



# 2010 Minerals Yearbook

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## CAMBODIA

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# THE MINERAL INDUSTRY OF CAMBODIA

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In 2010, industrial minerals dominated the production of minerals in Cambodia. They included sand and gravel and crushed stone consumed domestically by the construction industry, and limestone, which was used for the production of cement.

## Government Policies and Programs

The Ministry of Industry, Mines and Energy (MIME), which implements Cambodia's mineral law and policy, is the Government entity that leads the effort to promote and develop the industrial sector in the country. The Department of Geology and Mines and the Department of Energy, which are both under the MIME, coordinate the development of the energy and mineral sectors (Investincambodia.com, 2009).

The policy governing foreign direct investment (FDI) in the country is based on the Law on Investment of the Kingdom of Cambodia, which was enacted in 1994. The objective of the law is to restructure, simplify, and more efficiently manage foreign investments in the country. These efforts included modernizing the legal structure that supports commercial activities, strengthening and organizing Government departments, and enacting laws and regulations to support business activities in Cambodia. The law provides competitive concessions and incentives for FDI and also provides comparable treatment to domestic and foreign investors, with the exception of land ownership, which, in accordance with the country's Constitution, is restricted to Cambodian nationals. Foreign investors are allowed to lease the land for a period of up to 70 years with the option to renew from then on. The investment law also allows foreign investors to own 100% of their mining investments in the country, and guarantees that foreign-owned assets will not be nationalized and that the prices for goods produced and services provided by the investors will not be regulated. Under the investment law, the Government created the Council for the Development of Cambodia (CDC), which oversees the investment policy and assists investors in all the aspects related to doing business in the country. The CDC, through the Cambodian Investment Board, processes and evaluates all proposals for exploration and is required to respond to each application within 45 days of submittal, after which the CDC grants an exploration license. If exploration is successful, the CDC grants a mining license to the investors; a mining project plan or proposal is required as a condition for acquiring a mining license (Investincambodia.com, 2010a).

The Government was starting to consider the possibility of building its first nuclear powerplant to ensure a sufficient supply of energy to cover the increasing demand in the country. The Government, through the MIME, proposed to work with the Association of South East Asian Nations (ASEAN) and the International Atomic Energy Agency to obtain advice on safety procedures, plant operation, maintenance, and waste disposal

management. At present, Cambodia uses coal-fired powerplants and diesel-powered generators as the main sources of energy production. The Government was envisioning having a nuclear powerplant built by 2020. The Government indicated that it was aware of some of the challenges posed by switching to nuclear power, including the requirements for technology, trained personnel, financing, and the acquisition of materials (Steelguru.com, 2010).

## Production

The Department of Mineral Resources of Cambodia reported that the output of industrial minerals in 2010 was more than twice that of 2009. The production of sand used as construction material increased to about 38.4 million metric tons (Mt) in 2010 from about 14 Mt in 2009. The production of laterite increased by 156% to about 1.6 Mt in 2010 from 631,000 metric tons (t) in 2009; production of stones used for construction materials increased by about 125% to 6.3 Mt from 2.8 Mt in 2009; and production of gravel increased by 97% to 82,500 t from 41,875 t in 2009 (table 1).

## Structure of the Mineral Industry

In 2010, nearly 60 domestic and foreign companies held mining and exploration licenses in Cambodia. Among the foreign companies that held mining exploration licenses were OZ Minerals Ltd. and Southern Gold Ltd. of Australia; Japan Oil, Gas, and Metals National Corp. (JOGMEC) of Japan; and KenerTec Resources Co., Ltd. of the Republic of Korea. Table 2 is a list of major mineral industry facilities.

## Commodity Review

### Metals

**Bauxite and Alumina.**—In 2010, the Vietnam National Coal and Mineral Industries Group (Vinacomin) started a 2-year exploration program in Cambodia with the objective of identifying bauxite ore. Vinacomin was targeting an area in Mondol Kiri Province that covers 1,500 square kilometers (km<sup>2</sup>). The area is located in eastern Cambodia adjacent to the border with Vietnam's Dak Nong Province, where bauxite ore resources have been discovered in the past (Investincambodia.com, 2010b).

**Gold.**—In 2010, OZ Minerals held four exploration tenements in Mondol Kiri Province. The most advanced project was the Okvau gold project, where, after extensive exploration had been conducted that included geologic mapping, surface sampling, and drilling, a gold mineralized system had been identified within the 440-km<sup>2</sup> tenement area. In March, OZ Minerals announced initial inferred mineral resources of 8.1 Mt

grading 2.3 grams per metric ton (g/t) gold for an estimated 18,800 kilograms (kg) (reported as 605,000 troy ounces) of gold at a cutoff of 0.5 g/t. The company started exploration in the country in 2006 and since then had conducted nearly 10,600 meters of drilling. The company was also exploring in areas adjacent to the Okvau gold project, specifically the O-Khlekk Khlok and the Phnom Peam Louk polymetallic projects (Thompson, 2010; OZ Minerals, 2011a, p. 1; 2011b, p. 14).

Southern Gold held a total of seven exploration licenses for gold and base metals in an area covering 1,500 km<sup>2</sup> located in several Provinces in eastern Cambodia. The tenements were distributed within five main projects—the Kratie North, the Kratie South, the Memot, the Phnum Romdul, and the Srae Pok. In 2010, Southern Gold (72.6% interest) explored the two tenements within the Kratie South project—the Preak Khlung and the O'Khtung—with JOGMEC (27.4%) as part of a joint-venture agreement. Within the agreement, JOGMEC was to fund 100% of the exploration for gold and base metals with an expenditure commitment of \$4.5 million for a 3-year period in order to earn 51% interest in the tenements. As for the remaining five tenements, they were wholly owned by Southern Gold. In 2011, Southern Gold planned to continue its exploration program in the area, which included drilling and trenching, stream sediment and soil sampling, and the creation of geologic maps for the area to identify high-grade gold intersections, mainly in the Kratie South project (Southern Gold Ltd., 2011, p. 12, 13, 17).

Indochine Mining Ltd. of Australia held two copper and gold exploration projects in Cambodia. The projects were the Kratie project, which is located in the Province of Kracheh (also known as Kratie), and the Ratanakiri project, which is located in the northeastern Province of Rotanakiri (also known as Ratanakiri). The two projects combined covered an area of about 4,300 km<sup>2</sup> (Indochine Mining Ltd., 2011).

**Iron Ore.**—In 2010, the Hoang Anh Gia Lai Group (HAGL Group) of Vietnam acquired a license to explore and survey an iron ore mine in Cambodia. By the end of 2009, the HAGL Group signed a cooperation agreement with the MIME to survey the iron ore mine site, which is located in the Quayday District in the Province of Rotanakiri. The property covered an area of 154 km<sup>2</sup> and had an estimated reserve of 30 Mt of iron ore (Hoang Anh Gia Lai Group, 2010, 2011).

### **Industrial Minerals**

**Cement.**—In December 2010, the national company Chip Mong Group signed a \$200 million joint-venture agreement with Siam City Cement Plc. of Thailand to build Cambodia's second cement factory. The new cement factory was to be built in the Province of Kampot and would have an estimated annual capacity ranging from 1 to 1.5 Mt of cement. Cambodia's sole operating cement factory, which was commissioned in 2008, was also located in Kampot. The construction of the new facility was scheduled to start in 2011 and was expected to be completed within 2 years (Cemnet.com, 2010).

### **Mineral Fuels**

**Natural Gas and Petroleum.**—Chevron Corp. of the United States operated the offshore oilfield Block A, which is located about 200 kilometers (km) off the coast of Cambodia in the Gulf of Thailand. Chevron held a 30% interest in the Block, which covers 4,709 km<sup>2</sup>. In 2010, the company drilled three exploration wells successfully in Block A, but by the end of the year, no proven reserves were determined. In September 2010, the company submitted a request to the Government for a 30-year production permit; the company expected to receive a response by mid-2011. Chevron also held other offshore interests in the Cambodia-Thailand overlapping claim zone in the Gulf of Thailand, which was under a maritime boundary dispute between the countries. The company's interests in the zone ranged from 30% to 80%, but owing to the unresolved boundary issue, the area remained inactive as of 2010 with the exception of Block A (Chevron Corp., 2011a, p. 27–28; 2011b, p.1).

