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2014 Minerals Yearbook

TAIWAN [ADVANCE RELEASE]

U.S. Department of the Interior
U.S. Geological Survey

July 2017

The Mineral Industry of Taiwan

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Taiwan is an island with a limited amount of mineral resources. In 2014, Taiwan's gross domestic product (GDP) increased by 3.8% to about $530 billion compared with an increase of 2.2% (revised) in 2013 and 2.1% (revised) in 2012. The mining and quarrying sector accounted for a 0.1% share of the GDP. The service sector accounted for about 64% of the GDP, and the industrial sector accounted for about 34%. Taiwan's economy was export oriented and depended on world demand and commodity prices. The total value of exports increased by 2.7% in 2014 compared with that of 2013. Exports from Taiwan to Central America increased by 7.9%; those to North America, by 6.7%; the Middle East, by 6.5%; Europe, 3.1%, and Asia, 2.6%. Exports from Taiwan to South America decreased by 7.7%, and those to Africa decreased by 16.9%. China (including the Hong Kong Special Administrative Region) was the leading destination for Taiwan's exports and received 39.7% of the total value of its exports, followed by the United States, which received 11.1%. Electronics, machinery, and petrochemicals remained Taiwan's leading export commodities. Mineral products accounted for 10% of the total value of exports (Bureau of Foreign Trade, 2015; Taiwan Statistical Bureau, 2015).

Minerals in the National Economy

Mineral resources of significance included metallic minerals, such as copper, gold, iron, and silver; nonmetallic minerals, such as dolomite, fire clay, limestone, marble, serpentine, silica sand, sulfur, and talc; and mineral fuels, such as coal, natural gas, and petroleum. After several decades of mining, however, nearly all recoverable coal, metallic minerals, and talc had been depleted. The output of the mineral industry, which accounted for a very small portion of Taiwan's economy, was less than 1% of total industrial production. In 2014, Taiwan had a total of 254 mines (excluding offshore mines) on the island, of which 189 mines (74.4% of the total) were active, including 1 new mine located in Tainan City that was established to explore for natural gas; 59 mines (23.2%) were inactive; and 6 mines (2.4%) had suspended operations. As of the end of 2014, 2,757 people were employed in the mineral industry (Bureau of Mines, 2015, p. 15–16; Taiwan Statistical Bureau, 2015).

Production

Limestone and marble were mined on the eastern part of Taiwan, and natural gas and petroleum were produced on the western part of the island. Sulfur was the island's most valuable mineral commodity other than natural gas and marble. Because the island had no domestic primary aluminum, copper, lead, or zinc smelting capacity, downstream metal producers relied on imports of ingots and scrap to produce products from these metals. Owing to high labor costs, environmental problems, and weak internal demand, the output of these industries had decreased gradually during the past several years, and companies had moved their manufacturing facilities to mainland China and to countries in Southeast Asia. In 2014, production of limestone, natural gas, serpentine, silica sand, and sulfur increased, but that of marble and petroleum decreased (table 1; Bureau of Mines, 2015, p. 18).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Aluminum.—In 2014, Taiwan produced 352,650 metric tons (t) of aluminum and aluminum alloy ingots, 191,967 t of fabricated aluminum, and 166,481 t of aluminum sheet. CS Aluminum Corp. [a subsidiary of China Steel Corp. (CSC)] began its Phase II expansion project in 2011, which was expected to increase its production of aluminum products. Upon completion in 2014, the company reached a production capacity of 266,000 metric tons per year of aluminum (CS Aluminum Corp., 2015; Ministry of Economic Affairs, 2015).

Copper.—In 2014, Taiwan did not produce refined copper and relied on imports to meet its copper demand. The country processed or produced 103,656 t of copper alloy bar; 104,670 t of copper foil; 105,597 t of copper alloy wire; and 168,728 t of fabricated copper. Refined copper was imported mainly from Australia, Chile, the Democratic Republic of the Congo [Congo (Kinshasa)], Japan, and Peru; copper alloy was imported from Japan, the Republic of Korea, Russia, and Ukraine. The electronics sector was the major consumer of copper and copper products on the island (Ministry of Economic Affairs, 2015).

