# The Mineral Industry of Turkey

By Philip M. Mobbs

Turkey had a diverse and dynamic mineral industry. The nation was a leading producer of barite, boron minerals, celestite (strontium), chromite, emery, feldspar, limestone, magnesite, marble, perlite, and pumice and is a significant source of value-added processed mineral commodities that included refined borates and related chemicals, cement, ceramics, glass, and steel.

Turkey was positioned as a significant channel for trade between Europe and the countries in the eastern Commonwealth of Independent States (CIS) and has remained a conduit for trade with the Middle East. During the past 10 years, the value of Turkish exports has more than tripled and that of imports has more than doubled. Bridging Asia and Europe, Turkey has emerged as a major energy transit corridor. Crude oil from Iraq moved through Turkey until March, when the war in Iraq stopped Iraqi oil exports. Natural gas from Iran and Russia was piped into Turkey, and the proposed South Caucasus gas pipeline was to deliver additional natural gas to Turkey from Azerbaijan. Some of the Azerbaijani natural gas was to be transshipped to Greece starting in 2006 under a planned 285-kilometer (km) pipeline that would deliver about 14.2 million cubic meters per year of Azerbaijani natural gas to Greece. Connection of the Turkish natural gas pipeline system with the European gas network could provide an alternative route to allow surplus Eurasian natural gas to flow into Europe (Alexander's Gas & Oil Connections, 2003§[1]).

Turkey's gross domestic product (GDP) based on purchasing power parity was estimated to be about $461 billion in 2003, and the GDP per capita based on purchasing power parity was $6,646. The national economy continued its recovery from the severe economic crisis of 2001. While real GDP growth slowed in 2003 to 5.8% compared to a revised 7.9% in 2002, inflation declined to an annual rate of 25%, which was a decrease from 45% in 2002 and 85% in 1998. In 2003, the Government worked closely with the International Monetary Fund (2004§) to continue economic reforms and with the European Union to become a member.

## Trade

In 2003, total Turkish exports were valued at $47.2 billion compared with $35.8 billion in 2002 and $15.3 million in 1993. European countries received 60% of Turkish exports (by value) in 2003 compared with 56% in 1993. Countries of the Middle East received 11% of Turkish exports in 2003, which was a decrease from 14% in 1993, and countries of the CIS received 6%, which was a decrease from 7% in 1993. The United States received 8% of Turkish exports in 2003, which was an increase from 6% in 1993 (State Institute of Statistics, 2004§).

Total imports were valued at $69.3 billion in 2003 compared with $51.3 billion in 2002 and $29.4 million in 1993. In 2003, Europe accounted for 56% of total Turkish imports (by value), which was an increase from 53% in 1993. The CIS was the source of 11% of Turkish imports compared with 8% in 1993, and the Middle East supplied 6% of imports compared with 10% in 1993. The United States supplied 5% of Turkish imports in 2003, which was a decrease from 11% in 1993 when the United States was a significant supplier of steel scrap to the Turkish steel industry (State Institute of Statistics, 2004§).

In 2003, exports of mineral and chemical-based commodities and products were valued at about $10.7 billion and accounted for about 22% of total Turkish exports. Iron and steel exports, which included bars, billets, pipes, pig iron, flat-rolled products, sections, and wire, were valued at about $4.4 billion. Other exports included mineral fuels, oils, and products, $968 million; jewelry, about $788 million; raw blocks and worked stone, $431 million; copper metal, $248 million; inorganic chemicals, $245 million; borates and concentrates, about $84 million; and metal ores, about $56 million. Compared with exports in 2002, the value of steel wire bars increased by 38% in 2003 to $1.2 billion; aluminum bars, pipes, profiles, ropes, wire and unrolled aluminum exports, by 44% to $309 million; worked marble, by 39% to $302 million; cold-rolled flat steel, by 42% to $175 million; copper ropes and wires, by 32% to $164 million; granite blocks, by 66% to $97 million; steel scrap, by 88% to $38 million; lead ore, by 36% to $28 million; steel wire, by 47% to $19 million; feldspar, by 110% to $10 million; slate, by 65% to about $4 million; marble blocks, by 642% to $3 million; meerschaum, by 1,884% to $2 million; bauxite, by 37% to $2 million; and antimony ore, by 69% to about $2 million. In 2003, the value of exports of hot-rolled steel dropped by 9% to $107 million; fertilizer, by 45% to $20 million; and pig iron, by 75% to less than $1 million (Istanbul Mineral and Metals Exporters' Association, 2004§).

## Structure of the Mineral Industry

The private sector dominated the country's industrial minerals and metals sectors. Private sector enterprises included exploration and production companies owned by domestic and foreign stockholders, mining and manufacturing subsidiaries of large Turkish conglomerates, and medium- and small-sized family-owned mining companies. In 2003, 32,259 new companies and cooperatives were established in Turkey, of which 291 were mining and quarrying companies.

The Government had started to privatize state-owned companies in 1989; state-owned companies, however, remained significant producers of fuels and metallic ores. In 2003, mineral operations held by the Government's Privatization Administration included the chrome mines and ferrochrome and ferrosilicon plants of Eti Elektrometalurji A.Ş; the ferrochrome plant of Eti Krom A.Ş; the copper mines of

[1]References that include a section mark (§) are found in the Internet References Cited section.

Eti Bakir A.Ş; the copper smelter of Karadeniz Bakir Işletmeleri A.Ş.; several fertilizer plants; the iron ore mines of Divriği Hekimhan Madenleri Sanayi ve Ticaret A.Ş.; the domestic and foreign steel operations of Ereğli Demir ve Çelik Fabrikalari T.A.Ş. (Erdemir); the petroleum refineries of Türkiye Petrol Rafineleri A.Ş. (TUPRAS); and the silver mine and plant of Eti Gümüş A.Ş. The slowdown in the Government's divestment of state-owned mineral enterprises that began with the economic crisis in late 2001 continued through 2003, although much of the Privatization Administration's mineral company portfolio was expected to be sold off in 2004.

## Commodity Review

### *Metals*

**Copper.**—Çayeli Bakir Isletmeleri A.Ş. (CBI), which was the joint venture of Inmet Mining Corp. (55% equity interest) and Eti Holdings A.Ş. (45%), continued the restoration of the Cayeli Mine after a series of ground falls in 2002. Production increased to 930,000 metric tons (t) of ore milled, which contained 33,600 t of zinc and 33,500 t of copper. In 2003, CBI started a 3-year $14 million program to deepen the mine's main shaft by 300 meters (m). CBI also acquired Teck Cominco Madencilik Sanayi A.Ş. and its Cerattepe and Rize exploration licenses. CBI proposed starting production at Cerattepe by 2006 and to transport mined ore 200 km to the mill at the Cayeli Mine by truck (Inmet Mining Corp., 2004, p. 16-17, 20).

In 2003, Anatolia Minerals Development Ltd. and Rio Tinto Mining & Exploration Ltd. extended their strategic exploration agreement until 2008. In 2003, the companies continued exploration on the Gurculer, the Ikiztepe, and the Karapinar copper prospects and drilled the Kizilviran copper prospect. Eurasian Minerals Inc. (which was known as Marchwell Capital Corp. prior to its acquisition of Southern European Exploration Ltd. in 2003) sampled the Golcuk property.

**Ferrochromium.**—Improved international market conditions in 2003 allowed Eti Krom to restart two of its four high-carbon ferrochromium furnaces that had been idle since 2001.

**Gold.**—In past years, until Normandy Madencilik A.Ş opened the Ovacik gold mine in 2001, Turkish gold output was primarily a coproduct of base-metal mine production. In 2002, Newmont Mining Corp. of the United States acquired Normandy Mining Ltd. of Australia and its subsidiary Normandy Madencilik. Newmont increased ore production in 2003 by almost 40% compared with that of 2002.

Eldorado Gold Corp. continued exploration of the Kisladag prospect, Eurasian Minerals was prospecting on the Delidemirci and the Sisorta gold properties, and Odyssey Resources Ltd. started exploration on the Tavsan property. Rio Tinto continued to drill the Copler gold prospect for the Anatolia/Rio Tinto joint venture. At yearend, Anatolia Minerals was negotiating to buy the remaining equity interest (about 25%) that it did not own in the Copler prospect from Rio Tinto and the Turkish license holder.

**Iron and Steel.**—The Turkish steel industry was dominated by electric-arc-furnace (EAF) mini-mills that required steel scrap. More than 70% of domestic steel production capacity was attributed to EAF plants. Because of the higher prices for scrap on the international market in 2003 compared with those of 2002, obtaining steel scrap was a problem for Turkish mini-mills. Turkey, formerly a major importer of scrap from the United States, obtained about 50% of its scrap supply from the Ukraine (Metal Bulletin, 2003).

Steel output was skewed toward long products (bars, billets, concrete-reinforcing bar, and wire rod), which accounted for about 80% of output, compared with flat products (18%) and specialty steel (2%). In 2002, Erdemir had completed its acquisition of Iskenderun Demir ve Çelik A.Ş. (Isdemir). In 2003, Erdemir proposed converting the Isdemir steel plant from long-product to flat-rolled steel production because Erdemir was the only flat-product producer in Turkey and was unable to satisfy local demand for flat products (Woodcock and Burtin, 2003).

**Nickel.**—European Nickel plc of the United Kingdom continued its evaluation of the Caldag lateritic nickel deposit near Izmir. In 2002, European Nickel and As Krom Madencilik Turzim Lusaat Nakliye San. ve Tic. A.Ş. of Turkey had set up Bosphorus Nickel Madencilik Turzim A.Ş as the operating company for Caldag. Bosphorus Nickel started trial mining in April 2003, and total production for the year was about 44,000 t of ore. Two shipments of about 20,000 t of ore were sent to the Larco nickel smelter in Greece, which was operated by General Mining and Metallurgical Company S.A. Larco. European Nickel reported that the ore shipments averaged 1.38% nickel (Canaccord Capital Ltd., 2004, p. 30).

Oriel Resources plc of the United Kingdom explored the Gordes nickel prospect, which was located about 60 km south of Caldag. In October, Oriel shipped 3,500 t of ore that graded 1.37% nickel to Larco for treatment. At yearend, Oriel was preparing a second shipment of ore (Oriel Resources plc, 2004§, p. 42).

### *Industrial Minerals*

**Boron.**—Unlike most of state-owned Eti Holding A.Ş.'s mining operations, the boron mines were not transferred to the Privatization Administration. Turkish boron operations had been nationalized in 1978 and the Government company had retained a monopoly on boron production. In 1985, private companies were authorized to export boron.

In 2003, the 240,000-metric-ton-per-year (t/yr)-capacity Bandirma sulfuric acid plant and the 100,000-t/yr-capacity Bigadic II boron grinding unit were under construction. Construction of the 100,000-t/yr-capacity Emet boric acid plant was completed. The state geological research organization Maden Tetkik ve Arama Genel Müdürlüğü (MTA) explored and mapped several boron prospects near existing Eti Bor mines. Eti Holdings reported that MTA completed a 6,956-m drill program and calculated that Eti Bor controlled an additional 1 billion metric tons of boron reserves. Eti Holding's organization name was to be changed to Eti Maden İşletmeleri Genel Müdürlüğü in January 2004 (Eti Holding A.Ş., 2004§).

**Feldspar.**—Several companies completed new facility projects in 2003, which allowed increased production and sales of feldspar. Cine Akmaden Madencilik T.A.Ş. tripled its feldspar-crushing capacity with the installation of a new 300-metric-ton-per-hour plant and initiated an expansion of the company's flotation capacity to 180,000 t/yr. Esan Eczacıbaşı

Endüstriyel Hammaddeler San.ve Tic. A.Ş. continued the construction of a 400,000-t/yr-capacity crushing plant. Commercial operations were expected to begin in 2004. In August, operations began at the 150,000-t/yr flotation plant that Kaltun Madencilik San. ve Tic. A.Ş built at Kaltun (Moore, 2004).

**Soda Ash.**—Eti Soda A. Ş., which was a venture of the Park Group (73.96% equity interest), Eti Holdings (26%), and Türkiye Vakifbank Bankasi T.A.O. (0.04%), continued construction of the Beypazari trona processing plant. Commercial production was expected to begin in 2006.

### *Mineral Fuels*

**Natural Gas and Petroleum.**—State-owned Türkiye Petrolleri A.O. was the country's leading oil producer. Most of Turkey's oil exploration and production were in the southeastern region; exploration activity on the recently-awarded Black Sea hydrocarbon leases, however, was expected to increase in 2004. In 2003, acquisition of two- and three-dimensional seismic survey data significantly increased compared with that of 2002. New wells added to gas production from the Cayirdere gasfield and to oil production from the G. Raman, the Tokaris, and the Vakiflar oilfields.

In November, BP p.l.c. indicated that it planned to close the 100,000-barrel-per-day Anadolu Tasfiyehanesi A.Ş. refinery. In December 2003, law No. 5015, the Petroleum Market Law, was enacted (Platts, 2003§).

Bad weather and increased ship traffic again raised the issue of shipping crude oil through the Bosphorus and the Dardanelles Straits. In 2003, 8,097 tankers that carried 130 million metric tons (Mt) of cargo transited the Straits compared with 6,516 ships that carried 101 Mt in 2001. Turkish regulations allow only tankers longer than 200 m to transit the passage during daylight hours. In early December, tankers that were moving crude oil from Russia to Europe were delayed for up to 30 days when seeking passage through the Bosphorous. At yearend, a new vehicle-tracking system became operational. OJSC AK Transneft of Russia proposed to build an oil pipeline across Turkey or across Bulgaria and Greece to bypass the bottleneck (Oil & Gas Journal, 2004; Roberts, 2004§).

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### Major Sources of Information

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TABLE 1
TURKEY: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003[p] |
|---|---|---|---|---|---|---|
| METALS | | | | | | |
| Aluminum: | | | | | | |
| Bauxite[2] | | 207,743 | 458,537 | 242,040 | 287,403 | 364,306 |
| Alumina: | | | | | | |
| Gross weight | | 159,122 | 155,448 | 145,993 | 152,869 | 162,174 |
| Metal, smelter[e] | | 62,000 | 61,000 | 61,730 [3] | 63,000 | 63,000 |
| Antimony:[e] | | | | | | |
| Ore, mine output: | | | | | | |
| Gross weight | | 3,400 | 6,800 | 7,000 | 7,000 | 7,000 |
| Sb content | | 180 | 360 | 370 | 370 | 370 |
| Concentrates: | | | | | | |
| Gross weight | | 500 | 1,000 | 1,000 | 1,000 | 1,000 |
| Sb content | | 100 | 200 | 200 | 200 | 200 |
| Cadmium | | 64 | -- | -- | -- | -- |
| Chromium, gross weight (34% to 43% chromic oxide)[4] | | 770,352 | 545,725 | 389,759 | 313,637 | 281,783 |
| Copper: | | | | | | |
| Mine output, exclusive of pyrite:[5] | | | | | | |
| Gross weight | | 4,297,170 | 4,473,711 | 3,467,306 | 2,942,721 | 2,620,896 |
| Cu content of ore | | 73,051 | 76,053 | 56,864 | 48,253 | 45,000 |
| Metal: | | | | | | |
| Smelter output, primary and secondary | | 32,900 [e] | 32,550 | 33,504 | 32,550 | 30,000 |
| Refined[e] | | 60,500 | 64,100 | 58,400 | 41,000 | 45,000 |
| Gold[e, 6] | kilograms | 1,200 | 500 | 2,000 | 2,400 [r] | 2,350 |
| Iron and steel: | | | | | | |
| Iron ore: | | | | | | |
| Gross weight | thousand metric tons | 4,846 | 4,076 | 3,932 | 4,500 [e] | 4,000 |
| Fe content[e] | do. | 2,600 [r] | 2,200 | 2,100 | 2,400 | 2,100 |
| Metal: | | | | | | |
| Pig iron and ferroalloys: | | | | | | |
| Ferrochromium | | 99,100 | 97,240 | 50,735 | 11,200 | 25,000 |
| Ferrosilicon | | 420 | -- | 5,895 | 7,245 | 7,000 |
| Pig iron | | 314,670 | 300,000 [e] | 247,598 | 157,622 | 181,080 |
| Steel, crude including castings | thousand metric tons | 14,309 | 14,325 | 14,382 | 16,046 | 17,644 |
| Lead: | | | | | | |
| Mine output, Pb and Pb-Zn ores: | | | | | | |
| Gross weight | | 284,504 | 345,391 | 388,795 | 375,592 | 379,250 |
| Pb content | | 14,225 | 17,270 | 17,923 | 17,352 | 17,500 |
| Concentrates:[e] | | | | | | |
| Gross weight | | 11,500 | 13,000 | 13,000 | 13,000 | 13,000 |
| Pb content | | 7,500 | 8,500 | 8,500 | 8,500 | 8,500 |
| Metal, refined[e] | | 4,000 | 4,000 | 4,000 | 4,000 | 6,000 |
| Manganese ore, gross weight[7] | | 29,000 | 23,300 | 20,000 | 20,000 | 18,000 |
| Silver, mine output, Ag content[8] | kilograms | 100,000 [e] | 110,000 [e] | 987,656 | 662,000 | 794,998 |
| Zinc: | | | | | | |
| Mine output, Zn and Pb-Zn ore: | | | | | | |
| Gross weight | | 4,630 | 861 | 816 | 800 | 800 |
| Zn content | | 545 | 39 | 37 | 35 | 34 |
| Concentrates:[e] | | | | | | |
| Gross weight | | 500 | 26 | 25 | 25 | 25 |
| Zn content | | 300 | 26 | 25 | 25 | 25 |
| Metal, smelter, primary | | 33,179 | -- | -- | -- | -- |

See footnotes at end of table.

TABLE 1--Continued
TURKEY: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003[p] |
|---|---|---|---|---|---|---|
| INDUSTRIAL MINERALS | | | | | | |
| Aluminum sulfate, alunite | | 11,264 | 12,266 | 11,531 | 11,389 | 10,458 |
| Barite, run of mine | | 150,058 | 120,893 | 57,373 | 106,843 | 119,648 |
| Boron minerals: | | | | | | |
| Run of mine | | 2,554,404 | 2,398,220 | 2,357,592 | 2,214,064 | 2,207,092 |
| Concentrates | | 1,504,000 | 1,402,000 | 1,493,361 | 1,346,000 | 1,400,000 |
| Refined borates | | 387,000 | 435,000 | 420,000 e | 436,000 | 436,000 |
| Cement, hydraulic | thousand metric tons | 34,258 | 35,825 | 30,125 | 32,576 | 35,077 |
| Clays: | | | | | | |
| Bentonite | | 899,614 | 636,273 | 674,178 | 559,224 | 831,146 |
| Kaolin | | 449,954 | 595,415 | 574,550 | 372,344 | 370,455 |
| Other[e] | | 6,000,000 | 6,500,000 | 2,506,061 [3] | 2,500,000 | 2,500,000 |
| Emery | | 14,535 | 16,830 | 13,629 | 15,418 | 15,402 |
| Feldspar, run of mine | | 1,369,655 | 1,147,716 | 1,510,293 | 1,766,387 | 1,862,310 |
| Fluorspar | | 4,812 | 4,113 | 4,093 | 5,344 | 5,000 |
| Glass, crude | thousand metric tons | 1,203 | 1,300 e | 1,400 e | 1,550 e | 1,500 |
| Graphite, run of mine[e] | | 15,000 | 15,000 | 15,000 | 1,393 r, 3 | 942 [3] |
| Gypsum, other than that for cement | | 242,960 | 302,552 | 328,656 | 264,038 | 196,668 |
| Lime[9] | thousand metric tons | 975 | 914 | 855 | 1,310 r | 1,305 |
| Magnesite, run of mine | | 1,724,744 | 2,672,089 | 1,450,031 | 3,044,440 | 3,224,278 |
| Meerschaum[e] | kilograms | 400 | 500 | 400 | 300 | 200 |
| Nitrogen, N content of ammonia[e] | | 82,400 | 53,400 | 67,100 | 300,500 [3] | 289,300 [3] |
| Perlite, run of mine | | 147,818 | 149,429 | 70,738 | 151,902 | 136,683 |
| Pumice | | 950,189 | 787,081 | 754,052 | 820,347 | 895,616 |
| Pyrites, cupreous, gross weight | | 896,519 | 561,565 | 662,872 | 952,094 | 1,103,872 |
| Silica sand, gross weight | thousand metric tons | 1,211 | 1,485 | 1,207 | 1,274 | 1,283 |
| Sodium compounds: | | | | | | |
| Salt, NaCl, all types | do. | 2,146 | 2,126 | 1,771 | 2,197 | 2,243 |
| Soda ash, trona[e] | do. | 620 | 620 | 640 | 600 | 600 |
| Sodium sulfate, concentrates | | 438,069 | 456,590 | 300,000 e | 562,660 | 556,575 |
| Stone: | | | | | | |
| Dolomite | | 921,105 | 957,182 | 915,441 | 975,971 | 1,158,539 |
| Limestone, other than for cement | thousand metric tons | 28,045 | 30,295 | 40,572 | 30,261 | 28,609 |
| Marble | cubic meters | 739,240 | 647,160 | 460,834 | 557,630 | 544,629 |
| Quartzite | | 2,514,383 | 2,743,271 | 2,085,791 | 2,006,654 | 2,908,584 |
| Strontium minerals, celestite: | | | | | | |
| Run of mine | | 100,000 e | 40,000 e | 110,000 e | 116,278 | 116,000 [3] |
| Concentrates | | 60,540 | 24,150 | 63,635 | 70,000 e | 70,000 |
| Sulfur:[e] | | | | | | |
| S content of pyrites | | 45,000 [3] | 26,000 [3] | 30,000 | 30,000 | 30,000 |
| Byproduct: | | | | | | |
| Petroleum | | 47,000 | 43,000 | 51,000 | 48,000 r, 3 | 48,000 [3] |
| Other | | 75,000 | 75,000 | 75,000 | 75,000 | 72,000 |
| Total | | 167,000 | 144,000 | 156,000 | 155,000 | 120,000 |
| Talc | | 48,378 | 54,278 | 883 | 98 | -- |
| MINERAL FUELS AND RELATED MATERIALS | | | | | | |
| Asphalt, natural[e] | | 150,000 | 150,000 | 150,000 | 118,235 [3] | 217,759 [3] |
| Carbon black | | 26,379 | 35,144 | 35,000 | 35,000 | 6,754 |
| Coal: | | | | | | |
| Hard coal, run of mine | thousand metric tons | 2,738 | 3,330 | 3,370 | 3,313 | 3,090 |
| Lignite, run of mine | do. | 66,706 | 61,315 | 58,173 | 49,627 | 43,749 |
| Coke and semicoke | do. | 2,811 | 2,090 | 1,890 | 2,080 | 2,543 |
| Gas, natural, marketed | thousand cubic meters | 718,806 | 611,822 | 600,000 e | 268,000 e | 275,947 |

See footnotes at end of table.

TABLE 1--Continued
TURKEY: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

| Commodity | | 1999 | 2000 | 2001 | 2002 | 2003[p] |
|---|---|---|---|---|---|---|
| MINERAL FUELS AND RELATED MATERIALS--Continued | | | | | | |
| Petroleum: | | | | | | |
| Crude | thousand 42-gallon barrels | 21,157 | 19,783 | 18,370 | 17,579 | 17,000 |
| Refinery products: | | | | | | |
| Liquefied petroleum gas | do. | 8,071 | 7,409 | 8,019 | 8,580 | 8,000 |
| Gasoline | do. | 38,096 | 39,889 | 24,993 | 31,634 | 28,800 |
| Naphtha | do. | 16,106 | 15,717 | 16,656 | 11,947 | 11,000 |
| Jet fuel | do. | 11,883 | 11,009 | 9,496 | 9,368 | 13,000 |
| Kerosene | do. | 730 | 638 | 209 | 312 | 5,000 |
| Distillate fuel oil[10] | do. | 69,551 | 70,333 | 58,901 | 59,281 | 54,000 |
| Lubricants | do. | 4,501 | 4,322 | 1,736 | 2,090 | 2,000 |
| Residual fuel oil | do. | 9,512 | 8,769 | 56,323 | 53,077 | 39,000 |
| Asphalt | do. | 7,635 | 7,764 | 6,661 | 7,548 | 8,500 |
| Unspecified[11] | do. | 1,644 | 3,110 | 5,969 | 6,125 | 2,600 |
| Total | do. | 167,729 | 168,960 | 188,963 | 189,962 | 171,900 |

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [p]Preliminary. [r]Revised. -- Zero.
[1]Table includes data available through September 30, 2004. In addition to the commodities listed, large quantities of construction materials (clay, sand, and gravel) are quarried. Also mined are basalt, diabase, granite, onyx, sandstone, serpentine, slate, and travertine for building stone, limestone and gypsum for cement manufacture, and molybdenum, olivine, titanium, tungsten, and zeolite, but information is inadequate to estimate output.
[2]Data are for public sector production only. Data for private sector production are not available, but production is believed to be approximately 30,000 metric tons per year.
[3]Reported figure.
[4]Approximately 70% of gross production is salable product.
[5]Copper mines produce a copper concentrate (of about 22% Cu) and a cupreous pyrite concentrate (of about 0.7% Cu). Copper is not recovered from the cupreous pyrite concentrate.
[6]Data includes estimated content of Turkish copper refinery tankhouse slimes. Prior to 2001, all gold production was the byproduct of base-metals refining.
[7]Does not include manganiferous iron ore from the Deveci Mine, production of which amounts to several hundred thousand tons per year and has a manganese content of 3% to 5%.
[8]Includes estimated content of base-metals-refinery tankhouse slimes.
[9]Data are lime produced for steel production and do not include the widespread artisanal production of lime for whitewash and sanitation purposes.
[10]Diesel fuel (gasoil) and special heating oil.
[11]Includes refinery fuel and losses.