



2019 Minerals Yearbook

TURKEY [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF TURKEY

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Turkey's mineral industry produced primarily metals and industrial minerals; mineral fuels production was limited largely to production of lignite coal. In 2019, Turkey was the world's leading producer of boron, accounting for the majority of world production (excluding the production of the United States), pumice and pumicite (40%), and feldspar (24%). It was also the 2d-ranked producer of chromite ore (23% excluding United States production), magnesium compounds (6% excluding United States production), perlite (19%), and soda ash (22%); 4th-ranked producer of bentonite (8%) and gypsum (7%); 6th-ranked producer of antimony (2%); 7th-ranked producer of cement (1%), sand and gravel (4%), and zeolites (natural) (6%); 8th-ranked producer of barite (3%) and raw steel (2%); 9th-ranked producer of kaolin (3%) and selenium (2%); and 11th-ranked producer of pig iron (1%) and salt (2%) (table 1; Anderson, 2021; Bolen, 2021a, b; Briocche, 2021a, b; Crangle, 2021a–c; Dolley, 2021; Hatfield, 2021a, b; Klochko, 2021; McRae, 2021; Merrill, 2021; Schulte, 2021; Simmons, 2021; Tuck, 2021).

Minerals in the National Economy

In 2019, Turkey's real gross domestic product (GDP) increased by 0.9% compared with that of 2018; the nominal GDP was \$761.4 billion. Mining and quarrying accounted for 1% of the nominal GDP in 2019. The real gross value of the mining and quarrying sector increased by 3.3% in 2019. The real gross value of manufacturing, which included the production of value-added processed minerals, such as cement and steel, decreased by 2.3% and accounted for 18.3% of the GDP in 2019 (Türkiye İstatistik Kurumu, 2020; World Bank, The, 2020).

Government Policies and Programs

The exploration for and extraction of minerals in Turkey are regulated under the mining law No. 3213 of 1985 ("Mining Law") and four recent regulations. The Regulation on Mining Activity Permits, No. 25852, of June 2005 regulates permits granted for mining activities. The Mining Regulation, No. 30187, of September 2017 provides for the implementation of the Mining Law, and the Regulation on the Tender of Mining Fields, No. 30187, of September 2017 sets out the principles and process for mining field tenders. The Regulation on the Transfer of Mining Districts and Licenses, No. 30429, of May 2018 covers the implementation of mining districts (Tunç, Altunyuva, and Taşçı, 2019).

The Maden ve Petrol İşleri Genel Müdürlüğü (MAPEG) [General Directorate of Mining and Petroleum Affairs] within the Enerji ve Tabii Kaynaklar Bakanlığı (ETKB) [Ministry of Energy and Natural Resources] is the primary mineral regulatory agency, and it is responsible for issuing mineral licenses and permits in Turkey. As of yearend 2019, there were 15,731 mineral licenses in effect in Turkey, of which 5,926 were exploration licenses and 9,805 were operating licenses.

Of the 7,743 licensed mining and quarrying operations in 2019, more than one-half were for construction materials. A total of 1,202 applications for new licenses were submitted in 2019 (Maden ve Petrol İşleri Genel Müdürlüğü, 2020a, c–e).

Production

In 2019, output increased substantially for fuel oil, 487%; fuller's earth, 162%; fluorspar, 132%; magnesium (metal, primary), 75%; iron ore (gross weight), 72%; iron ore (Fe content), 58%; diesel, 47%; gold (mine, Au content), 40%; residual fuel oil, 33%; phosphate rock (P₂O₅ content) and soda ash, 27% each; phosphate rock (gross weight), 26%; jet fuel, 24%; silver (mine, Ag content), 23%; bentonite, 15%; olivine, 14%; gasoline, 13%; granite and manganese (mine, Mn content), 12% each; natural gas and salt, 11% each; and manganese (mine, gross weight), 10%. Output decreased significantly for vermiculite, by 92%; kerosene, 67%; molybdenum (mine, gross weight) and nickel-cobalt hydroxide, 57% each; molybdenum (mine, Mo content), 56%; cobalt (mine, Co content), 54%; dolomite, 48%; chalcedony and nepheline syenite, 44% each; emery, 41%; limestone, 39%; basalt, 32%; gypsum and calcite, 31% each; ammonia, 29%; zeolites, 27%; bituminous coal and pumice and related minerals, 26% each; marble, 25%; magnesite, 24%; sodium sulfate, 23%; zinc (mine, gross weight), 22%; cement and zinc (mine, Zn content), 21% each; chromium (Cr₂O₃ content) and lignite coal, 19% each; bauxite, 18%; refined borates, 16%; kaolin, 15%; ferrosilicon, 14%; barite, ferrochromium, and peat, 11% each; and raw steel, 10% (table 1; Maden ve Petrol İşleri Genel Müdürlüğü, 2020b).

Structure of the Mineral Industry

Turkey's metals and industrial minerals production was undertaken mainly by privately owned companies. The Government's involvement in the mineral industry was limited to exploration and the production of boron, coal, hydrocarbons, soda ash, and sulfuric acid. Table 2 is a list of major mineral-producing companies, mines, and facilities.

Mineral Trade

In 2019, Turkey's exports of mined nonfuel minerals decreased in value by 5.5% to \$4.31 billion and accounted for 2.4% of the country's total exports of \$180.5 billion. Natural stone and marble continued to be Turkey's leading nonfuel mineral commodity category, making up 43% of the country's mined mineral exports in 2019. Natural stone and marble exports were followed by metallic minerals exports (such as chromite, copper, gold, lead, magnesite, silver, and zinc), which made up 28% of the country's mined mineral exports; industrial minerals (such as bentonite, boron, feldspar, gypsum, and quartz), 21%; ferroalloys, 4%; and other nonfuel mineral commodities, 4%. In 2019, China remained the leading recipient of Turkey's exports

of these mineral commodities, in particular those of natural stone and marble, accounting for 31.2% of the total mined nonfuel mineral exports. China was followed by the United States, which received 8.6%; Spain, 4.6%; Belgium, 4.2%; Italy, 3.4%; and India, 3.3%. The value of mineral exports to China decreased by 11% to \$1.34 billion in 2019, and the value of mineral exports to the United States decreased by 6.2% to \$373 million (İstanbul Maden İhracatçıları Birliği, 2020, p. 2–4, 6).

In 2019, mineral fuels (primarily crude petroleum and natural gas) continued to be the Turkey's leading import category. Mineral fuel imports were valued at \$41.7 billion, accounting for 20% of the country's total imports of \$210.3 billion. Imports of iron and steel (primarily steel scrap) were valued at \$15.0 billion, accounting for 7% of total imports. Imports of precious stones and metals (primarily gold) were valued at \$13.4 billion, accounting for 6% of the country's total imports in 2019. Turkey remained a major gold importer globally. The country's gold imports decreased by 21% to 160 metric tons (t) in 2019, continuing the downward trend since the peak in 2017, when it had reached 361 t. Turkey's gold imports were expected to increase in 2020 (Türkiye Ticaret Bakanlığı, 2020; Altın Madencileri Derneği, 2021b).

In 2019, Turkey was the leading source of boron and feldspar imports for the United States, accounting for 84% and 98% of the United States' imports, respectively. Turkey was also an important source of soda ash (accounting for 62% of the United States' imports), cement (16%), and magnesium compounds (6%) (Bolen, 2021; Brioche, 2021a, b; Hatfield, 2021; Merrill, 2021).

Commodity Review

Metals

Bauxite, Alumina, and Aluminum.—In 2019, Eti Alüminyum A.Ş., which was the only primary aluminum producer in Turkey, continued its \$1.1 billion multiyear modernization of the Seydischir aluminum smelter in Konya Province through an additional new investment of \$560 million. The facility had the capacity to produce 260,000 metric tons per year (t/yr) of alumina and 160,000 t/yr of cast products. The company's aluminum production reportedly provided about 10% of Turkey's annual consumption of 600,000 t. Eti Alüminyum also exported about 400,000 t of aluminum hydroxide, aluminum oxide, and other byproducts to 75 countries, including the United States, annually. The company aimed to become one of the top four aluminum producers in Europe and one of the top eight producers globally (Artan, 2018; Cengiz Holding A.Ş., 2020).

Cobalt and Nickel.—Meta Nikel Kobalt Madencilik Sanayi ve Ticaret (META) A.Ş., which was owned equally by GSR Capital of China and Vestel Elektronik Sanayi ve Ticaret A.Ş. of Turkey since 2018, operated Turkey's first and Europe's only nickel-cobalt concentrate plant; the plant was located in Gordes, Manisa Province. The company had achieved commercial production and first exports at Gordes in 2016. In 2019, META continued to export all its metal output. In 2019, the Gordes plant operated for 138 days owing to planned downtime and produced 2,175 t of nickel content compared with 242 days of operation and production of 5,001 t of nickel content in 2018. The plant had a production capacity of 10,000 t/yr of nickel

and 750 t/yr of cobalt. With GSR's investment, META planned to increase the production capacity at Gordes to 20,000 t/yr of nickel by 2023. The company would also add nickel sulfate and cobalt sulfate production facilities as well as a sulfuric acid plant; sulfuric acid used in its mixed hydroxide precipitate (MHP) production process was currently imported. META was also engaged in reserve development of and exploration for nickel deposits in Eskisehir Province and Usak Province, respectively (Meta Nikel Kobalt A.Ş., 2018, 2020; Roskill, 2018; Vestel Elektronik Sanayi ve Ticaret A.Ş., 2020, p. 111–112, 171).

Copper and Zinc.—Çayeli Bakır İşletmeleri A.Ş., which was a subsidiary of First Quantum Minerals Ltd. of Canada, produced 16,706 t of copper and 5,252 t of zinc at its Cayeli copper mine in Rize Province in 2019 compared with 19,896 t of copper and 4,091 t of zinc in 2018. Copper output decreased by 16% owing primarily to decreased throughput and lower grades. Zinc output increased by 28% owing to continuous operation of the zinc circuit and improved zinc recovery. Cayeli's copper recovery was 88%, and zinc recovery, 38% in 2019. Production in 2020 was expected to be 15,000 t of copper and 6,000 t of zinc as the mine approached reserve depletion, projected for 2023 (First Quantum Minerals Ltd., 2020a, p. 3, 19–20, 30–31; 2020b, c).

Gold and Silver.—Turkey's gold production increased by 40% to 38 t in 2019. The Turkish gold sector included 17 mines and 5 refineries in 2019. The Kisladağ deposit in Usak Province and the Cöpler deposit in Erzincan Province were Turkey's largest gold deposits, with reserves of 143,000 kilograms (kg) and 99,000 kg of gold, respectively. The Lapseki gold-silver mine in Canakkale Province and the İvrindi gold mine in Balıkesir Province became operational in 2018 and 2019, respectively (Tümad Madencilik San. ve Tic. A.Ş., 2018a, b; Altın Madencileri Derneği, 2021a–c).

Eldorado Gold Corp. (Eldorado) of Canada operated the Kisladağ open pit, which was a low-grade gold porphyry mine, and the Efemcükuru underground high-grade epithermal vein mine in the Aegean region. In 2019, Eldorado restarted mining operations in Kisladağ after completing the testing of different recovery methods. Production in Kisladağ decreased by 19.2% to 4,361 kg of gold from ore grading 1.15 grams per metric ton (g/t); sales from the mine totaled 4,315 kg in 2019. The remaining life of the mine was 15 years. Production in Efemcükuru increased by 9.2% to 3,228 kg of gold from ore grading 7.03 g/t; sales were 3,289 kg in 2019. The increased output was due to higher volume milled and a higher average head grade. The remaining life of the mine was 7 years (Eldorado Gold Corp., 2020a, p. 15–17; 2020b, c).

Anagold Madencilik Sanayi ve Ticaret A.Ş., which was majority-owned by Alacer Gold Corp. of Canada, had operated the Cöpler open pit mine since 2010. In 2019, Cöpler's gold output more than doubled with the ramping up of operations to 12,168 kg (from ore grading 1.13 g/t gold), making it Turkey's largest operating gold mine. Alacer Gold projected Cöpler's remaining life of mine to be 17 years with gold production of approximately 9.3 to 12.5 t/yr. As of 2016, probable gold reserves at the Cöpler Mine were 41.2 million metric tons (Mt) at grades of 2.41 g/t gold, 5.7 g/t silver, and 0.01% copper. In 2019, Alacer Gold completed phase 1 oxide ore production in

Cakmaktepe, which was located about 5 kilometers from Cöpler. Ore from Cakmaktepe was processed through the existing Cöpler facilities. The company planned to engage in phase 2 production at the site. As of 2017, probable gold reserves at the Cakmaktepe Mine were 1.3 Mt at a grade of 2.13 g/t gold (SSR Mining, 2020a; 2020b, p. 1, 4).

Koza Altın İşletmeleri A.Ş. (Koza Altın), which was the only domestically owned gold producer in Turkey, produced approximately 9,082 kg of gold (from ore grading 4.59 g/t gold) and 4,466 kg of silver (from ore grading 3.81 g/t silver) from five mines and four processing plants that it operated in 2019; the mine had produced 6,379 kg of gold (from ore grading 3.40 g/t gold) and 3,673 kg of silver (from ore grading 3.42 g/t silver) in 2018, respectively. Kaymaz, which was located in Eskisehir Province, was the company's largest processing plant in terms of output. In 2019, the Kaymaz plant produced 4,402 kg of gold (from ore grading 5.01 g/t gold) and 2,321 kg of silver (from ore grading 4.65 g/t silver). Koza Altın's second largest processing plant was located at Ovacik in Mugla Province, which processed ore extracted mainly from the Cukuralan Mine in Izmir Province. In 2019, the Ovacik plant produced 3,970 kg of gold (from ore grading 4.82 g/t gold) and 1,628 kg of silver (from ore grading 2.94 g/t silver). Koza Altın had been operated by Government-appointed trustees since 2015 because of a criminal case filed against its former owner (Business Wire, 2019; Koza Altın İşletmeleri A.Ş., 2020, p. 5–6, 11, 26–28).

Iron and Steel.—Erdemir Madencilik Sanayi ve Ticaret A.Ş., which was a wholly owned subsidiary of steel producer Ereğli Demir ve Çelik Fabrikaları T.A.Ş., remained Turkey's leading iron ore producer. Erdemir accounted for about 34% of Turkey's annual iron ore output and supplied 12% of the country's iron ore demand (Erdemir Madencilik Sanayi ve Ticaret A.Ş., 2020).

Turkey's steel sector comprised 24 electric arc furnace (EAF) mills, 7 induction furnace plants, and 3 basic oxygen furnace (BOF) steelmaking plants with a total production capacity of 51.5 million metric tons per year (Mt/yr) of steel. All steel companies were privately owned. Turkey's raw steel output decreased by 9.6% to 33.7 Mt in 2019, ranking it 2d in Europe and 8th globally, which was the same ranking as in 2018. About 68% of Turkey's total raw steel production was by electrical mills and 32% was by BOF mills. In 2019, Turkey exported 19.7 Mt of steel and was the 7th-ranked steel exporter in the world; the country imported 12.4 Mt of steel and was the world's 13th-ranked importer of steel. Turkey's exports of raw steel and steel products were valued at \$13.8 billion in 2019, accounting for 7.7% of the country's total exports. About one-half of Turkey's steel exports consisted of long products; flat products accounted for 27%; tubes and pipes, 10%; billet and slab, 6%; and other steel products, 7%. Turkey imported about 18.9 Mt of ferrous scrap in 2019 and remained the world's leading importer of ferrous scrap, followed by the Republic of Korea, which imported about 6.5 Mt (Türkiye Çelik İhracatçıları Birliği, 2020; World Steel Association, 2020, p. 9–10, 18, 22, 27).

Industrial Minerals

Boron.—Eti Maden İşletmeleri Genel Müdürlüğü produced 2.04 Mt of refined borates in 2019, which was a decrease of 16.1% from the amount produced in 2018. The company's

global market share of refined borates decreased to 56% in 2019 from 59% in 2018. Total boron chemical plant capacity increased slightly to 2.73 Mt/yr, yielding a capacity utilization rate of about 75% in 2019 compared with 90% in 2018. Boron product exports, 96% of which were refined boron products, made up 95% of the company's total sales of 2.06 Mt and were valued at \$820 million in 2019 compared with \$990 million in 2018. Countries in the Asia and the Pacific region received 53% of Eti Maden's exports, followed by the Europe and Central Eurasia region (29%) and the Americas (16%). The remaining 2% of total sales, or 101,000 t, met domestic demand for boron products, 34% of which was consumed in cleaning agents; 28%, by the glass industry; and 21%, by the ceramics industry. Total boron reserves were 3.25 billion metric tons as of yearend 2019 (Eti Maden İşletmeleri Genel Müdürlüğü, 2020a, p. 3–4, 23, 26, 29, 30).

Cement.—Turkey's hydraulic cement production decreased by 21.5% to 56.97 Mt in 2019, and clinker production decreased by 17.8% to 57.8 Mt. The country's total gray cement production capacity increased by 1.3% to 143.8 Mt/yr, and the cement capacity utilization rate was 41.6% in 2019 compared with 53.4% in 2018. The country's total clinker production capacity increased by 2% to 91.7 Mt/yr, and the clinker capacity utilization rate was 67.2% in 2019 compared with 82.9% in 2018. Turkey's cement industry included 63 integrated plants and 16 grinding stations. OYAK Çimento Grubu had a 15% market share and was the country's leading producer. The company operated seven integrated plants that had a combined production capacity of 16 Mt/yr (Perilli, 2019; Türkiye Çimento Müstahsilleri Birliği, 2019a, c; 2020a, c; Datis Export Group, 2020).

Turkey exported cement to 95 countries around the world. Its exports accounted for about 10% of the country's total output and increased by 49% to 11.1 Mt in 2019. The United States received about 33% of Turkey's cement exports, followed by Israel (20%), Syria (11%), and Ghana (4%). Turkey exported clinker to 35 countries around the world. The exports accounted for about 20% of the country's total clinker output and almost doubled to 11.6 Mt in 2019. Ghana received about 21% of Turkey's clinker exports, followed by Côte d'Ivoire (15%), Guinea (9%), and Colombia (7%) (Türkiye Çimento Müstahsilleri Birliği, 2019b; 2020b).

Phosphate Rock.—Turkey's phosphate rock production, which had started in 2013, increased in 2019, although output remained below the level reached in 2016. Eti Bakır A.Ş. finished the construction of the Mazıdağı phosphate plant and integrated metal facility in Mardin Province in southeastern Turkey through a \$1.2 billion investment in 2018. The plant became operational in 2019 and had the capacity to produce 550,000 t/yr of phosphate rock and 200,000 t/yr of diammonium phosphate; it providing 20% of Turkey's annual fertilizer consumption. Eti Bakır also planned to produce metals, including cobalt, copper, silver, and zinc, in the Mazıdağı facility from pyrites that it extracted at its Kure copper plant. The company's prospective cobalt output received interest from multiple electric vehicle manufacturers globally (Belovacıklı, 2018; Aydınlik, 2019; Eti Bakır A.Ş., 2020).

Soda Ash.—Eti Soda A.Ş., which was a subsidiary of Ciner Group (74%) and Eti Maden (26%), had a production capacity of 1.5 Mt/yr of soda ash and 200,000 t/yr of sodium bicarbonate

in Beypazari, Ankara Province, since its capacity expansion was completed in 2017. Kazan Soda Elektrik Üretim A.Ş. (Kazan Soda), also a subsidiary of Ciner Group (100%), operated its 2.5-Mt/yr soda ash and 200,000-t/yr sodium bicarbonate production complex in Kazan, Ankara Province, which began operating in 2018. The Kazan facility was expected to meet 14% of total global demand for trona, which is an ore that is the primary source of sodium carbonate, making Kazan Soda the leading trona and sodium bicarbonate producer in Europe. Kazan Soda planned to increase its production capacity to 2.7 Mt/yr of soda ash. The company exported 93% of its trona output, and the remaining 7% was sold domestically. Ciner Group was one of the leading soda ash producers globally, and it also had facilities in the United States (Ciner Group, 2019; Eti Maden İşletmeleri Genel Müdürlüğü, 2020b, p. 31; Eti Soda A.Ş., 2020; Kazan Soda Elektrik Üretim A.Ş., 2020a; 2020b, p. 10).

Mineral Fuels

Coal.—Turkey produced 19% of Europe’s lignite coal in 2019 and was the second-ranked producer of lignite coal in Europe after Germany. The country’s lignite production increased by 0.7% in 2019 to 85.8 Mt, of which 69.5 Mt, or 81%, was delivered to powerplants for electricity generation. Hard coal (bituminous) production from the Zonguldak basin on the Black Sea coast remained relatively minor and decreased by 26% to 1.2 Mt, although the output by privately operated mines increased. Turkey was Europe’s second-ranked coal importer after Germany and would likely become the top importer in 2020 given the country’s increasing reliance on coal in its energy mix. In 2019, imports of coal decreased by 2.8% to 36.1 Mt, most of which originated from Colombia and Russia. Turkey’s steam coal imports amounted to 30.4 Mt in 2019 and were expected to increase in 2020 owing to the anticipated addition of new coal-fired powerplants and increased industrial production. About one-third of steam coal imports were used by industrial users, including cement producers (Euracoal, 2020, p. 9, 13).

Outlook

Turkey is likely to remain a globally significant producer of bentonite, boron, cement, chromite, feldspar, magnesium compounds, perlite, pumice, soda ash, and steel, and a leading producer of gold in Europe. The country’s production of boron and soda ash may increase with expanded production capacity. Aluminum, cobalt, nickel, and phosphate rock outputs are expected to increase with new investment into production facilities. Gold and silver outputs are expected to continue to increase substantially with new mines becoming operational. Turkey’s production of cement and steel may decrease further unless domestic and foreign demand increases for these two commodities. Coal and copper production are likely to decrease owing to depletion of reserves. The trajectory of mineral exports overall will be contingent on the recovery of demand in Turkey’s major export markets in Asia, Europe, and North America (Begcecanli, 2020).