Iron and Steel and Iron Ore.—In 2014, Taiwan produced 5,651 t of steel ingot; 52,940 t of iron pipe; and about 22.5 million metric tons (Mt) of carbon steel slabs and billets. The increased steel production was attributable to the 2013 startup of a new blast furnace by Dragon Steel Corp., which was a subsidiary of CSC (Ministry of Economic Affairs, 2015).

CSC was the only integrated iron and steel producer on the island and had invested $6.7 billion to increase the company's output capacity to 20 million metric tons per year (Mt/yr) during the next several years. The company's subsidiary, Dragon Steel, had completed the construction of a 2.5-Mt/yr blast furnace in 2010 and the installation of a second 2.5-Mt/yr blast furnace in 2013. In 2014, it was in the process of completing its Phase II expansion project to increase its capacity to 6.2 Mt/yr of crude steel, of which 1.2 Mt/yr of crude steel would be produced from an electric arc furnace. CSC and Dragon Steel combined had a total output capacity of more than 16 Mt/yr of crude steel (China Steel Corp., 2014).

Taiwan had no iron ore resources and relied on imports, mainly from Australia, Brazil, and Canada, to meet its iron ore demand. Imports of iron ore were expected to continue to increase as Dragon Steel's operations expanded. During the past several years, CSC had made efforts to secure iron ore resources from abroad. A consortium between CSC's subsidiary CSC Steel Australia Holding Pty Ltd. and Pohang Iron and Steel Corp. (POSCO) of the Republic of Korea had invested $290 million and acquired a 3.95% share of ArcelorMittal Mines' iron ore project in Canada in 2013. CSC and POSCO combined held a 15% stake in the ArcelorMittal Mines iron ore project. CSC would receive 1 Mt/yr of iron ore from ArcelorMittal Mines as part of the acquisition agreement (ArcelorMittal Mines Canada, 2013).

Industrial Minerals

Cement.—Most of Taiwan's cement producers were located on the eastern part of the island and together accounted for more than 80% of the country's total cement output capacity. Owing to a lack of limestone resources and a limited market on the island, many local cement producers gradually moved their production facilities to mainland China in the late 1990s to expand their output capacities. In 2014, Taiwan's output capacity of cement was about 26 Mt/yr; it produced about 15 Mt, and it consumed about 13 Mt. About 3 Mt of cement was exported to Ghana, Indonesia, Malaysia, Mauritius, Singapore, the United States, and other countries. Taiwan's cement consumption had decreased gradually to a low of about 12 Mt/yr in recent years from 28 Mt/yr in the 1990s; cement exports had increased to 4.26 Mt in 2013 and decreased to 3 Mt in 2014. Imported cement came from China, Japan, the Republic of Korea, and Vietnam; the quantity of imports had been about 1.37 Mt/yr in both 2012 and 2013, and decreased to 1.25 Mt in 2014. Cement prices remained relatively stable from 2013 to 2014 at $4.60 per 50-kilogram bag (Global Cement Report, The, 2015, p. 338–339)..

Mineral Fuels and Related Materials

Coal.—Coal was no longer mined in Taiwan, which depended on imports to meet its demand. Taiwan Power Co. was the leading coal consumer followed by the cement and iron and steel sectors. In 2014, Taiwan's total coal supply was 65.78 Mt and its consumption was 63.86 Mt. Coal imports decreased by 0.24% in 2014 from the amount imported in 2013; about 48% of the imported coal was used for power generation, about 27% was used for coking coal production, and about 4% was used for basic metal production. Thermal coal was imported mainly from Australia, China, Indonesia, Russia, and South Africa (Bureau of Energy, 2015a).

Natural Gas and Petroleum.—In 2014, Taiwan produced 387 million cubic meters of natural gas, of which residential use accounted for about 52%; industrial use, about 27%; services, about 20%; and power generation, about 0.3%. The total amount of imported liquefied natural gas (LNG) was 17.7 billion cubic meters, and the total consumption of LNG was 16.5 billion cubic meters, of which power generation accounted for about 86%; industrial use, about 11%; services, about 2%; and residential use, about 0.3%. With limited mineral fuel resources, Taiwan produced less than 1% of its petroleum requirements and relied on imports to meet the remaining demand—mainly through long-term contracts with Angola, Iraq, Kuwait, Oman, Saudi Arabia, and the United Arab Emirates (Bureau of Energy, 2015b).

