



# 2015 Minerals Yearbook

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**TAIWAN [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF TAIWAN

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Taiwan is an island with limited mineral resources. In 2015, Taiwan's real gross domestic product (GDP) increased by 0.65% to \$472 billion<sup>1</sup> [15,616 billion Taiwan new dollars (TWD)] compared with a 3.9% increase in 2014. The county's economy relied heavily on exports and, therefore, depended considerably on world market demand. Mineral products accounted for about 8% of exports. China (excluding Hong Kong) was the leading destination of Taiwan's exports, accounting for 25% of exports, followed by Hong Kong, 13%; the United States, 12%; and Japan, 6%. Exports to European Union (EU) member countries accounted for 8% of Taiwan's exports (Directorate General of Budget, Accounting and Statistics, 2016, p. 76, 94–95; Bureau of Trade, 2017a, b).

## Minerals in the National Economy

The mining and quarrying industry made up only a small portion of Taiwan's economy and accounted for about 0.2% of the GDP in 2015. As of yearend, 185 mines and quarries were operational and about 2,700 people were employed in the mining and quarrying industry. Taiwan had no domestic primary aluminum, copper, lead, or zinc smelting capacity; therefore, downstream metal producers relied on imports of ingots and scrap to produce products from these metals (Bureau of Mines, 2016; Directorate General of Budget, Accounting and Statistics, 2016, p. 76, 114).

## Production

Marble, natural gas, and sulfur remained the country's most valuable mineral commodities. Production of several industrial minerals decreased in 2015, such as that of limestone, which decreased by 96%; kaolin, by 60%; lime, by 19%; marble, by 12%; and cement, by 7.9%. Talc production increased by 22% in 2015; however, it remained far below the 2012 production level. Production of mica, which began in 2014, increased by 65% in 2015. Production of crude petroleum increased by 26%, whereas production of natural gas decreased by about 3.4%. Crude steel production decreased by 7%, whereas pig iron production remained about the same (Bureau of Mines, 2016).

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

## Commodity Review

### Metals

**Iron and Steel.**—Taiwan did not produce iron ore domestically owing to a lack of resources, and it relied on imports from Brazil and Canada to support its steel industry. In 2015, Taiwan

produced 21.4 million metric tons (Mt) of steel and was the fifth-ranked crude steel producer in Asia, behind China, Japan, India, and the Republic of Korea. The value of iron and steel exports fell by nearly 25% in 2015. This was the largest decrease in iron and steel exports since 2009. This decrease was attributed to lower global steel prices and the expansion of China's steel production capacity. The quantity of iron and steel exports to China and Hong Kong decreased by 14% and 50%, respectively. Taiwanese steel exports to Europe were affected by a 12% tariff placed on cold-rolled flat stainless steel from Taiwan in March by the EU. The quantity of iron and steel exports to European countries (including EU member countries and European countries not in the EU) decreased by about 23% in 2015 (Blenkinsop, 2015; China Post, The, 2015; World Steel Association, 2016, p. 2; Bureau of Trade, 2017a, b).

### Industrial Minerals

**Cement.**—In 2015, Taiwan produced about 13.4 Mt of cement, which was the lowest level of production in more than two decades. The 7.9% decrease in cement production could be attributed to the lowering of cement prices on the world market in response to an oversupply in China. The two leading cement producers in Taiwan—Asia Cement Corp. and Taiwan Cement Corp. (TCC)—controlled about 75% of the country's cement market. Asia Cement operated two cement plants in Hsinchu and Hualien Counties. TCC operated two cement plants in Hualien and Yilan Counties, as well as one plant in Keelung City. In 2015, Taiwan exported about 3.2 Mt of cement, which was a decrease of about 7.7% compared with that of 2014. Imports of cement decreased by 1.4 Mt, or by about 2.3% compared with those of 2014 (Flannery, 2015; Bureau of Mines, 2016; Bureau of Trade, 2017a, b).

### Mineral Fuels and Related Materials

**Coal.**—Domestic coal production in Taiwan ceased more than a decade ago; therefore, Taiwan relied on imports to meet demand. Taiwan imported about 67 Mt of coal, which was just under a 0.5% decrease compared with that of 2014. Australia supplied about 47% of Taiwan's coal imports, followed by Indonesia, which supplied about 37%. In 2015, power generation accounted for 41% of domestic consumption; coking coal production, 23%; the basic metals industry, about 4%; and the cement industry, about 2%. Since 2000, coal accounted for between 28% and 31% of all energy consumption in Taiwan annually. In 2015, the Government approved an amendment to the Electricity Act proposed by the Ministry of Economic Affairs. The amendment would split Taiwan Power Co. (Taipower) into two independently managed companies—a power generation company and an electrical grid company. The proposed split was to take place

<sup>1</sup>Where necessary, values have been converted from Taiwan new dollars (TWD) to U.S. dollars at the rate of TWD33.089=US\$1.00, for 2015.

within 5 to 9 years (Chao, 2015; Bureau of Energy, 2016a; Directorate General of Budget, Accounting and Statistics, 2016, p. 117; Bureau of Trade, 2017a, b).

