



2013 Minerals Yearbook

ESTONIA

THE MINERAL INDUSTRY OF ESTONIA

By Lin Shi

In 2013, Estonia's real gross domestic product (GDP) increased by 0.8% compared with a growth rate of 3.2% in 2012. The inflation rate in 2013 was 2.8%, and the country's mining and quarrying sector accounted for about 1% of the total GDP. Estonia produced rare-earth metals and oil shale; however, the mining activities were causing serious domestic environmental problems. The Government continued to promote free market and economic reforms. Estonia joined the North Atlantic Treaty Organization and the European Union (EU) in 2004, participated in the Organisation for Economic Co-operation and Development in 2010, and adopted the euro in 2011 (Estonia Ministry of Finance, 2014; U.S. Central Intelligence Agency, 2014).

Production

Estonia's rare-earth metals drew the attention of other countries that were seeking supplies of these mineral commodities, which have become increasingly important in the manufacturing of electronic devices used in the alternative energy, communications, and defense industries. Estonia's oil shale production was used to generate electricity and heat for domestic use (table 1; Estonia Ministry of Finance, 2014).

Mineral Trade

In 2013, Estonia's total exports were valued at about \$15 billion; metals exports accounted for about 9% of the total exports. The country's major export partners were Sweden, which accounted for about 17% of total exports; Finland, 15%; Russia, 13%; Latvia, 9%; Lithuania, 6%; and Germany, 5%. Estonia's total imports were valued at about \$16 billion; mineral fuels were among the major imported commodities. The country's major import partners were Finland, which accounted for about 15% of total imports; Germany and Sweden, 11% each; Latvia, 10%; Lithuania, 9%; and Poland, 7%. About 77% of Estonia's total trade was with EU member countries. The value of exports to EU countries accounted for 71% of Estonia's total exports; the value of imports from EU countries accounted for 83% of Estonia's total imports. Estonia established free trade zones at the Ports of Paldiski, Muuga, and Sillamae and adopted the euro as its currency to attract foreign investors; it also applied a 21% flat-rate income tax system to encourage expansion of businesses, including those in the mineral sector (Estonia Ministry of Finance, 2014; U.S. Central Intelligence Agency, 2014).

Structure of the Mineral Industry

In 2013, a total of 158 mining and quarrying companies were active in Estonia—22 foreign companies, 135 domestic private companies, and 1 Government-owned organization. Within the mining and quarrying sector, 2 companies had 250 or more employees, 11 companies had 50 to 249 employees,

and 35 companies had 10 to 49 employers (Statistics Estonia, 2014, p. 232–233).

Estonia produced construction materials, peat, secondary lead from battery recycling, and shale oil for domestic consumption. Nitrofert JSC was an ammonia and urea producer. AS Kunda Nordic Tsement was the only cement plant in Estonia and was a subsidiary of both HeidelbergCement Sweden AB of Sweden and CHR Europe Holding BV of the Netherlands. AS Tootsi Turvas was Estonia's leading (in production quantity) peat milling and export enterprise and was owned by Vapo OY Group of Finland. Molycorp Silmet AS was a producer of rare-earth metals. Eesti Energia AS Group had two shale oil plants in Narva with a combined capacity of 3.4 million barrels per year (Mbbbl/yr). VKG Oil AS (a subsidiary of Viru Keemia Group AS) had a shale oil plant in Kohtla-Jarve with a capacity of 1.8 Mbbbl/yr (table 2).

Commodity Review

Metals

Rare Earths.—Molycorp Minerals LLC of the United States owned manufacturing facilities in Sillamae; its subsidiary Molycorp Silmet AS was a major rare-earth metal and rare-earth-alloy producer and processor in Europe. Molycorp Silmet had the capacity to produce about 3,000 metric tons per year (t/yr) of rare-earth products and about 700 t/yr of rare-earth metals; the company produced cerium, lanthanum, neodymium, praseodymium, and samarium-europium-gadolinium products as well as niobium and tantalum metal chips, ingots, metallic hydrides, and powders. Molycorp Silmet employed about 550 people to operate several factories and sold products to countries in Asia, Central Eurasia, Europe, North America, and South America. The rare-earth metals were used in producing aircraft, electronics, and energy (Molycorp Inc., 2011; 2014a, p. 5–6; 2014b).

