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The Mineral Industry of Estonia

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In 2016, Estonia was one of the three largest oil shale-processing countries in the world, along with China and Brazil. The country produced such mineral commodities as cement, coke, clay, crushed stone, dolomite, fuel oil, gravel, lead, limestone, nitrogen, peat, and sand. Estonia also processed rare-earth metals and secondary lead from imported materials (table 1; Viru Keemia Grupp, 2017, p. 4).

Minerals in the National Economy

In 2016, Estonia's nominal gross domestic product (GDP) was $23.1 billion. The real GDP rate of growth was 1.6% compared with 1.4% in 2015. The share of the mining and quarrying sector in the GDP was 1.0% compared with 1.2% in 2015. In 2016, the value added of the mining and quarrying sector decreased by 6.4% owing to a short-term decrease in production in the oil shale mining industry, which was the result of low market prices. In 2016, total industrial production increased by 2.3% compared with that of 2015. Production increased in value in the energy and manufacturing sectors by 14.5% and 2.1%, respectively, but decreased by 15.6% in the mining sector. In 2016, foreign direct investment (FDI) in Estonia increased by nearly 5% to $20.1 billion compared with that of 2015. Almost 50% of the total FDI came from Finland and Sweden (Statistics Estonia, 2016a, p. 31, 36; 2017a; 2017b, p. 26–27, 31; 2017c, p. 24; International Monetary Fund, 2017).

In 2016, Estonia's exports and imports increased by 3% each compared with those of 2015. In 2016, Estonia's exports amounted to $13.2 billion (at current prices) and imports amounted to $14.9 billion. Exports of mineral products amounted to $1.03 billion, which was a decrease of 13% compared with that of 2015 and represented an 8% share of Estonia's total exports, by value. In 2016, 74% of Estonia's exports went to European Union (EU) countries. Estonia's principal export partners in 2016 were Sweden (which received 18% of Estonia's total exports, by value); Finland (16%); and Latvia (9%). The United States imported 12% of its yttrium and 6% of its rare earths from Estonia (Statistics Estonia, 2017d; Gambogi, 2018a, b).

In 2016, imports of mineral products were valued at $1.3 billion, which was a decrease of 17% compared with that of 2015 and accounted for a 9% share of Estonia's total imports by value. Estonia also imported mineral fuels, such as coal, coke, natural gas, and liquid fuels. Natural gas imports increased by nearly 10% owing primarily to increased demand by powerplants. In 2016, EU countries provided 82% of Estonia's imports, by value, including Finland (23%), Germany (11%), and Lithuania (9%) (Statistics Estonia, 2017c, p. 113; 2017d).

Government Policies and Programs

Mining in Estonia was regulated by the Mining Act of December 2003, as amended in 2015, and the Earth's Crust Act of April 2005, as amended in 2014. The Mining Act regulated the technical aspects of mining, including safety regulations, and the Earth's Crust Act outlined the procedures for the exploration, use, and protection of the crust. In addition, the use of oil shale in combustion plants and crude petroleum production was regulated by the Ambient Air Protection Act of September 2004, as amended in 2014, and the Waste Act of May 2004, as amended in 2015. The Ministry of Environment granted extraction permits for deposits of national importance, in territorial and inland seas, in the exclusive economic zone of Estonia, and on cross-boundary water bodies. The Environmental Board was the agency responsible for granting permits for deposits of local importance (Dimireva, 2012; Narep, 2014; United Nations, undated).

Production

In 2016, the production of silica increased by 122%; coke, by 52%; crushed limestone, by 38%; peat briquets, by 33%; and unspecified limestone, by 27%. The production of lime decreased by 47%; horticultural peat, by 33%; clay and shale, by 20%; and oil shale, by 19% (table 1).

Structure of the Mineral Industry

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

Commodity Review

Industrial Minerals

Cement.—AS Kunda Nordic Tsement, which was a subsidiary of HeidelbergCement Group of Germany (75%) and CRH Europe Holding BV of the Netherlands (25%), operated the country's only cement plant; the plant was located at Kunda in northeastern Estonia. The company also owned and operated the port at Kunda as well as the largest limestone quarry in the country, which provided crushed limestone and aggregates to the cement plant and other customers. The company owned the nearby Ubja opencast oil shale deposit which provided fuel for the cement plant. The company employed about 200 people (Aggregates Business Europe, 2017; AS Kunda Nordic Tsement, 2017).

Rare Earths.—Estonia was estimated to produce about 4,000 metric tons per year (t/yr) of rare earths, and about 20% of the niobium and 10% of the tantalum consumed globally. NPM Silmet AS was one of Europe's leading manufacturers of rare metals and rare-earth metals, operating three plants in Sillamae. The company had a production capacity of 3,000 t/yr of rare-earth products and about 700 t/yr of rare metals, including cerium, lanthanum, neodymium, niobium, praseodymium, and tantalum. The company reported that the rare metals production line would restart in January 2016 following suspension caused by a fire at the facility in June 2015. In August, Molycorp Inc. of the United States, which was the parent company of Estonia's Molycorp Silmet AS, emerged from Chapter 11 reorganization as

Neo Performance Materials, Inc. and renamed its wholly owned Estonian subsidiary to NPM Silmet AS in September (Dickson, 2015; Gerden, 2015; Globe Newswire, 2016; American Chamber of Commerce Estonia, 2017; Baltic Course, The, 2017b).

Mineral Fuels and Other Sources of Energy

Oil Shale.—In 2015 (the latest year for which data were available), oil shale supplied nearly 70% of Estonia's primary energy. About 77% of the country's electricity was produced from oil shale, which contributed to the country's self-sufficiency in electricity production. In 2015, the country's energy foreign dependency rating was 7.4%, which made it one of the most energy-independent countries in the EU. In June 2016, the Government introduced flexible taxation for the industry by linking the oil shale resource charges to the world market price for fuel oil, which had previously been set at a fixed price. Flexible taxation would help the industry maintain production and employment when prices were low and enable the state to earn more taxes when prices rose (Eesti Energia and others, 2016, p. 20; Statistics Estonia, 2016b, p. 318; 2017b, p. 42; Eesti Energia AS, 2017, p. 4, 21).

In 2016, Viru Keemia Grupp AS (VKG) produced 451,300 t of oil shale; most of the oil shale produced by VKG was exported. In January, VKG suspended production of oil shale at its Kiviter oil shale processing plants owing to low global market prices for oil; the suspension affected about 500 employees. Production continued, however, at VKG's three Petroter plants. In July, the company restarted the two Kiviter plants and returned about 350 employees to work. The decision to restart the plants was based on the Government's introduction of the new taxation system and improving conditions in the oil market. VKG owned the Ojamaa underground oil shale mine and seven oil shale processing plants in Kohtla-Jarve (Viru Keemia Grupp, 2016a, b; 2017, p. 5, 28).

The Government-owned energy company Eesti Energia AS mined oil shale. In 2016, the company produced 317,700 t of oil shale, which was a decrease of 6% compared with that of 2015. The decrease was owing to low market prices for oil at the beginning of the year, as well as the closure of the company's Enefit 280 oil, gas, and electricity coproduction plant in the summer for maintenance (Eesti Energia and others, 2016, p. 19; Baltic Course, The, 2017a; Eesti Energia AS, 2017, p. 6, 8, 39).

In late 2016, the Ministry of the Environment authorized the construction of an underground mine at Eesti Energia's Narva oil shale mine. The new mine was expected to employ the longwall mining method, which was already in use at the company's Estonia underground mine. The company expected to make a decision in 2017 on whether to proceed with the new mine, which in turn could open by 2019 (ERR News, 2016).

Peat.—AS Tootsi Turvas was the leading peat producer in Estonia. The company, which was wholly owned by the Vapo OY Group of Finland, produced peat for fuel and horticultural use. During the period from May 2015 to April 2016, the company produced about 296,000 metric tons (t) of horticultural peat (reported as 740,000 cubic meters) and about 51,000 t of fuel peat (reported as 128,000 cubic meters). In 2016, the company exported about 38% of its products, by value, to European countries as well as to Israel and Japan. Tootsi Turvas employed about 33 people (AS Tootsi Turvas, 2017; Estonian Chamber of Commerce and Industry, 2017).