**Natural Gas and Petroleum.**—In 2015, Taiwan produced about 374 million cubic meters of natural gas domestically and 1.3 billion cubic meters of natural gas that was converted from imported liquid natural gas. Residential use accounted for about 52% of all natural gas consumption in Taiwan; industrial use, about 26%; commercial use, about 20%; and cogeneration, about 0.3%. Natural gas made up a steadily increasing percentage of Taiwan's energy consumption during the past two decades, accounting for 13.3% in 2015 compared with 7.7% in 2006 and 5.2% in 1996. Owing to limited mineral fuel resources, Taiwan produced less than 1% of its petroleum requirements and relied on imports to meet the remaining demand. The industrial sector accounted for about 4.4% of Taiwan's domestic consumption. Within the industrial sector, the nonmetallic mineral products industry accounted for just over 13% of the sector's petroleum consumption; the basic metals industry accounted for an additional 13%; and the mining industry accounted for only 1.8%. Since 2000, crude petroleum and petroleum refinery products accounted for between about 46% and 52% Taiwan's total annual energy supply (Bureau of Energy, 2016b, c; Directorate General of Budget, Accounting and Statistics, 2016, p. 117).

## Outlook

Owing to Taiwan's limited mineral resources, the mineral sector has little effect on the country's overall economy. The iron and steel and nonferrous metals sector, which relies on imports, is sensitive to the global prices of raw materials. Rising production costs and tightening environmental regulation may cause nonferrous metals and steel producers to relocate facilities to mineral-rich countries. China remained Taiwan's leading trading partner in 2015 and will likely continue to be important to Taiwan's economy, which is heavily dependent on trade, for the foreseeable future.

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

(Metric tons unless otherwise specified)

Commodity	2011	2012	2013	2014	2015	
<b>METALS</b>						
<b>Iron and steel:</b>						
Pig iron	thousand metric tons	12,718 <sup>r</sup>	11,785 <sup>r</sup>	13,319 <sup>r</sup>	14,400	14,370
Steel, crude	do.	20,178 <sup>r</sup>	20,664 <sup>r</sup>	22,282 <sup>r</sup>	23,121 <sup>r</sup>	21,392
<b>INDUSTRIAL MINERALS</b>						
Cement, hydraulic	thousand metric tons	16,852	15,808	16,554	14,592	13,445
Kaolin		16,936	26,376	15,963	1,808	732
Lime		318,064	286,808	282,057	260,717	211,230
Mica		--	--	--	5,016	8,287
Silica sand		173,354	58,157	61,718	131,652	132,469
Sodium compounds, caustic soda		1,693,241	1,727,597	1,738,858	1,707,262	1,705,451
<b>Stone:</b>						
Dolomite		67,459	47,488	37,755	22,196	22,349
Limestone		7,144	6,357	9,079	30,055	1,094
Marble	thousand metric tons	24,365	22,540	21,729	20,568	18,035
Serpentine		76,890	60,663	93,610	137,959	133,965
Sulfur		219,975	231,296	192,292	195,280	211,219
Talc		659	778	362	133	162
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Gas, natural, gross	million cubic meters	330	442	381	387	374
Petroleum, crude	thousand 42-gallon barrels	71	72	66	57	72

<sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through August 31, 2016.

TABLE 2  
TAIWAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity <sup>c</sup>	
Cement	Asia Cement Corp.	Hsinchu County	1,800	
Do.	do.	Hualien County	4,020	
Do.	Chia Hsin Cement Corp.	Kaohsiung County	1,860	
Do.	Chien Tai Cement Co. Ltd.	do.	1,720	
Do.	Lucky Cement Corp.	Taoyuan County	2,000	
Do.	Southeast Cement Corp.	Kaohsiung	1,090	
Do.	do.	Chutung	1,400	
Do.	Taiwan Cement Corp. (TCC)	Keelung City	1,600	
Do.	do.	Hualien County	5,600	
Do.	do.	Yilan County	3,400	
Do.	Universal Cement Corp.	Kaohsiung City	1,550	
Iron and steel:				
Pig iron	China Steel Corp.	do.	9,900	
Do.	Dragon Steel Corp. (China Steel Corp.)	Taichung City	6,200	
Steel, crude	An Feng Steel Co. Ltd.	Kaohsiung City	2,000	
Do.	China Steel Corp.	do.	9,900	
Do.	Dragon Steel Corp. (China Steel Corp.)	Taichung City	6,200	
Do.	Hai Kwang Enterprise Corp.	Kaohsiung City	600	
Do.	Tang Eng Stainless Steel Plant	do.	300	
Do.	Yieh Hsing Enterprise Co. Ltd.	do.	450	
Do.	Yieh Phui Enterprise Co. Ltd.	do.	1,300	
Do.	Yieh United Steel Co.	do.	1,000	
Do.	Feng Hsin Iron and Steel Co. Ltd.	Taichung City	1,200	
Mica	Xingyang Mining Co., Ltd.	Taoyuan City	10	
Nickel	Taiwan Nickel Refining Corp.	Kaohsiung City	14	
Petroleum:				
Crude	thousand 42-gallon barrels	CPC Corp. Taiwan	Chuhuangkeng and Tungtuchiaio fields	100
Refinery products	do.	do.	Kaohsiung City	570
Do.	do.	do.	Taoyuan City	200
Do.	do.	Formosa Plastics Group	Yunlin County	450
Sulfur		China Petrochemical Development Corp.	Taipei City	280

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto.