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The Mineral Industry of Estonia

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

In 2017, Estonia was estimated to be the 11th-ranked peat producer in the world. Estonia also produced such mineral commodities as cement, clay, coke, crushed stone, dolomite, gravel, limestone, nitrogen, oil shale and petroleum refinery products, peat, and silica. Estonia also processed rare-earth metals and secondary lead from imported materials. The country was one of the three leading oil-shale-processing countries in the world, along with China and Brazil (table 1; Viru Keemia Grupp, 2017, p. 4; Brioche, 2019; Neo Performance Materials Inc., 2019, p. 17).

Minerals in the National Economy

In 2017, Estonia's gross domestic product (GDP) increased by 5.6% compared with that in 2016. The GDP at current prices was $25.7 billion (EUR 23.8 billion).[1] The value added in manufacturing represented the country's leading economic activity and increased by 3.9% in 2017 compared with an 0.8% increase in 2016. The value added by the mining and quarrying sector increased by 46.1% compared with a 6.4% decrease in 2016. This increase followed a short-term economic crisis in 2016 that was the result of a dramatic decrease in petroleum prices, which made the production of oil from oil shale less profitable. The unemployment rate decreased to 5.8% in 2017 from 6.8% of 2016 (Statistics Estonia, 2017, p. 24; 2018, p. 5; Eesti Pank, 2019).

In 2017, the total value of exports of goods from Estonia increased by 8% to $14.0 billion. Mineral products, which accounted for 10% of the value of total exports, increased by 36% and comprised mineral fuels (valued at $1.34 billion); salt, stone, and cement ($26 million); and ores and slags ($3 million). Exports of base metals and articles thereof increased by 25% in value and consisted of articles of iron or steel (valued at $526 million), iron and steel ($318 million), aluminum and aluminum articles thereof ($96 million), and copper and copper articles ($48 million). Estonia's principal export partners in 2017 were Finland (which received 16% of Estonia's total exports), Sweden (13%), and Latvia (9%). European Union (EU) member countries received 72% of Estonia's total exports, by value. The value of exports to the EU increased by 5% in 2017 (Statistics Estonia, 2018, p. 5, 32–34; 2020).

In 2017, the total value of Estonia's imports increased by 9% to $15.9 billion. Mineral products, which accounted for 10% of the value of total imports, increased by 22%; they included mineral fuels (valued at $1.38 billion); salt, stone, and cement ($52 million); and ores and slags ($8 million). Imports of base metals and articles thereof increased in value by 17% and consisted of iron and steel (valued at $548 million), articles of iron or steel ($411 million), aluminum and aluminum articles thereof ($152 million), and copper and copper articles ($70 million). Estonia's principal import partners in 2017 were Finland (which supplied 14% of Estonia's total imports), Germany (11%), and Lithuania and Sweden (9% each). EU countries accounted for 82% of Estonia's total imports, by value. Estonia's imports from EU countries increased by 9% in 2017 (Statistics Estonia, 2018, p. 5, 32–34; 2020).

Government Policies and Programs

Mining in Estonia is regulated by the Mining Act of December 2003, as amended in 2015, and the Earth's Crust Act of April 2005, as amended in 2017. The Mining Act focuses on safety and requires inspections related to the technical side of the mining industry. The Earth's Crust Act outlines the procedures for the exploration, use, and environmental protection of the crust. The Environmental Board, through the Ministry of Environment, grants permits for local deposits. The Ambient Air Protection Act and the Waste Act are important in monitoring the use of oil shale and crude petroleum production (Dimireva, 2012; Narep, 2014).

In June 2017, Parliament adopted the fundamental principles of the Subsurface Resources Policy, which has the objective of maintaining sustainable mineral resource activities. Also in 2017, the amended Earth's Crust Act was enacted to reduce adverse effects on the environment caused by mining activity. Under these changes, the Environmental Board will replace the Ministry of the Environment in issuing mining and exploration permits. Companies applying for mining permits for oil shale must conduct an analysis of the socioeconomic impact of the mining activities (Oil Shale Competence Center, 2018, p. 10).

Production

In 2017, the production of limestone (size and shape unspecified) increased by 65%; dolomite, by 62%; clinker, by 57%; sand and gravel for construction, by 47%; oil shale oil, by 40%; oil shale, by 37%; clay, by 30%; oil shale gas and hydraulic cement, by 26% each; horticultural peat, by 19%; and secondary lead, by 15%. Production of fuel peat decreased by 85%; coke, by 46%; crushed limestone, by 26%; and silica, by 12% (table 1).

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities in the country.

Commodity Review

Mineral Fuels and Related Materials

Oil Shale.—In 2017, the production of electricity increased by 8% and domestic consumption increased by 1%.

[1]Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US$) at an annual average exchange rate of EUR0.923=US$1.00 for 2017.

Approximately 90% of the electricity produced in Estonia was from oil shale. In 2017, Estonia produced 11.1 terawatt-hours (TWh) of electricity, which was 2.8 TWh more than it consumed. About one-quarter of Estonia's total electricity output was exported by way of the Nord Pool power exchange. In 2017, the oil shale industry employed 7,387 people. The new Earth's Crust Act did not change the law that allows 20 million metric tons per year (Mt/yr) of oil shale to be extracted (Eesti Energia AS, 2018, p. 15; Oil Shale Competence Centre, 2018, p. 8, 10, 17; Statistics Estonia, 2018, p. 45).

In 2017, Eesti Energia AS, a Government-owned energy company, set a new production record at its Estonia Mine, located southwest of Sillamae, by extracting 10 million metric tons (Mt) of oil shale. In 2017, the company produced 2.89 million barrels of oil shale oil, which was a 24.2% increase compared with production in 2016. This large growth in output was owing mainly to capital repairs at the company's oil plants in 2016, which led to improved efficiency in 2017 (Eesti Energia AS, 2018, p. 12, 91).

Peat.—Total peat production from Estonia increased by 8% to 942,000 metric tons (t) in 2017. The portion of horticultural peat of total peat production increased to 99% in 2017 from 69% in 2014. For the period from 2012 through 2016, 88% of Estonia's total exported peat was delivered to the following European countries: the Netherlands (38%), Germany (13%), Belgium (11%), France (10%), and others (16%). AS Tootsi Turvas, which was a wholly owned subsidiary of Vapo OY Group of Finland, was the leading peat-producing company in Estonia. The company produced peat for fuel and horticultural use from deposits in Ellamaa, Lavssaare, Peningi, Puhata, and Ulila (table 1; Niitlaan and others, 2017; AS Tootsi Turvas, 2018).

MINERAL INDUSTRY HIGHLIGHTS IN 2018

In 2018, the GDP of Estonia increased by 4.8% compared with that in 2017. The GDP at current prices was $30.7 billion (EUR 26.0 billion).[2] The value added growth of mining and quarrying was 8.7% (Eesti Pank, 2019; Statistics Estonia, 2019b).

The value of Estonia's total exports in 2018 was $17.0 billion (EUR 14.4 billion). Mineral fuels accounted for 14.8% of the total exports and included refined petroleum products (valued at $1.4 billion) and petroleum and other products of coal tar ($700 million); iron and steel with products accounted for 5.7% of the total exports. In 2018, the top destinations for Estonia's exports were Finland (received exports valued at $2.7 billion), Sweden ($1.9 billion), Latvia ($1.6 billion), and the United States ($1.1 billion) (Statistics Estonia, 2019a).

The value of Estonia's total imports was $19.1 billion (EUR 16.2 billion). Mineral fuels accounted for 14.9% of the total imports and included refined petroleum products (valued at $1.7 billion) and petroleum and other products of coal tar ($700 million); iron and steel with products accounted for 6.2% of the total imports. The leading source countries for Estonia's imports were Finland (supplied imports valued at $2.5 billion), Germany ($2.0 billion), Lithuania ($1.9 billion), and Sweden ($1.7 billion) (Statistics Estonia, 2019a).