Outlook

Taiwan's economic growth is heavily dependent on external trade. The economic recovery in the United States and other developed countries is expected to increase the demand for Taiwan's exports. Given the island's limited mineral resources, the mineral sector is expected to have only a minimal effect on its economy in the future. The growth of mineral commodity manufacturing relies on imports of raw materials to support Taiwan's iron and steel and nonferrous metals sectors. The prices of the raw materials affect the volume and value of production. The tightening environmental regulations could cause nonferrous metals and steel producers to relocate their production facilities to mineral-rich countries with lower labor costs. The Taiwan authorities proposed a new law governing the oversight of cross-Strait agreements in early 2014 that would delay implementation of any additional economic arrangements with China (U.S. Central Intelligence Agency, 2015). Economic growth in Taiwan is expected to increase slowly during the next few years and to be more dependent on the economic growth in the Asia and the Pacific region.

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TABLE 1
TAIWAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2010	2011	2012	2013	2014
METALS						
Iron and steel:						
Pig iron	thousand metric tons	9,358	12,940	11,800	13,400	14,400 e
Steel, crude	do.	18,975	21,640 r	19,927	21,466	22,511
INDUSTRIAL MINERALS						
Cement, hydraulic	thousand metric tons	16,301	16,852	15,808 r	16,554 r	14,592
Lime		321,561 r	318,064 r	286,808 r	282,057 r	260,717
Mica		--	-- r	-- r	-- r	5,016
Silica sand		305,882	173,354	58,157	61,718	131,652
Sodium compounds, caustic soda		1,782,680	1,693,241	1,727,597	1,738,858 r	1,707,262
Stone:						
Dolomite		117,466	67,459	47,488 r	37,755 r	22,196
Limestone		50,550 r	7,144 r	6,357 r	9,079 r	30,055
Marble (raw material)	thousand metric tons	25,134 r	24,365 r	22,540 r	21,729 r	20,568
Serpentine (raw material)		110,805 r	76,890 r	60,663 r	93,610 r	137,959
Sulfur		231,700	219,975	231,296	192,292 r	195,280
Talc		360	659 r	778 r	362 r	133
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural, gross	million cubic meters	296 r	330	442	381 r	387
Petroleum, crude	thousand 42-gallon barrels	89 r	71	72	66	57

eEstimated; estimated data are rounded to no more than three significant digits. rRevised. do. Ditto. -- Zero.

[1]Table includes data available through October 26, 2015.

TABLE 2
TAIWAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilitites	Annual capacity[e]
Cement	Asia Cement Corp.	Hsinchu	1,800
Do.	do.	Hualien	4,020
Do.	Chia Hsin Cement Corp.	Kaohsiung	1,860
Do.	Chien Tai Cement Co. Ltd.	do.	1,720
Do.	Lucky Cement Corp.	Tungao	2,000
Do.	Southeast Cement Corp.	Kaohsiung	1,090
Do.	do.	Chutung	1,400
Do.	Taiwan Cement Corp.	Hualien	1,600
Do.	do.	Hualien Hsien	5,600
Do.	do.	Suao	3,400
Do.	Universal Cement Corp.	Kaohsiung	1,550
Iron and steel:			
Pig iron	China Steel Corp.	do.	9,900
Do.	Dragon Steel Corp. (China Steel Corp.)	Taichung	6,200
Steel, crude	An Feng Steel Co. Ltd.	Kaohsiung	2,000
Do.	China Steel Corp.	do.	9,900
Do.	Dragon Steel Corp. (China Steel Corp.)	Taichung	6,200
Do.	Feng Hsin Iron and Steel Co. Ltd.	Kaohsiung	1,200
Do.	Hai Kwang Enterprise Corp	do.	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
Marble	Taiwan Marble Co., Ltd.	Panchiao	15
Nickel	Taiwan Nickel Refinery	Kaohsiung	14
Petroleum:			
Crude thousand 42-gallon barrels	Chinese Petroleum Corp.	Chuhuangkeng and Tungtzuchiao	850
Refinery products do.	do.	Kaohsiung	570
Do. do.	do.	Taoyuan	200
Do. do.	Formosa Plastics Group	Yunlin	450
Sulfur	China Petrochemical Development Corp.	Taipei	280

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto.