



2015 Minerals Yearbook

PAPUA NEW GUINEA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF PAPUA NEW GUINEA

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Papua New Guinea has abundant mineral and hydrocarbon resources. Several mineralized regions in the country host copper and gold deposits, and there are other significant mineral occurrences of chromium, cobalt, iron, molybdenum, nickel, and platinum. The country also has significant reserves of natural gas. The decrease in metal commodity prices in 2015 led to financial constraints in Papua New Guinea, reducing production and operations at both existing mines and within the exploration sector. Consequently, the country was exploring the possibility of diversifying its mineral industry to include production of such mineral commodities as coal, mineral sands, and molybdenum, as well as producing energy from geothermal sources (Mineral Resources Authority, 2015, p. 4).

In 2015, the Government of Papua New Guinea approved the Kumul Consolidated Holdings (Amendment) Act 2015. This act consolidated Papua New Guinea Government's assets in petroleum, mining, and other state-owned enterprises under the following three holding companies: Kumul Consolidated Holdings, Kumul Minerals Holdings, and Kumul Petroleum Holdings. This legislation is part of a Government reform policy and enables the Government to act as the trustee owner of the state-owned assets and enterprises (International Monetary Fund, 2015, p. 9; Kumul Consolidated Holdings, 2017a).

Minerals in the National Economy

In 2015, the rate of growth of Papua New Guinea's real gross domestic product (GDP) was 9.9% compared with a growth rate of 13.3% in 2014. The mineral sector accounted for 85.8% of the total foreign investment of the country compared with 85.2% in 2014. The slowdown in the economy was mainly due to the decrease in mineral commodity prices, suspensions of mining operations, adverse effects of the El Niño weather phenomenon, and the slow growth in sectors of the economy other than minerals (Bank of Papua New Guinea, 2015, p. 1; 2016a, p. 32; 2016b, p. 28–29; International Monetary Fund, 2015, p. 6).

Production

The production of copper in Papua New Guinea decreased by 43% in 2015 compared with that of 2014 owing to the temporary closure of the Ok Tedi Mine. The production of cobalt and nickel contained in nickel cobalt hydroxide increased by 17% and 22%, respectively, whereas silver production decreased by 15%. The Papua New Guinea liquefied natural gas (PNG LNG) project produced 7.4 million metric tons (Mt) of liquefied natural gas (LNG) in 2015, which was 7% more than its original design specification of 6.9 million metric tons per year (Mt/yr) (table 1: Exxon Mobil Corp., 2016, p. 47).

Structure of the Mineral Industry

The Mineral Resources Authority (MRA) is the Government entity responsible for the regulation of mining in

Papua New Guinea. The major mining projects in Papua New Guinea included the Ok Tedi Mine (copper, gold, and silver) operated by Ok Tedi Mining Ltd. (OTML), the Lihir gold mine operated by Lihir Gold Ltd. (a subsidiary of Newcrest Mining Ltd. of Australia), the Porgera gold mine operated by Barrick Gold Corp. of Canada and Zijin Mining Group Co. Ltd. of China (Zijin), and the Ramu Nickel project operated by Ramu NiCo Management (MCC) Ltd. (a subsidiary of China Metallurgical Group Corp.). In 2015, the Porgera and the Ok Tedi Mines suspended operations temporarily because of the severe drought associated with El Niño. Other operating projects in Papua New Guinea included the Hidden Valley gold mine operated by Morobe Mining (a 50–50 joint venture of Newcrest Mining and Harmony Gold Mining Co. Ltd. of South Africa) and the Simberi gold mine operated by Simberi Gold Co. Ltd. (a subsidiary of St Barbara Ltd. of Australia) (Mineral Resources Authority, 2014, p. 4).

Commodity Review

Metals

Cobalt and Nickel.—The Ramu Nickel project (also known as the Ramu nickel-cobalt laterite project), which is located on the north coast of Papua New Guinea, comprises the Kurumbukari Mine site (a laterite open pit mine), the Basamuk processing plant, and a slurry pipeline that runs from the mine to the Basamuk processing plant. The site was managed by Ramu NiCo Management (MCC) Ltd., which held 85% of the shares; Highlands Pacific Ltd. of Australia, 8.56%; and the Government and local community, 6.44%. In 2015, the Ramu Nickel project produced 25,582 metric tons (t) of nickel in concentrate and 2,505 t of cobalt. The increase was attributed to an increase in mine production and plant throughput. The resources at the Kurumbukari Mine included 36 Mt of measured resources grading 0.9% nickel and 0.1% cobalt. The project had a planned mine life of more than 20 years and a production capacity of more than 30,000 metric tons per year of nickel (Highlands Pacific Ltd., 2016, p. 4, 7–8, 13; Ramu NiCo Management (MCC) Ltd., 2017).