Industrial Minerals

Cement.—AS Kunda Nordic Tsement was owned by HeidelbergCement Northern Europe, which was a subsidiary of HeidelbergCement Group. HeidelbergCement Sweden AB (Sweden) and CRH Europe Holding BV (Netherlands) held 75% and 25% of the shares of AS Kunda Nordic Tsement, respectively. AS Kunda Nordic Tsement was a leading cement and crushed limestone producer and employer in Estonia, and the company operated the country's sole cement plant at Kunda, with production capacities of 650,000 t/yr of clinker and 750,000 t/yr of cement (AS Kunda Nordic Tsement, 2014; CemNet.com, 2014; Eesti Ehitusmaterjalide Tootjate Liit, 2014).

Nitrogen (Ammonia).—Nitrofert JSC owned the Nitrofert fertilizer plant at Kohtla-Jarve. Nitrofert was Estonia's only ammonia producer and was capable of producing about 200,000 t/yr of ammonia. Nitrofert imported Russian natural

gas to provide energy for manufacturing ammonia and to reduce its high ammonia-producing domestic fuel energy costs. Russia has sufficient resources of natural gas with a higher hydrogen content than Estonian natural gas to supply Estonia's need. Russian natural gas is provided at a lower operating cost than Estonian gas and is easy to deliver to Estonia. In 2013, through NF Trading of Finland, Nitrofert exported 15,000 metric tons (t) of ammonia to the United States at about \$600 per metric ton. Ammonia was mainly consumed in the agricultural sector and for industrial applications. World demand for ammonia was expected to continually increase from 2013 to 2015 (ICIS News, 2012; Egenhofer and others, 2014)

Mineral Fuels and Other Sources of Energy

Oil Shale.—The oil shale industry in Estonia began with oil production, but focused on electricity generation after World War II, while shale oil was consumed as a raw liquid fuel material. Estonia has been using oil shale for almost a century to meet 70% to 80% of the country's energy demand. The state-owned energy company Eesti Energia AS Group produced 1,580,000 barrels per year (reported as 215,000 t/yr) of shale oil, which was 96% of the company's designated capacity from all its plants. The company also produced electricity and heat from semicoke (remaining after oil extraction) and from retort shale gas, but generated a large amount of CO₂ during the process. In addressing the environmental issues, Estonia's national development plan for oil shale use for 2008–15 called for restricting domestic oil shale mining to 20 million metric tons per year (Mt/yr) and then to 15 Mt/yr by 2015 (Eesti Energia AS, 2014; International Energy Agency, 2014).

Peat.—In 2013, Estonia's peat production increased by 58% to 1.05 million metric tons (Mt) compared with 665,900 t in 2012; this increase was mainly attributed to the increased fuel price and peat extraction fees. Domestic consumption of peat for the production of electricity had decreased, however. Environmental regulations are less favorable for electricity producers using peat as a fuel than for some other fuels; for example, electricity producers that use peat as a fuel must buy carbon dioxide (CO₂) allowances. Estonia AS Tootsi Turvas, headquartered in Parnu, was the leading peat producer. The company was owned by Vapu OY Group and was producing milled peat in Ellamaa, Lavassaare, Peningi, Puhatu, and Ulila (Niitlaan and Tiidermann, 2013; AS Tootsi Turvas, 2014; Organisation for Economic Co-operation and Development, 2014).

