



2014 Minerals Yearbook

LAOS

THE MINERAL INDUSTRY OF LAOS

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In 2014, Laos produced a variety of mineral commodities, including barite, copper, gold, iron ore, lead, and silver (table 1). Laos had a variety of undeveloped mineral resources, and the Government recognized mining as a critical sector of the economy and continued to support the development of the sector by promoting domestic and foreign investment. Employment in the mining sector, which comprised about 0.3% of the total population of Laos, was 15,381, which represented an increase of 3.8% compared with 14,819 in 2013.

During 2014, the Government continued its plans to improve the country's infrastructure, which included the construction of dams, railway systems, and roads, and the restoration of many hydropower plants nationwide. The Nam Sim and Nam Hao hydropower projects, which are located in Houaphanh Province, were scheduled to be completed in 2015. The Nam Sim project had a designed generation capacity of 8 megawatts (MW), and the Nam Hao project had an installed generation capacity of 15 MW. In August 2014, the Asian Development Bank (ADB) approved \$217 million in funds for the construction of the Nam Ngiep 1 hydropower project, which would have a designed capacity of 290 MW and was expected to be commissioned in 2019. The electricity generated from this project would be exported mainly to neighboring Thailand. Other planned infrastructure projects included the construction of the Nam Neun 1 and Nam Neun 3 hydropower projects to start in 2016. The Nam Neun 1 would be located in Xieng Khuang Province, and would have an installed capacity of 124 MW. The Nam Neun 3 project would be located in Houaphanh Province and would have an installed capacity of 60 MW. The estimated cost of the project was \$400 million, and production was expected to start in 2020. The Government estimated that about 90% of households in the country would have access to electricity by 2020 (Ministry of Energy and Mines, 2014a–c).

Minerals in the National Economy

In 2014, the value of Laos's industrial sector, which included the construction, electricity generation, manufacturing, and mining and quarrying sectors, increased by 8.5% and contributed 28.7% to Laos' real gross domestic product (GDP) (at constant 2002 prices) compared with an increase of 28.6% in 2013. The construction sector contributed 7% to the GDP in 2014 compared with 6.8% in 2013. During 2014, the mining and quarrying sector was affected by low commodity prices and a decrease in domestic gold output, which caused the sector to grow at a slower pace—5.2% compared with 6.6% in 2013. The mining and quarrying sector contributed about 6.3% to Laos's GDP in 2014 compared with about 6.6% in 2013 (Bank of the Lao PDR, 2014, p. 3, 21).

Production

The production of several mineral commodities increased significantly in 2014, such as clay (by 272%), barite (192%), potash (144%), tin (50%), salt (43%), and silver (23%). On the other hand, production decreased for limestone (by 80%), lignite (76%), sandstone (68%), gold (23%), and silicon (20%) (table 1).

Structure of the Mineral Industry

According to the Department of Mines (DOM), by yearend 2013 (the latest year for which comprehensive data were available), a total of 211 mining companies were operating in Laos, including about 150 companies that were in the prospecting and exploration phases and were monitored by the Department of Geology and Mines (DGM) of the Ministry of Natural Resources and Environment (MONRE). A total of 61 mining companies—35 that were joint ventures, 14 that were locally owned, and 12 that were foreign owned—were in the mining operation and mineral-processing phases, and were being monitored by the DOM of the Ministry of Energy and Mines (MEM) (Department of Mineral Resources of Thailand, 2013).

The MONRE was created in 2011 from the merger of the Water Resource and Environment Administration (WREA) with departments of the National Land Management Authority (NLMA) and the Geology Department, and the Forest Conservation Divisions within the Ministry of Agriculture and Forestry (MAF). The MEM is the Government agency that manages and promotes the mining, processing, and trade of mineral products. The DOM oversees mining company compliance with the country's mining regulations and contracts; oversees and implements the mineral law, mine safety, and mine closure regulations; creates the necessary regulations and guidelines for the promotion of the mining and metallurgical sector; and issues, rejects, extends, and withdraws mining licenses (Department of Mineral Resources of Thailand, 2013; The REDD Desk, 2015).

In 2014, the main producers of copper, gold, and silver in Laos were Minerals and Metals Group, Lane Xang Minerals Ltd. (MMG LXML), which was a subsidiary of MMG Ltd. of Hong Kong (90% interest) and the Government (10% interest), and Pan Australian Resources Ltd. of Australia. The country's major mineral industry facilities and their capacities are listed in table 2.