Copper.—In August 2015, OTML temporarily suspended operations at its gold and copper mine sites in Papua New Guinea's Western Province owing to severe dry weather. Dry weather reduced the water level of the Fly River, which was used to transport ore concentrates and supplies to and from the OK Tedi Mine. As a result, the company decided to reduce its workforce by 15%. During the first quarter of 2015, OTML reported production of 18,629 t of copper and 1,787 kilograms (kg) of gold, which was a decrease of 18% and 26%, respectively, from that of 2014; the decreased production was owing to lower head grades (Mineral Resources Authority, 2014, p. 4; 2015, p. 20; Ok Tedi Mining Ltd., 2015, p. 2; Jorgensen, 2016, p. 1).

The Frieda River project was located in northwestern Papua New Guinea about 200 kilometers (km) from the coastline. The mineral resource was estimated to be more than 2.64 billion metric tons at average grades of 0.44% copper and 0.23 gram per metric ton (g/t) gold containing approximately 12 Mt of copper and 610,000 kg of gold. PanAust Ltd., which was a wholly owned subsidiary of Guangdong Rising Assets Management Co Ltd. (GRAM) of China, held an 80% interest in the Frieda River project, and Highlands Pacific held the remaining 20%. By the end of 2015, a final feasibility study was expected to have been completed, but the date was extended to allow time for full consideration of various design concepts and operating parameters (Highlands Pacific Ltd., 2016, p. 4; PanAust Ltd., 2017a, p. 14, 2017b).

Nautilus Minerals Inc. of Canada was the first company to explore the ocean floor commercially for high-grade seafloor massive sulfide deposits of copper, gold, silver, and zinc. Solwara 1 was Nautilus Minerals's copper-gold project, which was under development in the territorial waters of Papua New Guinea in the Bismarck Sea off the coast of the Provinces of East New Britain and New Ireland. Nautilus Minerals was granted an environmental permit (in 2009) and a mining lease (in 2011), both of which were required for resource development at this site. The Solwara 1 project is located offshore approximately 1,600 meters below sea level and outcrops for a strike length of 1.6 km along a submarine ridge. The Solwara 1 deposit contains a copper grade of approximately 7% and gold grades of more than 20 g/t; average gold grades of approximately 6 g/t have been recorded. The major shareholders of Nautilus Minerals were MB Holding Company LLC (27% interest) and Metalloinvest Holding (Cyprus) Ltd. (15% interest) (Crowhurst and Lowe, 2011; Nautilus Minerals Inc., 2017a–c; Papua New Guinea Chamber of Mines, 2017).

Gold.—The Lihir gold mine, which is located about 700 km northeast of Port Moresby on Niolam Island in Papua New Guinea's New Ireland Province, consisted of three open pit mines and was 100% owned by Newcrest Mining. For the fiscal year that ended on June 30, 2015, the Lihir Mine produced 21,421 kg of gold compared with 22,434 kg in 2014, representing a 5% decrease. The mineral resource at the Lihir Mine was estimated to be 1.8 million kilograms (Mkg) of gold, and the reserves were estimated to be 902,000 kg of gold (Mineral Resources Authority, 2015, p. 21; Newcrest Mining Ltd., 2015, p. 15, 43).

For the fiscal year that ended on June 30, 2015, the Hidden Valley Mine in Morobe Province produced 2,942 kg of gold compared with 3,292 kg in 2014, which was an 11% decrease. The estimated mineral resource of Hidden Valley was 84,000 kg of gold and 1.5 Mkg of silver, and the estimated reserves were 47,000 kg of gold and 871,000 kg of silver (Newcrest Mining Ltd., 2015, p. 17).

The Simberi gold mine is an open pit mine and processing plant located in New Ireland Province. The operation's total gold production for the fiscal year that ended on June 30, 2015, was 2,474 kg compared with 1,376 kg in 2014. The increase was made possible by the optimization of the processing plant to sustain throughput of 3.5 Mt/yr. Ore reserves at the Simberi gold mine were estimated to be 39 Mt/yr at a grade of 1.7 g/t gold (St Barbara Ltd., 2015, p. iii, 7).

Porgera is an open pit and underground gold mine located about 600 km northwest of Port Moresby. In August 2015, Barrick Gold sold 50% of its interest in the Porgera Mine to Zijin. Barrick Gold and Zijin together owned 95% of the Porgera Mine shares, and the remaining 5% interest was held by Mineral Resources Enga Ltd. The Porgera Mine produced 13,561 kg of gold in 2015 compared with 15,334 kg in 2014. Barrick Gold attributed the 12% decrease in gold production to divestment of shared companies along with the prolonged dry conditions, power issues, and decreased ore recovery (Barrick Gold Corp., 2015, p. 8, 12, 63).

The Wafi-Golpu project, located on the northern coast of Papua New Guinea, was an advanced exploration project that formed part of the Wafi-Golpu joint venture [owned by Newcrest Mining (50%) and Harmony Gold (50%)]. The Wafi-Golpu project comprised the epithermal gold Wafi deposit and the porphyry copper-gold Golpu and Nambonga deposits. The Wafi-Golpu mineral resource was estimated to contain 435,000 kg of gold and 4.7 Mt of copper, including estimated reserves of 193,000 kg of gold and 2.7 Mt of copper. A prefeasibility study reported an approximate mine life of 27 years, with annual production expected to peak at 9,953 kg of gold and 150,000 t of copper in 2025. The Government expected to receive the Wafi-Golpu feasibility study report by late 2016 or early 2017 (Mineral Resources Authority, 2015, p. 26; Newcrest Mining Ltd., 2015, p. 19).

Mineral Fuels

Natural Gas.—Kumul Petroleum Holdings Ltd. (KPHL), which was Papua New Guinea's national oil and gas company, was created through the Kumul Petroleum Holdings Limited Authorization Act of 2015. The act replaced the former National Petroleum Company of Papua New Guinea (NPCP). KPHL was responsible for managing Papua New Guinea's 16.57% share of the PNG LNG project through its subsidiary Kumul Petroleum Ltd. (Kumul Consolidated Holdings, 2017b).

The PNG LNG project was an integrated development project that included gas production and processing facilities in the southern and western highlands of Papua New Guinea. The joint-venture owners of PNG LNG were Exxon Mobil Corp. of the United States (33.2%), Oil Search Ltd. (29%), KPHL (16.57%), Santos Ltd. of Australia (13.5%), JX Nippon Oil & Energy Co. of Japan (4.7%), Mineral Resources Development Co. Ltd. (2.8%), and Petromin PNG Holdings Ltd. (0.2%). In 2015, 7.4 Mt of LNG was produced, which was an increase of 7% from the original design specification of 6.9 Mt/yr. The PNG LNG project was projected to produce more than 8 Mt/yr of LNG in the coming years (ExxonMobil PNG Ltd., 2017; Kumul Petroleum Holdings Ltd., 2017).

Outlook

In 2015, Papua New Guinea's economy was affected by low export commodity prices, temporary closures of mines, and the adverse effects of El Niño to the agricultural and mining sectors. Nevertheless, the first full year of LNG production is expected to boost overall GDP growth. Mineral deposits, including that of copper, gold, and petroleum, account for nearly two-thirds

of export earnings of the country. Meanwhile, the MRA is continuing to study geothermal sites for economic development to provide an alternative source of energy. In addition, the alluvial mining sector is being considered a potential area of growth and is expected to increase mining exports in the next 5 years (International Monetary Fund, 2015, p. 4; Mineral Resources Authority, 2015, p. 4–5).