In 2018, the production of peat (for fuel use) increased by 432%; peat for horticultural use, by 53%; crushed limestone, by 41%; dolomite, by 18%; and coke, by 12%. Lime production decreased by 88% and secondary lead and industrial sand and gravel decreased by 23% and 18%, respectively (table 1).

NPM Silmet OU (Silmet), which was a subsidiary of Neo Performance Materials Inc. of Canada, operated a smelting and refining plant in Sillamae. In 2018, Silmet had production capacities of up to 2,500 metric tons per year (t/yr) of rare-earth products, 540 t/yr of minor-metal oxides, and 205 t/yr of minor-metal (niobium and tantalum) products. Silmet processed mineral ores to produce niobium and tantalum products (Neo Performance Materials Inc., 2019, p. 3, 4, 17).

In 2018, the total investment into the oil shale industry increased by 66% to $137 million (EUR116 million) compared with that of 2017. Investments into environmental protection projects accounted for 47% of the total investment and increased to $65 million (EUR55 million) in 2018 from $37 million (EUR31 million) in 2017. The contribution from the oil shale industry to state revenue totaled more than $144 million, which was a 17% increase from that of the previous year. In 2018, the oil shale industry employed 7,303 people, which was a 1% decrease from the number employed in 2017. The extraction volume allowed by the Government for Estonia's four oil shale companies was maintained at 20 Mt/yr of oil shale in 2018. More than 90% of CO_2 emissions in Estonia came from burning oil shale for electricity. The oil shale industry contributes job security in the mining areas and provides inexpensive electricity (Statistics Estonia, 2018, p. 45; Oil Shale Competence Centre, 2019, p. 3, 8, 10).

Outlook

Estonia's economy is expected to remain stable owing to nearly full employment and moderate inflation. Overall, Estonia's GDP is expected to increase by 2.8% in 2019 and by 2.4% in 2020. Continued stable growth in the oil shale sector and record levels of oil shale production in 2018 indicate that the industry has recovered to the prerecession level. The production of oil shale is expected to remain a significant contributor of the country's economy. Unemployment remains an issue in Estonia's oil-shale-producing region in the northeast, however, the unemployment situation could further worsen in 2019 if the state-owned Eesti Energia AS closes the three oil shale powerplants built in 1970s to improve the environmental situation in Estonia (Statistics Estonia, 2018, p. 45; European Commission, 2019, p. 98; International Monetary Fund, 2019).

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[2]Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US$) at an annual average exchange rate of EUR0.848=US$1.00 for 2018.

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TABLE 1
ESTONIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2014	2015	2016	2017	2018
METALS						
Lead, refinery, secondary		8,588	8,329	8,348	9,606	7,393
INDUSTRIAL MINERALS						
Cement:						
Clinker	thousand metric tons	721	356	329 r	518	505
Hydraulic	do.	447	390	399 r	503	527
Clay, unspecified, including kilts, used in construction		107,000	58,000	46,600	60,600	56,700
Lime		47,200 r	79,200	42,000	44,000	5,100
Nitrogen, ammonia, N content	thousand metric tons	30	35	35 e	35 e	35 e
Sand and gravel, industrial, silica		23,000	25,600	56,900	50,200	41,000
Stone, sand and gravel, construction:						
Sand and gravel, gravel, pebbles, shingle and flint		2,499,680	3,756,960	3,627,000 r	5,335,000	5,649,000
Stone:						
Crushed, limestone		626,000	510,000	702,000 r	518,000	732,000
Other, size and shape unspecified:						
Dolomite		55	38	21 r	34	40
Limestone		1,030,000 r	487,000 r	468,000 r	771,000	763,000
MINERAL FUELS AND RELATED MATERIALS						
Coke, metallurgical, electrode		24,500	27,800	23,700 r	12,800	14,300
Oil shale	thousand metric tons	20,995	19,616 r	15,764 r	21,625	21,883
Peat:						
Fuel use		261,000	89,400	89,000 r	13,100	69,700
of which, peat briquets		62,000	6,000	8,000	6,500	6,800
Horticultural use		593,600	719,900	782,900 r	929,300	1,419,700
Petroleum, refinery:						
Oil shale gas	million cubic meters	1,108	912	808	1,020	1,020 e
Oil shale oil	thousand 42-gallon barrels	4,475	5,483	4,648	6,523	7,122

eEstimated. rRevised. do. Ditto.

