



# 2013 Minerals Yearbook

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**LAOS [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF LAOS

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In 2013, 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.

During 2013, several natural disasters struck Laos, including landslides in the District of Pakbaeng in August and October and Typhoon Nari battered Central Laos in October (Disaster-report.com, 2013; Reliefweb.int, 2013).

## Minerals in the National Economy

In 2013, the industrial sector as a whole, which included the construction, electricity generation, manufacturing, and mining and quarrying sectors, contributed 28.6% to Laos' real gross domestic product (GDP) (at constant 2002 prices) compared with 28.3% in 2012. Specifically, the construction sector contributed 6.8% to the GDP compared with 6.7% in 2012. The mining and quarrying sector contributed about 6.6% to Laos' GDP compared with about 7.0% in 2012 (Bank of the Lao PDR, 2013, p. 5, 25).

## Government Policies and Programs

In July 2013, the National Assembly (Laos' unicameral Parliament) requested that the Central Government implement regulations to govern the small-scale mining industry and mineral extraction projects as a result of allegations that such operations were causing environmental damage and social concerns. The National Assembly suggested stricter measures on the inspection of mining projects and revocation of mining contracts and halting of mining operations if contracts were breached or mining laws and regulations were not followed by the permit holder. These measures were also proposed to apply to mining operations that failed to start operations once approvals and permits were granted. In June 2012, the Government implemented a moratorium and suspended the approval of new mining projects until an effective monitoring system and an appropriate land management system were implemented in the country. The Government projected that it would resume granting new licenses between 2015 and 2016. A similar moratorium was imposed in 2009 as details emerged about licensed projects that had been inactive for extended periods of time and because of findings that mining operations were causing environmental damage (Lao Voices, 2013).

The mineral sector in Laos is governed by the Mining Law of 2008, which has been in the implementation stage since the law's adoption. Meanwhile, the Government has been working towards reforming its legal system to a more standardized and plan-based one and reviewing the laws regarding natural resource management, all of which would affect Laos' trading

system and development of the private sector. The Ministry of Natural Resources and the Environment (MoNRE) is in charge of the compilation and maintenance of a geologic database to more efficiently manage its oversight of exploration and mining projects. Although a moratorium remained in place, the Government did allow for land assessments and surveys (Lao Voices, 2011; Mining Journal Online, 2012).

The Mining Law of 2008 establishes the requirements for obtaining a mining license to develop a mineral project. The MoNRE issues mining licenses and oversees the implementation of the Mining Law, which includes inspecting and monitoring mineral development activities in the country. It also assists in the negotiation of mining contracts and in mineral exploration and mining licensing activities, promotes investment in the mining sector, maintains other geologic databases, and provides mineral exploration support and data analyses (Department of Geology and Mines of Laos PDR, 2010a, b).

## Production

The production of silver increased 55% to 29,715 kilograms (kg) from 19,181 kg in 2012. Based on information compiled using trade data, the production of silicon decreased by about 22% to 11,950 metric tons (t) from 15,301 t (table 1).

## Structure of the Mineral Industry

As of yearend 2011 (the latest year for which data were available), a total of 152 mining companies were operating in Laos, of which 70 were domestically owned and 82 were foreign enterprises. The 152 mining companies operated in 256 mining concessions across the country (Lao Voices, 2011). In 2013, the main producers of copper, gold, and silver in Laos were Lane Xang Minerals Ltd. (MMG LXML), which was a subsidiary of MMG Ltd. of Hong Kong (90% interest) and the Government (10% interest), and PanAust Ltd. of Australia. The country's major mineral industry facilities and their capacities are listed in table 2.