Mineral Trade

In 2014, the total value of trade in Laos was reported as \$6.93 billion, which represented an increase of 29.8% compared with \$5.34 billion (revised) in 2013. The country's total exports were valued at about \$2.66 billion in 2014, which was an increase of 17.6% compared with \$2.26 billion in 2013. The value of all mineral commodity exports amounted to

\$1.29 billion (48% of total exports) and that of electricity exports amounted to \$570 million (21.4% of total exports). Among the mineral commodities exported by Laos, copper was valued at \$1.07 billion, or 40% of total exports, and a 40% increase in value compared with that of 2013, and gold was valued at \$140 million, or 5.3% of total exports, which was about a 9% decrease compared with that of 2013 (Bank of the Lao PDR, 2014, p. 35).

The total value of Laos' imports in 2014 increased by about 39% to \$4.27 billion from \$3.08 billion (revised) in 2013, of which electricity imports increased by about 16.4% to about \$79 million from \$67.8 million in 2013. Iron and steel imports, most likely used in the construction and infrastructure sectors, amounted to \$697 million; crude oil, fuel and related material imports totaled \$700 million; and gold and silver imports combined totaled \$76 million (Bank of the Lao PDR, 2014, p. 35).

Commodity Review

Metals

Bauxite and Alumina.—The Laos Bolaven Plateau bauxite project, which is located in the southern part of the country, was being developed by Sino Australian Resources (Laos) Co., Ltd. (SARCO). SARCO was a joint venture between China Nonferrous Metals Industry's Foreign Engineering and Construction Co., Ltd. of China (NFC) (51% interest) and ORD River Resources Ltd. of Australia (49% interest). SARCO had two tenements on the property—the LSI tenement, which covered an area of 66 square kilometers (km²), and the Yuqida tenement, which covered an area of 421 km², for a total area of 487 km². Once the permits and studies had been granted and performed, the joint venture planned to build a bauxite mine and an alumina refinery as part of the project. In May, Southwest Pacific Bauxite (HK) Ltd. (Southwest) of Australia offered to purchase ORD's interest in the Bolaven project. The offer was accepted under several conditions, including payment (by Southwest) of an initial \$300,000 as a fee for a 12-month period of exclusivity for Southwest to exercise its option to purchase interest in the project. If the company were to exercise the purchase option, then Southwest would pay \$2 million in cash and \$3 million worth of its shares for the purchase of ORD's SARCO interest. On November 28, ORD announced that it would officially change its name to Vango Mining Ltd. on December 15 (ORD River Resources Ltd., 2014, p. 10; Thomson Reuters, 2014).

Copper, Gold, and Silver.—In 2014, the Sepon copper-gold project produced a total of 88,541 metric tons (t) of copper cathodes, and 11 kilograms (kg) of gold, which represented a decrease of 1.7% for copper and about 99% for gold compared with that of 2013. The significant decrease in gold production was attributed to MMG placing its gold operations at the Sepon Mine on care-and-maintenance status starting in December 2013 owing to declining global gold prices (MMG Ltd., 2014, p. 7, 16, 44).

PanAust Ltd. of Australia, through its wholly owned subsidiary Pan Mekong Exploration Pty. Ltd., owned a 90% interest in the Lao-registered company Phu Bia Mining Ltd.

(PBM), which managed the Phu Kham copper-gold mine, and the Government owned the remaining 10% interest. The Government and PBM had a mineral exploration and production agreement that regulated exploration and mining within the company's contracted area of 2,636 km². In 2014, the Phu Kham copper-gold mine, which is located approximately 140 kilometers (km) north of the capital city of Vientiane, produced 71,155 t of copper in concentrate, which was an increase of 9.7% compared with that of 2013 (table 1). The mine also produced 2,109 kg of gold, which represented a decrease of 4.8% compared with the 2,215 kg produced in 2013; and 11,597 kg of silver, which was an increase of 17.3% compared with the 9,883 kg produced in 2013. Most of the increases in production were the result of increased production levels and lower operating costs owing to the implementation of expansions at the Phu Kham facility that took place in 2013 and 2014. The slight decrease in gold production was mainly attributed to low grades mined during the year. The Phu Kham Mine was expected to produce between 73,000 t and 76,000 t of copper in concentrate in 2015 and to reach a projected peak of 90,000 t between 2018 and 2019 (PanAust Ltd., 2014, p. 2, 3, 9).

