonia's conceded mining areas; the North plant's Koniambo deposit accounted for 4% of the area and NMC mining centers accounted for 13%. In 2013 (the latest year for which data were available), NMC produced 2,190,000 t of ore (all grades) compared with 1,784,000 t in 2012. Production of saprolite ore, mainly for shipment to the Gwangyang ferronickel plant in the Republic of Korea, totaled 1,838,703 t, and production of limonite ore, mainly for shipment to Australia, totaled 215,197 t (SMSP Group, 2014, p. 10, 12).

KNS was a joint venture between Glencore plc of Switzerland (49%) and SMSP (51%). The company was responsible for the management of mining operations and the construction and operation of the Koniambo ferronickel plant, which cost \$7 billion and had a designed production capacity of 60,000 t/yr of nickel metal. In April 2013, the plant started the first production line of a pyrometallurgical ferronickel process. In February 2014, the first nickel tapping of the second production line was processed. The official inauguration of KNS's North plant was conducted in November 2014, and a metal leak occurred in the oven on December 26, 2014. No personnel injuries or environmental damage was reported. The accident led to the suspension of operations until the end of 2014. The plant was expected to produce between 27,000 t and 40,000 t of nickel in 2015 and to perform at full capacity by mid-2016. The plant site is located near a deepwater coastal area, which is suitable for development as a port facility. As of the end of 2014, KNS had 323 employees at its mining sites and 616 employees at its Koniambo plant (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a; SMSP Group, 2015a, b, d).

Ore to be used in the production of ferronickel at the North plant was extracted from the Koniambo massif, which is 20 kilometers (km) long and 5 km wide and includes an area of high-grade nickel laterite mineralization measuring approximately 21 square kilometers. There were estimated to be 75.6 Mt of measured and indicated saprolite resources at a grade of 2.47% nickel and 83 Mt of inferred resources at a grade of 2.5% nickel. The project site was served by a network of roads and was capable of supplying enough freshwater to meet mining and metallurgical requirements (SMSP Group, 2015c).

Vale S.A. of Brazil, through its subsidiary VNC, conducted nickel mining and metallurgical processing in New Caledonia. The company operated the Goro nickel and byproduct cobalt project. In 2014, VNC produced 2,134,000 t of ore at a grade of 1.44% nickel compared with 1,860,000 t of ore at a grade of 1.36% nickel in 2013. The output, in terms of metal content, was 18,700 t compared with 16,300 t in 2013. In 2014, VNC produced 1,384 t of cobalt as a byproduct of nickel production compared with 1,117 t in 2013. Within the next 2 years, the company was expected to continue to ramp up production to reach a nominal capacity of 57,000 metric tons per year (t/yr) of nickel oxide and hydroxide cake and 4,500 t/yr of cobalt in carbonate form. As of the end of 2014, VNC had 412 employees at its mining sites and 297 employees at its Goro plant (Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a; Vale S.A., 2015, p. 36, 39, 40, 45, 46).

As of the end of 2014, the proven reserves of nickel ore at VNC mines were estimated to be 55.3 Mt at a grade of 1.34% nickel and the probable reserves were estimated to be 67.0 Mt at a grade of 1.49% nickel. The total reserves in 2014 were 122.3 Mt at a grade of 1.42% nickel compared with 124.2 Mt at a grade of 1.42% nickel in 2013. The decrease in mineral reserves held by VNC was owing to mining depletion at the Goro Mine. Operations at the Goro open pit mine started in 2011, and the mine was projected to be exhausted in 2044. The nickel mineral reserves at the VNC mines had a grade of about 0.11% cobalt (Vale S.A., 2015, p. 67, 69).

In 2014, a protected wetland area was created by the local authorities of New Caledonia, which included 27% of the total surface area of the VNC tenements, and potentially could affect mining activities. The company expected that additional capital costs would be needed to address the potential affects on the tailings storage facility. In February 2014, a new law enacted by the South Province of New Caledonia imposed stricter limits on emissions of nitrogen oxide, sulfur oxide, and particulates from large combustion power stations. A power station that supplied electricity to VNC would likely need to be upgraded to meet the new standards, which was expected to increase the cost of power for VNC (Vale S.A., 2015, p. 76, 78).

In September 2014, JinPei Century Investment (Group) Co Ltd. (JinPei) of China signed an agreement with Mai Kouaoua Mines (MKM) to mine and process nickel ore in New Caledonia. Under the agreement, JinPei would invest \$1.25 billion and take a 49% stake in MKM, which owned several mines in New Caledonia. JinPei was expected to produce 10,000 t/yr of nickel starting in 2018, and the output would later be increased to 30,000 t/yr. The mine output would be shipped to Vanuatu for smelting. MKM would hold 51% equity in the Vanuatu plant, and JinPei, 49% (Asia Miner, 2014).

Outlook

New Caledonia is expected to remain a globally significant cobalt- and nickel-producing country. In the short run, production is expected to increase at the Goro and Koniambo projects. In the long run, continued investment in new projects and expansion of current projects, along with the improved market conditions, could facilitate the expansion of the mineral industry in New Caledonia.

References Cited

- Asia Miner, 2014, New Caledonia—Chinese firm secures nickel deal: The Asia Miner, October 10. (Accessed September 29, 2015, at <http://www.asiaminer.com/news/latest-news/6063-new-caledonia-chinese-firm-secures-nickel-deal.html#.VgxDTxFVhBc>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015a, Bilan deuxième semestre 2014 [Balance of second half 2014]: Noumea, New Caledonia, Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 6 p. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/sites/default/files/download/29478261.pdf>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015b, Fonds Nickel [Nickel fund]: Directeur de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie Web page. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/fonds-nickel>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015c, Le schéma minier [The mining schema]: Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie Web page. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/mines-et-carrieres/le-schema-minier>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015d, Les mines [The mines]: Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie Web page. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/mines-et-carrieres/les-mines>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015e, Présentation [Introduction]: Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie Web page. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/dimenc/presentation>.)
- Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015f, Présentation et missions [Introduction and missions]: Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie Web page. (Accessed September 29, 2015, at <https://dimenc.gouv.nc/mines-et-carrieres/presentation-et-missions>.)

Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, 2015g, Productions et exportations minières & métallurgiques de la Nouvelle-Calédonie—Décembre 2014 [Production and exports of mining and metallurgical products in New Caledonia—December 2014]: Noumea, New Caledonia, Direction de l'Industrie, des Mines et de l'Energie de la Nouvelle-Calédonie, January 21, 3 p.

Eramet Group, 2015a, Annual report 2014—The heart of our performance: Eramet Group, 59 p. (Accessed September 29, 2015, at http://www.erafmet.com/sites/default/files/publications/pdf/eramet_annual_report_2014_en.pdf.)

Eramet Group, 2015b, ERAMET develops to meet constantly growing nickel demand: Eramet Group Web page. (Accessed September 29, 2015, at <http://www.erafmet.com/en/our-activities/extracting-generating-value/nickel/our-key-figures>.)

Kuck, P.H., 2015, Nickel: U.S. Geological Survey Mineral Commodity Summaries 2015, p. 108–109.

SMSP Group, 2014, Nickel Mining Company SAS—A mining expertise integrated into metallurgy: Noumea, New Caledonia, SMSP Group, 30 p.

SMSP Group, 2015a, Andre Dang's keynote—Address to the special celebration of the North Plant's first nickel melting: Noumea, New Caledonia, SMSP Group press release, April 19. (Accessed September 29, 2015, at http://www.smsp.nc/index.php?option=com_docman&task=doc_download&gid=285&Itemid=100005&lang=en.)

SMSP Group, 2015b, Construction of the North Plant: SMSP Group Web page. (Accessed September 29, 2015, at http://www.smsp.nc/index.php?option=com_content&view=article&id=129&Itemid=100018&lang=en.)

SMSP Group, 2015c, Nickeliferous potential: Noumea, New Caledonia, SMSP Group Web page. (Accessed September 29, 2015, at http://www.smsp.nc/index.php?option=com_content&view=article&id=127&Itemid=100015&lang=en.)

SMSP Group, 2015d, The President of the French Republic proceeded over the official inauguration of Koniambo Nickel: Noumea, New Caledonia, SMSP Group press release, December 3. (Accessed September 29, 2015, at http://www.smsp.nc/index.php?option=com_content&view=category&layout=blog&id=10&Itemid=167&lang=en.)

U.S. Central Intelligence Agency, 2015, New Caledonia, *in* The world factbook: U.S. Central Intelligence Agency. (Accessed September 29, 2015, at <https://www.cia.gov/library/publications/the-world-factbook/geos/nc.html>.)

United Nations, 2015, New Caledonia: New York, New York, United Nations Comtrade and ServiceTrade database, 2 p. (Accessed September 29, 2015, at <http://comtrade.un.org/pb/FileFetch.aspx?docID=5775&type=country%20pages>.)

Vale S.A., 2015, Form 20-F—2014: U.S. Securities and Exchange Commission, March 20, 288 p. (Accessed September 29, 2015, at http://www.vale.com/EN/investors/Quarterly-results-reports/20F/20FDocs/Vale%2020-F%202014_i_novo.pdf.)

TABLE 1
NEW CALEDONIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014	
Cement	161,236	147,761	123,668	118,531 ^f	106,469	
Nickel:						
Ore:						
Gross weight	thousand metric tons	8,709	8,835	9,659	12,004 ^f	13,115
Co content		2,850	3,240	3,500	3,190	4,400 ^e
Ni content		131,309	128,732	131,693	164,406 ^f	178,080
Ferronickel:						
Gross weight		165,506	169,513	184,476	171,000 ^e	231,000 ^e
Ni content		39,802	40,015	43,030	40,459	54,683
Matte:						
Gross weight ^e		18,600	18,400	17,900	17,700	11,000
Ni content		13,917	13,780	13,417	13,279	8,241

^eEstimated; estimated data are rounded to no more than three significant digits. ^fRevised.

¹Table includes data available through August 27, 2015.

²In addition to the commodities listed, chromite, copper, crushed stone, gold, iron, manganese, silica, and silica sand were produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
NEW CALEDONIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Cement	Tokuyama Nouvelle Calédonie S.A. (Tokuyama Corp., 74.1%)	Grinding plant, Noumea	200,000
Cobalt, in ore and concentrate, Co content	Société le Nickel (SLN) [Eramet Group, 56%; Société Territoriale Calédonienne de Participation Industrielle (STCPI), 34%; Nisshin Steel Co., 10%]	Kouaoua, Nepoui-Kopeto, Poum, Thio, and Tiebaghi mining centers	3,000
Do.	Vale S.A., 80.5%; Sumic, 14.5%; Société de Participation Minière du Sud Calédonien SAS, 5%	Goro, 58 kilometers east of Noumea in South Province	4,500
Nickel:			
In ore and concentrate, Ni content	Société le Nickel (SLN) [Eramet Group, 56%; Société Territoriale Calédonienne de Participation Industrielle (STCPI), 34%; Nisshin Steel Co., 10%]	Kouaoua, Nepoui-Kopeto, Poum Thio, and Tiebaghi mining centers	55,000
Do.	Nickel Mining Company SAS [Société Minière du Sud Pacifique (SMSP), 51%, and POSCO, 49%]	Ouaco, Poya, Nakety, Kouaoua, and Boakaine mining centers	31,000
Do.	Société des Mines de la Tontouta, 100%	Moneo and Nakety mining centers	50,000
Do.	Other small nickel mining companies, including Société Minière George Montagnat SA (SMGM)	Tontouta mining center	1,000
Do.	Vale New Caledonia SAS (VNC) (Vale S.A., 80.5%; Sumic, 14.5%; Société de Participation Minière du Sud Calédonien SAS, 5 %)	Goro, 58 kilometers east of Noumea in South Province	60,000
In ferronickel, Ni content	Koniambo Nickel SAS (KNS) (Société Minière du Sud Pacifique SA, 51%, and Glencore plc, 49%)	Koniambo plant in North Province	60,000
Do.	Société le Nickel (SLN) [Eramet Group, 56%; Société Territoriale Calédonienne de Participation Industrielle (STCPI), 34%; Nisshin Steel Co., 10%]	Doniambo, Noumea	60,000
In nickel matte, Ni content	do.	do.	15,000
In nickel oxide, Ni content	Vale New Caledonia SAS (Vale S.A., 80.5%; Sumic, 14.5%; Société de Participation Minière du Sud Calédonien SAS, 5 %)	Goro plant in South Province	57,000

^eEstimated. Do., do. Ditto.