## Mineral Trade

In 2013, total trade in Laos' was reported to be \$5.28 billion compared with \$5.32 billion (revised) in 2012. The country's total exports were valued at about \$2.26 billion compared with \$2.27 billion in 2012. The value of all mineral commodity exports amounted to \$899 million (40% of total exports) and that of electricity exports amounted to \$590 million (26% of total exports). Within the mineral commodities exported, copper was valued at \$681 million, or 30% of total exports, and gold was valued at \$148 million, or 6.5% of total exports. The total value of imports in 2013 decreased by 1.3% to \$3.02 billion from \$3.06 billion in 2012, of which electricity imports

amounted to \$67.8 million (\$63.4 million in 2012), an increase of 7% compared with that of 2012, and gold and silver imports combined amounted to \$8.46 million (Bank of the Lao PDR, 2013, p. 37).

On October 26, 2012, the General Council of the World Trade Organization (WTO) approved Laos' application to join the WTO, 15 years after the country first applied for membership. On January 3, 2013, the Government of Laos informed the WTO that it had ratified its membership, and, on February 2, Laos officially became the 158th member of the organization. During the 15 years of negotiations, Laos implemented significant domestic reforms and adjustments for its WTO membership; additionally, the Government passed more than 90 laws and regulations in the areas of customs valuation, import licensing, intellectual property rights, investments, technical barriers to trade, and trading rights. Laos' membership in the WTO opened the door for the country to join the international trading community, supported by a legal platform; gave it access to other WTO members' markets; and enabled it to become part of a transparent international trading system. By accepting WTO membership, Laos became subject to market access commitments for its goods and services, subsidy limits in agriculture, and tariff ceilings on goods. Laos also committed to engage in bilateral and multilateral negotiations on partnership agreements with nine other WTO members, including Australia, Canada, China, Chinese Taipei (Taiwan), the European Union, Japan, the Republic of Korea, the United States, and Ukraine (World Trade Organization, 2012a, b; 2013a, b).

## 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). In June 2013, ORD announced its decision to exit from the project, although by the end of 2013 the company had not yet started a formal sale process of its shares. According to ORD, the project required investments that were beyond the company's capability. During 2013, NFC, the operator of the project, continued to prepare its proposal to the Government for a mining license for bauxite and a permit to export bauxite and to develop an alumina refinery. NFC expected to receive approval of the permit by mid-2014. SARCO had two tenements on the property for a total of 487 square kilometers (km<sup>2</sup>). They were the Laos Service Incorporation Ltd. (LSI) tenement, which covers a 66-km<sup>2</sup> area and the Yuqida tenement, which covers a 421-km<sup>2</sup> area (ORD River Resources Ltd., 2013, p. 14, 62).

**Copper, Gold, and Silver.**—In 2013, the Sepon copper-gold project produced a total of 90,030 t of copper cathodes, which exceeded the targeted production of 88,000 t for the year, and 1,122 kg of gold, which represented an increase of 4.3% for copper and a decrease of about 48.7% for gold, respectively,

compared with production in 2012. The increase in copper production was mainly owing to productivity improvements. MMG LXML, which was the Sepon project's operator, expected to produce between 88,000 t and 93,000 t of cathode during 2014. The decrease in gold production was caused mainly by low grades of gold. MMG LXML announced in November that it had ceased gold production and placed the gold plant on care-and-maintenance status (MMG Ltd., 2014, 1, 3, 7, 9–10).

PanAust Ltd., through its wholly owned subsidiary Pan Mekong Exploration Pty. Ltd., owned a 90% interest in the Laos-registered company Phu Bia Mining Ltd. (PBM), which managed the Phu Kham copper-gold mine, and the Government owned the remaining 10%. The Government and PBM had a mineral exploration and production agreement that regulated exploration and mining within the company's contracted 2,636-km<sup>2</sup> area. In 2013, the Phu Kham copper-gold mine, which is located approximately 140 kilometer (km) north of the capital city of Vientiane, produced 64,885 t of copper in concentrate, which was an increase of 2.5% compared with that of 2012 (table 1). The mine also produced 2,215 kg of gold, which was an increase of about 20% compared with the 1,851 kg produced in 2012; and 9,883 kg of silver, which was a decrease of 32% compared with the 14,617 kg of silver produced in 2012. In June, the recovery project at the Phu Kham Mine was successfully commissioned and copper and gold recovery rates increased. The upgrade increased the designed processing capacity to 18 million metric tons per year (Mt/yr) of ore from its 2012 capacity of 16 Mt/yr. The company expected the Phu Kham operation to produce between 65,000 t and 70,000 t of copper in concentrate in 2014. PanAust announced further improvements in copper recovery at the Phu Kham project were planned for 2014. In October, the company projected a peak in copper concentrate production of 90,000 t between 2018 and 2019 (PanAust Ltd., 2013, p. 4, 11, 13).

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 operation that produced 3,501 kg of gold and 19,832 kg of silver in 2013, compared with 2,378 kg and 4,564 kg, respectively, in 2012. The increase in silver production was mainly owing to an increase in ore grade. The company was targeting production of more than 3,100 kg of gold in 2013 (PanAust Ltd., 2013, p. 13).

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. During 2013, PanAust focused on the feasibility study to determine the development options for the KTL deposit, which included the development of an open pit mining operation and a processing plant. However, as an alternative the company considered transporting the crushed ore from the KTL deposit to the Phu Kham property for processing (PanAust Ltd., 2013, p. 15).

**Nickel.**—In January, Puying Nickel Co., Ltd. (Hong Kong) (a subsidiary of Qinhuangdao Tonglian Group) signed a cooperative agreement with the Government for a mining license on a 24-km<sup>2</sup> property. The company planned to develop the property to mine nickel. No details were offered as to the

location of the property or the timeline for the development (Antaika Nickel and Stainless Steel Monthly, 2013).

**Zinc.**—In November, Padaeng Industry Public Co. Ltd. of Thailand, through its wholly owned subsidiary Padaeng Industry (Laos) Co. Ltd., announced that it would cease all exploratory activities at its 400-km<sup>2</sup> zinc project in Vientiane Province. Based on extensive assessments of the project, the company decided to cease operations because significant investments were required and an alternative drilling method was needed in order to proceed with the exploration phase of the project. By the end of 2013, the property was put up for sale. In addition, two other zinc prospects owned by Padaeng Industry, which are located in the Kasi and Lamphun Provinces, ceased exploration activities mainly owing to small deposit sizes and because it was not economically feasible for the company to continue exploration (Padaeng Industry Public Co. Ltd., 2014, p. 43, 49).

### *Industrial Minerals*

**Cement.**—By yearend 2013, the Lao-Phatthana Cement Industry Co. (a subsidiary of Souksomboon Group) and Siam Cement Group (SCG) of Thailand agreed to construct a cement plant at Khammouane. The plant, which had an estimated construction cost of \$330 million, would have a production capacity of 1.6 Mt/yr of clinker. The company planned to commission the plant by early 2016. The Government granted Lao-Phatthana a 50-year concession to work in the country (Global Cement, 2013; VietStock, 2013).

**Potash.**—By May, Orient Mining Ltd. of China had finished the drilling of 11 holes that resulted in the discovery of potassium magnesium salt deposits in 8 holes. In addition, Orient Mining also completed the design of the first phase of drilling, a geophysical survey, land negotiations, road paving, and other site preparation work (Orient Mining Ltd., 2013).

In July, the Belarusian Geological Research Institute of the Ministry of Natural Resources and Environmental Protection of Belarus, and the Department of Standardization and Metrology of the Ministry of Science and Technology of Laos signed a memorandum of understanding (MOU) to establish a joint-venture laboratory to study the mineral resources of Laos, in particular, potash. Along with the MOU, Belarus expressed its interest in participating in a project to build a potash fertilizer plant in Laos through a joint venture with the Government. No details on the location or timeframe were available (Belisa.org.by, 2013).