PanAust's mineral resource interests in Laos also included the Ban Houayxai gold-silver project, which is located approximately 25 km west of the Phu Kham copper-gold operation. The Ban Houayxai project was an open pit mine that produced 3,140 kg of gold in 2014, which was a decrease of 10.3% compared with the 3,501 kg of gold produced in 2013, and 28,209 kg of silver, which was an increase of 42.2% compared with the 19,832 kg of silver produced in 2013. In 2015, PanAust projected that the annual production of gold at the Ban Houayxai Mine would remain steady at about 3,000 kg (PanAust Ltd., 2014, p. 3, 9).

The Phonsavan copper-gold project consisted of two copper deposits—KTL and Tharkhek—that are located within 5 km of each other and about 100 km from the Phu Kham project. In 2014, PanAust completed a feasibility study for developing the KTL copper-gold deposit as a satellite open pit mine of the Phu Kham project. The study determined that an estimated capital investment of \$52 million would be required to develop the project. In July, the company submitted an environmental and social impact assessment of the project to the Government for evaluation (PanAust Ltd., 2014, p. 10).

Iron Ore.—In March, an iron-ore-processing plant located in Ban Boneng (a village in the Hinboun District, Khammouane Province) was commissioned. The plant was located about 200 km southeast of Vientiane. The facility was expected to comprise a processing plant, a tailings dam, roads, and a water management system, and to have a processing capacity of 200 metric tons per day (t/d) of iron. The reported grade was expected to include 75% iron ore and 25% clay. No additional information was available, nor could it be confirmed by the Government; therefore the plant is not included in table 2 (Jurutera Adda Sdn Bhd Consulting Engineer, 2015; Shanghai World State Machinery Co. Ltd., 2015).

Zinc.—By yearend 2014, Padaeng Industry Public Co. Ltd. of Thailand, through its wholly owned subsidiary Padaeng Industry (Laos) Co. Ltd., announced that it was continuing

negotiations with an investor who was interested in developing the company's 400-km² zinc project in Vientiane Province. Padaeng Industry expected negotiations to conclude in 2015. In November 2013, Padaeng Industry had ceased all exploratory activities at its zinc project. The decision was based on extensive assessments in which the company was required to invest significantly and to use an alternative drilling method to proceed with the exploration phase of the project. By yearend 2013, the project had been put up for sale (Padaeng Industry Public Co. Ltd., 2015, p. 54).

Industrial Minerals

Cement.—In May, Siam Cement Group (SCG) of Thailand announced plans to build a new 1.8-million-metric-ton-per-year (Mt/yr)-capacity cement plant in Laos with an estimated investment of \$370 million. The company was expected to commission the plant by the second quarter of 2017. In November, SCG announced that it had received authorization by the Government to carry out a surveying study to evaluate the availability of raw materials and potential locations that would support building another cement plant in the country. SCG proposed constructing the plant in Bouldapha District in Khammouane Province (Global Cement, 2014a, b).

Potash.—In November, FYI Resources Ltd. of Australia, which was involved in the development of potash projects in Thailand and other locations, announced the expansion of its business in Laos. The company targeted a 108-km² area in the Vientiane Basin region near the country's southern border with Thailand as the location for the project after conducting extensive reviews of the geologic features of the area. The company created the Vientiane Basin Potash joint venture through a memorandum of understanding; the joint venture consisted of FYI Resources (75%); GM Consulting, which was a wholly owned subsidiary of the Greater Mekong Development Group (15%); and the Government of Laos (10%) (FYI Resources Ltd., 2014).

Outlook

In 2015, the Association of Southeast Asian Nations (ASEAN) is expected to fully implement the ASEAN Economic Community (AEC), which consists of a regional economic integration plan for the member countries of Brunei, Burma (also called Myanmar), Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. The resulting economic integration would allow for a single market and production base, regionally equitable economic development, and a regional integration into the global economy. The integration would also include unrestricted trade of goods, investments, skilled labor, services, and flows of capital (Association of Southeast Asian Nations, 2015).

The expected integration of Laos into the AEC in 2015, combined with the accession of the country into the World Trade Organization in 2013, is expected to boost economic development, increase foreign direct investment, attract investment interest, and expand the country's economic cooperation with other Southeast Asian countries (World Trade Organization, 2013).