[1]Table includes data available through August 5, 2019. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits.

[2]In addition to the commodities listed, rare earths, minor metals, and sulfur may have been produced, but available information was inadequate to make reliable estimates of output.

TABLE 2
ESTONIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2018

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facility	Annual capacity
Cement	AS Kunda Nordic Tsement (HeidelbergCement Sweden AB, 75%, and CRH Europe Holding BV, 25%)	Kunda plant	1,200 cement; 650 clinker.
Gold, secondary	Toma Group	Refining facility (gold, rhenium, and silver) in Maardu	NA.
Lead, secondary	Ecometal AS	Sillamae	20.
Lime	Nordkalk AS (Rettig Group, 100%)	Rakke lime plant	NA.
Do.	VKG Energia OÜ (Viru Keemia Grupp AS, 100%)	Lime plant in Kohtla-Jarve	24.
Niobium	NPM Silmet AS (Neo Performance Materials, 100%)	Factories in Sillamae	NA.
Nitrogen, ammonia	Nitrofert JSC (Group DF, 100%)	Kohtla-Jarve plant, Ida-Viru region of Kohtla-Jarve	220 urea; 180 liquid ammonia; 30 aqueous ammonia.
Oil shale	Eesti Energia AS Group (Government, 100%)	Narva opencast mine, 18 kilometers south of Sillamae	6,000.
Do.	do.	Estonia underground mine, Väike-Pungerja, Ida-Viru	12,600.
Do.	Kiviõli Keeminatööstus OÜ (Alexela Energia, 100%)	North Kivioli quarry, Ida-Viru	1,100.
Do.	VKG Oil AS (Viru Keemia Grupp AS, 100%)	Ojamaa underground mine in Ida-Viru	2,800.
Oil shale gas million cubic meters	3 companies (and equity owners): Eesti Energia AS Group (Government, 100%) Kiviõli Keeminatööstus OÜ (Alexela Energia, 100%) VKG Oil AS (Viru Keemia Grupp AS, 100%)	Locations: Narva and Väike-Pungerja North Kivioli, Ida-Viru Ojamaa, Ida-Viru	1,100.
Oil shale oil thousand 42-gallon barrels	Eesti Energia AS Group (Government, 100%)	3 plants in Narva, of which: 2 x Enefit 140 1 x Enefit 280	3,400.[e] (1,500.)[e] (1,900.)[e]
Do. do.	VKG Oil AS (Viru Keemia Grupp AS, 100%)	7 processing plants in Kohtla-Jarve, of which: Petroter I and II Petroter III 4 x Kiviter	NA. (1,500.)[e] (1,000.)[e] NA.
Do. do.	Kiviõli Keemiatööstuse OÜ (Alexela Energia, 100%)	Kivioli oil shale plant	420.[e]
Peat	AS Tootsi Turvas (Vapo OY Group, 100%)	Ellamaa, Lavassaare, Peningi, Puhatu, and Ulila deposits	NA.
Rare earths metric tons	NPM Silmet AS (Neo Performance Materials, 100%)	Factories in Sillamae	2,500.
Stone:			
Dolomite	Nordkalk AS (Rettig Group, 100%)	Kurevere dolostone quarry	NA.
Limestone	do.	Vasalemma limestone quarry	NA.
Limestone, aggregates	AS Kunda Nordic Tsement (HeidelbergCement Sweden AB, 75%, and CRH Europe Holding BV, 25%)	Jaama 2, Kunda	NA.
Tantalum	NPM Silmet AS (Neo Performance Materials, 100%)	Factories in Sillamae	NA.

[e]Estimated. Do., do. Ditto. NA Not available.