Outlook

Estonia's mining industry will continue to focus on reducing CO₂ emissions by improving technology for greater efficiency throughout the oil shale cycle (from mining to consumption). In 2013, Eesti Energia implemented EEFIT280 technology, which is water-free and carbon-capture ready, and has nonhazardous residue ash as the only byproduct. Plants equipped with this new technology can fully utilize oil shale; this would allow oil shale to be used in industries other than energy (for example, nonhazardous residue ash can replace clinker in cement

production). Estonia's Ministry of Finance projected that the country's GDP would increase by 2.0% in 2014 compared with an increase of 0.8% in 2013, and that the inflation rate would decrease 1.4% in 2014 from 2.8% in 2013. The production of Estonia's major minerals, such as rare-earth metals, peat, and oil shale, is expected to increase steadily and to be exported to meet global market demands (Eesti Energia AS, 2014; Estonia Ministry of Finance, 2014).

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TABLE 1
ESTONIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013 ^c
Cement:					
Clinker (sold production)	314,000	209,000	381,000	343,800 ^r	340,000
Portland, other	326,200	375,000	451,000 ^r	481,500 ^r	480,000
Clays and kilts used in construction	93,800 ^r	85,000 ^r	120,000 ^r	98,600 ^r	99,000
Coke, electrode	21,400 ^r	22,400	24,400 ^r	26,300 ^r	26,000
Crushed stone used for concrete aggregates, for roadstone, and for other construction use	5,400,300	5,752,600	6,196,300	6,200,000	6,000,000
Dolomite cubic meters	NA	112 ^r	35 ^r	25 ^r	25
Fuel oil	489,300	524,300 ^r	559,900 ^{r,e}	560,000	560,000
Gravel, pebbles, shingle and flint cubic meters	1,563,300 ^r	1,252,000 ^r	1,251,680	1,250,000	1,250,000
Lead, metal, secondary	5,283 ^r	7,199 ^r	7,840 ^r	8,046 ^r	7,100 ³
Lime	30,000 ^r	27,000 ^r	36,100 ³	72,000 ^r	70,000
Nitrogen, N content of ammonia thousand metric tons	1,300 ^r	1,400 ^r	1,598 ^r	3,333 ^r	3,000
Oil shale do.	14,939	17,934	18,734 ^r	18,796 ^r	19,000
Peat, all uses	859,700	965,000	926,700 ^r	665,900 ^r	1,050,000 ³
Of which:					
For fuel	328,000	360,800	322,600 ^r	163,700 ^r	NA
For agricultural	531,700 ^r	604,200 ^r	604,100 ^r	502,200 ^r	NA
Rare-earth metals ^e	3,000	3,000	3,000	3,000	NA
Silica sand (industrial)	33,000 ^r	36,000	14,000 ^r	21,000 ^r	20,000
Tantalum, metal, chips	44 ^r	36	56 ^r	57 ^r	50

^eEstimated; estimated data are rounded to no more than three significant digits. ^rRevised. do. Ditto. NA Not available.

¹Table includes data available through October 24, 2014.

²In addition to the commodities listed, Estonia produced sulfur, but available information is inadequate to make reliable estimates of output.

³Reported figure.

TABLE 2
ESTONIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(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	750
Nitrogen (ammonia)	Nitrofert JSC	Kohtla-Jarve plant	200
Peat	AS Tootsi Turvas (Vapo OY Group, 100%)	Ellamaa, Lavassaare, Peningi, Puhatu, and Ulila	NA
Shale oil	42-gallon barrels per year Eesti Energia AS Group	2 plants in Narva, of which: Enefit140 Enefit280	3,400,000 (1,500,000) (1,900,000)
Do.	do. VKG Oil AS (Viru Keemia Grupp AS, 100%)	Plant in Kohtla-Jarve	1,840,000
Rare earths:			
Products	metric tons Molycorp Silmet AS (Molycorp Minerals LLC, 90.02%)	Factories in Sillamae	3,000
Metals	do. do.	do.	700

Do., do. Ditto. NA Not available.