The production of copper, gold, and silver is expected to increase as projects and expansions are commissioned in 2014, including the Phu Kham project. The Phu Kham Mine is projected to reach its production capacity of 90,000 t/yr of copper concentrate between 2018 and 2019.

The production of many construction minerals was expected to increase in the near future to support the high demand for these mineral commodities as the Government moves forward with its plans to improve and further develop the country's infrastructure, including the construction of dams, railway systems, and roads, and the restoration of many hydropower plants nationwide. Many projects that were under construction in recent years are set to commence between 2015 and 2020. These projects are expected to contribute to the social and economic development of the country and to enable the Government to achieve its plans to provide access to electricity to about 90% of all households in the country by 2020.

References Cited

- Association of Southeast Asian Nations, 2015, ASEAN economic community: Association of Southeast Asian Nations. (Accessed November 2, 2015, at <http://www.asean.org/communities/asean-economic-community>.)
- Bank of the Lao PDR, 2014, Annual economic report 2014: Vientiane, Laos, Bank of the Lao PDR, 44 p. (Accessed September 21, 2015, at http://www.bol.gov.la/together_use/Annual Report 2014_ENG.pdf.)
- Department of Mineral Resources of Thailand, 2013, Sustainable development of the mining sector by increasing the institutional and technical capacity of the Lao mining authorities—Lao-German technical cooperation project: Department of Mineral Resources of Thailand presentation by the Department of Mines of Laos PDR. (Accessed December 5, 2014, at http://www.dmr.go.th/download/lao_thai56/pdf_dat/Lao_German Technical Cooperation Project.pdf.)
- Global Cement, 2014a, Siam Cement Group surveys Laos for cement plant: Global Cement, November 26. (Accessed September 21, 2015, at <http://www.globalcement.com/news/item/3093-siam-cement-group-surveys-laos-for-cement-plant>.)
- Global Cement, 2014b, Siam Cement to build US\$370 m plant in Laos: Global Cement, May 1. (Accessed September 21, 2015, at [http://www.globalcement.com/news/item/2466-siam-cement-to-build-us\\$370m-plant-in-laos](http://www.globalcement.com/news/item/2466-siam-cement-to-build-us$370m-plant-in-laos).)
- FYI Resources Ltd., 2014, Australia's FYI expands Asian potash footprint beyond Thailand into Laos under new MOU: Victoria Park, Victoria, Australia, FYI Resources Ltd. news release, November 26, 4 p.
- Jurutera Adda Sdn Bhd Consulting Engineer, 2015, Iron ore mining in Laos: Kuching, Sarawak, Malaysia, Jurutera Adda Sdn Bhd, October 30. (Accessed October 30, 2015, at <http://adda.com.my/portfolio/iron-ore-mining/>.)
- Ministry of Energy and Mines, 2014a, Houphanh [sic] to have two dams built next year: Ministry of Energy and Mines, August 27. (Accessed September 21, 2015, at http://laoenergy.la/pageNews.php?id_News=71.)
- Ministry of Energy and Mines, 2014b, Hydropower project in Laos secures \$217m loan (Nam Ngiep 1): Ministry of Energy and Mines, August 24. (Accessed September 21, 2015, at http://laoenergy.la/pageNews.php?id_News=69.)
- Ministry of Energy and Mines, 2014c, Work on Nam Neun 1, 3 hydro schemes to begin in early 2016: Ministry of Energy and Mines, August 27. (Accessed September 21, 2015, at http://laoenergy.la/pageNews.php?id_News=70.)
- MMG Ltd., 2014, Annual report 2014: Melbourne, Victoria, Australia, MMG Ltd., 156 p. (Accessed August 19, 2015, at http://www.mmg.com/en/Investors-and-Media/Reports-and-Presentations/~/_media/Files/About%20us/MMG%202014%20Annual%20Report.ashx.)
- ORD River Resources Ltd., 2014, Annual financial report year ended 30 June 2014: Sydney, New South Wales, Australia, ORD River Resources Ltd., September 30, 85 p. (Accessed June 12, 2015, at <http://vangominer.com.au/wp-content/uploads/reports/Annual%20Report%202014.pdf>.)
- Padaeng Industry Public Co. Ltd., 2015, Annual report and sustainability report 2014: Bangkok, Thailand, Padaeng Industry Public Co. Ltd., August, 158 p. (Accessed September 24, 2015, at http://www.padaeng.com/files/en/report/2015_05/pdf/39076452351994162803.pdf.)