Outlook

Estonia's GDP growth rate is projected to be 2.5% in 2017 and 2.8% in 2018. The oil shale industry is expected to remain an important part of the country's economy into the foreseeable future. To meet the goals of the National Development Plan for Use of Oil Shale for 2016–2030, the use of oil shale in heat and power production is expected to decline, whereas its use for electricity is expected to increase. The production capacity of renewable resources, particularly wind power, is also expected to increase (International Monetary Fund, 2017).

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TABLE 1
ESTONIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2012	2013	2014	2015	2016
METALS						
Lead, refinery production, secondary		8,046	7,581	8,588	8,329	8,348
INDUSTRIAL MINERALS						
Cement:						
Clinker	thousand metric tons	715	691	721	356	328
Hydraulic	do.	482	457	447	390	395
Clay and shale used in construction		98,600	99,000	107,000	58,000	46,600
Lime		72,000 r	69,600 r	47,300 r	79,200	42,000
Nitrogen, N content, ammonia	thousand metric tons	14	99	NA	NA	NA
Stone, sand, and gravel:						
Sand and gravel, construction, gravel, pebbles, shingle and flint		1,514,400	1,931,680	2,499,680	3,756,960 r	3,610,560
Silica, mine production, unspecified		21,000	20,000	23,000	25,600 r	56,900
Stone, crushed, limestone		679,600	360,784	626,000	510,000	702,400
Stone, size and shape unspecified:						
Dolomite		72	72	55	38	40
Limestone		1,017,415	1,013,176	1,031,133	486,649	617,300
MINERAL FUELS AND RELATED MATERIALS						
Coke, metallurgical, electrode		26,300	22,000	24,500	27,800 r	42,300
Peat:						
Fuel use		166,000	260,200	261,000	89,400 r	88,700
Of which, peat briquets		52,100	56,000	62,000	6,000 r	8,000
Horticultural use		504,800 r	800,900	593,600	719,900	479,800
Petroleum, refinery production:						
Fuel oil	thousand 42-gallon barrels	4,779	5,024	6,145	6,145	5,894
Other, oil shale	thousand metric tons	18,796	20,511	20,995	19,217	15,657

rRevised. do. Ditto. NA Not available.

[1]Table includes data available through December 15, 2017.

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

TABLE 2
ESTONIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facility	Annual capacity
Ammonia		AS Nitrofert (Group DF, 100%)	Kohtla-Jarve plant, Ida-Viru Region of Kohtla-Jarve	220 urea; 180 liquid ammonia; 30 aqueous ammonia.
Cement		AS Kunda Nordic Tsement (HeidelbergCement Sweden AB, 75%, and CRH Europe Holding BV, 25%)	Kunda plant	750 cement; 650 clinker.
Dolomite		Nordkalk AS (Rettig Group, 100%)	Kurevere dolostone quarry	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	24.
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.
Oil shale		VKG Oil AS (Viru Keemia Grupp AS, 100%)	Ojamaa underground mine, about 10 kilometers south of Kohtla-Jarve	2,800.
Do.		Eesti Energia AS Group (Government, 100%)	Narva opencast mine, 18 kilometers south of Sillamae	6,000.
Do.		do.	Estonia underground mine, 30 kilometers southwest of Sillamae	12,600
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	3,000 rare-earth metals; 700 rare metals.
Refinery products, fuel oil	42-gallon barrels per year	Eesti Energia AS Group (Government, 100%)	3 plants in Narva, of which: 2 x Enefit 140 1 x Enefit 280	 1,500,000.[e] 1,900,000.[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	 1,500,000.[e] 1,000,000.[e] NA.
Do.	do.	Kiviõli Keemiatööstuse OÜ (Alexela Energia, 100%)	Kivioli oil shale plant	NA.

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