

2017–2018 Minerals Yearbook

ICELAND

THE MINERAL INDUSTRY OF ICELAND

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Note: In this chapter, information for 2017 is followed by information for 2018.

Mining did not play a significant role in Iceland's economy. Iceland has an abundance of geothermal and hydropower energy sources but no proven mineral fuel or metallic mineral reserves. Energy-intensive smelting of aluminum metal, ferrosilicon, and silicon metal were economically advantageous endeavors in Iceland owing to the country's inexpensive and accessible renewable energy (Naess-Schmidt and others, 2017, p. 7, 13).

Minerals in the National Economy

Iceland's gross domestic product (GDP) growth slowed from 6.6% (revised) in 2016 to 4.6% in 2017. Manufacturing products, such as aluminum metal and ferrosilicon, made up 54.1% of Iceland's exported goods for 2017; raw aluminum alone accounted for 35.9% of all exports. Refined petroleum and alumina accounted for 9% and 8.1% of the total imports, respectively. Iceland's main export partners were the Netherlands (which received about 25.5% of the country's total exports), Spain (13.5%), and the United Kingdom (9.4%); the main import partners were Germany (which supplied about 10.6% of the country's total imports), Norway (9.1%), and China (6.9%). The laws that most directly address mining and manufacturing in Iceland are the Act on the Survey and Utilization of Ground Resources No. 57/1998, the Nature Conservation Act No. 44/1999, and the Electricity Act No. 65/2003. About 1.2% of Iceland's employed population worked in the metals manufacturing industries in 2017 (Observatory of Economic Complexity, The, 2018; Statistics Iceland, 2018, p. 9, 21; 2019e).

Production

Aluminum and ferrosilicon continued to be the leading mineral commodities produced in Iceland. In 2017, the country started to produce silicon metal. Data on mineral production are in table 1 (Observatory of Economic Complexity, The, 2018).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Commodity Review

Metals

Aluminum.—Although a 2017 study commissioned by Iceland's national power company, Landsvirkjun, recommended that the Government increase the amount charged to consumers for energy, Iceland remained an attractive location for aluminum smelting. In 2017, the production of aluminum increased by nearly 2% to an estimated 870,000 metric tons (t) from 853,505 t in 2016 (table 1; Naess-Schmidt and others, 2017, p. 17, 18).

Silicon.—United Silicon hf of Iceland finished construction of a 23,000-metric-ton-per-year (t/yr) silicon metal smelting plant at Helguvik in 2016, and production began in November that year. In August 2017, a moratorium was issued to United Silicon to cease smelting activities owing to excessive pollution. The Environment Agency of Iceland suspended all operations at the smelter in September (Demurtas, 2018b).

At the end of 2017, the PCC SE Group of Germany completed construction of a new 32,000-t/yr-capacity silicon metal plant in Husavik in northern Iceland. Production of silicon was officially set to start in May 2018. Silicor Materials Inc. of the United States continued the construction of its 16,000-t/yr-capacity solar silicon production facility in Grundartangi, which was expected to start production in 2019 (PCC SE, 2018; Silicor Materials, 2018).

Mineral Fuels and Other Sources of Energy

Renewable Energy.—In 2017, Iceland generated 100% of its electricity from a mix of hydropower (73%) and geothermal (27%) sources. The country's power consumption increased by 3.7%, to 19,239 gigawatt-hours (GWh) in 2017 from 18,549 GWh in 2016, mainly because of the introduction of new silicon smelting facilities. The Master Plan Act was the Icelandic Parliament's strategy to consider and develop new energy options. It advocated for two new hydropower plants in the Westfjords and north Iceland regions, respectively, and 14 new geothermal plants—6 in northeastern Iceland and 8 in the Reykjanes Peninsula. The Master Plan Act was approved by the Government in 1997 and came fully into force in 2013. Phase four of the Master Plan Act (2017–21) started in April 2017 when a new steering committee was formed, although recommendations for categorization of power options proposed by the steering committee in phase three of the Master Plan Act (2013–17) had not been fully processed by the Parliament and had not been submitted for a vote (Albingi, 2018a, b; Orkustofnun, 2017, p. 1; 2018, p. 1).

MINERAL INDUSTRY HIGHLIGHTS IN 2018

In 2018, Iceland's GDP growth rate was 4.6%, which was the same as in 2017. The economic growth was driven mainly by private consumption and investment (Statistics Iceland, 2019d).

In 2018, Iceland's leading trading countries in exports of goods were the Netherlands, the United Kingdom, and Spain, and 71.8% of all exports went to European Union (EU) countries. In 2018, the total value of exports of goods increased by 15.9% to \$5,174 million compared with that of the previous year. Iceland exported 882,479 t of aluminum and 117,559 t of ferrosilicon, accounting for 41.3% of the total value of the country's exported goods. Regarding imports, Iceland's main

trading partners were, in order of the value of goods imported, Norway, Germany, China, and the United States, and 49% of all imports came from EU countries. In 2018, the total value of imports of goods was \$6,699 million, which was 12% higher than in 2017 owing mainly to an increase in the value of mineral fuel imports (Statistics Iceland, 2019a, c).

Compared with that of 2017, Iceland's inventory of aluminum increased by \$28.4 million, whereas the inventories of ferrosilicon and other primary industrial supplies decreased by approximately \$6 million. The Nordural Grundartangi smelter, which was owned by Century Aluminum Co. of the United States, was one of the three aluminum smelters in the country. Century Aluminum was in the process of completing a 5-year expansion project at Nordural Grundartangi that would increase the smelter's production capacity to 325,000 t/yr from 270,000 t/yr. In 2018, the Grundartangi smelter, which was one of the country's largest industrial facilities in terms of output, produced approximately 317,000 t of aluminum; this was about 17% above the smelter's rated capacity and was at approximately the same level of production as in 2017 (317,179 t) (Nordural Grundartangi, 2018; Veal, 2018a; Century Aluminum, 2019; Statistics Iceland, 2019d).

After the suspension of all operations at the Helguvik silicon smelter by the Environment Agency of Iceland in September 2017, United Silicon declared bankruptcy on January 22, 2018. In February, Arion Bank, an Icelandic bank and the largest owner and creditor of United Silicon, bought the company's assets and established a new company, Stakksberg ehf. Stakksberg's objective was to redesign the plant for improvements and to complete repairs and modifications to meet the requirements of the Environment Agency. The company planned to restart operations at the plant in 2020 (Demurtas, 2018b; Veal, 2018b; Stakksberg, 2019).

PCC BakkiSilicon hf, which is located in Bakki, near Husavik, was a new silicon metal plant that started production on May 11, 2018. The first electric arc furnace was started on April 30, and the second one, on August 31. Regular production was expected to start in the second half of 2019, after the company fixed a few remaining malfunctions. The factory received a license from the Environment Agency that was valid through November 8, 2033. PCC BakkiSilicon was owned by PCC SE of Germany (86% of the shares) and Bakkastakkur, a local company (14%) (Demurtas, 2018a; PCC SE, 2019).

Outlook

Iceland's GDP is expected to decrease by 0.2% in 2019, and to have an annual average growth rate of 2.6% from 2020 through 2024. In 2019, production at the new PCC BakkiSilicon hf silicon metal project is anticipated to increase the country's silicon metal production by approximately 70%. The cost of energy will play a central part in determining the continuing roles of aluminum, ferrosilicon, and silicon metal in Iceland's economy, as production of aluminum and ferrosilicon consumed approximately 80% of the nation's generated electricity, and the nation's power supplier, Landsvirkjun, aims to increase power prices in the near future (Christensen, 2017, p. 14, 24; Landsvirkjun, 2017; Statistics Iceland, 2019b).

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TABLE 1
ICELAND: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2014	2015	2016	2017	2018
METALS					
Aluminum, metal, primary	844,700 ^r	877,850 ^r	853,505 ^r	870,000 ^e	885,000 ^e
Ferroalloys, ferrosilicon	112,657 ^r	121,556	128,020 ^r	116,811	116,889
Silicon, metal	--	--	--	7,160	7,036

^eEstimated. ^rRevised. -- Zero.

¹Table includes data available through July 29, 2019. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

²In addition to the commodities listed, pumice, salt, sand and gravel, scoria, and crushed stone may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
ICELAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons)

Commodity	Major operating companies and major equity owners	Location of main facility	Annual capacity
Aluminum	Alcoa Corp.	Fjardaal smelter at Reydarfjörður	344
Do.	Nordural Grundartangi (Century Aluminum Co., 100%)	Grundartangi	317
Do.	Reykjavik [ISAL] (Rio Tinto Alcan Inc., 100%)	Straumsvík	212
Ferrosilicon	Elkem Iceland ehf (Elkem AS)	Akranes	120
Pumice	BM Valla Ltd.	Mount Hekla	32
Do.	Jardefnaidnadir ehf	do.	210
Silicon	PCC BakkiSilicon hf (PCC SE, 86%, and Bakkastakkur slhf, 14%)	Husavik	32
Do.	Stakksberg ehf (Arion Bank, 100%) ¹	Helguvirk plant in Reykjanesbaer	23
Do., do. Ditto.			

¹Operations suspended by Environment Agency of Iceland in September 2017; United Silicon HF announced bankruptcy in 2018. Arion Bank took over and set up a new company, Stakksberg ehf, to repair and modify the plant.