PanAust Ltd., 2014, Annual report 2014: PanAust Ltd., 132 p. (Accessed August 19, 2015, at http://www.panaust.com.au/sites/default/files/reports/PanAust_2014AnnualReport_Shareholders_WEB.pdf.)

Shanghai World State Machinery Co. Ltd., 2015, Laos iron ore processing plant: Shanghai, China, Shanghai World State Machinery Co. Ltd., October 30. (Accessed October 30, 2015, at <http://voris.in/pro/archives/laos-iron-ore-processing-plant.html>.)

The REDD Desk, 2015, Ministry of Natural Resources and Environment (Lao PDR): The REDD Desk. (Accessed June 12, 2015, at <http://thereddesk.org/countries/actors/ministry-natural-resources-and-environment-lao-pdr>.)

Thomson Reuters, 2014, ORD River Resources Ltd. announces change of company name: Thomson Reuters, December 1. (Accessed September 21, 2015, at <http://www.reuters.com/finance/stocks/VAN.AX/key-developments/article/3116768>.)

World Trade Organization, 2013, Laos ratifies membership package, will join WTO on 2 February: Geneva, Switzerland, World Trade Organization, January 3. (Accessed December 2, 2013, at http://www.wto.org/english/news_e/news13_e/acc_lao_08jan13_e.htm.)

TABLE 1
LAOS: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014
Antimony, Sb content	530	1,456	1,042	1,607 ^r	1,239
Barite ^c	17,500 ³	2,500	21,900	10,500 ^{r,3}	30,610
Cement ^c	1,200,000	1,300,000	1,500,000	1,500,000	1,500,000 ^c
Clay, common	1,901,530	609,840	512,587	445,714 ^r	1,656,475
Coal:					
Anthracite	211,721	166,609	133,583	104,260 ^r	110,317
Lignite	501,622	511,700	578,068	403,925 ^r	99,144
Copper:					
Mine output, Cu content	67,806	59,897	63,285	64,885 ³	71,155
Metal, refined	64,241	78,859	86,295	90,030 ³	88,541
Gold, mine output, Au content kilograms	5,061	3,984	6,415	6,838 ³	5,265
Gypsum, mine output	553,396	686,150	578,543	772,138 ^r	707,908
Iron ore:					
Gross weight	50,900	42,700	316,400 ^r	904,757 ^r	1,148,571
Fe content	31,565	26,471	196,172 ^r	560,949 ^r	712,114
Lead, mine output, Pb content	2,270	2,921	4,510	1,000 ^r	--
Limestone	3,106,724	997,591	1,014,000	3,781,176 ^r	773,148
Potash, K ₂ O content	NA	NA	42,798	86,499 ^r	210,983
Salt, rock	13,421	23,395	11,980	6,099 ^r	8,706
Sandstone	3,695,838	339,331	1,214,668	1,211,899	391,186
Silicon, metal, exports	7,792	3,001	15,301	11,972	9,528
Silver, mine output, Ag content kilograms	17,188 ^r	18,038 ^r	20,081 ^r	32,262	39,806
Tin, mine output, Sn content	925	674	762	579 ^r	866
Zinc, mine output, Zn content	1,500 ^r	1,600 ^r	1,600 ^r	1,500 ^r	--

^cEstimated; estimated data are rounded to no more than three significant digits. ^rRevised. NA Not available. -- Zero

¹Table includes data available through October 27, 2015.

²In addition to the commodities listed, crude construction materials (such as sand and gravel and varieties of stone) and sapphire were produced irregularly.

³Reported figure.

TABLE 2
LAOS: 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
Barite	Barite Mining Co., Inthavong Mining Co., Lao Development Construction Co., Phethongkham Co., Oravan Barite Co., and Singphooufar Co.	Muongfuong and Sanakham, Vientiane Province	30,000 ¹
Cement	Lao Cement Co. Ltd., a joint venture between China Yunnan Corp. for International Techno-Economic Cooperation and Lao State Agricultural Industry Development Enterprise Imp-Exp & General Service	Vang Vieng Cement Plant No. I, Vientiane Province	100,000
Do.	do.	Vang Vieng Cement Plant No. II, Vientiane Province	240,000
Do.	Lao Cement Industry Co. Ltd	Thakhek Cement Plant, Khammouane Province	850,000
Do.	Luang Prabang Cement Co. Ltd.	Luang Prabang Cement Plant, Luang Prabang Province, 340 kilometers from Vientiane	100,000
Do.	Wanrong Cement I	Vangvieng, Vientiane Province	78,000
Do.	Wanrong Cement II (Yunnan Industrial Economic Co., 60%, and Agricultural and Forestry Development and Service Co. of Laos, 40%)	do.	200,000
Do.	Wanrong Cement III	Savannakhet Province	200,000
Do.	Zhongyayici Co.	Saravan cement plant, Saravan Province	450,000
Coal:			
Anthracite	Agriculture Industry Development Enterprises	do.	60,000
Lignite	Viengphoukha Coal Mine Co. Ltd.	Viengphoukha, Luangnamtha Province	300,000
Copper:			
Mine output, Cu content	Phu Bia Mining Ltd. (wholly owned subsidiary of PanAust Ltd., 90%, and Government, 10%)	Phu Kham copper-gold operation located in Xaisomboun special zone, 120 kilometers north of Vientiane, Vientiane Province	65,000
Metal, refined	Lane Xang Minerals Ltd. (MMG LXML) (MMG Ltd.), 90%, and Government, 10%	Sepon, Vilabouly District, Savannakhet Province	93,000
Gemstone (sapphire)	carats Bokeo Mining Co. Ltd.	Bokeo Province	300,000
Do.	do. Buhae Industrial Corp.	Houaxay District, Bokeo Province	500,000
Do.	do. Lao International Trade and Service	do.	400,000
Gold, mine output, Au content	kilograms Lane Xang Minerals Ltd. (MMG LXML) (MMG Ltd.), 90%, and Government, 10%	Sepon, Vilabouly District, Savannakhet Province	7,500
Do.	do. Phu Bia Mining Ltd. (wholly owned subsidiary of PanAust Ltd., 90%, and Government, 10%)	Phu Kham copper-gold operation located in Xaisomboun special zone, 120 kilometers north of Vientiane, Vientiane Province	2,000
Do.	do. PanAust Ltd.	Ban Houayxai gold-silver project located approximately 25 kilometers west of the Phu Kham copper-gold operation	3,100
Gypsum	Lao State Gypsum Mining Co. Ltd.	Champhon District, Savannakhet Province	200,000
Do.	Mining Development Economy Cooperation (OEDCD)	Tha Kect District, Khammouane Province	150,000
Do.	Savan Gypsum Mining Co. Ltd.	Champhon District, Savannakhet Province	70,000
Do.	LAVICO Co. Ltd. (a Laos-Vietnam joint venture)	Xebangfay District, Khammouane Province	100,000
Iron ore	Lao SPG CMC Mining Co. Ltd. (a subsidiary of Gimpex Ltd.)	Houaphanh Iron Ore Mine, Xamneua District, Houaphanh Province	25,000
Limestone	Laos Cement Co. Ltd. (a Laos-China joint venture)	Vangvieng, Vientiane Province	250,000
Do.	Agriculture Industry Development Enterprises	do.	150,000
Do.	V.S.K. Co. Ltd.	Tha Kect District, Khammouane Province	150,000
Do.	Phanangnon Co. Ltd.	do.	100,000

See footnotes at end of table.

TABLE 2—Continued
 LAOS: 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
Potash		SinoAgri Mineral Resources Exploration Ltd. (a joint venture between Beijing Jiang Zhi Yuan Investment Ltd. and China National Agricultural Means of Production Group Corp.)	Plant in Sakhon Nakon Basin in the Khammouane Province	100,000
Do.		Laotian Potash Mining Industry Ltd. Co.	Potassium chloride plant, Vientiane Province	50,000
Silver	kilograms	Phu Bia Mining Ltd. (wholly owned subsidiary of PanAust Ltd., 90%, and Government, 10%)	Phu Kham copper-gold operation located in Xaisomboun special zone, 120 kilometers north of Vientiane, Vientiane Province	14,000
Do.	do.	PanAust Ltd.	Ban Houayxai gold-silver project located approximately 25 kilometers west of the Phu Kham copper-gold operation	20,000
Tin, mine output, Sn content		Lao-North Korea Tin Mines	Hinboun District, Khammouane Province	120
Do.		S V Mining Co. Ltd.	do.	300

^eEstimated. Do., do. Ditto.

¹Estimated combined capacity of the six local barite mining companies.