In May 2010, the Cambodian National Petroleum Authority and JOGMEC signed a memorandum of understanding to cooperate in the oil and gas sector. Under the agreement, JOGMEC would carry out a feasibility study in an area that covers 6,500 km<sup>2</sup> in the Tonle Sap basin in search for oil reserves. The area had what was considered Southeast Asia's largest freshwater lake. The study was to be carried out within the basin, in Block 17, which is located about 200 km northwest of the country's capital of Phnom Penh in the Province of Kampong Thum (Energy-pedia.com, 2010; Japan Oil, Gas, and Metals National Corp., 2010; Upstreamonline.com, 2010).

### **Outlook**

During 2010, Cambodia signed several bilateral cooperation agreements with various neighboring countries as well as other Asian countries. The agreements, which in many cases turned into multimillion-dollar investments in the mining sector, involved investors from Australia, Japan, Thailand, the United States, Vietnam, and others. The cooperation efforts could potentially open the country to more opportunities for investment in the near future. As the economy of Cambodia and those of neighboring countries are developed, the demand for cement and other industrial mineral commodities will most likely increase, both domestically and regionally. The Government of Cambodia is considering mining exploration activity as an opportunity to make future mining of key mineral commodities possible to ease Cambodia's dependence on imported goods, such as cement and energy. By 2020, the Government is aiming to supply electricity to at least 70% of Cambodia's population.

Another challenge that the Government faces is the country's lack of proper infrastructure. For the immediate future, it is expected that the mineral industry of the country will be dominated by the production of industrial minerals as the country tackles those challenges. Exploration for metals is expected to increase as well, because of the recent discovery by OZ Minerals of a gold mineralized system.

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

(Metric tons)

Commodity <sup>2</sup>	2006	2007	2008	2009	2010
Cement	--	86,990	772,029	933,900 <sup>f</sup>	789,025
Gravel	45,625	36,250	37,500 <sup>e</sup>	41,875	82,500 <sup>e</sup>
Laterite, blocks	--	312,718	454,750	631,000	1,612,500
Salt	59,000	76,651	78,000 <sup>e</sup>	NA	NA
Sand, construction material	2,043,500	329,028	6,581,500	14,035,775 <sup>f</sup>	38,367,500
Stones:					
Crude construction material	676,832	1,433,086	2,039,336	2,819,804 <sup>f</sup>	6,331,000
Limestone <sup>e</sup>	--	1,000,000	1,000,000	1,000,000	1,000,000

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

<sup>1</sup>Table includes data available through December 13, 2011.

<sup>2</sup>In addition to the commodities listed, clay, gemstones, gold, and iron ore are presumably produced, but available information is inadequate to make reliable estimates of output.

Source: Cambodia's Ministry of Industry, Mines and Energy, General Department of Mineral Resources; U.S. Geological Survey Minerals Questionnaires for Cambodia 2006–10.

TABLE 2  
CAMBODIA: STRUCTURE OF MINERAL INDUSTRY IN 2010

(Thousand metric tons)

Commodity	Main operating companies and main equity owners	Location of main facilities	Annual capacity <sup>e</sup>
Cement	Kampot Cement Co. Ltd. (a joint-venture between Siam Cement Group of Thailand, 90%, and Khaou Chuly Group, 10%)	Touk Meas District, Kampot Province	1,000
Gemstones	Jirech International Cambodia Construction and Import-Export Co. Ltd.	Anlong Krapeu-Preak Bey, Samlot District, Batdambang Province	NA
Do.	Seoul Digem Cambodia Co. Ltd.	Loamphat District, Rotanakiri Province	NA
Do.	Sonuba Cahm Industries Co. Ltd.	Phnom Trop, Pailin City	NA
Do.	Ultra Marine Kiri (Cambodia) Ltd.	Pating Thom Village, Ting Chak Commune, Borkeo District, Rotanakiri Province	NA
Do.	do.	Sen Chauv, Samlot District, Batdambang Province	NA
Granite	TTY-Rithy Mexico	Svay Chreas District, Kracheh Province	NA
Limestone	Kampot Cement Co. Ltd.	Tatung, Kampot Province	1,500
Do.	Thai Boon Roon Cement Co. Ltd.	Phnom Laang Laan Commune, Donghtung District, Kampot Province	NA
Do.	United International (Cambodia) Foreign Investment Group Co. Ltd.	East Touk Meas, Banteay Meas District, Kampot Province	NA

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.