### **Outlook**

Laos' accession to the WTO in February 2013 is expected to enhance the country's economic development, increase foreign direct investments, and attract investment interest from other members of the international trading community. As Laos continues to develop its infrastructure and expands its economic cooperation with other Southeast Asian countries, its demand for construction materials, fertilizers, metals, and fuel minerals is expected to increase. The demand for cement in Laos is expected to reach 3.5 Mt/yr by 2014 and 2015; however, domestic supply falls short of 2 Mt/yr. The high demand

for cement and construction materials is mainly caused by the Government's plans to improve the country's infrastructure, which includes the construction of dams, railway systems, and roads, and the restoration of many hydropower plants nationwide. The construction of new plants is expected to decrease cement imports as the plants are commissioned in the near future (Global Cement, 2013; VietStock, 2013).

Similarly, the production of copper, gold, and silver is expected to increase as major projects and expansions are commissioned in 2014, such as the Phu Kham project. Increases in the production of potash are also expected within the next few years as mines and plants that have been in the construction phase are completed.

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TABLE 1  
LAOS: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2009	2010	2011	2012	2013 <sup>e</sup>
Antimony	887	530	1,456	1,042	1,000
Barite <sup>e</sup>	12,460 <sup>3</sup>	17,500 <sup>3</sup>	2,500	21,900	22,000
Cement <sup>e</sup>	1,000,000 <sup>r</sup>	1,200,000 <sup>r</sup>	1,300,000 <sup>r</sup>	1,500,000 <sup>r</sup>	1,500,000 <sup>r</sup>
Clay, common	1,783,567 <sup>3</sup>	1,901,530	609,840	512,587	515,000
Coal:					
Anthracite	167,447	211,721	166,609	133,583	135,000
Lignite	466,082	501,622	511,700	578,068	580,000
Copper:					
Mine output, Cu content	54,019	67,806	59,897	63,285	64,885 <sup>3</sup>
Metal, refined	67,561	64,241	78,859	86,295	90,030 <sup>3</sup>
Gold, mine output, Au content kilograms	5,033	5,061	3,984	6,415	6,838 <sup>3</sup>
Gypsum	761,331	553,396	686,150	578,543	580,000
Iron ore:					
Gross weight	42,000	50,900	42,700	48,400	50,000
Fe content (62%)	26,095	31,565	26,471	30,000 <sup>e</sup>	31,000
Lead, mine output, Pb content	2,000	2,270	2,921	4,510	4,500
Limestone	1,488,070	3,106,724	997,591	1,014,000	1,000,000
Potash	NA	NA	NA	42,798	45,000
Salt, rock	6,536	13,421	23,395	11,980	12,000
Sandstone	752,781	3,695,838	339,331	1,214,668	1,215,000 <sup>3</sup>
Silicon, metal, exports	7,362 <sup>r</sup>	7,792 <sup>r</sup>	3,001	15,301 <sup>r</sup>	11,950 <sup>3</sup>
Silver, mine output, Ag content kilograms	14,726	15,788	16,738	19,181	29,715 <sup>3</sup>
Tin, mine output, Sn content	598	925	674	762	800
Zinc, mine output, Zn content	4,000	5,000	5,320	5,250	5,500

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. NA Not available.

<sup>1</sup>Table includes data available through January 6, 2015.

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

<sup>3</sup>Reported figure.

Sources: Pan Australian Resources Ltd., Annual Report 2009–13; Minerals and Metals Group Lane Xang Minerals Ltd. (MMG LXML) Quarterly Reports 2009–13.

TABLE 2  
LAOS: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>e</sup>
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 <sup>1</sup>
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 of 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. (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 km 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 (OECD)	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 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity <sup>c</sup>
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 km west of the Phu Kham copper-gold operation	20,000
Tin, mine output, Sn content		Lao-North Korea Tin Mines	Hinboune District, Khammouane Province	120
Do.		S V Mining Co. Ltd.	do.	300
Zinc, mine output, Zn content		Padaeng Industry Public (Laos) Co. Ltd. [Majority interest owned by Padaeng Industry (Public) Co. Ltd., and minority interest owned by the Government]	Kaiso, Vangvieng, Vientiane Province	5,000

<sup>c</sup>Estimated. Do., do. Ditto.

<sup>1</sup>Estimated combined capacity of the six local barite mining companies.