References Cited

- Bank of Papua New Guinea, 2015, Monthly economic review: Port Moresby, Papua New Guinea, Bank of Papua New Guinea, December, 4 p. (Accessed January 22, 2017, at <https://www.bankpng.gov.pg/wp-content/uploads/2015/02/20160122-MER-Report-for-December-2015.pdf>.)
- Bank of Papua New Guinea, 2016a, June 2016 quarterly economic bulletin: Port Moresby, Papua New Guinea, Bank of Papua New Guinea, November 18, 44 p. (Accessed January 22, 2017, at <https://www.bankpng.gov.pg/wp-content/uploads/2015/02/June-2016-Quarterly-Economic-Bulletin-QEB.pdf>.)
- Bank of Papua New Guinea, 2016b, March 2016 quarterly economic bulletin: Port Moresby, Papua New Guinea, Bank of Papua New Guinea, August 25, 42 p. (Accessed January 22, 2017, at <https://www.bankpng.gov.pg/wp-content/uploads/2015/02/March-2016-Quarterly-Economic-Bulletin-QEB.pdf>.)
- Barrick Gold Corp., 2015, Full year and fourth quarter results: Toronto, Ontario, Canada, Barrick Gold Corp., 26 p. (Accessed January 22, 2017, at <http://www.barrick.com/files/press-release/2016/Barrick-Reports-2015-Full-Year-and-Fourth-Quarter-Results.pdf>.)
- Crowhurst, Peter, and Lowe, Jonathan, 2011, Exploration and resource drilling of seafloor massive sulfide (SMS) deposits in the Bismarck Sea, Papua New Guinea: Proceedings of the OCEANS 2011, IEEE Meetings and Conference, September 19–22, 2011, Waikoloa, HI. (Accessed May 9, 2017, at <http://ieeexplore.ieee.org/document/6107232/?reload=true>.)
- Exxon Mobil Corp., 2016, 2015 financial & operating review: Irving, Texas, Exxon Mobil Corp., 98 p. (Accessed January 22, 2017, at http://cdn.exxonmobil.com/~media/global/files/financial-review/2015_exxonmobil_financial_and_operating_review.pdf.)
- ExxonMobil PNG Ltd., 2017, Project overview: Port Moresby, Papua New Guinea, ExxonMobil PNG Ltd. (Accessed January 22, 2017, at <https://pnglng.com/About/Project-overview>.)
- Highlands Pacific Ltd., 2016, 2015 Annual report: Brisbane, Queensland, Australia, Highlands Pacific Ltd., March, 71 p. (Accessed January 22, 2017, via <http://www.highlandspacific.com/financial-reports>.)
- International Monetary Fund, 2015, Article IV consultation—Press release; staff report; and statement by the Executive Director for Papua New Guinea—IMF Country Report No. 15/318: Washington, DC, International Monetary Fund, 70 p. (Accessed January 22, 2017, at <https://www.imf.org/external/pubs/ft/scr/2015/cr15318.pdf>.)
- Jorgensen, Dan, 2016, The garden and beyond—The dry season, the Ok Tedi shutdown, and the footprint of the 2015 El Niño drought: Oceania, v. 86, issue 1, p. 25–38. (Accessed January 22, 2017, at <http://onlinelibrary.wiley.com/doi/10.1002/ocae.5121/pdf>.)
- Kumul Consolidated Holdings, 2017a, Corporate profile: Port Moresby, Papua New Guinea, Kumul Consolidated Holdings. (Accessed January 22, 2017, at <http://www.kch.com.pg/about-us/corporate-profile/>.)
- Kumul Consolidated Holdings, 2017b, History: Port Moresby, Papua New Guinea, Kumul Consolidated Holdings. (Accessed January 22, 2017, at <http://kumulpetroleum.com/about-us/history/>.)
- Kumul Petroleum Holdings Ltd., 2017, Commercial activities: Port Moresby, Papua New Guinea, Kumul Petroleum Holdings Ltd. (Accessed January 22, 2017, at <http://kumulpetroleum.com/pnglng-project/>.)
- Mineral Resources Authority [Papua New Guinea], 2014, Chief Inspector of Mines annual report 2014: Port Moresby, Papua New Guinea, Mineral Resources Authority, 34 p. (Accessed January 22, 2017, at <http://www.mra.gov.pg/Portals/2/Inspectorate/Mines%20Safety%20Branch%20Webpage%20Upgrade%20%20files/Chief%20Inspector%20Of%20Mines%20Reports/Chief%20Inspector%20of%20Mines's%20Annual%20Report%202014.pdf>.)
- Mineral Resources Authority [Papua New Guinea], 2015, Mining & exploration bulletin: Port Moresby, Papua New Guinea, Mineral Resources Authority, 65 p. (Accessed January 22, 2017, at <http://www.mra.gov.pg/Portals/2/Publications/Bulletin/Bulletin%201st%20Issue%202015.pdf>.)
- Nautilus Minerals Inc., 2017a, The Pipeline: Toronto, Ontario, Canada, Nautilus Minerals Inc. (Accessed January 22, 2017, at <http://www.nautilusminerals.com/irm/content/png.aspx?RID=258>.)
- Nautilus Minerals Inc., 2017b, About Nautilus: Toronto, Ontario, Canada, Nautilus Minerals Inc. (Accessed January 22, 2017, at <http://www.nautilusminerals.com/irm/content/overview.aspx?RID=252&RedirectCount=1>.)
- Nautilus Minerals Inc., 2017c, Investors: Toronto, Ontario, Canada, Nautilus Minerals Inc. (Accessed January 22, 2017, at <http://www.nautilusminerals.com/irm/content/major-shareholders.aspx?RID=273>.)
- Newcrest Mining Ltd., 2015, Annual report 2015: Melbourne, Victoria, Australia, Newcrest Mining Ltd., 148 p. (Accessed January 22, 2017, at http://www.newcrest.com.au/media/agm/NCM_Annual_Report_2015.pdf.)
- Ok Tedi Mining Ltd., 2015, Ok Tedi Mining Ltd. financial year 2015 first quarter results: Tabubil, Papua New Guinea, Ok Tedi Mining Ltd., 5 p. (Accessed January 22, 2017, at <http://www.oktedi.com/media-items/reports/corporate/quarterly-results/366-2015-quarter-1-results/file>.)
- PanAust Ltd., 2017a, 2016 Business review & sustainability report: PanAust Ltd. 86 p. (Accessed June 11, 2018, at http://www.panaust.com.au/sites/default/files/reports/2016%20Business%20Review_Sustainability_Report_FINAL_web_0.pdf.)
- PanAust Ltd., 2017b, Company profile: PanAust Ltd. (Accessed May 8, 2017, at <http://www.panaust.com.au/company-profile>.)
- Papua New Guinea Chamber of Mines, 2017, Mining in PNG: Port Moresby, Papua New Guinea, Papua New Guinea Chamber of Mines. (Accessed January 22, 2017, at <http://pngchamberminpet.com.pg/mining-in-png/>.)
- Ramu NiCo Management (MCC) Ltd., 2017, The project: Ramu NiCo Management (MCC) Ltd. (Accessed January 22, 2017, at <http://www.ramunico.com/plus/list.php?tid=240>.)
- St Barbara Ltd., 2015, Annual report 2015: Melbourne, Victoria, Australia, St Barbara Ltd., 120 p. (Accessed January 22, 2017, at http://www.annualreports.com/HostedData/AnnualReports/PDF/ASX_SBM_2015.pdf.)

TABLE 1
PAPUA NEW GUINEA: PRODUCTION OF MINERAL COMMODITIES¹

Commodity ²		2011	2012	2013	2014	2015
METALS						
Copper, mine output, Cu content	metric tons	130,473	125,348	105,524	75,907	42,894
Gold, mine output, Au content	kilograms	62,200	59,100	54,092	52,809 ^r	54,729
Nickel-cobalt hydroxide:						
Gross weight	metric tons	--	13,777	29,763	57,360	65,286
Co content	do.	--	469	1,013	2,134	2,505
Ni content	do.	--	5,283	11,369	20,987	25,582
Silver, mine output, Ag content	kilograms	90,700	81,300	82,702	83,711 ^r	70,789
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural, liquefied	thousand metric tons	--	--	--	4,000	7,400
Gas, natural, marketed	million cubic meters	113	100	100	160 ^e	190 ^e
Petroleum, crude	thousand 42-gallon barrels	11,000	10,000	10,900	11,000	11,500 ^e

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through January 23, 2017.

²In addition to the commodities listed, cement and other construction materials (common clays, sand and gravel, and stone) were produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
PAPUA NEW GUINEA: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^e
Cement	thousand metric tons	PNG-Taiheiyo Cement Ltd., 100%	Lae, Morobe Province	200
Cobalt	do.	Ramu NiCo Management (MCC) Ltd., 85%; Highlands Pacific Ltd., 8.56%; Government and local landowners, 6.44%	Kurumbukari Mine, Basamuk beneficiation plant, Madang Province	3
Copper	do.	Ok Tedi Mining Ltd. (OTML) (Government, 100%)	Ok Tedi open cut mine, Western Province, 20 km northwest of Tabubil and 390 km southwest of Wewak	170
Gold		Lihir Gold Ltd. (Newcrest Mining Ltd., 100%)	Lihir open cut mine, Niolam Island, New Ireland Province, 700 km northeast of Port Moresby	26
Do.		St Barbara Ltd., 100%	Simberi Island open cut mine, New Ireland Province	3
Do.		Newcrest Mining Ltd., 50%, and Harmony Gold Mining Co. Ltd., 50%	Hidden Valley open cut mine, Morobe Province, 90 km southwest of Lae	8
Do.		Ok Tedi Mining Ltd. (OTML) (Government, 100%)	Ok Tedi open cut mine, Western Province, 20 km northwest of Tabubil and 390 km southwest of Wewak	17
Do.		Porgera Joint Venture [Barrick Gold Ltd., 47.5%; Zijin Mining Group Ltd., 47.5%; Mineral Resources Enga Ltd., 5%]	Porgera open cut and underground mines, Enga Province, 620 km northwest of Port Moresby	22
Do.		New Guinea Gold Corp., 90%, and Niugini Holdings Pty Ltd., 10%	Sinivit open pit, East New Britain Province, about 50 km south-southwest of Rabaul	1
Do.		Asidokona Mining Resources Pte. Ltd., 100%	Tolukuma Hill open pit mine, 100 km north of Port Moresby	2
Natural gas	million cubic meters	Oil Search Ltd., 100%	Hides GTE, Southern Highlands Province, 80 km northwest of Kutubu	190
Natural gas, liquefied	million metric tons	ExxonMobil PNG Ltd. (operator), 33.2%; Oil Search Ltd., 29%; Kumul Petroleum Holdings Ltd, 16.6%; Santos Ltd., 13.5%; JX Nippon Oil and Gas Exploration, 4.7%; Mineral Resources Development Co. (landowners), 2.8%; Petromin PNG Holdings Ltd. 0.2%	Southern Highlands, Hela, Western, Gulf, and Central Provinces	7

See footnotes at end of table.

TABLE 2—Continued
PAPUA NEW GUINEA: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities ¹	Annual capacity ^c
Nickel	thousand metric tons	Ramu NiCo Management (MCC) Ltd., 85%; Highlands Pacific Ltd., 8.56%; Government and local landowners, 6.44%	Kurumbukari Mine, Basamuk beneficiation plant, Madang Province	32
Petroleum, crude	thousand 42-gallon barrels	Oil Search Ltd. (operator and manager for license 2), 49.51%; Exxon Mobil Corp. (operator and manager for license 5), 26.82%; Eda Oil Ltd., 11.28%; Merlin Petroleum Co., 8.31%; Petroleum Resources Kutubu Ltd., 2.97%; Petroleum Resources Moran Ltd., 1.10%; Petroleum Resources North West Moran Ltd., 0.02%	Central Moran oilfield, Southern Highlands Province (includes Agogo and Iaqufi-Hedinia fields). Onshore Papuan Basin, petroleum development licenses 2 and 5	2,000
Do.	do.	Merlin Petroleum Co., 73.48%; Exxon Mobil Corp., 14.52%; Oil Search Ltd. (operator), 10%; Petroleum Resources (Gobe) Ltd., 2.0%	Gobe Main oilfield, Southern Highlands Province. Onshore Papuan Basin, petroleum development license 4	50
Do.	do.	Oil Search Ltd., 60.05% (operator and manager); Merlin Petroleum Co., 18.69%; Exxon Mobil Corp., 14.52%; Petroleum Resources (Kutubu) Ltd., 6.75%	Kutubu oilfield, Southern Highlands Province. Onshore Papuan Basin, petroleum development license 2	4,000
Do.	do.	Oil Search Ltd., 36.36%; Southern Highlands Petroleum Ltd., 40.15%; Santos (operator), 15.92%; Cue PNG Oil Co Ltd., 5.57%; Petroleum Resources (Gobe) Ltd., 2.0%	South East Gobe oilfield, Gulf and Southern Highlands Provinces. Onshore Papuan Basin	200
Silver		Porgera Joint Venture [Barrick (Niugini) Ltd., 47.5%; Zijin Mining Group Ltd., 47.5%; Mineral Resources Enga Ltd., 5%]	Porgera open cut and underground mines, Enga Province, 620 km northwest of Port Moresby	4
Do.		Newcrest Mining Ltd., 50%, and Harmony Gold Mining Co. Ltd., 50%	Hidden Valley open cut mine, Morobe Province, 90 km southwest of Lae	124
Do.		Ok Tedi Mining Ltd. (OTML) (Government, 100%)	Ok Tedi open cut mine, Western Province, 20 km northwest of Tabubil and 390 km southwest of Wewak	30

^cEstimated. Do., do. Ditto.

¹Abbreviations used for units of measure in this table include the following: km, kilometer.