References Cited

- Altın Madencileri Derneği, 2021a, İşletilen altın madenleri [Active gold mines]: Ankara, Turkey, Altın Madencileri Derneği. (Accessed January 27, 2021, at <http://altinmadencileri.org.tr/aktif-olan-altin-madenleri/>.) [In Turkish.]
- Altın Madencileri Derneği, 2021b, Türkiye altın üretimi [Turkey’s gold production]: Ankara, Turkey, Altın Madencileri Derneği. (Accessed January 27, 2021, at <http://altinmadencileri.org.tr/turkiye-altin-uretimi-2/>.) [In Turkish.]
- Altın Madencileri Derneği, 2021c, Türkiye’nin altın ithalatı [Turkey’s gold imports]: Ankara, Turkey, Altın Madencileri Derneği. (Accessed January 27, 2021, at <http://altinmadencileri.org.tr/turkiyenin-altin-ithalati-3/>.) [In Turkish.]
- Anderson, C.S., 2021, Selenium: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 146–147.
- Artan, Gökhan, 2018, Eti Alüminyum GM—Yatırım 1.1 milyar dolara, istihdam 3 bin 100 kişiye ulaşacak [Eti Alüminyum GM—Investment will reach \$1.1 billion, employment to increase to 3,100 people]: *Hurriyet*, October 8. (Accessed January 28, 2021, at <https://www.hurriyet.com.tr/yerel-haberler/istanbul/merkez/eti-aluminyum-gm-yatirim-1-1milyar-dolara-ist-40979767>.) [In Turkish.]
- Aydinlik, 2019, Eti Bakır’ın Mardin yatırımı işsizliği beş puan aşağı çekti [Eti Bakır’s investment reduced unemployment by five points]: *Aydinlik*, October 6. (Accessed January 28, 2021, at <https://www.aydinlik.com.tr/eti-bakir-in-mardin-yatirimi-issizligi-bes-puan-asagi-cekti-ekonomi-ekim-2019>.) [In Turkish.]
- Begcecanli, Busranur, 2020, Turkey set to break 2019 record in gold output in 2020: Ankara, Turkey, Anadolu Agency, January 27. (Accessed April 25, 2021, at <https://www.aa.com.tr/en/economy/turkey-set-to-break-2019-record-in-gold-output-in-2020/1715669#>.)
- Belovacıklı, Mete, 2018, Doğu’ya yatırım Türkiye’ye borcumuzdu [We owed it to Turkey to invest in the East]: *Milliyet*, October 26. (Accessed January 28, 2021, at <http://www.milliyet.com.tr/yazarlar/mete-belovacikli/dogu-ya-yatirim-turkiye-ye-2766743>.) [In Turkish.]
- Bolen, W.P., 2021a, Salt: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 138–139.
- Bolen, W.P., 2021b, Soda ash: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 152–153.
- Brioché, A.S., 2021a, Boron: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 36–37.
- Brioché, A.S., 2021b, Feldspar and nepheline syenite: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 58–59.
- Business Wire, 2019, Koza Altın welcomes UK Supreme Court’s decision to dismiss Ipek’s claims: *Business Wire*, July 29. (Accessed January 29, 2021, at <https://www.businesswire.com/news/home/20190729005413/en/Koza-Altin-Welcomes-UK-Supreme-Court%E2%80%99s-Decision>.)
- Cengiz Holding A.Ş., 2020, Eti Alüminyum A.Ş.—From mining to the final product: Istanbul, Turkey, Cengiz Holding A.Ş. (Accessed January 18, 2021, at <http://www.cengizholding.com.tr/sectors/maden/eti-aluminyum-a-s/?lang=en>.)
- Ciner Group, 2019, How Ciner became a leader in the soda ash industry: Istanbul, Turkey, Ciner Group. (Accessed January 10, 2021, at <https://www.ciner.us.com/how-ciner-became-a-leader-in-the-soda-ash-industry/>.)
- Crangle, R.D., Jr., 2021a, Gypsum: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 74–75.
- Crangle, R.D., Jr., 2021b, Pumice and pumicite: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 128–129.
- Crangle, R.D., Jr., 2021c, Zeolites (natural): U.S. Geological Survey Mineral Commodity Summaries 2021, p. 188–189.
- Datis Export Group, 2020, How many cement plants are producing in Turkey 2020?: Dubai, United Arab Emirates, Datis Export Group, August 31. (Accessed April 24, 2021, at <https://datis-inc.com/blog/how-many-cement-plants-are-producing-in-turkey-2020/>.)
- Dolley, T.P., 2021, Sand and gravel (industrial): U.S. Geological Survey Mineral Commodity Summaries 2021, p. 142–143.
- Eldorado Gold Corp., 2020a, 2019 sustainability report: Vancouver, British Columbia, Canada, Eldorado Gold Corp., 98 p. (Accessed January 11, 2021, at https://s2.q4cdn.com/536453762/files/doc_downloads/sustainability_report/0335_EldG_Sust-2020_v24_linked.pdf.)

- Eldorado Gold Corp., 2020b, Operations & projects—Efemcukuru (Turkey): Vancouver, British Columbia, Canada, Eldorado Gold Corp. (Accessed January 11, 2020, at <https://www.eldoradogold.com/assets/operations-and-projects/europe/operations/efemcukuru-turkey/default.aspx>.)
- Eldorado Gold Corp., 2020c, Operations & projects—Kisladag (Turkey): Vancouver, British Columbia, Canada, Eldorado Gold Corp. (Accessed January 11, 2020, at <https://www.eldoradogold.com/assets/operations-and-projects/europe/operations/kisladag-turkey/default.aspx>.)
- Erdemir Madencilik Sanayi ve Ticaret A.Ş., 2020, Corporate: Ereğli, Turkey, Erdemir Madencilik Sanayi ve Ticaret A.Ş. (Accessed February 24, 2022, at <https://www.erdemirmaden.com.tr/corporate/>.)
- Eti Bakır A.Ş., 2020, Mazıdağı phosphate plant: Istanbul, Turkey, Eti Bakır A.Ş. (Accessed January 28, 2021, at <https://etibakir.com.tr/plants/mazidagi-phosphate-plant/?lang=en>.)
- Eti Maden İşletmeleri Genel Müdürlüğü, 2020a, Bor sektör raporu 2019 [Report on boron sector 2019]: Ankara, Turkey, Eti Maden İşletmeleri Genel Müdürlüğü, May, 32 p. (Accessed January 20, 2021, at <https://www.etimaden.gov.tr/storage/2020/2019BORSEKTORRAPORU.pdf>.) [In Turkish.]
- Eti Maden İşletmeleri Genel Müdürlüğü, 2020b, Faaliyet raporu 2019 [Activity report 2019]: Ankara, Turkey, Eti Maden İşletmeleri Genel Müdürlüğü, May, 96 p. (Accessed January 20, 2021, at <https://www.etimaden.gov.tr/storage/uploads/sunumlar/2019-tr/index.html>.) [In Turkish.]
- Eti Soda A.Ş., 2020, About us: Ankara, Turkey, Eti Soda A.Ş. (Accessed January 10, 2021, at <https://www.etisoda.com/en/about-us/>.)
- Euracoal, 2020, Euracoal market report 2020 no. 1: Brussels, Belgium, Euracoal, May, 14 p. (Accessed January 10, 2021, at http://euracoal2.org/download/Public-Archive/Library/Market-Reports/EURACOAL-Market-Report-2020-1_v02-yyt.pdf.)
- First Quantum Minerals Ltd., 2020a, 2019 annual report—Reliable growth: Vancouver, British Columbia, Canada, First Quantum Minerals Ltd., 116 p. (Accessed January 28, 2021, at https://s24.q4cdn.com/821689673/files/doc_downloads/2019-annual-meeting-of-shareholders-materials/03/First-Quantum-Annual-Report-2019.pdf.)
- First Quantum Minerals Ltd., 2020b, Operating mines—Cayeli: Vancouver, British Columbia, Canada, First Quantum Minerals Ltd. (Accessed January 28, 2021, at <https://first-quantum.com/English/our-operations/default.aspx#module-operation--cayeli>.)
- First Quantum Minerals Ltd., 2020c, Operating mines—Cayeli production statistics: Vancouver, British Columbia, Canada, First Quantum Minerals Ltd. (Accessed January 28, 2021, at <https://first-quantum.com/English/our-operations/operating-mines/cayeli/production-statistics/default.aspx>.)
- Hatfield, A.K., 2021a, Cement: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 42–43.
- Hatfield, A.K., 2021b, Perlite: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 120–121.
- İstanbul Maden İhracatçıları Birliği, 2020, 2019 yılı maden sektörü görünümü raporu [Report on state of mining sector 2019]: Istanbul, Turkey, İstanbul Maden İhracatçıları Birliği, 14 p. (Accessed January 25, 2021, at https://www.imib.org.tr/uploads/docs/1592996652_maden-sektor-gorunumu.pdf.) [In Turkish.]
- Kazan Soda Elektrik Üretim A.Ş., 2020a, About us: Ankara, Turkey, Kazan Soda Elektrik Üretim A.Ş. (Accessed January 10, 2021, at <https://www.kazansoda.com/en/about-us/>.)
- Kazan Soda Elektrik Üretim A.Ş., 2020b, Kazan Soda sustainability report 2019: Ankara, Turkey, Kazan Soda Elektrik Üretim A.Ş., 64 p. (Accessed April 26, 2021, at <https://www.kazansoda.com/wp-content/uploads/2020/09/Kazan-Soda-Sustainability-Report-2019.pdf>.)
- Klochko, K., 2021, Antimony: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 22–23.
- Koza Altın İşletmeleri A.Ş., 2020, Faaliyet raporu—1 Ocak-31 Aralık 2019 [Activities report—January 1–December 31, 2019]: Istanbul, Turkey, Koza Altın İşletmeleri A.Ş., February 28, 84 p. (Accessed January 29, 2021, at <http://kozaaltin.com.tr/upl/ka-faaliyet-2019-09.pdf>.) [In Turkish.]
- Maden ve Petrol İşleri Genel Müdürlüğü, 2020a, Maden grubuna göre Türkiye geneli ruhsat dağılımı [License distribution across Turkey by mineral group]: Ankara, Turkey, Maden ve Petrol İşleri Genel Müdürlüğü. (Accessed January 26, 2021, at http://www.mapeg.gov.tr/maden_istatistik.aspx.) [In Turkish.]
- Maden ve Petrol İşleri Genel Müdürlüğü, 2020b, Maden üretim değerleri [Mining production amounts]: Ankara, Turkey, Maden ve Petrol İşleri Genel Müdürlüğü. (Accessed January 26, 2021, at http://www.mapeg.gov.tr/maden_istatistik.aspx.) [In Turkish.]
- Maden ve Petrol İşleri Genel Müdürlüğü, 2020c, Tarihçe [Brief history]: Ankara, Turkey, Maden ve Petrol İşleri Genel Müdürlüğü. (Accessed January 26, 2021, at <http://www.mapeg.gov.tr/Tarihce.aspx>.) [In Turkish.]
- Maden ve Petrol İşleri Genel Müdürlüğü, 2020d, Yıllar itibariyle ruhsat müracaatları sayısı [Number of license applications by year]: Ankara, Turkey, Maden ve Petrol İşleri Genel Müdürlüğü. (Accessed January 26, 2021, at http://www.mapeg.gov.tr/maden_istatistik.aspx.) [In Turkish.]
- Maden ve Petrol İşleri Genel Müdürlüğü, 2020e, Yıllar itibariyle Türkiye geneli ruhsat sayıları [Number of licenses across Turkey by year]: Ankara, Turkey, Maden ve Petrol İşleri Genel Müdürlüğü. (Accessed January 26, 2021, at http://www.mapeg.gov.tr/maden_istatistik.aspx.) [In Turkish.]
- McRae, M.E., 2021, Barite: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 28–29.
- Merrill, A., 2021, Magnesium compounds: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 100–101.
- Meta Nikel Kobalt A.Ş., 2018, With the partnership deal signed with GSR Capital, Zorlu Holding takes the first step into the league of global companies that will share the future: Ankara, Turkey, Meta Nikel Kobalt A.Ş. news release, February 26. (Accessed January 24, 2021, at <http://www.metanikel.com.tr/en/news-detail/zorlu-holding-signed-partnership-deal-with-gsr-capital>.)
- Meta Nikel Kobalt A.Ş., 2020, Gordes Meta nickel cobalt facility: Ankara, Turkey, Meta Nikel Kobalt A.Ş. (Accessed January 24, 2021, at <http://www.metanikel.com.tr/en/gordes-meta-nickel-cobalt-facility/>.)
- Perilli, David, 2019, Update on Turkey: Global Cement News, February 20. (Accessed January 20, 2021, at <https://www.globalcement.com/news/item/8833-update-on-turkey>.)
- Roskill, 2018, Nickel, cobalt—Turkey’s Zorlu Holding signs agreement with GSR Capital to produce battery-grade material: Roskill Industry News, April 3. (Accessed January 24, 2021, at <https://roskill.com/news/nickel-cobalt-turkeys-zorlu-holding-signs-agreement-with-gsr-capital-to-produce-battery-grade-material/>.)
- Schulte, R.F., 2021, Chromium: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 46–47.
- Simmons, K.J., 2021, Clays: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 48–49.
- SSR Mining, 2020a, Our operations—Production—Cöpler: Vancouver, British Columbia, Canada, SSR Mining. (Accessed January 27, 2021, at <https://www.ssrmining.com/operations/production/copler-mine/>.)
- SSR Mining, 2020b, Reserves and resources: Vancouver, British Columbia, Canada, SSR Mining, 4 p. (Accessed January 27, 2021, at https://www.ssrmining.com/_resources/Reserves-and-Resources-8-4-2020.pdf.)
- Tuck, C.C., 2021, Iron and steel: U.S. Geological Survey Mineral Commodity Summaries 2021, p. 82–83.
- Tunç, Zeynel, Altunyuva, Aslı Kehale, and Taşçı, Tuğba, 2019, Mining in Turkey—Overview: Thomson Reuters, June 1. (Accessed January 27, 2021, at [https://content.next.westlaw.com/4-616-5262?_lrTS=20200713034909818&trAnsiionType=Default&contextData=\(sc.Default\)&firstPage=true](https://content.next.westlaw.com/4-616-5262?_lrTS=20200713034909818&trAnsiionType=Default&contextData=(sc.Default)&firstPage=true).)
- Tümad Madencilik San. ve Tic. A.Ş., 2018a, İvrindi gold and silver mine: Ankara, Turkey, Tümad Madencilik San. ve Tic. A.Ş. (Accessed January 29, 2021, at <https://www.tumad.com.tr/en/ivrindi>.)
- Tümad Madencilik San. ve Tic. A.Ş., 2018b, Lapseki gold and silver mine: Ankara, Turkey, Tümad Madencilik San. ve Tic. A.Ş. (Accessed January 29, 2021, at <https://www.tumad.com.tr/en/lapseki>.)
- Türkiye Çelik İhracatçıları Birliği, 2020, Statistics: Türkiye Çelik İhracatçıları Birliği. (Accessed January 21, 2021, at <http://www.cib.org.tr/en/statistics.html>.)
- Türkiye Çimento Müstahsilleri Birliği, 2019a, Aylık veriler—2018 [Monthly data—2018]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at https://www.turkcimento.org.tr/uploads/pdf/Yeni-2018_Aylik-eng2.xls.) [In Turkish.]
- Türkiye Çimento Müstahsilleri Birliği, 2019b, İhracat—2018 [Exports—2018]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at <https://www.turkcimento.org.tr/uploads/pdf/Yeni-export-import2018.xls>.) [In Turkish.]
- Türkiye Çimento Müstahsilleri Birliği, 2019c, Kapasite—2018 [Capacity—2018]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at <https://www.turkcimento.org.tr/uploads/pdf/Yeni-WEBKAPASITE2018-eng.xls>.) [In Turkish.]
- Türkiye Çimento Müstahsilleri Birliği, 2020a, Aylık veriler—2019 [Monthly data—2019]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at https://www.turkcimento.org.tr/uploads/pdf/Yeni-2019_Aylik-eng2.xls.) [In Turkish.]

Türkiye Çimento Müstahsilleri Birliği, 2020b, İhracat—2019 [Exports—2019]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at <https://www.turkcimento.org.tr/uploads/pdf/Yeni-export-import2019.xls>.) [In Turkish.]

Türkiye Çimento Müstahsilleri Birliği, 2020c, Kapasite—2019 [Capacity—2019]: Türkiye Çimento Müstahsilleri Birliği. (Accessed January 21, 2021, at <https://www.turkcimento.org.tr/uploads/pdf/Yeni-WEBKAPASITE2019-eng.xls>.) [In Turkish.]

Türkiye İstatistik Kurumu, 2020, Annual gross domestic product, 2019: Ankara, Turkey, Türkiye İstatistik Kurumu press release, August 31. (Accessed January 25, 2021, at <https://data.tuik.gov.tr/Bulten/Index?p=Annual-Gross-Domestic-Product-2019-33671>.)

Türkiye Ticaret Bakanlığı, 2020, Dış ticaret ve başlıca ekonomik göstergeler bülteni (2019 YILLIK) [Foreign trade and main economic indicators (Yearbook 2019)]: Ankara, Turkey, Türkiye Ticaret Bakanlığı. (Accessed January 25, 2021, at <https://ticaret.gov.tr/istatistikler/dis-ticaret-istatistikleri>.) [In Turkish.]

Vestel Elektronik Sanayi ve Ticaret A.Ş., 2020, Towards new horizons—2019 annual report: Manisa, Turkey, Vestel Elektronik Sanayi ve Ticaret A.Ş., 288 p. (Accessed January 24, 2021, at http://www.vestelinvestorrelations.com/en/_assets/pdf/AnnualReport_2019.pdf.)

World Bank, The, 2020, Turkey—Country data: The World Bank. (Accessed December 28, 2020, at <https://data.worldbank.org/country/turkey>.)

World Steel Association, 2020, 2020 world steel in figures: Brussels, Belgium, World Steel Association, 30 p. (Accessed January 21, 2021, at <https://worldsteel.org/wp-content/uploads/2020-World-Steel-in-Figures.pdf>.)

TABLE 1
TURKEY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS					
Aluminum:					
Bauxite	1,050,000	1,000,000	940,695	1,000,000 ^e	818,551
Alumina ^e	294,000	305,000	300,000	300,000	300,000
Metal, primary	45,900	78,800	80,000 ^e	80,000 ^e	80,000 ^e
Antimony, mine:					
Ore:					
Gross weight	35,501	50,000	87,940	64,975 ^r	69,330
Sb content ^e	2,000	2,800	4,900	3,600 ^r	3,800
Concentrate:					
Gross weight	7,100	10,000	17,600	13,000 ^{r,e}	13,900 ^e
Sb content	1,950 ^e	2,520	2,500 ^e	1,840 ^{r,e}	1,970 ^e
Chromium, mine, chromite, 34% to 43% Cr ₂ O ₃	8,301,218	6,066,022	7,849,500	10,757,199 ^r	8,666,114
Cobalt, mine, Co content ³	NA	100 ^e	220	259	120 ^e
Copper:					
Mine, concentrates, exclusive of pyrite:					
Gross weight	526,931	523,537	415,649 ^r	400,000 ^e	400,000 ^e
Cu content	108,000	100,000	83,000	79,600	73,500
Smelter:					
Primary	45,400	46,200	53,400 ^r	85,400 ^r	83,700
Secondary	5,000	5,000	5,000	5,000	5,000
Refinery:					
Primary	74,000	47,400	88,000	116,300	106,000
Secondary	10,000 ^e	5,000	7,000	10,000	10,000
Ferroalloys:					
Ferrochromium ⁴	82,650	75,000	83,894	91,799 ^r	81,743
Ferrosilicon ⁵	1,400	2,900	2,900	3,500	3,000
Gold, mine, Au content kilograms	27,800	24,500	23,090	27,100	38,000
Iron ore, mine:					
Gross weight thousand metric tons	7,761	7,137	9,992	9,550	16,382
Fe content do.	4,700	4,320	6,050	5,777	9,110
Iron and steel:					
Pig iron do.	10,184	10,304	10,589	10,536	9,869
Raw steel, including castings do.	31,517	33,163	37,524	37,312	33,743
Lead:					
Mine:					
Lead-zinc ore:					
Gross weight	333,690	293,100	341,200	381,300	367,900
Pb content ^e	74,000	65,000	68,000	76,000	71,000
Concentrate:					
Gross weight	126,500	111,100	102,715 ^r	95,359 ^r	87,771
Pb content	74,000 ^e	76,827	92,539	76,000 ^e	71,000 ^e
Refinery, secondary ^e	56,000	58,000	58,000	58,000	56,000
Magnesium, metal, primary ^e	200	3,750	14,000	4,000	7,000
Manganese, mine:					
Gross weight	142,809	150,000 ^e	39,780	40,800	45,000 ^e
Mn content	51,000 ^e	54,000 ^e	13,920	14,280	16,000 ^e
Molybdenum, mine, concentrate:					
Gross weight	3,500	3,500 ^e	3,500 ^e	3,500 ^e	1,500 ^e
Mo content	900	900 ^e	900 ^e	900 ^e	400 ^e
Nickel, Ni content:					
Mine, laterite ore	9,900	10,680	17,000	17,000	16,600
Intermediate, nickel-cobalt hydroxide	--	1,790	4,000	5,001	2,175

See footnotes at end of table.

TABLE 1—Continued
TURKEY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS—Continued					
Selenium, Se content kilograms	50,000	--	50,000 ^e	50,000 ^e	50,000 ^e
Silver, mine, Ag content do.	190,550	376,640	151,490	197,320 ^r	242,000
Titanium, mineral concentrate, rutile	5,000 ^e	5,000	6,706 ^r	6,498 ^r	6,450 ^e
Zinc, mine, concentrate:					
Gross weight thousand metric tons	850 ^e	1,000	1,800	2,300 ^e	1,800 ^e
Zn content do.	174 ^e	202	150 ^e	190 ^e	150 ^e
Zirconium, zircon	1,500	500	1,200	1,950 ^r	1,900 ^e
INDUSTRIAL MINERALS					
Abrasives, emery	75,538	89,756	107,951	181,743 ^r	106,540
Barite, ground	209,097	105,573	310,667 ^r	335,473 ^r	298,000 ^e
Boron:					
Crude ore	5,071,896	4,814,553	5,801,459	6,000,000 ^e	5,500,000 ^e
Concentrate	1,840,000	1,607,208	1,640,000	2,200,000	2,000,000 ^e
Refinery, refined borates	1,839,000	1,831,000	2,025,000	2,432,000	2,040,000
Cement, hydraulic thousand metric tons	71,419	75,403	80,552	72,544	56,966
Clay:					
Bentonite	3,134,911	1,744,912	1,481,617	1,331,955 ^r	1,533,547
Fuller's earth, sepiolite	28,804	56,038	15,624	26,300 ^r	69,000
Kaolin	1,887,302	1,283,260	1,362,799	1,515,609 ^r	1,283,776
Unspecified	7,130,271	3,677,258	4,069,458	4,050,928	4,100,000 ^e
Total	12,200,000	6,760,000	6,930,000	6,920,000 ^r	6,990,000 ^e
Diatomite	86,656	61,722	169,584	242,789 ^r	220,757
Feldspar:					
All types	6,368,079	6,120,978	7,153,908	5,540,010	5,067,955
Nepheline syenite	--	1,432	1,085	1,798 ^r	1,000 ^e
Fluorspar	6,238	10,339	20,150	6,200 ^r	14,400
Gemstones:					
Chalcedony	1,154	1,000 ^e	832	2,149 ^r	1,213
Olivine	184,623	304,279	177,493	411,612 ^r	469,545
Graphite, amorphous ^{e,6}	1,800	2,000	2,300	2,000	2,000
Gypsum, mine	8,639,000	10,124,221	10,223,112	10,896,476 ^r	7,489,129
Leonardite	1,780	1,500	1,000	1,000	1,000 ^e
Lime ^e thousand metric tons	4,400	4,500	4,700	4,700	4,600
Magnesite, run of mine	2,800,000	3,258,445	1,694,071	1,958,847 ^r	1,496,081
Mica:					
Illite	44,000	12,110	-- ^e	6,000 ^e	6,000 ^e
Other	637	3,321	204 ^e	500 ^e	454
Nitrogen, ammonia, N content	560,000	380,000	302,000	550,000 ^r	390,000
Perlite, crude ore	843,242	909,254	1,116,629	1,088,983 ^r	1,174,486
Phosphate rock:					
Gross weight	713,230	772,500	500,000 ^r	500,000 ^e	630,000
P ₂ O ₅ content	214,000	232,000	150,000 ^r	150,000 ^{r,e}	190,000
Pumice and related minerals	5,660,190	5,637,494	7,773,957	7,259,376 ^r	5,392,045
Salt, all types thousand metric tons	6,257	5,328	6,673 ^r	6,299 ^r	6,961
Sand and gravel, industrial, unspecified	12,013,933	10,471,915	13,472,384	10,034,954 ^r	10,000,000 ^e
Soda ash, natural and synthetic thousand metric tons	1,854	1,977	3,274	3,400 ^e	4,302
Sodium, compounds, sodium sulfate	167,688	261,159	268,815	275,000 ^e	212,068

See footnotes at end of table.

TABLE 1—Continued
TURKEY: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019	
INDUSTRIAL MINERALS—Continued						
Stone:						
Crushed, serpentine	thousand metric tons	1,385	991	1,000 ^e	1,000 ^e	1,000 ^e
Dimension:						
Basalt		23,060,917	24,161,479	20,114,197	24,944,745 ^r	17,040,720
Diabase		331,027	313,228	358,210	365,000 ^e	350,000 ^e
Dolomite		21,609,434	17,669,892	19,816,906	26,197,907 ^r	13,593,324
Granite		157,463	314,059	278,884	312,660 ^r	350,929
Limestone	thousand metric tons	407,702	459,247	478,730	557,029 ^r	342,112
Marble ⁷	do.	14,370	13,536	14,286 ^r	13,939 ^r	10,493
Onyx ⁷	do.	17	18	16	16 ^e	15 ^e
Travertine ⁷	do.	3,123	2,762	2,222 ^r	2,441 ^r	2,248
Size and shape unspecified, calcite		10,071,769	8,410,582	9,445,257	9,769,000 ^r	6,767,137
Sulfur, S content:						
Byproduct, natural gas and petroleum		72,900	73,000 ^e	73,000 ^e	73,000 ^e	73,000 ^e
Pyrites		40,000	40,000 ^e	40,000 ^e	40,000 ^e	40,000 ^e
Other, unspecified		10,000	10,000 ^e	10,000 ^e	10,000 ^e	10,000 ^e
Total		123,000	123,000 ^e	123,000 ^e	123,000 ^e	123,000 ^e
Talc and related minerals:						
Talc		9,681	8,559	3,882	4,000	3,742
Pyrophyllite ⁶		50,000	50,000	50,000	50,000	50,000
Vermiculite		425	1,050	1,618	18,183 ^r	1,370
Zeolites		55,224	71,568	63,250	99,848 ^r	73,354
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	2,074	1,882	1,764	1,621	1,207
Lignite	do.	58,730	77,896	84,303	99,207	80,820
Coke, metallurgical	do.	4,400 ^e	4,500 ^e	4,600 ^e	4,530 ^r	4,455
Natural gas	million cubic meters	399	382	354	436 ^r	483
Peat, unspecified		134,647	134,091	227,779	112,477 ^r	100,000 ^e
Petroleum:						
Crude	thousand 42-gallon barrels	18,615 ^r	18,980 ^r	18,615 ^r	20,805 ^r	21,900
Refinery:						
Asphalt, natural	do.	837	1,567	1,405	1,808	1,844
Diesel	do.	63,500	71,500	77,500	69,300 ^r	101,800
Fuel oil	do.	4,100	2,300	540	460	2,700
Gasoline	do.	43,600	43,500	45,700	40,000	45,100
Jet fuel	do.	39,800	35,600	38,400	38,000	47,300
Kerosene	do.	447	91	32	30	10
Residual fuel oil	do.	15,600	15,600	14,300	11,700	15,600
Other	do.	43,300	51,900	43,200	30,500	49,200
Total	do.	211,000	222,000	221,000	192,000	264,000

^eEstimated. ^rRevised. do. Ditto. NA Not available. -- Zero.

¹Table includes data available through November 23, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, ammonium nitrate, liquefied natural gas, quartz and quartzite, refined gold and silver, and silica may have been produced, but available information was inadequate to make reliable estimates of output.

³Cobalt content of nickel-cobalt hydroxide.

⁴Reported by CRU Group in Chrome Monitor.

⁵Exports. Source: United Nations Comtrade.

⁶Turkish marketable production averages approximately 5% of run-of-mine production. Almost all is for domestic consumption.

⁷Converted from cubic meters to metric tons using conversion factors of 2.56 for marble and 2.52 for onyx and travertine.

TABLE 2
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum, metal	Eti Alüminyum A.Ş. (Cengiz Holding A.Ş., 100%)	Smelter at Seydisehir, Konya Province	82
Antimony, ore, gross weight	Eti Bakır A.Ş. (Cengiz Holding A.Ş., 100%)	Halikoy Mine, Izmir Province	91
Do.	Özdemir Antimuan Maden Limited Şti. (Koza-İpek Holding A.Ş.)	Turhal Mine, Tokat Province	NA
Bauxite and alumina:			
Bauxite	Albuck Madencilik San. ve Tic. A.Ş.	Mine near Cirpi, Mugla Province	NA
Do.	do.	Mine near Mihaliccik, Eskisehir Province	NA
Do.	Demireller Tarım Madencilik Petrol Sanayi ve Ticaret Limited Şti.	Mines near Arslankoy, Mersin Province	500
Do.	Eti Alüminyum A.Ş. (Cengiz Holding A.Ş., 100%)	Mines near Madenli, about 25 kilometers south of Seydisehir, Konya Province	550
Alumina	do.	Refinery at Seydisehir, Konya Province	260
Boron:			
Crude ore, concentrate and refined	Bigadiç Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Four open pit mines at Bigadic, Balikesir Province	635
Do.	Emet Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Espey Mine, Emet, Kutahya Province	500
Do.	do.	Hisarcik Mine, Emet, Kutahya Province	500
Do.	Kestelek Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Kestelek Mine, Bursa Province	100
Do.	Kırka Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Mine at Kirka, Eskisehir Province	856
Refined borates	Bandırma Bor ve Asit Fabrikaları İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Plant at Bandırma, Balikesir Province	500
Do.	Bigadiç Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Plant at Bigadic, Balikesir Province	700
Do.	Emet Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Boric acid complex, Emet, Kutahya Province	600
Do.	Kırka Bor İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü, 100%) (Government)	Plant at Kirka, Eskisehir Province	900
Calcite	Hisar Madencilik (Bera Holding, 100%)	2 plants in Aksaray and Aydin	12,000
Cement:			
Gray portland	Adana Çimento Sanayii ve Ticaret A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 57%]	Adana plant, Adana Province	5,500
Do.	do.	Iskenderun grinding plant, Iskenderun, Hatay Province	1,000
Do.	Afyon Çimento Sanayii Ticaret A.Ş. (Ciments Français S.A., 77%)	Afyon plant, Afyonkarahisar Province	500
Do.	Akçansa Çimento Sanayi ve Ticaret A.Ş. (HeidelbergCement AG, 40%, and Sabancı Holding A.Ş., 40%)	Buyukcekmece plant, Buyukcekmece, Istanbul Province	2,600
Do.	do.	Canakkale plant, about 11 kilometers northwest of Ezine, Canakkale Province	4,990
Do.	do.	Ladik plant, Ladik, Samsun Province	953
Do.	AS Çimento Sanayi ve Ticaret A.Ş.	Bucak plant, Burdur Province	3,901
Do.	Aslan Çimento A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 97%]	Darica plant, Gebze, Kocaeli Province	1,090
Do.	Aşkale Çimento Sanayi ve Ticaret A.Ş.	Trabzon plant, Degirmendere, Trabzon Province	1,000
Do.	do.	Askale plant, Erzurum Province	900
Do.	Bakırçay Çimento Sanayii ve Ticaret A.Ş. (Kars Çimento San. ve Tic. A.Ş., 98%)	Poyracik plant, near Kinik, Izmir Province	907
Do.	Bartın Çimento Sanayii ve Ticaret A.Ş. (Sanko Holding A.Ş.)	Bartın plant, Bartın Province	400
Do.	Baştaş Çimento Sanayii A.Ş. (Vicat Group, 85%)	Elmadag plant, Ankara Province	1,270
Do.	Batıçim Batı Anadolu Çimento Sanayii A.Ş. (Ciftay Insaat Taahhut ve Tic. A.Ş., 30%; Sanko Enerji San. ve Tic. A.Ş. 18%; Cimko Cimento ve Beton Sanayi Tic. A.Ş., 6%; others, 46%)	Bornova plant, Izmir Province	1,814
Do.	Batisöke Söke Çimento Sanayii ve Ticaret A.Ş. (Batıçim Batı Anadolu Çimento Sanayii A.Ş., 75%)	Soke plant, Aydin Province	1,300

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement—Continued:			
Gray portland—Continued	Bolu Çimento Sanayii A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 52%]	Bolu plant, Bolu Province	907
Do.	do.	Ankara grinding plant, Kazan, Ankara Province	800
Do.	Bursa Çimento Sanayii ve Ticaret A.Ş. (Bursa Çimento Fabrikası A.Ş., 98%)	Kestel plant, Bursa Province	2,722
Do.	Çimentaş İzmir Çimento Fabrikası Türk A.Ş. (Intercem S.A., 67%, and Cementir Holding SpA, 29%)	Isikkent plant, Izmir Province	2,921
Do.	do.	Trakya plant, Lalapasa, Edirne Province	1,300
Do.	Çimko Adıyaman Çimento ve Beton Sanayii ve Ticaret A.Ş. (Çimko Çimento ve Beton Sanayii Ticaret A.Ş.)	Adıyaman plant, Adıyaman Province	898
Do.	Çimko Çimento Kahramanmaraş Narlı Fabrikası (Çimko Çimento ve Beton Sanayii Ticaret A.Ş.)	Narlı plant, Narlı, Kahramanmaraş Province	907
Do.	Cimpor Yıbitaş Çimento Sanayii ve Ticaret A.Ş. (Votorantim Cimentos, 100%)	Corum plant, Corum, Corum Province	950
Do.	do.	Hasanoglan grinding plant, Hasanoglan, Ankara Province	725
Do.	do.	Nevşehir grinding plant, Kalaba, Nevşehir Province	300 ^c
Do.	do.	Samsun grinding plant, about 6 kilometers west of Samsun, Samsun Province	300 ^c
Do.	do.	Sivas plant, Sivas, Sivas Province	615
Do.	do.	Yozgat plant, Saraykoy, Yozgat Province	800
Do.	Çimsa Çimento Sanayii ve Ticaret A.Ş. (Sabancı Holding A.Ş., 55%; Akcansa Çimento Sanayi A.Ş., 9%; others, 36%)	Agirnas Plant, Kayseri Province	1,000
Do.	do.	Eskisehir plant, Eskisehir Province	907
Do.	do.	Ankara grinding plant, Lalahan, Ankara Province	481
Do.	do.	Mersin plant, Yenitaskent, Mersin Province	998
Do.	do.	Nigde plant, Nigde, Nigde Province	1,200
Do.	Denizli Çimento Sanayi ve Ticaret A.Ş. (Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 100%)	Kaklık plant, Denizli Province	2,722
Do.	Elazığ Çimento A.Ş. (Kars Çimento Sanayii ve Ticaret A.Ş., 93.55%; Cimentas A.Ş., 6.17%; Bakırçay Çimento Sanayii ve Ticaret A.Ş., 0.27%)	Elazig plant, Elazig Province	900
Do.	Ereğli Çimento Sanayii ve Ticaret A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 50%]	Karadeniz Ereğli plant, Kemer, Zonguldak Province	300
Do.	Göлтаş Çimento A.Ş. (Sadecib S.A., 34%, and Göl Yatırım Holding A.Ş., 28%)	Isparta plant, Isparta Province	2,000
Do.	Kars Çimento Sanayii ve Ticaret A.Ş. (Cimentas A.Ş., 58%, and Alfacem Srl, 40%)	Bozkale plant, Kars Province	390
Do.	Konya Çimento Sanayii A.Ş. (Vicat Group, 81%)	Konya plant, Konya Province	1,814
Do.	Lafarge Van Çimento A.Ş. (Lafarge S.A., 99.99%)	Edremit plant, Van Province	600
Do.	Limak Ege Çimento Sanayii ve Ticaret A.Ş. (Limak Şirketler Grubu)	Ege plant, Turgutlu, Manisa Province	700
Do.	Limak Kurtalan Çimento Sanayii ve Ticaret A.Ş. (Limak Şirketler Grubu)	Ambarlı grinding plant, Buyukcekmece, Istanbul Province	907
Do.	do.	Ankara plant, Ankara, Ankara Province	1,261
Do.	do.	Balikesir plant, Balikesir Province	1,100
Do.	do.	Gaziantep plant, Gaziantep (Sehit Kamil), Gaziantep Province	1,152
Do.	do.	Kurtalan plant, Kurtalan, Siirt Province	1,200
Do.	do.	Mardin plant, Balikesir Province	790

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement—Continued:			
Gray portland—Continued	Limak Kurtalan Çimento Sanayii ve Ticaret A.Ş. (Limak Şirketler Grubu)	Sanliurfa plant, about 14 kilometers north-northwest of Sanliurfa, Sanliurfa Province	862
Do.	do.	Trakya plant, Pinarhisar, Kırklareli Province	971
Do.	Limak-Istaç İnşaat Sanayi ve Ticaret A.Ş.	Bitlis plant, Bitlis Province	1,000
Do.	Limak Madencilik Yapı Çimento Sanayii ve Ticaret A.Ş. (Limak Şirketler Grubu)	Ergani plant, Ergani, Diyarbakir Province	1,270
Do.	Mardin Çimento Sanayii ve Ticaret A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 56%]	Mardin plant, Mardin Province	3,000
Do.	Medcem Çimento Sanayi A.Ş. (Eren Holding, 100%)	Akdere plant, Mersin Province	4,500
Do.	Nuh Çimento Sanayi A.Ş. (Nuh Ticaret ve Sanayi A.Ş., 43%)	Hereke plant, Kocaeli Province	5,171
Do.	Sönmez Çimento Yapı ve Madencilik San. Tic. A.Ş.	Yumurtalık plant, Adana Province	1,588
Do.	Traçim Çimento Sanayii ve Ticaret A.Ş. (Soyak Holding A.Ş. and TBS Taşıma Beton A.Ş.)	Evrencik plant, Vize, Kırklareli Province	2,000
Do.	Ünye Çimento Sanayi ve Ticaret A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 51%, and Nuh Çimento Sanayi A.Ş., 39%]	Unye plant, Ordu Province	2,359
Slag	KarÇimsa Çimento Sanayii ve Ticaret A.Ş. (Akçansa Çimento Sanayi ve Ticaret A.Ş.)	Karabuk plant, Karabuk Province	200
White	Adana Çimento Sanayii ve Ticaret A.Ş. [Ordu Yardımlaşma Kurumu (OYAK) Çimento Grubu, 57%]	Adana plant, Adana Province	318
Do.	Çimsa Çimento Sanayii ve Ticaret A.Ş. (Sabancı Holding A.Ş., 47%)	Mersin plant, Yenitaskent, Mersin Province	1,000
Chromium, Cr content			
	Dedeman Madencilik Tic. ve San. A.Ş.	Mines in Adana, Eskisehir, Erzurum, and Kayseri	NA
Do.	Eti Elektrometalurji A.Ş. (Özdoğu İnşaat Tic. Ltd. Şti, 100%)	7 mines in Fethiye and Gocek, Mugla Province	100
Do.	Eti Krom A.Ş. (Yıldırım Holding A.Ş., 100%)	Mines in Adana, Diyarbakir, Elazig, Hatay, Hatay, Kayseri, Malatya, and Mugla Provinces	1,000
Coal:			
Bituminous	Amasra Taşkömürü İşletme Müessesesi [Türkiye Taşkömürü Kurumu (TTK), 100%] (Government)	Amasra Mine, Amasra, Bartın Province	500
Do.	Armutçuk Taşkömürü İşletme Müessesesi [Türkiye Taşkömürü Kurumu (TTK), 100%] (Government)	Armutçuk Mine, Kandilli, Zonguldak Province	400
Do.	Karadon Taşkömürü İşletme Müessesesi [Türkiye Taşkömürü Kurumu (TTK), 100%] (Government)	Karadon Mine, Kilimli, Zonguldak Province	450
Do.	Kozlu Taşkömürü İşletme Müessesesi [Türkiye Taşkömürü Kurumu (TTK), 100%] (Government)	Kozlu Mine, Kozlu, Zonguldak Province	2,000
Do.	Üzülmüş Taşkömürü İşletme Müessesesi [Türkiye Taşkömürü Kurumu (TTK), 100%] (Government)	Uzulmez Mine, Asma, Zonguldak Province	2,370
Lignite ¹	Bursa Linyitleri İşletmesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKİ), 100%] (Government)	Bursa lignite facility, Orhaneli, Bursa Province	1,000
Do.	Çan Linyitleri İşletmesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKİ), 100%] (Government)	Can lignite facility, Can, Canakkale Province	1,800
Do.	Ege Linyitleri İşletmesi Müessesesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKİ), 100%] (Government)	Soma Mine, Soma, Manisa Province	10,500
Do.	Garp Linyitleri İşletmesi Müessesesi Müdürlüğü (Ciner Group, 100%)	Tuncbilek mining center, Tavşanlı, Kutahya Province	7,000
Do.	Güney Ege Linyitleri İşletmesi Müessesesi Müdürlüğü (Bereket Enerji Üretim A.Ş., 100%)	South Aegean lignite facility, Yatagan, Mugla Province	4,900
Do.	Ilgın Linyitleri İşletmesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKİ), 100%] (Government)	Ilgın lignite facility, Ilgın, Konya Province	300

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Coal:—Continued				
Lignite ¹ —Continued	Seyitömer Linyitleri İşletmesi Müessesesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKI), 100%] (Government)	Seyitomer lignite facility, Seyitomer, Kutahya Province	8,000	
Do.	Yeniköy Linyitleri İşletmesi Müdürlüğü [Türkiye Kömür İşletmeleri Kurumu Genel Müdürlüğü (TKI), 100%] (Government)	Yenikoy lignite facility, Oren (Milas), Muğla Province	8,500	
Cobalt:				
Ore, Co content	metric tons	Meta Nikel Kobalt Madencilik Sanayi ve Ticaret A.Ş. (GSR Capital, 50%, and Vestel Elektronik Sanayi ve Ticaret A.Ş., 50%)	Mines in Gordes, Manisa Province, and Yunussemre, Eskisehir Province	3,000 ^c
Metal	do.	do.	Processing plant in Gordes, Manisa Province	750
Copper:				
Concentrate, gross weight	Eti Bakır A.Ş. (Cengiz Holding A.Ş., 100%)	Kastamonu Kure facility (three open pit mines and one underground mine), Kastamonu Province	110	
Do.	do.	Murgul facility (three open pit mines, including the Anayatak and the Cakmakkaya Mines), Murgul, Artvin Province	95	
Do.	Kuzey Ege Bakır İşletmeleri A.Ş. (Özdoğu İnşaat Tic. Ltd. Şti, 100%)	Tepeoba Mine, Balıkesir Province	50	
Do.	Nesko Maden (Yıldızlar SSS Holding, 100%)	Kocayayla and Yenice Mines, Canakkale Province	130	
Do.	do.	Sebinkarahisar Mine, Giresun Province	22	
Do.	do.	Yomra Mine, Trabzon Province	128	
Concentrate, Cu content	Çayeli Bakır İşletmeleri A.Ş. (First Quantum Minerals Ltd., 100%)	Cayeli Mine, Cayeli, Rize Province	17	
Do.	Cengiz San. ve Tic. A.Ş. (Cengiz Holding, 100%)	Madenkoy Mine, Siirt Province	20	
Do.	Demir Export A.Ş. (Koç Holding A.Ş.)	Lahanos Mine, Giresun Province	15	
Do.	Nesko Maden (Yıldızlar SSS Holding, 100%)	Ivrindi facility, Balıkesir Province	11	
Do.	do.	Surmene Facility, Trabzon Province	11	
Anode (blister) and cathode	Eti Bakır A.Ş. (Cengiz Holding A.Ş.)	Smelter at Tekkekoy, Samsun Province	75	
Cathode	Er-Bakır Elektrolitik Bakır Mamulleri A.Ş.	Refinery at Denizli, Denizli Province	200	
Do.	Sarkuysan Elektrolitik Bakır San. ve Tic. A.Ş.	Refinery at Darıca, Kocaeli Province	200	
Feldspar	Kaltun Madencilik Sanayi ve Ticaret A.Ş.	Cine, Milas, Yatagan Mines, Muğla Province	2,000	
Ferrochromium, high-carbon	Eti Krom A.Ş. (Yıldırım Holding A.Ş., 100%)	About 55 kilometers east of Elazığ, Elazığ Province	165	
Do.	Eti Elektrometalurji A.Ş. (Özdoğu İnşaat Tic. Ltd. Şti, 100%)	Plant in Antalya, Antalya Province	58	
Fertilizer:				
Ammonium nitrate	Kütahya Gübre Sanayii A.Ş. (Yıldız Yatırım Holding A.Ş.)	Kutahya, Kutahya Province	339	
Diammonium phosphate	Ege Gübre Sanayii A.Ş.	Aliaga, İzmir Province	165	
Do.	İstanbul Gübre Sanayi A.Ş. (IGSAŞ) (Yıldız Yatırım Holding A.Ş.)	Korfez, Kocaeli Province	240	
Do.	Samsun Gübre Fabrikası [Türkiye Gübre Sanayii A.Ş. (TÜGSAŞ)]	Tekkekoy, Samsun Province	227	
Monoammonium phosphate	Ege Gübre Sanayii A.Ş.	Aliaga, İzmir Province	130	
Gold:				
Ore, Au content	kilograms	Anagold Madencilik Sanayi ve Ticaret A.Ş. (Alacer Gold Corp., 80%, and Lidya Madencilik Sanayi ve Ticaret A.Ş., 20%)	Copler Mine, Erzincan Province	12,500
Do.	do.	Eczacıbaşı Esan	İnce Mine and plant, Konya Province	NA
Do.	do.	Gümüştaş Madencilik ve Ticaret A.Ş.	Niğde-Bolkar Mine, Niğde Province	NA
Do.	kilograms	Koza Altın İşletmeleri A.Ş. (ATP İnşaat ve Ticaret A.Ş., 45.01%; Koza İpek Holding A.Ş., 24.99%; others, 30%)	Kaymaz Mine and processing plant, Sivrihisar, Canakkale Province	4,500 ^c
Do.	do.	do.	Cukuralan Mine, Dikili, İzmir Province	3,000 ^c
Do.	do.	do.	Himmetdede Mine and processing plant Kayseri Province	2,000

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold:—Continued				
Ore, Au content— kilograms		Koza Altın İşletmeleri A.Ş. (ATP İnşaat ve Ticaret A.Ş., 45.01%; Koza İpek Holding A.Ş., 24.99%; others, 30%)	Ovacik Mine and processing plant, Ovacik, Mugla Province	1,000 ^c
Continued				
Do.	do.	do.	Mastra Mine and processing plant, near Demirkaynak, Gumushane Province ²	800 ^c
Do.		Pomzaexport Madencilik Sanayi ve Ticaret A.Ş.	Sart placer mine, Manisa Province	NA
Do.		Tümad Madencilik San. ve Tic. A.Ş.	Ivrindi Mine, Balıkesir Province	NA
Do.		do.	Lapseki Mine, Canakkale Province	NA
Do.	kilograms	Tüprag Metal Madencilik Sanayi ve Ticaret A.Ş. (Eldorado Gold Corp., 100%)	Kisladag Mine, Katranci, Usak Province	6,000
Do.	do.	do.	Efemcukuru Mine, Izmir Province	4,000
Do.		Zenit Madencilik San. ve Tic. A.Ş.	Kiziltepe Mine, Balıkesir Province	NA
Refined	metric tons	Atasay Kuyumculuk Sanayi ve Ticaret A.S.	Refinery at Istanbul	15
Do.	do.	İstanbul Altın Rafinerisi A.Ş.444 7 427	do.	120
Do.	do.	Nadir Metal Rafineri San ve Tic. A.Ş.	do.	140
Do.	do.	Onsa Mücevherat İmalatı ve Dış Ticaret A.Ş. (Altınbaş Holding)	do.	130
Iron and steel:				
Iron ore		Erdemir Madencilik Sanayi ve Ticaret A.Ş. [Ereğli Demir ve Çelik Fabrikaları T.A.Ş.] (Erdemir Group)]	Fourteen mines in the Divrigi area, Sivas Province	5,600
Do.		Hekimhan Madencilik İthalat İhracat Sanayi ve Ticaret Ltd. Şti. (Kolin İnşaat Turizm Sanayi ve Ticaret A.Ş.)	Deveci Mine, Malatya Province	2,000
Do.		Özkoyuncu Madencilik A.Ş.	Mines in Yahyali, Kayseri Province	2,000
Pellet		Erdemir Madencilik Sanayi ve Ticaret A.Ş. [Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Erdemir Group)]	Plant in Ekinbasi, Sivas Province	2,250
Steel:				
Raw		Asil Çelik A.Ş.	Plant south of Orhangazi, Bursa Province	485
Do.		Bilecik Demir Çelik Sanayi ve Ticaret A.Ş. (Ada Metal Demir Çelik Geri Dönüşüm San. ve Tic. A.Ş., 40%)	Bilecik plant, Bilecik Province	240
Do.		Çebitaş Demir Çelik Endüstrisi A.Ş.	Aliaga plant, Izmir Province	750
Do.		Çelik Makina Sanayi ve Ticaret A.Ş. (ÇEMTAŞ)	Bursa plant, Bursa Province	174
Do.		CER Çelik Endüstrisi A.Ş.	Bornova plant, Izmir Province	850
Do.		Çolakoğlu Metalurji A.Ş.	Dilovasi plant, Kocaeli Province	3,200
Do.		Diler Demir Çelik Endüstrisi ve Ticaret A.Ş.	do.	1,500
Do.		Ege Çelik Endüstrisi Sanayi ve Ticaret A.Ş.	Aliaga plant, Izmir Province	2,000
Do.		Ekinciler Holding A.Ş.	Iskenderun plant, Hatay Province	1,000
Do.		Erege Metal Demir Çelik Sanayi ve Ticaret A.Ş.	Aliaga plant, Izmir Province	720
Do.		Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Erdemir Group) (Ataer Holding A.Ş., 49.29%, and ArcelorMittal, 24.99%)	Karadeniz Ereğli plant, Zonguldak Province	3,800
Do.		Habaş Sinai ve Tibbi Gazlar İstihsal Endüstrisi A.S. (Habaş Topluluğu)	Aliaga plant, Izmir Province	3,000
Do.		İçdaş Demir Çelik Enerji Tersane ve Ulaşım Sanayi A.Ş.	Istanbul (Gunesli) plant, Istanbul Province	1,000
Do.		İçdaş Demir Çelik Enerji Tersane ve Ulaşım Sanayi A.Ş.	Biga plant, Canakkale Province	1,500
Do.		İlhan Metalurji A.Ş.	Toprakkale plant, Osmaniye Province	220
Do.		İskenderun Demir ve Çelik A.Ş. (İsdemir) [Erdemir Group, 92%]	Iskenderun plant, Hatay Province	4,700
Do.		İzmir Demir Çelik Sanayi A.Ş. (İDÇ)	Aliaga plant, Izmir Province	1,320
Do.		Kaptan Demir Çelik Endüstrisi ve Ticaret A.Ş.	Marmara Ereğlisi plant, Tekirdag Province	1,400
Do.		Karabük Demir Çelik Sanayi ve Ticaret A.Ş. (Kardemir) (Kardemir retirement group, 68%; Kardemir employees, 21%; others, 11%)	Karabuk plant, Karabuk Province	1,500
Do.		Kroman Çelik Sanayii A.Ş.	Cayirova plant, Kocaeli Province	1,250
Do.		Makina ve Kimya Endüstrisi Kurumu Genel Müdürlüğü (MKEK)	Kirikkale plant, Kirikkale Province	60
Do.		Mega Demir Mamulleri Sanayi ve Ticaret Ltd. ŞTI	Iskenderun plant, Hatay Province	220
Do.		Nursan Metalurji A.Ş.	Payas plant, Hatay Province	1,100
Do.		Sivas Demir Çelik İşletmeleri A.Ş. (Sidemir)	Sivas plant, Sivas Province	350
Do.		Tosyalı Demir Çelik Sanayi A.Ş. (Tosyalı Holding A.Ş.)	Iskenderun plant, Hatay Province	NA

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel:—Continued			
Steel:—Continued			
Raw—Continued	Yazıcı Demir Çelik Endüstrisi ve Ticaret A.Ş. (Diler Demir Çelik Endüstrisi ve Ticaret A.Ş.)	Karabük plant, Karabük Province	1,000
Do.	Yeşilyurt Demir Çelik A.Ş.	Tekkekoy plant, Samsun Province	1,300
Rolled products	Asil Çelik A.Ş.	Rolling mill south of Orhangazi, Bursa Province	410
Do.	Borçelik Çelik Sanayii ve Ticaret A.Ş. (ArcelorMittal and Borusan Holding A.Ş.)	Gemlik rolling mill, Bursa Province	1,500
Do.	Çebitaş Demir Çelik Endüstrisi A.Ş.	Aliaga rolling mill, Izmir Province	600
Do.	Çelik Makina Sanayi ve Ticaret A.Ş. (ÇEMTAŞ)	Bursa rolling mill, Bursa Province	210
Do.	CER Çelik Endüstrisi A.Ş.	Rolling mill at Bornova, Izmir Province	300
Do.	Çolakoğlu Metalurji A.Ş.	Dilovasi rolling mill, Kocaeli Province	750
Do.	Demirsan Haddecilik Sanayi ve Ticaret A.Ş.	do.	500
Do.	Diler Demir Çelik Endüstrisi ve Ticaret A.Ş.	do.	1,500
Do.	Ege Çelik Endüstrisi Sanayi ve Ticaret A.Ş.	Aliaga rolling mill, Izmir Province	1,200
Do.	Ekinciler Holding A.Ş.	Iskenderun rolling mill, Hatay Province	1,100
Do.	Erege Metal Demir Çelik Sanayi ve Ticaret A.Ş.	Aliaga rolling mill, Izmir Province	400
Do.	Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Erdemir) (Ataer Holding A.Ş., 49.29%, and ArcelorMittal, 24.99%)	Karadeniz Ereğli rolling mill, Zonguldak Province	8,800
Do.	Habaş Sinai ve Tibbi Gazlar Istihsal Endustrisi A.S. (Habaş Topluluğu)	Aliaga rolling mill, Izmir Province	3,000
Do.	İçdaş Demir Çelik Enerji Tersane ve Ulaşım Sanayi A.Ş.	Istanbul (Gunesli) rolling mill, Istanbul Province	1,500
Do.	do.	Biga rolling mill, Canakkale Province	1,500
Do.	Intermet A.Ş.	2 rolling mills, Istanbul, Istanbul Province	600
Do.	İskenderun Demir ve Çelik A.Ş. (Isdemir) [Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Erdemir), 92%]	Iskenderun rolling mill, Hatay Province	3,500
Do.	İzmir Demir Çelik Sanayi A.Ş. (IDÇ)	Aliaga rolling mill, Izmir Province	900
Do.	Kaptan Demir Çelik Endüstrisi ve Ticaret A.Ş.	Marmara Ereğlisi rolling mill, Tekirdag Province	700
Do.	do.	Corlu rolling mill, Tekirdag Province	500
Do.	do.	Karabük rolling mill, Karabük Province	100
Do.	Karabük Demir Çelik Sanayi ve Ticaret A.Ş. (Kardemir) (Kardemir retirement group, 68%, and Kardemir employees, 21%)	do.	700
Do.	Kar-demir Haddecilik Sanayi ve Ticaret Ltd. ŞTI	Aliaga rolling mill, Izmir Province	700
Do.	Kocaeli Haddecilik Sanayi ve Ticaret Ltd. ŞTI. (Kocaeli Grubu)	do.	700
Do.	do.	Denizli rolling mill, Denizli Province	100
Do.	Kroman Çelik Sanayii A.Ş.	Bar and profile mill at Cayirova, Kocaeli Province	200
Do.	Kürüm Demir Sanayi Dış Ticaret A.Ş.	Gebze rolling mill, Kocaeli Province	445
Do.	Nursan Haddecilik A.Ş.	Payas rolling mill, Hatay Province	500
Do.	Özefe Demir Sanayi ve Tic A.Ş. (Efesan Demir Sanayi ve Ticaret A.Ş.)	Bar mills at Alibeykoy, Istanbul Province	250
Do.	Özkan Demir Sanayi A.Ş.	Aliaga rolling mill, Izmir Province	700
Do.	Sivas Demir Çelik İşletmeleri A.Ş. (Sidemir)	Sivas rolling mill, Sivas Province	400
Do.	Sözer Demir Çelik A.Ş.	Aliaga rolling mill, Izmir Province	220
Do.	Yazıcı Demir Çelik Endüstrisi ve Ticaret A.Ş. (Diler Demir Çelik Endüstrisi ve Ticaret A.Ş.)	Karabük rolling mill, Karabük Province	1,250
Do.	Yeşilyurt Demir Çelik A.Ş.	Tekkekoy rolling mill, Samsun Province	900
Lead, ore	Eczacıbaşı Esan	Balya Mine and Plant, Balıkesir Province	NA
Magnesite	Akdeniz Mineral Kaynakları A.Ş. (Grecian Magnesite S.A., 90%)	Caustic calcined magnesia plant in Eskisehir, Eskisehir Province	32

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Magnesite—Continued		Cihan Grubu	Dead-burned magnesia plant in Erzurum, Erzurum Province	60
Do.		Konya Selçuklu Krom Magnezit Tuğla Sanayi A.Ş. (Grecian Magnesite S.A., 90%)	Caustic calcined magnesia plant in Selcuklu, Konya Province	40
Do.		Kümaş Kutahya Manyezit Sanayi A.Ş. (Yıldız Holding and Gurmen Group, 90%)	Dead-burned magnesia plant in Kutahya, Kutahya Province	300
Do.		do.	Fused magnesia plant in Kutahya, Kutahya Province	38
Do.		Magnesit Anonim Şirketi (MAŞ) (RHI Group, 100%)	Dead-burned magnesia plant in Dutlucu, Eskisehir Province	265
Magnesium, metal		Kar Mineral Madencilik A.Ş.	Magnesium smelter, Afyonkarahisar Province	15
Manganese, ore		Demeka Madencilik A.Ş.	Mine in Musa Beyli, Kilis Province, and plants in Kahramanmaraş and Kilis	381
Do.		Erdemir Madencilik Sanayi ve Ticaret A.Ş. [Ereğli Demir ve Çelik Fabrikaları T.A.Ş. (Erdemir Group)]	Mines in the Divrigi area, Sivas Province	NA
Molybdenum, ore, metric tons Mo content		Kuzey Ege Bakır İşletmeleri A.Ş. (Özdoğu İnşaat Tic. Ltd. Şti, 100%)	Tepeoba Mine, Balıkesir Province	1,800
Natural gas	million cubic meters	Türkiye Petrolleri Anonim Ortaklığı (TPAO)	Akcakoca offshore gasfield, Düzce Province	500
Nickel:				
Ore, Ni content		Meta Nikel Kobalt Madencilik Sanayi ve Ticaret A.Ş. (GSR Capital, 50%, and Vestel Elektronik Sanayi ve Ticaret A.Ş., 50%)	Mines in Gordes, Manisa Province, and Yunusçayırı, Eskisehir Province	20 °
Metal		do.	Processing plant in Gordes, Manisa Province	10
Nitrogen, N content of ammonia		Gemlik Gübre Sanayii A.Ş. [Türkiye Gübre Sanayii A.Ş. (TÜGSAŞ)]	Gemlik, Bursa Province	270
Do.		İstanbul Gübre Sanayii A.Ş. (IGSAŞ) (Yıldız Yatırım Holding A.Ş.)	Korfez, Kocaeli Province	326
Perlite		Bergama Mining Construction Machinery Perlite Industry & Trade Inc. (Cullas Group)	Bergama plant, Izmir Province	120
Do.		do.	Konya plant, Konya Province	20
Petroleum				
Crude	thousand 42-gallon barrels per day	Türkiye Petrolleri Anonim Ortaklığı (TPAO)	Oilfields in Adıyaman and Batman Provinces	60
Refined products	do.	STAR Rafineri A.Ş. (SOCAR Türkiye Enerji A.Ş.)	Izmir refinery, Aliaga, Izmir Province	214
Do.	do.	Türkiye Petrol Rafinerileri A.Ş. (Tüpraş) (Fiat Chrysler Automobiles NV, 37.86%; Koç Holding, 37.86%; free floating shares, 24.28%)	Batman refinery, Batman, Batman Province	22
Do.	do.	do.	Izmir refinery, Aliaga, Izmir Province	200
Do.	do.	do.	Izmit refinery, Izmit, Kocaeli Province	226
Do.	do.	do.	Kirikkale refinery, Kirikkale, Kirikkale Province	110
Phosphate rock		Eti Bakır A.Ş. (Cengiz Holding, 100%)	Mazıdağı Mine, Mardin Province	550
Silver:				
Ore, gross weight	metric tons	Eti Gümüş A.Ş. (Yıldızlar SSS Holding, 100%)	Gumuskoy, Kutahya Province	350
Ore, Ag content	kilograms	Koza Altın İşletmeleri A.Ş. (ATP İnşaat ve Ticaret A.Ş., 45.01%; Koza İpek Holding A.Ş., 24.99%; others, 30%)	Kaymaz Mine, Sivrihisar, Eskisehir Province	2,400 °
Do.	do.	do.	Cukuralan Mine, Dikili, Izmir Province	1,700 °
Do.	do.	do.	Mastra Mine, near Demirkaynak, Gumushane Province ²	600 °
Do.	do.	do.	Himmetdede Mine, Kayseri Province	4 °
Do.	do.	Tümad Madencilik San. ve Tic. A.Ş.	Ivrindi Mine, Balıkesir Province	NA
Do.	do.	do.	Lapseki Mine, Canakkale Province	NA
Do.	do.	Zenit Madencilik San. ve Tic. A.Ş.	Kızıltepe Mine, Balıkesir Province	NA

See footnotes at end of table.

TABLE 2—Continued
TURKEY: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Silver:—Continued				
Metal	metric tons	Ahlatci Metal Rafineri A.Ş. (Ahlatci Holding)	Refinery at Corum, Corum Province	468
Do.		Atasay Kuyumculuk Sanayi ve Ticaret A.Ş.	Refinery at Istanbul, Istanbul Province	NA
Do.		İstanbul Altın Rafinerisi A.Ş.444 7 427	do.	NA
Do.	metric tons	Nadir Metal Rafineri A.Ş.	do.	150
Do.	do.	Onsa Mücevherat İmalatı ve Dış Ticaret A.Ş. (Altınbaş Holding)	do.	130
Soda ash		Alkim Alkali Kimya	Cayirhan Mine, Ankara Province	150
Do.		Eti Soda A.Ş. [Ciner Group, 74%, and Eti Maden İşletmeleri Genel Müdürlüğü (Government), 26%]	Beypazari trona mine and soda ash plant, Beypazari, Ankara Province	1,500
Do.		Kazan Soda Elektrik Üretim A.Ş. (Ciner Group, 100%)	Soda ash plant, Northwest Ankara, Ankara Province	2,500
Do.		Soda Sanayii A.Ş [Türkiye Şişe ve Cam Fabrikaları A.Ş. (ŞİŞECAM)]	Kazanli Mine, Mersin Province	1,400
Sulfur		Türkiye Petrol Rafinerileri A.Ş. (Tüpras) (Enerji Yatırımları A.Ş., 51%, free-floating shares, 49%)	Izmir refinery, Aliaga, Izmir Province	NA
Do.		do.	Izmit refinery, Izmit, Kocaeli Province	NA
Do.		do.	Kirikkale refinery, Kirikkale, Kirikkale Province	NA
Sulfuric acid		Bandırma Bor ve Asit Fabrikaları İşletme Müdürlüğü (Eti Maden İşletmeleri Genel Müdürlüğü) (Government)	Plant at Bandırma, Balıkesir Province	240
Zinc, concentrate, Zn content		Befesa Silvermet Turkey S.L. (Befesa Zinc S.A.U., 51%, and Global Atomic Corp., 49%)	EAFD processing plant in Iskenderun, Hatay Province	65
Do.		Çanakkale Madencilik Ltd. Şti.	Koru Mine, Çanakkale Province	9
Do.		Çayeli Bakir İşletmeleri A.Ş. (First Quantum Minerals Ltd., 100%)	Cayeli Mine, near Cayeli, Rize Province	5
Do.		Cinkom Metal A.Ş.	EAFD processing plant in Kayseri Province	200
Do.		Dedeman Madencilik Tic. ve San. A.Ş.	Delikkaya and Yesil Hisar Cadirkaya Mines, Kayseri Province	10
Do.		Eczacıbaşı Esan	Balya Mine and Plant, Balıkesir Province	120
Do.		Elkin Maden Tic. ve San. A.Ş.	Mines in Hakkari Province	NA
Do.		Marzinc Dis Tic. A.Ş.	EAFD processing plant, Karabük Province	NA
Do.		Meskan Ölmez Madencilik Harfiyat İnşaat yol Yapım Petrol Ürünleri İthalat İhracat Nakliye Taahhüt San. ve Tic.	do.	20
Do.		RCR ve Seyitoğlu Madencilik İthalat İhracat Tic. ve San. A.Ş. (Red Crescent Resources Ltd. and the Seyitoğlu family)	Hakkari Mine, Hakkari Province	NA
Do.		Seyitoğlu Madencilik A.Ş.	Mines in Hakkari Province	NA
Do.		Turkmex (Cinkom Metal A.Ş., 50%, Zinc Nacional S.A., 50%)	EAFD processing plant in Aliaga, Izmir Province	175

⁶Estimated. Do., do. Ditto. NA Not available.

¹Includes subbituminous coal.

²Suspended since 2016.

TABLE 3
TURKEY: EXPORTS OF SELECTED MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019	
Abrasives, emery	51,772	52,979	63,679	259,052	92,641	
Antimony	2,645	2,553	2,622	2,703	1,778	
Barite	216,614	167,137	207,891	291,721	249,864	
Bauxite	279,988	471,403	632,237	1,104,512	1,412,880	
Bentonite	416,572	539,178	595,166	719,867	880,417	
Borate	713,491	692,992	825,169	829,964	651,046	
Calcium phosphate	158,790	26,395	135,144	97,820	25,875	
Cement	thousand metric tons	7,399	7,461	7,980	7,467	11,116
Chromite ore	1,258,031	1,225,723	1,378,526	1,442,923	1,290,442	
Clay, unspecified	101,316	246,295	60,887	213,627	139,392	
Clinker	thousand metric tons	3,062	3,725	4,932	5,854	11,609
Cobalt ore	5	99	220	259	120	
Copper ore	299,309	244,592	248,726	119,428	185,498	
Cryolite and zeolites	--	--	6	--	--	
Feldspar	5,731,271	5,508,879	6,438,517	6,672,877	6,346,775	
Ferrochromium	80,550	130,560	124,524	103,432	104,853	
Graphite	748	868	1,292	1,603	1,607	
Gypsum	647,611	568,834	744,882	927,546	1,200,778	
Iron and steel:						
Iron ore	327,015	334,021	756,713	755,043	800,000	
Iron pellets	4,865	6,159	5,997	6,958	5,520	
Pig iron	5,182	10,276	5,000	5,000	6,000	
Steel:						
Crude billet and slab	305,000	272,000	891,000	1,068,000	1,506,000	
Long products	10,183,000	10,193,000	9,257,000	10,675,000	10,557,000	
Flat products	2,437,000	3,093,000	4,293,000	6,192,000	5,764,000	
Kaolin	150,967	67,414	141,971	91,611	190,950	
Lead ore	126,503	107,456	124,877	126,003	118,012	
Magnesite	283,517	319,363	398,665	411,373	341,151	
Magnesium sulfate	kilograms	--	1,600	--	--	
Manganese ore	15,696	36,765	29,192	49,415	38,633	
Mica:						
Raw	439	457	345	722	632	
Processed	45	73	47	61	68	
Molybdenum ore	1,474	1,031	3,399	770	500	
Nickel:						
Ore	80,236	82,780	239,330	96,000	82,000	
Concentrate	--	10,400	23,130	25,114	10,900	
Perlite	421,633	416,467	499,372	496,759	533,028	
Pumice and pumicite:						
Pumice	213,589	243,751	261,781	370,290	419,868	
Volcanic ash	8,099	6,826	5,905	6,231	7,155	
Quartz and quartzite	467,284	454,760	504,266	533,384	548,869	
Salt	415,664	259,500	280,611	374,509	625,546	
Selenium, celestine	--	--	--	10	2,482	
Silica	51,857	48,871	71,995	27,297	52,786	
Soda ash	1,854	1,977	3,274	3,400	4,302	

See footnotes at end of table.

TABLE 3—Continued
 TURKEY: EXPORTS OF SELECTED MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
Stone:					
Building stone	24,808	26,117	30,014	38,685	38,638
Dolomite	53,656	37,461	28,821	28,779	59,969
Granite:					
Raw	112,087	100,661	87,768	77,159	127,598
Processed	18,458	15,025	13,720	33,097	49,232
Marble:					
Raw	4,350,560	4,359,292	5,663,709	5,043,319	4,481,206
Processed	1,508,409	1,528,869	1,561,565	1,672,935	1,779,282
Travertine	456,699	435,951	539,883	541,243	593,947
Sulfur	118,157	124,409	157,254	138,331	140,635
Talc and steatite	2,413	2,691	3,626	4,814	5,935
Zinc ore	347,180	424,440	762,133	961,301	734,753

-- Zero.

¹Table includes data available through November 23, 2020.

²Sources: Istanbul Mineral Exporters Association (IMIB); Turkish Cement Producers Association; Turkish Steel Producers Association.